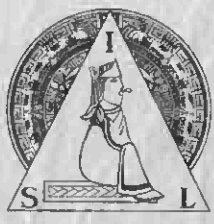
SEMANTIC RELATIONSHIPS OF GAHUKU VERBS



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CONTENTS

FIGURES AND CHARTS

PREFACE

It is hoped that this study will contribute to linguistic understanding in two ways. First of all, I trust that it will make available a description of some of the most interesting and most complicated aspects of one of the languages in a little-known area of the world—the highlands of Papua New Guinea. I also hope that it will point to the relationships between various kinds of propositions and their manifesting clause structures and orders that must be analyzed and understood before one can say he has a competence in a given language.

Gahuku is the mother tongue of some 7,000 persons living on the northeast side of the Asaro Valley, surrounding the town of Goroka, in the Eastern Highlands of Papua New Guinea. The language is also spoken or understood by probably as many others in surrounding dialects and languages. Gahuku is simply the name of the largest clan in the language group, and is the general name used by linguists, anthropologists, and others. Sometimes the name Zoqmaga has been used by a few of the local people to refer to the language as a whole.

Data for this study were gathered largely in the village of Wanima during the years 1959–63 and 1967–72, working under the auspices of the Summer Institute of Linguistics. It is impossible to name all those from whom data were obtained (especially since I never worked with an 'informant' as such); but special thanks go to Loisieq Golohaveq, who taught us as he worked for us, and to Heliviq Sulaeq, who transcribed and typed up a great amount of the text material.

The corpus from which most of the illustrations in this study were drawn includes some 215 triple-spaced typed pages of text plus an accumulation of letters. Citations from this corpus are so indicated by an indexing symbol given in brackets following the free English glosses. Much of the work on this corpus was carried out in 1970 as part of a project sponsored by contract OEC-9-097756-4409(014) of the Office of Education, United States Department of Health, Education, and Welfare.

I am grateful beyond words to the members of my committee—Keneth L. Pike, Robbins Burling, Alton L. Becker, and Kenneth C. Hill—for their untir-

ing patience in trying to teach me the principles of writing with accuracy and clarity. Any success is due to them; the failures are my own.

I am also very grateful to those many friends who have over the years supported financially our work among the Gahuku people.

And finally, I should like to acknowledge my gratitude to Him who is the ultimate source of all wisdom and knowledge. The beautiful and intricate patterns of structure in Gahuku which I have tried to show here reveal to me a bit of the beauty—and inexhaustible riches—of His handiwork.

ABBREVIATIONS AND SYMBOLS

Alt	Alternative
Adv	Adverbial
B	Base
ben	benefactive marker
benef	benefactive complex
C	consonant
Cau	Cause
Cd	compounding suffix
CfA	Contrafactual Apodosis
CfP	Contrafactual Protasis
Cnd	Condition
Con	Contrast
def	definite article
Dep	Dependent
dl	dual
d.sub	different subject (than that of following clause)
Equ	Equivalent Action
Ev	Event
exist	existential
Fin	Final
fu	future
gen	genitive
ger	gerundive
hab	habituative
Imp	Imperative
ind	indicative
indef	indefinite article
Inq	Inquiry
int	interrogative
Inten	Intentive Action
M	Margin
$^{M}\square$	Morphological unit
Man	Manner
$^{n}\square$	any number of successive occurrences
neg	negative
N.P.	Noun Phrase
nuc	nucleus
obj	object
$^{P}\square$	Phonological unit
para	paratactic
pf	perfect
pl	plural
pred	predicative enclitic
Pri	Prior
pron	pronoun
prog	progressive
Pur	Purpose
Quo	Quotation
R-A	Relator-Axis
rea	reason
rel	relator
rep	repetitive
Res	Resemblance
S	Sentence
$^{S}\square$	Sememic unit
Seq	Sequence
sg	singular
Sim	Simultaneous

s.sub	same subject (as that of following clause)
sta	stative
sub	subject
Subs	Subsequent
Suc	Successive Action
sum	summary
Sup	Supposition
Syl	Syllable
Thes	Thesis
top	topic
v.	verb
V	vowel
voc	vocative

#	phonological word boundary
# #	phonological clause boundary
[′]	high tone
[ ]	low tone (unmarked)
[-]	separate morphemes considered important to the discussion; if attached to a single morpheme indicates a bound form
+	another obligatory unit follows
( )	optional unit
→	is realized as
:	separates function (slot) from manifesting class (filler)
=	unit named at the left consists of the tagmemes named at the right
∅	zero manifestation of a unit
{ }	encloses alternates from which a choice must be made
/__X	occurring in the environment of a following X
/X__	occurring in the environment of a preceding X
⟶	the item at the left is subordinate to the one at the right

1 INTRODUCTION

In more ways than one, the island of New Guinea can be said to be the "last great frontier" which holds a wealth of unexplored areas for man's investigation. The highland areas of what is now called Papua New Guinea were first opened to the outside world in 1933–34; and since the Second World War a veritable army of investigators from many fields of interest have swarmed in to have a look at the people and their ways of life, their land, their diseases, their flora and fauna. And among these have been the linguists. But with an estimated 700 distinct languages in the country (including the offshore islands to the east), the country could either be called a linguist's paradise or a linguist's nightmare, depending on one's point of view. The linguistic surface is just beginning to be explored. For this reason alone a detailed study of one of these languages is justified. The first aim of the present study is thus to make available a description of the verb structure of one of those languages of the highlands of New Guinea.

Within that large group of languages designated by Wurm (1964) as the East New Guinea Highlands Stock, probably the outstanding morphological feature which is shared by a majority of the languages is the presence of so-called sentence–medial verbal forms which differ in structure from sentence-final verbal forms. The word "medial" refers to a verb of a dependent clause and the word "final" refers to a verb of the independent clause, which is almost always the last one in the sentence. More specifically, the so-called medial verbs, which in Gahuku are verbs which express a temporal relationship with other verbs in the sentence, and which predominate numerically in certain types of discourse such as narrative, have separate structures depending on whether the subject of the clause in question and the subject of the succeeding clause are the same or different. Thus in English one may say "After I went. . ." without paying any attention to what subject he wishes to use in the following clause. But in Gahuku I cannot express "After I went. . ." without having decided what the subject of the next clause will be; for I will either say *vokuke*. . . implying that I will follow with a clause which

expresses a further action of mine, or I will say *vokugo*. . . implying that I will follow with a clause expressing an action performed by someone else.

And along with these distinctions comes another outstanding feature of these so-called highland languages: these "medial" verbs may be strung together almost ad infinitum within what seems grammatically and phonologically to be one sentence. The transcription of a text can continue for a couple pages without a final verb indicating the end of a sentence.[1] These peculiar features are fairly well known by now due to a number of published articles and volumes; but their theoretical significance has yet to be explored. Must we collapse sentence and paragraph as a linguistic unit in certain circumstances? Should we look for units larger than sentence and smaller than paragraph, or larger than clause and smaller than sentence, or is there another solution? What is the underlying principle behind the fact that sentences go on and on in narrative discourse (averaging 9.3 clauses per sentence in written Gahuku narratives) whereas sentences in expository discourse are quite short (averaging 2.7 clauses per sentence in expository discourse, either written or unwritten)? What are the orders in which clauses expressing various relationships may occur, and what is the significance of their ordering?

These are some of the questions I wish to speak to in the present study. I will show that in Gahuku there is a unit which can be called "sentence" which is marked by a verb whose structure is often markedly different from that of other verbs in the sentence. Specifically its person and number subject indicators may be different from those of verbs in other clauses, and it usually can select from a much wider range of affixes indicating tense. This sentence unit, when it is not an embedded quotation, is clearly marked phonologically in a way distinct from other clauses within a sentence. Furthermore, a sentence is a morphological structure which expresses certain propositions which have specific relationships with each other. A proposition is a sememic construction which, for example, may express the relationship between a certain actor or item and a state or activity, and which is most frequently expressed morphologically by a clause. The nature of the relationships between sememic propositions for Gahuku is stated in this study, and the clausal structures which may express these relationships are stated by means of formal rules. The possible orders of occurrence of these clauses in the complete sentence are also stated as well as comments on the relative frequency of each. The conditioning factors which lead to one set of propositional relationships being expressed by alternative sentence structures are also discussed.

This study presents the implications of the claim that various subordinate relationships (e.g., purpose, condition, reason) of propositions to one another or to a main proposition are not equally subordinate sememically but may be regarded (in a sense to be defined) as ranked on a scale of closeness of relationship. For example, for Gahuku a temporal succession relationship can be considered a closer one than a purpose relationship, which in turn is a closer one than a reason

1. See for example sentence 35, Section **6.5.3.**

relationship. This closeness of relationship sememically must be reflected morphologically in the order of clauses within a sentence. And inasmuch as in Gahuku a dependent clause is almost invariably subordinate to one of those that follows it, and because the scale of relative closeness of various relationships between propositions is also reflected by a clear and specifiable order, formulas are stated expressing the total possible clause structure within Gahuku sentences.

Furthermore, suppose that in a given language there is a set of three propositions related to each other. We must expect that within that language the rules for expressing those relationships will differ depending on which proposition is subordinate to which. For example, a clause expressing a conditional relationship could be subordinate to a temporal clause, or the dependencies could be reversed; and in Gahuku the conditional relationship would be expressed by quite different structures in these two instances. Nor should it be surprising if the rules for expressing a particular set of propositional relationships find widely different expression in different languages, especially among unrelated languages. Specifically, Gahuku is illustrative of those languages which, given a series of events which occur in temporal succession, allow these temporally related events to be expressed morphologically in one long sentence in which the dependent temporal clauses have a different structure from the clause which concludes the sentence. The occurrence of sememic propositions which express relationships other than temporal sequence calls for shorter sentences in Gahuku. These matters will be discussed and illustrated in this study.

Another noteworthy feature of the so-called highland languages of New Guinea is the presence of sets of suffix combinations which indicate person and number of the subject and sometimes mood as well, which are not easily segmentable. Within these forms there are recurring phonological combinations, but it proves impossible to assign invariant individual meanings of specific person or number to these recurring forms. As a result these morphological forms are usually considered as fused morphemes and listed as such. The result of doing so for Gahuku would be the listing of twelve sets of person-number morphemes for Independent Final clauses alone, with no attempt to recognize the recurring partial forms within the fused morphemes or their patterns.

This study adopts a matrix technique for segmenting these fused morphemes. In so doing, instead of establishing a tagmemic slot labelled "person" whose morphemic fillers distinguish 1st, 2nd, and 3rd person, and a tagmemic slot labelled "number" whose fillers distinguish singular, dual, and plural, I establish person, number, and mood tagmemes whose fillers are matrices each containing forms of morphemes which potentially signal both person and number simultaneously. A form from one matrix which marks a specific person and number is usually ambiguous until it is combined with forms from the other two matrices.

The result has a twofold benefit. By segmenting sets of morphemic forms into matrices signalling person, number, and mood, instead of multiplying our sets, the total number needed to account for all the data is actually diminished.

Furthermore, it is then possible to recognize patterns of recurring phoneme combinations distinguishing various person and number combinations within the matrices, patterns which are repeated throughout the various sets of matrices, and which also prove significant as we examine similar sets of morphemic person-number indicators in related languages. A comparison of the results of similar studies in other New Guinea highlands-type languages should provide additional grounds for judging the correctness of decisions on language grouping.

In this study I first present a brief sketch of the more outstanding features of Gahuku grammar in order to give the reader an overall view of the language. Then follows the verb morphology, including a description of the various verb stem classes and other elements of minimal verb phrases. Next is a description of how minimal verb phrases may be expanded by the insertion within the verb of aspectual complexes. Next is a description of the structures which express the relationships of clauses to other clauses or to the discourse, or which express embedding relationships of clauses within phrases. Then comes a longer section in which I discuss sentences and their structures. Following these chapters on Gahuku verb structure I suggest some theoretical implications of this study. The Appendixes include a section describing Gahuku phonology.

2 GRAMMATICAL OVERVIEW

2.1 This section presents a brief summary of the outstanding features of the language, beginning with phonology and working up to the largest units of morphology.

2.2 Phonology. Gahuku has a set of voiceless stops (in bilabial, alveolar, velar, and glottal positions) and a corresponding set of nonstops, which are either voiced or fricative or both. There are two nasals, and a voiced and a voiceless sibilant. There are five vowels, all unrounded, and a rare semivowel. In this study I symbolize these as follows, with the form in phonetic brackets representing the major allophonic form of each phoneme:

p = [p]	t = [t]	k = [k]	q = [ʔ]
v = [b]	l = [ɾ][1]	g = [g]	h = [h]
m = [m]	n = [n]		
	s = [s]		
w = [w]	z = [z]		
i = [i]			u = [ï]
e = [e]		a = [a]	o = [ë]

There are two phonemic register tones in Gahuku, and each syllable carries one of the two tones. There are probably not a dozen minimal tone pairs in the language, however; and although tone perturbation is of grammatical significance, altogether tone carries a very low functional load.[2] Syllable structure is very simple: there are no consonant clusters initially or finally within a syllable, and the

1. This retroflexed flapped vibrant is symbolized by /l/ in the orthographies of a number of adjacent languages. The orthography used here is that which has been used for all material printed in Gahuku.

2. For this reason, and because of complexities of nonverbal tone perturbation which have not been fully analyzed, tone is not marked on the examples in this study.

glottal stop is the only consonant which may end a syllable. The type of stress within a phonological word is predictable from the tone pattern. A phonological clause in certain cases is marked by a special stress on the final syllable of the verb (which is the final word in the clause), and a phonological sentence is marked by a lowered pitch or downglide on the final syllable of the verb in the final clause. A more complete phonological description is given in Appendix B.

2.3 Morphology.[3]

2.3.1 Nouns. There are a number of noun stem classes in Gahuku which can be defined by their occurrence with possessive affixes and by whether the form that marks object, indirect object, or beneficiary in transitive clauses requires the suffix *-ni*. According to their class, noun stems may require possessive prefixes or possessive suffixes or both, or have optional possessive suffixes, or take no affixes at all (in which case possession, if sememically possible, may be indicated by a free possessive pronoun). A summary of the noun stem classes is given in Fig. 1. The class numbers in parentheses at the left include all the (sub)classes to the right; class 10 thus includes (sub)classes 11, 12, 13, 14, and 15.

	No Possessive Affix	Obligatory Possessive Prefix	Obligatory Possessive Suffix	Optional Possessive Suffix	Obligatory Possessive Prefix and Suffix
Class 10 (no object marker) (10)	11	12	13	14	15
Class 20 (*-ni* object marker) (20)	21	—	23	—	25

Fig. 1. Gahuku Noun Stem Classes

There are two very large classes. One (class 21) consists exclusively of proper names, and the other (class 11) includes terms for miscellaneous items not considered inalienably possessed. Three of the noun stem classes (15, 23, and 25) consist exclusively of terms expressing relationships between individuals, such as kinship. The remaining three classes (12, 13, and 14) consist of terms for items which may be considered more or less inalienably possessed, such as body parts. Below are listed one representative for each noun stem class, using the first person singular possessive form if applicable.

Class 11:	*neniq*	*lape*	
	my	dish	'my dish'
Class 12:	*ni-gisa*		
	my-foot		'my foot/leg'

3. Throughout the remainder of this study the word "morphology" is used to cover what has traditionally been arbitrarily divided into morphology and syntax. Reasons for this shift in terminology are given in Chapter 7.

Class 13:	*mulu-qne*		
	liver-my		'my liver'
Class 14:	*zopova-qne* or	*neniq zopova*	
	hair-my	my-hair	'my hair'
Class 15:	*nu-guna-qne*		
	my-younger_brother-my		'my younger brother'
Class 21:	proper names - unpossessed		
Class 23:	*ame - qne - ho*		
	father-my - sg sub		'my father'
Class 25:	*n - izavo-qne - ho*		
	my-inlaw - my - sg sub		'my female inlaw'

2.3.2 Pronouns. Besides pronoun affixes, there are free pronouns in Gahuku which can occur in three forms: emphatic subject forms, forms indicating either object or possessive, and neutral forms. The free pronouns distinguish first, second, and third person, and singular vs. plural. Pronominal verb suffixes also distinguish dual. Neither free pronouns nor bound verb affixes distinguish between inclusive and exclusive, nor gender.

The three sets of free pronouns are clearly interrelated by a complicated set of morphophonemic rules. These rules are not given here, but the neutral set may be derived from the object/possessive set, which may in turn be derived from the emphatic subject set. The common *-si* suffix on the emphatic subject set is not a productive affix elsewhere in the language, although it does occur as the final syllable on a large number of nouns and appears to be a vestige of a noun classifier in a protolanguage. The *-q* on the object/possessive does not occur elsewhere except as the final consonant on proper names in their subject, not object, form; and the *-za* which is common to the neutral set does not occur elsewhere. The pronouns in their three forms are:

	Emphatic Subject	**Object or Possessive**	**Neutral**
1st sg.	*neqnisi*	*neniq*	*neza*
2nd sg.	*geqisi*	*geiq*	*geza*
3rd sg.	*aqisi*	*aiq*	*eza*
1st pl.	*leqlisi*	*leliq*	*leza*
2nd pl.	*lekelisi*	*lekeliq*	*lekeza*
3rd pl.	*keqisi*	*keiq*	*keza*

2.3.3 Numerals. Cardinal numerals designating "one" and "two" occur as simple morphemes:

hamoq 'one' *losi(taq)* 'two'

Numerals designating "three" and "four" are coordinate phrases built on the term for "two":

losi-ve	*mako-le*	
two-is	another-is	'three'
losi-ve	*losi-ve*	
two-is	two-is	'four'

Those numerals designating "five" or more are clauses. The counting system is basically by fives and involves use of fingers and toes. The clauses designating the numerals "five" and above indicate how many sets of fingers and toes are "gone" in the counting process, and how many additional units less than five have "jumped over" to make the total number. Examples representing the numbers "six" and "twelve":

6:	*li-gizani*	*luga-loka*	*asuq*	*oake*
	our-fingers	part-at	finished	being
	luga-loka	*hamoq*	*oliqo*	*molago*
	part-at	one	jump	having_put

'After half of the fingers were finished, one jumped over from the (other) half.'

12:	*li-gizani*	*luga*	*luga*	*asuq*	*oake*	*li-gisa*
	our-fingers	part	part	finished	being	our-toes
	luga-loka	*losi*	*oliqo*	*molago*		
	part-at	two	jump	having_put		

'After both parts of the fingers were finished, two jumped over from one part of the toes.'

2.3.4 Verbs. Verb stem classes are subdivided by three sets of suffixal allomorphs with which they occur, and also by whether they require an object prefix and whether they occur with stem vowel changes. Verbs in Gahuku are predominantly suffixing; but there is a progressive prefix, and some verb stem classes have a direct or indirect object prefix or infix. Verb suffixes are far more extensive, indicating benefactive, negative, various tense combinations, subject, and mood, in that order.

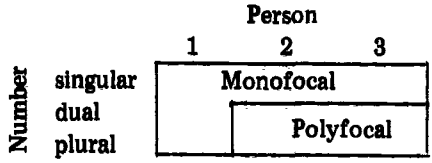
Verb suffixes marking subject distinguish between first, second, and third person. Dual and plural suffixes distinguish only between first person and non–first person. The person and number subject suffixes on verbs are morpheme complexes whose segmentation and description requires the use of matrix techniques. A full description of verb morphology is given in Chapter **3.**

The sets of pronominal affixes which indicate the beneficiary of an action and the direct or indirect object distinguish only between first, second, and third person and between singular and nonsingular.

Many sets of morphemes in the language (verbal and nonverbal) distinguish between referents which are either singular or 1st person ("monofocal"[4]) and those

4. These terms were first used to describe this phenomenon by Robert Young to describe features of the Benabena language in New Guinea.

which are neither 1st person nor singular ("polyfocal"). This distinction is also maintained in many related languages. The sememic area covered by the terms "monofocal" and "polyfocal" is summarized below:



The occurrence of /i/ instead of /o/ with polyfocal subjects in many verb morphemes is recurrent. It may be stated as follows:

/o/ / __polyfocal subject → /i/[5]

This rule, to be known as the *ablaut* rule, will be referred to as such whenever any forms are subject to it.

The structure of subject suffixes on verbs (Sect. **3.3.6**) suggests that historically the dual-plural distinction is a recent addition. This distinction is made in related languages, but in each case the dual affix is an extra one "tacked on" to those indicating singular and nonsingular.

In Gahuku as in related languages there is often a correlation between the phonological forms that signal 1st plural and 2nd singular in subject morphemes (see the matrices in Sect. **3.3.6** and discussion). The semantic reasons that would prompt such a grouping are not known.

2.3.5 Noun Phrases. The order of elements in noun phrases is possessive pronoun, verbal modifier, modifier expressing color, head noun, other adjectival modifier, numeral, and summation morpheme. An example of a fully expanded noun phrase is:

leliq	*takisi*	*aleakaq*	*golohaq*	*ve*	*golesa*	*lositaq*	*nene*
our	tax	taking	red	men	bad	two	summary

'our two wretched European tax collectors'

There is a set of enclitics which attach to the last word in the noun phrase, which show whether the noun phrase functions as a subject, object, locative, acquisitional, instrumental, referential, vocative, or possessive in its clause. A complete list of these enclitics is given in Section **4.3.**

2.3.6 Clauses. The order of phrasal elements within a clause is vocative, subject, object, indirect object/beneficiary, verb phrase. The other clausal tagmemes are not obligatorily ordered. Several of the possible clause tagmemes are illustrated in the following example:

5. The solidus (/) introduces the conditioning environment and the arrow indicates "is realized by." See Section **7.8** for the theoretical reasons behind this notational arrangement.

Helivi-zo	*azozaq*	*geza*	*maketi-loka*	*nene*	*nosaqnetaq*	*makoq*
Helivi-voc.	tomorrow	you	market-at	pause	food	some
Vocative	Temporal	Subject	Locative		Object	

imane	*gehani-tunuq*	*Losaqe-ni*	*meina*	*hizetatane.*
this	money-with	Losae-obj.	payment	you'll_make_for_her
Instrumental		Beneficiary	Verb	

'Helivi, tomorrow you can buy some food for Losae at the market with this money.'

The verb is the final element within the clause. Gahuku may be considered an ergative-type language: the subject of intransitive verbs and the object of transitive verbs are unmarked for the largest class of nouns. The examples below illustrate one noun phrase serving as the subject of an intransitive clause, the object of a transitive clause, and the subject of a transitive clause. The unmarked form of the word *venala* 'wife' is subject of the intransitive clause (1) and object of the transitive clause (2), while it requires the subject marker *-qmo* when subject of the transitive clause (3).

(1)	*Ovake-ni*	*venala*	*vitive.*	
	Ovake-possessive	wife	she_will_go	'Ovake's wife will go.'
(2)	*Ovake-ni*	*venala*	*apilimoq.*	
	Ovake-possessive	wife	he/she_smote_her	'He/she hit Ovake's wife.'
(3)	*Ovake-ni*	*venala-qmo*	*apilimoq.*	
	Ovake-possessive	wife-subject	she_smote_her/him	'Ovake's wife hit him/her.'

2.3.7 Sentences. Within a sentence in Gahuku a dependent clause nearly always precedes the clause it is subordinate to; if two or more subordinate clauses precede the clause they are subordinate to, the order of said subordinate clauses depends on the nature of the subordinate relationships; and the main clause is nearly always sentence final. A verb which expresses a temporal relationship with another clause is marked by a relator suffix which distinguishes whether its subject is the same as or different from the subject of the verb in the immediately following clause. These temporal clauses may be strung together in a very long chain to form an extended sentence whose final verb often has different subject morphemes, a greater range of tense possibilities, different mood morphemes, and different phonological characteristics than earlier verbs in the sentence. Sentences in narrative and procedural discourse often open with a temporal clause which repeats the final verb of the previous sentence. For example:

...*gosavaq*	*noune.*	*gosavaq*	*okunike*...	
sharpen	we_are	sharpen	after_we_have	

'...we sharpen it. After we sharpen it...' (HB:2-3)

A description of Gahuku sentence structure is given in Chapter **6**.

3 MINIMAL CLAUSE PREDICATES

3.1 Introduction. A clause in Gahuku is a unit of structure whose only obligatory constituent member is a predicate tagmeme, whose slot may be filled by a verb phrase or a predicative enclitic. Clauses are either Independent or Dependent: a clause which may by itself constitute a complete sentence will be called an Independent clause, and a clause which may not stand by itself phonologically or morphologically as a complete sentence will be called a Dependent clause.

A predicate slot in an Independent clause in Gahuku may be filled by a verb phrase or by a predicative enclitic. The latter will be described in Section **3.8.**

Verb phrases may be minimal or expanded. Verb phrases containing aspectual complexes will be called expanded verb phrases. An expanded verb phrase contains one or more additional words than a minimal verb phrase, due to the insertion of aspectual complexes. These are described in Chapter **5;** minimal[1] verb phrases are discussed in the remainder of this section.

Minimal verb phrases in Independent clauses occur with the full range of affixes described in this section, except for the existential verb, whose structure is described in Section **3.7.**

Minimal verb phrases consist of a verb, preceded by an optional adjunct or up to three optional preverbs. Using parentheses to indicate optional units, the structure of minimal verb phrases is thus as follows:

$$\text{Minimal verb phrase} = \left(\left\{ \begin{matrix} \text{adjunct} \\ (\text{preverb})\ (\text{preverb})\ \text{preverb} \end{matrix} \right\} \right)^{2} \text{verb}$$

1. *Minimal* here thus does not mean "the smallest number of morphemes possible," but the structure of verb phrases which may consist of only one phonological word.

2. In this study braces enclose alternates on separate lines from which a choice is to be made.

In Sections **3.2, 3.3,** and **3.4** the structure of verbs is presented; in Section **3.5** the structure of verb phrases containing adjuncts is discussed, and in **3.6** that of verb phrases containing preverbs. Appendix A, Chart 6 gives a summary of the structure of minimal verb phrases, with illustrative examples.

3.2 Overall Structure of Verbs. A minimal verb phrase containing only a verb is composed of one word. Before discussing in detail the elements of a verb, I shall give several formulas to present an overall pattern of its surface structure. These are not tagmemic formulas in the sense of indicating slot and filler, but only indicate slots. In each slot occurs either a morpheme class or a morpheme complex which can be further analyzed. The forms and functions of the morphemes in each class are described later in this section.

Verbs in most Gahuku Independent clauses (and many Dependent clauses as well) have the following general overall pattern, in which v = verb, prog = progressive prefix, v.nuc = verb nucleus, benef = benefactive suffix complex, neg = negative suffix, tense = tense complex, sub = subject complex:

v = (prog) v.nuc (benef) (neg) (tense) sub mood

This pattern applies to both Imperative and Nonimperative verbs, except that a verb in an Independent clause whose mood morpheme is Imperative contains no tense complex morphemes. A description of elements of Imperative verbs is given in Section **3.4.**

The nucleus of a verb consists of a verb stem which may be preceded by a prefix or contain an infix indicating the person and number of the direct or indirect object of the verb. Certain verb stem subclasses require a prefix, one subclass may occur with an infix, and the rest take no prefix or infix. All these are described in Section **3.3.2.**

The benefactive complex consists of three parts, including a pronominal suffix designating the person and number of the beneficiary of the action. This complex is described in Section **3.3.3.**

There are a number of suffixes which group together in meaningful combinations which express time relationships. These suffixes, which are called the tense complex affixes, are described in Section **3.3.5.** The position of the negative morpheme varies when it occurs with various of these complexes; its specific position will be indicated in the discussion of each tense complex. The overall structure of the morpheme combinations (excluding negative) which can occur in the various tense complexes conforms to the following pattern, in which sta = stative suffix, fu = future suffix, perfect = perfect suffix complex:

$$\text{tense} = \left(\left\{\begin{matrix}\text{sta}\\ \text{perfect}\end{matrix}\right\}\right)\ (\text{fu})$$

Appendix A, Chart 5 gives a summary of the structure of minimal verbs, with illustrative examples.

Verbs in some Dependent clauses have structures which differ from that given above. The patterns of such verbs and a description of their elements is given in Chapter **6.**

3.3 Elements of Nonimperative Verbs. A description of all the elements of nonimperative verbs is given in this section, generally in their linear order. (A more complete description of mood morphemes is given in Chapter **4.**) In subsections dealing with affixes, all illustrations will use *ITALIC CAPS* for the affixes under discussion.

3.3.1 Progressive Prefix. A progressive prefix (prog) may precede the verb nucleus. This prefix has the basic form *no-;* the vowel conforms to the ablaut rule described in Section **2.3.4** (i.e., becomes /i/ with polyfocal subjects). The vowel of the prefix is lost before *a*-initial verb nuclei.

Note that the environment which conditions the loss of the vowel is both morphological and phonological. This stems from the fact that if a zero verb stem occurs (the verbs "be" and "come"), the vowel of the progressive prefix is retained preceding the vowel of the following subject suffix. The failure of the vowel of the prefix to delete in this environment would suggest that these two stems were historically expressed by some consonant which has since been lost. This hypothesis is supported by the fact that in the adjacent Benabena language the stem of the verb "be" is *h-*.

The progressive prefix indicates action in progress. When occurring with no tense suffix, it indicates an action currently in progress. The only tense complex suffix which may co-occur with the progressive prefix is the future suffix; and the negative suffix co-occurs with the progressive prefix only with the zero stem of the verb "be". Examples illustrating the progressive prefix are as follows:

NO - v - ive[3] prog-go-he	'He is going.'
NI - v - ave prog-go-they	'They are going.'
N - al - ive prog-get-he	'He is getting.'
NO - v - it - ive prog-go-fu-he	'He will be going.'
NO - Ø - am - ive prog-be-neg-he	'He is not (here).'

3. A hyphen attached to an isolated morpheme indicates a bound form (i.e., an affix or a stem which requires a prefix or suffix). In the examples in this study hyphens separate morphemes only where recognition of the individual morphemes is pertinent to the discussion. The symbol [_] in English glosses joins words which together represent one Gahuku word-or-morpheme combination not separated by hyphens.

3.3.2 Verb Nuclei. The verb nucleus (v. nuc) consists of a verb stem and any required affix designating the person and number of the direct or indirect object.

Verb stems (except for the existential verb) may be divided into classes according to the alternate sets of affixes they take, and according to whether or not they occur with a pronominal prefix or infix. Fig. 2 presents a convenient summary of the verb stem classes. The major class numbers in parentheses at the left in Fig. 2 include all the sub(classes) to the right; e.g., class 10 includes (sub)classes 11, 12, and 13.

		No infix or prefix	Obligatory prefix	Optional infix
Occur with set 10 suffixes	(10)	11	12	13
Occur with set 20 suffixes	(20)	21	22	—
Occur with set 30 suffixes	(30)	31	—	—

Fig. 2. Gahuku Verb Stem Classes

I shall now give a description of the features of each verb stem class. This will be followed by a group of illustrative examples of all these classes.

Classes 11, 21, and 31 occur with no pronominal prefixes or infixes.

Classes 12 and 22 require one of six prefixes which designate the person and number of the direct or indirect object of these verbs. The basic forms of these prefixes are:

n-	'1st sg.'	*l-*	'1st pl.'
g-	'2nd sg.'	*lk-*	'2nd pl.'
a-	'3rd sg.'	*k-*	'3rd pl.'

Vowels are supplied between any resulting consonant clusters by the following general rule, to be known as the vowel copying rule, in which V_α represents any specific vowel, C_1 any consonant except glottal stop, and C_2 any consonant:

$$C_1C_2 / \_\_V_\alpha \longrightarrow C_1V_\alpha\, C_2$$

The 3rd singular prefix *a-* is subject to the following phonological rule, which will be referred to as the vowel reduction rule, which applies at morpheme boundaries:

$$V_\alpha / \_\_ \quad \left\{ \begin{matrix} o \\ a \\ V_\alpha \end{matrix} \right\} \longrightarrow \emptyset$$

These pronominal prefixes (and the rules which apply to them) are the same as those which occur with certain other morpheme classes; e.g., they are the same as

the possessive prefixes which occur with certain noun stem classes (Sect. **2.3.1**) and the pronominal prefixes occurring with some adjuncts (Sect. **3.5**).

Classes 11, 12, 21, and 22 each contain certain stems with one or more vowels which exhibit regressive vowel harmony. In each case those stems could be marked as constituting a separate subclass. It is not possible to list these stems without the vowels and try to extend the vowel-copying rule to supply the correct vowels, because the data will not warrant it. The alternative adopted here however, is to consider that those stems represent cases where some undetermined vowel, not now existent in the language, has been absorbed by other vowels by the application of what will be referred to as the V-assimilation rule.[4] That rule is as follows:

/V/	/___ Cu	→	/u/
	/___ Ci	→	/i/
	/___ {CC, Ce}	→	/e/
	/___ {Co, Ca}	→	/o/

It should also be noted that undetermined vowels of classes 11 and 12 stems are subject to the ablaut rule (Sect. **2.3.4**); whereas undetermined vowels of classes 21 and 22 stems are not.

Class 13 consists of a stem which may occur with an optional infix expressing the person and number of the object. These infixes are the same as the pronominal prefixes which occur with class 12 and 22 verb stems, except that 3rd singular is ∅ instead of /a/.

A number of verb stem classes have very limited membership. The only member of class 13 is *aqnig-* 'see', whose optional infix, which occurs before the final consonant of the stem, is used only to specify the person and number of human objects. (The infix does not occur if the object is nonhuman; and even when the object is human the infix is often not used.) The only three members of class 31 are *l-* 'say', *v-* 'go', and *∅-* 'be'. The only members of class 12 known to me are *-ol* 'consume (with hunger)', *-qmeget-* 'follow', and *lVqm-* 'get (with human objects)'. I know of only a handful of members of class 22 verb stems. Classes 11 and 21 are the most common; but even so, there are not a great many stems which belong to these classes. The majority of verb phrases in the language contain an adjunct as well as a verb stem.

Examples illustrating these various classes and their pronominal affixes (including examples with vowel alternation), some using the future *(-at/-it)* suffix, some the negative *(-am/-em)* suffix, and all using either the 1st sg. *(-uve)*, 3rd sg. *(-ive)*, or 3rd pl. *(-ave)* indicative subject suffix complex, are given below. In the case of forms with the negative suffix, "past" is only one of several

4. Since comparative studies have not been done to determine what that protovowel was, it will be represented by V when the basic forms of stems containing those vowels are referred to.

time relationships which may be conveyed by stems that are unmarked as to tense (cf. Sect. **3.3.5**).

Class 11 (no infix or prefix)

huk- cut	*huk-at-ive* cut-fu-he	'He will cut it.'
	huk-am-ive cut-neg-he	'He did not cut it.'
mVl- put	*mol-at-ive* put-fu-he	'He will put it.' [V-assimilation rule]
	mil-at-ave put-fu-they	'They will put it.' [ablaut rule]
	mul-uve put-I	'I put it.' [V-assimilation rule]

Class 12 (obligatory prefix)

-qmeget- follow	*ne-qmeget-at-ive* me-follow-fu-he	'He will follow me.'
	ge-qmeget-am-ive you-follow-neg-he	'He did not follow you.'
-lVqm- get	*ne-leqm-at-ive* me-get-fu-he	'He will get me.' [V-assimilation rule]
	a-leqm-at-ive him-get-fu-he	'He will get him.'
	a-liqm-at-ave him-get-fu-they	'They will get him.' [ablaut rule]

Class 13 (optional infix)

aqnig- see	*aqnig-at-ave* see - fu-they	'They will see it.'
	aqni-Ø -g -at-ive see-him...-fu-he	'He will see him.'
	aqni-ka -g-at-ive see-them...-fu-he	'He will see them.'
	aqni-ku-g - uve saw-them...- I	'I saw them.'
	aqni-ka - g-am-uve saw-them...-neg-I	'I did not see them.'

Class 21 (no infix or prefix)

al- get	*al-it-ive* get-fu-he	'He will get it.'
	al-em-ive got-neg-he	'He did not get it.'
gVl- sense	*gil-it-ive* sense-fu-he	'He will sense.' [V-assimilation rule]
	gel-em-ive sensed-neg-he	'He did not sense.' [V-assimilation rule]
	gul-uve sensed-I	'I sensed.' [V-assimilation rule]

Class 22 (obligatory prefix)

-m- give	*ni-m-it-ive* me-give-fu-he	'He will give me.'
	ne- m -em-ive me-gave-neg-he	'He did not give me.'
	luku - m - uve you(pl)-gave-I	'I gave you all.'
-pVl- smite	*ni - pil-it-ive* me-smite-fu-he	'He will smite me.' [V-assimilation rule]
	ne - pel - em-ive me-smite-fu-he	'He did not smite me.' [V-assimilation rule]
	no - gu-pul -uve prog-you-smite-I	'I am smiting you.' [V-assimilation rule]

Class 31 (no infix or prefix)

v- go	*v-it-ive* go-fu-he	'He will go.'
	v- am -ive went-neg-he	'He did not go.'

Before proceeding to a discussion of individual suffixes and suffix complexes, it is worth noting that suffixes in general occur in two or more alternate forms, usually depending on what morpheme immediately precedes. When various verb stems immediately precede suffixes, the distribution of the alternate forms of the suffixes is such that verb stems must be grouped into three major classes, not two (i.e., into class 10, 20, and 30 stems). One might have expected that the occurrence of suffixes in only two alternate forms which were otherwise unconditioned would have led to the establishment of two stem classes. Note,

however, the following summary of the distribution of the alternate forms of the future and negative suffixes with the three major verb stem classes, drawn from the above illustrations:

	Future	Negative
Following class 10 v.stems	*-at*	*-am*
Following class 20 v.stems	*-it*	*-em*
Following class 30 v.stems	*-it*	*-am*[5]

If a morpheme other than a verb stem precedes a given suffix, that morpheme determines which form of the suffix will occur. The realization rules in this section specify these choices.

Appendix A Chart 4 gives a summary of the structure of verb nuclei, with illustrative examples.

3.3.3 Benefactive Suffix Complex. The benefactive suffix complex (benef) consists of three obligatory parts: (1) a compounding suffix (Cd), (2) a benefactive pronominal suffix, and (3) a benefactive indicating suffix (ben).

The compounding suffix occurs not only as an element of the benefactive complex but in several other places in verb structure (cf. Sect. **3.3.5.2**). The compounding suffix is a vowel whose basic form is /o/, but which is subject to the ablaut rule and then to the following rule, to be known as the class 20 verb-stem rule:

$$\left\{\begin{matrix} a \\ o \end{matrix}\right\} \quad / \text{ class 20 v.stem } \_\_ \longrightarrow /e/$$

That is, the form of the compounding suffix is *-i* with polyfocal subjects; it is *-e* with monofocal subjects following class 20 verb stems; and it is *-o* with monofocal subjects following class 20 or 30 verb stems or a benefactive indicating suffix.

The benefactive pronominal suffixes have the same general form as the direct or indirect object pronominal prefixes which occur with class 12 and 22 verb stems, except that 3rd singular is ∅ and the rule specifying the vowels is different. The forms of the benefactive pronominal suffixes may be summarized in chart form as follows:

5. There is no semantic basis for the three classes of stems. It is tempting to try to make this alternation phonological. But there is no way of alternate segmentation combined with phonological rules to account for the data. Since syllable structure forbids any consonant except glottal stop concluding a syllable, we would prefer to have stems ending in a vowel. This would lead to postulating class 20 stems ending in /e/. To arrive at the *-it* form of the future morpheme which occurs with class 20 stems, however, would still require postulating either *-at* or *-it* as the basic form of the future suffix, and subsequent vowel reduction. In either case the vowel reduction rules necessary to account for the future forms would contradict the vowel reduction rules necessary to account for either the negative or the stative morphemic forms.

	In stative tense and with poly-focal subjects	Elsewhere
1st singular	*-ni*	*-ne*
2nd singular	*-gi*	*-ge*
3rd singular	*-Ø*	*-Ø*
1st plural	*-li*	*-le*
2nd plural	*-liki*	*-leke*
3rd plural	*-ki*	*-ke*

Stated in formal terms, the benefactive pronominal suffixes have vowels whose basic form is /e/, but which conform to the ablaut rule and one other phonological rule[6] as follows:

$$V_{\text{benef pronoun}} \quad / \_\_\_ Ci \rightarrow /i/$$

The benefactive-indicating suffix (ben) has the form *-m* preceding the stative suffix, and *-t* elsewhere.

The benefactive suffix complex is used to express a number of sememic relationships involving humans who are in some way connected with the goal of an action. The specific relationship to the action of the individual(s) whose person and number are signified by the benefactive pronominal suffix depends on the verb stem. Some of these sememic relationships are:

(a) Individuals affected by an action.

e.g., *gale z - i t - ave* 'They will bury it (nonbenefactive).'
pit attach-fu - they

gale z - I - Ø - T-at-ave 'They will bury him (benefactive).'
pit attach - Cd-him-ben-fu-they

gale z - E - Ø - M- ik - uve 'I have buried him (benefactive).'
pit attach-Cd-him - ben-sta - I

(b) Individuals who are beneficiaries of an action.

e.g., *huk - O - GE - T - at - ive* 'He will cut it for you.'
cut - Cd-you-ben-fu-he

(c) Individuals with reference to whom an action is done.

e.g., *asuq Ø- Ø - NE - T - at - ive* 'It will end for me/I will be finished with.'
finish be-Cd-me - ben - fu - it

6. This rule is needed to account for the fact that these vowels are /i/ with monofocal as well as polyfocal subjects if the next vowel is /i/ (viz., that of the stative suffix *-ik*).

3.3.4 Negative Suffix. The basic form of the negative suffix (neg) is *-am;* its vowel is subject to the class 20 verb stem rule. That is, the form of the negative morpheme is *-em* if it follows a class 20 verb stem. If the negative follows either a class 10 or class 30 verb stem, the benefactive indicating suffix *-t,* or the perfect suffix, the form of the negative suffix is *-am.*

The negation of a past action is expressed using the negative suffix with no tense suffixes. The negative suffix and the progressive prefix cannot co-occur (except with *ϕ-* 'be'); likewise, the stative and negative suffixes do not co-occur. The negative suffix with no tense suffix serves to signal the negation of an action presently in progress or of a present state, as well as the negation of a past action. All three glosses are given in the first example below.

v - AM-ive	'He did not go / he is not going / he has not gone.'
went-neg-he	
al - EM-uve	'I did not get it.'
got-neg-I	
al - e - ge - t - AM-uve	'I did not get it for you.'
got-Cd-you-ben-neg-I	

3.3.5 Tense Suffix Complexes. There are five suffix complexes which reflect various sememic specifications of the time of an action; these are labelled future, perfect, future perfect, stative, and contraconsequential. Each of these tense complexes consists of one or more suffixes and will be described in turn.

"Past time" is a sememic unit but not a morphemic one. That is, past time is indicated by the unmarked form of the verb stem.[7] The topic mood suffix *-moq* without any tense indicator signals an action performed at some specific point of time in the distant past. The indicative *(-ve/-ne)* or interrogative *(-he/-pe)* suffixes (see matrices 3 and 6, Sect. **3.3.6**) without any tense indicator usually signal an action which occurred in the recent past, but in rare instances can also express an action which is about to take place.

v - i - ve	'He went (recent past).'
went-he-indicative	
v - i - moq	'He went (distant past).'
went-he-topic	

3.3.5.1 The *future tense* suffix (fu) signals an action which is expected to occur at some future time. The future suffix may be preceded by the negative suffix. The rule specifying the forms of the future tense morpheme is:[8]

7. One is tempted to postulate a zero morpheme for past tense. To do so, however, would complicate the description considerably; therefore it is simpler to set up one "unmarked tense" as in English.

