A GRAMMAR AND DIALECT STUDY OF KEWA, NEW GUINEA

Karl J. Franklin

PRECIS:

The thesis divides naturally into three parts: (1) a general and theoretical orientation, given in Chapters 1 and 7; (2) the dialect study, given in Chapter 8; and (3) the grammar proper, which is outlined in Chapters 2 through 6, describing the dialect of West Kewa.

The theoretical model employed throughout the grammar is tagmemics. Chapter 1 describes the basic tenets of the theory, as well as recent criticisms and revisions of it. The functional role of tagmemes at various levels is emphasized in the grammar, rather than the various classes and subclasses of forms which may occur as exponents at such levels. The presentation has benefitted from the works of S.C. Dik (1968) and A.L. Becker (1967a, 1967b), who also emphasize function in a grammar. Chapter 1 also briefly describes the Kewa area and previously published materials in East Kewa.

Chapter 7 describes the type of rule format which a tagmemic grammar such as this one might employ. In so doing the dual nature of the tagmem (function and set, or slot and class) is made explicit by two main kinds of rules: those which apply to functions on the one hand and those which apply to categories on the other.

Chapter 8 describes the dialects of Kewa by means of phonological isoglosses, word geography, and distributional facts, the latter which relate to both the grammar and culture.
All of these points are in turn summarised by maps. The languages which surround the Kewa area, as well as related languages, are also compared lexicostatistically with the Kewa dialect closest to them.

Chapter 2 summarises tagmemic phonology and then briefly outlines West Kewa phonology and some general tone perturbation patterns.

Chapter 3 describes word classes and word patterns. Although there is a clear division between verbs and non-verbs, other classes of words are less relevant. This is especially so because of derivational patterns.

Chapter 4 describes four basic clause types: intransitive, complementive, transitive, and derived transitive. The functional points in clauses are limited: Subject, Object, Complement, Predicate, and Adjunct. Each of these grammatical functions have a variety of co-functions, often marked overtly, which occur with them. Some examples are: Agent, Location, Direction, Topic, Goal, and Recipient. Characteristics of conjoining and embedding at each function point is also included.

Chapter 5 describes two main nominal phrase types (descriptive and possessive) and also verbal phrase types, e.g., purposive and gerundive.

Chapter 6 describes several major sentence types in Kewa: Coordinate, Causal, Antithetical, Alternative, Thematic, and Quotative. Coordinate sentences are the most varied and include the description of what is commonly known in New Guinea languages as "medial" and "final" verb actions, as well as certain time relationships which apply between them.
A GRAMMAR AND DIALECT STUDY OF
KEWA, NEW GUINEA

by

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Except where otherwise acknowledged in the text, this thesis represents the original research of the author.

Karl J. Franklin
May, 1969

K.J. Franklin
PREFACE

My interest in Kewa dates back to 1958 when, as members of the Summer Institute of Linguistics, Inc. (SIL), my wife and I first began our study of the language. Our efforts concentrated on East Kewa from 1958 to the end of 1962. From 1963 to 1967 we were absent from the Kewa area, due to a graduate study programme at Cornell University (Ithaca, New York) and administrative duties in New Guinea. Finally, in 1967 as a Research Scholar of the Australian National University, we returned to our studies of Kewa, this time in the West dialect. The grammatical portion of this thesis describes West Kewa.

The thesis can be logically divided into three parts: (1) the grammar proper, which consists of Chapters 2-6; (2) the dialect study (Chapter 8), which was published by the journal Pacific Linguistics. (For this reason the format of Chapter 8 differs slightly from that used elsewhere in the thesis); (3) a theoretical summary and application of the grammatical model known as tagmemics. This is given immediately preceding and following the grammar, i.e. Chapters 1 and 7. In addition, Chapter 1 briefly outlines the Kewa language area, as well as previously published materials in East Kewa.
I am very grateful to those who have been my linguistic teachers: especially Kenneth L. Pike, Robert E. Longacre, Joseph E. Grimes and Charles F. Hockett. It would be rewarding if this thesis reflected some of their scholarship and approach to language. Professor Pike, since he first visited New Guinea in 1962 to conduct a linguistic workshop, has been a helpful stimulus to me.

While a Research Scholar at the Australian National University, Dr. C.L. Voorhoeve and Professor S.A. Wurm guided my research programme. I have especially appreciated Dr. Voorhoeve's comprehensive written comments, and discussions of many aspects of the grammar with T.E. Dutton, a fellow Research Scholar in Linguistics. Many colleagues of the Summer Institute of Linguistics have read parts of the thesis; I have acknowledged their help in specific chapters.

My wife, Joice, has been a constant source of encouragement and help. In addition to reading and commenting on all phases of the study, she has performed clerical and typing duties, including this thesis in many drafts.

From all the Kewa people who have helped us learn their language, four deserve special mention: Pigu and Yandawae of East Kewa, and Kirapeasi and Orope from West Kewa. These young men have been both willing teachers and friends.
Finaly, I wish to express my appreciation for financial aid to two sources: (1) to the A.N.U. for a research scholarship which made concentrated research in West Kewa possible; (2) to many friends (especially members of the First Baptist Church, Pontiac, Michigan) who have supported our work with the Kewa from the beginning.

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Chapter 1
INTRODUCTION

1.0 General Orientation

The Kewa people, who live in the Southern Highlands District of Papua and number over 40,000, are part of a large Highlands Stock (Wurm 1960a).1 The Kewa language is a member of the West-Central Family, a Family which also includes Enga (dialects), Ipili, Huli, Mendi (dialects), Sau and perhaps Wiru.2 More specifically, Wurm (ibid) includes Kewa as a member of the Mendi-Pole Sub-Family along with Mendi, Pole, Augu and Sau.3 Later Wurm and Laycock suggest that all of these Sub-Family members are in fact one language (1961:141), a presumption which has been most recently followed by C.F. and F.M. Voegelin (1965:11).4 On the other hand, I have outlined what I hold to be the boundaries of Kewa and give evidence for them in Chapter 8 of this thesis.

The first indication of a group of related languages corresponding in part to what is now known as the West-Central Family was by A. Capell (1948-49:374ff). He examined and gave limited vocabularies from Koiyevia (= Ipili), Tarifuroro5 (= Huli), Augu, Kutubu (= Foi), Sau and Telefomin. Capell then suggested a relationship between what is now known as Ipili, Huli, Mendi and Sau, as well as Enga.6
However, despite the early comparisons by Capell and the survey by Wurm, there is still little published linguistic material available on the West-Central Family. Our own published articles are on East Kewa; the grammatical features are summarised later in this chapter. Others are compared in appropriate chapters of this thesis. The present study is, however, exclusively on West Kewa. Much of the primary material in the grammatical description is from a concordance of over 14,000 words of text in West Kewa made on computer at the University of Papua and New Guinea. The programme was supervised by Professor M.H. McKay of the Department of Mathematics. A concordance of East Kewa consisting of 19,000 words of text made on the IBM 1410 computer at the University of Oklahoma by the Linguistic Information Retrieval Project of the Summer Institute of Linguistics and the University of Oklahoma Research Institute, and sponsored by Grant GS-270 of the National Science Foundation, was also used. Research in West Kewa was carried out during fourteen months of field work between 1967-9 as a Research Scholar of the Australian National University.

1.1 Theoretical Orientation

Because the grammar which follows draws mainly from tagmemic for its theoretical base, it is necessary to outline the basic tenets of the theory, particularly those which concern grammar.
Although the term tagmemic is now generally applied to grammatical formulations developed by Pike (1954, 1955, 1960; revised 19672), the theory was devised to cover language and culture generally, and was not intended exclusively for grammar. Thus, the grammatical unit designated tagmeme is but one unit in a general theory of language and culture. The history of the theory centres around Pike's search for a minimal grammatical unit (Pike 1958:274ff, for the development of the theory) which earlier publications called a gram(m)eme, a term which was later abandoned in favour of tagmeme. The term tagmeme is from Bloomfield (1933:264; 166, quoted in Pike 1958:275), although Bloomfield's concept linked the tagmeme as an analogical unit to taxeme in the same relationship as phoneme (meaningless) to morpheme (with meaning). More recently Longacre (1964b:6), in a matrix display of the three tagmemic hierarchies, lists the morpheme as the minimal grammatical unit on a par with the phoneme and lexeme.

The fundamental assumptions of tagmemics can be summarised as: (1) language consists of three simultaneous interlocking hierarchies: the grammatical, phonological and lexical; (2) each of these hierarchies have minimal units which are distributed in the same or other levels of the hierarchy; (3) to qualify as distinctive (well-described), any unit must have its contrast, variation and distribution clearly stated.
(Pike 1964c:145-6 concisely summarises exactly what is meant by well-described). In early Pike terminology (and 1967) these three dimensions of a unit were referred to as the feature, manifestation and distribution modes; (4) each hierarchy can be viewed from three mutually supporting perspectives: particle, string and field (Pike 1959; Longacre 1964b:6 gives the first all inclusive diagram of such dimensions)\(^\text{10}\); (5) language or culture may be represented from two standpoints: the etic or outside view, and the emic or inside view. Only the latter is well-described.

For any grammatical description the question of "structurally relevant" levels within a language has been an empirical question (Pike 1967\(^2\):437). Longacre's textbook (1964a) gives analytical procedures for but four (clause, phrase, word and sentence) levels, but tagmemics has always assumed that there may be "still other levels" (Elson and Pickett 1962:86), especially "units larger than sentences (ibid, p. 127). One of Longacre's (1965a:1) main contributions relating to tagmemics is hierarchical structuring. Each syntagmeme (construction type) is described in relation to syntagmemes at levels above or beneath it, as well as to the grammatical field as a whole.

Although tagmemic pedagogy suggests the clause as a logical or useful starting place in grammatical analysis because "it is often possible to work both down and up in the
hierarchy" (Elson and Pickett 1962:64), it insists that such units are "a class of syntagmemes of a median hierarchical order ranking above such syntagmemes as the phrase and word and below such syntagmemes as the sentence and discourse" (Longacre 1964a:35). This distinction of sentence as "the level on which clauses combine into larger units" (Longacre 1967b:15) sets it apart from such theoretical frameworks as transformational grammars where "S→NP, VP is more appropriate to the clause" (Longacre, ibid).

Clause-level and other grammatical-level analytical procedures provide a nuclear-peripheral distinction that is of primary importance (along with the obligatory vs. optional dichotomy) in defining syntagmemes. Considerable discussion in tagmemics has occurred regarding further criteria which may be used to clearly delimit syntagmemes on a given level. In a recent study (1966:242) Longacre mentions three contrastive features of Trique clauses: (1) internal structure; (2) placement within the total system of clauses; (3) distribution in sentence-level slots. Internal structure must involve a difference in the nuclei of the syntagmeme patterns (Longacre 1964a:18; see also discussion in Chapter 7).

Tagmemics places considerable emphasis upon "discovery procedures" to delimit linguistic units, whether within the grammatical, lexical or phonological hierarchies. The units are in turn labelled, often resulting in neologisms. This
practice, as well as the emphasis of the theory upon units, has led to certain criticisms which will be reviewed next.

1.2 Theoretical Criticisms

Reviews of Pike's preliminary edition of *Language* most often threw out the theory with the terminology. Some linguists still "cringe" at the terms etic and emic (Chafe 1965:646) but their use is now well established, at least in anthropology.

Other terms originally proposed by Pike have been less fortunate. Two terms which have been replaced are grame, replaced by tagmeme, and hypergrammeme, replaced for the most part by syntagmeme. The prefix hyper- carries on, however, and is most recently given in Longacre (1964b:6) for hyperphonemes, -morphemes, and -lexemes, but in a different sense from that in which Pike uses it. The early hypergrammeme was replaced by syntagmeme (Longacre 1964a:15n) for tagmeme on various levels (Pike 19672:432n). It is not at all clear that Pike's present hypergrammeme and Longacre's level-oriented syntagmeme now always refer to the same kind of unit. Pike's hypergrammeme represented "high-level, non-minimum members of the grammatical hierarchy" (19672:432) and not (following Longacre 1964a:15) patterns. Longacre emphasises the correlative aspect of syntagmeme (pattern) and tagmeme (pattern point) as well as that of function and set.11
described the tagmeme as "an elaboration of the substitution-frame procedure." Gleason (1965:140-1) has said almost the same thing about tagmemics, further stating that it contrasts with the base-and-modifier technique by adding modifier (as a tagmeme) to the major sentence elements, rather than as within other major elements.13

Such criticisms appeared before Longacre wrote "Some Fundamental Insights of Tagmemics" (1965a) in which he categorized the major theoretical insights of tagmemics as: (1) the function-set correlation; (2) isolation of syntagmemes which are structurally relevant; (3) hierarchical structuring as a system; (4) the dimensional parameters of syntagmemes.

The value of the tagmeme symbol as a function notation is not seriously disputed. However, the need to represent function in the tagmemic manner is disputed. Postal (1966) in a review of Longacre 1964a, says that tagmemics, by using notations such as S:N, confuses categorical membership notions (is an NP) with relational notions (subject-of). According to Postal, a sequence is simply an NP or not, but to say that something is a subject one must indicate what other sequences it is also a subject of. Thus in sentences such as 'John told Bill to go', 'Bill is Subject of 'go' but the Object of 'told'. Tagmemics, according to Postal, fails to state that relationships are involved in ordered pairs, e.g. <Bill, told> has an O relation and <Bill, go> has an S
relation. Longacre’s reply (1967a) sees this criticism simply as a restatement of Postal 1964:37-8 which was answered by Longacre 1965a:66 where he showed that tagmemes “manifest grammatical functions which are at the same time relations within the clause”.

Chomsky (1967:113n) also sees the functional notation of tagmemics as pointless because such functions must always be abstracted, whether from P-markers (e.g. [NP, S]) or from tagmemes. This is meant to counter Seuren’s (1966:210) statement that in any grammar functions should be made explicit. Householder, on the other hand, saw tagmemic function (on the phonological level) as an important relational device between primes (1961:25).

Cook (1967:34; 41n) constructs tagmemic trees using forms alone, but this involves abstracting functions from the lines which connect nodes exactly as in transformational grammar (TG). TG makes explicit all functions by conventions such as [NP, S] or [NP, VP] which specify the functions grammatical subject or object just because NP is dominated by S on the one hand and VP on the other (Chomsky 1965:65-74).

Just exactly what has been meant by grammatical function is clearly summarised by Dik (1968:143ff). Although he disagrees with the concept of tagmeme as a unit (p. 157) his definition of function follows that of Longacre: “...the particular office or role of one distinguishable
part of a construction type in relation to other parts of the same construction." (p. 29, quoting Longacre 1965a;65).

Dik's 'functional grammar' is a system which comprises among its set of primitives both categories and functions (p. 171). In certain respects which will be pointed out later, the grammar to follow has benefitted much from Dik's work.

The notation most often used to represent a tagmeme (X:A) has caused a great deal of misunderstanding that an extra node is being introduced in the underlying tree (Bach 1964;41-4; Postal 1964, et seq). True tagmemic trees have been represented in A. Hale (1965) and Longacre (1967a, 1968, n.d.a). Hale deals with conversions of transformational-type trees to tagmemic trees while Longacre deals with trees depicting specific syntagmemees as well as with generalised trees. Longacre's attempt to some extent refutes criticisms that tagmemics sees surface and deep structure as identical (Postal 1966:98). However, Longacre does state explicitly (1967a:326) that tagmemics "wants less distance between its 'deep' or abstract structure [= generalised syntagmemees] and its 'surface' structure than that found in MIT transformational grammar".

Structural evidence has always been required in tagmemics before semantic differences are recognised as contrastive. Postal, although emphasising the relational aspect of function terms, speaks of relation only in terms of "deep
structure", a construct to which semantic interpretation can be given. Deep structure relations then are developed to account for semantic interpretation and are not equivalent to "surface-structure" relations, since various transformational rules are required to change deep structure relations into surface structure relations. Therefore, Postal can say that the relations between <Bill, go> in 'John told Bill to go' is a Subject relation, because 'Bill goes' would be the deep structure form of the surface structure "...Bill to go". However, this is not simply a Subject relation but an Actor-Action relation since it is constructed in the order (Bill, go) to allow the semantic interpretation of Actor-Action.

Becker (1967a, 1967b) has taken the criticism seriously that tagmemics does not distinguish clearly between surface and deep structure. His suggestions to overcome this problem are outlined in §1.5.

1.3 Theoretical Refinements

Postal (1964:51) categorised tagmemics as a sub-type of the theory of phrase structure grammars with weak generative power and which simply recognises more categories or constituents. At that time he stated that a full recognition of the difference between context-free and context-sensitive PSG rules, and especially a recognition of the uses of the latter, would make a great difference and an improvement on
tagmemic descriptions "even within their PSG framework" (1964:39).

Postal's conclusion appeared the same year as Longacre's attempt to formalise tagmemic grammars. The operations outlined by Longacre, as well as other rule formats based on tagmemics, will be outlined in Chapter 7.

Tagmemics incorporated the notion of grammatical transformation as a further structural differential for distinguishing syntagmeme classes (Longacre 1960:75; 1964a:147, summarised in Cook 1964:51). Nevertheless, Postal (1966:98) has referred to tagmemic transformations as "ad hoc devices thrown in to talk about relations between sentences". Tagmemics has often used transformations in a different sense than TG, just as the latter has in a different sense than Harris. Longacre (1965b) also makes use of transformations to show relationships between construction types (following Pike 1962), but states (p. 43) that these "are not the only parameters which relate constructions". This distribution of transformation parameters on a total system of relationships is characteristic of the emphasis of tagmemics on "field" structure, i.e. the matrices of Pike. Sentences and other syntagmeme classes must be viewed in the total language perspective. Tagmemic field structure or matrix technique theoretically allows this to be done.
It is, then, within the lexical hierarchy that certain aspects of Pike's matrix analysis lie. Although the first two main publications by Pike on matrix theory (1962; 1963a) dealt with grammatical constructions and were in fact seen by Pike as contributions to typology ("an etics...of clauses", 1966:368) and simplicity ("controlled redundancy", 1966:371; 1964c:148), later studies became increasingly sub-morphemic in their grammatical application. His article on name-fusion (1964a), while using matrices to represent data, deals with lexical bits (lexemes) with social settings as slots. Other articles by Pike on morphological matrices (1963b; 1964b; Pike and Erickson, 1964; Pike and Becker 1964) analyse traditional morphemes in terms of intersecting semantic dimensions which are not usually recognised or represented as more than sub-morphemic in other types of analysis. The formatives which Pike isolates by such techniques are very similar to such semantic components as Longacre (1964b: 16) earlier suggested as lexemes. Thus while transformational grammar speaks of "deep" structure, tagmemics in a similar vein has often spoken of a "lexical" hierarchy.16 A more satisfactory development of the lexical hierarchy of tagmemics is necessary before "deep structure" is adequately represented. Becker (1967a:115ff) suggests that more of this type of information must be provided in tagmemic notation. This follows Pike (19672:196) who discussed actor-as-
subject as the structural meaning of a tagmemic within the feature node. This would contrast with subject-as-goal within the lexical [= semantic] hierarchy. The terms actor, action, time, location and so on represent situational roles by various actors (Pike 1967; 246n). Although this is only an elaboration of his original work (1954), only recently has Pike attempted to establish discovery procedures for the elicitation of situational roles (1964b). Illustrations by Pike include matrices where grammatical meanings such as Subject and Object intersect situational roles such as actor, goal, or instrument. Reid (1966) also attempts to distinguish between grammatical roles (e.g. Subject) and situational roles (actor). The notations employed later in the grammar follow these leads, but with certain modifications.

Such refinements show that very diverse theoretical and mechanical innovations may occur in the name of tagmemics exemplifying, perhaps, what Newman (1956: 86) has called the "built-in elasticity" of the theory.

A further refinement, first hinted at by Longacre (1965a: 75n) and more recently expounded by him (1968), may limit the "elasticity". Longacre now considers empirical evidence sufficient to limit the hierarchical levels in a tagmemic grammar. Thus, what was earlier called colon (Longacre 1964a: 132; also Pride 1965 for a grammatical description employing this level intermediate between clause and sen-
sentence) is now accounted for by sentence embedding and external evidence (the distribution of introductory particles). Longacre's revision at this point is also important because it incorporates deletions of tagmemes postulated at a prior level in the analysis. While the concept of an empty slot is not new, it had previously been partially rejected in principle by Pike. Longacre (n.d.a) now sets up three types of exponent: (1) primary, which may be function morphemes (such as if in English) or depict descending syntagmemes; (2) secondary, which refers to an embedded tagmem on the same level as the one being treated; (3) tertiary, which may be back-looping to a higher level or level-skipping if such level-skipping is not to zero. Zero-level-skipping is restricted to function morphemes of (1).

1.4 Previous Kewa Materials
In an earlier grammatical paper on E. Kewa (1964) the morphology of the verb was dealt with, in particular the final or independent verb. The suffixes were charted according to their relative position away from the stem and then a semantic designation such as tense, purpose, aspect, type of reason, and so on, was assigned to the range of affixation occurring in a given position. This, however, is inadequate in several respects: (1) it does not significantly describe the functional role of many such affixes in relation to
other tagmemes, especially sentences and clauses; (2) the semantic designation of a relative position is often forced, i.e., instead of recognising three different orders of aspects, each order is given a different name; (3) the mode suffixes have nothing to do with the morphology of the verb; (4) certain reason "suffixes" are, in fact, clitics which can be attached to practically any word class.

Later (1965a) clauses and verbs were classified as transitive vs. intransitive and independent vs. dependent. The latter classification was based on terminal vs. non-terminal suffixes, although it was pointed out that terminal verbs could have an additional marker which would render them independent. Actually, in this grammar such markers are not considered relevant to the clause-level. Instead, they mark a sentence-level relationship between tagmemes. The article on sentence structure (1967b) was, as is pointed out in Chapter 6, written before the paper on clauses and included in it two further clause types: an Equative (with two sub-types) and a Quotative. The first type of equative is included in the present study under complementive clauses, and the latter type of equative, as well as the quotative are included within the present description of sentences. Basically, the study on sentences was a sentence-by-sentence analysis of a text according to sentence types, clause constituent types, and internal and external referent markers.
External markers were called goal, subject, cause, result, general and pronominal. Sequential relationships were called temporal, chained and logical.

Phonological materials are summarised in Chapter 2; references to some anthropological materials are given in Chapter 8.

1.5 Presentation

Becker (1967a:116) outlined, by means of a matrix, the kind of information a complex tagmeme symbol can employ. Slightly modified, it is given in Figure 1 and would be notationally $\text{Act}_{\text{com}}^{N}$, i.e. the functional slot Subject-as-Actor filled by Nouns which are common.

<table>
<thead>
<tr>
<th>Grammatical</th>
<th>Lexical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form (Surface)</td>
<td>Subject</td>
</tr>
<tr>
<td>Meaning (Deep)</td>
<td>Actor</td>
</tr>
</tbody>
</table>

Figure 1: after Becker (1967a)

Merrifield (1967:49ff), as will be mentioned in Chapter 7, places function squarely within the semantic [= lexical] hierarchy, exactly opposite to Becker. On the other hand, Longacre (n.d.a) wants much of the information from the lexical hierarchy included in dictionaries, not the grammar.

By distinguishing more clearly between relations (functions) on the one hand, and grammatical and lexical (semantic) categories on the other, Becker's matrix can be
re-aligned as in Figure 2.