8. Ordered subrules are indicated in this study by subscript numbers to the left of the solidus introducing the conditioning environment. Superscript letters M, P, and S indicate Morphemic,

$$^{M}\text{fu}\quad {}_{1}/\ {}^{M}\left\{\begin{array}{r}\text{class 10 v. stem}\_\_\_\\ \text{benefactive}\_\_\_\\ \text{stative}\_\_\_\end{array}\right\} \rightarrow {}^{P}/\text{at}/$$

$$_{2}/\ \ldots\ldots\ldots\ldots\ldots\ldots \rightarrow {}^{P}/\text{it}/$$

That is, the form of the future suffix is *-at* if it follows a class 10 verb stem, the benefactive indicating suffix *-t,* or a stative suffix. If the future suffix follows a class 20 or class 30 verb stem, the perfect suffix, or the negative suffix, its form is *-it.*

The progressive prefix occurs with the future suffix to indicate an action which is assumed will be in progress at some future time.

Examples of the future suffix:

huk-AT-ive cut - fu - he	'He will cut it.'
huk-am-IT-ive cut - neg - fu - he	'He will not cut it.'
huk-o - ∅ - t - AT-ive cut - Cd - him - ben - fu - he	'He will cut it for him.'

3.3.5.2 The *perfect tense* suffix complex consists of two parts: (1) the compounding suffix (Sect. **3.3.3**), and (2) the perfect suffix. The perfect complex may be followed by the negative suffix.

In its surface form the perfect morpheme is *n-* when it precedes the negative suffix, a 2nd singular suffix, or a polyfocal subject. Its form is *-ne* with class 20 verb stems preceding a 3rd singular or future morpheme, and *-no* in 3rd singular with class 10 and class 30 verb stems, and with 1st person subjects with all verb stems.

Historically it seems that originally the perfect tense was expressed by forms comprising two words. The first word ended in the compounding suffix and the second began with the progressive prefix (Sect. **3.3.1**). The word division was then lost, and the vowel of the progressive morpheme was conditioned by its phonological environment. We may then say the basic form of the perfect suffix is *-no;* its vowel is subject to the ablaut rule plus the following phonological fronting rule:

$$/\text{o}/\quad /\ \text{en}\_\_\_\text{i} \rightarrow /\text{e}/$$

The vowel reduction rule (Sect. **3.3.2**) was then applied subsequently.

Phonemic, or Sememic units. The purpose of ordered subrules is that the conditioning environment listed for one subrule is applicable only if conditioning environments of previous numbered subrules have not been met. Therefore the conditioning environment of the final subrule may be left completely unspecified. Rules presented in formulas will thus be as brief as possible, but in the prose presentation of the same material this redundant or unnecessary material will be made specific. The symbol . . . indicates the unspecified environment of the final subrule.

The perfect tense is used to express an action which has occurred at some time in the past which is not specified; the speaker is indicating that the exact time is irrelevant. In that sense it parallels the use of the English perfect tense.

Examples of the perfect tense:

venaq hamoq al E-NO-uve wife one get-Cd-pf-I	'I have gotten one wife.' (=I have one wife)
aqnig-O-NO-uve see-Cd-pf-I	'I have seen.' (=I am visually acquainted with)
gel-E-NO-uve sense-Cd-pf-I	'I have sensed.' (=I am mentally familiar with; I know)
gil-I-N-ave sense-Cd-pf-they	'They have sensed.'
gel-E-NE-ive sense-Cd-pf-he	'He has sensed.'

3.3.5.3 The *future perfect* tense complex consists of three parts: (1) the compounding suffix, (2) the perfect suffix (pf), and (3) the future morpheme (fu). An optional negative morpheme may occur between the perfect suffix and the future suffix.

The future perfect tense complex expresses a state which it is expected will exist in the future, or a state which is presumed to exist at present, the existence of which is usually deduced logically. In this latter sense it parallels the English usage of "must have" to denote logical deduction or inference.

Examples of the future perfect tense complex:

mol-O-NO-IT-ive put-Cd-pf-fu-he	'He will have put it/he probably put it/he must have put it.'
al-E-N-AM-IT-ive get-Cd-pf-neg-fu-he	'He will not have (gotten) it/he will probably not have (gotten) it/he must not have (gotten) it.'
al-I-N-IT-ave get-Cd-pf-fu-they	'They will have (gotten) it/they will probably have (gotten) it/they must have (gotten) it.'

3.3.5.4 The *stative tense* complex (sta) consists of one morpheme whose basic form is *-ok*. Its vowel is subject to the ablaut rule, and then to the class 20 verb stem rule. Its vowel also becomes /i/ following the benefactive indicating suffix *-m*. In summary, the form of the stative suffix is *-ik* with polyfocal subjects and following the benefactive complex; with monofocal subjects its form is *-ek* following class 20 verb stems and *-ok* following class 10 and class 30 verb stems.

The stative tense is used to express a present state which is the result of an action which began (but was not necessarily completed) in the past. Examples of the stative suffix:

v-OK-ave go-sta-he	'He is gone.'

v - IK - ave go - sta - they	'They are gone.'
ni - vis - EK-ave me - sicken - sta - it	'It has made me sick/I am sick.'
l - OK - ave burn - sta - it	'It is cooked.'
asuq Ø - OK - ave finish be - sta - it	'It is finished.'

3.3.5.5 The *contraconsequential* tense complex consists of the stative suffix and the future suffix.[9]

The contraconsequential tense complex expresses an action which the speaker thinks is likely to occur if some other action does not prevent it. In this sense it can be compared to the English conjunction "lest." In English, however, a "lest" clause is always a dependent one, and a clause expressing the main thesis normally occurs preceding it. In Gahuku the clause containing the contraconsequential complex may occur by itself as an Independent final clause, paralleling the English use of the auxiliary "might. . . (otherwise)." The contraconsequential construction usually expresses an action which the speaker does not desire to happen.

ge - pel - EK-AT-ive you - smite - sta - fu - it	'It might smite you/lest it smite you/I don't want it to smite you.'
huk - OK - AT - ive cut - sta - fu - it	'It might cut it/lest it cut it/I don't want it to be cut.'
huk - IK - AT - ave cut - sta - fu - they	'Lest they cut it/they might cut it/it would be bad if they cut it.'

3.3.6 Subject Complex Suffixes. Subject suffix combinations which denote person and number in Gahuku cannot be easily segmented. This phenomenon is very prevalent in New Guinea highlands languages. As a result, those who write descriptions of verb structures in these languages have usually given up trying segmentation of such suffix combinations, and instead present sets of these subject indicators as compound suffixes.[10] In this way, for them one set of subject suffix combinations in Gahuku, which occurs following class 30 verb stems signifying the indicative mood, would be given in a bidimensional array as follows, with person on the horizontal axis and number on the vertical axis:

	1st	2nd	3rd
singular	*-uve*	*-ane*	*-ive*
dual	*-usive*	*-asive*	*-asive*
plural	*-une*	*-ave*	*-ave*

9. For the negation of the contraconsequential tense, see Section **5.4.**

10. For earlier presentations of some of this Gahuku material see Deibler 1964 and 1968. Compare lists in Franklin 1971.39, 40; Scott 1968.49, 53; and Thurman 1973.37.

Presented in this manner, the only two phonological segments that are readily identifiable as recurring forms to which specific meanings may be assigned unequivocally are *-si* 'dual' and *-u*, for which the meaning '1st person' can be listed. Single meanings cannot be assigned to the remaining forms *-a*, *-i*, *-ve*, or *-ne*.[11]

However, it appears that using a matrix technique[12] segmentation is possible and useful when the various sets of subject suffix combinations which occur in different morphemic environments are compared. We shall, in effect, put each set of subject suffix combinations in a bidimensional array similar to that above.

If we take the set of subject suffix combinations for the indicative mood listed above, and then permute the dual and plural rows in order to bring like forms as close together as possible, the matrix (M_0) appears as:

M_0	1st	2nd	3rd
singular	*-uve*	*-ane*	*-ive*
plural	*-une*	*-ave*	*-ave*
dual	*-usive*	*-asive*	*-asive*

Note that the pronominal subject suffixes of verbs never distinguish between 2nd and 3rd person in plural and dual forms (except in the Imperative mood, cf. Sect. **3.4**). Thus most sets of subject suffix combinations distinguish only seven person-number forms. Using the monofocal vs. polyfocal distinction (Sect. **2.3.4**) we may say that monofocal subjects distinguish five person-number combinations and polyfocal subjects distinguish only two. If a distinction between 2nd and 3rd person is necessary to avoid ambiguity between nonsingular subjects in a given discourse context, a free pronoun must also be used. Listing only one form for 2nd or 3rd plural and one form for 2nd or 3rd dual (as I shall do shortly), matrix M_0 could be given with only seven person-number forms listed; but for the moment all nine are retained along with the redundancy just noted.

Let us now note the outcome of a classical tagmemic segmentation of the suffix combinations given in M_0. If *-u* is recognized as signifying '1st person', it seems reasonable to separate the initial vowels of these suffix combinations from the remainders, and designate these vowels as forms denoting 1st, 2nd, and 3rd person morphemes comprising the filler class of a tagmeme labelled Person. Of these morphemes, the 1st person morpheme would have the form *-u*, the 2nd person morpheme would have the form *-a*, and the 3rd person morpheme would have the allomorphs *-i* and *-a*.

11. The *-e* can be separated as common to *-ve* and *-ne*, but since the corresponding interrogative allomorphs also end in *-e* and there are no alternate sets of suffixes in which /v/ and /n/ occur with a contrastive following vowel, no meaning can be assigned to the *-e*.

12. Note Pike's (1963) treatment of Fore material. Further discussion of matrix technique is given in Pike and Erickson (1964). See also Pike and Becker (1964) for a presentation in which submatrices of stem formatives are extracted from matrices of patterns of stem alternants, leading to suggestions of historical development.

Taking the remainders of the subject suffix combinations of M_0, it is clear that we may separate *-si* as signifying "dual" from the *-ve* and *-ne* portions of the suffix combinations. This would lead to postulating a second tagmeme labelled Number, whose filler class consisted of three members: a *-si* morpheme signifying "dual" and two zero morphemes signifying "singular" and "plural."

Then we must deal with the *-ve* and *-ne* portions of the suffix combinations of M_0. As we shall shortly see, these forms contrast with other forms signifying "interrogative." Therefore following the classical approach we would postulate a third tagmeme labelled Mood. One member of its manifesting class would be a morpheme signalling "indicative" whose allomorphs were *-ve* and *-ne*.

In order to see the picture a little more clearly, after segmenting the suffix combinations of M_0 as suggested above, let us group the resultant forms into three matrices M_{0a}, M_{0b}, and M_{0c}. Each of these will be given its appropriate tagmeme label of Person, Number, or Mood. Within each of these matrices will be listed according to person and number[13] the forms of the filler class of morphemes which were segmented as suggested above. Matrices M_{0a}, M_{0b}, and M_{0c} are then as given below.

Person

M_{0a}

	1st	2nd	3rd
singular	-u	-a	-i
plural	-u	-a	-a
dual	-u	-a	-a

Number

M_{0b}

	1st	2nd	3rd
singular	—	—	—
plural	—	—	—
dual	-si	-si	-si

Mood (Indicative)

M_{0c}

	1st	2nd	3rd
singular	-ve	-ne	-ve
plural	-ne	-ve	-ve
dual	-ve	-ve	-ve

In each of these matrices certain forms are encircled to bring into focus features of homonymity; any one pattern of encircled forms within a matrix will be called a specific matrix shape. Since columns express person, in M_{0a} we wish to see clearly that the *-a* allomorphs of person exhibit homonymity across columns, in contrast to the *-u* form. Since rows express number, in M_{0b} we wish to see clearly that the zero allomorphs of number exhibit homonymity across rows, in contrast to the *-si* form. In M_{0c} we wish to see clearly those allomorphs of Indicative Mood which exhibit homonymity across both columns and rows. We are now left with forms which are ambiguous as to which person they signal (e.g., *-a* signals 2nd or 3rd person). We are also left with pairs of allomorphs which signal one meaning parameter (e.g., *-i* and *-a* signal 3rd person).

Up to this point these statements contain nothing very surprising. However, it is the vast complexity of the two features just noted which leads to dissatisfaction with the classical approach. Were we to compare the forms within M_0 with other

13. The words 'person' and 'number' will thus be used in two senses: (1) as the names of the tagmemes (for which initial capital letters will be used), and (2) as the label of the semantic category by which the constituent members contrast. It is hoped that the text will enable the reader to keep the two senses separate.

sets of subject suffix combinations which occur in other morphological environments, we would find that all of the morphemes or allomorphs of M_{0a}, M_{0b}, and M_{0c} have further extensive sets of alternate forms which are determined by these other morphological environments.[14] The classical segmental approach would require the listing of the specific morphemic conditioning environments for each alternate form of a morpheme. In the case of the *-i* and *-a* allomorphs within M_{0a} which signify 3rd person, this would mean that the conditioning environment for the one was the zero morpheme signifying singular, and the conditioning environment for the other was a zero morpheme signifying plural. An approach which postulates allomorphs conditioned by two zero morphemes is not very appealing.

Let us ask ourselves why such a solution turns out to be so unsatisfactory. The question hinges on the relation of morphemic to sememic structure. The classical approach assumed that M_{0a} consisted of three morphemes denoting 1st, 2nd, and 3rd person, one of which occurred in alternate forms; and that M_{0b} similarly consisted of three morphemes denoting singular, plural, and dual. This in turn assumed that sememes of person are manifested in Gahuku in a set of three morphemes, and that sememes of number are manifested in a set of three morphemes. However, as the data show, this is clearly not the full truth. Sememes of person and number are manifested simultaneously in the forms that fill the Person and Number slots, and, in cases where there are allomorphs of one morpheme manifesting the Mood tagmeme (as in M_{0c}), in the forms that fill the Mood slot as well.

In other words, in Gahuku, of the nine possible combinations of the three sememes of person and the three sememes of number, seven of these are realized in morphological structure as distinctive suffix combinations on verbs indicating subject. These seven distinctive suffix combinations are in each instance made up of forms assignable to three successive tagmemes which have been labelled Person, Number, and Mood. A form manifesting a slot in one of these tagmemes potentially signals one or more various meaning components of person and number. Then, since the subject of the clause requires a decision about person and number to be made designating which forms will fill these three tagmemic slots in the verb, the sememic decision as to which of the seven cells of the three successive matrices will be selected for encoding is made first. Then a realization rule, which specifies that certain matrices (i.e., sets of alternate forms of constituent morphemes) will manifest the Person, Number, and Mood tagmemes in specific morphemic environments, will allow the selection of a form from the appropriate cell of a specific matrix.

The approach to be suggested here is superior to the classical segmental approach in that it captures several generalizations. Not only are (a) the phonemic forms of different morphemes sometimes identical even within the set of

14. None of the alternate forms of morphemes expressing person and number of the subject of the verb are phonologically conditioned.

allomorphs that occurs in one morphological environment (e.g., the *-a* of 2nd and 3rd person of M_{0a} above), but also (b) the matrix shapes are often the same in various morphemic environments, even though the specific phonemic forms of the morphemes themselves may be different. And (c) inasmuch as the same matrix shapes are retained across language boundaries in spite of phonological differences between the forms themselves, these matrix shapes are extremely significant as we compare them with the results of similar studies made in related languages, because of their clear indication of language affinity (cf. Deibler 1968.167–68). For this purpose we need to be able to see at a glance not only such patterns but the phonemic shape of the forms within them.

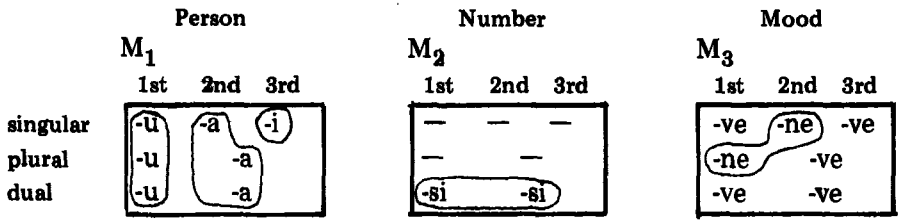
If matrices similar to M_{0a}, M_{0b}, and M_{0c} are abstracted from matrices established for the subject suffix combinations which occur in other morphemic environments (e.g., following the future morpheme, following different verb stems, or in different moods), and if like forms within the matrices are again encircled, the generalizations about matrix shapes just noted become apparent.

The approach which is adopted here and built around such matrices will enable us to formalize a small number of realization rules which account for the alternate forms of all the sets of subject suffix combinations. The end result of this approach will be that from each contrastive set of alternate forms of subject suffix combinations are abstracted sets of forms placed within three matrices. These three sets of forms will manifest Person, Number, and Mood tagmemes. Each Person and Number tagmeme matrix will then contain one set of alternate forms of seven morphemes which potentially contrast by distinctions of both person and number.[15] Each Mood matrix will either contain two allomorphs of one morpheme which differ by distinctions of both person and number, or one allomorph with no contrast by distinctions of person or number (i.e., all the forms within the cells of the matrix will be alike). As stated above, in agreement with the sememic components of person and number of the subject of the clause, one form is selected from the corresponding position or cell in each of three successive matrices. Rules will also be presented stating which matrices (i.e., which sets of alternate forms of the morphemes of the Person, Number, and Mood tagmemes) occur in a given morphemic environment.

There is a large set of sets of subject suffix combinations, but the total system can be accounted for by a small set of matrices of alternate forms of the morphemes of Person, Number, and Mood. I shall therefore select from the complete set of sets of subject suffix combinations a small subset whose forms,

15. There is still good justification for continuing to use the labels Person and Number for the tagmemes whose morphemes distinguish both person and number. The end results will show that there is never a Person matrix in which forms in any given row are identical across the three columns (which distinguish person), whereas there are often cases where the forms in a column are identical. Similarly, there is never a Number matrix in which forms in a given column are identical down the three rows (which distinguish number), whereas there are often cases where the forms in a row are identical.

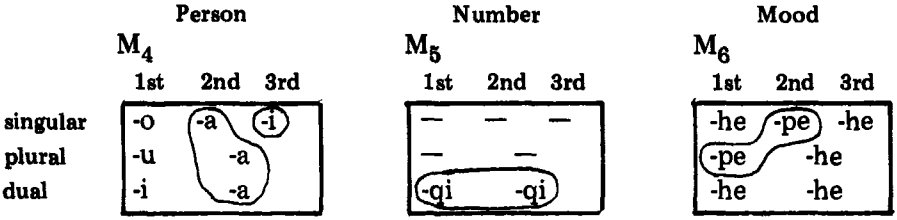
when segmented as suggested above, will provide all the morphemic matrices[16] necessary to account for the complete set of sets of subject combinations.[17] First, M_{0a}, M_{0b}, and M_{0c} will be rewritten as matrices M_1, M_2, and M_3 as given below, listing within each matrix only seven forms instead of nine. The forms which indicate non-1st person for plural and dual will be written only once, and positioned half way between the 2nd and 3rd person columns, to signify that these two sememic distinctions are never separated by these forms.



Next, the set of subject suffix combinations which express interrogative mood in the future tense are listed as follows:

	1st	2nd	3rd
singular	*-ohe*	*-ape*	*-ihe*
plural	*-upe*	*-ahe*	
dual	*-iqihe*	*-aqihe*	

Segmenting these as we did with M_0, we have the following three matrices M_4, M_5, and M_6:



Next are listed the subject suffix combinations which occur following class 20 verb stems and preceding the topic Mood suffix *-moq:*

16. In the cases where there is an invariant form of a morpheme filling the Mood tagmeme, that single form will be written only once in the center of the matrix, and that matrix not assigned a number; and in the realization rules to follow, that morpheme will be referred to by the name assigned to its slot function (e.g., Topic) rather than by a matrix number.

17. Including those of all dependent clauses, since the comprehensive rules to be given in this section will result in avoiding a great deal of redundancy elsewhere.

	1st	2nd	3rd
singular	*-u*	*-eni*	*-i*
plural	*-uni*[18]	-e	
dual	*-usi*	*-esi*	

Segmenting these in a similar manner we have the matrices M_7 and M_8:

M_7[19]

	Person 1st	2nd	3rd
singular	-u	-e	-i
plural	-u	-e	
dual	-u	-e	

M_8

	Number 1st	2nd	3rd
singular	—	-ni	—
plural	-ni	—	
dual	-si	-si	

Mood (Topic): -moq

Next are listed the subject-suffix combinations which occur following a class 10 verb stem and preceding the Contrafactual Apodosis relator *-line:*

	1st	2nd	3rd
singular	*-u*	*-ati*	*-a*
plural	*-uti*	*-a*	
dual	*-usi*	*-asi*	

Segmenting these in a similar manner gives us matrices M_9 and M_{10}:

M_9

	Person 1st	2nd	3rd
singular	-u	-a	-a
plural	-u	-a	
dual	-u	-a	

M_{10}

	Number 1st	2nd	3rd
singular	—	-ti	—
plural	-ti	—	
dual	-si	-si	

Mood (Contrafactual Apodosis): -line

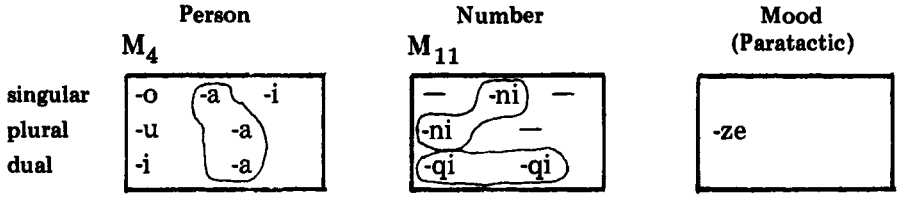
Next are listed the subject-suffix combinations which occur with the Paratactic Mood relator *-ze* in the future tense:

	1st	2nd	3rd
singular	*-o*	*-ani*	*-i*
plural	*-uni*	*-a*	
dual	*-iqi*	*-aqi*	

18. There is an alternate form for the 1st plural subject marker when the topic mood suffix *-moq* would occur, with or without a preceding perfect tense morpheme. Instead of *-unimoq* the alternate form is *-uhaq*. The /u/ in this form is, curiously, subject to the class 20 verb stem rule.

19. The need for matrix 7 may be eliminated simply by stating that matrix 1 is subject to the class 20 verb stem rule.

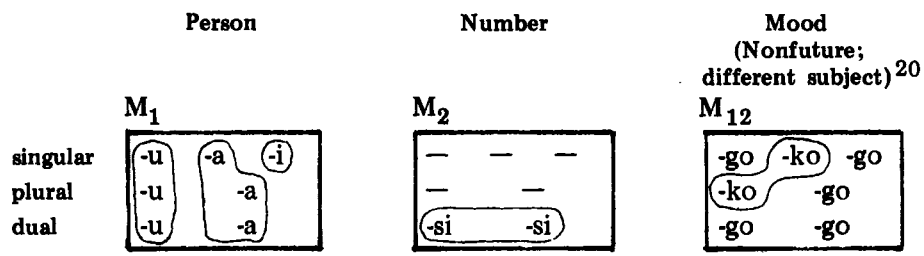
Segmenting these in a similar manner gives us besides a repetition of matrix 4, matrix 11:



Next are listed the subject suffix combinations which occur following a perfect suffix and indicate a Dependent clause denoting a nonfuture action whose subject is different from that of the following clause (Sect. **6.6.1.1**):

	1st	2nd	3rd
singular	*-ugo*	*-ako*	*-igo*
plural	*-uko*	*-ago*	
dual	*-usigo*	*-asigo*	

Segmenting these in a similar manner gives us a repetition of matrices M_1 and M_2, plus matrix 12:

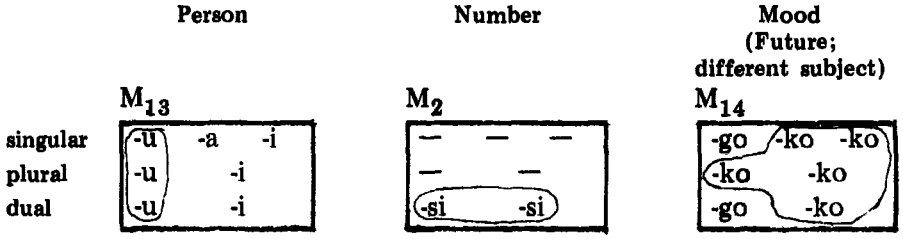


Finally are listed the subject suffix combinations which occur following the stative suffix and indicate a Dependent clause denoting a future action, whose subject is different from that of the following clause:

	1st	2nd	3rd
singular	*-ugo*	*-ako*	*-iko*
plural	*-uko*	*-iko*	
dual	*-usigo*	*-isiko*	

20. It is interesting to speculate on the possible phonological reasons behind the alternation between v/n, h/p, and g/k in matrices 3, 6, and 12. Inasmuch as /f/ in the adjacent Benabena language corresponds to /h/ in Gahuku, it is reasonable to reconstruct a /*p/ for this phoneme. Then perhaps the 1st plural and 2nd singular forms were marked by a glottal stop preceding the mood suffix. Then a rule stating that the fricative phonemes became their non-fricative counterparts following glottal stop is quite plausible. This would explain p → p and g → k following glottal stop, but it is difficult to conceive how /n/ could be considered the nonfricative counterpart of /b/.

Segmenting these in a similar manner gives us matrix 13, a repetition of matrix 2, and matrix 14:



It now needs to be stated that the remaining sets of subject suffix combinations which occur in different morphological environments would all be segmentable into various combinations of the above fourteen numbered matrices, and *no more*. In each case the Person matrix would be either M_1, M_4, M_7, M_9, or M_{13}; the Number matrix would be either M_2, M_5, M_8, M_{10}, or M_{11}; and the Mood matrix would be either M_3, M_6, M_{12}, or M_{14}, or else the Mood slot would be filled by another invariant Mood morpheme. But within these restrictions there is considerable variation as to which matrix of morphemic forms fills which slot. A few examples will suffice to illustrate the combinations of matrices which can result. The subject suffix combinations which occur with future tense and the Reason Mood relator *-nazo* are:

	1st	2nd	3rd
singular	*-o*	*-ani*	*-i*
plural	*-uni*	*-a*	
dual	*-iqi*	*-aqi*	

which segment into Person matrix M_4 plus Number matrix M_{11}.

The subject suffix combinations which occur following a benefactive indicating suffix and indicate interrogative mood are:

	1st	2nd	3rd
singular	*-uhe*	*-ape*	*-ahe*
plural	*-upe*	*-ahe*	
dual	*-usihe*	*-asihe*	

which segment into Person matrix M_9 plus Number matrix M_2 plus Mood matrix M_6.

The subject-suffix combinations which occur following a class 20 verb stem with the Contrafactual Protasis Mood relator *-lina* are:

	1st	2nd	3rd
singular	*-u*	*-eti*	*-i*
plural	*-uti*	*-e*	
dual	*-usi*	*-esi*	

which segment into Person matrix M_7 plus Number matrix M_{10}.

The subject-suffix combinations which occur following a negative morpheme and with the Mood relator *-ke*, indicating a nonfuture action of a Dependent Sequence clause whose subject is the same as that of the following clause, are:

	1st	2nd	3rd
singular	*-u*	*-ani*	*-i*
plural	*-uni*	*-a*	
dual	*-usi*	*-asi*	

which segment into Person matrix M_1 plus Number matrix M_8.

Our conclusion thus far is that our approach is reducing to a fairly small set of sets of alternate forms of seven morphemes an otherwise extremely complicated set of subject-suffix combinations.

The rules specifying the occurrence of the forms of the various matrices are then as follows. First, for the Person matrices:

$$
\begin{array}{lll}
^{M}\text{Person} \;/\; {}^{M}\text{future}\_\_ & \rightarrow & M_4 \\
{}_1/\; \_\_ M_2 \quad M_{14} & \rightarrow & M_{13} \\
{}_2/\; {}^{M}\left\{\begin{array}{l}\text{class 30 v. stem} \\ \text{negative} \\ \text{perfect}\end{array}\right\} \_\_ & \rightarrow & M_1 \\
/\; {}^{M}\text{class 20 v. stem}\_\_ & \rightarrow & M_7 \\
/\; \ldots\ldots\ldots & \rightarrow & M_9
\end{array}
$$

That is, the forms of the Person morphemes are those of matrix 4 following the future tense suffix; and those of matrix 13 preceding those of matrix 2 when matrix 2 is followed by the future different-subject Relator (M_{14}). Elsewhere the forms of the Person morphemes are those of matrix 1 following a class 30 verb stem or a perfect or negative suffix; and those of matrix 7 following a class 20 verb stem; and those of matrix 9 following a class 10 verb stem, benefactive, or stative suffix.

Next, the rules specifying the forms of the morphemes of the Number matrices are:

$$
\begin{array}{lll}
^{M}\text{Number} \;{}_1/\; \_\_ \; {}^{M}\left\{\begin{array}{l}\text{CfP} \\ \text{CfA}\end{array}\right\} & \rightarrow & M_{10} \\
{}_2/\; M_4 \_\_ \left\{\begin{array}{l}M_3 \\ M_6\end{array}\right\} & \rightarrow & M_5
\end{array}
$$

$$
\begin{array}{lll}
3/ & M_4 \text{——} \cdots\cdots & \rightarrow M_{11} \\
4/ & \text{——} \left\{ \begin{matrix} M_3 \\ M_6 \\ M_{12} \end{matrix} \right\} & \rightarrow M_2 \\
5/ & \cdots\cdots\cdots & \rightarrow M_8
\end{array}
$$

That is, preceding the Contrafactual Protasis Relator *(-lina)*[21] or Contrafactual Apodosis Relator *(-line)*[21] the forms of the Number morphemes are those of matrix 10. Elsewhere the forms of the Number morphemes are those of matrix 5 if preceded by Person morphemes of matrix 4 and followed by Mood morphemes of matrices 3 or 6; elsewhere following morphemes of matrix 4 the forms of the Number morphemes are those of matrix 11; and elsewhere preceding morphemes of matrices 3, 6, or 12 the forms of the Number morphemes are those of matrix 2. Elsewhere the forms of the Number morphemes are those of matrix 8: specifically, following morphemes of matrices 1, 7, or 9 and preceding the remaining relators which occur in the Mood slot: Paratactic *(-ze)*, Topic *(-moq)*, Reason *(-nazo)*, Exclamatory *(-nae)*, Unfulfilled *(-gopa)*, nonfuture same-subject *(-ke)*, Referential *(-kumuq)*, Subject *(-tiqmo)*, Possessive *(-tiqmini)*, Locative *(-kuq, -toq)*, Vocative *(-tika, -tita)*. Further discussion of these Mood relators will be given in subsequent sections.

There are obvious similarities between the shapes of the numbered matrices. The following are suggested as observations on matrices with similar or identical shapes but with differences between the manifesting phonological forms.

$$
\begin{bmatrix} M_{11} \\ M_8 \end{bmatrix} = \begin{bmatrix} M_5 \\ M_2 \end{bmatrix} \quad \text{except that } \textit{-ni} \sim \emptyset
$$

$$
M_6 = M_3 \quad \text{except that } \begin{bmatrix} h \\ p \end{bmatrix} \sim \begin{bmatrix} v \\ n \end{bmatrix}
$$

$$
\begin{bmatrix} M_8 \\ M_2 \end{bmatrix} = \begin{bmatrix} M_{11} \\ M_5 \end{bmatrix} \quad \text{except that } s \sim q
$$

$$
M_{12} = M_3 \quad \text{except that } \begin{bmatrix} go \\ ko \end{bmatrix} \sim \begin{bmatrix} ve \\ ne \end{bmatrix}
$$

$$
M_{10} = M_8 \quad \text{except that } t \sim n
$$

$$
M_7 = M_1 \quad \text{except that } e \sim a
$$

21. These two forms could be segmented to give *-lin* 'contrafactual', and *-e* and *-a*. However, *-e* and *-a* are not elsewhere identifiable as morphemes which always signify Independent and Dependent clauses respectively; so the value of such segmentation is very dubious.

$$\begin{bmatrix} M_1 \\ M_{13} \end{bmatrix} = M_9 \quad \text{except that } i \sim a$$

It can be seen that three matrix shapes, illustrated by matrices 1, 8, and 3 (representing Person, Number, and Mood respectively), exemplify the most common ones signifying person and number of subject in Gahuku; and these prove to be significant in other related New Guinea highlands languages as well.

3.4 Elements of Imperative Verbs. The Person, Number, and Mood morphemes are the only elements of the Imperative verb whose forms are different from those described in Sect. **3.3.** Imperative occurs only with 2nd and 3rd person subjects. Following the approach used for the nonimperative subject suffixes in Sect. **3.3,** the matrices listing the forms of the morphemes of the Imperative Person, Number, and Mood tagmemes are given below. Note that although matrices 15–17 constitute a set which occurs in one morphological environment, matrix 18 substitutes for matrix 15; this is the one remaining matrix, abstracted from other sets of subject suffix combinations, which is necessary to provide rules which will account for the whole system.

Person — M_{15}

	2nd	3rd
singular	-o	-i
plural	-a	-i
dual	-a	-i

Number — M_{16}

	2nd	3rd
singular	—	—
plural	—	—
dual	-li	-si

Mood (Imperative) — M_{17}

	2nd	3rd
singular	-zo	-no
plural	-lo	-no
dual	-zo	-no

Person — M_{18}

	2nd	3rd
singular	-o	-i
plural	-i	-i
dual	-i	-i

The vowels of matrix 18 are subject to the class 20 verb-stem rule.

The rules for the occurrence of the forms of these matrices are as follows:

$$^{M}\text{Person-Imp} \quad {}_1/ \left\{ \begin{matrix} ^{M}\text{class 10 v. stem} \\ \text{benefactive} \end{matrix} \right\} \text{ — } \longrightarrow M_{15}$$

$${}_2/ \quad \ldots\ldots\ldots\ldots\ldots \longrightarrow M_{18}$$

That is, the forms of the Imperative Person morphemes are those of matrix 15 if preceded by a class 10 verb stem or benefactive indicating suffix *-t;* and those of matrix 18 if preceded by a class 20 or 30 verb stem. If the negative morpheme is present the *-zo* imperative indicator does not occur in 2nd singular. Examples illustrating forms of various Imperative morphemes are:

v - o - zo go - 2sg - Imp	'Go! (sg.)'
v - i - li - zo go - 2nd-dl-Imp	'Go! (dl)'
v - am - i - no go-neg-3sg - Imp	'Let him not go!'
huk - i - ki - t - a - lo cut - Cd - them - ben - 2pl - Imp	'Cut (pl) it for them!'

There is one exception to the realization rules given above. The 2nd singular imperative form of the class 11 verb *∅-* 'come', which would be *ozo* by the above rules, is *ano* instead.

3.5 Verb Phrases Containing Adjuncts. An adjunct may precede the verb in a verb phrase. The adjunct is either uninflected or may require a pronominal prefix denoting person and number of the object. The pronominal prefixes and the morphophonemic rule specifying their vowel are the same as those for classes 12 and 22 verb stems (Sect. **3.3.2**).

Some of the adjuncts also occur in environments other than in verb phrases; and when they do it is possible to assign a meaning to the adjuncts. Generally any one of several adjuncts will co-occur with one verb nucleus to form a set of verb phrases containing the same nucleus. Note the following examples, in which various adjuncts occur with the stem *z-* which without the adjunct carries the sense "strike unmaliciously," but in these examples can be given the sense of "bring into contact with:"

geha z- cold	'be wet, cool'
golini z- rain	'rain'
nagamiq z- water	'wash'
gale z- pit	'bury'
nagaq z- rope	'tie'
luhuva z- design	'carve a design, write'

In many cases it is extremely difficult to assign a common meaning to the nucleus of such verb phrases. Even if separate meanings can be assigned to the adjunct and nucleus, the combined sense is often idiomatic. Another complexity of such phrases is that when different adjuncts occur with the same verb nucleus, some adjuncts require 3rd singular (= nonhuman) subjects and some do not. These features of verb phrases are common in other New Guinea highland languages.

Further examples of verb phrases containing adjuncts are given below. The nucleus of each of these examples except for the first is either *hiz-* or *viz-* (both class 21 verb stems). Hyphens again indicate bound forms. Note in the illustration following the first example that the adjunct *goniq* cannot be a verb stem because it precedes the progressive prefix. When, following the adjunct, the overt verb form consists exclusively of suffixes and an optional progressive prefix, and these fit the pattern for class 31 verb stems, one must postulate a zero stem (which elsewhere = 'be") for these affixes to attach to.

goniq	*Ø-*	'be on trial'
trial	be	

Illustration of this adjunct in a complete verb phrase:

goniq - no - Ø-ive	'He is on trial.'
trial prog - be - he	

geisa	*hiz-*	'make a fence'
fence	stake	
giniq	*hiz-*	'make a boundary (by a row of these shrubs)'
Victory-shrub	stake	
meina	*hiz-*	'stake a payment in the ground, buy'
payment	stake	
negi	*hiz-*	'become crazy, dumb'
crazy, dumb	?	
goive	*hiz-*	'have measles'
sweet-potato	?	
-helele	*viz-*	'make afraid' (3rd sg. subj. only)
?	?	

Illustrations of this adjunct in complete verb phrases:

ne-helele viz-ek-ave	'It has made me afraid.'
me- ? ? -sta-it	
a-helele no-viz-ive	'It is making him afraid.'
him- ? prog-?-it	
ke-helele viz-it-ive	'It will make them afraid.'
them- ? ? -fu-it	

-goliza viz- 'be happy'
? ?

napa viz- 'be full-sized' (3rd sg sub only)
big ?

tele viz- 'tear down'
? ?

-putaq viz- 'embrace'
? ?

-vasuq viz- 'rest'
? ?

-goka viz- 'trick, tempt'
nose ?

Illustrations of this adjunct in complete verb phrases:

no-goka viz-it-ive 'He will trick me.'
my-nose ? -fu-he

go-goka no-viz-uve 'I am tricking you.'
your-nose prog-?-I

hugepa viz- 'show a rainbow' (3rd sg sub only)
rainbow ?

pigi viz- 'be loud, shout'
? ?

gala viz- 'urge, incite'
dog ?

goni viz- 'stuff a bamboo tube'
bamboo ?

gululuq viz- 'be slippery' (3rd sg sub only)
? ?

-gutoq viz- 'save, rescue'
? ?

gosagava viz- 'dry up, wither' (3rd sg sub only)
? ?

Three[22] adjuncts exhibit /o/ vowels which are subject to the ablaut rule (Sect. **2.3.4**). These are:

oliqo mVl- 'jump over'[23]

22. There are two others which, because of the rule specifying the vowels, might be considered in the same category: *tVvV ∅-* 'go up' and *lVmV ∅-* 'go down'; but sometimes these appear to be verb phrases containing an adjunct plus the stem *∅-* and sometimes class 13 stems (i.e., *tVv-* and *lVm-*).

23. The ablaut rule seems to apply only to /o/ vowels which are not followed by an /i/ in the same word. Thus the first /o/ in this adjunct is not subject to the ablaut rule, whereas the final /o/ is, as are the two /o/ vowels in the adjunct *mohona* in the following example.

mohona Ø- 'stroll around, meander'
loloq Ø- 'make (transitive), become (intransitive)'

Illustrations of two of these in verb phrases:

oliqo	*no-mul-uve*	'I am jumping over.'
jump	prog-put-I	
oliqo	*mol-at-ive*	'He will jump over.'
jump	put-fu-he	
oliqi	*mil-at-ave*	'They will jump over.'
jump	put-fu-they	
mohona	*no-Ø-ive*	'He is strolling around.'
stroll	prog-be-he	
mihina	*ni-Ø-ave*	'They are strolling around.'
stroll	prog-be-they	

3.6 Verb Phrases Containing Preverbs. Verb phrases may contain one or more successive preverbs, each of which consists of an optional adjunct plus a verb nucleus plus the Compounding (Cd) suffix (Sect. **3.3.3**). The final verb in the phrase carries all the additional affixation (except that the nuclei themselves may contain pronominal prefixes). The nuclei of preverbs contain stems drawn from the general classes of verb stems.

Verb phrases may contain one or more preverbs. In the latter case either a second preverb is repeated or three different preverbs occur in succession, preceding the verb whose nucleus consists of the stem Ø- 'be'. Examples of verb phrases with one preverb, with several illustrations of a complete verb phrase following the first example, are as follows:

l- -m-		'speak to, tell'
say give		
l - o	*ni - m - it-ive*	'He will tell me.'
say-Cd	me-give-fu-he	
l - i	*ki - m-it-ave*	'They will tell them.'
say-Cd	them-give-fu-they	
l - o	*no - ki - m-ive*	'He is telling them.'
say-Cd	prog-them-give-he	
l - o	*ke - m - em - ive*	'He didn't tell them.'
say-Cd	them-give-neg-he	
al-	*mVl-*	'put away'
take	put	
al-	*vilVg-*	'turn around' (transitive)
take	turn	

min-	*vilVg-*	'turn around' (intransitive)
stay	turn	
al-	*ahul-*	'throw away'
take	leave	
gVl-	*al-*	'obey'
sense	do	
gVl-	*-m-*	'heed'
sense	give	
gVl-	*ahul-*	'reject'
sense	leave	
z-	*liq* *Ø-*	'fasten shut'
attach	shut be	
hiz-	*liq* *Ø-*	'close off, block'
thrust	shut be	
-pVl-	*hVl-*	'murder'
smite	die	

If either of the stems of the phrase is transitive, the total phrase is transitive. The agent of the total action expressed by the verb phrase is indicated by the subject of the verb of the phrase. Thus in the last example cited above, the subject of the verb containing the stem *hVl-* 'die' expresses the agent of the murdering, not the individual who will die:

ni - pil - i	*hil-it-ave*	'They will murder me.'
me-smite-Cd	die-fu-they	

Several examples of verb phrases containing three preverbs are given below. In the first, the stems *l-* and *gVl-* are followed by a third stem *gVl-* which is preceded by the adjunct *ha*.

l-	*gVl-*	*ha*	*gVl-*	*Ø-*	'converse'
say	sense	simply	sense	be	

An example of this form in a complete verb phrase:

l - i	*gil - i*	*ha*	*gil - i*	*ni - Ø - ave*[24]	'They are conversing.'
say-Cd	sense-Cd	simply	sense-Cd	prog-be-they	

l-	*-m-*	*-m-*	*Ø-*	'recite bit by bit'
say	give	give	be	
-pVl-	*ahul-*	*ahul-*	*Ø-*	'habitually slaughter'
smite	leave	leave	be	

24. Native reaction to this and other examples is to write no more than three words in the verb phrase; e.g., for the illustration above, *ligili hagili niave*.