<table>
<thead>
<tr>
<th>Grammar</th>
<th>Semantics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functions</td>
<td>Subject</td>
</tr>
<tr>
<td>Categories</td>
<td>Noun</td>
</tr>
<tr>
<td></td>
<td>Actor</td>
</tr>
<tr>
<td></td>
<td>Common</td>
</tr>
</tbody>
</table>

Figure 2: Functions vs. Categories

The tagmemic notation for Figure 2 is identical to that of Figure 1, but the distinction between function and category is kept distinct, more in line with Dik (1968:158): "Functions and categories are independent parameters which in any construction can contract a multitude of different mutual relations." Such distinctions are important because in some cases tagmemic studies have not specified exactly what is being designated by their symbols or labels. Thus, for example, a designation by Liem such as 'the alternate division-subclass Negated Declarative Verb Phrase' does not only needlessly carries labels from one grammatical level to the next, but also includes both semantic categories and relationships. It is a kind of clause which belongs to that set of clauses called declarative, not the verb. Negative (and positive) as well as declarative are clause parameters. The 'alternate-division-subclass' is a context restriction of the phrase exponents, not a further kind of, or variation of, the phrase type. Such label proliferation or tagmemic name-calling can obscure the distinction between grammatical levels and categories as well as semantic categories.
Longacre (n.d.a) has specified semantic relationships between nodes by including such relationships as actor (see Figure 3) on the same line as subject.

```
S (Actr)     P    O
|       |       |
Deo Act Tr Cl
```

Figure 3: after Longacre (n.d.a)
Deo=Declarative; Act=Active; Tr=Transitive; Cl=Clause; S=Subject; P=Predicate; O=Object; Actr=Actor

It would appear to be more representative of the actual structure involved if the semantic relationships were diagrammed horizontally in such trees. In Kewa, for example, there are several relationships involved between other tagmemes and the Predicate. Any additional sub-function of the Predicate is often specified once the function of any other tagmeme is listed, so that it is redundant and cumbersome to relist all sub-functions with the Predicate. A very common specification of semantic functions in Kewa would include the following:

- Subject-as-Agent
- Object-as-Beneficiary
- Object-as-Goal
- Object-as-Location
- Predicate-as-Action
- Predicate-as-Benefactor
- Predicate-as-Goal Directed
- Predicate-as-Motion

The semantic relationships need only be listed once as SAGN, OBJEN, OLOC, and so on. If all these occur simultaneously in
a clause, the Predicate would be automatically read (semantically) as \( P \{ \text{ATN, BEN, NOT} \} \), but only the function diagnostic of the clause type is listed with the \( P \). If it is necessary to represent such functions in a tree it can be done as shown in Figure 4.

![Diagram](attachment:diagram.png)

Figure 4: Grammatical and Semantic Functions.

In Figure 4 the Subject and Predicate tagmemes are in an Agent-Action semantic relationship and the Predicate-Object tagmemes are in a Goal Directed-Goal semantic relationship.

In this grammar phrase structure or equivalence rules (which always show a lower-level expansion or an embedded construction) are symbolised by a single-shaft arrow \( \rightarrow \); exponence rules by a colon \( [:] \); environments by a diagonal line \( / \).

All Kewa language materials are underlined and have hyphens to indicate morpheme boundaries, when possible. The English gloss or translation is enclosed in single quotes. If the gloss is grammatical rather than lexical in meaning, it is also enclosed in parenthesis. Thus \( \text{\#} \) will be glossed either as '\((1 \text{ sg})\)' or simply as 'I'.
1.6 Summary

The theoretical notions and refinements in regard to tagmemes have been discussed in some detail. I have done this to remind readers of the highly diverse approaches which "tagmemicists" do in fact use. Emphasis by them has always been more upon language detail than upon linguistic universals. It is also only recently that any formalisation of parts of the theory has been attempted. The validity of a theory, to echo Dik (1968:5), "is whether it provides the means for a satisfactory description and explanation of the facts of language". Once this is done, "then formalization is only a matter of time and ingenuity" (ibid).

What I have done in the following chapters is to account for the facts of Papua as I understand them. I have tried to emphasise the functional role of tagmemes and the formal markers which often relate such roles on various grammatical levels. For example, I emphasise the functional role of clauses as coordinated bases. Other articles on New Guinea language verb (and clause) systems, including my own (1964), have correctly stressed the distinction between "medial" and "final" verbs as one which involves a time relationship by the same or different subjects. In this grammar I consider the time factor as part of the functional role of the coordinators.

In Chapter 7 I have tried to indicate the form which
complete tagmemic rules would take in a grammar such as this one. However, to formulate such rules consistently throughout the grammar has proved, at this point, beyond my ingenuity. In consolation, the words of Hockett (1967:221) are relevant: "[not to confuse] one's machinery of analysis with one's object of analysis". The tagmemic and other theoretical apparatus are simply machinery to help describe the grammar of Kewa.

1.7 Abbreviations

The most general abbreviations used throughout the grammar are given below. Some appear in the grammar both as capitalised (for functions) and small case (for categories) symbols. Other abbreviations are given in individual chapters.

<table>
<thead>
<tr>
<th>sg</th>
<th>singular</th>
<th>AGN</th>
<th>Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>dl</td>
<td>dual</td>
<td>aj</td>
<td>adjective</td>
</tr>
<tr>
<td>pl</td>
<td>plural</td>
<td>alo</td>
<td>altrocentric</td>
</tr>
<tr>
<td>n-sg</td>
<td>non-singular</td>
<td>ANTE</td>
<td>Antecedent</td>
</tr>
<tr>
<td>1</td>
<td>1st Person</td>
<td>AR</td>
<td>Axis-Relator</td>
</tr>
<tr>
<td>2</td>
<td>2nd Person</td>
<td>asp</td>
<td>aspect</td>
</tr>
<tr>
<td>3</td>
<td>3rd Person</td>
<td>ATN</td>
<td>Action</td>
</tr>
<tr>
<td>A</td>
<td>Adjunct</td>
<td>ATR</td>
<td>Actor</td>
</tr>
<tr>
<td>ADJZ</td>
<td>Adjectiviser</td>
<td>BEN</td>
<td>Beneficiary</td>
</tr>
<tr>
<td>adv</td>
<td>adverb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Complement</td>
<td>ID</td>
<td>Identificational</td>
</tr>
<tr>
<td>-------</td>
<td>------------------</td>
<td>--------</td>
<td>------------------</td>
</tr>
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<td>cas</td>
<td>causative</td>
<td>imm</td>
<td>immediate</td>
</tr>
<tr>
<td>cl</td>
<td>clause</td>
<td>n-1mm</td>
<td>non-immediate</td>
</tr>
<tr>
<td>cmp</td>
<td>complementive</td>
<td>imp</td>
<td>imperative</td>
</tr>
<tr>
<td>col</td>
<td>color</td>
<td>IN</td>
<td>Instrument</td>
</tr>
<tr>
<td>coll</td>
<td>collective</td>
<td>inc</td>
<td>inceptive</td>
</tr>
<tr>
<td>COM</td>
<td>Comment</td>
<td>incom</td>
<td>incomplete</td>
</tr>
<tr>
<td>comp</td>
<td>completive</td>
<td>int</td>
<td>intransitive</td>
</tr>
<tr>
<td>CONTM</td>
<td>Contemporaneous</td>
<td>inter</td>
<td>interrogative</td>
</tr>
<tr>
<td>DEG</td>
<td>Degree</td>
<td>K</td>
<td>Conjoining</td>
</tr>
<tr>
<td>dei</td>
<td>deictic</td>
<td>Kewa I</td>
<td>&quot;Kewa I: Phonological Asymmetry&quot; (1962b)</td>
</tr>
<tr>
<td>dem</td>
<td>demonstrative</td>
<td>Kewa II</td>
<td>&quot;Kewa II: Higher Level Phonology&quot; (J. Franklin 1965)</td>
</tr>
<tr>
<td>des</td>
<td>descriptive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dim</td>
<td>diminutive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIR</td>
<td>Direction</td>
<td>KVM</td>
<td>&quot;Kewa Verb Morphology&quot; (1964)</td>
</tr>
<tr>
<td>ditr</td>
<td>ditransitive</td>
<td>KCM</td>
<td>&quot;Kewa Clause Markers&quot; (1965a)</td>
</tr>
<tr>
<td>dp</td>
<td>different person</td>
<td></td>
<td>&quot;Kewa Sentence Structure&quot; (1967b)</td>
</tr>
<tr>
<td>e</td>
<td>embedded</td>
<td>KSS</td>
<td>Location</td>
</tr>
<tr>
<td>ego</td>
<td>egocentric</td>
<td>LOC</td>
<td>Modification</td>
</tr>
<tr>
<td>eq</td>
<td>equational</td>
<td>M</td>
<td>Manner</td>
</tr>
<tr>
<td>GD</td>
<td>Goal Directed</td>
<td>MAN</td>
<td>Motion</td>
</tr>
<tr>
<td>ger</td>
<td>gerundive</td>
<td>MOT</td>
<td></td>
</tr>
<tr>
<td>GOL</td>
<td>Goal</td>
<td>MP</td>
<td>Morphophonemic</td>
</tr>
<tr>
<td>H</td>
<td>Head</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>noun</td>
<td>sp</td>
<td>same person</td>
</tr>
<tr>
<td>-----</td>
<td>---------------</td>
<td>-----</td>
<td>---------------</td>
</tr>
<tr>
<td>neg</td>
<td>negative</td>
<td>STA</td>
<td>State</td>
</tr>
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<td>nm</td>
<td>number</td>
<td>sue</td>
<td>successive</td>
</tr>
<tr>
<td>ng</td>
<td>general noun</td>
<td>SZ</td>
<td>Size</td>
</tr>
<tr>
<td>np</td>
<td>noun phrase</td>
<td>ten</td>
<td>tense</td>
</tr>
<tr>
<td>nt</td>
<td>temporal noun</td>
<td>Term</td>
<td>Terminal</td>
</tr>
<tr>
<td>o</td>
<td>Object</td>
<td>n-Term</td>
<td>non-Terminal</td>
</tr>
<tr>
<td>P</td>
<td>Predicate</td>
<td>TM</td>
<td>Time</td>
</tr>
<tr>
<td>par</td>
<td>particle</td>
<td>TOP</td>
<td>Topic</td>
</tr>
<tr>
<td>pos</td>
<td>possessive</td>
<td>tr</td>
<td>transitive</td>
</tr>
<tr>
<td>POSR</td>
<td>Possessor</td>
<td>d-tr</td>
<td>derived tr.</td>
</tr>
<tr>
<td>pro</td>
<td>pronoun</td>
<td>v</td>
<td>verb</td>
</tr>
<tr>
<td>pun</td>
<td>punctiliar</td>
<td>va</td>
<td>active verb</td>
</tr>
<tr>
<td>pur</td>
<td>purpose</td>
<td>vaf</td>
<td>verb affix</td>
</tr>
<tr>
<td>Q</td>
<td>Quote</td>
<td>vp</td>
<td>verb phrase</td>
</tr>
<tr>
<td>QAL</td>
<td>Quality</td>
<td>vs</td>
<td>stative verb</td>
</tr>
<tr>
<td>QAN</td>
<td>Quantity</td>
<td>d-vs</td>
<td>derived vs</td>
</tr>
<tr>
<td>qt</td>
<td>quotational</td>
<td>vst</td>
<td>verb stem</td>
</tr>
</tbody>
</table>

RE  Reason
REC  Recipient
S   Subject
s   sentence
SEQL Sequel
sim  simultaneous
NOTES

1. Wurm, using lexicostatistical measures (1960a:16), set up five distinct Families within the Stock, but recent evidence by Pawley (1966) indicates that there is a sixth.

2. Earlier designations to the Families were by a combination of the major "Sub-Family" names; the West-Central was called the Enga-Huli-Pole-Wiru Family (Wurm 1960a:18; 1960b: 127). I question the inclusion of Wiru within the Family (see § 8.6.2).

3. Augu is a Mendi dialect (J. Rule 1965) which was first mentioned by F.E. Williams (1939), the government anthropologist at that time. Pole is the southernmost dialect of Kewa (see § 8.2.22 and 8.4.12). Mendi is spoken in the vicinity of Mendi town as well as westward and north of it; Sau is spoken around Samberegi. All of these languages are in the Southern Highlands District.

4. Since the original classification by Wurm, the tendency has been toward more inclusive groupings. Thus Wurm and Laycock, by suggesting the boundary between language and dialect as "at least limited mutual intelligibility, i.e., at least 60% of information transfer" (1961a:140), reduce the number of distinct languages in the Stock from 48 to 26 and those within the West-Central Family from 11 to 5. C.F. and F.M. Voegelin set up a Central New Guinea Macro-phylum which includes the original East New Guinea Highlands Stock plus Pawley's Kaban-Karan-Gents Family plus Mikaru, Pawaia, and a Sesa Group. For criticism of this latter group see K. Franklin (1968:42).

5. The name given by Hides (1936) to the large population discovered near present day Tari in the epoch exploration by Hides and O'Malley in 1935.

6. Called Tsaga by Capell (1948-9) and later Tchaga by J. Crotty (1951).

7. There are numerous publications in anthropology. See, for example, the bibliography in J. Watson (ed. 1964). There are also many unpublished linguistic materials which have been prepared by missionaries available in almost every language of the Family. Published linguistic materials will be mentioned elsewhere in the grammar.
8. Except Chapter 8, which covers all Kewa dialects and was published separately by Pacific Linguistics, it incorporates previous East Kewa materials to the extent indicated in §8.0.3, note 3.

9. Many of the theoretical points raised here and in Chapter 7 are from a paper called "The Tagmemic Model" given by the author at the May 1968 meetings of the Linguistic Society of Australia. I received helpful comments on the paper (and on earlier versions) from the following: D. Bee, R. Breind, E. Deibler Jr., L.A. Reid, N.R. Wise (all colleagues of the Summer Institute of Linguistics), T.E. Dutton and C.L. Voorhoeve (both of the Australian National University). Deibler later (Nov. 1968) published an article called "Trends in Tagmemics" which includes several points very similar to my own.

10. However, Pike calls "wave" what Longacre now refers to as "string". Pike's concept of wave in grammar suggests that the nucleus of a construction may reveal the speaker's "point of attention" (1967b:12) to the hearer.

11. Pike now "withdraws the multimorphemic requirement for hypertagmemes, under the impact of Longacre's work" (1967c:424n).

12. More recently Hockett (1968:33) has admitted defeat in understanding tagmemics, placing all blame on its terminology.

13. A similar statement is by Hill (1966:21): "The set of prenominal modifiers are now thought of as separate from adjectives."

14. Belasco (1964:15) has suggested that tagmemics best provide structural types and sub-classes upon which transformations may operate.

15. Longacre has acknowledged (n.d.a) that "at the lowest level" matrices can be "a heuristic doodling device", probably in response to Hockett's (1966) criticisms of Pike. If we follow Hockett's (1966) argument, a phonological matrix (phoneme chart) would be only a discovery device and not represent structure at all. Liem (1966) uses matrix to represent structure in English.

McKaugan (1966:2) classifies matrices as an analytical device which should not be conceived as a "descriptive model". He states that it would not be useful as an over-all model powerful enough to generate all grammatical sequences in Taiorora (pp. 10-11).
22. Wurm (n.d.) gives a concise summary of the nature of such time relationships and subject markers. See also, for example, B.F. Elson (ed.), Verb Studies in Five New Guinea Languages, on the range of categories indicated in verbs. As exponents of the Predicate, verbs are often best seen as "a clause-in-miniature" (Longacre 1964:36).
Chapter 2

PHONOLOGY

2.0 Introduction

This chapter begins with a summary of the theory underlying tagmemic phonology and then briefly outlines the phonology and some tone perturbation (morphtenemic) patterns of West Kwa. Some of the findings are related to materials from the East Kwa dialect, as well as to other Highland languages.

Wurm (1964a) has summarised and conflated a maximum non-existent phonological index for the Mendi Sub-Family. His summary is based on phonemic inventories of Kewapi (our E. Kewa), Pole (our S. Kewa), Mendi and Sau. The only other relevant phonological material available for the Sub-Family is by J. Rule (1965) in which she compares two Mendi dialects (the Mendi valley proper and the westward Nembia valley where there is a dialect called Wala or Wela). There are several differences between the phoneme inventories of Wurm on the one hand, and Rule on the other which may alter Wurm's conflated index for the Sub-Family. Allowing for overlap, but based on Rule's dialects, two phonemes should be added to Wurm's non-existent maximum system: /d/ and /t/. Both of these, however, are included in Wurm's conflated system for the whole West-Central Family (1964a:16)--if his /ŋ/, listed in the alveopalatal column, may be considered the
same as Rule's alveolar /n/). Other differences are probably due to interpretation: for example, the listing of labialised and alveopalatal consonants in Wurm's inventory.

2.1 The Phonological Hierarchy

Pike's Volume II of Language (1955) outlines the tagmemic phonological hierarchy. His revision (1967) is essentially unchanged in respect to phonology, although the implications of Crawford's (1963) study are noted (1967: 520-1).

Crawford (1963:2) postulated a phonotagmeme as an analog to the grammatical tagmeme. The phonotagmeme is one part of a correlation on the lowest-level of the phonotagmemic hierarchy. As the lowest-level unit, it represents a slot which is in turn filled by a class of phonemes. Ascending the hierarchy which Crawford proposed for Mixe, the individual units are represented by correlations such as Syllable type: Syllable; Phonological-word-type: Phonemic-word; and Phonological-phrase-type: Phonemic-phrase. The phonotagmemic hierarchy is a distributional framework for units of the phonemic hierarchy, which is represented by classes of units such as phoneme, syllable and so on up the hierarchy.

Other studies follow Pike's original model more closely, where the P-hierarchy descends as follows: Breath Group, Pause Group, Stress Group, Syllable and the Phoneme (Pike
1967²:515). Within this model the important feature is the
distribution of lower-level units into higher-level ones.
Although there are variations in analysis and presentation,
several New Guinea studies have built on this framework.4

Longacre (1964b:6ff) calls Crawford's slots (i.e. in
his phonotagmemic hierarchy) P-syntagmemes and his fillers
P-tagmemes (1964b:12). He then shows how one particular
Trique syllable-type (called a P-syntagmem) can be generated
by classes of phonemes (including tone), abstracted and col-
lapsed into a horizontal and vertical array. Within his
hierarchical view of language Longacre has accepted the P-
tagmem as a unit parallel to the G-tagmem. He then, fol-
lowing Pike (1967²:520), posits an L-tagmem and fills in
the L-hierarchy (1964b:6ff). However, Longacre has modified
to some extent the original view of Crawford by introducing
the P-syntagmem. If, following Longacre (1960:64 but here
hypertagmem), and also 1964a:15; 1965a:72) a syntagmem is
part of a correlation involving tagmem, then Crawford's
phonotagmemic and phonemic hierarchies depict correlations
between them at each level and not only (as Crawford sug-
gests) within each hierarchy.

Within such a framework as Longacre's, P-tagmemes on
various levels can be more easily conceptualised. A syllaba-
ble-level P-tagmem can most often be decomposed into strings
of phonemes, just as a word-level G-tagmem can be segmented
(most often) into morphemes. Often the syllable as a whole is no more amenable to segmentation across morpheme boundaries than a word is divisible into morphemes (see Longacre, n.d.a, for illustrations, and his conclusion that a “wave” theory allows us to see and account for such instances more clearly—following Pike (1959)). The importance of Longacre’s phonological strings is an emphasis upon patterns of P-syntagmemes which have defining contrastive properties at various levels of the P-hierarchy.

At variance with Longacre’s implications (1964b:12), Crawford’s model does not indicate that the syntagmeme-tagmeme is a correlation on the one hand, and that slot-class is a correlation on the other. Crawford suggested instead a slot-class correlation within a dual hierarchy, the phonemic on the one hand, and the phonotagmemic on the other. In either hierarchy a unit from one level enters into or manifests another level, but Crawford’s phonotagmemic units are not P-syntagmemes; they are distributional slots plus classes of fillers, not simply patterned strings.

The main thrust of Pike’s P-hierarchy has, however, remained: units at lower levels most commonly manifest higher-level units. Revisions such as those mentioned by Crawford and Longacre build upon and expand this fundamental hierarchical concept. In Kewa II, the higher-level units are called phonological foot, phonological phrase, and
phonological sentence. In the following sections these are briefly reviewed, but first the segmental phonemes are outlined.

2.2 Segmental Phonemes

West Kewa has the following phonemes: p, t, k, b, d, g, m, n, l, r, s, w, y, j, a, e, i, o and u. This inventory is two less than E. Kewa, which also has the palatals /i/ and /y/ (Kewa I:30).5

The symbols employed here have traditional articulatory values except that /t/ and /y/ are fronted, /b/ and /d/ are prenasalised, /l/ and /r/ are flaps, and /g/ is generally voiceless and backed. As an orthographic convention /j/ will hereafter be written /a/; /a/ will be written as /aa/.6

Any consonant or vowel may occur as a syllable onset, but only a vowel occurs as syllable terminus: da 'to do'; fá ‘to hit’; ka ‘hand’; bí ‘name’; di ‘a count’; gj ‘to give (to 1st or 2nd person)’; mí ‘sand’; nu ‘net bag’; lo ‘stomach’; ro ‘bridge’; sáá ‘we (two)’; wáa ‘sugar cane’; jáá ‘bird’; áá ‘man’; ñ ‘garden’; i ‘excrement’; o ‘scabs’; u ‘sleep’.7

Syllable nuclei have a contrastive peak of tone which is always simple, even in combination with other vowels: saá ‘banana’.

Any vowel may follow any consonant in a syllable, except for these restrictions: *vi, *vu, *wu. In contiguous
syllables of a single morpheme the following combinations have not been observed: *CeC1, *CeCu, *CoC1, *CoCu, i.e. low non-central and high vowels do not occur in contiguous syllables separated by a consonant.

There are other phonological features which are important but which have been outlined elsewhere; others are not as well developed. Note especially that: (1) except for /aa/ which is perceptually slightly longer, long vowels are restricted to monosyllabic rhythm units (Kewa I:33); (2) any rhythm unit (or phonological foot) is a unit of stress placement, each foot having an obligatory stress which is the nucleus (Kewa II:84); (3) a plus juncture accompanies the joining of single foot syllables within a single morpheme.

Word space, for the most part, also represents plus juncture, but grammatical words are determined by criteria other than plus juncture alone. On the phonological realm, clitics in combination with stems or each other, as well as any V which is not /a/ or /aa/ but which is followed by one of them, have audible transition points. Compound stems, on the other hand, have their borders signalled by a change in pitch at the seam, by plus juncture, or by both. Some considerations of plus juncture may be morphophonemic, e.g. /y/ may be interpreted as occurring as a variant of plus juncture in certain positions.
2.3 **Tone**

Most New Guinea Highland languages have been found to have a phonemic system which includes tone or accent. The partition of suprasegmental systems into tone systems on the one hand, and accent systems on the other has been suggested for a number of reasons:

1. In accentual systems high pitch is most often linked with the nucleus of a rhythm unit; in a tonal system the tone is not dependent on the nucleus of a rhythm unit.

2. In accentual systems the position of the accent is conditioned by the placement of the vowel nucleus in the rhythm unit; in a tonal system every vowel carries a contrastive tone.

3. In accentual systems the morphophonemics often determines but one accent in a string of words; in a tonal system the contrastive tone points are maintained.

4. In accentual systems phonetic features of voice quality may help determine an unaccented string of syllables; in a tonal system the phonetic features of short rises or falls occur at the margins of syllables.

In general the points which Pike and Scott outline for tonal systems hold for Kewa. The only modification necessary would be point (3), where in Kewa contrastive tone points are often neutralised in morphophonemics.
Tone was shown to be phonemic in E. Kewa (Kewa I:34). Tonal patterns in W. Kewa correspond to those in E. Kewa with the exception that a low-low pattern occurs on verb stems and must be reconstructed only in the case of nouns. In E. Kewa all basic low-low patterns were reconstructed on the basis of their perturbation pattern. The four tonal patterns of two syllable verb stems are illustrated in the following frame:

(1) nǐ rūmāwā 'I climbed up it'
(2) nǐ kdlawā 'I gave it (to him)'
(3) nǐ rubāwā 'I threw it out'
(4) nǐ dawa 'I did it'

The isolating frame consists of nǐ [ ]-wa 'I [verb]-(1 sg Pa)', where the verb stems are: rūmā 'to climb', kdlā 'to give (to a 3rd person)', rubā 'to throw out', fā 'to do (something)'. The free pronoun nǐ 'I' is always basic high tone, but the suffix -wa '(1 sg Pa)' perturbs according to the basic tone of the verb stem. Most verb suffixes follow the tone carried on the final syllable of the stem, but there are other complications which are mentioned later. Because so many expected tone patterns do not actualise due to perturbation, the discussion of basic tones of other word classes such as nouns is delayed until §2.5. In the remainder of this section the phonetic variations of tone patterns which have been observed are given.
2.31 **Tonal Variation**

The perceptual or auditory height of a tone may be conditioned by stress placement (Cf. Kewa I:35). Disregarding levels above the phonemic word, a primary stress occurs on the first syllable of any noun stem of less than four syllables and on the second syllable of any stem over four. Any basic low tone which occurs on such stressed syllables will be heard as mld.

In a given sequence of up to three tones, if the first is high and the third low, the second will most often actualise as mld. In such cases the tone can be interpreted as high or low only by determining its perturbation effect with adjacent tones.