3.7 The Existential Verb. A special verb stem is used to express existence of a nonhuman entity. This stem occurs only in the 3rd singular form with an extremely limited set of affixes, in contrast to the stem *ø-* 'be' (which is used with human participants) which occurs with the full range of affixes already described. The existential verb occurs with the following structure:

^{M}v. exist = stem (neg) (fu) 3sg. mood

The form of the existential stem is *ne-*. The forms of the various other morphemes of the existential verb are as given previously in this section, except that the following phonological rules which precede the vowel reduction rule (Sect. **3.3.2**) are necessary to account for the surface forms:

i / e___ → ø
a / e___ → o

The existential verb does not occur in the Imperative mood. Examples illustrating the existential verb:

n - e - he 'Does any exist?'
exist-3sg-int

n - om-it - i - ve 'There will not be any.'
exist-neg-fu-3sg-ind

The existential verb must also occur following the topic relator *(-moq)* on any verb phrase to which another relator is to be affixed. Examples:

v - ani - moq *n - e - nazo* 'because you went'
went-you-top exist-3sg-since

v - ani - moq *n - e - he* 'Did you go?'
went-you-top exist-3sg-int

3.8 The Predicative Enclitic. A predicate slot in Independent clauses may be filled by a predicative enclitic as well as by a verb phrase. In such cases the predicate, which signifies "it is," consists solely of the predicative enclitic, which may be affixed to any Relator-Axis noun phrase (cf. Sect. **5.1**), adjective, locative noun, possessive pronoun, or numeral. Its function is to make such a word or phrase into a clause, similar to the stative clauses in English which use the pronoun *it* as a dummy subject.

The form of the predicative enclitic is *-ve*[25] following a vowel; and following a form which would otherwise end in a glottal stop, the glottal stop is absent and the form of the predicative enclitic is *-le*. Examples of clauses with a predicative enclitic are:

25. Thus in form identical to the indicative 3rd singular suffix.

nene	*etami*	*suni-ve*		'That is not a nice action.'	(SO:3)[26]
that	unfair	action-is			
aiq	*neta-le.*			'It is his affair.'	(CO 8:8)
his	thing-is				
luhuva	*neta-kumuq*	*gakoq*	*aqminasi-le.*	'It is enough talk about the letter.'	(LL:14)
design	thing-about	talk	enough-is		
gehani	*hamo-le.*			'It is one shilling.'	(C03:6)
money	one-is				

26. In the rest of this study, notations in parentheses following the free English translations of illustrative examples refer to the location of the examples in the corpus.

4 FUNCTIONS OF VERB RELATORS

4.1 Introduction. In Section **3.3.6** brief mention was made of a group of relators which fill the mood slot in verbs. These relators are suffixes or complexes, one of which always concludes the verb phrase. A relator may specify the relationship of the particular Dependent clause in which it occurs to another clause in the sentence. The forms and functions of these relators will be described in chapter **6.**

Alternatively, a relator may specify the function in the discourse of the sentence containing the Independent clause in which the relator occurs. The forms of these relators will be described in Section **4.2.** Often a single form can, in different environments, serve one of each of these first two functions. In such cases I have given the relator one name, which is often more applicable to its function in Dependent clauses than it is to its second function.

A relator may also specify the function a clause in which it occurs may fulfill in the structure of clauses or phrases. This function of verb relators is thus an embedding one. The forms and functions of such relators are described in Section **4.3.**

4.2 Independent Clause Relators. The relator complexes which occur in Independent clauses each conclude with a relator suffix. All the relator suffixes except the topic suffix may be optionally preceded by a complex consisting of the topic suffix and (in another word) the existential verb stem (Sect. **3.7**) and its 3rd person singular subject suffix. This structure may be expressed as follows:

$$\textbf{Relator Complex} = \left\{ \begin{array}{l} \textit{-moq} \\ \textbf{topic} \end{array} \right\} \left\{ \begin{array}{l} \left(\begin{array}{lll} \textit{-moq} & \textit{n-} & \textit{-e} \\ \textbf{topic} & \textbf{exist} & \textbf{3sg} \end{array} \right) \\ \textbf{other relator suffix} \end{array} \right\}$$

In this section the Independent clause relators and their functions will be described and illustrated in turn. The Independent clause relator suffixes are:

indicative	paratactic
interrogative	exclamatory
topic	unfulfilled
	reason

In the illustrative examples, the relator morphemes are given in capital letters.

4.2.1 The *indicative* (ind) *relator* (whose forms are *-ve* and *-ne* as given in matrix 3, Sect. **3.3.6**) occurs in declarative and question-word clauses. Declarative clauses state information and do not elicit other information or action from hearers. Question-word clauses, which contain a question morpheme in a unit which fills one of its constituent tagmemes, usually elicit a response which it is hoped will supply information being sought.

The indicative relator may co-occur with any tense complex. As noted previously (Sect. **3.3.5**), the indicative relator without any tense complex morphemes (i.e., with the stem unmarked as to tense) usually signals an event which has occurred in the recent past, but can also signal an event in the remote past or even one about to occur.

v - u - VE		*v - u - NE*	
went-1sg-ind	**'I went.'**	**went-1pl-ind**	**'We went.'**
v - it - o - VE		*v - it - u - NE*	
go-fu-1sg-ind	**'I will go.'**	**go-fu-1pl-ind**	**'We will go.'**

4.2.2 The interrogative (int) relator (whose forms are *-he* and *-pe* as given in matrix 6, Sect. **3.3.6**) occurs in yes/no question clauses. (The interrogative relator also occurs in Dependent clauses signalling an Alternative Query; see Sect. **6.6.10**). Yes/no question clauses usually call for the confirmation or denial of the content of the sentence in a reply beginning with *oo* 'yes' or *oqe* 'no'.

v - u - HE		*v - u - PE*	
went-1sg-int	**'Did I go?'**	**went-1pl-int**	**'Did we go?'**
v - it - o - HE		*v - it - u - PE*	
go-fu-1sg-int	**'Shall I go?'**	**go-fu-1pl-int**	**'Shall we go?'**

4.2.3 The *topic* (top) *relator -moq* also occurs by itself in declarative clauses. The topic relator may co-occur with any tense complex. As noted in Sect. **3.3.5**, the topic relator without any tense complex morphemes signals events which occurred at some definite time in the distant past.

v - u - MOQ		*v - it - o - MOQ*	
went-1sg-top	**'I went.'**	**go-fu-1sg-top**	**'I will go.'**

If the topic relator occurs in yes/no question clauses, it must be followed by the existential stem, a 3rd singular morpheme,[1] and the interrogative relator *-he;*

1. The 3rd singular morpheme in such a case is not indicating the subject, but is only a "dummy" morpheme joining the stem and the relator. The construction might be translated literally as "it is (the case) that... ."

and if it occurs in question-word clauses, it must be followed by the existential stem, the 3rd singular morpheme, and the indicative relator *-ve*.

vani - MOQ[2] *n - e - VE*
you_went-top exist-3sg-ind 'You went.'

vani - MOQ n - e - HE
you_went-top exist-3sg-int 'Did you go?'

nanamuq vani - MOQ n - e - VE
why you_went-top exist-3sg -Ind 'Why did you go?'

With the future tense suffix the same construction signals ability.

v - IT-ani-MOQ n - e-HE
go-fu-2sg-top exist-3sg-int 'Will you be able to go?'

v - am-IT - o-MOQ n - e - VE
go-neg-fu - 1sg - top exist-3sg-ind 'I will not be able to go.'

nanamuq v - am-IT-ani-MOQ n - e - VE
why go-neg-fu - 2sg - top exist-3sg-ind 'Why won't you be able to go?'

4.2.4 The *paratactic relator -ze*, when occurring in an Independent clause, is used only in those sentences in which the speaker wishes to call the hearers' attention to the fact that they are being addressed directly. Thus the relator *-ze* occurs frequently with verb phrases in Independent clauses in sentences of direct discourse (conversation or prayers) or in expository letters or in quoted speech. It does not occur in the body part of narrative, descriptive, or procedural texts, but is frequent in the introduction to such texts where the speaker addresses his audience concerning what he is about to relate. The first illustration below was selected from an introduction to a procedural text, and the second from a prayer.

... *neneqmini mogona lito - ZE*
of_that nature I'll_say - para '...I'll speak about the nature of that.' (EF:1)

... *imane geitoka noluni - ZE*
here to_you we're_saying - para 'We are making requests to you here.' (P2:3)

4.2.5 The *exclamatory relator -nae* is rare and occurs only in Independent clauses, marking an utterance which calls for special attention by the hearers to an unexpected turn of events.

... *guivahaniqmo noli - NAE*
lord he's_saying - exclamatory '... the Lord is speaking!' (SS:7)

4.2.6 The *unfulfilled relator -gopa* may occur in either an Independent or a Dependent clause in a sentence. With the latter it parallels the use of the English conjunction "instead of," and this clause, which expresses an unfulfilled action, is followed by an Independent clause which expresses the action which occurred or

2. Morpheme divisions will be indicated in the illustrations only where they are in focus in the discussion.

will occur in place of the unfulfilled one. Within an Independent clause the relator *-gopa* signals an action which is impossible of fulfillment under the given circumstances.

... tulitali eqaho hizekiko gito - GOPA
wall who after_he_weaves I'll_build - unfulfilled
'... who will weave the wall so that I can build (the house)?'[3] (LM:28)

4.2.7 The *reason relator* (rea) *-nazo*, though occurring more frequently in a Dependent clause signalling Cause (Sect. **6.6.3**), also occurs with a verb phrase containing a future suffix in an Independent clause to signal the speaker's fervent desire or wish that a certain action might occur (but his doubt that it will occur).

Mosope - ga vito - NAZO
Moresby-place I'll_go - rea 'I wish I could go to (Port) Moresby!' (HX)

... nosaqnetaq koma ali nupa iki gimita - NAZO
food small get gathered being they'll_give_you - rea
'... would that they would gather together and give you a little food!' (LH1:13)

4.3 Embedding Clause Relators. A clause may be embedded in the structure of a phrase or of another clause. If a clause fills a modifying slot in a phrase (i.e., a relative clause), this may be indicated in two ways in Gahuku. The verb of the modifying clause may occur with no mood suffix and be immediately followed by the noun it modifies. This construction is further described in Section **4.3.1.** Alternatively, the relative clause (or clauses) may follow any noun phrase it modifies. In this case the mood slot is filled by a relator complex which indicates the slot which the phrase is filling in the clause. This latter construction must be used if the clause is serving in a nominal function, or if there is no noun for the relative clause to modify, or if the noun phrase it modifies is a compound one or contains additional elements preceding the head word of the phrase. This is also the preferred construction if the modifying unit contains more than one clause. The relator complexes which occur in this latter construction are described in detail beginning with Section **4.3.2.**

The relator complexes which mark embedded clauses may be monomorphemic or polymorphemic in form. If monomorphemic, the relators occur as the final suffix in a verb, filling the mood slot (Sect. **3.1**); and if polymorphemic they may consist of one or more suffixes and/or an immediately following word. The polymorphemic forms of an embedding relator include morphemes which intervene between the number suffix of the verb and the final morpheme of the relator. The intervening morphemes which may occur in that position are:

-moq	top(ic)	*-qa*	indef(inite article)
-ma	def(inite article)	*nene*	sum(mary)

3. The difficulty of making a more literal English translation is due to the fact that it is impossible for a word which signals a question to occur in a dependent clause in English.

Most final morphemes of the embedding relators have two forms, conditioned by whether the preceding morpheme is the number suffix of the verb or one of the above intervening morphemes. The two alternate forms are usually identical in form with the two morphophonemically conditioned variants of noun phrase enclitics. All the enclitics which occur with verb phrases with their alternate forms are listed here[4]; most of them are relevant to examples in this section. The form given at the left in the list below is that form which occurs with nonverbal phrases which end in a vowel, and to the right is the form which occurs with nonverbal phrases which end in a glottal stop; in each case the glottal stop is lost. The most common glosses for each morpheme are also given.

-ga	-ka	'place'	
-ga -ka	-ga -ka	'vocative singular	occurs with names' occurs elsewhere'
-gi	-ki	'and, along with'	
-goq	-koq	'only'	
-guq	-kuq	'in'	
-loq	-toq	'to, at, in exchange for'	
-ma	-ma	'definite article'	
-muq	-kumuq	'concerning, about'	
-qa	-laqa	'indefinite article'	
-qmo	-liqmo	'singular	
-tosa	-litosa	'dual	subject'
-te	-lite	'plural	
-qmini	-liqmini	'singular	
-tosini	-litosini	'dual	genitive'
-tini	-litini	'plural	
-tiq	-tiq	'from'	
-tunuq	-tunuq	'with, by means of'	
-ve	-le	'it is'	

It is possible to postulate basic forms for each of these morphemes and then postulate a couple of detailed phonological rules which will account for most of the alternate forms. However, these rules would not explain the fact that it is the form on the right which is always selected if it immediately follows the number suffix on the verb, even though those suffixes never end in glottal stop.

The rule stated above covering the alternate forms of these enclitics is operative in the illustrations in this section whenever two relator suffixes occur in

4. In the majority of cases the phonological shapes of enclitics which occur with verb phrases are the same as those which occur with nonverbal phrases, and often the meanings are the same. In some cases, however, the phonological shapes are different and in some cases there are contrastive sememic functions. There are also nonverbal phrase enclitics which do not occur with verb phrases. Hence, a distinction is made between the two sets.

succession; i.e., if the first relator without a further suffix ends in a glottal stop, the second relator will occur in the form given on the right in the above list, and the glottal stop not occur. Thus, for example, the rule would dictate that the enclitics *-toq* 'at' + *-ga* 'place' → *-toka*.

I shall now list the various relator complexes and the types of embedding constructions with which they occur. In each case the construction is one in which the relator signals what the function of its clause is in another clause or phrase. As usual, forms placed above each other within braces are mutually exclusive, hyphens before isolated morphemes represent bound forms, and (_) joins words in the English glosses that represent one or more morphemes in the Gahuku that are not separated by hyphens. In order that the reader may relate the illustrative examples to the text more easily, the Gahuku forms of the relator morphemes will be given in capital letters, and broken brackets will surround the embedded clause in both the Gahuku forms and the English glosses.

4.3.1 No Relator. A verb with no suffix in the mood slot following the person and number morphemes marks a relative clause which modifies the noun which immediately follows it. This adjectival function does have a phonological manifestation, in that the tone pattern of the noun which the clause modifies is perturbed such that all syllables of the noun stem occur with low tone. In the examples below the modifying clause is in parentheses and the high tones marked on the following noun. Unmodified, these nouns by themselves would have the tone patterns *gapó* and *vé*.

[*v - it - aqi*	*gapomúq*	*vitagaq*	*ikasike...*	
go-fu-3dl]	road_for	search	after_they_did	

'after they searched for a road [to escape]...' (FA:11)

[*Ø - asi*	*gapomá*	*nene*	*goha*	*ali*	*atiginaq*	*iki...*
came-3dl]	road	pause	again	made	return	doing

'returning again on the road [by which they came]...' (FO:15)

[*izegipa*	*get - a*]	*ve...*	
child	begot-3sg]	man	

'the man [who had begotten the child]...' (FO:15)

4.3.2 Locative Relator Complexes. There are two locative relator complexes. Each of these marks a clause as filling a locative slot in another clause. The two complexes are very similar semantically and differ structurally by the interchange of one morpheme.

Loc. relator complex$_1$ =	{ *-moq*	*-ma*	*-loq*	}	*(-ga)*	*(-tiq)*
	top	**def**	**to/at**		**place**	**from**
	{		*-toq*	}		
			to/at			

This relator complex may express "(from) on/at/the place where," or "to the state where," or "in exchange or return for, in response to." Examples:

[*amisi* *giakaq* *Ø - asi*]*-MOQ-MA-LOQ*
[ground_oven building be-3dl] top - def - at
'where [they used to build the ground-oven]' (FA:11)

[*numuni* *nomi*]*-TOQ*
[house not_exist] to
'to where [there was no house]' (LW:13)

... [*vi*]*-TO - KA* *loq* *lokila*... *itive.*
[he_went] to-place fire smoke it_rose
'... the smoke rose up ... at the place where [he went].' (FO:7)

[*zavusaveloq* *mina*]*-TO-TIQ* *nama* *ligiki* *amoq.*
[men's_house they_stayed] at - from song singing they_came
'They came back singing from where [they stayed at the men's house].' (WT:10)

... [*loq* *alituni*]*-TOQ* *noune.*
[fire we'll_get] at we_are
'... we are to the point of [receiving (hell) fire].' (SH:11)

... [*ahuloleta*]*-TO - KA - TIQ* *emane* *minoloko* *itehaq* *leqlisi*...
[he_left_us] at-place-from way_back staying we_rose we
'We who have arisen from where [he forsook us] way back there ....' (FP:6)

[*nosaqnetaq* *amu*]*-TOQ* *nene* *geza* *iza* *apeleko*...
[food I_gave_him] to pause you pigs smiting
'in exchange for [my giving him food], you kill pigs ....' (AD:14)

[*gehani* *gumusi*]*-TO-TIQ* ... *goha* *vokaq* *lamo.*
[money we_gave_you] to-from again beg don't
'In response to [our giving you money] ... don't beg again.' (LM:11)

Locative relator complex$_2$ = { *-moq* top; *-ma* def; *-guq* in; *-kuq* in } *(-ga)* place *(-tiq)* from

This relator complex may express "(from) in the place where" or "in the time when." Examples:

[*pokisiguq* *mola*]*-MOQ-MA-GU-TIQ*
[box_in he_put] top - def - in - from
'from inside where [he put it in the box]'

[*aqmina* *kopiq* *zuhaq* *Ø - a*]*- KUQ*
[that coffee plant be-3pl] in
'in where [they planted the coffee]' (WT:10)

netekala *holuguq* [*goq* *lami*]*- KUQ*
morning night [light didn't_burn] in
'early in the morning in the period when [it was not light]' (FO:4)

4.3.3 Subject Relator Complex. A modifying clause or clauses immediately preceded by an optional noun phrase[5] may end the subject relator complex, which marks the whole unit as filling the subject slot of a transitive verb. (The relator complex used to indicate the subject slot of intransitive verbs is the object relator complex described in Sect. **4.3.4** below).

Subject relator complex =	*-moq* top	{ *-ma* def / *-qa* indef / *nene* sum }	{ *-qmo* sg / *-tosa* dl / *-te* pl }

Examples:

aqmina makisi [*na* / he_ate] *-MOQ-MA-QMO... voe-li*
those greens [/ he_ate] top-def-sg sub what?-it_said
'Those greens [that he ate][6] ... said "what?".' (FA:34)

[*gili vevesiki gelema* / sense straightly didn't_sense] *-MOQ NENE-TE*
top sum-pl sub
'those [who didn't understand correctly]' (WT:17)

[*aleve minasi* / couple they_stayed] *-MOQ NENE-TOSA... minasi -kuq*
top sum-dl sub they_stayed-in
'in where those two [who were a married couple] stayed...' (FA:24)

... [*gilita* / they_will_sense] *-MO-LAQA-TE nene ahulinitataze.*
top-indef-pl sub pause they_must_send_me
'Those [who will feel...] must send it to me.' (LV:2)

4.3.4 Object Relator Complex. A modifying clause or clauses, immediately preceded by an optional noun phrase, may end in the object relator complex, which marks the whole unit as filling the object slot of a transitive verb, a subject slot of an intransitive verb, or a complement slot of a stative verb.

Object relator complex =	*-moq* top	*(nene)* sum	({ *-ma* def / *-qa* indef })	*(nene)* sum

It is worth noting that the morpheme *nene* usually concludes the object relator complex, although I give one example below where it does not. In the other relator complexes the *nene* always precedes the *-ma*. This raises the question of the interpretation of *nene*. It seems that *nene* can act as a demonstrative meaning "that

5. The equivalent of "the individual" or "those" in phrases such as "the individual who..." or "those who..." can be implied if no noun phrase is present.

6. This comes from a folktale about magic greens that have the ability to speak.

which I've been referring to", or it can be a summary marker in the final word of a phrase, or it can simply be an optional fill-in for a pause between phrases or clauses. Here it is not certain whether the two *nene*'s in the formula refer to the latter two usages just described, or two alternate positions for the summary marker.

Examples:

vegenaq nene [*gululusi gatamito*]-*MOQ NENE-MA iki...*
people sum [crowd I'll_not_count] top sum - def coming
'a crowd of people [that I couldn't count] were coming....' (LNW:8)

luhava [*ahulani*]-*MOQ NENE alekuke...*
design [you_sent] top sum after_I_got
'after I got the letter [that you sent]... (LW:1)

iza makoq [*neti*]-*MO-LAQA aliki iki...*
pigs other [will_exist] top-indef getting coming
'bringing other pigs [that there may be]...' (NF:12)

gahuqma [*legeko ale ahulo-ahulo Ø-i*]-*MOQ-MA NENE nagamiq*
branch [severing got threw-threw be-3sg] top-def sum water
ohunimaguq lemeko...
pool_in falling
'the branch [that he broke off and threw down] fell into the pool...' (FA:22)

holisi imane... [*lo hutoko molani*]-*MOQ alitokago...*
holiday this [say cutting you_put] top after_it_neared
'because this rest day [that you established] had come near...' (P1:1)

... loisigi itoq golipagi [*zuhaq Ø-i*]-*MOQ imane neve.*
pandanus_and and casuarina_and [plant be-3sg] top this it_is
'... this is the pandanus and casuarina [that he planted].' (LD:9)

4.3.5 Vocative Relator Complex. A modifying clause immediately preceded by an optional 2nd person pronoun may end in the vocative relator complex, which marks the whole unit as filling a vocative slot in a clause.

Vocative relator complex = *-moq nene* top sum { { *-ka* voc sg / *-ta* voc pl } / { *-tika* voc sg / *-tita* voc pl } }

Example:

geza [*komaqisiq gele aleqvoleq Ø-ani*]-*TIKA*
you [little_bit sense firm be-2sg] voc sg
'you [who believe a little bit]...' (Mt 14:32)

4.3.6 Referential Relator Complex. This complex marks a clause with which it occurs as stating that about which or concerning which the action of the main clause is performed.

$$\text{Referential relator complex} = \left\{ \begin{array}{cccc} \textit{-moq} & \# & \textit{nene} & \textit{-muq} \\ \text{top} & & \text{sum} & \text{about} \\ & & & \textit{-kumuq} \\ & & & \text{about} \end{array} \right\}$$

Examples:

[...*nagaq numukuq vokakaq nouni*]-*MOQ NENE*-*MUQ litoze*...
[rope house_in going we_are] top sum - about I'll_speak
'...I will speak about [our going to jail].' (LD:1)

...[*loq lokila ititi*]-*KUMUQ kogoqmula vitagaq iki*...
[fire smoke will_rise] about their_eyes search doing
'...their eyes searching for [smoke to rise]...' (FO:6)

4.3.7 Genitive Relator Complex. This complex signifies that the clause with which it occurs is describing or specifying the following generic noun. Alternatively, a modifying clause, immediately preceded by an optional noun phrase, may end in the possessive relator complex, which marks the whole unit as filling a possessive slot in another noun phrase.

$$\text{Genitive relator complex} = \textit{-moq}_{\text{top}} \left\{ \begin{array}{cc} \textit{(nene)} & \textit{(-ma)} \\ \text{sum} & \text{def} \end{array} \right\} \left\{ \begin{array}{c} \textit{-qmini} \\ \text{gen sg} \\ \textit{-tosini} \\ \text{gen dl} \\ \textit{-tini} \\ \text{gen pl} \end{array} \right\}$$

The genitive suffixes can be further analyzed as:

$$\left\{ \begin{array}{c} \textit{-qmo} \\ \text{sg} \\ \textit{-tosa} \\ \text{dl} \\ \textit{-te} \\ \text{pl} \end{array} \right\} \quad \begin{array}{c} \textit{-ni} \\ \text{genitive} \end{array}$$

along with the following morphophonemic rule:

V / ——*ni* 'genitive' ⟶ /i/

Examples:

[*venaq losi aliti*]-*MOQ*-*MA*-*QMINI mogona*
[wife two he'll_get] top - def - gen sg nature
'the way of [his taking two wives]' (PO:15)

venaq alimi nimila -*MOQ* *NENE-MA-QMINI* *gakolaqa*
wife taking they_are_putting top sum - def - gen sg talk
'the story of [how they betroth women]' (WT:19)

vegi venaki miniakaq Ø-asi -*MOQ* *NENE-TOSINI* *izegipala losi*...
man_and woman_and stayed be-3dl top sum - gen dl children two
'the two children of a man and woman [who once lived]...' (FA:2)

4.3.8 Instrumental Relator Complex. A modifying clause, immediately preceded by an optional noun phrase, may end in the Instrumental relator complex, which marks the whole unit as filling an Instrumental slot in a clause.

Instrumental relator complex = *-moq* top { *(nene)* sum *(-ma)* def } *-tunuq* with

Examples:

...*ekevake zeko mina* -*MOQ*-*MA*-*TUNUQ*...
dab affixing it_stayed top - def - with
'... with [what remained dabbed on]...' (FC:11)

nagaq makoq molonou -*MOQ* *NENE-TUNUQ*...
rope some I_have_put top sum - with
'with some rope [that I have put away]...'

5 EXPANDED (ASPECTUAL) VERB PHRASES

5.1 Introduction to Overall Structure. Any verb phrase may be expanded into a longer phrase by means of aspectual complexes. In general, when one of these aspectual complexes occurs, the resultant verb phrase (ignoring any adjuncts or preverbs, which will precede) will have the following pattern, in which asp = aspectual suffix(es):

v.nuc (benef) asp # (prog) v.stem (tense) sub mood

It can be seen by comparing this with the verb structure presented in Section **3.2** that there are two ways of describing the differences between the two structures. The presentation here assumes that an aspectual complex consisting of an aspectual suffix (or suffixes) and (in a separate word) an additional verb stem has been inserted after the verb nucleus (following the benefactive complex if it occurs), and that the progressive prefix has moved to the inserted verb stem. Alternatively, we may consider another verb stem to have been inserted in place of the original nucleus, and the nucleus and any benefactive complex (with the aspectual suffix(es)) to have formed a new word preceding the verb. In either case, those stems which occur in the nucleus slot of expanded verb phrases form an unlimited class (and express the main action), whereas only four stems (viz., *ϕ-* 'be', *it-* 'rise', *v-* 'go', and *min-* 'stay') are known to occur in the slot of the inserted verb stem.

Appendix A, Chart 7 gives a summary of the structure of expanded (aspectual) verb phrases, with illustrative examples.

The inabilitative aspectual verb phrase has a slightly different structure from that given above. Its pattern is:

v.nuc (benef) neg fu sub top # v.stem (tense) 3sg mood

5.2 Specific Aspectual Complexes. There are certain specific rules, especially concerning the occurrence of the negative and tense complex morphemes, which will be presented in the following discussion of the individual

aspectual complexes. In some cases a particular aspectual suffix or suffix combination occurs in other constructions than an aspectual complex. These other constructions will be described in turn following the description of each aspectual complex and its function in expanded verb phrases. This section will be concluded by a description of the ergative complement complex, which is different in meaning but very similar in form to some of the aspectual complexes, and the inabilitative aspectual verb phrase.

In the examples in this section the aspectual complex morphemes being illustrated are given in capital letters. In certain instances extraneous material is enclosed in parentheses.

5.2.1 The *intentive aspectual complex* expresses an action which the speaker considers as definitely going to occur. It has the following structure:

. . .(negative) intentive # ∅- . . .
be

In this construction the stem ∅- occurs with an optional progressive prefix, but no negative or tense complex suffixes can be included in the affixes which complete the verb phrase.

The rule specifying the basic forms of the intentive relator is:

$$^{M}\text{intentive} \quad \begin{matrix} 1/ \\ 2/ \end{matrix} \quad \begin{matrix} ^{M}\{\text{class 10 v. stems, benefactive}\}— \\ \ldots\ldots\ldots\ldots\ldots \end{matrix} \quad \begin{matrix} \rightarrow \ ^{P}/anogo/ \\ \rightarrow \ ^{P}/inogo/ \end{matrix}$$

Both /o/ vowels are subject to the ablaut rule (Sect. **2.3.4**). Thus, following a class 10 verb stem or benefactive indicating suffix, the form of the intentive relator is *-anogo* with monofocal subjects and *-anigi* with polyfocal subjects; and elsewhere, following a class 20 or class 30 verb stem or negative suffix its form is *-inogo* with monofocal subjects and *-inigi* with polyfocal subjects.

If no progressive prefix occurs on the stem of the verb "be" following the relator, then with polyfocal subjects the word boundary is lost and the vowel reduction rule (Sect. **3.3.2**) applies. In the first of the examples of intentive aspectual phrases given below, the elision is seen (the unelided form would be *v-inigi ave*).

v- INIG - ave
go-intentive - they
'They will surely go.'

v - INIGI ni - ∅ -ave
go-intentive prog-be-they
'They are surely intending to go.'

v - am - INOGO ∅ - ive
go-neg-intentive be-he
'He will surely not go.'

huk -o- ge-t - ANOGO *Ø - ive*
cut-Cd-you-ben-intentive be-he
'He will surely cut it for you.'

huk -i- gi -t - ANIGI *ni - Ø - ave*
cut-Cd-you-ben-intentive prog-be-they
'They are surely going to cut it for you.'

5.2.2 The *habituative aspectual complex* expresses an action performed habitually or continually. The habituative aspectual complex contains the habituative suffix combination, which consists of the stative suffix plus the habituative suffix (hab) *-akaq*. The stative suffix is as described in Section **3.6.5**: its forms are *-ek/-ok/-ik*. With perhaps a majority of speakers, the /k/ of the stative suffix is elided,[1] making the forms of the full habituative suffix combination *-eakaq/-oakaq/-iakaq*.

The habituative aspectual complex consists of:

. . .(negative) stative hab # Ø- . . .
be

As with the intentive aspectual complex, the stem Ø- occurs with the optional progressive prefix, but no negative or tense complex suffixes may follow the Ø- stem.

Examples of habituative aspectual phrases:

amuza miliki v - IK-AKAQ Ø - a - moq
force puttlng go-sta-hab be-they-topic
'They used to go energetically.' (ON:4)

v - OK-AKAQ no - Ø - une
go-sta-hab prog-be-we
'We habitually go.' (BU:3)

ke - m - E -AKAQ no - Ø - une
them-give-sta-hab prog-be-we
'We habitually give them.' (BU:12)

A clause whose verb phrase ends with the habituative suffix serves two other functions. It may fill a modifying slot in a noun phrase, preceding the head word of the phrase. The sememic function of this clause with the habituative suffix is to state an action which customarily or habitually characterizes a certain object, or the habitual purpose or function associated with that object. In this construction the monofocal forms of the stative morpheme are generally used (i.e., when the

1. This appears as a general optional rule of verb suffixation: a suffixal sequence /kVk/ may reduce to /Vk/. It also occurs when a stative suffix precedes the s(ame) sub(ject) relator *-ke* (Sect. **6.6.1**):

mezane it - i - a - ke ...
up_there climb-sta-they-s. sub
'after they climbed way up there ...' (CA:4)

speaker considers this action to be associated with this object by himself and all others, since 1st plural is covered by the monofocal category).

hoza *al-EK-AKAQ* *gamena*
work do-sta-hab time
'the time that work is habitually done' (SO:13)

n - am - OK-AKAQ *netaq*
eat-neg-sta-hab thing
'an inedible thing'

The same construction may also occur with one of the noun phrase enclitics (cf. Sect. **4.3**) to mark a clause which fills a non-verbal slot in another clause. Examples of such constructions are:

monoq *l - OK-AKA*[2]*-kumuq*
religion say-sta - hab - concerning
'concerning the customary exercise of religion' (LH1:7)

zuhaq *Ø - OK - AKA*[2]*-liqmini* *mogona*
plant be - sta - hab - poss.sg nature
'the nature of planting' (GA:1)

5.2.3 The *gerundive aspectual complex* occurs with a negative suffix to indicate the absolute nonoccurrence of an action (equivalent to the English use of "never"). The gerundive aspectual complex consists of:

... gerundive # $\overset{\text{Ø-}[3]}{\text{be}}$ negative ...

The basic form of the gerundive suffix is *-osaq*. The /o/ is subject to the class 20 verb stem rule (Sect. **3.3.3**) and the ablaut rule. That is, the form of the gerundive suffix is *-isaq* with polyfocal subjects, *-esaq* following a class 20 verb stem with monofocal subjects, and *-osaq* following either a class 10 or class 30 verb stem, a negative, or a benefactive indicating suffix, with monofocal subjects.

Examples of gerundive aspectual phrases:

gele *zageko* *min-OSAQ* *Ø - AM -une*
sense trusting stay-ger be-neg-we
'We never keep believing it.' (SM:29)

makoq *gi - m - ISAQ* *Ø - AM -ave*
some you-give-ger be-neg-they
'They never give you any.' (LM:12)

Oqmasimuq *gel - ESAQ* *Ø - AM -une*
God_about sense-ger be-neg-we
'We never think about God.' (SM:25)

2. For the rule of loss of glottal stop before a following suffix see Section **4.3**.

3. Native reaction as seen in written material is sometimes to eliminate the word boundary (and thus the need for a zero stem here).

A similar construction with 2nd person subject morphemes can also express an urgent positive command:

v - ISAQ - Ø - AM-ave
go - ger be-neg-2pl
'You (pi) get going!'

The sense here seems to be, "You haven't gone (but you ought to, now!)."

A clause functions as a noun phrase if it ends in a gerundive suffix. The gerundive suffix may be preceded by a negative suffix. This construction often fills a subject slot in stative clauses to introduce a query or a comment concerning the future performance by anyone of some particular action. Examples:

v-OSAQ n - e - he
go-ger exist-3sg-int
'Will someone be going?'

aqnig-OSAQ n - e - he
see - ger exist-3sg-ind
'Someone will look at it.' (RB:20)

itiqna v-OSAQ lamanaq itive
today go - ger good will_be
'It will be good to go today.'

itiqna v-OSA-kumuq lamive
today go-ger-about he_didn't_say
'He didn't talk about going today.'

5.2.4 The *collective aspectual complex* describes an action performed by a group *en masse* or collectively. The collective aspectual complex consists of:

... compounding suffix # collective # $\begin{matrix}\text{Ø-}\\ \text{be}\end{matrix}$

The collective morpheme is *gesaq*. The compounding suffix (Cd) is as described in Section **3.3.3.** An example of a collective aspectual phrase is:

ki - pil - I GESAQ Ø-iki...
them-smite-Cd collective be-ing
'all smiting them in unison...' (ON:6)

5.2.5 The *repetitive aspectual complex* describes an action which is repeated over and over. This complex consists of a repetition of a unit consisting of the verb nucleus plus any benefactive complex plus the repetitive suffix, followed by the stem "be." If the verb phrase has an adjunct (Sect. **3.5**) or a preverb (Sect. **3.6**), those elements are not repeated.

The basic form of the repetitive suffix (rep) is *-ova*. The /o/ is subject to the ablaut rule and to the class 20 verb stem rule.

Examples of phrases containing the repetitive aspectual complex (the first three with an adjunct) are:

lova hiz-IVA hiz-IVA Ø-iki...
fight wage-rep wage-rep be-ing
'(they) repeatedly fighting...' (ON:1)

ive Ø-OVA Ø-OVA Ø-oko...
cry be-rep be-rep be-ing
'(she) repeatedly crying...' (BU:6)

nosaqnetaq meina hiz-e-ge-t-OVA
food payment make-Cd-you-ben-rep
hiz-e-ge-t-OVA no-Ø-ugo...
make-Cd-you-ben-rep prog-be-I
'as I was repeatedly buying food for you...'

A clause whose verb phrase contains the repetition of the unit consisting of the verb nucleus and any benefactive complex and a repetitive suffix, and no further morphemes, expresses an action which has been repeated over and over again unsuccessfully. The forms of the repetitive suffix in this case are the same as those described above except that the consonant is /h/ instead of /v/.[4] An example of a clause containing this construction is:

... geisa goha hiz-IHA hiz-IHA izate amuza miliki
fence again stake-rep stake-rep pigs force putting
minikago nene goseleq lepelekago...
having_stayed pause weariness after_it_smote_us
'... having tried to make a fence again and again, since the pigs kept on forcefully (uprooting it), after we got weary of it...' (GA:15)

Sometimes an action is expressed by a combination of two verb nuclei, the first of which occurs with the Successive Action (Suc) relator (Sect. **6.6.1**), forms are *-oko*/*-eko*/-iki. To indicate that action is recurring, each of the verb nuclei along with the repetitive suffix occurs once, and the verb stem *0-* 'be' follows. In this case, however, the basic form of the repetitive suffix is *-ovo*, with /o/ subject to both the ablaut rule and the class 20 verb-stem rule. Note the following examples, the first two of which contrast the same expression in the nonrepetitive and repetitive forms.

na-gata z-eko ateg-e-a-ke...
my-ears hit-Suc crack-sta-he-when
'after he had boxed my ears...' (CA:9)

na-gata z-EVO ateg-EVO Ø-oko lovimoq.
my-ears hit-rep crack-rep be-Suc he_went_on
'He went on boxing my ears repeatedly.' (CA:10)

gu-gulizaq napa al-EVO let-OVO Ø-oko...
your-name big take-rep break-rep be-Suc
'repeatedly besmirching your great name...' (P2:2)

4. This alternation between /v/ and /h/ has been seen in the forms indicating indicative vs. interrogative (matrices 3 and 6, Sect. **3.3.6**). Perhaps the /v/ represents semantically certainty while /h/ represents uncertainty.

. . .al - IVI let - IVI Ø - iakaq niave.
take-rep break-rep be-hab they_are
'. . .they are repeatedly besmirching it'

5.2.6 The *continuative aspectual complex* expresses an action which continues for some period. It consists of the compounding suffix (Cd) or Successive Action relator (Sect. **6.6.1**), followed by the verb stem *min-* 'remain, stay'. Investigation has failed to reveal any semantic distinction to correspond with the two forms: some verb stems select the compounding suffix and some select the Successive Action relator. Note in the first example below that the habituative aspectual complex is compounded onto the continuative aspectual complex.

al - I MIN - i -akaq ni - Ø - ave
take-Cd stay-sta-hab prog-be-they
'They habitually remain holding it.' (FC:9)

al - E MIN-at-une
take-Cd stay-fu-we
'We will keep holding it.' (SM:34)

aqnig-O MIN -a-moq
see-Cd stay-he-topic
'He kept looking.' (FA:22)

giqmiz-I MIN - a - ke. . .
stick-Cd stay-they-when
'as they kept sticking close. . .' (CA:6)

apiz - IKI MIN -asi-mole.
be_together-Suc stay-2dl-topic
'They both kept close together.' (SJ:5)

n - OKO MIN-usi-moq
eat-Suc stay-1dl-topic
'We both kept eating.' (UT:8)

5.2.7 The *extended aspectual complex* is used to express a continued action when it is desired to emphasize the extended period during which the action takes place. In function (as well as in form) it parallels the English usage of 'go on and on doing'. The extended aspectual complex, which contains both the compounding suffix (Cd) and the Successive Action (Suc) relator, consists of:

$$\ldots \text{Cd} \begin{matrix} l \\ \text{say} \end{matrix} \text{ Suc } \# \left\{ \begin{matrix} v \\ \text{go} \\ it \\ \text{rise} \end{matrix} \right\} \ldots$$

Morphologically the whole verb phrase thus consists of at least three verb stems, each separated by only one suffix; viz. the stem expressing the prolonged action, the verb stem *l-* 'say', and either the verb stem *v-* 'go' or the stem *it-* 'rise'; but native reaction as seen in written material is to consider the first three morphemes of the extended aspectual complex as phonologically belonging to the

same word. In some cases an idiomatic sense attaches to the construction, as in the first two examples below. Note also that in the second and third examples of the extended aspectual complex phrase below, the repetitive complex is compounded onto the extended complex.

min - I-L -IKI IT - e vete
stay-Cd-say-Suc rose-3pl men
'the men who kept on arising/the succeeding male generations' (FC:16)

utoq Ø - I - L - IKI V-iva V-iva Ø - a izegipa
appear be- Cd-say- Suc go-rep go-rep be-3pl. children
'the children who continually kept on appearing/the successive generations' (FC:15)

aqnig-I - L -IKI IT - iva IT - iva Ø-ake...
see - Cd-say-Suc rose-rep rose-rep be-when_they
'as they repeatedly went on arising and looking at it...' (FC:15)

aqnig-I - L -IKI ni - V -ave
see -Cd -say-Suc prog-go-they
'They are going on and on looking at it.' (FC:16)

holisi min - O - L -OKO V-oko...
holiday stay- Cd-say-Suc go-Suc
'going on and on observing the holiday...' (BU:7)

lova hiz - I -L -IKI numutoka V -ake...
fight wage-Cd-say-Suc home went-when_they
'as they kept on going home fighting...' (JF:8)

5.3 The Ergative Complement Complex. One other complex, different in function but very similar in form morphologically to some of the aspectual complexes described above[5], is the ergative complement complex, corresponding roughly in function to what in English is usually called an object complement. In it one or more complement morphemes which provide a description of an affected item (i.e., subject of an intransitive verb or object of a transitive verb) are inserted within the verb. In this case, however, the insertion is between the verb nucleus and the optional benefactive suffix complex. The complement morphemes may consist of an adjective, a verb phrase adjunct, a locative phrase, or a noun phrase. The total complex is:

... compounding suffix # complement # v. stem ...

The final stem is Ø- 'be' unless the complement is inserted in a verb phrase containing a preverb (Sect. **3.6**), in which case the complement is simply inserted between the preverb and the verb. Examples of clauses containing the ergative complement complex, with the morphemes of the complex indicated by capital letters and the type of complement indicated in parentheses to the right, are as follows:

5. The collective aspectual complex (Sect. **5.2.4**) could be included here except that the collective morpheme *gesaq* occurs nowhere else in the language structure, in contrast to the complement morphemes of the ergative complement complex.

aqnig-O *LAMANAQ* *Ø - okisinake...* (adjective)
see - Cd good be-after_we_do
'after we have seen that it is good/coveted it...' (FO:8)

numukuq *min - O* *VAIQ* *Ø - okunike...* (adjunct)
house_in stay-Cd full be-when_we_had
'after we had filled the house...' (EF:7)

gale *napama* *al - I* *KOLOQ* *Ø - iake...* (adjunct)
pit big got-Cd open be-when_they
'after they had made the big pit open...' (CA:9)

le-leqm-O *UTOQ* *mol-okanike...* (adjunct)
us-got-Cd appear put-when_you
'after you had created us...' (P3:1)

nagaq *al - E* *ASUQ* *Ø - okinake...* (adjunct)
rope get-Cd finish be-when_we
'after we have finished tying the rope...' (HB:7)

gonosivaqa *al - I* *HETOQ* *Ø - ikake...* (locative noun)
his_corpse got-Cd outside be-when_they
'after they had taken his corpse outside...' (EF:16)

ho *lem - E* *NUMUNAGUQ* *no - Ø -igo...* (locative phrase)
sun descended-Cd its_house_in prog-be-as_it
'as the sun went down...'

venaq *izegipala* *ahul-O* *AGOQMULA-LOKA* *Ø - oake...* (locative phrase)
wife children left-Cd his_eyes - at be-when_he
'after he had sent his wife and children in front of him...' (CA:5)

al - E *HILISI* *it - eake...* (noun)
got-Cd pile rose-when_he
'after he had made it rise up into a pile...' (CA:9)

al - E *LAMANAQ* *Ø - o - le - t - ozo*
get-Cd good be-Cd-us-ben-imp sg
'Make it good for us.'

5.4 Inabilitative Aspectual Verb Phrases. Inability always requires a phrase, whose structure has been indicated in Section **5.1.**

The difference between an inabilitative aspectual verb phrase and a nonaspectual verb phrase could be described in several ways. Five morphemes (negative, future, and topic suffixes, and a verb stem and a 3rd singular suffix) are added in the inabilitative phrase. The first two occur in the usual tense complex slot of the verb. The topic suffix replaces the usual mood suffix, which occurs instead on an appended word which contains the additional verb stem and the 3rd singular suffix. The inabilitative aspectual verb phrase thus differs from other aspectual verb phrases in that its subject occurs in the penultimate word of the phrase (with a dummy 3rd singular subject occuring in the final word of the phrase); whereas in other aspectual phrases the subject occurs in the final word of the phrase.