A non-phonemic up-glide occurs on syllable final lows when such lows are followed by a word with an initial high. This phonetic clue is often useful in establishing the identity of following tones as phonemic highs. In the same manner, a rapid fall on the final syllable of an utterance establishes the final tone as high plus terminal fade (see below on intonation), rather than as the normal very low tone of a terminal fade. In a series of two identical tones on adjacent syllables interrupted by /p/ [p] or /r/ [ɾ], the first tone actualises with a slight rise-fall where the consonant intervenes.

An intonational downdrift actualises any series of basic
high or low tones as successively lower in an utterance.

The beginning pitch point of all utterances is most often perceptibly mid on the first syllable. This may indicate that the beginning as well as the end syllables of every utterance have tones which can be interpreted as pitch points in an intonational contour, rather than simply as lexical tones. It, therefore, follows that the basic tones of any stem can only be positively identified in an environment other than pre- or post-silence.

2.4 Intonation Contours

Three contrastive intonational contours were described for E. Kewa (Kewa II:87). In each case the final syllable of the utterance carries the contrastive intonation pitch and one highest point or peak occurs in the contour (marked with ° in the article referred to).

The intonational contours are signalled by terminal fade, terminal rise, or terminal fall-rise. The usual semantic distinctions are respectively:

(1) fact, repetition, permission and command;
(2) attention, affirmation, exclamation or incredulity;
(3) inquiry.

These three intonational contours seem to be practically the same in W. Kewa; in addition, a fourth pattern occurs (presumably in both dialects). A terminal rise-fall appears to mark intonational contours which are meant to forewarn.
Morphologically, such forms are identical with that of the future tense, but the meaning is different, as shown below:

(4) *nimi awalimf* 'you all should not dig it'

This intoneme contrasts with normal negative imperative structures or simple future statements, both of which have contours as described in (1) above:

(1a) *nimi awalim* 'you all will dig it'
(1b) *nimi naawalepa* 'don’t you all dig it'

Often the contrastive intonation terminal contour is carried by a special morpheme, rather than simply the final syllable of an utterance; for example, -*re* in the case of emphatics (2).

2.5 Morphophonemics

The few tone perturbation rules outlined for E. Kewa (Kewa I:34) apply, with some amplification, to W. Kewa. The rules in E. Kewa were: (1) the tones of noun stems perturb to the same tone as the basic uniform tones of a preceding word; sub-classification is necessary if the preceding tones are diverse; (2) stems with tones of basic low-high are not perturbed; (3) the free pronouns of 1st dual and plural could be perturbed so that their basic tones were dissimilated.

Tone or stress perturbation rules for other languages of the New Guinea Highlands have been summarised by E.V. Pike (1964:127-8). Of general interest is a system of separate patterns of perturbation affecting nouns on the one hand and
verbs on the other. Languages with this system are all in the Eastern Highlands and contrast with the system in Kwa, which has a more uniform system across word classes. Two other languages summarised by E.V. Pike are reported to have stress perturbation systems.12

A. Healey (1964:43-7) has briefly described tonal sandhi in Telefol, a language to the extreme west in the Highlands but not in the same stock as Kwa. Healey's work is of direct interest and importance to our own in that it describes clearly (although briefly) morphonemic processes of assimilation and dissimilation which are internal (stem plus suffix(es)) or external, i.e. separate phonological words. Our study observes the same type of patterns in W. Kwa, but to a greater degree and across a wider range of syntactic combinations. Nevertheless, it will be obvious that our description is only preliminary. From the total set of syntactic patterns only a small sub-set has been extracted and studied. Further materials will amplify but should not greatly alter the general perturbation rules outlined here. Furthermore, so little has been done in this sphere on New Guinea languages that even this preliminary description should prove useful.13

Morphonemic patterns in Kwa do not operate independently of lexical, rhythm, or intonational spans. In certain cases, and in ways not presently understood, the stressed
syllable of a rhythm unit may override an expected perturbation pattern. It appears that such examples of stress are not purely lexical, but that in such instances emphasis may be given to any particular word (or clitic) in an utterance.

In this section perturbation is described without taking into account the effect of stress on rhythm units. In other words, our analysis has not progressed far enough to describe exactly what happens to tone patterns when they are distributed in other high-level phonological units.

In the case of nouns, the perturbing effect of the stem helps classify its basic tones. This is most obvious in pairs of words which are alike except for their basic tones. For example, in the following frame, 'my NOUN two', the post frame lââpo (HL) 'two' perturbs to LL only if the basic tones of the substituted noun stem are also low:

(5) ninâ [Imaa] lââpo 'my two [relatives]'
(6) ninâ [Imaa] lââpo 'my two [pig tusks]'

Here the contrastive basic tones of Imaa 'relative' and Imaa 'pig tusks' actualise as identical tones. However, the basic tones can be classified as HL and LL respectively due to perturbation. This is because only stems with basic lows can perturb a following high to low such that lââpo becomes lââpo. At the same time, the final basic high of the clitic -nâ '(possessive)' has perturbed the otherwise isolatable initial basic low of Imaa 'pig tusks' to high. Such an
understanding and interpretation of the interaction of final and initial tones is crucial to the classification of the basic tones of any stem. It has, therefore, been necessary to determine and test tonal patterns in many syntactic environments and state all changes in terms of an underlying basic pattern.

In the examples which follow usually only a limited number of stems from the main word classes are used; these are given in Chart 1. Although the tones of the total lexicon have been tested in frames, a proliferation of forms in this section would add little to the description. By holding the forms constant in various syntactic combinations the perturbation patterns can be observed more easily. In addition, all tones in the examples can be read as derived; if they are the same as the basic tones below they are thus unaffected by perturbation.
2.51 Stems with Basic Low(s)-High

The most stable tone pattern is any stem with one or more low tones followed by a high. Such patterns in nouns do not perturb unless bounded by final pause. Basic patterns of low-high with verb stems perturb to all low if preceded by the clitic na- '(negative)', which has a basic low tone. This rule may be stated as:

\[
T-Rl. \quad \text{B-LH} \rightarrow \begin{cases} 
\text{n-HL} / \# \\
\text{v-L.../na-} \\
\text{x-LH/elsewhere}
\end{cases}
\]

where x is any other stem class.

In the following examples -má and -nu are clitics which mark substantives as 'subject/agent' or 'collection of' respectively. Tense suffixes and other details are outlined later.
(7) epé kōbere [sarr] lāapo 'the two good dark [bananas];
good dark bananas two
(8) epé kōbere [sāti] 'the good dark [banana];
(9) ādmē [sarr] tā 'the man hit the [banana];
(10) [urfr̂] valāmē 'all of the [frogs] croaked';
(11) nimi na[pesota]paapa 'you all don't [jump];'

Notice in (10) that the LH pattern of urfr̂ 'frog' perturbs the clitic -nu which follows it to H. It is a common feature that any basic low following a basic high also perturbs to high.

2.52 Progressive Assimilation to Lows

When free pronouns with tones of basic low are followed by verb stems, the latter usually become low:

(12) ne niki 'you ate it some time ago';
(13) nimi rogaalim 'you all will bind it';
(14) nimi valāmē 'you all yelled';
(15) ne iriti 'you have cooked it';

The exceptions are stems with a basic LH pattern (as shown in T-R1) or verb stems which seem to reflect fused morpheme combinations, such as:

saafr̂a (Cr. (16) below) 'to hold' (sia 'to put' plus pīra 'to sit'); rɨpfnā 'to grasp' (rīa 'to carry' plus pīna 'doing (subordinate)'); rɨgita 'to cover over' (rīga 'bamboo type/knife' plus tā 'to hit').
Verbs such as these perturb sometimes as if the tones of the postulated fused morphemes were interacting with each other, as well as with final tones from adjacent stems: In the following example the tones of the verb dissipate, i.e. they become all high.

(16) nimi [sədprə]fut 'you all will [hold it]'

Other apparent compounds sometimes represent tones which are basic: thus fut 'eyes' plus ḍaga 'mouth' for ḍaga 'face', and the combination is the patterns of the separate forms. In other instances the tonal combinations appear to represent internal perturbation on their own part: ḍa 'hand' plus ṣara 'touch' form ḍara 'palm', whereas sa 'foot' plus 'touch' form ḍara 'sole'. It has not been possible to deal with compounds, especially the more involved ones.

If an object is overtly specified the marker -mə (\~ -mf) occurs as a clitic on the noun subject and breaks the chain of assimilation begun by the pronoun so that the rule for assimilation to lows is very restricted in its application:

\[
\begin{align*}
T-R2. & \quad B-H \ldots \\
& \quad B-HL \\
\rightarrow & \quad v-L \ldots /pro-B-L_-
\end{align*}
\]

This rule may also provide for such instances as (11) where the verb is marked by both the negative enclitic and an imperative suffix. The rule applies regardless of the grammatical category of the imperative suffix, i.e. immedi-
ate singular or plural, egocentric or altrocentric benefaction.15

The rule, however, must be expanded to include two further instances of perturbation to all low tones: (1) the 'collective' marker -nu which causes progressive assimilation to low of the second order clitic -mf which may follow it; this perturbation to low then carries on to the verbs; (2) stems of basic high tones which occur as a noun object following free pronouns of basic low are perturbed to low. Some examples of both instances are:

(17) 44[nu]mi irame  ['all of] the men cooked it'
(18) 44[nu]mi radepeame  ['all of] the men scraped it'
(19) 44[nu]mi vašane  ['all of] the men yelled at it'
(20) 44[nu]mi rogaame  ['all of] the men have bound it'
(21) nimi aa nalepaape  'you all eat the men'
(22) nimi aa pogotepepe  'you all jump on the men'

In (22) the final syllable of the stem pogote pe is replaced by the imperative suffix, but the initial tone of the suffix remains high and perturbs all but the final syllable tone. This happens also when the final syllable is not replaced: rumé 'to climb up' plus the imperative plural -lepae becomes rumalépepe 'you all climb up it'. We account for some examples of suffix perturbation later.

In examples (17-20) -nu perturbs the otherwise isolatable basic H of -mf to L. The verbs then in turn perturb to
T-R3 accounts for the perturbation of the first syllable of rogaa 'to bind' (23) and pa 'to do' (24) and for many tense suffixes. It does not, however, account for the perturbation of nu → nuf / B-I in (24). In fact, this perturbation is very common and illustrates a principle which can be stated informally as: generally, if two stems or a stem and a clitic both of which are basic L occur next to each other, one or the other must perturb to a H. Before discussing this in more detail, examples which illustrate T-R3 are given.

(25) áámé [Akárá] tād
     'the men hit [the eel]'
(26) ád [áánt] púr
     'the men went to [the husband]'
(27) épé [adáa] as laápo
     'the two good [big] men'
(28) épé [ogé] ákána laápo
     'the two good [little] eels'
(29) épé [ogé] ád laápo
     'the two good [little] men'
(30) go [rogaa]
     '[bind] that one there'
(31) só [rogaa]
     '[bind] that one up there'

For the present, adjectives used in these examples may be defined as a small set of stems which may function as noun modifiers. Some other examples of basic tone patterns in adjectives are: ogé 'little'; adáa 'big'; épé 'good'; rúdu 'short'; and kóbare 'dark'. Only the first three are used in (25-29). Demonstratives (in examples 30 and 31) are also a small closed class: go 'that' (near)'; mì 'that (distant)'; no 'that (below)'; só 'that (above)' and combina-
tions of these and a few others. In combination, perturbation follows regular patterns of assimilation: *mf* plus *go* becomes *mogó*.

Notice that in every case except (28 and 29), which follow T-R1, the first syllable tone of all the forms enclosed in square brackets assimilates to the *H* of the preceding word. There are several other tone changes in the examples:

(1) *akena* 'eel' perturbs to all *H* in (25) but to *HHL* in (28). Normally such a basic *L* pattern perturbs a following *H* to *L*, as in (28) where *láapo* 'two' becomes *laapo*. However in (25) in a pre- and post-frame of all *Hs*, *akena* also remains *H*.

(2) Almost the reverse happens in (27) where the basic *H* of *ádá* 'man' perturbs to low following the basic *Ls* of *adas* 'big'. Because *aa* is then a derived *L* pattern, the form *láapo* is not perturbed (as it is in (29)).

Such examples have not been formally accounted for but they do suggest that once the tones of a given pattern are listed as derived, i.e. once moved to the right hand of the rule, they may in turn cause perturbation as if they were basic tones, or they may perturb differently. If such forms perturb as if they were a basic pattern, although they are in fact derived, it would probably be simpler to cycle the rules and make them recursive at this point. If this is so,
there would need to be some formal device incorporated which will separate a derived LH, say, which perturbs or acts like a B-LH, from one which does not.