In some respects that structure suggests a word appended to a verb rather than a complex inserted within the verb, except that it is the final word of the verb phrase which as usual carries the full range of mood affixes and a variation of tense suffixes. The verb stem (in the final word of the phrase) may be the existential stem only if no tense complex morphemes occur; otherwise the stem ∅- 'be' occurs. The tense affixes which may occur are as follows:

$$\text{tense}_{\text{inabilitative}} = \left\{ \begin{matrix} \text{sta (fu)} \\ \text{perfect} \end{matrix} \right\}$$

This construction, with the stative and future morphemes, becomes the means of negating the contraconsequential tense complex (Sect. **3.3.5.5**). Examples of this aspectual phrase are as follows:

v - AM-IT- a - MOQ ∅ - I - moq
go-neg-fu-3pl- top be-3sg-top
'They were not able to go.'

v - AM-IT - a - MOQ ∅ - ok - A - ve
go-neg-fu-3pl - top be-sta-3sg-ind
'They are not able to go.'

v - AM-IT - a - MOQ ∅ - ok-at - I - ve
go-neg-fu-they-top be-sta-fu-3sg-ind
'lest they go/they might not go otherwise'

6 SENTENCE STRUCTURE

6.1 Introduction. This study claims that sentences in Gahuku are the largest morphological units for which constituent structure may be fully specified according to contrastive types. Sentences are units of morphological structure which normally express (i.e., are the realizations of) one or more sememic constructions each of which will be called a sememic configuration. Since, however, there is not necessarily a one-to-one correlation between sememic units and morphemic units, often the boundaries of sememic configurations are not marked by sentence boundaries. The most obvious example of this in Gahuku is in procedural and narrative types of discourse, in which configurations which exhibit temporal relationships with each other are strung together in one sentence as a succession of clauses, all but the last one of which are Dependent temporal clauses of the Sequence or Successive Action type.

In this chapter I shall discuss what part verbs have in the structure of sentences. In Section **6.2** there is a brief discussion of the verbal and nonverbal tagmemes that may comprise a sentence, with special attention paid to those tagmemes and orders which are infrequent. Section **6.3** presents the phonological features that mark a verb as concluding a sentence. Section **6.4** discusses sentences as contrasting morphological constructions and the importance of verb affixation in their overall structure. Section **6.5** contains an extended discussion of the three sentence types (which contrast by the structure of the verbs of their constituent clauses), with several examples of each type. Section **6.6** discusses in detail the rules relating various semological propositional relationships to the verb structures of each type of subordinate clause and their orders in sentences.

6.2 Sentence Tagmemes. Sentences consist of one or more optional Margin slots filled by Dependent clauses, and a Base slot filled by an Independent clause or Exclamation. If the sentence comes first in a paragraph which initiates a discourse, it may also contain one or more initial Vocative slots. Vocative slots are illustrated in sentences 1–5, which introduce the opening paragraph in a text

consisting of a letter from one individual to another named Wanimapi, and express thoughts directed toward the addressee. Sentence 1 consists of Vocative and Exclamation tagmemes; sentence 2 consists of a Vocative tagmeme; sentence 3 consists of a series of Vocative tagmemes and an Independent clause; sentence 4 consists of an Exclamation; sentence 5 consists of a Vocative tagmeme and an Exclamation.

(1) *Wanimapiq mokaqneve*[1]. (2) *neniq ameqneho lamanaq.*
Wanimapi ?_my_is my my_father good

(3) *Kaivaq Petizoq Losaeq itoq Wanimapiq neniq zuha lamanaq niave.*
Kaiva Petizo Losae and Wanimapi my clan good you_are

(4) *motinaqne.*[1] (5) *ameqneho Wanimapiq mokaqneve.*[1]
?_my my_father Wanimapi ?_my_is

(1) 'Wanimapi, my gracious! (2) My good father! (3) Kaiva, Petizo, Losae, and Wanimapi, you are my good relatives. (4) My goodness! (5) My father Wanimapi, my gracious!' (LH4)

Sentences may also contain an initial Evaluation tagmeme if the sentence is functioning as a Reply in a discourse following a Query by another speaker. There are three possible fillers of the Evaluation slot: (1) *oo* 'yes', (2) *oqe* 'no', or (3) an idiomatic construction consisting of the particle *laq* 'thus' plus a dependent Sequence form containing the stem *∅-* 'be' which is marked (a) for tense and (b) to indicate the person referred to by the subject of the preceding question clause. Examples of this latter construction serving as Replies are:

(Reply to "Will you go?") *laq ∅-it-o-go*
thus be-fu-I-d. sub **'(Who knows whether) I will?'**

(Reply to "When will he go?") *laq ∅-it-i-go*
thus be-fu-he-d. sub **'(Who knows when) he will?'**

(Reply to "Where did he go?") *laq ∅-i-go*
thus be-he-d. sub **'(Who knows where) he went?'**

Normally the Dependent clause precedes the Independent one in Gahuku, and the Independent clause concludes the sentence. When the speaker wishes to present information which is omitted from the content of the sequence of Dependent clauses which precedes the Independent clause, he may insert this information following the Independent clause but before the conclusion of the sentence. In some cases the prior omission and later insertion may be considered accidental, as in the following examples. Each example consists of the Independent clause of the sentence followed by the appended information. A dash introduces the appended material in both the Gahuku and the free translation.

1. In these words, suffixes may be isolated and meanings assigned, but since the stems occur nowhere else but in these exclamations it is impossible to assign meanings to them. To capture the flavor of the exclamations and preserve a bit of the form, the English exclamations "my goodness" and "my gracious" have been supplied.

(6) ... *Wanimakaloka une — holisi napaguq holuguq akoveveq.*
Wanima_to we_came holiday big_in night midnight.
'...we came to Wanima—on Sunday at midnight, that is.' (LW:19)

(7) ... *uvoqno novoza nohuluze — imanuvane vegenaq nenete gakoq*
my_brother my_shame I'm_dying right_here people they talk
emane liliki nivatiqmo lugupeloka emane.
way_back saying their_going_on our_bodies_on way_down
'... my brother, I'm dying of shame—on account of the people right here going on and on talking down on us, that is.' (FP:13)

(8) ... *uvolahoma nene itimoq — gahuqmaloq nene.*
older_brother pause climbed gahu_on summary
'...his brother climbed up—on the gahu-tree, that is.' (FA:21)

(9) ... *aqmina ve ha noive — Hinole loko.*
that man still he_is Hino_is saying
'...that man is still alive—Hino, that is.' (CA:8)

(10) ... *laqa loko limoq — gamena lositaq nene lokaq omikago.*
thus saying he_said time two pause ask after_doing_to_him
'...he said thus—after (the other one) had asked him twice, that is.' (SS:25)

In examples 6–10 only the end of the sentence is given; the number of clauses which have preceded the portions given are 8, 1, 10, 13, and 3 respectively.

There are instances, however, where the sememic structure of the discourse is such that insertion of information following the main verb is normal and deliberate. Because such a morphemic pattern is rare and often suggests afterthoughts which could have been inserted into the sentence prior to the Independent clause, when informants have translated material from English into Gahuku and written such sentences, in order to edit material for publishing a body of vernacular literature, I have invariably tried to revise these sentences. On occasion, however, I have subsequently been told that the "appended" clause should stay appended. Material which falls into this category includes the specifying of persons, times, places, an adverbial negative emphasizer, and in some instances other clauses. The semantic reasons for the appendage of the latter have not yet been fully analyzed, but the realization rules which specify these possibilities are included in the description in Section **6.6.** Examples of phrases and dependent clauses which occur in sentence-final positions, some of which illustrate structures described in Section **6.6,** are grouped here.

(11) ... *ve makoq Oqmasiqmo amiselekago amoq — nene agulizaqa Zoniq.*
man a God having_sent-him he_came pause his-name John
'...there came a man sent from God—his name, John.' (SX:1)

(12) ... *numuni geko amitanimoq — kekeq.*
house build you_won't absolutely
'...you won't build a house—positively not!' (MA:14)

(13) ... *Apilikaka oko hoza aleko minamoq — nene melekeni 16.*
Africa_to coming work doing he_stayed pause dances 16
'... he came to Africa and remained working there ... for 16 years.' (LI:30)

(14) *laq okake Livinistonini aleqmo ve napa loloq imoq — nene*
thus having_done Livingstone made_him man big become he_did pause

apaq makoq Apilikaka Kuilimaneloq minoko Igilani vegenaq
place other Africa_at Quilimane_at staying England people

itoq hozaqinimuq gizapa itive loko.
and their_work_about oversee he_will saying
'After that, he made Livingstone an important man—namely, that he should stay in Africa at Quilimane and look after the English people and their work.' (LI:32)

(15) ... *Sezeleq nene ininaq napa imoq — nakahuni kepeleko laq*
Sechele pause tremble big he_did stick smiting_them thus

amuhaqma nemoqza vatiq iki gilikave loake.
we_didn't but well doing they've_sensed after_saying
'... Sechele was greatly amazed—realizing that they hadn't beaten them with sticks, but that they had responded well.' (LI:16)

(16) ... *netaq makoq lainimi imoq — nene totaq loloq itove loko*
thing other learn he_did pause doctor become I_will saying

lusa geakaq hozamuq.
medicine building work_about
'... he studied something else—namely, about medicine, in order to become a doctor.' (LI:6)

(17) *Nenemuq keza pasatiaq vegenaq nene goseleq kepeleakaq imoq —*
So they passenger people sum weariness smiting_them it_did

litaq oko vo anitituninazo liake.
quick being go we_should_arrive after_they_said
'So the passengers got bored—wishing they could arrive quickly.' (LI:10)

(18) ... *Livinistonini gala ve liliq itamoq — aqisi gehani*
Livingstone's enemy men become they_did_to_him he money

aleakaq uhaq gapoma hize liq okanazo liake.
gettlng we_did road thrust shut he_did_since after_they_said

'... they became Livingstone's enemies—namely, on account of his closing off their way of getting money.' (LI:36)

Although sentences may contain Vocative, Exclamation, and Evaluation tagmemes and although sentences do not always end with the Independent clause, the most common sentence structure is that of optional Dependent clauses followed by an Independent clause. A detailed description of such structure begins with Section **6.4.**

6.3 Phonological Features of Sentences. Morphological sentences are realized phonologically by units which may be called phonological sentences, which are characterized by certain phonological features. The end of a

phonological sentence is marked by a lowered pitch or a downglide on the final syllable, followed by pause. There are two phonemic tones in Gahuku; using [´] to mark high tone and leaving low tone unmarked, and using [`] to mark extra-low pitch and [ˆ] to represent a mid-low downglide, we have the following rules for phonological sentence boundary:

...Sýl / ___ ## → [...Sŷl]
...Syl / ___ ## → [...Sỳl]

That is, at a phonological sentence boundary a final high-tone syllable is manifested phonetically by a mid-low downglide, and a final low-tone syllable is manifested by extra-low pitch.

Sometimes a morphological sequence is terminated by a clause which structurally meets the definition of an Independent clause but which is not marked by the phonological features noted above. Such a sequence is also considered an (embedded) sentence if it is immediately followed by a morpheme which marks the preceding unit as a quotation. A quotation may end with the verb of an Independent clause but be followed without further intonational features by the quotation-indicating clause. In such a case the whole unit can be analyzed as a clause whose object slot is filled by another single or multiclause sentence unit. Consider the following examples:

(a) [*aqnígatóvê*]
I'll_see_it

(b) [*aqnígatóvê lóko límòq*]
I'll_see_it saying he_said

(c) [*aqnígatóvé-lì*]
I'll_see_it-he_said

Each of the above is a clause and at the same time a sentence, but (b) and (c) contain a sentence within a sentence. Example (c) is interesting because phonologically it is clearly one word, but morphologically it is two sentences (one embedded within the other); and likewise semologically two propositions, with two actions, agents, and aspects fully indicated.

6.4 Constituent Structure of Sentences. My belief that the sentence in Gahuku is the highest level of structure in the morphological mode for which it is possible to specify units which contrast in terms of their constituent structure has already been stated. In some languages the status of the sentence may be questionable as a unit so defined. There are then two questions which remain to be answered for Gahuku. First, on what grounds are sentences included as contrastive morphemic units (i.e., structures which can be divided into contrastive types on the basis of their internal structure)? Second, on what grounds are larger structures excluded as contrastive morphemic units?

6.4.1 Sentences as the Largest Contrasting Morphemic Units. Regarding the first question, sentences in Gahuku are morphemic units because there are three contrastive sentence types whose structures (a) differ and (b) are describable in a manner which accounts for the data correctly and exhaustively; that is, structures may be specified which will account for the morphemic patterns of all the sentences in the corpus. Sentences are structures whose constituent morphemes are arranged in certain tagmemic patterns; both the morphemes themselves and the patterns in which they are arranged are realizations of certain sememic units and structures; and both the sememic units and structures and the rules which relate them to the morphemic units and structures are specifiable. Gahuku sentences in general consist of Margin (M) and Base (B) slots which are filled by specific contrastive clausal construction types. Sentences are, in addition, units which are realized by certain phonological structures.

On the other hand, it is impossible to postulate for Gahuku larger morphemic units, such as paragraphs, in these terms. Even for sentences it is impossible to state exhaustively in morphemic terms what paragraph or discourse units various contrastive sentence types fill slots in, or what sentence types manifest constituent tagmemic slots in these larger units and in what combinations. What is possible, however, is to specify what sentence constructions may manifest certain high-level sememic constructions, by stating the semo-morphemic realization rules which interrelate the two.

There is a close parallel with the limitations of phonological structure. One could not postulate for Gahuku contrastive phonological sentences, and then state exhaustively what phonological word-types fill which constituent slots in these phonological sentences, and in what permissable combinations. What is possible is the specification of which phonological sentences realize which morphological sentences (including specification of relevant intonational contours) by stating the morphophonemic rules that relate the two.

It could be objected that in certain higher level units of discourse there are structures in which there are clearly limitations on the manifesting morphological classes, and that therefore there are clearly morphological units larger than sentences. This is not denied. An example might be the case of a question by speaker A and a response by speaker B. In English, a response to the question "Where did you go yesterday?" could be almost any kind of sentence or sentence fragment. It might be in the form of a Declarative sentence (e.g., "I went to town"/"I'm not going to tell you"), an Imperative sentence ("Don't ask me"/"Stop meddling in my affairs"), a yes/no question sentence ("Is that any of your business?"), or a question-word sentence ("Why do you ask?"/"Where do you think I went?") etc. There are very clearly specifiable sememic relationships between a question and its response, although it is easier to look backwards from the reply and suggest the grammatical form of the query than vice versa. There is one clear limitation in that the reply will not begin with yes/no. However, this is only one exclusion from what otherwise appears to be unlimited possibilities of morphemic structure in the reply. We might observe that conversations are not

normally initiated by morphological constructions which begin with certain conjunctions (e.g., therefore, however, furthermore, but, then, or, etc.). But in English there are other conjunctions (e.g., when, if, since) which could begin a conversation; and thus we need to account for these limitations in sememic, not morphemic structure. Thus, as previously noted, it is possible to postulate morphemic units above sentence level and note certain morphological features which apply to these units; but to account for what may for example be an answer to a question, we need the much more extensive contrastive arrangements of sememic structure. And negatively, to try to account formally and exhaustively for the structures of questions and replies (which involve change of speaker, which are accounted for in semology) strictly in terms of morphemic structures is impossible. It is like trying to account for all the possible syllable combinations which can express a unit consisting of a transitive verb phrase plus object. The structures of the different modes (semology, morphology, phonology) must be kept separate, and the rules which relate them specified.

6.4.2 Gahuku Verb Complexities. This study is confined to morphemic verb phrase structures in Gahuku, including rules relating morphemic to sememic or phonemic structures. However, in Gahuku one cannot account for verb affixation without taking into consideration the distribution of clausal units in sentences and in other morphemic structures. In Gahuku a word which is a verb may comprise a complete clause, which in turn may comprise a complete sentence. To illustrate the need for stating sentence structures in order to account for the affixes of verbs, we may consider the following examples, each of which is a single word consisting of the morpheme *v-* 'go' plus suffix *-i* '3rd singular' plus various suffix forms. Note the extraclausal considerations involved in the italicized morphemes in each of the following. The extraclausal information signaled in italics is given in parentheses following the gloss for the entire verb form.

v-i-*moq*	'He went.' (remote past, declarative clause, indicative mood, sentence)
v-i-*he*	'Did he go?' (recent past, yes/no question clause, interrogative mood, sentence)
v-i-*lina*	'If he had gone. . .' (Contrafactual protasis clause filling Margin slot in a contrafactual sentence)
v-i-*he*	'after he went' (recent past, Sequence Dependent clause indicating the subject is the same as that of the succeeding clause,[2] filling Margin slot in a sentence)
v-i-*go*	'after he went' (recent past, Sequence Dependent clause indicating its subject is different from that of the succeeding clause, filling Margin slot in a sentence)
v-i-*moqza*	'although he went' (Contrast Dependent clause, filling Margin slot in a sentence)

2. Only Sequence clauses, such as in this and the following example, distinguish whether their subjects are the same as or different from the subject of the following clause.

v-i-*kumuq* 'concerning his going' (Embedded clause filling a Referential slot in a clause)

v-i 'who went, that he went' (Adjectival clause filling a modifying slot in a noun phrase; e.g.,

vi	*ve*	
he_went	man	'the man who went'
vi	*apaq*	
he_went	place	'the place where he went'

If we state sentence structures as well as lower-level morphemic structures which involve verbs in Gahuku, we will account for the structures of the above illustrations. And contrariwise, there are no data relative to verb phrase structure involving constituents of larger morphological structures which, for their explanation, demand consideration of units larger than the sentence. There are data concerning phenomena such as pronominal usage and agreement, and initial clauses which repeat the specific verb nucleus of the final clause of the previous sentence, which demand consideration of units larger than the sentence. However, such data are concerned with the occurrence of specific members of morphological classes and not the total classes; hence they are accounted for exclusively in rules relating sememic and morphemic structures and not in morphological structures, and hence in general beyond the scope of this study.

6.5 Sentence Types. Gahuku sentences may be classified as Imperative, Contrafactual, or Complex according to the type of clauses which may fill the Margin and Base slots of each.[3] For Gahuku (as is probably true for most languages) a statement of the possible orders of clauses within one sentence is extremely complex, yet this complexity is governed by a very small set of rules. These rules will now be stated and explained; and it is hoped that the result will be a description which will correctly and exhaustively account for the data.

I have already considered cases where a sentence is not concluded by the verb of an Independent clause. These occur in only a small fraction of the data,[4] because the first general semo-morphemic rule regarding sentences is that subordinate propositions are expressed by clauses which precede the clause they are related to, and that the Independent clause concludes the sentence. Of this small proportion of sentences in which the Independent clause does not end the sentence, only a few contain an Independent clause followed by another clause within the same sentence. These consist mostly of cases where a clause expressing Purpose, Cause, or a Prior Event follows the Independent clause. Note for example sentences 14–18 above.

Aside from these instances, to account for the rest of the data it is necessary to understand two rules. First is the general semo-morphemic rule of clause order, which may be stated as follows: if a sememic proposition j (which is realized

3. Appendix A, Chart 9 gives a summary of the contrastive features of the three sentence types.

4. Just 4 percent from a sampling of 600 sentences of the corpus.

morphologically by a Dependent clause) is in a (sememically) subordinate or a temporal relationship to another proposition i (which is realized morphologically by an Independent clause) the Independent clause will normally conclude the sentence containing those two clauses. If we group the sememic propositions such that the proposition on the left is subordinate to the one on the right to which it is connected by a line (with the arrowhead showing the direction of dependency), and in the morphemic structure put in parentheses the symbol i or j which indicates which morphemic clause corresponds to which sememic proposition, the rule is then:

$$\text{Proposition j} \longrightarrow \text{Proposition i} \rightarrow \text{(j) + (i)}$$

In the above symbolism, which will be used extensively in this section, the isolated arrow indicates again "is realized by/is expressed by."

The second general rule is, if two or more propositions are sememically both in a subordinate relationship to a third proposition, these relationships are realized morphologically by a clause order which reflects the Gahuku scale of closeness of propositional relationships.

The reason for the term "closeness" may be given briefly as follows. Suppose there are three propositions i, j, and k; and that j and k are in different subordinate relationships to i (e.g., Condition and Purpose). The rule for Gahuku given above states that the clauses expressing j and k will precede the clause which expresses i. But the rule does not state whether the clause expressing j will precede the clause expressing k, or vice versa, or whether both are possible. The claim is made here that such a decision is made according to a scale on which various propositional relationships are ranked. There appears to be a fair amount of evidence that this scale is not strictly language specific, but that it has a large degree of universal validity.[5] This scale thus specifies that given the above conditions, which may be expressed as

the nature of the relationship of j and k to i specifies which of the two will be expressed by a clause closer in linear morphological order to the clause which expresses i.

The morphemic manifestation of this scale of closeness for Gahuku is given in Fig. 3. In this scale, number 1 (the Final[6] clause) is the point of reference, and increasing numerical order correlates with decreasing closeness. Fig. 3 thus indicates what types of clauses which are all subordinate to one Final clause may occur, and in what order, in Gahuku.

5. For further discussion of this notion see Deibler and Lowe, "Semantic Closeness of Propositions," forthcoming.

6. In the rest of this section the Independent clause (which normally occurs sentence final) will be referred to as the Final clause.

Slot Position No.

Name	6	5	4	3	2	1
	Con(trast)	Rea(son) Fu(ture) Top(ic) Para(tactic)	Fu(ture) Quo(tation) Sup(position) Seq(uence) Top(ic)	Com(parison) Adv(erbial) Suc(cessive Action)	Equ(ivalent Action) Sim(ultaneous) Action)	Fin(al)
	Int(errogative)					

Fig. 3. Scale of Clause Closeness in Gahuku

All Gahuku clauses are what may be termed Relator-Axis[7] clausal constructions. These constructions contain a Relator tagmeme which consists of a monomorphemic or polymorphemic relator complex filling the mood slot of the verb (cf. Sect. **3.2**).

6.5.1 Correlative Propositional Relationships. Propositional relationships may be classified as either temporal, correlative, or noncorrelative (subordinate). I shall describe the correlative relationships first because it is very simple to do so, in contrast with the others.

The correlative relationships include Antithetical ("but"), Conjoining ("and"), and Alternative ("or") relationships. Using the label *thesis* for propositions which are either independent or to which one or more other propositions are subordinate or temporally related, two or more theses may be joined by any one of the correlative relationships. If the relationship is Conjoining, the propositions are both expressed as Independent clauses of two sentences in Gahuku, with all but the first introduced by the coordinate conjunction *itoq*. Sentences 19–21, which form a segment of one text, illustrate this.

(19) . . *kalimaqmini* *kanisolivaqa* *mota* *loloq* *onoune.*
cars_of its_council now become we_have

(20) *ITOQ* *kohiqmaqmini* *kanisolivaqa* *loloq* *onoune.*
and coffee_of its_council become we_have

(21) *ITOQ* *pisinisimaqmini* *kanisolivaqa* *loloq* *onoune.*
and business_of its_council become we_have

'. . .we have now become owners of cars. And we have become owners of coffee. And we have become owners of businesses.' (SH:4–6)

If the relationship between two theses is Antithetical, one is realized as a Contrast clause and precedes the Final clause which expresses the other thesis. The Contrast relator complex is:

7. In English the clause "when John came home" illustrates a Relator-Axis construction, in which "when" is the relator and "John came home" is the clause filling the axis slot.

-moq	*(-ma*	*nemoq)*	*-za*
top(ic)	def(inite)	it_is	con(trast)

Examples of sentences containing Contrast clauses:

(22) *geisa hize - MOQ-ZA* (6)[8] *makoq nene izate akohiki* (3) *epetiki* (3)...
fence they_staked-top-con some sum pigs biting uprooting
'They made a fence (6), but some of it the pigs bite (3) and pull up (3)...' (SA:15)

(23) *goiq oko* (3) *vi - MOQ-ZA eza nene amuza moloko* (3)
ahead being it_went-top-con it pause force putting

vamimoq (1).
It_didn't_go
'It went (6) ahead (3), but it didn't go (1) fast (3).' (SF:11)

(24) ... *aleloko* (3) *vi - MOQ-MA NEMOQ-ZA* (6) *itoq Zohaneq makoq*
take_saying he_went-top-def it_is - con and John other

nene lelitoka nene noihe (1).
sum us_to pause is_he?
'... he continued to go on (6) doing it (3); however, is there any other John among us (1)?' (SJ:16)

If the relationship between two or more theses is Alternative, all but the last one are realized as Interrogative clauses and the last one as a Final clause. The relator complex indicating Interrogative is as described in Sections **4.2.2** and **4.2.3**.

Examples of sentences expressing Alternatives:

(25) *nene soza lu - HE* (5/6) *lamanaq luve* (1).
that lie I_spoke-int truth I_spoke
'Am I lying (5/6) or telling the truth (1)?' (GA:22)

(26) *nosaqnetakumuq gelekunike* (4) *nou - PE* (5/6) *itoq izamuq*
food_about after_we_sensed are_we-int and pork-about

gelekunike (4) *noune* (1).
after_we_sensed we_are
'... are we (here) (5/6) because we had a desire for food (4) or are we (here) (1) because we had a desire for pork (4)?' (SJ:39)

(27) *itiqna vani - MOQ NE - HE* (5/6) *azo vani - moq neve* (1).
today you_went-top exist-int yesterday you_went-top it_is
'Did you go today (5/6) or go yesterday (1)?'

A correlative relationship may also exist between two or more propositions which are either in a subordinate or a temporal relationship to some thesis. If a Conjoining relationship exists between two or more such propositions in Gahuku,

8. In all further examples in this section, following each relator which is part of a construction manifesting a sentence-level tagmeme, there is given in parentheses its slot-position number from Fig. 3. This number is given in the free English translations as well. The morphemes being illustrated in each example are given in capital letters.

the second and subsequent clauses which realize these conjoined propositions are introduced by the coordinate conjunction *itoq*. Likewise, if an Antithetical or Alternative relationship exists between two such propositions, the realization rule is the same as that for the Conjoining relationship, with the semantic content of the clauses being left to express the Antithetical or Alternative sense. The following sentences illustrate a Conjoining relationship between various Dependent clauses. In each case the structure of the verbs in the conjoined clauses is identical and they are connected by *itoq*.

(28) Conjoined Conditional Propositional Relationships

... lekeza mikasiliniguq hoza aliki (3) *mini zuhaq ita - MOQ NENE* (5)
you your_land_in work doing garden plant you_will-top sum

ITOQ haitopaitoq nosaq zuhaq ita - MOQ NENE (5) *gehani napa*
and various food plant you_will-top sum money big

alinigave (1).
you'll_surely_get

'... if you work on your land (3) and plant gardens (5) and if you plant various kinds of foods (5), you'll get a lot of money (1).' (SO:34)

(29) Conjoined Purpose Propositional Relationships

... Izesuni gapovaqa aqnig-AT-ave LOKO (4) *ITOQ monoq nagamiq hiliki* (3)
Jesus' his_road see - fu - you saying and religious water anointing

Izesuni vegenakoq liliq IT-ave LOKO (4) *gapovaqa lekelepizeko* (3)...
Jesus' people_only become fu-you saying his_road showing_you

'... we're showing you the way (3) so that you will see Jesus' way (4) and so that you will be baptized (3) and become Christians (4)...' (SJ:42)

(30) Conjoined Prior Action Propositional Relationships

... iza moqnonama huk-IKI (3) *ITOQ logoqmulaloq netaq alemoqma*
pig breasts cut-when and our_eyes_at things that_they_did

vegenaqma huk - IKI (3) *kimikago* (4)...
people cut-when after_giving_them

'... after they cut up the pig breasts (3) and after they cut up the things that they were handling before our eyes (3) and had given them to the people (4)...' (IR:5)

(31) Conjoined Prior Action Propositional Relationships

... aqmina namama nene ahulokuni - KE (4) *ITOQ neza kozama ne*
those birds pause we_left - s. sub and my possessions this

netaq mana netaq ahulokuni - KE (4)...
thing that thing we_left - s. sub

'... after we got rid of those bird-flutes[9] (4) and after we got rid of this and that (4)...' (IR:7)

9. The flutes acquired the name "birds" because the uninitiated were never allowed to see the bamboo flutes, and were told that the tunes they heard being played on them were the songs of birds.

Note that in 30 and 31 the inclusion of *itoq* indicates that the propositions are to be taken as conjoined and not in temporal sequence; there was no temporal order in the two actions. Without the *itoq* in 31 for instance, the sentence would mean that they got rid of the first-named item (magic flutes) and then the other odds and ends.

6.5.2 Subordinate and Temporal Propositional Relationships. A Contrast clause may be followed by one or more clauses which express either temporal or noncorrelative (subordinate) propositional relationships to the Final clause which expresses the thesis. The types of clauses and the order in which they occur following the Contrast clause but preceding the Final clause has been previously indicated in Fig. 3. In position 5 a Paratactic, Reason, or Future Topic clause may occur, or Future Topic may occur with either one of the others, in either order. In position 4 similarly either a Future Quotation, Sequence, Topic, or Supposition clause may occur, or more than one may occur in either order. In position 3 a Successive Action, Comparison, or Adverbial clause, or more than one of these, may occur in any order, although the usual order is for a Comparison clause to precede an Adverbial clause, and an Adverbial clause to precede a Successive Action clause. In position 2 the fillers are mutually exclusive. In position 1 (sentence final) one Final clause must occur.

An Interrogative clause expressing the Alternative relationship may be followed by one or more of the clauses in positions 4, 3, or 2 as indicated by Fig. 3. In such a case, however, position 4 may only be filled by a Future Quotation or a Sequence clause. Otherwise the fillers of the positional slots are the same as those noted above which may follow a Contrast clause. Note that an Interrogative clause, expressing any but the last of a set of Alternatives, cannot be followed by a Reason, Future Topic, or Paratactic clause. Thus while sememically Antithetical and Alternative relationships are in a sense parallel, morphemically the Interrogative clause in this case lies in 5th or 6th position on the scale, or more precisely covers both (cf. Fig. 3), whereas the Contrast clause expressing the Antithetical relationship lies in 6th place.

6.5.3 Complex Sentences. There are two other features of sentence structure which must be mentioned before presenting an overall formula for Complex sentences. First is the fact that in Gahuku, propositions which indicate a temporal sequence of events may be strung together morphemically almost ad infinitum in one sentence. According to the rule stated above that a clause expresses a subordinate or temporal relationship to a proposition expressed by a clause which follows it in the same sentence, any number of Sequence clauses may occur in succession, each one indicating an action which occurred prior to or simultaneous with the action of the Sequence clause which follows it. Note the following typical example of a Complex sentence in which the Sequence clause boundaries are marked with a comma for identificational purposes only; there are no special intonational features at such boundaries and often no pauses either.

(32) ... *vikago* (4), *leza Wanimapiq itoq Heliviq itoq Maimaq leza nene*
after_they_went we Wanimapi and Helivi and Maima we pause
mikasiloq nolomouko (4), *golohaq ve makoq kaliguq noake* (4), *nene*
land_on as_we_went_down red man a car_in as_he_came pause
leleqmo vatiq ike (4), *kaliguq nene leleqmoko* (3) *ake* (4),
making_us fine when_he_did car_in pause taking_us when_he_came
Wanimaka ahuloletamoq (1).
Wanima_at he_left_us

'After they had gone (4), as we, Wanimapi, Helivi, and Maima, went down by land (4), after a European came along (4) and helped us (4), he brought us in a car (3, 4) and left us off at Wanima (1).' (RT:20)

The other significant feature of Gahuku sentence structure is a rule that any of the clauses occurring in positions 3–6 of Fig. 3 may have preceding it and subordinate to it any clause from a position represented by a number lower than its own. For instance, according to Fig. 3 a sentence containing a Contrast clause (position 6) could be followed by a Sequence clause (position 4) and then by a Final clause (position 1); but by the rule just stated, both the Sequence clause and the Final clause might each be immediately preceded by a Successive Action clause (position 3). Sentence 33 illustrates exactly this situation.

(33) *mikasi nene makoq veqmini nemoqza* (6) *makoq veqmo nene soza*
land sum other man's is_but other man pause lie
moloko (3) *mini zuhaq okoko* (4) *neneguq golipa zuhaq oko* (3)
putting garden plant after_he_does in_it casuarina plant doing
loisi hizitimoq (1).
pandanus he'll_stake

'The land belongs to one man (6), but another man will falsely (3) plant a garden (4), and then planting casuarina trees in it (3) he will make a pandanus boundary (1).' (LD:4)

It is now possible to summarize the material presented thus far in this section by a formula which (excluding exceptions noted previously) represents the total structure of Complex sentences. Using the numbers of Fig. 3 to represent the types of clauses that may fill the position denoted by that number (and the possibilities of more than one member from each number set occurring, as noted above), Fig. 4 presents the structure of Gahuku Complex sentences. Fig. 4 was obtained by noting the orders of occurrence of various clause types in each sentence of the corpus, and by constructing a formula (or formulas) which would account for all the data. Note that the formula continues for several lines, and each line is to be read as continuing from the previous one. The exception is the fourth line, which contains Interrogative; this line substitutes as an alternative for the whole of lines 2 and 3. Each set of parentheses encloses an optional unit which is subordinate to a subsequent unit (viz. subordinate to the next unit which is represented by a larger number, or else to the unit of number 1). Within each unit enclosed in parentheses,

the final unit is the head of that unit, to which the other number-units within the parentheses are subordinate.

In Fig. 4 a superscript number indicates the number of successive occurrences observed as possible for a particular construction in a given slot. These superscript numbers are based on examination of the corpus. It is likely that in some cases these do not represent an actual upper limit of how many times in succession a construction may occur.

The data of lines 2, 3, and 5 (or of lines 4–5) of Fig. 4 can be expressed by the following prose statements, in which the numbers refer to slot-position tagmemes of Fig. 3:

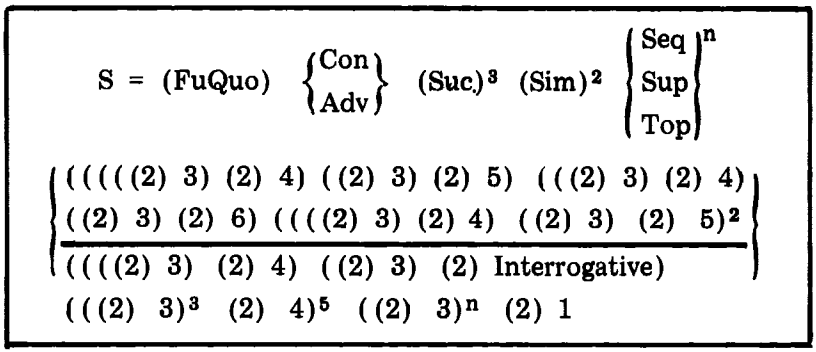


Fig. 4. Gahuku Complex Sentence Structure

(a) Slot-position tagmeme 1 (the Independent Final clause) must occur, and in last position in the sentence; it can occur nowhere else.

(b) Any of the other slot-position tagmemes may optionally precede and be subordinate to tagmeme 1 in ascending order to the left: i.e., (6) (5) (4) (3) (2) 1.

(c) Whenever one of the slot-position tagmemes 2–6 occurs, it becomes the head of a potentially expanded unit, and it may be immediately preceded by a set of lower-numbered tagmemes (other than 1) which will be subordinate to it, in the same ascending order. (Thus we might have in an actual instance . . . 3 2 4 . . . 1, in which slot-position tagmeme 4 was subordinate to tagmeme 1, and slot-position tagmemes 3 and 2 both subordinate to tagmeme 4.)

(d) A lower-numbered unit subordinate to a following unit must be in closer proximity to that following unit than a higher-numbered unit which is also subordinate to that following unit.

Lines 2, 3, and 5 of Fig. 4 represent a mathematical formulation which may be expressed as follows. If we select only those units which are not optional units bounded by parentheses within a larger unit, there are five units which may optionally precede unit 1. Within each of these, the final number-unit is the only obligatory tagmeme within that unit. If we assign subscript numbers to these units, representing the final unit by U_1 and each of the five preceding units by the number

denoting the obligatory tagmeme in that unit, then the total structure of lines 2, 3, and 5 can be represented as:

$$\text{Complex Sentence} = (U_6)\ (U_5)\ (U_4)\ (U_3)\ (U_2)\ U_1$$

To account for the successive embedding which characterizes the structure of constituents U_6, U_5, U_4, and U_3, if U_n represents any one of these four units and U_{n-1} represents the next optional unit following U_n, the structure of U_n is then

$$U = (U_{n-1})\ (U_{n-2}) \ldots n,$$

granted the condition that n–1 etc. $\geqslant$ 2.

Before presenting further theoretical discussion it will be useful to illustrate Fig. 4. Obviously any given sentence which is selected from a body of text will in all probability represent only a fraction of the total possible sentence structure. A few examples have been selected to represent various aspects of the total Complex sentence structure. As can be seen from Fig. 4, the structure of Complex sentences can be illustrated from three phases: (A) line 1 of the formula, representing basically clauses expressing temporal sequence, plus any clauses associated with and subordinate to them; (B) the obligatory tagmemes of the units of lines 2–5 of Fig. 4, representing the order of clauses which are each subordinate to the Final clause (and which thus represents Fig. 3); (C) the optional elements within the units of lines 2–5 of the formula, representing the fact that any clause filling any of the positions of Fig. 3 may be preceded by a clause from a lower slot-position number (except that position 1 occurs only sentence final).

First are presented examples illustrating Phase A; i.e., line 1 of Fig. 4 (clauses expressing temporal sequence). With each example there is stated the overall formula for the specific sentence given in the illustration, and also following each clause in both the Gahuku and the free English translation there occurs the slot-position number from Fig. 3 for that clause. Within parentheses the units on the left are subordinate to the unit on the right. The formulas for some of the sentences have been condensed. In these cases superscript numbers again indicate the number of successive occurrences of a particular tagmeme, and inner parentheses indicate that that tagmeme occurs only in some instances.

(34) Seq (4)^2 (Man (3) Suc (3) Seq (4)) Topic (4) (Suc (3) Seq (4)) Fin (1)

... *vike* (4) *keleqnagaloka novigo* (4) *nene izegipala nene aqminaqmini*
when_he_went shore_at as_he_went pause disciples sum like_that

iki (3) *lape nene hiluluq iliki* (3) *viake* (4) *aqnigamoq nene* (4)
being boat sum shove doing after_they_went they_saw sum

lokuq nene lagahagi nosaqnetaki loko (3) *nego* (4) *aqnigamoq* (1).
fire_in sum fish_and food_and burning as_it_was they_saw

'...going on (4) as he went along the shore (4), when his disciples similarly (3) went (4) shoving a boat along (3) and looked (4), they saw fish and food (1) as it was (4) cooking in the fire (3).' (SS:8)

(35) Toplc (4) ((Suc (3)^2 Seq (4))^{15} (Suc (3) Topic (4)) (Suc (3) Seq (4)) (Sim (2) Seq (4))^2 (Sim (2) Seq (4)) Seq (4) (Slm (2) Suc (3)^2) (Sim (2) Seq (4)) Seq (4) Suc (3) Fln (1)

aqnigasimoq nene (4) *keza vanagi venalagima nene gahama apilikasike* (4)
they_saw sum they husband_and wife_and sum possum after_they_smote
aliki (3) *iki* (3) *agoka komaloq nene amisi nigesigo* (4) *amisi*
taking coming hill small_at sum ground_oven as_they_bullt ground_oven
giakaq asimoqmaloq nene aqnigikasike (4) *numutoka asike* (4) *nene*
built they_did_at pause after_they_saw home_to when_they_came pause
kogoka kegepauka situni nene hiliki (3) *luhuva lahava ziki* (3)
their_noses their_mouths_at charcoal pause applying designs designs tapping
haitopaitoq gonanalisi ikasike (4) *uvolahoma nene vokaq makoq*
varlous decorations after_they_made older_brother sum drum a
geko (3) *aligo* (4) *agunalaqmo nene zokaiq lolovaloq nene golosaqma*
building as_he_took younger_brother sum spear tip_at sum rattle
zekago (4) *laq okago* (4) *nene vasike* (4) *vasike* (4)
after_he_attached thus after_doing pause when_they_went when_they_went
luga meiniloka nene uvolaho vokaqma aleake (4) *itigo* (4)
opposite cliff_at sum older_brother drum after_he_took as_he_climbed
luga meiniloka nene agunalaqmo zokaiqma aleake (4) *nene*
opposite cliff_at sum younger_brother spear after_he_took pause
itigo (4) *asike* (4) *nene uvolahoma vokaqma tuq loko* (3)
as_he_climbed when_they_were pause older_brother drum boom sounding
zimoq nene (4) *agunalamaqmo golosaqma aleko* (3) *gololeq lokago* (4)
tapped sum younger_brother rattle taking shook after_he_sounded
laq imi (2) *imi* (2) *asike* (4) *asike* (4) *imi* (2) *aliq nilasigo* (4)
thus doing doing as_they_came as_they_came coming near as_they_did
imane alevema kehelele novizigo (4) *laq imi* (2) *iki* (3) *iki* (3) *imi* (2)
thls couple their_fear as_it_rose thus doing coming coming coming
kugupeloq asigo (4) *gapo vitaqi gapomuq nene vitagaq*
their_bodies_at as_they_came road they'll_go road_for pause search
ikasike (4) *venalagi vanagima nene zunimaloq ako hiliki* (3) *lemesimoq* (1).
after_they_did wife_and husband_and sum chasm_at lie dying they_fell

'When they looked (4), as the husband and wife had killed a possum (4) and brought it (3, 3) and were making a ground oven at a little hill (4) where they usually made a ground oven, after they saw it (4) they both came home (4); and after applying charcoal on their faces (3) and tapping designs (3) and making various decorations (4), the older brother fastened together (3) and took a drum (4), and the younger brother fastened a rattle on the tip of a spear (4); and after that (4) they went along (4, 4), and on one side of the cliff the older brother took the drum (4) and climbed up (4); and on the opposite cliff the younger brother took the rattle (4) and climbed up (4); and then (4) when the older brother beat the drum (3, 4) the younger brother took (3) and shook the rattle (4); and as

they kept on coming (4, 4) like that (2, 2), after they got near (2, 4) this couple were terrified (4); and as they kept on coming (3) and coming (3) like that (2), when they came close (2, 4), they looked for a way they could escape (4), and the woman and her husband fell (1) headlong into the chasm (3).' (FA:11)

(36) (Suc (3) (Sim (2) Suc $(3)^2$) Top(4)) Suc $(3)^2$ Fin (1)

lavasuq vizeko (3) *ive omo* (2) *oko* (3) *oko* (3) *numutoka minuhaq nene* (4)
our_rest taking cry doing coming coming home_at we_stayed sum
lagata geleko (3) *ive ova ova oko* (3) *minoakaq noune* (1).
our_ears sensing cry doing doing being staying we_are

'When we rest (3) and keep on crying (2) as we come (3, 3), and stay at home (4), we keep on (1) thinking (3) and crying over and over again (3).' (BU:6)

(37) ((FuQuo (4)) (Suc $(3)^2$) (Sim $(2)^2$) Seq $(4))^{11}$ Fin (1)

helekago (4) *Ukalapagatiq golohaq ve mukiq itoq anupaq ve lezagi*
after_he_died Ukarumpa_from red men many and dark men we_and
kaliguq nene itekunike (4) *voko* (3) *Koloka anitekunike* (4) *monoq*
car_in pause after_we_entered going Goroka after_we_arrived religion
numuni napaguq nene gonosivaqa aliki (3) *itiki* (3) *miliake* (4) *pokisi*
house big_in sum his_corpse taking entering after_they_put box
lamanaq netalaguq milimiake (4) *nene guvava netaq palaovaq nene*
good thing_in having_put_him pause flower things flowers pause
haitopaitoliqmini hukiki (3) *nagaq likiki* (3) *pokisi veletoq milikaq* (2) *itoq*
various_kinds cutting rope binding box above putting and
pokisi agataloka milikaq (2) *ikake nene niago* (4) *voko* (3)
box side_at putting after_they_did pause as_they_were going
anitekunike (4) *monoq numukuq itítune loko* (4) *gatetoq noituko* (4)
after_we_arrived religion house_in we'll_enter saying door_at as_we_entered
nene golohaq ve makoq hili golohaq veqmini pikisalaqa nene
pause red man a he_died red man's picture pause
aleake (4) *noike* (4) *hamopamoq limimoq* (1).
after_he_got as_he_was one_by_one he_gave_us

'After he died (4), many of the Europeans from Ukarumpa and dark men also, we got in cars (4) and went (3); and after we arrived at Goroka in a big church (4), they took (3) and put the corpse (4) inside (3); and after they put it in a nice box coffin (4), they cut various kinds of flowers (3) and tied them (3) and put them on top of the box (2) and alongside the box (2); and as they were (there) (4), after we went (3) and arrived (4), as we were entering the doorway (4) in order to go into the church (4), another white man had gotten pictures of the European who died (4), and as he was (there) (4), he gave them to us one by one (1).' (EF:6)

I shall now present a few examples of phase B of Fig. 4 (the obligatory tagmemes of the optional units), with some overlap of phase A (preceding Sequence or Topic clauses). The numbers which represent clauses illustrating phase B (clauses subordinate to the Final clause) are in italics.