Most verb suffixes also follow the rule pattern outlined in T-R3 such that any suffix tone pattern (which is not basic low-high) assimilates to the tone of its immediate environment:

(32) mọga[sa] 'some time ago I] tried it'
(33) rọdẹpẹ[sa] 'some time ago I] scrapped it'
(34) mọga[lo] 'I am] trying it'
(35) rọdẹpẹ[lo] 'I am] scraping it'

The verb mọga 'to try' (32 and 34) is B-Ls and in the same tone class as our usual examples, but it combines with the same set of suffix allomorphs as rọdẹpẹ and thus better illustrates suffix perturbation.

Other verb paradigms which are identical in segmental phonemes help illustrate the tonal interaction of verb stems with free pronouns on the one hand, and bound suffixes on the other. Notice, for example, the following paradigms for sọ 'to put' and sọ 'to knit' in the future tense:
Paradigm A: 'to put'
1. ni sálua 'I will...
2. ne sál 'you will...
3. nipí sál 'he will...
4. sád sál 'we two will...
5. níni sál 'you two will...
6. nipí sál 'they two will...
7. níns dáli 'we all will...
8. níni sál 'you all will...
9. níni sál 'they all will...

Paradigm B: 'to knit'
1. ni sálua
2. ne sál
3. nipí sál 'he will...
4. sád sál 'we two will...
5. níni sál 'you two will...
6. nipí sál 'they two will...
7. níns dáli 'we all will...
8. níni sál 'you all will...
9. níni sál 'they all will...

Both verb paradigms are preceded by a column of free pronoun forms which are in cross-reference to the person-number of the "tense" suffixes. Each pronoun has its basic tone marked. The verb forms consist of a verb plus a suffix, but in this case the tones given are derived ones. Although the basic tones of 'to put' and 'to knit' are H and L respectively, there is in fact no contrast shown on the derived stem tones. The contrast is instead shown only on some of the suffixes. This is because: (a) the tones of a stem with B-H become L following pronouns of B-L, i.e. in Paradigm A following (2, 5 and 8); the result is a neutralisation of contrast between Paradigms A and B in just those examples; (b) the tones of a stem or suffix of B-L become H following a B-H, i.e. in Paradigm B, sa 'to knit' in examples (1, 3, 4, 6, 7 and 9); in Paradigm A, -li- (or -lu- in example 1) in the
same examples. In Paradigm B it is the pronoun basic tones which cause the verb's tone to perturb; in Paradigm A it is the basic tone of the verb which causes the first tone of the suffix to perturb.

The same perturbation pattern seems to hold in the case of all tense suffixes.

2.54 Dissimilation of Basic Tones

As indicated earlier, any stem with a B-L is very unstable, especially if it occurs adjacent to a like pattern. This behaviour is not limited solely to such patterns, however. Following some initial basic patterns and also the clitic -mf (~-më) dissimilation has also been observed:

(37) aapidmr [sän] tää 'the stone axe hit [the husband];'
(38) sënë [kopë] taa 'the man hit [the plate];'
(39) sänë [aapidr] tää 'the man hit [the stone axe];'
(40) sän [sän] püa 'the man went [to the husband];'
(41) sän [aapidr] püa 'the man went [to the stone axe];'
(42) urr [aapidì] püa 'the frog went [to the stone axe];'
(43) sanì [akënd] püa 'the husband went [to the eel];'

Notice that the only instance of a noun functioning as object or location retaining its basic pattern is in (42) where aapidì 'stone axe' retains its basic tones following the B-LH on urr 'frog'.
It is possible to conflate a rule representing the instances of dissimilation as follows:

\[
\begin{align*}
\text{T-R4.} \quad & \quad \begin{cases}
\text{n-B-H} \ldots \\
\text{L} \ldots \\
\text{HL}
\end{cases} \quad \rightarrow \quad \begin{cases}
\text{L} \ldots /\text{n-B-H} \quad \text{-mé} \\
\text{H} \ldots /\text{x} \quad \text{(-mé)} \\
\text{LH} / \{ \quad \text{-mé} \\
\text{n-B-H} \quad \text{(-mé)}
\end{cases}
\end{align*}
\]

where \( x \) is a stem of any word class which can occur with the clitic \( \text{-mé} \).

Although in the examples given thus far \( B-Ls \) reverse their tone only when filling the object position, or in the location position (if the preceding noun is \( B-H \)), there are other examples which suggest that this perturbation pattern is widespread in the language.

It is very likely that a "phoneme of process" such as Pike suggests (see note 9) may help describe the interaction of adjacent words of \( B-Ls \) in Kewa. Pike's work follows that of other Africanists who have shown how certain languages have fixed contrastive pitches (usually \( H \) and \( L \)) but also a further contrast (\( \text{Mld} \)) when the \( H \) and \( L \) tones are in sequence.\(^{16} \) The fact that tone patterns which are basic \( L \) must most often be reconstructed in Kewa and that this pattern is very unstable in regards to perturbation may indicate that a tone of change should be set up, rather than always interpreting the changes as \( H \) or \( L \).
2.6 Other Observations

In this section we include several additional morphophonemic notes which have not been possible to fully incorporate into this chapter:

(1) Expanded possessive phrases such as niná ádpáná ádkúándá sí 'the son of my father's father' suggest that -ná 'possessive' generally causes progressive assimilation and the apparent reversal of the basic high tone of nf 'I' is actually the lowering of it to a mid tone point at the beginning of a statement.

(2) The tones of medial verb suffixes are not perturbed although it appears that in some cases (usually in the presence of supposed fused verb stems) such suffixes may cause regressive perturbation. Some examples, with medial form interlinear translation, are:

(44) aani nda ákéná rádójá 'the husband ate and then scrapes the eel'
say eat-and

(45) aani yalda ákéná rogaaria 'the husband yelled and then bound the eel'
say yell-and

(46) sddá sáñí yalámána nímfí ákéná nálímfí 'we two yell for the husband and they eat the eel'
say yell-we-and

In each case the final tone of the medial suffix actualises as mid. This again may suggest some intonation factor at the seam of such clauses, but if so perturbation carries across this boundary: e.g. akéna, which is basic low, is perturbed even though adjacent to the suffix -a which is
interpreted as basic low.

(3) Some of the above examples, as well as others in our data, suggest that the intonation contours must be more thoroughly examined. The beginning pitch point of statements and the final pitch point of juxtaposed clauses are always mid; this may mean that it is necessary to postulate three intonational tones or pitches, but only two phonemic lexical tones.

(4) There are instances where stress shifts in the same types of syntactic patterns, except that the stress always accompanies noun stems which are basic low. Modifications are therefore necessary in our previous overall rules about stress, so that such examples may be accounted for. This may only be possible in terms of two layers of stress: that which accompanies rhythm units, and that which accompanies certain tonal patterns.

(5) Verbs which function as modifiers in a noun phrase, e.g. kiriteə́ ona (kirite 'to gather' + ona 'adjectiviser' = 'the woman who collects things'), perturb the initial tone of the following noun stem (ona 'woman') to a high tone the same as that of -ə́. Other classes of verbs take different adjectival markers (-ə́ ~ -ə́) with consequent morphophonemic patterns of stem reduction so that the tone perturbation appears to depend upon the lost tones. This has not been analysed satisfactorily.
2.7 Summary

The most stable tone pattern in Kewa is a basic low-high. It may be perturbed only in very rare instances, e.g. in noun stems only when adjacent to final pause.

The basic pattern of lows is the most unstable; it most frequently simply reverses all of its tones. Once it does reverse its tones, or even in some other cases, it is the only pattern which perturbs following highs to lows.

Patterns which consist solely of basic highs cause perturbation of most patterns which are adjacent to them.

Free pronouns consist of a small class of stems which are easily perturbed. Those which are basic low cause complete assimilation of the tones of any verb stem which may follow.

Clitics have independent perturbation rules in that they cause perturbation, rather than simply assimilating to the tones of the stem, which is most often the case with suffixes.
NOTES

1. Kewa I, Kewa II, and J. Franklin (unpublished manuscript). My wife, Joice, who did most of the E. Kewa tone analysis, has transcribed all of the W. Kewa tones for me. I have also benefitted by discussing with her the analysis of tone perturbation presented here. However, the present analysis is my own. A visual output of all our tone recordings was also used. This was made on a Mingograph at the Speech and Language Research Centre of the School of English Studies, Macquarie University (Sydney). I am grateful to those at Macquarie who so generously helped me process the materials. The Mingograph is used in conjunction with a Transpitch meter and an Intensity meter. The Pitchmeter is used to filter out the fundamental frequency and the Intensity meter filters out the intensity ratio of low frequencies. A similar array of instruments is in use at the Australian National University and is described by S.A. Wurm (1967).

2. The lexical relationship of Mendi and Sau (as well as other languages) to Kewa is given in Chapter 8.

3. As indicated at the end of Chapter 1, the colon symbol (:) means 'is filled by', or 'is represented by a member of the class of' the phonological type which follows the colon. The term preceding the colon is the slot name. Usually in tagmemes, slot, which is better called function, "refers primarily to grammatical function and only secondarily to linear position" (Elson and Pickett, 1962:57). However, in Crawford's phonotagmeme hierarchy slot refers to a significant position...in phonological structure" (1963:2). The functional aspect of the phonotagmeme is a distributional one.

4. See, for example: May and Loeweke (1965), J. Franklin (1965), J. Swick (1966), and Pence (1966).

5. Chapter 8, on dialects, considers the distribution of most phonemes throughout the Kewa language area, including South Kewa.

6. Earlier (Kewa I:29) we considered /aa/ as a geminate cluster of /a/ plus /a/ with a wide distribution and therefore listed only five vowels. Orthographically, never more than one such vowel digraph is written, e.g.: ma- '(causative)' + aa 'to be' = maak 'cause it to be'.

7. Throughout later chapters of this thesis the basic phonemic tones are represented on all examples as either
H (') or L (unmarked).

8. E.V. Pike (1964) lists typological features displayed in 35 New Guinea languages. She outlines two types of tone systems in the Highlands: (1) syllable-tone, mainly high or low tones (10 languages), but in addition falling and rising tones (4 languages, all in the same Family of the Eastern Highlands but with Usarufa not having a rising tone); (2) word-tone, where only the stressed syllable has a high-low tone contrast (in two apparently unrelated languages, both in the Southern Highlands).

She also describes seven languages of the Highlands as having contrastive stress systems—one (Waffa) in the Eastern Highlands Family. Three other languages reported by her as having contrastive stress systems are in the Sepik River area.

Out of the 35 languages reported upon, 26 have a phonemic system which includes suprasegmentals. To this number should be added Wele (in her Family 10, p. 131n), according now to H. and M. Boxwell (1966:87); also Kanite (her Family 2), according to R. Young (1962:96). Three other languages mentioned in her survey have now reported contrastive pitch points within intonational systems: Kunimaipa (A. Pence, 1964); Iatmul (P. Staalsen, 1966:74); and Karam (A. Pawley, 1966:40-1).

9. Condensed from K.L. Pike and G. Scott (1963). They use the term accent instead of stress "to soften an over-emphasis on intensity" (p. 179n). More recently Pike has done research on African tone languages which indicates that he would now analyze Fone as having suprasegmental accent markers which operate syntagmatically (1967:a:1552-3). Such a suprasegmental phoneme of change ("process" or "wave") may be helpful in understanding one particular tonal perturbation pattern in Kewa.

10. This feature is the same as, for example, the 'evolutional' mode in Awa (R. Loving and McKaughan 1964:24-5), or Talrora (Vincent 1962:7), indicated by a verb compound and suffix respectively; the 'negative morpheme' in Gadsg (C. Frantz and McKaughan 1964:89), indicated by the 'ablative' suffix plus a falling tone on the subject suffix.

11. In Kewa I:35 nâââ was incorrectly and inadvertently glossed as third person dual, rather than second person dual.
12. Chuave of the Central Family and Pore of the Eastern Family. In addition, E.V. Pike reports tonal perturbation in Tifan, a language of the Ok Family and closely related to Telefol.

13. The most complete study to date is by R. Loving (1966) for Awa of the Eastern Family. His tonal patterns are based on classes of noun stems, satellites, and suffixes, each with cross-classification according to basic tonemes. Alternately, by analyzing the interaction of final basic tones (where the end point of a falling or rising tone can be regarded as basic) and the initial tones of suffixes, the Awa system is more analogous to Kewa.

The work by Bee and Glasgow (1962) first described in detail morphonemic features in a New Guinea language, Usurufa, which they studied, and Awa are not on more than a stock-level relationship with Kewa (Wurm, 1961).

14. Abbreviations are (B)asic; (L)ow; (H)igh. In general, the rules formulated here concentrate only on the initial and final syllable tones. A letter L or H followed by periods represents an all low or all high pattern. Square brackets often enclose the particular pattern being illustrated.

15. Grammatical categories are outlined in the next chapter.

16. See, for example, Schachter (1961) for an introduction to the theory and mechanics of such a system. There is a great volume of literature on African tone languages and many illustrate the classic so-called terracing effect where (often) an additional phonemic tone of change can be postulated (Arnott 1964). Welsers (1959) noted that Pike's typological classification (1948:5-13) of tone languages as contour or register systems was inadequate for Bantu languages (such as Tiv, described by Schachter and Arnott) at least. Wang (1967) has typologically outlined the phonological features of tone on a world-wide basis—excluding New Guinea.

I have worked out some preliminary rules which show that the terracing effect may not be unique to African tonal languages. However, because they are not adequately developed at this time and because this thesis is primarily a grammar, I have not included any details in this chapter.
Chapter 3

WORDS

3.0 Introduction

In this chapter both word classes and word patterns are outlined. If both the members and morphological combinations of a given class are restricted, they are described in the same section.

3.1 Word Classes

Two major groups of words may be conveniently defined in Kewa: Verbs and Non-Verbs. The criteria employed to classify verbs are primarily inflectional coupled with morphophonemic variations of the verb bases and certain suffixes. This results in a clear division between a class of verbs on the one hand and all non-verbs on the other. The subdivision of non-verbs is less clear-cut, but several additional word classes can be substantiated: Nouns, Adjectives, Adverbs, Deictics, and possibly a class called simply Particles. The latter includes several clitics which are not clearly words because they do not occur as free forms. On the other hand, clitics cannot be considered as affixes because at least some of them can occur, in combination with each other, as words. The classification which follows is not exhaustive, nor is this to be expected realistically for any first description of a language. However, by giving definitions of
word classes the category symbols employed for them throughout the grammar should be clearer to the reader.

3.11 Verbs (v)

Verbs are those stems which may occur with (1) tense suffixes; (2) the pre-clitic na- 'negative'; (3) command suffixes. Thus the definition of a verb may be on inflectional grounds alone. By incorporating syntactic, i.e. additional distributional criteria, verbs also: (4) have tense suffixes which are potentially in cross-reference with free pronoun subjects; (5) occur with coordinating suffixes.

Verb stems are inherently Active (va) or Stative (vs). Stative stems are signalled phonologically by bases ending only in /aa/ and morphologically by occurring only with affixes of Set II (outlined in § 3.22.1). Stative verbs may be subclassified into non-derived and derived stems, the latter arising from underlying active bases. Some examples of non-derived stative stems are:

1. nimnaa 'to understand'
2. ruuiaa 'to portion out'
3. kiriiaa 'to gather together'
4. misiaa 'to lift up'

Active stems have bases with phonemic shapes which end in /a/, or in two cases /u/; they occur with affixes of either Set I or Set II. Active bases which occur with Set II
are derived stative stems.

3.12 Nouns (n)

The definition of a noun stem is essentially a negative one which in fact applies to any non-verb, non-derived stem which cannot occur with terminal or non-terminal suffixes (outlined in § 3.22.2). A positive definition must employ functional criteria: those stems which potentially expound the Head of a nominal phrase are nouns. When nouns expound functions such as Subject-as-Agent or Object-as-Location of certain clause types they are marked by special clitics. However, so are other word classes, so there appears to be little or no morphological evidence to separate nouns from other word classes, excluding verbs.²

When a noun expounds the Head-as-Agent of a descriptive noun phrase (npdes) it may be modified and the full np is marked by the clitic -mē (≈-mē). This particular clitic marks the function of Subject-as-Agent in certain clause types. For example, the following are npdes marked by -mē (throughout, a hyphen indicates morpheme boundaries):

(5) adaas adā-mē 'the big man'

(6) adaas adā 1āāpo-mē 'the two big men'

Such clitics as -mē mark clause-level functions for various grammatical categories, not simply nouns. For this reason they are discussed in Chapter 4 on clause patterns.
It is possible to subdivide nouns semantically into those which are general (ng) and those which are temporal (nt). Any further sub-categorisation of ng is also on a semantic basis; for example, nouns which are animate (ngan) versus those which are inanimate (nginam). As will be shown later, an animate-inanimate dichotomy is reflected in the semantic interpretation of functions such as Subject-as-Agent on the one hand, and Subject-as-Instrument on the other. In addition, interrogative pronouns (Cf. §3.15.1) have animate-inanimate forms and consequently support the division of ng into these two semantic categories.

Stems which specify time are a sub-class of nouns and include forms such as: §bra 'now'; rrbäd 'night'; órópe 'later'; and ogó oro 'Saturday'.

Reference to specific points of time in the past or future is often by a combination of nt and demonstratives (§3.15.2). Note, for example, the bottom three rows in Chart 2.
Chart 2: Time Orientation

However, any nt can also occur with substantive (= non-verb) clitics, e.g.:

(7) َắkéráá-má... 'with (the coming of) tomorrow...'
(8) َắkéráá-náne 'in the future'
(9) َắkéráá-nu 'later on' (lit., tomorrow-many)

There seems to be no basis for a sub-classification of "nt into common versus proper."

3.13 Adjectives (aj)

Stems which may expound the Modification function of an np or often the Complement function in a clause are non-derived adjectives. Such stems may be sub-categorised on the basis of their potential position and function in a noun phrase. The following sub-categories of adjectives will be described in greater detail later in Chapter 5 on Phrases.
(a) colours (ajol) are forms such as kōbēre 'dark', kaane 'red', and kāzē rékene 'green'.
(b) size (ajsz) are forms such as adaa 'big', oracle 'little', and rūdu 'short'.
(c) number (ajnm) are forms such as láapə 'two', skātəa 'little finger', and ndəpu 'one cycle'.
(d) quality (ajqal) are such forms as əpə 'good', waq 'bad', and ndəri 'strong'.

Any verb may also become a derived adjectival form upon filling the modification slot of a npqes and by being marked by the suffixes -ne (egocentric benefaction) or -se (altrocentric benefaction) (see §3.26.1).

An ajnm may also be marked with the clitic -pu which specifies the category of quantifier, usually with the meaning of 'sequence' or 'progression'. In addition, words of other classes or even sub-classes of aj may become a derived ajnm:

(10) nimi adaa-pu fəm (they all, big-quant, they have = they have plenty) [ajsz + -pu]
(11) skārəa yādpi-pu fapa yətəa (tomorrow, day-quant, water, it will pull = tomorrow during the day the water will recede) [nt + -pu]
(12) aki-pu rapoyaa (what-quant, quantity? = how many are there?) [interrogative + -pu]
3.14 Adverbs (adv)

Stems which expound the Adjunct tagmeme (4.16) of a clause generally are adverbs. Adverbs do not occur with clitics which typically mark functions expounded by nouns or adjectives. Such stems may be derived or non-derived. The latter are a small closed set of forms including: ān̄apāldi 'quickly'; gāpā 'likewise'; kādē 'almost'; mādē 'enough'; waru 'really'; alōma 'quickly' (only with verbs of motion); pawā 'slowly'; waldē 'again'; and ā̄ba 'before'. Derived adverbs (actually adverbials) are a combination of any stem which is not already an adverb plus the clitic -rupa '(adverbialiser)' or any construction plus this clitic. The latter represent embedded adverbial clauses and are outlined in the next chapter. Some examples of derived adverbs are:

(13) ni ā-rupa pīlālua (I, man-like, I will sit = 'I will sit like a man') [ng + -rupa]

(14) ni ātēa māf-ni-rupa lēgātea (I, food, prepare-Adjt-like, he told = 'He told me how food is prepared') [Adjectival Clause + -rupa]

(15) ni mādōpara-rupa māwā (I, that over there-like, I got it = 'I got (the one) similar to that (thing) over there') [Deictic Phrase + -rupa]

(16) nindo kiri pa-rupa te (he, laugh, just-like, he is = 'He is just laughing (without reason)') [Particle + -rupa]
3.15 Deixtics (dei)

Deixtics are either pronouns or demonstratives and constitute a closed class, i.e. they can be enumerated. They can also only be defined semantically by reference to the speech event and to the participants of the speech event.7

3.15.1 Pronouns (pro)

There are two sets of pronouns: Personal and Interrogative. Personal pronouns are a small closed set which may represent actors or objects. The complete set of personal pronouns is given in Chart 3.

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Dual</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>nf</td>
<td>ṣeṣẹ</td>
<td>nfẹẹ</td>
</tr>
<tr>
<td>2nd</td>
<td>ne</td>
<td>nipi</td>
<td>nimi</td>
</tr>
<tr>
<td>3rd</td>
<td>nipi</td>
<td></td>
<td>nimi</td>
</tr>
</tbody>
</table>

Chart 3: Personal Pronouns

In the third person, singular or dual is ambiguous, but may be explicitly stated by the addition of lẹẹpo 'two':

(17) nipi lẹẹpo ṣeṣẹ-pe (he, two, they two saw = 'They two saw it')

However, except when free pronouns function as objects, the use of lẹẹpo 'two', is omitted because pronouns functioning as subject are in cross-reference with verbs. In the following examples the subject of the verb is marked as dual
or singular by two separate suffixes (which also indicate number and tense):

(17a) *nimí ãda-pe* (he, they two saw = 'They two saw it')
(17b) *nimí ãda-a* (he, he saw = 'He saw it')

If suffixes ambiguously signal the person of the actor, this may be clarified by the use of free pronouns:

(18) *nimí ãda-me* 'You all saw it'
(18a) *nimí ãda-me* 'They saw it'

where -me ambiguously marks 2nd or 3rd plural Past.

Some examples of clitics occurring with pronouns are:

*ni∫pu-ná* (he-pos = 'his'); *nimí-pará* (you all-loc = 'to them'); *ne-gí* (you-dir = 'little you'); *ãã-mer* (we two-AGN = 'we two').

Interrogative substitutes are built on two forms: (1) *ãáp* '(animate)', and (2) *ake* '(inanimate)' meaning broadly 'who?' and 'what?' respectively. Note the appropriate nouns which are used in answer to questions containing the interrogative forms:

(19) *[ãáp*-ũ] [ãa]-tí-a 'Who hit it?'
(19a)*[ãa*-má] [ãa]-tí-a 'The man hit it'
(20) *[ake*-ũ] [ãa]-tí-a 'What hit it?'
(20a)[*rãpêna*-má] [ãa]-tí-a 'The tree hit it'

By expanding these two forms with general clitics, or by the use of a separate interrogative clitic, the full range of interrogatives such as 'which', 'how many', 'why',
'how' and so on may be constructed. These will be outlined under word patterns.

3.15.2 Demonstratives (dem)

Demonstratives, similarly to pronouns, are a small closed set of substitutes, but which point out actors or objects. The complete set of simple stems is given in Chart 4 and other dem compounds are built upon them.

<table>
<thead>
<tr>
<th>sô</th>
<th>'up'</th>
<th>go</th>
<th>'specific' (seen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>nd</td>
<td>'distant'</td>
<td>ò</td>
<td>'neutral'</td>
</tr>
<tr>
<td>no</td>
<td>'down'</td>
<td>ápo</td>
<td>'general' (unseen)</td>
</tr>
</tbody>
</table>

Chart 4: Demonstratives

3.16 Particles (par)

Particles are non-derived or derived forms which function mainly at the clause and sentence-level as Subordinators or Connectors. Subordinators are free forms such as rábd 'when' in the following example:

(21) épália rábd épé ta (he will come, when, good it is = 'when he comes it will be good')

Connectors are of two shapes, either as clitics or derived from these forms plus the affirmative verb 'to be' ña:
-pare 'but, however' yapare
-pulu 'because' yapulu
-pae 'perhaps' yapae

The forms in the first column are used if the relationship signalled is between two verbal clauses or between a verbal clause and some other construction; those in the second column are used if the relationship is between a complementive clause and a verbal clause. Note the following contrast:

(22) ora lāe-pare napālue (true, you said, but, I will not go = 'You spoke true but I will not go')

(22a) ora yapare napālue 'True, however I will not go'

3.2 Word Patterns

As already indicated, words consist of simple or, in some cases, derived stems. These stems occur with various patterns of affixation or clitic orders. Those patterns which are contrastive (in the tagmemic sense where usually two structural differences are required—see Chapter 1) are separate syntagmemes. The patterns described in this section begin with the more complex ones of verbs and proceed to the simpler patterns.