(38) ((Suc (3) Seq (4))^2 Con *(6)*) Fin (1)

neniq izegipama nehe loko (3) *gizapa lamanaq uke* (4) *nosaqnetaq lamanaq*
my child is_he? saying care well as_I_did food good

amuke (4) *laq umoqza (6) geza nene mota alekanize* (1).
as_I_gave_him thus I_did_but you pause now you_have_taken

'I watched over him (4) as though he were my child (3) and gave him good food (4); but *(6)* now you have taken him (1).' (AD:13)

(39) (Topic (4) Con *(6)*) Rea *(5)* FuTop *(5)* Suc *(3)*^{2} Fin (1)

neza hoza alitokumuq lo gumumoq nene (4) *neniq netaq nemoqza (6)*
I work I'll_do_about say I_gave_you sum my thing is_but

nene hozaguq Collins Bros.[10] *keiq gehani napa nenazo (5) hozaloq vete*
that work_in their money big is_since work_at men

aliakaq niamoq nene gehani alitomoq (5) alika goha oko (3) geiq geleqmo
getting they_are that money I'll_get later again coming you making

vatiq oko (3) hoza alemitomoq (1).
fine doing work I'll_not_do

'In that I told you about the work I will do (4), that is my affair *(6)*, but since the money in that work for Collins Bros. is big *(5)*, if I get the money that their workers get *(5)*, I won't come again *(3)* and help you *(3)* and work for you (1).' (LH8:9)

(40) FuTop *(5)* ((Suc (3) Suc (3)) Seq *(4)*) Suc *(3)*^{2} Fin (1)

ve makoq avisitimoq nene (5) lusa getatune liki (3) *kagata*
man a he'll_be_sick sum medicine we'll_put_on_him saying their_ears

giliki (3) *nene haitoq numutoka lusa lamanaq gekakaq ve noititoka*
sensing pause other village_to medicine good making man he'll_be_to

izegipa hamoq amisilikiko (4) voko (3) lusa ve nene laqa
child one after_they_send_him going medicine man pause thus

loko (3) lo amitimoq (1)
saying say he'll_give_him

'If a man gets sick *(5)*, thinking (3) that they will work medicine on him (3), after they send one child to a good medicine-working man—a medicine man who will be at another village *(4)*—he will go *(3)* and say (1) this *(3)* to the medicine man.' (ME:1)

(41) Seq *(4)* Com *(3)* Adv *(3)* Fin (1)

laq noigo (4) mukiq kali nene aqmegetiki vamoq nenete aqminaqmini
thus as_it_was all cars pause following_him they_went they like_that

iki (3) hana hana ikigoq (3) vamoq (1).
being slow slow being_only they_went

'As it did *(4)*, all the cars that went following it similarly *(3)* went (1) just very slowly *(3)*.' (EF:13)

10. This is the form actually written in the original letter.

(42) Seq *(4)* Suc *(3)* Sim *(2)* Fin (1)

Giteneni ale amekusike (4) gapoloka gatoko (3) gelemo (2) une (1).
Gitene_to took after_we_gave road_on reading hearing we_came

'After we handed it to Gitene *(4)*, we read *(3)* and listened *(2)* as we came along the road (1).' (MB:42)

(43) FuQuo *(4)* Seq *(4)* Fin (1)

neza luhoakaq goq alitove loko (4) pukugutiq aqnigokuke (4) gehani
I wearing cloth I'll_get saying book_from after_I_saw money

£ 6-7/0 Sigozaupani amumoq (1).
Sigozaupa_to I_gave

'I gave Sigozaupa six pounds seven shillings (1) in order to get a shirt *(4)* after I saw it in the book *(4)*.' (LH:11)

(44) Rea *(5)* Seq *(4)*[3] Fin (1)

neza ve makoliqmini numukuq akunazo (5) nogoza helekuke (4) monoq
I man other's house_in I_slept_since my_shame after_I_died religion

zagila gatamuke (4) hanuva oqmasi agepoka louke (4) akoakaq umole (1).
leaf I_not_reading simply God his_praise after_I_spoke sleeping I_was

'Since I slept in another man's house *(5)*, I was ashamed *(4)* and didn't read the religious book *(4)* and just prayed to God *(4)* and went to sleep (1).' (LG:5)

(45) ((Seq (4)) FuTop *(5)*)[3] Sup *(4)* ((Suc (3)[3]) Seq *(4)*[4]) Fin (1)

vegi venaki minataqimoq (5) ve nene netaq avisekiko (4)
man_and woman_and they'll_stay man sum thing after_he's_sick

hilitimoq (5) itoq ve makoliqmo apelekago (4) *hilitimoq (5) venaliqmini*
he'll_die and man another smiting_him he'll_die woman's

vana helekikoma (4) nene venaliqmo miluma sipisi vanamuq
husband when_he_dies pause woman sorrow huge husband_for

gelekoko (4) nene agupeloq ginegane lamanaq nene ale
after_she_senses pause her_body_on clothes good pause take

ahulokoko (4) gotalaha golesa nene hukoko (3) *gaina veleko* (3) *goihaq*
after_leaving net_bags bad pause cutting skirt wearing mud

holoko (3) *nooko (4) gelokaq nene nagaq koma zegeko* (3) *neneloq sonoq*
applying as_she_is beads sum rope small rubbing that_on thread

vizeko (3) *agizatoq likeko* (3) *gohalaloq zekoko (4) minatimoq* (1)
doing her_hands_on binding her_waist_on fastening she'll_stay

'If there is a man and a woman *(5)*, if something makes the man sick (4) and he dies *(5)*, or if some man smites him (4) and he dies *(5)*, supposing a woman's husband dies *(4)*, the woman, feeling great sorrow for her husband *(4)*, will get rid of the good clothes on her body *(4)*, and cutting up wretched old net-bags (3), she will put on a skirt (3) and smear on mud (3), and then *(4)* rubbing together a small cord (3) she will thread beads on that (3) and remain (1) with them bound on her hands (3) and fastened on her waist *(4)*.' (WI:1)

I shall now give a few samples of phase C of Fig. 4 (optional elements within the main subordinate units), illustrating how a clause which expresses a relationship with one that follows may have preceding it (and subordinate to it) other clauses of the same or lower slot-position number.

(46) (Res (5) (Suc (3) Con (6))) Fin (1)

geqisi nelepizekakaq noaninazo (5) *neza haltoq apatoq voko* (3) *sukulu hoza*
you showing_me you_are_since I other place_to going school work

alitomoqza (6) *sukulu hoza aleakaq nenemuq velesaq gele vevesamuve* (1).
I'll_do_but school work doing that_about yet sense I'm_not_right

'Since you are showing me (5), I can go to a different place (3) and do school-teaching work, but (6) I don't yet understand well about doing school-teaching work (1).' (LH7:9)

(47) (FuTop (5) (Adv (3) Con (6))) Suc (3) Fin (1)

pukuguq hoza alitomoq nene (5) *Malekoq lakani 10 nenetiq apiq oko* (3)
book_in work I'll_do sum Mark chapter that_from start doing

alitomoqza (6) *neza laqa loko* (3) *nagata noguluve* (1).
I'll_do_but I thus saying my_ears I'm_sensing

'If I do the work in the book (5), I will do it (6) beginning from Mark chapter 10 (3), but I am thinking (1) like this (3).' (LH5:4)

(48) Con (6) ((Sim (2) Suc (3)) FuTop (5)) Adv (3) Fin (1)

laq itaqimoqza (6) *keza venaq losi nene minimi* (2) *nitiki* (3) *lovaleta*
thus they'll_do_but they women two pause staying as_they_rise quarrel

koma itaqimoq nene (5) *litaq iki* (3) *lova hizitaqimoq* (1).
small they'll_do sum quick being fight they'll_wage

'However (6), as those two women continue (2), eventually (3) if they both have a small quarrel (5) they will quickly (3) both have a fight (1).' (PO:13)

(49) Seq (4) (Suc (3)[2] Int (5/6)) Suc (3) Fin (1)

itoq gele asuq okunike (4) *goha voko* (3) *mikasiguq netakumuq geleko* (3)
and hear finish after_we_have again going land_in things_for feeling

minoakaq noupe (5/6) *monokumuq geleko* (3) *minoakaq noune* (1).
staying are_we? religion_for feeling staying we_are

'And after we have heard it completely (4), do we go again (3) and remain (5/6) desiring the things on earth (3) or do we remain (1) desiring religion (3)?' (SM:16)

(50) (Sup (4) (Suc (3) FuTop (5))) Fin (1)

itoq mini zuhaq akuq nosaqnetaq napa vizemikoma (4)
and garden plant they_did_in food big when_it_doesn't_grow

lusa netakumuq viki (3) *lilimani golohaq ve lokaq itanimoq*
medicine thing_for going agriculture red man ask you'll_do

nene (5) *lusa* *netaq* *ha* *likiminogo* *ive* (1).
sum medicine thing simply surely_give_you he

'And supposing the food doesn't grow large in the gardens you have planted (4), if you will go (3) and ask the European agriculturalist for fertilizer (5), he will give you fertilizer for nothing (1).' (SO:45)

(51) (Suc (3) (Sim (2) Rea (5))) Suc (3) Fin (1)

... *mohona* *oko* (3) *gapoma* *aqnigomo* (2) *mohona* *uninazo* (5) *aqisima*
wander doing road seeing wander we_did_since he

nene *Omukalae* *voko* (3) *minative* (1).
pause Omkalai going he'll_stay

'... since we wandered around (3) and saw the countryside (2) as we wandered around (5), he is going to go (3) and stay at Omkalai (1).' (CS:45)

6.5.4 Imperative Sentences. The structure of Imperative sentences seems to be that of Fig. 4 with certain modifications and restrictions. The position 1 slot is filled by a clause in the Imperative mood. Position 6 (Contrast) does not occur. Position 5 may be filled only by a Paratactic or Future Topic clause. Interrogative (position 5/6) does not occur. Otherwise the rest of the Imperative sentence pattern seems to be as in Fig. 4. In the corpus, however, the complexity of the Imperative sentences is very restricted and can be summarized as follows (again using the slot-position numbers of Fig. 3):

$$\text{Imperative S} = ((3)^2\ (2)\ \ 4)^n\ (((3)\ \ 4)\ \ (3)\ \ 5)\ \ (3)^4\ (2)\ \ 1$$

Following are a few examples of Imperative sentences, representing the most complex found in the available corpus.

(52) Sup (4) Seq $(4)^2$ Suc (3) Imp (1)

izamuq *nigilikima* (4) *nene* *lekezatini* *simele* *meina*
pigs_for as_you_feel pause you_yourselves cement payment

hizikiki (4) *numuni* *koma* *gikiki* (4) *viki* (3) *lilimani*
after_you_make house small after_you_build going agriculture

golohaq *ve* *izamuq* *lokaq* *ilo* (1).
red man pigs_for ask do!

'Should you desire pigs (4), you yourselves buy cement (4) and build little houses (4) and go (3) and ask the European agriculturalist for pigs (1).' (SO:4)

(53) (Suc (3) Para (5)) Suc $(3)^2$ Imp (1)

iza *koma* *nene* *lekezatini* *amisi* *giki* (3) *nataze* (5) *iza*
pigs small pause you_yourselves ground_oven building you'll_eat pigs

makoq *netimolaqa* *aliki* (3) *iki* (3) *apili* *limilo* (1).
other will_be_ones getting coming smite give_us!

'The little pigs, you yourselves can make a ground-oven (3) and eat (5); bring some other pigs that may be around (3, 3) and slaughter them for us (1)!' (NF:12)

(54) ((Suc (3)) ((Sim (2)) Seq (4)))[7] Imp (1)

guivahani amuza netaq minokanike (4) *neniq nigizani luhuva*
Lord power thing you_having_remained my my_hand carving

omane gopa miniki latila ikataze lokanike (4) *hoza*
down_there confused staying lost they_might_be after_you_said work

gamena mololoko (3) *vanike* (4) *holisi imane nenitoka likigika*
time putting as_you_went holiday this me_to your_insides

miliki minatave loko lo hutoko molanimoq alitokago (4) *golohaq*
putting you'll_stay saying say cutting you_put it_having_neared red

anupaq gegepoka lliliki (3) *vigaq* (3) *igaq* (2) *niago* (4) *leza imane*
dark your_praise saying going coming as_they_are we here

avevezaha oko (3) *laqa loko* (3) *noluko* (4) *ligikaqmini gokuq*
attempt doing thus saying as_we_speak our_insides_of bag_in

nene aleko (3) *lemeko* (3) *guqelimikoko* (4) *geiq mohoq gipa gizapa*
pause taking descending inserting_for_us your girls boys care

lamanaq oletozo (1).
well do_for_us

'Lord, you remaining the powerful one (4) have said (4), "Those that are my handiwork down there might remain confused and be lost," and so as you continued to go on (4) setting days for work (3), this Sabbath that you established saying "You must put your hearts toward me" having approached (4), as white and dark (people) are (4) continually coming (2) and going (2) praising you (3), as we here are attempting (3) to speak (4) thus (3), take (3) and enter the insides of our hearts (3) and receive us (4) and watch well over us your daughters and sons (1).' (P1:2)

(55) FuTop (5) Imp (1)

geza Austalaliaka hoza nalitanimoq nene (5) *lo nemezo* (1).
you Australia_at work you'll_be_doing sum say give_me

'Tell me (1) if you are working in Australia (5).' (LH7:14)

(56) Top (4) Suc (3)[4] Imp (1)

nogumusimoq nene (4) *nosaqnetatoq nene ahulamoko* (3) *gugupeloq*
we're_giving_you sum food_to pause not_throwing your_body_on

netaq hizeko (3) *akoloko* (3) *gizapa lamanaq oko* (3) *minozo* (1).
things buying wearing care well doing stay!

'As for what we are giving you (4), do not throw it away on food (3) but buy clothes for your body (3) and wear them (3) and keep (1) looking after them well (3).' (LM:7)

6.5.5 Contrafactual Sentences. The structure of Contrafactual sentences appears to be that of Fig. 4 except that a Contrafactual Protasis (CfP) clause is the only type which may occur in slot-position 5. Interrogative (position 5/6) does not occur, and position 1 is filled by a Contrafactual Apodosis (CfA) clause. The CfP relator is *-lina* (or occasionally *-lini*); the CfA relator is *-line*. Examples of Contrafactual sentences in the corpus are extremely rare, however; so those given below are not very representative of the total Contrafactual sentence structure.

(57) Suc (3)[3] CfA (1)

nenemuq nana oko (3) *numutoka mohona oko* (3) *lokaq oko* (3) *gulu-line* (1).
so what being home_at wander doing ask doing I_sensed-CfA

'So how (3) could I have wandered around the village (3) and asked (3) and found out (1)?' (LG:14)

(58) (Seq (4) CfP (5)) CfA (1)

vokugo (4) *ne - lina* (5) *ami - line* (1).
after_I_went it_existed-CfP he_not_come-CfA

'If it had happened (5) after I had gone (4), he wouldn't have come (1).' (HX)

(59) CfP (5) (Suc (3) Seq (4)) Adv (3) CfA (1)

neza Gahukuq gakoq amelahina minu - lina (5) *nene nezaqne numukuq*
I Gahuku talk its_father I_stayed-CfP pause I_myself house_in

minoko (3) *gizo asuq okoko* (4) *litaq oko* (3) *ahulogetu - line* (1).
staying write finish after_I_did quick being I_sent_you - CfA

'If I were a native speaker of the Gahuku language (5) I would have stayed in my own house (3) and written it completely (4), and quickly (3) sent it to you (1).' (LG:9)

6.6 Semo-morphemic Interpropositional Realization Rules. Thus far, sentence structure has been considered largely from a static viewpoint. That is, I have discussed the morphemic sentence structures available for encoding sememic propositions. I will now discuss the relationships between sememic and morphemic structures which the speaker must utilize in the encoding process.

Sememically, in a sememic configuration consisting of two or more propositions, each proposition has a certain sememic relationship with another proposition to which it is immediately related. This relationship could be one of temporal sequence, cause, purpose, condition, etc. Given two propositions having a certain relationship between them, the realization rules state the morphemic structures which are available to express that relationship. Should two propositions be the only ones related to each other, a biclausal sentence could result. However, the realization rules must also express other kinds of information for which it is necessary to take into consideration more than two propositions. Let us begin to look at this other information by posing a few questions.

First of all, given two propositions j and k which are both in a subordinate (or temporal) relationship to a third proposition i, can all these be encoded in one

sentence, and if so, what are the permissable structures and orders for the clauses representing these propositions? Secondly, given a proposition k which is in a subordinate relationship to a proposition j which is in turn in a subordinate relationship to proposition i etc., how many layers of such propositional relationships, and what kinds, can be expressed in one morphemic sentence, and with what clause orders? And thirdly, given a proposition k which is in a subordinate sememic relationship to a second proposition j, are the rules for encoding k morphemically always the same regardless of whether j is a subordinate proposition or an independent proposition?

The reasons for requiring this information may be illustrated from English. Let us consider three clauses labelled i (the independent clause), j (a temporal clause), and k (a reason clause) as follows:

i. I was very unhappy
j. when Mary got a divorce
k. because Fred wouldn't lend me $1,000

If we again connect with lines propositions related to each other, and indicate the direction of dependency by an arrowhead, two of the possible configurations of the three clauses may be represented as follows:

(a) k ⟵ j ⟵ i (b) j ⟵ k ⟵ i

The realization rules for English state that (a) can be expressed linearly by i-j-k or j-k-i, as in sentences (60) and (61):

(60) I was very unhappy when Mary got a divorce because Fred wouldn't lend me $1,000.[11]

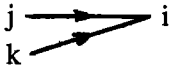
(61) When Mary got a divorce because Fred wouldn't lend me $1,000 I was very unhappy.

The rules also state that (b) can be expressed by i-k-j and also by k-j-i, as in (62) and (63):

(62) I was very unhappy because Fred wouldn't lend me $1,000 when Mary got a divorce.

(63) Because Fred wouldn't lend me $1,000 when Mary got a divorce I was very unhappy.

The realization rules for English must state which linear orders express what set of sememic relationships between the propositions. They must also state the fact that the orders j-i-k and k-i-j express a configuration (c) which is different from either (a) or (b) above:

(c) 

11. Note that this sentence and two of the three subsequent ones are ambiguous morphologically but are disambiguated phonologically. They are to be read here with no intonational breaks; e.g. no intonation drop or pause following the word "divorce" in this sentence.

An adequate description should also note that (62) is much more frequent than (63), and that a reason clause which precedes an independent clause will more likely be introduced by "since" than "because."

Furthermore, in some languages a given propositional relationship (such as that of k) may be expressed one way when it is a secondary subordinate relationship (i.e., that of k in (a) above) and another way when it is a primary subordinate relationship (i.e., that of k in (c) above). For instance, "inasmuch as" can replace "because" in the primary subordinate relationship of sentences (62)–(63) above, but not in the secondary subordinate relationship of sentences (60)–(61). In Gahuku a Conditional relationship sometimes encodes differently when it is a secondary subordinate relationship than when it is a primary subordinate relationship (cf. Sects. **6.6.5** and **6.6.8** below).

For these reasons I shall now present the formulas or rules of encoding propositional relationships. I shall list various sememic configurations similar to (a), (b) and (c) above, each of which involves three or more propositions. Two or more propositions may each be in a subordinate relationship to a third proposition, or one of them may be in a subordinate relationship to a second which is in turn in a subordinate relationship to the third. In each case, with the sememic configuration are presented one or more realization rules which specify the morphemic structures by which that configuration may be expressed. For each the most common realization is given first; and if alternate realizations are noted, a comment on their relative frequency of occurrence is given wherever possible. It should be noted again that sememic structures are considered linearly unordered. The morphemic order is imposed by the semo-morphemic realization rule.

In the illustrative examples in this section I have included certain helps to assist the reader in making the transfer from the sememic and morphemic structures noted in the formulas, to both the Gahuku citations and the free English glosses. At the end of each Gahuku clause[12] which illustrates one of the tagmemes of the realization rule above it, there is given in brackets the sememic label for the propositional relationship being represented. The following is a list of the propositional relationships discussed and their abbreviations:

Thesis (Thes)	Resemblance (Res)
Prior Event (PriEv)	Manner (Man)
Cause (Cau)	Quotation (Quo)
Condition (Cnd)	Perception (Perc)
Purpose (Pur)	Assumption (Assn)
Simultaneous Event (SimEv)	Subsequent Event (SubEv)

Following the sememic label there is also given in parentheses that clause's slot-position number from Fig. 3. If that clause illustrates one of the tagmemes of the realization rule, the slot-position number is followed by the letter (i, j, or k) that

12. This information is given after the verb because the verb ends the clause, and because the relator which signals the given relationship occurs at the end of the verb, in Gahuku.

signals which sememic proposition it represents in the realization rule. A clause not followed by a bracketed sememic label and whose slot-position number in parentheses occurs without either i, j, or k following, is one which is subordinate to one of those in focus and is not pertinent to the illustration.

In the formulas, the letters i, j, and k, which indicate the sememic units to which the morphemic units correspond, are written as subscript letters. In the morphemic structures (to the right of the →), the fillers of each Margin (M) slot are Relator-Axis clause constructions which may occur in that position. With the first mention of each such construction, the structure of the particular relator complex is presented. In the case of sememic configurations which have alternate realizations, the sememic structure (the material to the left of the →) is not repeated in the sub-rules. Items within braces are again mutually exclusive fillers of the slot.

It will be noted that in the semo-morphemic rules the morphemic unit which realizes the thesis is either a Base slot filled by a Final clause (B:Fin), or in many cases there is a second alternative of a Margin slot filled by a Dependent clause (M:Dep). The reason for this is that the former represents cases where the thesis must be expressed by a Final clause (which usually marks the end of a sentence), and the latter represents cases where the thesis may also be in a subordinate relationship to another proposition, and hence expressed by a clause which itself is a dependent one.

Appendix A Chart 8 summarizes the interrelationships between most of the propositional relationships and their manifesting clause structures.

6.6.1 Prior and Subsequent Events. Complex sentences in Gahuku, whose structure has been shown in Fig. 4, consist basically of the encoding of a thesis proposition, its subordinate propositions, and other propositions related to them. I have called this total unit a sememic configuration. But a Gahuku sentence may also express an almost unlimited series of events which are temporally related (line 1 of Fig. 4). In such cases we are dealing not so much with propositions related as nucleus and satellites but with those related as links on a chain. Although the temporal relationship between propositions is not one of the subordinate relationships, morphologically the clauses which express temporal relationships are Dependent clauses, and these clauses contain markers representing temporal relationships between the propositional events. Thus, given sememically a series of events occurring in chronological order which we may represent by

$$Ev_i \longrightarrow Ev_j \longrightarrow \ldots \longrightarrow Ev_n$$

the realization rules for English provide for this to be expressed in a series of sentences, each of which encodes one, two, or three events, using conjunctions such as *after*, *and*, and *then* between the clauses. But the Gahuku realization rule (which parallels similar rules in other New Guinea highland languages) calls for the clauses expressing these events to be strung together in one sentence. This may account for the confusion about whether the long chain of clauses so related is to be interpreted as one sentence or broken into subsentences (Longacre 1972:2–3). It is

simply a linguistic fact that most languages tend to group a series of temporally-related events into small clusters, each consisting of a thesis and perhaps one Prior Event and one Subsequent Event. Each cluster is encoded into a sentence, to parallel the clustering of noncoordinate propositional relationships into sentences which usually consist of a small number of clauses. New Guinea highlands–type languages tend to maintain the string of temporally-related propositions and let the sentence run as long as desired. When temporally-related propositions are interrupted by one which is nontemporally related, the realization rules usually call for the sentence to be terminated shortly.

An event whose relationship to a second event is that of temporal sequence may be expressed in Gahuku using a Successive Action (Suc) clause construction if the agents of the two events are the same, and using a Sequence (Seq) clause construction if the agents are either the same or different. If the time of the thesis to which they refer is still future, Future Sequence clauses are used to express events temporally related to it. If the time of the thesis to which they refer is present or past, Nonfuture Sequence clauses express events related temporally to it. As far as possible the linear order of Sequence or Successive Action clauses must reflect the chronological order of the actual events, but there are realization rules which handle events which are out of chronological order. The rules which handle chronological order will be presented first.

6.6.1.1 Events In Chronological Order. The general rule in Gahuku for expressing a series of chronologically ordered and temporally related events by a chain of Sequence or Successive Action clauses is as follows:

$$Ev_i \longrightarrow Ev_j \longrightarrow \ldots \longrightarrow Ev_n \rightarrow$$

$$M: \begin{Bmatrix} Seq \\ Suc \end{Bmatrix}_i + M: \begin{Bmatrix} Seq \\ Suc \end{Bmatrix}_j \ldots + B: Fin_n$$

The Successive Action clause can occur only if the agent of the proposition it expresses is the same as the agent of the proposition expressed by the clause which follows it. The basic form of the Successive Action relator, which agrees as to being monofocal or polyfocal with the subject of the clause which follows, is *-oko*. Both vowels are subject to the ablaut rule (Sect. **2.3.4**), and the first vowel is subject to the class 20 verb-stem rule (Sect. **3.3.3**).

The only morphemes which may occur with the verb nucleus preceding the Successive Action relator are the progressive prefix or the negative suffix. One of the enclitics *-ma* 'definite', *-goq* 'only', or *-gi* 'and' may follow the relator. Examples of sentences with a series of verbs containing the Successive Action relator are as follows:

(64)	... *v-IKI* (3)	*gimiqnopa*	*let-IKI* (3)	*goni*	*nagaq*	*huk-IKI* (3)	*numuni*
	go-Suc	bush-type	break-Suc	bamboo	rope	cut-Suc	house

lapusa *gitig-IKI* (3) *al-IKI* (3) *Ø-IKI* (3) *aliqmi* *vatiq* *i* *asuq*
post sever-Suc get-Suc come-Suc made_him fine do finish

ikake (4) ...
after_they_did

'... after they went (3) and broke off gimiqnopa-bushes (3) and cut bamboo rope (3) and cut off the house posts (3) and brought them (3, 3) and finished helping him (4) ...' (HB:4)

(65) ... *nosaqnetatoq* *nene* *ahul-am-OKO* (3) *gugupeloq* *netaq*
food_for pause send-neg-Suc your_body_on things

hiz-EKO (3) *akol-OKO* (3) *gizapa* *lamanaq* *Ø-OKO* (3) *minozo* (1).
buy-Suc wear-Suc care well be-Suc stay!

'... don't spend it on food (3), but buy things for your body (3) and wear them (3) and keep (1) looking after them (3).' (LM:7)

The Sequence relators vary according to whether the action of the verb of the Final clause in that sentence is future or nonfuture, and according to whether the subject of the clause with which it occurs is the same as that of the following clause or not. The four sets of Sequence relators are as follows (sets 2 and 4 are repeated from Sect. **3.3.6**):

(1) Nonfuture tense in Final clause, same subject (s.sub): *-ke*

(2) Nonfuture tense in Final clause, different subject (d.sub):

	Person		
	1st	**2nd**	**3rd**
singular	*-go*	*-ko*	*-go*
plural	*-ko*	*-go*	
dual	*-go*	*-go*	

(3) Future tense in Final clause, same subject:

	1st	**2nd**	**3rd**
singular	*-inake*	*-oko*	*-oko*
plural	*-inake*	*-iki*	
dual	*-isinake*	*-iki*	

(4) Future tense in Final clause, different subject:

	1st	**2nd**	**3rd**
singular	*-go*	*-ko*	*-ko*
plural	*-ko*	*-ko*	
dual	*-go*	*-ko*	

The permitted verb structure in clauses using rel(ators) 1 and 2 above is:

$$\text{v.} = (\text{prog})\ \text{v.nuc}\ (\text{benef})\ \left(\left\{\begin{matrix}\text{perfect}\\ \text{stative}\end{matrix}\right\}\right)\ (\text{neg})\ \text{per}\ \text{no}\ \text{rel}\left(\left\{\begin{matrix}\textit{-ma}\\ \text{def}\\ \textit{-goq}\\ \text{only}\\ \textit{-ve}\\ \text{it\_is}\end{matrix}\right\}\right)$$

In clauses occurring with relators 3 and 4 above, the verb structure is:

$$\text{v.} = (\text{prog})\ \text{v.nuc}\ (\text{benef})\ (\text{stative})\ \text{per}\ \text{no}\ \text{rel}\left(\left\{\begin{matrix}\textit{-ma}\\ \text{def}\\ \textit{-goq}\\ \text{only}\end{matrix}\right\}\right)$$

The difference between these structures and those of verbs in Independent clauses (Sect. **3.2**) is that these have a more restricted set of tense suffixes and may have an enclitic following the relator suffix. It should also be noted that in both these structures the progressive prefix cannot co-occur with any tense suffix.

An example illustrating relator 1 (Nonfuture, same subject):

(66) ... *nagamiq* *z - e - u - KE* (4)... *numukuq* *min - uve* (1).
water hit-sta-1sg-s.sub house_in stayed-I

'... after I washed it (4)... I stayed in a house (1).' (MB:7)

An example illustrating relator 2 (Nonfuture, different subject):

(67) ... *makoq* *kansolegi* *tiz - ik - a - GO* (4) *neqnisi* *alika*
other councilmen_also came_along-sta-3pl-d.sub I later

tizuve (1).
I_came_along

'... after other councilmen came along too (4), I came along later (1).' (MB:3)

An example illustrating relator 3 (Future, same subject):

(68) *mol - ok - INAKE* (4) *alika* *nene numuni* *agoka* *zitune* (1).
put-sta-1pl-s.sub later pause house peak we'll_fasten

'After we put that on (4), later we will fasten the peak of the house (1).' (B:18)

An example of relator 4 (Future, different subject):

(69) ... *netaq* *mukiq* *asuq* *Ø - ok - i - KO* (4) *neneguq* *akatune* (1).
things all finish be-sta-3sg-d.sub that_in we'll_sleep

'... after everything is finished (4) we will sleep in it (1).' (HB:19)

6.6.1.2 Events Not in Chronological Order. The formula below symbolizes the usual way of handling a flashforward (a reference to a Subsequent event) involving one event which is displaced from chronological order, corresponding to the English use of the conjunction "before." Specifically, this construction is used when it is desired to state an event j which prevented a subsequent event s from occurring, or when it is not desired to include s in the main stream of events. The word *velesaq* 'yet' occurs only preceding a verb phrase containing the negative morpheme. The verb of the Sequence clause containing the negative morpheme may occur with the perfect tense complex or with no tense suffix.

$$\left.\begin{matrix}\text{Subs Ev}_s \\ \text{Pri Ev}_i\end{matrix}\right\rangle \text{Ev}_j \rightarrow \text{M:}\left\{\begin{matrix}\text{Seq} \\ \text{Suc}\end{matrix}\right\}_i + \underset{\text{yet}}{\textit{(velesaq)}} + \text{M:Seq}\ \langle\text{neg}\rangle_s + \left\{\begin{matrix}\text{B:Fin} \\ \text{M:Seq}\end{matrix}\right\}_j$$

Examples:

(70) *koma* *vataq* *ikake* (PriEv) (4i) *lo* *lamanaq* *Ø - AM - i - GO* (SubsEv) (4s)
little cook after_they_had burn well be - neg - it - d.sub

gosohaq *nikakaq* *amoq* (Ev) (1i)
new eating they_were

'They used to cook it a little (PriEv) (4i) and eat it raw (Ev) (1i) before it was well cooked (SubsEv) (4s).' (IN:14)

(71) *. . . nama* *liki* *niago* (PriEv) (4i) *okoloho* *ganaq* *anoq*
song singing as_they_were rooster first sound

mol - on - AM - i - GO (SubsEv) (4s) *mohoq* *nene* *sele* *likago* (Ev) (4j) . . .
put - pf - neg - 3sg - d.sub girls pause call after_they_had

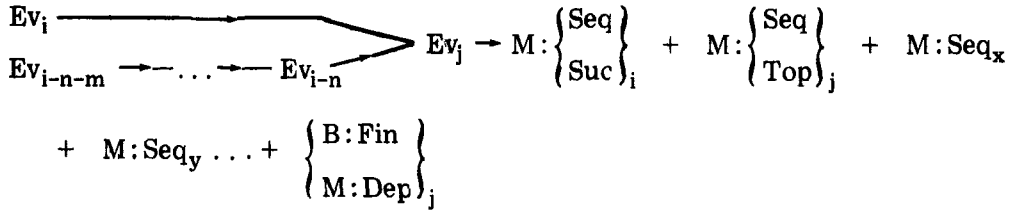
'. . . as they were singing (PriEv) (4i), after they called the girls (Ev) (4j) before the first rooster crowed (SubsEv) (4s) . . .' (WT:9)

(72) *netekaq* *VELESAQ* *goq* *lo* *hanat - AM - i - GO* (SubsEv) (4s) *nene*
morning yet light burn shine - neg - 3sg - d.sub pause

aqmina *somoleq* *ve* *nenete* *litaq* *iki* (3) *otikake* (Ev) (4j) . . .
those initiate men they quick being after_they_rose

'In the morning before it was light (SubsEv) (4s) those initiate youths quickly (3) arose (Ev) (4j) and . . .' (IN:9)

For a flashback (a reference to a Prior Event) there is no past perfect tense as in English. Given one or more events x, y, . . . which occurred prior to events i and j of the sequence being narrated (but related to j), j may be expressed by a Sequence or Topic clause, followed by the clauses expressing the prior action(s), and the verb phrase expressing event j (using the same verb stem or a sememically equivalent one) is repeated at the end. Often the events of the flashback comprise the reason for the main event being presented. The construction is as follows:



Examples:

(73) *lemeko* (Suc) (3i) . . . *gamena* *haqna* *no - u - KO* (Ev) (4j) *isa*
descending time long prog - 1pl - d.sub bridge

nomi - GO (PriEv) (4x) *golini* *zeka - ke* (4) *nagamiq* *velek - a - GO* (PriEv) (4y)
not_existed - d.sub rain hit - s.sub water boil - 3sg - d.sub

hanuva *minune* (Ev) (1j).
just we_stayed

'We went down (Suc) (3i) . . . and were there a long time (Ev) (4j, 1j) since there wasn't any bridge (PriEv) (4x), and since it had rained (4) and the river was flooded (PriEv) (4y).' (LW:15)

(74) . . . *aminiq* *namike* (4i) *AQNIG - a - MOQ* *NENE* (Ev) (4j) *agoqmula*
milk as_she_gave_him saw - she - top sum his_eyes

nekisauka *guhiq* *komaqisiq* *nene* *min - a - MOQ* (PriEv) (4x)
corner_at paint little_bit sum stayed - it - top

AQNIG - ok - a - ke (Ev) (4j) . . .
saw - sta - 3sg - s.sub

'. . . when she gave him some milk (4i) and looked (Ev) (4j) and saw (Ev) (4j) that a little bit of paint remained in the corner of his eye (PriEv) (4x) . . .' (FA:15)

Alternatively, the clause expressing the flashback events may be introduced using a combination of certain locative nouns and/or locative enclitics. These locative nouns elsewhere signify "way down there" or "below," but to indicate flashback they signify "way back," "previously." Sentence 75 illustrates this.

(75) *ametege* *aleqvoleq* *iki* (3) *EMANE - LOQ* . . . *lugulizaq* *napa* *Gahukuq*
our_fathers enduring being way_back - at our_name big Gahuku

veve *loko* *min - ok - a - GO* (PriEv) (4x) *leza* *Wanimaq* *ve* *limikigi* (3)
men_is saying stay - sta - 3sg - d.sub we Wanima men descending_and

minamimoq (Ev) (1j).
it_didn't_stay

'Our forefathers were strong (3), and we Wanima men did not remain (Ev) (1j) inferior either (3), since from way back . . . our big (clan) name remained "Gahuku men" (PriEv) (4x).' (BO:1)

6.6.2 Simultaneous Events. There are three means of expressing the Simultaneous relationship between propositions. Rules a, b, and c below present the constructions used for each. The first of these, which is by far the most common, simply expresses that a temporal overlap exists between two events, without specifying the exact temporal nature of the overlap. The construction uses a Sequence clause to express this relationship; the type of Sequence clause used depends on whether the agents of the simultaneously occurring events are the same or different. If the agents are the same, a Sequence clause using a same-subject (s.sub) relator is used (realization a1 below); if the agents are different, a Sequence clause using a different-subject (d.sub) relator (realization a2) occurs. In both a1 and a2 the verb of the Sequence clause occurs with the progressive prefix (Sect. **3.3.1**), whose forms again are *no-/ni-/ni-*.

The first two rules for encoding Simultaneous Events (SimEv) are then as follows:

$$\text{(a1)}\quad \text{SimEv}\langle \text{agent}_{\alpha}\rangle_j \longrightarrow\!\!\!\!\!- \quad \text{Thesis}\langle \text{agent}_{\alpha}\rangle_i \rightarrow \text{M:s.subSeq}_j \; + \; \left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$$

(76) ... *aminiq* *N - a - m - i - KE* (SimEv) (4j) *aqnigamoq* (Thes) (4i) ...
milk prog-him-gave-3sg-s.sub she-saw

'... as she gave him milk (SimEv) (4j) she looked (Thes) (4i) ...' (FA:15)

(77) ... *palusiguq* *mihina* *NI - Ø - a - KE* (SimEv) (4j) *aqnig - ikakaq* *niave* (Thes) (1i).
plane_in wander prog-be-3pl - s.sub see - habit they_are

'... as they roam around in airplanes (SimEv) (4j) they see it (Thes) (1i).' (SO:46)

(78) ... *NO - tiz - u - GO* (SimEv) (4j) *gimisigi* *vete* *nigizatoq* *aleve* (Thes) (1i).
prog - came_aiong - 1sg - d.sub bows_with men my_hands_at they_took

'... as I came along (SimEv) (4j) the policemen seized my arms (Thes) (1i).' (MB:9)

(79) ... *ho* *NO - it - i - KO* (SimEv) (4j) *ano* (Thes) (1i).
sun prog - rise - 3sg - d.sub come!

'... come (Thes) (1i) as the sun is rising (SimEv) (4j).' (MB:22)

Given two propositions expressing actions performed by the same agent, the thesis of which expresses motion and the other proposition an accompanying action, the latter is realized by a clause whose verb consists of the verb nucleus, optional benefactive complex, and Characteristic Action (Cha) relator. The basic form of the Characteristic Action relator is *-omo;* it is subject to the ablaut rule and the class 20 verb-stem rule.

The rule for the construction is then as follows:

$$\text{(b)}\quad \text{SimEv}\langle \text{agent}_{\alpha}\rangle_j \longrightarrow\!\!\!\!\!- \quad \text{Thesis}\langle \text{agent}_{\alpha}\rangle_i \rightarrow \text{M:Cha}_j \; + \; \left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$$

(80) ... *gel-EMO* (SimEv) (2j) *une* (1l).
hear-Cha we_came
'... we listened (SimEv) (2j) as we came (Thes) (1i).' (MB:42)

(81) ... *ive* *ø-OMO* (SimEv) (2j) *oko* (Thes) (3i)...
cry be-Cha coming
'... (he) came (Thes) (3i) crying (SimEv) (2j)...' (BU:6)

(82) ... *laq* *ø-IMI* (SimEv) (2j) *iki* (Thes) (3i)...
thus be-Cha coming
'... (they) did thus (SimEv) (2j) as they came (Thes) (3l)...' (FA:11)

It should be noted that when the Characteristic Action relator occurs with stem *ø-* 'come' preceding the stems *ø- 'be' or anit-* 'arrive', the combination is an idiom expressing the sense of "settle at, be resident at." Note the following two examples:

(83) ... *ø-OMO* *no-ø-i-moq* *neve-li.*
come-Cha prog-be-3sg-top it_is-he_says
'... he says he is in residence (here).' (SJ:32)

(84) ... *golohaq* *ve* *nene* *imaneloq* *ø-IMI* *ANIT-eke*...
red men sum here_at came-Cha arrive-when_they
'... when the Europeans settled here...' (SJ:22)

Given two simultaneous actions performed by the same agent, which are either similar or identical actions performed on different objects or else sememically opposite actions, each of the actions is encoded by a clause whose verb consists of the verb nucleus plus Equivalent Action (Equ) relator. The tense, subject, and mood of the simultaneous actions are expressed once by affixes on the stem *ø-* 'be' which must immediately follow.

The basic form of the Equivalent Action relator is *-ogaq/-okaq*.[13] The initial vowel is subject to the ablaut rule and the class 20 verb-stem rule.

The construction is then as follows:

(c) $\text{SimEv}\langle\text{agent}_\alpha\rangle_j \longrightarrow \text{Thesis}\langle\text{agent}_\alpha\rangle_i \rightarrow \text{M:Equ}_i + \text{M:Equ}_j + \text{B:}\frac{\text{ø-}}{\text{be}}$

(85) ... *v-OGAQ* *ø-OGAQ* *ø-itunize.*
go-Equ come-Equ be-we_will
'... we will be coming and going.' (P3:6)

(86) ... *v-IGAQ* *ø-IGAQ* *ni-ø-a-go*...
go-Equ come-Equ prog-be-3pl-d.sub
'... as they were coming and going...' (P1:1)

13. The forms with /g/ occur following /m/, /v/, or #; the forms with /k/ occur elsewhere.

(87) ... *nagamiq* *agataloka* *itiv - IGAQ* *lim - IGAQ* *Ø - a - ke...*
water side_at ascend - Equ descend - Equ be - 3pl-s.sub
'...after they went up and down alongside the river...' (IN:10)

6.6.3 Cause and Prior Event. The most common encoding of the cause-effect relationship is by a Sequence clause followed by the clause expressing the effect. The temporal component of effect following cause is also present, and at times it is difficult to determine whether the cause-effect relationship or the temporal sequence relationship is the more dominant. The realization rules are as follows:

(a1) $\begin{matrix}\text{Cause}_j \\ \text{PriEv}_k\end{matrix} \rightarrow \text{Thesis}_i \rightarrow \text{M:Seq}_j + \text{M:}\begin{Bmatrix}\text{Seq}\\ \text{Suc}\end{Bmatrix}_k + \begin{Bmatrix}\text{B:Fin}\\ \text{M:Dep}\end{Bmatrix}_i$

(a2) $\rightarrow \text{M:Seq}_k + \text{M:Seq}_j + \begin{Bmatrix}\text{B:Fin}\\ \text{M:Dep}\end{Bmatrix}_i$

The choice between a1 and a2 is usually determined by whether, viewed strictly temporally, the action of the Prior Event occurred before or after the action of the Cause. The order of the two Margin tagmemes nearly always reflects chronological order.