3.21 Verb Bases

While describing these, it will also be necessary to outline the morphophonemic rules which apply to both verb bases and certain affixes. Simple stative verb bases are
unaffected by morphophonemic rules. Derived stative stems are affected by one general morphophonemic rule:

\[ \text{vstMP-81} \quad \text{XV} \rightarrow \text{Xaa} / \text{ABase} \quad \text{SET II} \]

where V represents the final vowel of an active verb base which becomes /aa/ in the presence of affixes of Set II (§3.2.11). XV refers to the pattern of the active verb base; it always has one of the following underlying morphophonemic patterns:

1. Pattern L - bases ending with or consisting of the shape 1a, represented morphophonemically as XL.
2. Pattern E - generally bases ending with the vowel sequence 1a or aa, represented morphophonemically as XE.
3. Pattern A - generally bases ending with the vowel a, represented morphophonemically as XA.
4. Pattern H - any base with an underlying shape of XV1(C)V2, where V1 = y or ı, and V2 = a. Thus bases ending in 1a (Pattern E) automatically belong to Pattern H.

Pattern H provides for morphophonemic rules of vowel harmony which in every case override rules normally effective in Patterns L, E or A. Therefore, such rules are ordered and always apply last after any other appropriate rule.
Orthographically, patterns are marked as L, E, A or H only when phonemic and morphophonemic correspondences are not isomorphic. Some examples of each pattern are:

L: *vi'ıaš* 'to pull'; *tà* 'to talk'; *ódgolae* 'to jump'.
E: *río* 'to carry (on the shoulder)'; *sa*(E) 'to knit'; *rágópán* 'to husk'; *ógeya*(E) 'to beg'.
A: *áda* 'to look'; *pá* (A) 'to go'; *má* (A) 'to fetch'.
H: *póna* 'to shepherd' (basic pattern A); *rámila* 'to mend' (basic pattern L); *tá* 'to hit' (basic pattern E).8

MP rules operate upon such verb bases when they combine with obligatory suffixes. The verb base plus the obligatory Terminal or Non-Terminal suffix (see following section) constitute the obligatory verb nucleus. Before discussing MP rules it is necessary to introduce the obligatory suffixes which serve as conditioning environments to the verb bases.

3.22 Obligatory Suffixes

Obligatory verb suffixes are either Terminal or Non-Terminal and in each case belong to one of two sets: (1) Set I, which occurs only with active verb bases, marks egocentric benefaction; (2) Set II, which occurs either with stative or derived verb bases, marksallocentric benefaction. It is important to note that the set marks either of the categories
of benefaction, although the individual affixes mark some
other grammatical category as well.\textsuperscript{9} Non-obligatory verb
affixes co-occur with Set I or Set II terminal or non-termi-
nal suffixes, but do not occur alone.

3.22.1 Terminal Suffixes

Terminal suffixes mark either Tense or Imperative cat-
egories, which are mutually exclusive with each other.
Tenses are Present (Pr), Past (Pa), Remote Past (RP), Future
(Fu), and Perfect (Pr). Set II (alto-centric) suffixes are
outlined in Chart 5.

<table>
<thead>
<tr>
<th></th>
<th>Pr</th>
<th>Pa</th>
<th>NP</th>
<th>Fu</th>
<th>Pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 s</td>
<td>-to</td>
<td>-tu</td>
<td>-su</td>
<td>-lua</td>
<td>-evo</td>
</tr>
<tr>
<td>2 s</td>
<td>-te</td>
<td>-ri</td>
<td>-si</td>
<td>-li</td>
<td>-eye</td>
</tr>
<tr>
<td>3 s</td>
<td>-ta</td>
<td>-ria</td>
<td>-sa</td>
<td>-lia</td>
<td>-eva</td>
</tr>
<tr>
<td>1 dl</td>
<td>-tepa</td>
<td>-ripa</td>
<td>-sipa</td>
<td>-lipe</td>
<td>-spe</td>
</tr>
<tr>
<td>2, 3 dl</td>
<td>-tepa</td>
<td>-ripi</td>
<td>-sipi</td>
<td>-lipi</td>
<td>-spe</td>
</tr>
<tr>
<td>1 pl</td>
<td>-tema</td>
<td>-rima</td>
<td>-simo</td>
<td>-lima</td>
<td>-ema</td>
</tr>
<tr>
<td>2, 3 pl</td>
<td>-tema</td>
<td>-rimi</td>
<td>-simi</td>
<td>-limi</td>
<td>-ema</td>
</tr>
</tbody>
</table>

Chart 5: Set II Tense Suffixes

Although it is quite possible to further segment the
suffixes in Chart 5 so that person-number is distinct from
tense, or even so that person is distinct from number, all
of these categories are considered as compound representations and included within the semantic designation called **Tense**.10

Set II tense suffixes regularly combine with stative bases11 or, together with vstMP-Rl, with derived stative stems. Some examples are:

(23) r'ima + l sg Pr → r'ima-to 'I am portioning out (for someone)'

(24) əda + l sg Pr + vstMP-Rl → ədaa-to 'I am looking (on behalf of someone)'

(25) r'ia + l pl Pf + vstMP-Rl → r'iaa-ema 'we have carried (on behalf of someone)'

The first example r'ima illustrates a stative verb stem; the other two examples illustrate stative stems derived from active verb bases.

**Imperative categories are** Singular and Non-Singular, Immediate and Non-Immediate. Imperative suffixes are listed in Chart 6.

<table>
<thead>
<tr>
<th>Non-Immediate</th>
<th>Immediate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ego</td>
<td>Alo</td>
</tr>
<tr>
<td>Singular</td>
<td>vBase</td>
</tr>
<tr>
<td>Non-Singular</td>
<td>-lepaa</td>
</tr>
</tbody>
</table>

Chart 6: Imperative Suffixes
Some examples of Set II imperatives are:

(26) *rimaa* 'to portion out' + n-1mm n-sg → *rimaa-tepaa*
    'you all portion it out (for someone)'

(27) *ada* 'to look' + n-1mm sg + vstMP-R1 → *adaa*
    'look (on behalf of someone)'

(28) *ada* 'to look' + 1mm n-sg + vstMP-R1→*adaa-tepaa-pe*
    'you all look (on behalf of someone else) now'

Set I Tense suffixes are given in Chart 7.

The basic shape of the active verb base to which
Set I Tense suffixes are attached can be found in several
ways: (1) the shape of the verb base which results when the
regular past tense suffixes occur; (2) the shape of the verb
base which results when the 1 and 2 sg Pr tense suffixes
occur; (3) the shape of the verb base in the environment of
non-immediate sg Set I imperatives.

In other instances the shape of the verb base changes
according to regular MP rules which will be outlined.
3.22.2 Non-Terminal Suffixes

The presence of separate sets of verb suffixes according to the "medial" or "final" position of the verb in an utterance is a typological feature of New Guinea Papuan languages. It is also common in New Guinea Highland languages to treat such clauses in terms of two intersecting dimensions: the set of verb stems which expound the Predicate as one dimension, and the syntactic distribution of the Predicate as the other. In Kewa such aspects of clause relationships are described on the Sentence-level (Chapter 6), so that in this section only the suffix forms which have morphophonemic rules accompanying them are outlined. There are many variations of such suffixes, but semantically they fall into two main groups: those which mark successive actions and those which mark simultaneous actions.
Actions which are successive may be performed by the same or by different persons. Such actions may also be either allocentric or egocentric in benefaction. The suffixes which mark such actions are listed in Chart 8 (as well as two others which are discussed later). Morphophonemic rules for the combination of active verb bases and egocentric successive or simultaneous suffixes (Set I) follow in the next section.

<table>
<thead>
<tr>
<th>Benefaction</th>
<th>Same Person Suc.</th>
<th>Same Person Sim.</th>
<th>Different Persons Suc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ego</td>
<td>-a</td>
<td>-rl</td>
<td>-no -ina -na -pona -zona -lipina -limina</td>
</tr>
<tr>
<td>Alo</td>
<td>-we</td>
<td>-ma</td>
<td>vstNP-R1 plus above suffixes</td>
</tr>
</tbody>
</table>

Chart 8: Non-Terminal Suffixes

3.23 Morphophonemic Rules

Rules which specify the shape of the verb base for a particular pattern when that pattern occurs with the Terminal suffixes of Set I are given first. The suffix shapes which result are starred if MP suffix rules are yet to be applied. A general rule of vowel harmony applies finally to any appropriate tense or verb stem.

The following rule applies to any base of pattern L:
 Examples are from the base **yd** 'to pull':

(29a) **yd-lo** (1 sg Pr) 'I am pulling'
(29b) **yd-su** (1 sg. RP) 'I pulled sometime ago'
(29c) **yd-lua** (1 sg Fu) 'I will pull'
(29d) **yd-e** (1 sg Pf) 'I have pulled'
(29e) **yd-lepa** (1 dl Pr) 'We 2 are pulling'
(29f) **yd-sipa** (1 dl RP) 'We 2 pulled sometime ago'
(29g) **yd-lipa** (1 dl Fu) 'We 2 will pull'
(29h) **yd-epa** (1 dl Pf) 'We 2 have pulled'

To account for the actual shape of the tense suffixes the following rule must apply:

\[
\text{vafMP-R1} \quad \text{XL} + \begin{array}{c}
-\text{lu-} \\
-\text{le-} \\
-\text{to-} \\
-\text{to-} \\
-\text{te-} \\
-\text{te-} \\
-\text{ta-} \\
-\text{ta-} \\
\end{array} \Rightarrow \begin{array}{c}
\text{(29a)} \\
\text{(29b)} \\
\text{(29c)} \\
\text{(29d)} \\
\text{(29e)} \\
\text{(29f)} \\
\text{(29g)} \\
\text{(29h)} \\
\end{array}
\]

The correct shapes are thus **yd-toa** (29a), **yd-to** (29d), **yd-tapa** (29e), **yd-tepa** (29g), **yd-tape** (29h). If certain historical facts are taken into account, which are outside the scope of this grammar, **t** regularly replaces **l**. This results in ambiguity in the case of the 1 dl Pr and 1 dl Pf suffixes, but only with verb bases of this pattern.
The following rule applies to bases of pattern E or A:

\[
\begin{align*}
\text{vstMF-R3: } & \quad \begin{cases} 
XE & \rightarrow \begin{cases} 
\left( \frac{X}{X} \right) / \rightarrow \begin{cases} 
\{X\} & \rightarrow \begin{cases} 
\{X\} & \rightarrow \begin{cases} 
\{X\} & \rightarrow \begin{cases} 
\end{cases} 
\end{cases} 
\end{cases} 
\end{cases} 
\end{cases}
\end{align*}
\]

Examples are from the bases *ria* 'to carry' (on the shoulder), *rakepē* 'to husk', and *āda* 'to look'.

(30a) *ri-su* (1 sg RP) 'I carried sometime'
(30b) *ri-to* (1 sg Pf) 'I have carried'
(30c) *ri-sima* (1 pl RP) 'We all carried sometime'
(30d) *ri-tema* (1 pl Pf) 'We all have carried'
(31a) *rakepē-su* (1 sg RP) 'I husked sometime'
(31b) *rakepē-to* (1 sg Pf) 'I have husked'
(31c) *rakepē-sima* (1 pl RP) 'We all husked sometime'
(31d) *rakepē-tema* (1 pl Pf) 'We all have husked'
(32a) *ādi-su* (1 sg RP) 'I looked sometime'
(32b) *ād-e* (1 sg Pf) 'I have looked'
(32c) *ādi-sima* (1 pl RP) 'We all looked sometime'
(32d) *ād-ema* (1 pl Pf) 'We all have looked'

The variations in the tense suffixes (from those given in Chart 7) can be accounted for as follows:

1. by expanding the left-hand side of vafMF-R1 to include pattern E; this applies to (30b), (30d), (31b), and (31d).

2. by adding a further vowel harmony rule to provide the correct surface shapes for (30b and d):