With each of the examples given here to illustrate a1 and a2, is given a set of free English glosses. Such should not only assist the reader in gaining a feel of the structure but also highlight two other significant points: (1) that the more normal English order is often the reverse of what is frequently the only possible Gahuku order (exceptions when possible are noted in this section); and (2) there is much more freedom of clause order in English than in Gahuku. Note that not all English glosses sound equally natural, and that the commas represent significant phonological pauses which must be preserved to retain the sense. In these examples the English gloss which most closely matches the Gahuku order is given first, followed by what seems to be the normal English order and alternative orders.

(88) *ve* *makoq* *avis - ek - a - GO* (PriEv) (4k) *lusa* *getatane*
man a sicken-sta-3sg-d.sub medicine you'll_make_for_him
liki (4) *nimisil - ik - a - GO* (Cau) (4j) *nouve* (Thes) (1i).
saying sent_me-sta-3pl-d.sub I_am
'After a man got sick (PriEv) (4k), and because they sent me (Cau) (4j) so that you can work medicine on him (4), I am (here) (Thes) (1i).' (ME:2)
or 'I am (here) because they sent me so that you can work medicine on a man after he got sick.'
or 'After a man got sick I am (here) because they sent me so that you can work medicine on him.'

or 'I am (here) after a man got sick, because they sent me so that you can work medicine on him.'

or 'Because they sent me so that you can work medicine on him, I am (here) after a man got sick.'

(89) *nagamiq* *zeu - KE* (PriEv) (4k) *golini* *z - ek - a - GO* (Cau) (4j)
water I_hit - s.sub rain hit - sta - 3sg - d.sub

numukuq *minuve* (Thes) (1i).
house_in I_stayed

'After I washed it (PriEv) (4k), because it rained (Cau) (4j) I stayed in a house (Thes) (1i).' (MB:8)

or 'I stayed in a house after I washed it, because it rained.'

or 'After I washed it I stayed in a house because it rained.'

or 'Because it rained I stayed in a house after I washed it.'

or 'Because it rained, after I washed it I stayed in a house.'

(90) ... *geqisi* *amuza* *netaq* *lamanaq* *min - ok - ani - KE* (Cau) (4j)
you power thing good stay - sta - 2sg - s.sub

netaqmataq *mukiq* *lezagi* *imane* *leleqmo* *utoq*
various_things all we_too here made_us appear

mol - ok - ani - KE (PriEv) (4k) *gizapa* *lamanaq* *oletoko* (Thes) (3i) ...
put - sta - 2sg - s.sub care well you_doing_for_us

'... because you are the good and powerful one (Cau) (4j), having created all things and us too (PriEv) (4k) you watch over us well (Thes) (3i) ...' (P3:1)

or '... you watch over us well, having created all things and us too, because you are the good and powerful one ...'

or '... having created all things and us too, because you are the good and powerful one, you watch over us well ...'

or '... having created all things and us too, you watch over us well because you are the good and powerful one ...'

or '... you watch over us well because you are the good and powerful one, having created all things and us too ...'

(91) ... *aqisi* *kaliguq* *Ø - ok - a - KE* (PriEv) (4k) *aiq* *vilivili* *goihaliqmo*
he car_in come - sta - 3sg - s.sub his bicycle mud

Ø - ok - a - GO (Cau) (4j) *neniq* *nimive* (Thes) (1i).
be - sta - 3sg - d.sub me he_gave_me

'... after he came along in a car (PriEv) (4k), because the bicycle was muddy (Cau) (4j) he gave it to me (Thes) (1i).' (MB:4)

or '... after he came along in a car, he gave the bicycle to me because it was muddy.'

or '... he gave the bicycle to me because it was muddy, after he came along in a car.'

or '... he gave the bicycle to me after he came along in a car because it was muddy.'

or '... because the bicycle was muddy, he gave it to me after he came along in a car.'

or '... because the bicycle was muddy, after he came along in a car he gave it to me.'

Sentence 89 deserves further attention. As I have already noted, the use of the same-subject relators in Sequence clauses indicates that the subject of the verb to which it is affixed is the same as the subject of the following clause. But in 89, although the first clause has the same-subject relator, the next clause clearly has a different subject. This is permissible because the second clause expresses Cause, and not primarily temporal sequence. In such a case the same-subject relator "skips over" the second clause and agrees with the third clause, whose subject in 89 is again "I."
89 is again "I."

Although subrules a3 and a4 contain a Reason clause using the reason relator which strictly denotes Cause, examples of their occurrence are not nearly so frequent as those of a1 and a2. And a4, with its Reason clause occurring sentence final is less frequent than a3.

The Reason relator complex is: $\begin{pmatrix} \textit{-moq} & \textit{n - e -} \\ \text{topic} & \text{exist - 3sg -} \end{pmatrix}$ *nazo* (since)

(a3) $\rightarrow$ M:Rea$_j$ + M:Seq$_k$ + $\left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$

(a4) $\rightarrow$ M:Seq$_k$ + B:Fin$_i$ + M:Rea$_j$

An example of a3:

(92) *leliq* *Magetoq* *ve* *nene* *iza* *oqmasi* *nouni-NAZO* (Cau) (5j)
our Mageto men sum pig totem we_are-since

gozapaq ... izagi *omane* *makoq* *akokuni-KE* (PriEv) (4k) ... *iza*
ages_ago pigs_with way_down together we_slept-s.sub pigs

loloq *onouhaq* *neve* (Thes) (1i).
become we_have it_is

'Since we Mageto men are the pig totem (Cau) (5j), long ago ... after we slept down there with pigs (PriEv) (4k) ... we have turned into pigs (Thes) (1i).' (FP:6)

The sememic factors calling for the Cause relationship to be expressed by a Reason clause vs. a Sequence clause are not fully known, and are beyond the scope of this study. It may simply be observed that there is heavy pressure to use Sequence clauses whenever possible; and that to express a sentence such as "I didn't go because it rained/because I was sick," the Cause proposition in Gahuku would always be realized by a Sequence clause, never by a Reason clause.

Another possibility for encoding the cause-effect relationship is with the use of a Paratactic (Para) clause. The paratactic relator is *-ze*. While rules a1–a4 above express more specifically realizations of Cause and Thesis, a5 is more specifically that of Thesis and Effect or Conclusion.

(a5) $\rightarrow$ M:Para$_j$ + M:$\left\{\begin{matrix}\text{Seq}\\ \text{Suc}\end{matrix}\right\}_k$ + $\left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$

Examples:

(93) ... *mogonaqa lo likimito - ZE* (Cau) (5j) *gililo* (Thes) (1i)[14]
meaning say I'll_give_you - so listen!
'I'll tell you the meaning of it (Cau) (5j), so listen (Thes) (1i)!' (SH:1)

(94) *mota asuq noi - ZE* (Cau) (5j) *numutoka vilizo* (Thes) (1i).
now finish it_is - so home_to go!
'It is finished now (Cau) (5j), so go home (Thes) (1i)!' (MB:41)

In a realization of the cause-effect relationship which is quite infrequent, the Cause is expressed by an Agent Relator-Axis construction. The Agent is *-tiqmo*. An example:

(95) *itoq nene malalia malasini ahula - TIQMO* (Cau) (j)[15] *nene*
and pause malaria medicine he_lost - cause pause
Livinistoniq malalia netaq napa gizalimoq (Thes) (1i).
Livingstone malaria thing big he_contracted
'Because of the loss of the malaria medicine (Cau) (j), Livingstone became very ill with malaria (Thes) (1i).' (LI:46)

In another realization of the same sememic configuration, also fairly infrequent, the Cause is realized by a Referential Relator-Axis phrasal construction within the Final clause. The referential relator is *-kumuq* in the following example (cf. Sect. **4.3.6**):

(96) *geqisi gehani vokaq lani - KUMUQ* (Cau) (j) *nene nogumusive* (Thes) (1i).
you money ask you_spoke - about pause we_are_giving_you
'Because you requested money (Cau) (j), we are giving it to you (Thes) (1i).' (LM:6)

There now follows the set of rules for the realization of the sememic configuration in which the Prior Event proposition is in a subordinate relationship to the Cause proposition.

14. Sentences 93–96 do not contain Sequence or Successive Action clauses which are realizations of a Prior Event Propositional relationship.

15. Since examples of this realization are rare, the Agent construction has not been assigned a slot-position number in Fig. 3. It is not known what other slot-position tagmemes may occur between the Agent construction and the Final clause. It is possible that the realizations illustrated in sentences 95–96 are not available when there is a proposition in a Prior Event relationship as well as one in a Cause relationship subordinate to the thesis.

(b1) $\text{PriEv}_k \rightarrow \text{Cause}_j \rightarrow \text{Thesis}_i$

$\rightarrow \text{M:Seq}_k + \text{M:Seq}_j + \left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$

(b2) $\rightarrow \text{M:Seq}_k + \text{B:Fin}_i + \text{M:Seq}_j$ *(nene)* sum

(b3) $\rightarrow \text{M:}\left\{\begin{matrix}\text{Seq}\\ \text{Suc}\end{matrix}\right\}_k + \text{M:Rea}_j + \text{B:Fin}_i$

(b4) $\rightarrow \text{M:}\left\{\begin{matrix}\text{Seq}\\ \text{Suc}\end{matrix}\right\}_k + \text{B:Fin}_i + \text{M:Rea}_j$

Just as was noted for a1–a4, the realization of the Cause relationship by a Sequence clause (as in b1 and b2) is more frequent than by a Reason clause (as in b3 and b4). The possibilities with the clause expressing the Cause occurring sentence final (b2 and b4) are much less frequent than those with the clause expressing Cause preceding the Final clause (b1 and b3).

An example of b1:

(97) ... *golini* *zek - a - KE* (PriEv) (4k) *nagamiq* *vel - ek - a - GO* (Cau) (4j)
rain hit - 3sg - a.sub water boil - sta - 3sg - d.sub

hanuva *minune* (Thes) (1i).
simply we_stayed

'... because the river flooded (Cau) (4j) after it rained (PriEv) (4k), we just waited (Thes) (1i).' (LW:15)

An example of b3:

(98) ... *mohona* *Ø - OKO* (PriEv) (3k) *gapoma* *aqnigomo* (2) *mohona*
wander be - Suc road seeing wander

Ø - uni - NAZO (Cau) (5j) *aqisima* *nene* *Omukalae* *voko* (3) *minative* (Thes) (1i).
be - 1pl - since he pause Omkalai going he'll_stay

'... after we wandered around (PriEv) (3k), because we wandered (Cau) (5j) seeing the countryside (2), he is going to go (3) and stay at Omkalai (Thes) (1i).' (CS:22)

(See also sentences 15, 18.)

The Cause proposition may also be in a subordinate relationship to the Prior Event proposition:

(c1) $\text{Cause}_k \rightarrow \text{PriEv}_j \rightarrow \text{Thesis}_i$

$\rightarrow \text{M:Seq}_k + \text{M:Seq}_j + \left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$

(c2) $\longrightarrow$ M:Seq_j + Ref:RefR-A_k + B:Fin_i

In c2 the Cause is expressed by a Referential Relator-Axis phrase (RefR-A) within the Sequence clause, occurring between the free subject (if present) and the verb phrase.

An example of c1:

(99) ... *Mataniga* *vitane* *l - ok - a - GO* (Cau) (4k) *kaliguq*
Madang_to you'll_go say-sta-3sg-d.sub car_in
it - ek - u - GO (PriEv) (4j) *neleqmoko* (Thes) (3i)...
enter-sta-1sg-d.sub taking_me
'... after I got in the car (PriEv) (4j) because he said "You will go to Madang" (Cau) (4k), he took me (Thes) (3i)...' (HC:12)

An example of c2:

(100) ... *amitaq* *oko* (3) *minoakaq* *uka - KUMUQ* (Cau) (k) *imane* *golohaq*
knife being staying we_were-about these red
ve *anupaq* *ve* *imane* *kimiseleka - KO* (PriEv) (4j) *amoq* (Thes) (4i)...
men dark men here you_sent_them-d.sub they_came
'... these white men and dark men who came here (Thes) (4i) after you sent them (PriEv) (4j) because we remained (Cau) (k) sinful (3)...' (P3:2)

6.6.4 Condition and Prior Event. If Condition and Prior Event propositions are both in a subordinate relationship to one Thesis, the Conditional relationship is expressed by either a Future Topic (FuTop) or a Suppositional (Sup) clause in two possible arrangements:

(a1) Cnd_j $\longrightarrow$ $Thesis_i$
$PriEv_k$ $\nearrow$

$$\rightarrow \text{M:}\left\{\begin{matrix}\text{FuTop}\\ \text{Sup}\end{matrix}\right\}_j + \text{M:}\left\{\begin{matrix}\text{Seq}\\ \text{Suc}\end{matrix}\right\}_k + \left\{\begin{matrix}\text{B:Fin}\\ \text{M:Sub}\end{matrix}\right\}_i$$

(a2) $\rightarrow$ M:Seq_k + B:Fin_i + M:$FuTop_j$

Realization a2 with the Future Topic clause occurring sentence final is very infrequent. It should be noted that the occurrence of a Conditional relationship always requires aa future sememe in the Thesis proposition. The Future Topic relator complex is:

⟨fu⟩ *-moq* *(nene)*
topic summary

The Suppositional relator complex consists of one of the Future Sequence relators (Sect. **6.6.1.1**) plus the definite article *-ma*.

An example of a1:

(101) ... *lo* *nimiti - MOQ* *NENE* (Cnd) (5j) *neza* *Wanimaq* *vegenaq* *lo*
say he'll_give_me-top sum I Wanima people say

kemeku - GO (PriEv) (4k) *nosaqnetaq* *koma* *ali* *nupa* *iki* (3)
I_gave_them-d.sub food small get gather doing

gim - it - a - nazo (Thes) (1i).
give_you-fu-3pl-would

'... if he tells me (Cnd) (5j), after I told the people of Wanima (PriEv) (4k) they should gather together (3) and give you a little food (Thes) (1i)!' (LH1:13)

If the Prior Event proposition is in a subordinate relationship to the Condition proposition, the clause realizing the former must precede the clause realizing the latter:

(b) $\text{PriEv}_k \text{ —•— } \text{Cnd}_j \text{ —•— } \text{Thesis}_i$

$$\rightarrow \text{M:}\left\{\begin{matrix}\text{Seq}\\ \text{Suc}\end{matrix}\right\}_k + \text{M:FuTop}_j + \left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$$

Example:

(102) ... *nosaqnetaq* *nok - OKO* (PriEv) (4k) *lotuva* *ahuloko* (3) *gituhuq*
food eat - s.sub scraps leaving spit

oko (3) *loq* *aqminagutiq* *aleko* (3) *Ø - IT - ani - MOQ* *NENE* (Cnd) (5j)
doing wood there_from taking be-fu - 2sg - top sum

litaq *oko* (3) *givisitimoq* (Thes) (1i).
quick being you'll_be_sick

'... after you eat food (PriEv) (4k), if you leave scraps (3) or spit (3) and take firewood away from there (Cnd) (3, 5j), you will quickly (3) get sick (Thes) (1i).' (MA:12)

(c) $\text{Cnd}_k \text{ —•— } \text{PriEv}_j \text{ —•— } \text{Thesis}_i$: Not possible sememically.

6.6.5 Cause and Condition. If Cause and Condition propositions are both in a subordinate relationship to a Thesis proposition, the first two are realized by Reason and Future Topic clauses respectively.

(a1) $\text{Cause}_j \longrightarrow \text{Thesis}_i$
$\text{Condition}_k \nearrow$

$$\rightarrow \text{M:Rea}_j + \text{M:FuTop}_k + \text{B:Fin}_i$$

(a2) $$\rightarrow \text{M:FuTop}_k + \text{M:Rea}_j + \text{B:Fin}_i$$

(a3) $$\rightarrow \text{M:FuTop}_k + \text{B:Fin}_i + \text{M:Rea}_j$$

Realizations a2 and a3 are very infrequent. An example of a1:

(103) ... *Loisieq* *aqmina* *hozaloq* *viti - NAZO* (Cau) (5j) *neqnisigoq*
Loisie that work_to he'll_go-since I_only
v - IT - o - MOQ *NENE* (Cnd) (5k) *nana* *oko* (3) *litogopa* (Thes) (1i).
go-fu-1sg-top sum what doing I'll_speak_unfulfilled
'... since Loisie will be going to that work (Cau) (5j), if I go by myself (Cnd) (5k) how (3) will I speak (Thes) (1i)?' (LV:8)

If the Conditional proposition is in a subordinate relationship to the Cause proposition, the former is realized by a Suppositional clause.

(b) $\text{Condition}_k \longrightarrow \text{Cause}_j \longrightarrow \text{Thesis}_i$
$\rightarrow \text{M:Sup}_k + \text{M:Rea}_j + \text{B:Fin}_i$

(104) *usiq* *nene* *golesa* *Ø - ok - i - KO - MA* *gehani* *napa* *alemitani-MOQ*
tobacco sum bad be-sta-3sg-d.sub-def money big you'll_not_get-top
NE - NAZO (Cau) (5j) *lusa* *netaq* *molatanize* (Thes) (1i).
exist-since medicine thing you'll_put
'Since you will not get good pay (Cau) (5j) if the tobacco is bad (Cnd) (4k), you should put on fertilizer (Thes) (1i).'

If the Cause proposition is in a subordinate relationship to a Condition proposition, the former is again expressed by a Referential Relator-Axis phrase within the Future Topic clause:

(c) $\text{Cause}_k \longrightarrow \text{Condition}_j \longrightarrow \text{Thesis}_i$
$\rightarrow \text{M:FuTop}_j + \text{Ref:RefR-A}_k + \text{B:Fin}_i$

(105) *lusa* *netaq* *molani-KUMUQ* (Cau) (k) *gehani* *napa*
medicine thing you_put-about money big
al-IT-ani-MOQ *NENE* (Cnd) (5j) *vatiq* *okove* (Thes) (1i).
get-fu-2sg-top sum fine being_is
'If you get good pay (Cnd) (5j) on account of your putting on fertilizer (Cau) (k), that's fine (Thes) (1i).'

6.6.6 Cause and Purpose. If Cause and Purpose propositions are both in a subordinate relationship to some Thesis, the clause realizing the Cause will precede the clause realizing the Purpose. The Purpose proposition is realized by either a Future Quotation (FuQuo) clause or an Intentive Action (Inten) clause.

(a1) $\begin{matrix}\text{Cause}_j \\ \text{Purpose}_k\end{matrix} \rightarrow \text{Thesis}_i \rightarrow \text{M:}\left\{\begin{matrix}\text{Seq}\\ \text{Rea}\\ \text{RefR-A}\end{matrix}\right\}_j + \text{M:}\left\{\begin{matrix}\text{FuQuo}\\ \text{Inten}\end{matrix}\right\}_k + \left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$

A realization using the Intentive Action construction can occur only if the agent of the proposition it expresses is the same as the agent of the Thesis. The Intentive relator is as described in Section **5.2.1**: its four forms are *-anogo*, *-inogo*, *-anigi*, and *-inigi*.

The Future Quotation clause consists of an (embedded) sentence, the final verb phrase of which occurs with a future tense suffix and the indicative mood relator, followed by the stem *l-* of the verb 'say' and the Successive Action relator:[16]

$$\text{FuQuo relator} = [\text{Sentence}\langle \text{fu} + \text{ind}\rangle] \overset{l\text{-}}{\underset{\text{say}}{}} + \text{Suc}$$

Examples of a1:

(106) *Loisieni* *avisek - a - GO* (Cau) (4j) *nakasi* *al - INOGO* (Pur) (3k)
Loisie sicken-3sg-d.sub needle get-Inten

lusa *numutoka* *novive* (Thes) (1i).
medicine house_to he_is_going

'Loisie is going to the hospital (Thes) (1i) to get a shot (Pur) (3k) because he is sick (Cau) (4j).'

(107) *laq* *iakaq* *a - KUMUQ* (Cau) (j) *nene* *makoq* *zupaheq* ... *vegenaq*
thus hab 3pl-about pause other time people

kovogisalotiq *vo* *halak-IT-ove* *L-OKO* (Pur) (4k) ... *oliqo* *itimoq* (Thes) (1i),
their_faces_from go hide-fu-1sg say-Suc jump he_rose

'Because they always did that (Cau) (j), one time ... he jumped in (Thes) (1i) ... in order to escape from the presence of the people (Pur) (4k).' (LI:30)

There are two other realizations of the same configuration:

(a2) $\rightarrow$ $\text{M:}\left\{\begin{matrix}\text{FuQuo}\\ \text{Inten}\end{matrix}\right\}_k + \text{B:Fin}_i + \text{M:Rea}_j$

(a3) $\rightarrow$ $\text{M:Rea}_j + \text{B:Fin}_i + \text{M:FuQuo}_k$

Both a2 and a3 are infrequent.

If the Purpose proposition is in a subordinate relationship to the Cause proposition, the clause expressing the former must precede the clause expressing the latter. This is expressed in (b).

(b) $\text{Purpose}_k \leftarrow \text{Cause}_j \leftarrow \text{Thesis}_i$

$\rightarrow$ $\text{M:}\left\{\begin{matrix}\text{FuQuo}\\ \text{Inten}\end{matrix}\right\}_k + \text{M:Rea}_j + \text{B:Fin}_i$

16. Although this construction formally involves a quotation, sememically it serves to indicate Purpose, not Quoted Speech (cf. Sect. **6.6.11**).

(108) *nakasi al-IT-ove L-OKO* (Pur) (4k) *lusa numutoka vonoi-MOQ*
needle get-fu-1sg say-Suc medicine house_to he's_gone-top

NE-NAZO (Cau) (5j) *geza nana itane* (Thes) (1i).
exist-since you what will_do

'Since he has gone to the hospital (Cau) (5j) to get a shot (Pur) (4k), what will you do (Thes) (1i)?'

(c) Cause_k —→— Purpose_j —→— Thesis_i : Not possible sememically.

6.6.7 Purpose and Prior Event. If Purpose and Prior Event propositions are both in a subordinate relationship to one Thesis, the rule for encoding states that a Sequence clause realizing the Prior Event precedes the clause which realizes Purpose.

(a1) $\text{Purpose}_j \longrightarrow \text{Thesis}_i$
$\text{Prior Event}_k \nearrow$

(a1) → M:Seq_k + $\text{M:}\left\{\begin{matrix}\text{FuQuo}\\ \text{Inten}\end{matrix}\right\}_j$ + $\left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$

(a2) → M:Seq_k + B:Fin_i + M:FuQuo_j

In realization a2 there is an embedding of the Future Quotation clause within the Final clause, with the free subject of the Final clause followed by the embedded Future Quotation clause filling a purposive slot in that clause, followed by the remainder of the Final clause. Realization a1, which is more frequent than a2, is illustrated in sentence 109.

(109) ... *aliqmi vatiq i asuq Ø-ik-a-KE* (PriEv) (4k) *nene numuni*
made_him fine did finish be-sta-3pl-s.sub pause house

g-IT-une L-IKI (Pur) (4j) *nene litaq iki* (3) *numuni gemave* (Thes) (1i).
build-fu-1pl say-Suc pause quick being house they_don't_build

'... after they have finished helping him (PriEv) (4k), in order to build a house (Pur) (4j) they don't do it (Thes) (1i) quickly (3).' (HB:4)

If the Prior Event proposition is in a subordinate relationship to the Purpose proposition, the order of the realizing clauses is the same as in (a), but the structures are slightly altered:

(b) Prior Event_k —→— Purpose_j —→— Thesis_i

→ M:FuSeq_k + M:FuQuo_j + $\left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$

In this realization the Prior Event relationship is expressed by a Future Sequence clause (Sect. **6.6.1.1.**). With the sememic configuration of (a), if the

Thesis expresses a past action, the Prior Event relationship will be expressed by a Non-Future Sequence clause, and the structures of (a) and (b) thus differentiated. If the Thesis of (a) expresses a future action, the Prior Event relationship will be expressed by a Future Sequence clause inserted within the Future Quotation clause, and (a) and (b) will thus still be differentiated.

Examples of (b):

(110) ... *holisi* *imane* *nenitoka* *likigika* *mil-IKI* (PriEv) (3k) *min-AT-ave*
holiday this me_to your_insides put-Suc stay-fu-3pl

L - OKO (Pur) (4j) *lo* *hutoko* (3) *molanimoq* (Thes) (1i)
say-Suc say cutting you_put

'... you established this Sabbath (Thes) (4i) in order that we would remain (Pur) (4j) after we put our hearts toward you (PriEv) (3k).' (P1)

(111) ... *lape* *koma* *nene* *ali* *vilig - ik - i - KO* (PriEv) (4k) *nagamikuq*
boat small pause take overturn-sta-3pl-d.sub water_in

holok - AT - une *L-IKI* (Pur) (4j) *legesoq* *iki* (3) *viakaq* *amoq* (Thes) (1i).
might_anoint_fu-1pl say-Suc careful being going they_were

'... they went (Thes) (1i) carefully (3) so that they might not drown in the water (Pur) (4j) after they overturned the small boat (PriEv) (4k).' (LI:24)

If the Purpose proposition is in a subordinate relationship to the Prior Event proposition, the structures are as in (a) but the first two clauses reversed:

(c) $\text{Purpose}_k \longrightarrow \text{Prior Event}_j \longrightarrow \text{Thesis}_i$

$$\rightarrow \text{M:}\begin{Bmatrix}\text{FuQuo}\\\text{Inten}\end{Bmatrix}_k + \text{M:}\begin{Bmatrix}\text{Seq}\\\text{Suc}\end{Bmatrix}_j + \begin{Bmatrix}\text{B:Fin}\\\text{M:Dep}\end{Bmatrix}_i$$

(112) *nama* *nene* *kelepiz - IT - une* *L-IKI* (Pur) (4k) *nene* *olopa* *ve*
birds pause show_them-fu-1pl say-Suc pause elder men

nenete *izegipa* *nene...* *kiliqmiki* (3) *nagamiq* *napaloq*
they children sum taking_them water blg_to

v - a - KE (PriEv) (4j)... *kelepizemoq* (Thes) (1i)
went-3pl-s.sub they_showed_them

'In order to show them the bird-flutes (Pur) (4k) the elders took the youths (3) and went to the river (PriEv) (4j) and showed them (Thes) (1i).' (IN:3)

6.6.8 Purpose and Condition. If Purpose and Condition propositions are both in a subordinate relationship to one Thesis, there are three possible realizations:

(a1) $\text{Purpose}_j \longrightarrow \text{Thesis}_i$
$\text{Condition}_k \nearrow$

$$\rightarrow \text{M:FuTop}_k + \text{M:FuQuo}_j + \begin{Bmatrix}\text{B:Fin}\\\text{M:Dep}\end{Bmatrix}_i$$

(a2) → $M:FuTop_k + B:Fin_i + M:FuQuo_j$

(a3) → $M:FuQuo_j + B:Fin_i + M:FuTop_k$

Realizations a2 and a3 are much less frequent than a1. An example of a1:

(113) *ve* *makoq* *avis - IT - i - MOQ* *NENE* (Cnd) (5k) *lusa*
man a sicken-fu - 3sg - top sum medicine

get - AT-une *L - IKI* (Pur) (4j)... *izegipa* *makoq*
work_for_him-fu - 1pl say - Suc child a

amisil - ik - iko (Thes) (4i)...
send_him - sta - when_they

'If a man gets sick (Cnd) (5k), in order to work medicine on him (Pur) (4j)...
after they send a child (Thes) (4i)...' (ME:1)

If the Condition proposition is in a subordinate relationship to the Purpose proposition, again the former is expressed by a Suppositional clause:

(b) $Condition_k$ ⟵ $Purpose_j$ ⟵ $Thesis_i$

→ $M:Sup_k + M:FuQuo_j + \begin{Bmatrix} B:Fin \\ M:Dep \end{Bmatrix}_i$

(114) *lok - i - KO - MA* (Cnd) (4k) *n - AT - une* *L - OKO* (Pur) (5j)
cook-3sg-d.sub-def eat - fu - 1pl say - Suc

amisi *apatitune* (Thes) (1i).
ground_oven we_will_open

'We will open up the ground oven (Thes) (1i) in order to eat (the food) (Pur) (5j)
if it is cooked (Cnd) (4k).'

If the Purpose proposition is in a subordinate relationship to the Condition proposition, the realizing clauses are as in a1 but the order of the first two clauses reversed:

(c) $Purpose_k$ ⟵ $Condition_j$ ⟵ $Thesis_i$

→ $M:\begin{Bmatrix} FuQuo \\ Inten \end{Bmatrix}_k + M:FuTop_j + \begin{Bmatrix} B:Fin \\ M:Dep \end{Bmatrix}_i$

(115) *malasini* *al - IT - ove* *L - OKO* (Pur) (4k) *lusa* *numutoka*
medicine get - fu - 1sg say - Suc medicine house_to

v - IT - ani - MOQ *NENE* (Cnd) (5j) *lamanaq* *itive* (Thes) (1i).
go - fu - 2sg - top sum good it_will_be

'It will be good (Thes) (1i) if you go to the hospital (Cnd) (5j) to get medicine
(Pur) (4k).'

6.6.9 Resemblance, Manner, and Prior Event. Let us now consider Resemblance and Manner propositions along with a Prior Event proposition,

all in a subordinate relationship to one thesis. The Manner proposition is expressed by an Adverbial clause, and the Resemblance relationship by a Comparison (Com) clause.

(a1) Resemblance$_j$ → Thesis$_i$
Prior Event$_k$ →
Manner$_l$ →

$$\rightarrow \text{M:Seq}_k + \text{M:Com}_j + \text{M:Suc}_l + \left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$$

(a2) $$\rightarrow \text{M:Com}_j + \text{M:Suc}_k + \text{M:Suc}_l + \left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$$

The choice between a1 and a2 is determined by whether the agents of the Prior Event proposition and the Thesis proposition are the same. If they are not, a1 must be used.

Adverbial clauses which signal Manner are not distinguishable in form from Successive Action clauses which signal a Prior Action, except that those which express Manner very seldom contain any clause tagmemes except the verb phrase, and the verb stem itself is often that of the verb "be" (zero stem). Here are a few Adverbial clauses, listed in the monofocal form:

hana Ø-oko	'slowly'	*ololu l-oko*	'runningly'
slow be-Suc		run say-Suc	
litaq Ø-oko	'quickly'	*legesoq Ø-oko*	'carefully'
quick be-Suc		careful be-Suc	
goiq Ø-oko	'previously'	*silipa Ø-oko*	'with difficulty'
ahead be-Suc		difficult be-Suc	
apiq Ø-oko	'initially'	*lamanaq Ø-oko*	'well'
start be-Suc		good be-Suc	

The comparison relator complex is { *-moq nene -qmini* (topic sum of) / *-tiqmini* (of) } *Ø-* (be) + Suc

Examples of a2:

(116) *Zohaneq i -MOQ NENE-QMINI Ø -IKI* (Res) (3j) *lekelitoka nene*
John did-top sum - of be - Suc you_to pause
hoza nalemole (Thes) (1i).
work they_are_doing
'They are working among you (Thes) (1i) as John did (Res) (3j).' (SJ:18)

(117) *golohaq ve nene a - TIQMINI Ø - OKO* (Res) (3j) *hozagoq*
red men pause did - of be - Suc work_only
al - EKO (PriEv) (3k) *amisel - EKO* (Man) (3l) *minanogo une* (Thes) (1i)
do - Suc send_it - Suc surely_stay we
'We shall surely remain (Thes) (1i) just working (PriEv) (3k) uninterruptedly (Man) (3l) as the Europeans did (Res) (3j).' (ON:28)

(See also sentence 41.)

6.6.10 Query and Alternative Queries. Given two or more propositions which express alternative Queries, all but the final one are encoded as Interrogative clauses. The final alternative is expressed as a Final clause in the indicative (ind) mood.

Query ⟷ Alternative query$_j$ → B : Interrogative Fin$_i$ + B : Ind Fin$_j$

(118) *Ukalupa noi - HE* (Query) (5/6i) *noami - VE* (Alt Query) (1j)
Ukarumpa he_is-int he_is_not - ind
'Is he at Ukarumpa (Query) (5/6i) or not (Alt Query) (1j)?' (LH1:16)

(119) *aqisi hoza makoq nali - HE* (Query) (5/6i) *hanuva noi - VE* (Alt Query) (1j)
he work any is_doing-int simply he_is - ind
'Is he working (Query) (5/6i) or is he (doing) nothing (Alt Query) (1j)?' (LH2:10)

6.6.11 Quoted Speech. Up to this point the subject of quotations has not been discussed. First of all, let us note that each occurrence of cited speech ought to be separated from the surrounding structure and treated as a unit by itself. The sememic reason for this is that every utterance by a speaker fills a different function in the matrix of human behavior from that of every other utterance by another speaker or from the setting of those utterances. The morphemic reason for the separation is that in Gahuku each quoted speech consists of one or more embedded sentences, and the rules for pronominal usage within quotations are not the same as those for nonquotative material. And phonemically, in Gahuku the embedded quotation may or may not have its initial or final boundary marked by sentence-boundary phonological features; but if the final boundary of the embedded quote is not the end of a sentence, the phonological features of the embedded sentence unit are not the same as those for a full non-embedded sentence.

The alternate realizations for quotations are as follows. In a1 and a2 the verb stem *l-* 'say' occurs both prior to and following the quote; and the anaphoric morpheme *laqa* 'thus' may precede, and must follow, the quote in a2, but is absent following the quote in a1.

(a1) Quotation$_j$ ⟷ Speak$_i$ ⟨agent$_\alpha$⟩

$$\rightarrow (\text{subject}_\alpha)\begin{pmatrix}laqa\\ \text{thus}\end{pmatrix} + \begin{matrix}l-\\ \text{say}\end{matrix} + \text{Suc}\Big) \begin{matrix}l-\\ \text{say}\end{matrix} + \text{Quo S}^n{}_j \left(\begin{matrix}l-\\ \text{say}\end{matrix} + \text{Suc}\right) \begin{matrix}l-\\ \text{say}_i\end{matrix}$$

Examples of a1:

(120) ... *LAQA* *L - OKO* (3) *L - ive* (Speak) (1i). *mota* *asuq* *noi - ze* (5)
thus say-Suc say - he now finish it_is - so

numutoka *vilizo* (Quo) (1j) *L - oka - go* (Speak) (4i) ...
home_to go! say - he - d.sub

'... he said (Speak) (1i), "It's finished now (5), go home". (Quo) (1j) After he spoke (Speak) (4i) ...' (MB:4)

(121) ... *LAQA* *L - OKO* (3) *L - itimoq* (Speak) (1i). *neniq* *izegipa* *hanuva*
thus say-Suc say - he_will my child simply

gizapa *itove* (Quo) (1j) *L-okani-ke* (Speak) (4i) *alenimoqma* *nenazo* (5) *nezaqne*
care I_will say - 2sg-s.sub you_took since I_myself

mota *goha* *alitove* (Quo) (1j) *L - OKO* (3) *L - oko - ko* (Speak) (4i) ...
now again I'll_take say - Suc say - he - d.sub

'... he will say (Speak) (1i) this (3): "After you said (Speak) (4i) you would simply care for my child (Quo) (1j), you took him (5); so I myself will take him again now" (Quo) (1j). After he says (Speak) (4i) that (3) ...' (AD:9-11)

$$\text{(a2)} \rightarrow (\text{subject}_{\alpha}) \begin{pmatrix} laqa \\ \text{thus} \end{pmatrix} + \begin{matrix} l- \\ \text{say} \end{matrix} + \text{Suc} \Big) \begin{matrix} l- \\ \text{say}_i \end{matrix} + \text{QuoS}^n{}_j \; \# \; \begin{matrix} laqa \\ \text{thus} \end{matrix} + \begin{matrix} l- \\ \text{say} \end{matrix} + \text{Suc} + \begin{matrix} l- \\ \text{say}_i \end{matrix}$$

(122) ... *LAQA* *L - OKO* (3) *L - imoq* (Speak) (1i). *guivahaniqnemaka* *gizapa*
thus say - Suc say - he my_lord_vocative care

lamanaq *oketanogo* *uve* (Quo) (1j). *LAQA* *L-OKO* (3)
well for_them_surely I thus say-Suc

L - oka - go (Speak) (4i) ...
say-he-d.sub

'... he said (Speak) (1i) this (3): "My Lord, I will surely care for them well". (Quo) (1j) After he said (Speak) (4i) that (3) ...' (SS:18-20)

Realizations a1 and a2 are by far the most common for quoted speech. In both, the beginning of the quotation itself is a new sentence morphologically and phonologically. In a1 the end of the quotation may be marked as a sentence phonologically by pause and intonation; but if it is not so marked otherwise, the rules dictate that the phonological manifestation must be made to end in a vowel. Under such conditions, if the quotation would otherwise end in a morpheme which ends in a glottal stop, the predicative enclitic *-ve* or the existential verb *neve* 'it is' is added. The morphophonemic rules for the predicative enclitic (Sect. **3.8**) signify that /qv/ → /l/. Sentences 123 and 124 illustrate one or the other of these morphemes inserted after the topic suffix *-moq*.

(123) ... *makoq* *minasi - MO* (Quo) (1j) *-LE - L - i* (Speak) (1i).
together they_stayed-top pred-say-he

'He said (Speak) (1i) ... "they stayed together (Quo)" (1i).' (SJ:7)

(124) ... *luhuva* *netaq* *eqaho* *ahulok - a - go* (4) *omo* (2) *noi - MOQ*
design thing who sent - 3sg - d.sub coming he_is - top

NEVE (Quo) (1j) *- L - i* (Speak) (1i).
it_is say - he

'... he said (Speak) (1i), "Who sent a letter (4) to have him come (2) and be (here)?" (Quo) (1j)' (SJ:33)

It is difficult to determine the factors which call for the end of the quote in (a) to be marked phonologically as the end of a sentence or not (i.e., a1 vs. a2). Realization a2 is probably less frequent than a1. Realizations a3 and a4, in which the beginning of the quote, which is completely embedded within one clause, is not a new sentence morphologically or phonologically, are less frequent than a1 and a2. Rules a3 and a4 and an example of each are as follows:

$$\text{(a3)} \rightarrow \text{obj}:\text{Quo}\,S_j \left(\begin{matrix} l\text{-} \\ \text{say} \end{matrix} + \text{Suc}\right) \left(\text{subject} \begin{Bmatrix} \text{NP} \\ \text{pron} \end{Bmatrix}_{\alpha}\right) \quad \begin{matrix} l\text{-} \\ \text{say}_i \end{matrix}$$

(125) *neza* *nene* *hotoqma* *oko* (3) *minu - nazo* (5) *Totani* *amelahini*
I pause distant coming I_stay - since Tota's father

avisive (Quo) (1j) *L - OKO* (3) *Loisieq* (α) *L - o* *nemekago* (Speak) (4i) ...
is_sick say - Suc Loisie say after_giving_me

'Since I have come (3) and remain far away (5), after Loisie (α) told me (Speak) (4i) that (3) Tota's father was sick (Quo) (1j) ...' (LL:27)

$$\text{(a4)} \rightarrow \left(\text{subject}: \begin{Bmatrix} \text{NP} \\ \text{pron} \end{Bmatrix}_{\alpha}\right) \quad \text{obj}:\text{Quo}\,S^2_j \left(\begin{matrix} l\text{-} \\ \text{say} \end{matrix} + \text{Suc}\right) \ldots + \begin{matrix} l\text{-} \\ \text{say}_i \end{matrix}$$

(126) ... *izegipa* *komaqmini* *agatupaguq* *neke* (4) *voe* (Quo) (j)
child small_of stomach_in being what?

no - L - i - go (Speak) (4i) *eza* *uvolaho* (α) *nene* *geleka - ke* (4) *kee*
prog - say - 3sg - d.sub he older_brother pause heard - s.sub alas

ozahama *nene* *oko* (3) *live* (1). *gimisi* *mageq* *ale* *vatiq* *oko* (3)
old_man pause coming it_says bows arrows make ready doing

minatiqive (Quo) (1j) *L - OKO* (3) *L - oka - go* (Speak) (4i) ...
we'll_stay say - Suc say - he - d.sub

'... as it was in the young child's stomach (4) and said (Speak) (4i) "What?" (Quo) (j), his older brother (α) heard it (4) and said (Speak) (4i) this (3): "Alas, it sounds like (1) the old man is coming (3). Let's get ready the bows and arrows (3) and wait." (Quo) (1j) So then ...' (FB:46-49)

When an Inquiry (using a question-word) is quoted, the verb in the Final clause of the question sentence which expresses the Inquiry may be either interrogative or indicative in mood. This contrasts with unquoted questions, in

which the verb always occurs with an indicative mood suffix. In sentence 127 the Final clause expressing the quoted Inquiry occurs with the interrogative mood relator, and in sentence 128 with the indicative mood relator. The rule for the quoted Inquiries is:

(b) Quoted Inquiry_j ⟶ Speak_i

→ S:Question_j ⟨int/ind⟩ + *l-* (say)

(127) *nana* *itiqi - HE* (Inquiry) (1j) *L - ikasike* (Speak) (4i) . . .
what we'll_do - int say - when_they

'. . . after they said (Speak) (4i), "What will we do?" (Inquiry) (1j) . . .' (FA:21)

(128) . . . *loq* *hilaqagutiq* *aleko* (3) *oko* (3) *gizatiqi - VE* (Inquiry) (1j)
wood where_from getting coming we'll_burn - ind

L - ikaslke (Speak) (4l) . . .
say - when_they

'. . . after they said (Speak) (4i), "Where will we get (3, 3) firewood from to burn?" (Inquiry) (1k) . . .' (FA:22)

A special instance of quoted speech is more specifically defined as repeated or translated speech. It occurs when one individual repeats in Gahuku to listeners, immediately after its initial utterance, what a second individual has said in Gahuku or in another language. In such cases there is never any morphemic identification of the speaker. The rule for repeated Queries or Inquiries is given in c1; a Query is an utterance which calls for a yes/no answer and an Inquiry is an utterance which uses a question-word as the filler of one of its clause slots.

(c1) {Query / Inquiry}$_j$ ⟶ Ask_i → S:{Interrogative / Question}$_j$ + *l-* (say) Suc + *lokaq* *Ø-* (ask_i)

(129) *nosaqnetakumuq* *gelekuni - ke* (4) *nou - PE* (Ait) (5/6) *itoq* *izamuq*
food_for we_sensed - s. sub we_are - int and pork_for

gelekuni - ke (4) *nou - NE* (AitQuery) (1j) *L - OKO* (3) *lekeliq* *LOKAQ*
we_sensed - s. sub we_are - ind say - Suc you ask

no - Ø - i (1i)
prog - be - 3sg

'He is asking you (1i) saying (3), "Are we (here) (Query) (5/6) because we want food (4) or are we (here) (AltQuery) (1j) because we want pork?" (4)' (SJ:39)

(c2) Statement_j ⟶ Speak_i → S:Indicative_j *-l - i* (say - 3sg_i)

In a repeated statement (an utterance which neither calls for a yes/no answer nor makes an inquiry) the form *-li* (consisting of the stem *l-* 'say' plus 3rd

person suffix *-i*) occurs as a phonologically bound enclitic on the quoted sentence which expresses the Statement. As noted previously, the *-li* suffix must follow a vowel; and if the form it attaches to would otherwise end in a glottal stop, the predicative enclitic *-ve* or the indicative form of the existential verb follows the glottal stop and precedes the *-li*. Examples:

(130) ... *golohaq* *ve* *imaneloq* *imi* (2) *aniteke* (4) *nene*
red men here coming arriving pause
nilelepize - *ve* (j) - *L* - *i* (Speak) (i).
they're_showing_us-ind - say-3sg
'... "the white men have come (2) and arrived here (4) and are showing us" (j), he said (Speak) (i).' (SJ:22)

(131) ... *liqmugusi* *napa* *zea* - *ke* (4)... *mina* - *MO* - *LE* (j) - *L* - *i* (Speak) (i).
darkness big hit - s.sub stayed - top - pred - say - 3sg
'He said (Speak) (i), ... "a great darkness fell (4) and remained." (j)' (SJ:3)

(132) ... *luhuva* *netaq* *ahulamuhaq* (j) *NEVE* - *L* - *i* (Speak) (i).
design thing we_didn't_send exist - say - 3sg
'He said (Speak) (i), "... we didn't send a letter." (j)' (SJ:21)

The pronouns of quoted speech in Gahuku are basically direct address forms, but with some interesting modifications. Fig. 5 presents the semo-morphemic rules for some of the person combinations of quoted speech. Fig. 5 assumes there are

Quote Margin		Quote Content					
		A		B		C	
Speaker	*Addressee*	*agt*	*obl*	*agt*	*obl*	*agt*	*obl*
A	B	1	1	2	2	3	3
A	C	1	1	3	3/2	2/3	2
B	A	2	1	1	1	3	3
B	C	3/1	3	1	1	2	2
C	A	2	2/1	3	3	1	1
C	B	3	3/1	2	2	1	1

Fig. 5. Pronominal Realizations for Quoted Speech

three individuals, A, B, and C, in a situation such that A is quoting to B something said by one of the three to one of the others. Given the speaker and addressee of that prior speech act as listed in the two columns at the left, references to A, B, and C within the content of the quote will be by morphemes whose person designation is listed in the columns at the right. The *agt* columns list person designations for A, B, and C when one of them was the agent of the action referred to in the quote; the

obl columns list designations of them as they fill oblique roles (goal, recipient, beneficiary) in the action referred to in the quote.

Some of the data for Fig. 5 has been elicited and not drawn from the corpus. In certain instances this elicited data proved self-contradictory and thus needs further checking. It will be noted that in a few cases alternate realizations are listed. In these cases the first of the two realizations follows rules for direct speech, and the second of the two follows rules for indirect speech.[17]

Perhaps the most interesting pronominal realizations of quoted speech illustrated below in sentences 133–137 result in 1st person morphemes in both subject and non-subject slots of the Final clause of the unit expressing the quoted speech.

(133) *leliq* *nemoqza* (6) *mota* *LI-m-it-OVE* (Quo) (1j) *L-oka-ke* (Speak) (4i) ...
ours it_is_but now us-give-fu-1sg say-3sg-s.sub

'It is ours (6), but after he said (Speak) (4i) that he would give it to us now (Quo) (1j) ...' (BO:25)

or 'It is ours, but after he said "I will give it to you now"...'

(134) ... *nenitoka* *nosaqnetaq* *makoq* *ahulo-NE-t-at-UNE* (Quo) (1j)
me_to food some send-me-ben-fu-1pl

L-iki (Speak) (3i) ...
say-Suc

'... (those who) say (Speak) (3i) "We will send him some food" (Quo) (1j) ...' (LV:2)

or '... (those who) say that they will send me some food...'

(135) *geza* *NE-leqmo* *gilil-it-OVE* (Quo) (1j) *L-oko* (Speak) (3i) ...
you me-make heal-fu-1sg say-Suc

'If you say (Speak) (3i) you will make me healed (Quo) (1j) ...' (Mk1:40)

or 'If you say "I will heal you"...'

(136) *ve* *makolite* *neniq* *NE-qmeget-at-UNE* (Quo) (1j) *L-ikl* (Speak) (3i)
men some me me-follow-fu-1pl say-Suc

nigilikima (4) ...
as_they_sense

'Supposing some men feel (4) that (Speak) (3i) they will follow me (Quo) (1j) ...' (Mk9:34)

or 'Supposing some men respond saying, "We will follow him"...'

(137) ... *NI-gizatoq* *al-it-UNE* (Quo) (1j) *L-iki* (Speak) (3i) *niahe* (1)
my-hands_at take-fu-1pl say-Suc are_you?

'... are you (1) saying (Speak) (3i) that you will seize my hands (Quo) (1j)?' (Mk14:48)

or '... are you saying, "We will seize your hands"?'

17. For theoretical discussion of pronominal reference in conversation see Pike and Lowe 1969.

6.6.12 Awareness. Gahuku uses a quoted speech construction to express a situation which is apprehended by some sensory activity such as seeing, thinking, knowing, or to express the content of a written message. In this construction an embedded sentence (whose Final clause is in the indicative mood), expressing the content of what is perceived, functions as the object of the Successive Action clause containing the verb stem *l-* 'say'.

$$\text{Perception}_j \longrightarrow \text{Sense}_i$$
$$\rightarrow \text{obj:S}\langle\text{Indicative}\rangle_j + \underset{\text{say}}{l\text{-}} + \text{Suc} + \underset{\text{know, think, see, write}}{\textit{sense verb}_i}$$

Examples:

(138) *ameqnehini* *mikasi* *neve* (Perception) (1j) *L - oko* (3) *agata*
my_father's land it_is say-Suc his_ear
GEL - ek - oko (Sense) (4i) . . .
sense-sta-s.sub
'Thinking (Sense) (4i) that (3) it was his father's land (Perception) (1j) . . .' (LD:5)

(139) *goiq* *oko* (3) *nene* *golohaq* *ve* *niamave* (Perception) (1j)
ahead being pause red men they_are_not
L - OKO (3) *GEL - eakaq* *unimoq* (Sense) (1i).
say-Suc sense - hab we_were
'Previously (3) we thought (Sense) (1i) that (3) Europeans did not exist (Perception) (1j).' (ON:18)

(140) *gizapa* *ve* *loloq* *noketave* (Perception) (1j) *L - OKO* (3)
oversee men make he's_doing_for_them say - Suc
AQNIG - uhale (Sense) (1i).
see - 1pl
'We saw (Sense) (1i) that (3) he was making them officials (Perception) (1k).' (PP:11)

(141) . . . *neneqmini* *oko* (3) *kopiq* *zuhaq* *noune* (Perception) (1j) *L - oko* (3)
that_of being coffee plant we_are say-Suc
lo *utoq* *oko* (3) *luhuva* *GIZ - uve* (Write) (1i).
say reveal doing design burn - 1sg
'I have revealed (3) and written (Write) (1i) that (3) this is how (3) we plant coffee (Perception) (1j).' (CG:16)

6.6.13 Assumption. A quoted speech construction is also used to express the content of Assumptions or Evaluations which underlie some performed action. In this construction there is usually no morpheme to express the idea of "assume" or "evaluate" other than the verb stem *l-* 'say'. The Assumptions or Evaluations are realized by clauses whose phrases occur with the interrogative relator. It is often implied that the assumption was a false one. Listing the performed action as the Thesis, the construction is as follows:

$$\left\{\begin{matrix}\text{Assumption}\\ \text{Evaluation}\end{matrix}\right\}_k \longrightarrow \left\{\begin{matrix}\text{Assume}\\ \text{Evaluate}\end{matrix}\right\}_j \longrightarrow \text{Thesis}_i$$

$$\rightarrow \text{obj:S}\langle\text{Interrogative}\rangle_k + \begin{matrix}l\text{-}\\ \text{say}_j\end{matrix} + \text{Suc} + \left\{\begin{matrix}\text{B:Fin}\\ \text{M:Dep}\end{matrix}\right\}_i$$

(142) *neniq* *izegipama* *ne - HE* (Assumption) (1k) *L - OKO* (Assume) (3j)
my child is-interrogative say-Suc

gizapa *lamanaq* *u - ke* (Thes) (4i) . . .
care well I_did-s.sub

'As I looked after him (Thes) (4l) as though (Assume) (3j) he were my child (Assumption) (1k) . . .' (AD:13)

(143) *Ovakekigoq* *vitiqi - HE* (Assumption) (1k) *L - OKO* (Assume) (3j)
Ovake_with_only we'll_go-interrogative say-Suc

agata *nogili - go* (Thes) (4i) . . .
his_ear as_he_sensed-d.sub

'As he was thinking (Thes) (4i) that (Assume) (3j) only he and Ovake would go (Assumption) (1k) . . .' (UT:2)

(144) . . . *lamanaq* *onoi - HE* (Evaluation) (5/6) *golesa* *onoi - HE* (AltEvaluation) (1k)
good has_been-int bad has_been-int

L - OKO (Evaluate) (3j) *goha* *sekimi* *oko* (Thes) (3l) . . .
say-Suc again check doing

'. . . checking it again (Thes) (3i) to determine whether (Evaluate) (3j) it is good (Evaluation) (5/6) or bad (AltEvaluation) (1k) . . .' (RB:20)

6.6.14 Naming. There are three ways of expressing that a specific name has been given to one of a particular species. All three of these at least potentially use the verb stem *l-* 'say'. The first gives the species name followed by the morpheme *-gulizaq* 'name' and the morpheme expressing the specific given name, plus one of the stems *l-* 'say' or *mVl-* 'put':

(a) $\text{Name}_j \longrightarrow \text{Species}_i \longrightarrow \text{Apply}_k$

$$\rightarrow \text{species}_i + \begin{matrix}\textit{-gulizaq}\\ \text{name}\end{matrix} + \text{Given Name}_j$$

$$+ \left\{\begin{matrix}\textit{ave}\\ \text{it\_is}\\ \textit{-ve}\\ \text{it\_is}\end{matrix}\right\} + \begin{matrix}l\text{-}\\ \text{say}\end{matrix} + \text{Suc} + \left\{\begin{matrix}l\text{-}\\ \text{say}\\ mVl\text{-}\\ \text{put}\end{matrix}\right\}_k$$

(145) . . . *aqmina* *ve* (i) *a - GULIZAQ* *nene* *Wanimapiq* (j) *AVE* *L - IKI*
that man his - name pause Wanimapi it_is say_Suc

ni - L - amoqma (k)
prog-say-3pl

'. . . that man (i) whom they call (k) Wanimapi (j) . . .' (RB:3)

(146) ... *gapo* (i) *a-GULIZAQ* *aqmina* *isaloq* *memane* *Papolo*
road its - name that bridge_at down_there Papolo
ohuto (j) - *LE* *L - OKO* *nene* *no - L - une* (k) ...
pool_at - it_is say - Suc pause prog - say - 1pl
'... the place (i) down at that bridge that we call (k) Papolo pool (j) ...' (FP:12)

(147) ... *aqmina* *agokama* (i) *a - GULIZAQ* *nene* *Guseka* *agoka* (j) - *VE*
that mountain its - name pause Guseka mountain - it_is
L - IKI *MIL - asimoq* (k) ...
say - Suc put - 3dl
'... that mountain (i) to which they gave (k) the name Guseka mountain (j) ...' (FO:10)

The second naming device uses the adjectival relator construction (Sect. **4.3.1**) on the verb ('be' or 'put') which immediately precedes the species name:

$$\text{(b)} \rightarrow \text{Given Name}_j + \underset{\text{it\_is}}{ave} + \left\{ \begin{matrix} \underset{\text{say}}{l\text{-}} \text{ hab} + \underset{\text{be}}{\emptyset\text{-}} \\ \underset{\text{say}}{l\text{-}} \text{ Suc} + \underset{\text{put}}{mVl\text{-}} \end{matrix} \right\}_k + \text{species}_i$$

(148) ... *Wanimapiq* (j) *AVE* *L - IAKAQ* (k) *ni - Ø - a* *ve* (i) ...
Wanimapi it_is say - hab prog - be - 3pl man
'... the man (i) they call (k) Wanimapi (j) ...' (RB:19)

(149) ... *Loseeq* (j) *AVE* *L - IKI* *MIL - a* (k) *ve* (i) ...
Losee it_is say - Suc put - 3pl man
'... the man (i) whom they named (k) Losee (j) ...' (LB:20)

The third naming device uses the verb stem *l-* 'say' in an appositional Successive Action clause which has no structural relationship with the rest of the sentence, and often occurs sentence-final:

$$\text{(c)} \rightarrow \text{species}_i + \text{Given Name}_j + \underset{\text{it\_is}}{\text{-}ve} + \underset{\text{say}_k}{l\text{-}} + \text{Suc}$$

(150) ... *agulizaki* *ve* (i) *Zuzai* (j) - *LE* *L - OKO* (k) *aqisi* ...
his_name_with man Zuzai - it_is say - Suc he
'... an important man (i) (named) (k) Zuzai (j), he ...' (CA:5)

(151) ... *aqmina* *goni* (i) *ha* *neze* *Liqnumuka* (j) - *VE* *L - OKO* (k).
that bamboo still exists Liqnumuka - it_is say - Suc
'... that bamboo (l) (clump) still exists, (called) (k) Liqnumuka (j).' (FC:14)

7 THE THEORETICAL MODEL

7.1 Introduction. After a period in the development of linguistic theory in which considerable energy has been spent in hurling invective, it is refreshing to make this study at a time when a number of theories are beginning to show striking similarities. Complete uniformity of approach is not only unlikely but undesirable, for as soon as two scholars find nothing about which they disagree, one of them has stopped thinking. But several of the major linguistic approaches seem near enough in their basic assumptions that, granted the modifications acceptable to at least some of their adherents, this study could be written from any of these approaches with very little shifting of position. This study has selected the tagmemic approach. However, it is hoped that the convertibility into presentations by alternate theoretical viewpoints may be evident.

For those who are interested in theory in general and tagmemics specifically, it will be apparent that the tagmemic model followed in this study differs from "standard tagmemics" (if such a thing does exist). In this section I shall discuss those areas where my model differs from that of other tagmemicists and the reasons that have led to these modifications.

7.2 Goals. I shall begin by making a few statements on what constitutes for me an acceptable grammar of a language. Linguistics owes transformational grammarians a great debt for their insistence on grammars being generative. Generative has sometimes been defined as producing all and only the sentences in a language which are considered grammatical. However, language is a vehicle for communication, not just a black box which grinds out a nonsensical and unrelated series of sentences as someone turns a handle. It is a system by which individuals convey to others a certain meaning content by means of phonic or graphic forms. Therefore a truly generative grammar will present the structure which accounts for how a given body of semantic information can be represented by one or more phonic or graphic forms, and also how a given phonic or graphic form can be interpreted as representing one or more bodies of semantic information.

Such a goal is admittedly an ambitious one. It has not been achieved for any language and perhaps not even for one sentence of any language. We have made excellent progress in describing phonology, and have come a long way in grammar, defined for the moment in the narrow sense of surface structure or the structure of syntactic arrangement of morphemic units. But in that aspect of linguistic structure which accounts for the organization of meaning, we are a long way from any generative description. Nevertheless, if we can see what we are aiming at, we may eventually get our descriptive arrows on the target, if not in the center.

If our model were describing English, we would want it to account formally for the possibility of /klim/ but not */mkli/ as illustrating actual phonemes but possible vs. impossible structural combinations; for the possibility of "Mary count-ed slow-ly" but not *"count-ed slow-ly Mary" or *"Mary-ed count-ly slow" as illustrating actual morphemes but possible vs. impossible morphemic structural combinations; and for "John admires sincerity" but not *"sincerity admires John" as illustrating actual sememes but possible vs. impossible sememic structural combinations. We would also want our model to specify the structures which would account for the semantic ambiguity of "flying planes," and to specify the structures which allow the information of "John ate the apple" to be manifested in surface structure by "John's eating (of) the apple," "that John ate the apple," "(I saw) John eat the apple," "the apple was eaten by John," or "the apple (that) John ate."

Summed up briefly, we desire a model which will specify the possible structural combinations in both the grammatical and phonological modes. But we also desire a formal means to account for the fact that different grammatical structures and units may express the same semantic content, as well as the fact that one grammatical structure may be utilized to express different sets of semantic content.

7.3 Form and Meaning. Tagmemicists have insisted on the recognition of units as form-meaning composites. Pike states that

> Our present theory would not allow us to say—when we are on guard, or consistent—that a linguistic item "is the bearer of meaning," since there would be no available linguistic units to "bear" meanings, in view of the fact that there are only form-meaning composites. (1967.73)

He states, however, that we must not be prevented from "utilizing form and meaning, as basic, useful, hypostatized components in definition of emic structures" (1967.141). Pike's concept of morphemes as form-meaning composites is based on a fear of a dualism which would lead "to emes of meaning which have no constantly-present physical manifestation but which are merely abstracted relationships" (1967.187).

However, just as surely as it is necessary to distinguish between morphemes and phonemes and recognize that the former are expressed by the latter, so it is necessary to recognize that morphemes are not meanings but units by which

meanings are expressed. Sememes can only be established where there are contrastive morphological units and phonological forms which justify them. Likewise, in general no morpheme can be postulated unless the structural pattern indicates that there is a unit which is a bearer of meaning and which is conveyed by some phonological form.

Thus, in my view, meanings are not assigned to morphological units, but these units, by themselves or in combination with other units, are elements within the structure by which meanings are conveyed. A morpheme, in my view of tagmemics, is a unit which may express one or several meanings; and one sememic unit may be expressed by one or several morphemic units. In either case, however, we may preserve the notion of unit as a form-meaning composite. Morphemes are genuine linguistic units which enter into syntactic combinations in hierarchical levels in specifiable patterns; they express specific sememes or combinations of sememes; and they are expressed by certain phonemes or combinations of phonemes. The meaning associated with a given morpheme is that semological content which it expresses, and which is identifiable only by observation of what is understood by hearers through the use of the specific phonemic form or forms by which that morpheme is expressed. Phonemes similarly are units which fill slots in (phonological) tagmemes which enter into structural combinations according to specific patterns, and are forms which express meaning.

7.4 Three Modes. Most tagmemicists have maintained that there were three modes of structure in language, and that a complete description of a language would have to account for structure in each of these modes. Pike called these three modes "lexicon", "phonology", and "grammar" (1967.474), and insisted that these three modes of structure are semi-autonomous but interlocking. In each mode of structure there has been a hierarchical arrangement of units, with larger structures typically being composed of smaller units arranged in certain specifiable patterns. This study maintains the same view, that linguistic structure is hierarchical and trimodal, though I shall propose a modification of the labels for reasons to be stated below.

There are ample reasons for keeping the three modes of structure separate. To begin with, each mode is handling entirely different aspects of linguistic material in different ways. The phonological mode deals only with phonemic units and phonological structures by which morphological units are manifested in a linear phonological sequence. Thus in Gahuku morphological structure specifies that the morpheme ^{M}/dog/, which is one of a specific class of nouns, may occur in certain slots in certain phrase types. This morpheme is realized by a linear sequence of phonemes ^{P}/gala/ which is a phonemic word. The phonological structure specifies that this sequence consists of two syllables, each of which has a consonant followed by a vowel, and that the syllables have a certain stress pattern predictable from the tone pattern of the two syllables.

The grammatical (which I will henceforth call morphological) mode deals with morphemic units and morphemic structures. These structures specify the

permitted linear morphological sequences by which lexical (which I will henceforth call sememic) units may be manifested.

Taking the utterance "John struck the dog," we may consider that it has a sememic structure which identifies the participants and declares which of them is the agent and which the goal of the action, etc. Rules relating sememic to morphemic structures specify that this sememic structure may be realized in Gahuku by a morphemic clause structure in which the usual order of tagmemes is subject-object-predicate; the rules will specify the selection of affixes denoting the relationship of the participants to the action; and they will specify the verb nucleus which can express the sememe "strike." These rules will also specify the structures available for the morphological manifestation of "the dog (that) John struck."

Morphological structure itself says nothing about the semantic restrictions on the fillers of subject slots that may occur with various verb stems, nor of person-number restrictions on various verb stems. The fact that in Gahuku we may have *golini zekave* 'it is raining' and not **golini zikave* 'they are raining' is accounted for in the sememic structure. The sememic mode deals with the organization of units of meaning (sememes) in acceptable combinations. Its structures themselves are linearly unordered. Thus we want to keep distinct the structures of the three different modes.

By keeping these structures separate we may then set up a formal apparatus for relating the units of one to the units of another. We may formally account for such phenomena as synonymy (one sememic unit with alternate morphemic and phonemic manifestations), ambiguity (one morphemic structure realizing alternate sememic constructions), homonymy (one phonemic unit realizing alternate morphemic and sememic units). We are also better able to handle zero morphemes (sememes with nil morphemic or phonemic realization), empty morphs (morphemic units which do not realize any sememic unit), idioms (single sememic units with complex morphemic realization), and portmanteaus (single morphemic units realizing multiple sememes).

7.5 Static vs. Dynamic Models. Stratificational grammar has helped restore to focus a point which in the years prior to its emergence seemed to have been deemphasized; namely, that a grammar should account for the ability of speakers to express their thoughts and of hearers to understand. This has led to a model whose graphic representations resemble wiring diagrams. Lamb and Lockwood are aiming at a model which attempts to represent the path of signals in the brain from concepts to phonetic manifestation and vice versa. Lockwood admits, however, that there is no clear evidence supporting the notion that the stratificational model describes language as it is stored in the brain (1972.5–6).

But there are serious problems with trying to maintain that the progression of encoding must under all circumstances be exclusively from sememics to morphemics to phonemics for the speaker, and reversed for the hearer. Stratification claims that semolexemic rules apply before lexomorphemic rules,

which apply before morphophonemic ones. But what happens in instances where this is clearly not the order of application of rules for encoding? For example, poetry seems a clear case where the phonological tactics (of number of syllables per phonological phrase and allowable stress pattern of words, and even phoneme content) takes precedence over morphological tactics (where normal morphemic patterns are often set aside). Lamb (1966.542) speaks of the desirability of a theory "which does account for at least some features of poetry without also generating less prose or more spurious texts." But neither Lamb nor Lockwood comment further on how their model accounts for this and other examples of phonological conditioning of lexemic and morphemic structures. Lamb (1964.117) mentions the possibility of rules of anataxis to account for "a deviation from the usual order of the execution of the rules," but it is not clear how these would apply to poetry.

Wise (1971.207–219) has a whole section in which she gives examples of conditioning of units in each of the modes of structure by units of the other modes in Nomatsiguenga. Examples could be multiplied for Gahuku. The introduction of loan words whose phonological pattern is adjusted to Gahuku phonemes and syllable patterning illustrates phonological conditioning of morphemes, but the introduction of consonant clusters as in /masta/ or new phonemes as in /fut/[1] illustrate the reverse. Songs exhibit verb endings entirely different from those of ordinary speech, and forms which appear to be nonsense syllables or words inserted to make up the meter, chiasmatic patterns of structure, and the loss of glottal stop and the shift of [e] to [æ]; these facts illustrate phonemic conditioning of sememic, morphemic, and phonemic structure.

It is to account for such phenomena that I wish to maintain the view that there is structure in all three modes which is available to a speaker and to which he is normally limited; and that there may be rules of conditioning of units of one mode by any of the three modes, in any order, which are available to the speaker in the encoding process. As Wise puts it, "multi-dimensional conditioning is an integral part of tagmemic theory" (1971.217). This view corresponds to the Systemic grammar view expressed by Leech (1969.31) who states "no directional dependence is assumed between levels." Thus, although we may say that encoding in general involves progression from sememic to phonemic structures, we do not wish a model which rules out obvious exceptions. Furthermore, in a very real sense the structuring in all the modes is nearly simultaneous; for we start talking before we have thought through all we expect to say.

If we wish to present a model which will account for the structures represented in a given body of text, we may have a static model. Perhaps since tagmemic descriptions have largely been based on transcribed text and have aimed at the description of the structures represented therein, tagmemic descriptions have very largely been static; that is, they have not tried to relate the structures to the encoding or decoding processes. If, however, we wish a model to account for encoding or decoding, we need a dynamic model, which for encoding will aim at

1. See Appendix B for a brief outline of Gahuku phonology.

representing the flow of a given body of semantic information through the structures available to the speaker to arrive at the phonetic output, and one which, granted the exceptions referred to above, for decoding would represent basically the reverse process. We thus desire for our overall model one which is basically static and which will account for material which has already been spoken (and presumably transcribed) or written, but which will also represent that which may be dynamically operated by the encoder or decoder.

7.6 Names and Order of Modes. As has already been noted, tagmemics has long postulated trimodal structure. The three modes were originally labelled lexicon, phonology, and grammar, by Pike. And though other tagmemic writers have continued to use these labels, there seems to be both confusion and dissatisfaction. The word "lexicon" has often been used elsewhere to signify "the content of a dictionary." And since there can hardly be much hierarchical structure to dictionary entries, this appears part of the reason why Longacre has given up trying to find hierarchical structure in the third mode:

> This terminates, for my part, a search of several years for an elusive "lexical hierarchy" of whose existence I am no longer very confident. While I continue to believe that there is a third mode of linguistic structure —the lexicon—I am convinced that it is largely non-hierarchical in nature, although hierarchical structuring of the particular content structures of given texts can be demonstrated (Longacre 1964). Lexicon, I believe, is the domain of interplay of item and context, the traditional domain of the dictionary maker. (1972.xiii)

This seems to follow from his narrow definition of lexicon as "the study of the lexical resources of the language" (Longacre 1970.vi). He there speaks of an attempt by Wise to handle as lexicon what he calls deep grammar. But Wise (1971.24) rejects the word "lexicon" and states clearly "I consider surface structure to be grammatical structure and deep structure to be lexemic structure." Longacre fails to distinguish between what he calls lexicon and what Wise calls lexemic structure.

One could insist on retaining the words lexicon and lexemics, but already writers inside and outside tagmemics are using semology and sememics in preference. Merrifield suggested replacing "lexical" with "semantic" because of the misunderstanding of the meaning of "lexicon" noted above (1967.43). This is more in keeping with the view that the third mode deals with the structures of organization of units of meaning at all levels of discourse. Having made this substitution of the term semology for the term lexicon, I wish to suggest discontinuing the use of the word grammar to refer exclusively to the second mode, since grammar is already in wide use as a term referring to the total linguistic structure of a language. The term morphology is suggested for use in its place. Such a usage has a disadvantage in that morphology is often used to refer primarily to lower-level structures. But this is more than offset by advantages of a parallelism in nomenclature which is already in use in stratificational grammar:

Mode	Phonological	Morphological	Semological
Unit	Phoneme	Morpheme	Sememe
Study	Phonology	Morphology	Semology
Structures	Phonemic	Morphemic	Sememic

One could also refer to the tagmemes in each mode of structure as phonotagmemes, morphotagmemes, and semotagmemes. Furthermore, we may retain the traditional term "morphophonemic" to describe rules relating morphemic to phonemic units, and introduce the term semo-morphemic to refer to rules relating sememic units to morphemic ones.

Having made these changes, it would seem best to retain the "ordering" of modes suggested by Longacre (1964.6) and continued by Merrifield (1967), Cowan (1969), and Wise (1971), by putting the semological mode at one end as that nearest the semantic or content border of language structure and the phonological mode at the other end as that nearest the phonetic or form border of language structure. In Pike's original theoretical presentation (1967.476) he deliberately avoided such an ordering, to better avoid the implication that there was strictly a one-directional flow through structure for encoding and the opposite flow for decoding, and to focus attention on the notion of simultaneous structure in all three modes; but to do so now would appear both restrictive and unnecessary. Furthermore, since we want our model to be basically static but one which is immediately available for dynamic operation in encoding and decoding, we need a model which represents that, granted the exceptions and that we speak as we formulate what we are going to say next, the usual flow through structure for the encoder is from semology through morphology through phonology. We shall speak of phonemic units as realizations of units in the morphological mode, as long as it is understood that this implies generally a certain amount of temporal priority of morphemic to phonemic structures only in the encoding process. This should answer the criticism of Lockwood who states that "if some such stratal priority were recognized, tagmemics would come much closer to stratificational theory" (1972.255).

7.7 Hierarchy. Tagmemicists' insistence that structure in each mode is hierarchically arranged has usually led to the modes being labelled as hierarchies. Within each mode or hierarchy there are a number of levels on which structure is organized. On each level there are units

> distributed as members of classes of items, functioning within slots (positions in a temporal or spatial array, and distributed in cells of a dimensional system (Pike 1964.130).

The tagmemic use of the term "level" corresponds closely with Lamb's use of the term "rank" (1966), but there is no discussion of or systematic use of this term anywhere in Lamb's *Outline*. We have already noted that stratificational grammarians tend to separate into separate strata what tagmemicists insist are different levels within the same mode (= stratum). Compare for example Lockwood's discussion on whether a hypophonemic stratum is needed to deal with

phenomena that transcend syllable boundaries (1972.255ff). Systemic grammar (Halliday.1967–68) uses the word "level" for what we are here calling mode; and although it utilizes the concept of level in the tagmemic sense, there is no overall term to refer to it.

Tagmemics derives its name from this concept of a tagmeme as a slot:class (or function:set) correlation. In its early formulations the notion of syntagmeme as a construction on a given level consisting of one or more constituent tagmemes was confined to the grammatical (morphemic) mode (Pike 1967.451). Crawford (1963) insisted that the syntagmeme concept ought to be extended to phonology. Thus his phonosyntagmemes for Mixe included syllable, phonological word, and phonological phrase.

In the Appendix a brief phonological sketch is presented suggesting that there are two contrastive levels for which phonological structures in Gahuku may be specified syntagmemically. But what about higher level phonological units for Mixe or Gahuku? Since phonological sentences contain a downglide or lowered pitch on the final syllable which is contrastive with the tone pattern on phonological words in Gahuku, we may postulate phonological sentences as units which contrast with smaller units or other phonological levels. However, it is not possible to contrast the one phonological sentence type with other phonological sentence types on the same level by its internal structure of constituent phonological words.

Therefore in phonological structure there are, on the one hand, some levels for which we may describe syntagmemic units which systematically contrast according to their internal structures. These contrasts may be reinforced by suprasegmental phonological features. There are, on the other hand, higher phonological levels whose structure, while contrasting with that of lower levels, does not contrast according to its constituent structure, but may be marked by contrastive suprasegmental phonological features. We must make a distinction in the manner of describing structure on these different levels. At the higher phonological levels we have units which are phonological realizations of (but which may or may not be coterminous with) morphemic and sememic units, and for which there may be phonological features assigned, but for which there are no restrictions on the constituent phonological members.

In other words, it is futile to try to describe the structure of contrastive phonological sentences in Gahuku in terms of their constituent phonotagmemes because there are no restrictions on the phonological word-types which make up these constituents. Sooner or later in describing higher-level phonological structures we reach the point of diminishing return when we try to contrast these structures by internal structure as well as by suprasegmental features. The best we may hope for is to note certain phonological features (e.g. intonation or stress patterns) which may be characteristic of these larger units. The number and type of levels for which it will be possible to describe phonological structure syntagmemically may vary from language to language.

The morphological mode deals with syntactic classes and their distribution in the various tagmemes of each morphemic level. It says nothing about the actual sememic functions of these units expressed by their relationships to one another; and by giving sememic labels to morphemic units we practically destroy the possibility of examining the structures of the two modes separately. For instance, in the sentences "John shot the tiger" and "The tiger was shot by John," the former sentence morphologically has a noun phrase filling the object slot and the latter has an identical noun phrase filling the subject slot. By recognizing sememic functions such as actor, activity, and goal, we are able to state one underlying sememic structure with alternate semo-morphemic realization rules. These rules specify the structures of active and passive sentences which relate to the one sememic structure. In the former the filler of the sememic goal slot is manifested morphologically as a noun phrase of an object tagmeme, and in the latter as a noun phrase of a subject tagmeme. Trying to put sememic labels on the morphological units (e.g., agent, goal, actor, etc.) prevents us from stating just those semo-morphemic rules which allow us to equate the alternate morphemic structures to the one underlying set of sememic relationships.

Reid et al. (1968.15) postulate stem, word, phrase, clause, sentence, and discourse as grammatical levels in Totonac. Wise (1971.39) lists the same levels for Nomatsiguenga except for the omission of stem level. Such a list of morphemic levels is typical in tagmemic descriptions. In this study, however, only word, phrase, clause, and sentence levels are given as those for which syntagmemic morphological structure can be specified for Gahuku. Since paragraph and discourse are units which ordinarily consist of more than one sentence, they may be postulated as morphological units which contrast with units on lower levels. But particularly in languages where sentences tend to be very long[2] it seems to me impossible to establish paragraph types which contrast by the internal structure of their constituent morphological tagmemes. The same hold true for discourse types.

Thus in morphological structure, as in phonological, there are, on the one hand, levels such as word, phrase, and clause for which we may describe syntagmemic units which systematically contrast according to their internal tagmemic structures. These may also contrast by the presence or absence of specific morphemes of a given class. For example, the list of fillers of the head slot of a subject noun phrase will not be the same as the list of fillers of the head slot in noun phrases in all prepositional phrases. But it is semological control, not morphological, that limits particular nouns from occurring in one or the other. Therefore such contrasts of specific morphemes are not really morphological contrasts and are not valid criteria for distinguishing morphological units.

2. In discussing the "well-known fact that the English sentence has decreased in average length at least one half in three hundred years", Lewis (1894.34) noted that the concept of paragraph in English did not become important and well-defined until sentences became much shorter than they were in Old English. It may be that the difficulty of finding contrastive paragraph types is compounded in languages such as Gahuku in which sentence and paragraph may be one unit in certain discourse types.

There are, on the other hand, units such as paragraph and discourse, whose morphemic manifestations consist of sequences of sentences or clauses, and which some have considered to be morphemic units. The structure of these, however, does not contrast systematically according to its constituents but only by the occurrence of specific morphemes (e.g., specific tenses, specific person or number subjects). Since such are semological contrasts, in my view paragraph and discourse are semological levels but not morphological ones. In Gahuku, paragraph cannot be a morphological unit because there are no restrictions on constituent morphological sentence types. Thus in Gahuku, above the sentence level morphologically we have reached the point of diminishing return in trying to describe contrastive syntagmemic structural types by contrastive internal structures. The best we may do is note the statistical frequency of morphological features which characterize these larger units as they manifest high-level sememic structures.

Gleason seems to recognize the validity of this notion when he states:

> Grammatical analysis (in the narrow sense) [cannot] go up to the sentence and stop. There are larger structures composed of sentences and having structural features worth describing.... It is my conviction, however, that only a relatively small part of the structure of longer discourses is effectively described in such a framework (1968.59).

Cromack (1968.74) similarly states that for Cashinawa, "sentences, paragraphs, and the whole discourse have lexemically marked boundaries, but the slot-filler (tagmeme) notion is not grammatically relevant beyond the clause." As in phonology, the number and type of levels for which it will be possible to postulate morphemic structure in syntagmemic terms will be language specific, with "sentence" probably being a borderline case in many languages.

Blansitt states it more succinctly:

> There is a linguistic structure which can be defined as the largest grammatical structure which can be formulated in terms of obligatory and optional constituents. This structure is sometimes called clause and sometimes called sentence. This does not deny the existence of a paragraph; it does assert that a paragraph is not a purely[3] grammatical structure formulatable in terms of obligatory and optional constituents (1970.112).

We note in summary that for Gahuku we may postulate contrastive phonological units whose internal structure may be specified syntagmemically on two levels, viz. syllable and phonological word. Beyond that we are describing certain phonological features which apply to phonological units which are realizations of structures which are basically morphemic or sememic. And

3. Blansitt destroys the effectiveness of his argument by use of the word "purely", because hardly anyone would maintain that paragraph (or sentence) was a purely grammatical structure. His main point, which I subscribe to here, is that as we move to higher level units there are fewer (or no) morphological constraints.

phonological structure to this point is fairly simple; specifying the syntagmemic structures does not occupy many pages of description. Contrastive morphemic structure, however, may be specified for four levels in Gahuku, from word to sentence. To completely delineate all the morphemic structures within those four levels would result in a volume of considerable size (and is not within the scope of the present study). Beyond sentence level, we are unable to describe contrastive units syntagmemically but can only comment on the frequency of certain morphemic features which characterize these larger sememic units. Charts 1, 2, and 3 of Appendix A, compiled from examination of the complete available corpus, are illustrative of this.

Assuming the ordering of the three modes as one in which morphemic is between the other two, and noting that phonemic structure is quite simple and is describable syntagmemically for Gahuku on only two levels, and that morphemic structure is fairly complex and is describable syntagmemically on four levels, we should anticipate that sememic structure is extremely complex and can be described syntagmemically on perhaps half a dozen or more levels. This is represented in Fig. 6.

Mode	*Levels*	*Structure*
Sememic	6 +	Extremely complex
Morphemic	4	Fairly complex
Phonemic	2	Simple

Fig. 6. Complexity of Trimodal Structure in Gahuku

7.8 Realization Rules. From its inception tagmemics has put heavy stress on units and the relationships between these units within the same mode, and paid little attention to any formal means of interrelating structures of the different modes. Part of the reason has been that although a place was left open for such rules theoretically, they were not incorporated formally into the model. Pike had stated that there were three semiautonomous modes of hierarchical structure and that

> Interlocking between hierarchies may relate two or three of the hierarchies as a whole, but when it does so the actual linking must take place between one particular unit or layer of one of the hierarchies and one particular layer or unit of one of the other hierarchies (1967.566).

But though Pike gave examples to show that the borders of such units were sometimes coterminous and sometimes not, supporting the notion of partial independence of the modes, he made no effort to show formally how the actual units of one were related to the actual units of another. One of the results of this deficiency was that tagmemicists have never known just where morphophonemics fits into their model. Elson and Pickett for instance suggest three possible ways of treating it—via process statements, by listing phonological environments of conditioned alternants, and by postulating morphophonemes (1962). Invariably,

one of the three have been selected and used for tagmemic description without any theoretical justification.

Many outside of tagmemics have noted this need for rules of correspondence. Lockwood (1972.255) has lamented that tagmemics "employs no formal means to relate the units of one hierarchy with those of another." Merrifield has said (1967.44) that the basic weakness of tagmemics was not "providing a means of relating the elements of adjacent components (= modes)." Postal has suggested that refusal to incorporate context-sensitive and context-free rules gave tagmemics weak generative power (1964.51).

While it is true that tagmemicists have always insisted on describing the etic variants of an emic unit and the conditioning factors of such variants, such variants have been looked on as exceptions to a norm for units within one mode, rather than as part of an overall system for relating the units of one mode with those of another.

Within tagmemics there has been a belated recognition of the need for such rules, but the responses have been varied. Wise, for example, states that "a set of formal rules for mapping lexemic structure onto grammatical structures and the latter onto phonological structures is a desirable goal for simplicity in stating encoding processes" (1971.215), but the statement is simply left there. She leaves unanswered her question, "How should lexemic structure be mapped onto grammatical structure or vice versa?", and she concludes her study by noting that "no formal rules for encoding or decoding have been suggested in this study" (p. 219).

Other tagmemicists have attempted to incorporate some type of mapping rules but often the results have been quite unsatisfactory. Longacre (1964) suggests a set of three rewrite operations to make tagmemic formulas more generative. His Reading Rules operate on the optional elements in any syntagmeme to delineate those possible combinations of tagmemes that could actually occur. The Permutation Rules handle any necessary reordering of elements. Exponence Rules replace the slot or function labels with one member of the manifesting class of exponents which fill the slot. But although such rules make the syntagmemic formulas of the morphological hierarchy more generative with respect to morphology, they do nothing to relate morphemic to sememic or phonemic units. More recently Ballard, Conrad, and Longacre have presented charts which show which units of deep structure are encoded by which units of surface structure in sentences, and vice versa, but there is no attempt to state the rules formally (1971). Bee (1973.221–28) has a very brief section in which she mentions rules including those "which deal with the inter-relationship of the three hierarchies of units", but this area is one which she had only begun to develop in her model.

Others operating within a tagmemic framework have utilized one type of rule or another without attempting any theoretical justification. Wheatley uses both rewrite rules and certain context-sensitive rules, and includes morphophonemes as units in his system as well (1969). J. Platt lists grammatical meanings (which I would label sememic functions) which correspond to various grammatical forms,

and in effect gives the semo-morphemic manifestations without calling them such or noting the theoretical implications (1970.91–103). Cowan sets forth the relations between (morphemic and phonemic) modes in two steps: first a set of context-sensitive rules and then a set of realization rules. She also includes morphophonemes as units. Her rules are stated in prose to make the study more readable; but where she tries to relate sememic to morphemic units there is some confusion of modes. For instance, "a pronoun occupies Position One of the verb phrase nucleus of an indicative nonperfective verb if it is (1) the agent of an intransitive verb" (1969.65) is listed as a semomorphemic realization, but though "agent" is a sememic label, "verb" is still a morphemic one. It seems that the failure of tagmemics to come up with satisfactory presentations of rules relating the units in the different modes is closely related to the failure to develop the structure of the semological mode. Becker, for example, notes that Longacre's proposal of Reading, Permutation, and Exponence rules does not discuss the possibility of collocational restrictions that would necessitate context-sensitive rules (1967.50); and collocational restrictions are exactly what are specified by the structures of the semological mode.

Merrifield suggests that there are two kinds of rules relating the units in the adjacent modes, transformational and realizational (1967.48). The former type, which following Longacre we may call permutational, accomplishes any necessary reordering or deletion of elements; the latter type, which may be context sensitive, states the form by which the units of the one mode are realized or expressed in terms of the units of the next one, and any conditioning environment.

It is the latter type of rules, the realizational rules, which have been discussed in this study. If we make our model one representing encoding, such rules will state for example how sememic units are realized by morphemic units. If we make the model to represent decoding, they will state what sememic units are being realized by morphemic units. In the former case, examples of synonymy (one sememic structure realized by alternate morphemic structures) will be readily apparent; and in the latter case, examples of ambiguity (alternate sememic structures realized by one morphemic structure) will be apparent. An individual doing analysis must train himself to observe instances of both the former and the latter.

Theoretically we want our model to represent encoding and decoding, but for practical considerations of space limitation, this study has reflected primarily the view of the encoder. Thus the rules have been labelled semomorphemic and morphophonemic and not morphosememic and phonomorphemic. At certain points, however, it is useful to make reference to instances of morphemic structures used for the realization of alternate sememic structures.

Both Permutational and Realizational rules are unordered within themselves. Any context-sensitive Realizational rule, however, may have several parts, in which case there may be order within the one rule. For any rule having sub-rules (cf. the rules for person and number morphemes in Sect. **3.3.6**), the items to the left of the slash lines indicating the various conditioning environments are not

repeated; and if the parts are ordered, subscript numbers are indicated preceding the slash lines. Following the usual conventions for context-sensitive rules, if the environmental conditions listed in the first subrule are unfulfilled, the encoding proceeds to the second subrule. Given our model reflecting the encoding process, the ordered subrules as given are only relevant for encoding; in the decoding process the hearer is only aware that the form expressed is a realization of a given unit of the next mode and does not have to take into account any ordering. However, were our model to represent the decoding process as well, we would find that decoding would have its ordered subrules as well, and such subrules would usually provide for the sememic disambiguation of phonemically or morphemically ambiguous structures.

At this point it is appropriate to mention the theoretical reasons behind the notational arrangement adhered to in this study, in which a morphemic (or sememic) unit is given to the left, its phonemic (or morphemic) manifestation at the right, and the conditioning environment in between. The realization rules are the connecting link between the units of the different modes. When put into dynamic operation in the encoding process, the realization rules enable the speaker to express the units of the one mode by the units of the adjacent mode. In order to maintain the notion of distinct modes with their respective units and structures, we wish to have as the starting points and end points of rules the units of one of the modes, not the conditioning environments. Thus, in a morphophonemic rule such as

$$^{M}\text{fu} \quad / \quad {}^{M}\left\{\begin{array}{r}\text{class 10 v.stem} \_\_\_\_ \\ \text{benefactive} \_\_\_\_ \\ \text{stative} \_\_\_\_\end{array}\right\} \quad \longrightarrow \quad {}^{F}/\text{at}/$$

at the left is a unit of the morphological mode. At the far right, as the end point of the rule, is a group of units of the phonological mode; and these latter units can be the starting point of a phonetic realization rule.

7.9 Overall Model. As we have seen, though the fundamental principles of tagmemics have changed little over the years, the overall look of the model has been varied considerably with various practitioners. In Pike's original formulation, which insisted on three interlocking modes of hierarchical structure named lexicon, phonology, and grammar, he postulated the morpheme as the minimal unit of the lexical hierarchy, and the tagmeme as the minimal unit of the grammatical hierarchy. His model (1967.515) is that presented in Fig. 7.

As investigation of phonology progressed, it became apparent that here as well as in grammar one could describe structure in terms of manifesting classes filling slots in phonological constructions. Crawford (1963) then set up tagmemes and syntagmemes in the phonological hierarchy to correspond with those in the grammatical. He suggested that instead of a three-way split between modes there would be a doubly-bifurcated one. In the phonological mode there would be a hierarchy of phonemic units (phonemes, syllables, stress groups, etc.) and a

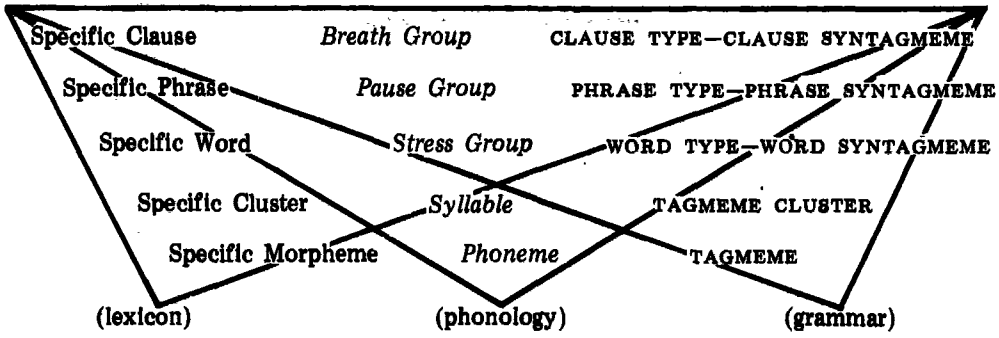


Fig. 7. Pike's Early Model of Trimodal Structure

hierarchy of phonemic syntagmemic structures. In the grammatical mode there would be a hierarchy of lexical units of increasing size (morphemes, phrases, clauses, etc.) and a hierarchy of grammatical syntagmemic structures. Crawford's view may be represented by Fig. 8.

Pike, however, suggested as an alternative (1967.520) the retaining of the trimodal view, maintaining the original grammatico-tagmemes and grammatical hierarchical structure, and looking for lexico-tagmemes which would differ "in some crucial way—as yet not delineated" from grammatico-tagmemes. Longacre maintained this proposal in his nine-box view of structure (1964.6) which evidenced influence by the then-recent emphasis of language being viewed from the three perspectives of particle, wave, and field. Longacre's formulation is represented in Fig. 9.

As transformational grammar began blurring the distinction between surface structure and deep structure and others insisted on the necessity to recognize the distinction between grammatical labels such as subject and functions such as agent vs. goal, Becker suggested modifications of at least part of the tagmemic model in this area, by developing what was explicit in Pike 1964 and implied in Pike's early formulations of tagmemics. Becker pointed out that somewhere in the system a

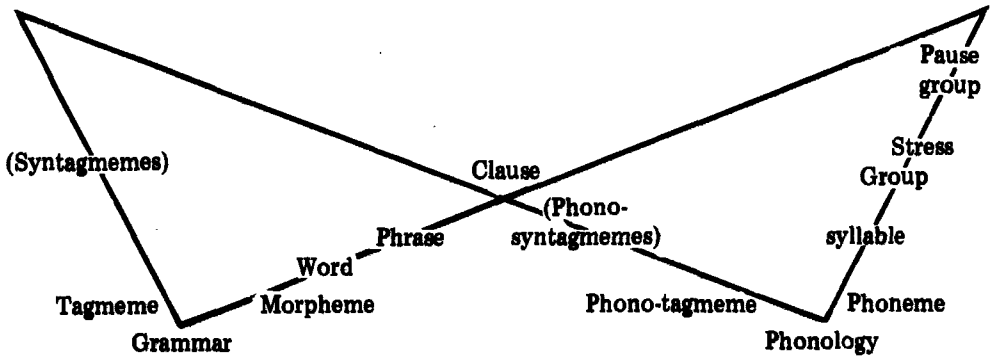


Fig. 8. Crawford's Bimodal structure

place to specify situational roles was imperative. Thus in "John hit the ball" John was expressing subject-as-actor and in "John was hit by the ball" John was expressing subject-as-goal. Becker then set up a matrix of four boxes as shown in Fig. 10 illustrating the incorporation of grammatical roles into the model (1967.6). Becker then claimed that Longacre's model really only specified aspects A and C of the model in Fig. 10, and thus dealt only with surface structure.

Wise heralded a return to Pike's second alternative by suggesting a significant rearrangement of Becker's model. Becker had assumed that tagmemes were correlatives of syntactic slot and lexical filler (1967.6),and that grammatical form was surface structure and grammatical meaning was deep structure (p. 153). Wise insisted that the elusive "deep structure" was in actuality lexemic structure (my sememic structure) and preserved the function:set concept in both modes (p. 24). She also suggested replacing the semantic features content of aspect D (which were considered as contrastive features of the meaning component of the lexemes) with lexemic units which might be manifested as allolexes (i.e., variant manifestations of one lexeme), Wise's model (omitting phonology) is shown in Fig. 11.

Thus Wise adds to the model lexicotagmemes just as Crawford added phonotagmemes. She insists that the tagmemic function:set notion is relevant in each mode, and that tagmemes are arranged in syntagmemic structures hierarchically in each mode. She then avoids the postulation of "deep structure" to which Longacre has recently turned.

Pike subsequently proposed (1970, unpublished) a nine-box representation of tagmemes which according to Klammer (1971.97) can be represented as in Fig. 12. In this view Pike considered a syntagmeme as a trimodal unit consisting of the interlocking structures of grammar, sememics, and phonology, whereas Longacre and others had considered syntagmeme to be equivalent to construction, and relevant for structures within each separate mode. The reason for Pike's view is not clear; but it seems to stem from continued stress on what might be considered certain norms in which viewing structure as being simultaneous in all three modes caused no serious problem, with little stress on the areas which clearly pointed to nonsimultaneity. In this recent model by Pike, then, there are tagmemes in each mode which enter into constructions hierarchically, and which consist of slot-class correlations.

There are a few weaknesses in the representation of this model, however. "John" does not illustrate the multiple-tagmeme possibilities of noun phrases, and "+sg." does not represent the system of noun classes to which "John" belongs but a sememic feature of that class. If in the *b*. half of the boxes in the middle column one wishes to show the system of classes from which the particular item has been selected, it would be better to list matrices of contrastive grammatical noun, lexemic item, and phonemic syllable classes. Furthermore, the features of Animate, Male, and Young in box 5b. might apply to the morpheme "boy" but hardly to the name "John." And it is a bit disconcerting to see seven "lexemic variants" listed in box 6 and only one grammatical variant in box 3. Those in box 6

	Particle	String [= wave]	Field
Phonology	1 Phonemes and hyperphonemes (phoneme clusters smaller than the syllable)	2 P-syntagmemes and P-tagmemes in P-hierarchy	3 Phonological systems (Rhyme, alliteration, assonance, etc.)
Grammar	4 Morphemes and hypermorphemes (morpheme clusters below lowest hierarchical G-level)	5 G-syntagmemes and G-tagmemes in G-hierarchy	6 Grammar matrices (Emphasis on relations rather than on units)
Lexicon	7 Lexemes and hyperlexemes	8 L-syntagmemes and L-tagmemes in L-hierarchy	9 Lexical sets in lexical domains; systems of lexical oppositions; lexical matrices

Fig. 9. Longacre's Tagmemic Model

	Grammar	Lexicon
Form:	A (e.g., Subject)	C (e.g., Noun Phrase)
Meaning:	B (e.g., Agent)	D (e.g., single, male, human, etc.)

Fig. 10. Aspects of Grammatical Unit
(according to Becker 1967.6)

	Function	Manifestation
Grammatical Unit	A (e.g., Subject)	B (e.g., Noun Phrase)
Lexemic Unit	C (e.g., Agent)	D (e.g., L-participant phrase)

Fig. 11. Wise's Model of Lexemic and Grammatical Structure (modified)

Tagmeme	Function	Class & System	Manifesting Item & Variants
G (Grammatical Tagmeme)	Subject 1	*a. Class* NP / *b. System* + sg., etc. 2	John 3
L (Lexemic Tagmeme)	Agent 4	*a. Class* / *b. System* + Anim + Hum + Male + Young, etc. 5	John Doe, he, the boy, John, my friend John, the one with the blond hair, Jack, etc. 6
P (Phonological Tagmeme)	e.g., bearer of primary stress (ˊ__ | [__ | __)] 7	*a. Class* CVC syllable / *b. System* Syllable feature 8	/jan/, /jɔn/, etc. 9

Fig. 12. Display of Pike's Clause-level Tagmemes

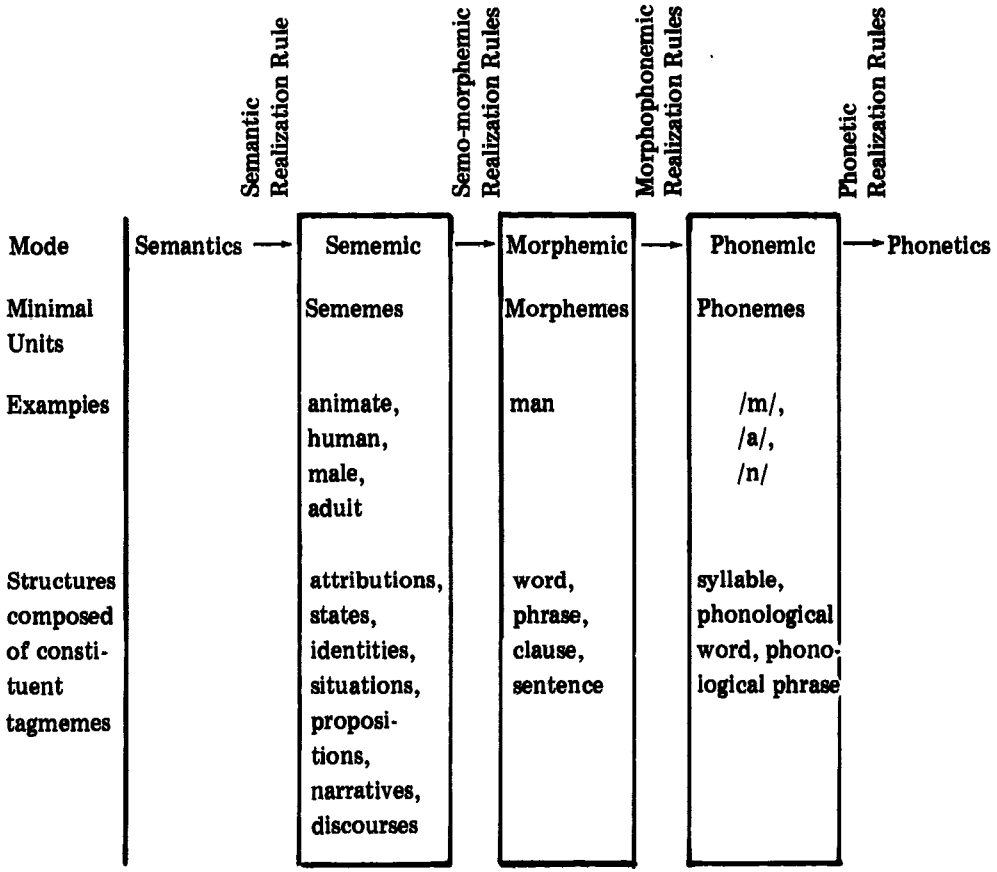


Fig. 13. Overall Model of Linguistic Structure

are alternate morphemic manifestations of structural arrangements or rules which account for different sememic designations of (presumably) the same referent. It would also have been helpful to indicate the labels of the specific constructions of which the three tagmemes are constituent members, such as G-clause, L-proposition, and P-stress group.

The main deficiency with all these models, however, as we have already noted, is that they have no provision for rules to relate the units of one mode with those of another. Without such rules there is no way to make a static model into a dynamic one. I present an overall representation of a tagmemic model incorporating such rules in Fig. 13. In doing so I have substituted the terms sememic and morphemic for lexemic and grammatical, and rearranged the order of the three modes to signify their relationship in the encoding and decoding process to semantic content and phonetic form. With the incorporation of realization rules it is, therefore, a static model available for dynamic operation.

The boxes in Fig. 13 enclose the units and hierarchical structures of each of the three modes. Realization rules link the modes. Semomorphemic and morphophonemic realization rules have been exemplified throughout this study; a few phonetic realization rules are presented in the phonological outline of Appendix B.

APPENDIX A:
Frequency of Features in Various Discourse Types

Nearly all the corpus on which this study is based has been examined to determine whether any of the morphological features of verbs described in this study are peculiar to or absent from the sentences in any particular type of discourse. Each text in the corpus was given a general classification as to discourse type according to its general semantic content and its setting in the universe of Gahuku discourse. The number of occurrences of various Dependent clause types and of specific morphemic features of the Independent clauses was determined for each text. These numbers were divided by the total number of sentences of the corpus for that particular discourse type.

Charts 1, 2, and 3 summarize the findings of this investigation. Chart 1 shows the frequency of various Dependent clauses in each discourse type, and the number of sentences of each type in the corpus. Chart 2 shows the frequency of various verbal morphemes within the Final (Independent) clause in each discourse type. These charts bear out what was stated earlier in this study: namely, that it is impossible to establish discourse types as morphological units which contrast on the basis of what clause types (or other morphological features) occur within them.

However, it is also clear that the relative frequencies of these various morphological features is not the same for each discourse type. In Chart 3 the most contrastive features from Charts 1 and 2 have been selected and their frequencies contrasted by labels ranging from "very high" to "nil." The various discourse types can all be seen to contrast by relative frequencies of one or more features. General narratives (accounts of events which have taken place) are thus seen to contrast with story narratives (folk tales) by the relative frequency of topic clauses and overall variety of non-final clauses, for example.

One further refinement in procedure would have made the results more instructive. Each introduction and conclusion within a text should have been handled separately. These tend to be much shorter sentences whose Final clauses contain different verb morphemes than those of the body of the text.

Type of Nonfinal Clause / *Discourse Types*	Major Types			Minor Types															TOTAL MINOR TYPES	TOTAL, ALL TYPES	TOTAL SENTENCES IN CORPUS
	Temporal: s. sub	Temporal: d. sub	Successive Action	Topic	Repetitive Aspect	Characteristic Action	Equivalent Action	Intentive Aspect	Paratactic	Reason	Alternative	Future Topic	Contrast	Contraconsequential	Gerundive Aspect	Future Quotation	Coordinate	Phrasal	Miscellaneous			
Narrative: General	1.5	2.0	2.6	.27	.12	.08	.05	.03	.05	.05	—	.01	.01	.01	.01	.01	—	—	.04	.66	7.6	301
Story	1.4	2.6	2.4	.47	.18	.09	.04	—	—	—	—	—	—	—	—	—	—	—	—	.78	8.2	110
Procedural	0.9	1.3	1.9	.05	.10	.03	.04	.03	—	—	.01	.07	.02	—	—	—	—	—	—	.34	4.5	184
Descriptive	0.3	0.5	0.8	.14	—	—	.02	—	—	.03	—	—	.03	—	—	—	—	—	.02	.25	3.0	102
Expository: General	0.2	0.3	0.8	.07	.03	.01	.01	.01	.03	.02	.03	.01	.04	.01	.02	.02	.01	.04	—	.36	2.7	149
Prayer	0.7	0.7	1.5	.14	.07	.03	.14	—	—	.03	—	—	—	—	—	.31	—	—	—	.72	4.7	29
Hortatory	0.3	0.3	0.7	.22	.04	—	—	—	—	—	—	.25	.09	—	.02	—	—	—	—	.63	3.0	44
Conversation	0.1	0.1	0.3	.05	—	.02	—	.04	.02	.02	.01	—	—	—	—	.02	—	—	—	.19	1.8	124

Chart 1. Average Number of Nonfinal Clauses per Sentence in Various Discourse Types

Specific Feature / *Discourse Type*	-*moq* (Far Past)	-*ve* (Near Past)	Stative	Perfect	Progressive	Existential	Future	Future Progressive	Intentive	Past Habituative	Progressive Habituative	(Past) & Predicative Enclitic	(Far Past) Question	Existential & Predicative Enclitic	Progressive Question	Progressive Habituative Question	Future Question	Existential Interrogative	(Past) Interrogative	(Past) Habituative Interrogative	Progressive Interrogative	Exclamatory	Future Interrogative	Reason	Imperative	Predicative	Phrasal
Narrative: General	.43	.45	.01	.01	.03	.01	.01	.01	—	.01	—	—	—	—	—	—	—	—	—	—	—	—	—	.01	—	—	.01
Story	.70	.04	.01	—	.02	.04	—	—	—	.13	—	.01	—	—	—	—	—	—	—	—	—	—	.01	—	—	.04	.02
Procedural	.14	—	—	—	.15	—	.27	.01	.01	.17	.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Descriptive	.32	.01	.02	.04	.13	.11	.11	—	.02	.01	—	.01	—	—	—	—	—	—	—	—	—	.02	—	—	—	—	.12
Expository: General	.23	.01	.04	.01	.16	.04	.07	—	.05	.05	.14	.03	.03	—	.01	.01	.01	—	.02	.01	.01	—	—	—	—	—	.01
Prayer	.07	.03	.10	—	.28	—	—	—	—	—	.14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hortatory	—	—	.02	.02	.11	.04	.01	—	.25	.02	.13	—	—	—	—	—	.02	—	—	—	.02	—	.02	—	.28	.18	.14
Conversation	.02	.01	.03	.02	.05	.04	.25	—	—	.01	—	.03	—	.06	—	—	.03	.03	.03	—	.06	.11	.02	.03	.11	.05	—

Chart 2. Average Number of Features per Sentence in Final Clauses in Various Discourse Types

Feature / Discourse Type	Clause Types					Features of Final Clauses							
	Clauses per Sentence	Temporal Clauses	Topic Clauses	Equivalent Action/ Characteristic Action Clause	Fu Top/Contrast Clause	Overall variety, Nonfinal Clauses	Past Tense	Habituative	Overall variety, Final Clauses	Exclamations	Future Tense	Imperative	Phrasal Sentences	Existential
Narrative: General	v. high	v. high	med.	low	v. low	med.	v. high	v. low	med.	nil	v. low	nil	v. low	v. low
Story	v. high	v. high	v. high	low	nil	v. low	v. high	med.	med.	nil	nil	nil	v. low	low
Procedural	med.	high	v. low	low	low	low	low	v. high	low	nil	v. high	nil	nil	nil
Description	low	low	low	low	v. low	low	med.	v. low	med.	low	med.	nil	high	high
Expository: General	low	low	v. low	low	v. low	v. high	med.	med.	v. high	nil	low	nil	v. low	low
Prayers	med.	med.	low	high	nil	low	low	med.	low	nil	nil	v. high	nil	nil
Hortatory	low	low	med.	low	v. high	low	nil	med.	med.	nil	v. low	high	nil	low
Conversation	v. low	v. low	v. low	low	nil	low	v. low	v. low	v. high	high	v. high	med.	nil	low

Chart 3. Summary of Relative Frequency of Clause Features of Contrasting Discourse Types

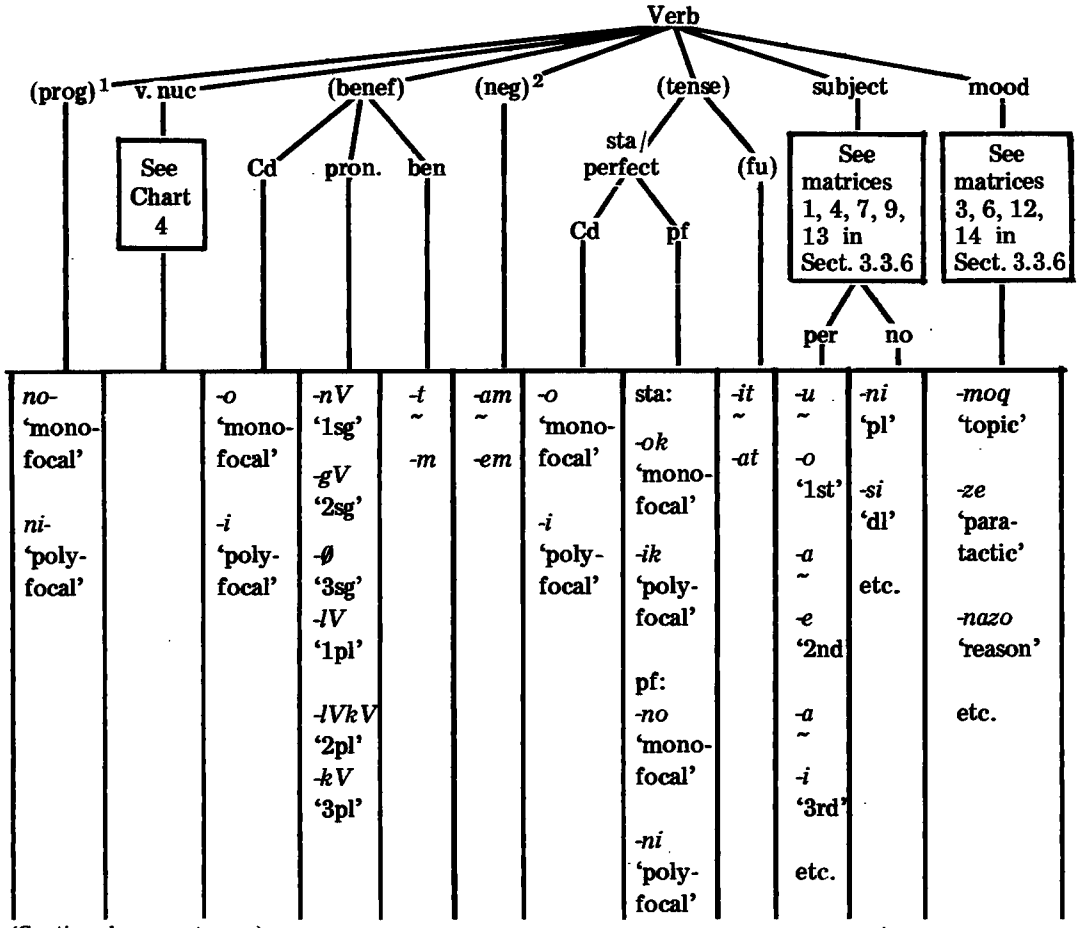
Verb Nuclei Slots			*Suffixal Slots* (from Chart E)	
Direct/Indirect Object prefix /Infix	Stem Class	Verb Stem	Negative /Tense	Subject
n- '1 sg' *g-* '2 sg' *a-* '3 sg' *l-* '1 pl' *lk-* '2 pl' *k-* '3 pl'	11	*huk-* 'cut'	*-am* 'neg' *-at* 'fu' etc.	*-uve* '1sg' *-ive* '3sg' etc. (see matrices in Sect. 3.3.6)
	12	*-qmeget-* 'follow'		
	13	*aqni...g-* 'see'		
	22	*-m-* 'give'	*-em* 'neg' *-it* 'fu' etc.	
	21	*al-* 'get'		
	31	*v-* 'go'	*-am* 'neg' *-it* 'fu' etc.	

The direct/indirect object affixes occur with class 12, 13, and 22 verb stems. With class 13 stems the 3rd singular morpheme is zero instead of *a-*.

The smallest number of suffixal morphemes which show the necessity of the three major verb classes (10. 20. and 30) and which, in so doing, comprise a complete verb, are illustrated.

	Stem Class	Examples:			Cited from page	
	11	*huk-*	*-am*	*-ive*	16	'he didn't cut'
		huk-	*-at*	*-ive*	16	'he will cut'
ne-	12	*-qmeget-*	*-am*	*-ive*	16	'he didn't follow me'
	13	*aqni-ka-g-*	*-am*	*-ive*	16	'I didn't see them'
ne-	22	*-m-*	*-em*	*-ive*	17	'he didn't give me'
	21	*al-*	*-em*	*-ive*	17	'he didn't get'
	31	*v-*	*-am*	*-ive*	17	'he didn't go'
		v-	*-it*	*-ive*	17	'he will go'

Chart 4. Examples of Contrastive Slots and Fillers in the Verb Nucleus Tagmeme



(Continued on next page)

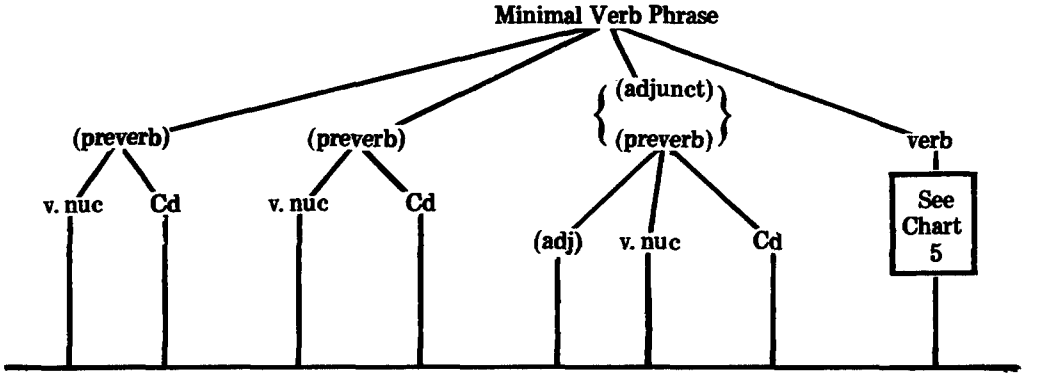
(Continued from preceding page)

Examples:												Cited from page	
	ahul- leave	*-o*	*-ge*	*-t*					*-u*	*-ø*	*-line*	86	'I would have left you'
	ø- be	*-o*	*-ø*	*-m*			*-ik*		*-a*	*-ø*	*-go*	65	'. . . after doing it to him . . .'
	z- attach	*-i*	*-ø*	*-t*				*-at*	*-a*	*-ø*	*-ve*	19	'they will attach it to him'
	al- get	*-e*	*-ge*	*-t*	*-am*				*-u*	*-ø*	*-ve*	20	'I did not get it for you'
	mol- put					*-o*	*-n -am*		*-i*	*-ø*	*-go*	93	'when he had not put it . . .'
no-	*-gum-* give you								*-u*	*-si*	*-ve*	100	'we two are giving you'
	huk- cut						*-ik*	*-at*	*-a*	*-ø*	*-ve*	23	'lest they cut it'
	al- get					*-e*	*-n -am*	*-it*	*-i*	*-ø*	*-ve*	22	'we won't have gotten it'
no-	*huk-* cut	*-o*	*-ge*	*-t*	*-am*			*-it*	*-u*	*-ni*	*-moq*	——	'we all won't be cutting it for you'

1. Future is the only tense suffix which can co-occur with the progressive prefix. The negative suffix can co-occur with the progressive prefix only with the stem *ø-* 'be'.

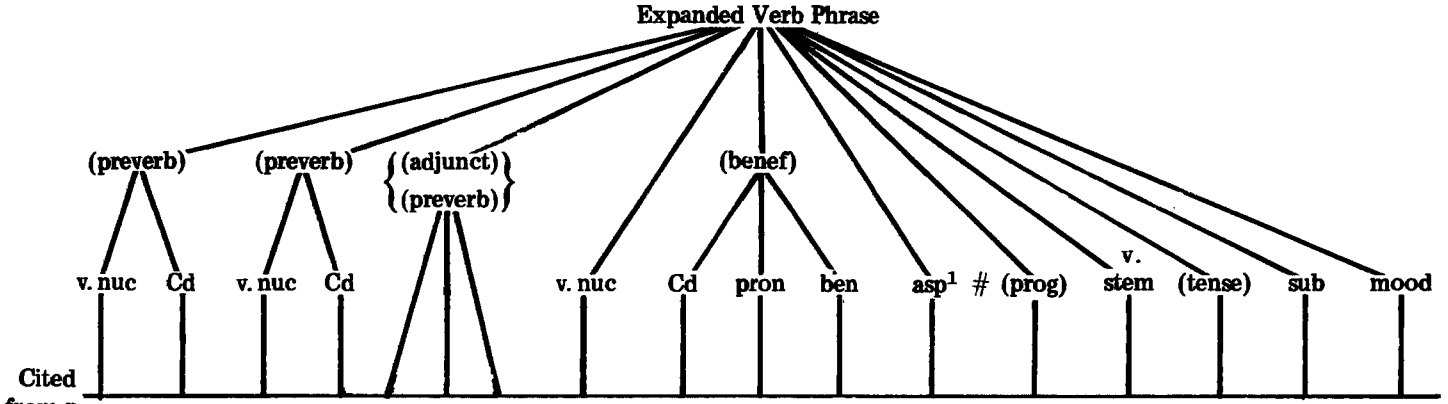
2. The negative suffix does not co-occur with the stative tense suffix. The negative suffix follows the perfect suffix, rather than preceding it.

Chart 5. Verb Structure



								Cited from p.	
l-	*-i*	*gil-*	*-i*	*ha*	*gil-*	*-i*	*ni-Ø-ave*	39	'they are conversing'
say	-ing	hear	-ing	simply	hear	-ing	prog-be-they		
		hiz-	*-e*	*liq*			*no-Ø-ive*	—	'he is blocking'
		stake	-ing	shut			prog-be-he		
		l-	*-o*				*ni-m-it-ive*	38	'he will tell me'
		say	-ing				me-give-fu-he		
				goniq			*no-Ø-ive*	36	'he is on trial'
				trial			prog-be-he		

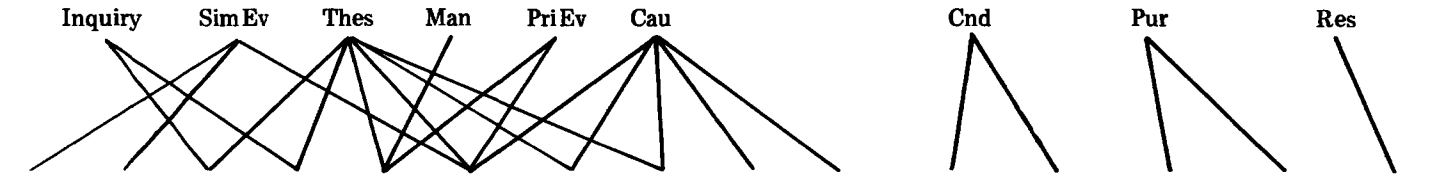
Chart 6. Examples of Slots and Fillers in Minimal Verb Phrases



55				*kem-*					*-eakaq*	#	*no-*	Ø		*-u*	*-ne*
				give them					hab					1st	pl.ind
	'We are habitually giving them.'															
55				*huk-*	*-i*	*-gi*	*-t*		*-anigi*	#	*ni-*	Ø		*-a*	*-ve*
				cut		you			inten					3rd	pl.ind
	'They are intending to cut it for you.'															
—	*hiz-*	*-i*	*liq*	Ø	*-i*	*-ni*	*-m*		*-iakaq*	#	*ni-*	Ø		*-a*	*-ve*
	stake		shut			me			hab					3rd	pl.ind
	'They are habitually blocking it off for me.'															
58			*meina*	*hiz-*	*-e*	*-ge*	*-t*		*-ova*	#	*no-*	Ø		*-u*	*-go*
			payment	stake		you			rep					1st	sg.s.sub
	'As I was repeatedly buying it for you...'															

1. With certain aspectual complexes, the four units between v.nuc and # are repeated. Thus in the fourth example here, the unit *hiz-e-ge-t-ova* occurs twice in succession.

Chart 7. Examples of Slots and Fillers in Expanded Verb Phrases
(i.e., Verb Phrases Containing Aspectual Complexes)



Cha	Equ	Int	Ind	Suc	Seq	Para	Rea	Ref R-A	Agt	Fu Top	Sup	Fu Quo	Inten	Com
Sentence No.														
80	85	127	128	99	76	104	101	96	95	101	104	107	106	116
		137	77	117	113	93	103							
				64	67									
					91									
Page No.														
96	96	113	113	102	95	104	103	100	100	103	104	105	105	109
		115	95	110	108	100	104							
				90	92									
					98									

Each line connects a sememic propositional relationship to a morphemic clause construction by which it may be realized. Below the labels for each clause construction are cross-references to illustrative sentences and the pages on which those sentences are found. If a morphemic clause type may realize more than one propositional relationship, the numbers of the illustrations given refer to the lines in order from left to right that converge at that clause type. Each set of lines which converges at one point, either at a given propositional relationship or a given clause type, represents alternate choices (i.e., "or" relationships).

Chart 8. Interrelationships of Sememic Propositions and Morphemic Clauses

Sentence Type	Clauses Each Subordinate to the Independent Clause					Indep. Clause
Complex	Contrast	Reason Future Topic Paratactic	Sequence Future Quotation	Comparison	Equivalent Action	Final
	Interrogative			Adverbial		
Imperative	——	Future Topic Paratactic	Supposition	Successive Action	Simultaneous Action	Imperative
Contrafactual	Contrast	Contrafactual Protasis	Topic			Contrafactual Apodosis

Examples:

							Sentence No.	Page No.
Complex:	... Contrast	Reason ...		Successive Action		Final	39	81
		Future Topic ...	Sequence	Successive Action		Final	40	81
			Sequence	Successive Action	Simultaneous	Final	42	82
	Interrogative			Successive Action		Final	49	83
Imperative:		Future Topic				Imperative	55	85
		... Paratactic		Successive Action		Imperative	53	84
			Sequence	Successive Action		Imperative	52	84
Contrafactual:		CfP ...	Sequence	Adverbial		CfA	59	86
				Successive Action		CfA	57	86

Chart 9. Examples of Slots and Fillers in Contrastive Sentence Types

APPENDIX B:
Notes on Phonological Structure

Gahuku has the distinction of having a very simple phonological structure. It is presented here in brief outline form to give the reader an indication of how it could be described from the theoretical viewpoint maintained in this study.

Segmental phonemes. The phonemes of Gahuku and their contrastive-identificational features are as follows (using the symbols by which they are represented in this study):

Unrounded[1] *Vowels*

/i/ high front
/e/ mid front
/a/ low central
/o/ mid back
/u/ high back

Consonants

Voiceless stops:
/p/ bilabial
/t/ alveolar
/k/ velar
/q/ glottal

Voiceless spirant: /h/

Voiceless sibilant: /s/ alveolar

Voiced continuants:
/v/ bilabial fricative
/l/ retroflexed alveolar flapped vibrant

1. The back vowels are made with the lips in a neutral, not a spread, position.

/g/ velar fricative
/m/ bilabial nasal
/n/ alveolar nasal
/z/ alveolar sibilant

Semivowel

/w/ voiced bilabial vocoid (occurs only word initial in the name of the village Wanima and names derived from it)

Phonetic Realization Rules

Unconditioned:

/p/ → [p]	/v/ → [ɓ]	/m/ → [m]
/k/ → [k]	/g/ → [ɠ]	/n/ → [n]
/q/ → [ʔ]	/h/ → [h]	/s/ → [s]
/i/ → [i]	/u/ → [ɨ]	
/a/ → [a]		

Conditioned:[2]

/t/	/ # ai__ {o, u}	→ [t^{y}]	Certain vocalic environments cause a light shift from alveolar toward alveopalatal in these two phonemes.
	/ ...	→ [t]	
/z/	/ #(V)i__ {o, u}	→ [ž]	
	/ ...	→ [z]	
/l/	/ {i, e}__	→ [ɾ̌]	The retroflexed flap is fronted following front vowels.
	/ ...	→ [ɾ̌]	
/e/	/ __l; C__q{#, C}; ´__{n, t}; l__´k	→ [ɛ]	The mid front vowel is lax in a complex set of environments.
	/ ...	→ [e]	

2. In this section [´] marks high tone; low tone is unmarked.

$$/o/ \;/\begin{cases} \_\_l \\ \#C\_\_n \\ \#C\_\begin{Bmatrix} z \\ s \\ l \\ t \\ p \end{Bmatrix} \end{cases} \rightarrow [\ddot{a}] \qquad / \ldots \rightarrow [\ddot{e}]$$

The mid back vowel is lax in a rather complex set of environments, all but one of which involve alveolar consonants

The rule for /e/ is interesting because at first glance it seems to contradict 'native reaction' of one type. /e/ is not always realized as [ɛ] before the glottal stop; in the words *eqaho* 'who?' and *veqa* 'men' it is realized as [e]. The conclusion might be made that in these two words the glottal stop is syllable initial (i.e. V.ʔV) and not syllable final, giving the rule that /e/ was lax in closed syllables. However, a group of literacy teacher trainees insisted that there were no glottal stop–initial syllables in Gahuku, and that the glottal stop only occurred syllable final (i.e., Vʔ.V in the two words above). As stated above, however, the conditioning is not in terms of syllable boundaries, and is valid for the two words noted.

Syllable Structure. Gahuku phonemes fall into three major classes according to the slots they fill in syllable structure. We shall designate the classes V (representing the five vowels), Q (representing the glottal stop), and C (representing the remaining consonants). Then we have an overall syntagmemic formula for syllables as follows:

$$\text{Syllable} = \pm C \;+ V \;\pm V \;\pm Q$$

Readings of this formula give eight possible syllable structures. All of these actually occur and no others occur; therefore the formula is truly generative.

It should be noted that in one-syllable words both V slots may be filled by different vowels (V_1V_2) or by the same vowel (V_1V_1), the latter giving in effect contrastive vowel length. In polysyllabic words successive adjacent vowels within the same syllable must be different.

Syllable is a phonological unit consisting of one or more phonemes and marked by a phonemic tone. There are two phonemic tones. Minimal tone pairs are extremely rare; and tone carries such a low functional load that marking it has been found to be of no assistance to readers of vernacular reading materials. Enclitics change the tone patterns of words in ways which require the grouping of stems into classes according to patterns of tone perturbation. Consider the resultant tone patterns on the following example of two nouns, each of which loses its *-ni* class-marker before the locative enclitic combination *-toka:*

numuní house	vs.	*numutóka* house-to
miní garden	vs.	*mitoká* garden-to

A lengthy investigation has failed to turn up any phonological criteria to account for the different patterns of tone perturbation by even the same enclitic.

Phonological Word Structure. Before proceeding further it will be useful to list and number the syllable types generated by the formula given above.

Syllable Type	Structure	Syllable Type	Structure
1	CV	5	V
2	CVV	6	VV
3	CVQ	7	VQ
4	CVVQ	8	VVQ

In monosyllabic words all possibilities have been observed to occur. In bisyllabic words all possible patterns ending in Type 1 occur, and five of the eight possible patterns ending in Type 3:

ve.naq 'woman' = CV.CVQ
hai.toq 'different' = CVV.CVQ
gaq.meq 'deserted' = CVQ.CVQ
a.noq 'sound' = V.CVQ
Au.voq (name) = VV.CVQ

Taking bisyllabic words ending in types 2 and 4 syllables, only five of the sixteen possible patterns have been observed, and these only with proper names or exclamations.

No words of more than one syllable have types 5–8 syllables beyond the initial syllable except in the case of a final type 5 syllable preceded by a type 3 syllable. In words of three or more syllables, the initial syllable may be of any type except type 4 or 8, but succeeding syllables must be type 1, 2, or 3.

A type 1–4 syllable following a type 3, 4, 7, or 8 syllable must begin with a consonant selected from the group consisting of m, n, l, v, and z; and of these the occurrence of l, v, and z is rare. Stated alternatively, the consonant following a word-medial glottal stop is nearly always /m/ or /n/.

A phonological word is a phonological unit consisting of one or more phonological syllables and marked by one or more stresses which are predictable from the tone pattern of the word. There appear to be four degrees of word-stress which will be designated as heavy (ˈˈˈ), medium (ˈˈ), light (ˈ) and unstressed. The stress rules, which comprise an ordered set, are as follows:

...Sýl	$_1$/__Syl	→	...ˈˈˈSýl	A high tone receives heavy stress if followed by a low-tone syllable
	$_2$/__Sýl^n	→	...ˈˈSýl	The first in a series of high-tone syllables within a word receives a medium stress
...Sýl$_3$	$_3$/__#	→	...ˈSýl$_3$	A final closed high-tone syllable receives light stress

$\ldots \text{Sýl}_{1,2,4} / \_\_\# \rightarrow \ldots \text{Sýl}_{1,2,4}$		Other final high-tone syllables are unstressed
$\ldots \text{Syl}_{4} / \underline{\underline{\quad}} \text{Sýl}_{1} \# \rightarrow \ldots$ 'Syl		In words whose final syllables are low and high tone respectively, a light stress occurs on the penultimate syllable if the final syllable is an open one
$\ldots \text{Syl}_{5} / \ldots \rightarrow \ldots \text{Syl}$		Low-tone syllables remain unstressed unless previous rules apply

There are no restrictions on syllable or stress patterns across word boundaries, although there are certain morphological structures which alter the tone pattern across word boundaries.

Phonological Clause. There are no contrastive phonological features on units larger than the phonological word except for the phonological sentence features noted under Section **6.3** and those features described below.

Phonological clause is a phonological unit which contrasts with phonological word in that it consists of one or more phonological words, but there are no restrictions on types or order of phonological words in a phonological clause. In addition to the lowered pitch or downglide (described in Sect. **6.3**) on the final syllable if the phonological clause marks the end of a phonological sentence, there is a phonological clause stress which contrasts with phonological word stress. If we indicate phonological clause boundary by ##, the rule may be expressed as follows:

$$\text{Sýl}_{1} / \# \text{Syl}^{n} \_\_ \# \# \rightarrow \text{'''Sýl}$$

$$_{2} / \ldots \rightarrow \text{Sýl}$$

That is, a clause-final high tone syllable receives a strong stress only if it is the only high-tone syllable in the word. Otherwise it is unstressed. In cases where the final syllable of the clause is not marked by high tone, the rules for phonological word apply.

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