

PACIFIC LINGUISTICS

Series B - No. 36

WAHGI PHONOLOGY AND MORPHOLOGY

by

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First published 1976.

The editors are indebted to the Australian National University for help in the production of this series.

This publication was made possible by an initial grant from the Hunter Douglas Fund.

National Library of Australia Card Number and ISBN 0 85883 141 4

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ABBREVIATIONS

AC	Absolute Completive aspect
Adv P	Adverb Phrase
Aj	Adjective
Aux	Auxiliary
Asp	Aspect
Asp T	Aspect Tense
bt	Botanical
C	Completive
Cf	Confirmative
CFC	Contrary to Fact Condition
Cl	Clause
CM	Class Marker
Com	Command
Ct	Continuative
CV	Complex Verb
Dep	Dependent
dl	Dual
Dur	Durative
DP	Dependent Primary
DS	Dependent Secondary
D-Sub	Different Subject
D-Sub-P	Different Subject in the Past
em	Emphasis
Emp	Emphatic
fr	Fraternity
Ft	Future tense
Gen	General
Grt	Greeting
H	Hortative

Hab	Habituated
Hd	Head
Ind	Independent
Imp	Imperative
Intrr	Interrogative
L	Lateral
loc	Locative
mlt	Multi-person
Mn	Manner
Mo	Mood
Mod	Modifier
Mx	Matrix
N	Negative
Nn	Noun
P	Potential
Peri	Periphrase
Phr	Phrase
pl	Plural
PN	Person-Number
Po	Polite
poA	Polite address
Pr	Primary
Prd	Predicate
ps	Personifier
PV	Primary Verb
Redupl	Reduplicative
Ref No	Reference Number
Req	Request
sg	Singular
Simp	Simple
Sm	Similitude Aspect
Sp	Specific
S-Sub	Same Subject
st	Stem
Subj	Subject
SV	Secondary Verb
Tmp	Temporal
V	Verb
VS	Verb Specifier
VZ	Verbalizer
1	First Person
2	Second Person
3	Third Person

< >	Allomorphic variants
~	Allomorphic alternation
/	or
X	Occurrence
--	No occurrence
-	Affixes
∅	Zero
+	Obligatory
±	Optional
>	Goes to
.	Velar
+	Alveolar-under the segment
v	Retroflex (laterals)/palatali- zation (fricatives and nasals)
-	voiceless (line passing through a segment)
.	syllable break (between two segments)
⌋	unreleased (under segment)

0. GENERAL INTRODUCTION

The author gathered the material for this monograph during twenty-three months of residence amongst the Wahgi people from 1963-1970, while working under the auspices of the Summer Institute of Linguistics.

The Wahgi language is spoken by approximately 45,000 people who dwell in and around the region of the Wahgi Valley of the Western Highlands of New Guinea. Dr. Wurm places this language in the Central Family of languages of the East New Guinea Highlands stock, and regards it as the sole member of a Wahgi sub-family (see Wurm, S.A. 'The Linguistic Situation in the Highlands District of Papua New Guinea', *Australian Territories* 1(2):14-23 [1961]). However, of the people living towards the west of Kudjip and Banz, approximately 6,000 speak the Ni language which is distinct from Wahgi. Ni (which is being studied by A. Stucky of the Summer Institute of Linguistics) and Wahgi share 50% of their verb affixes, and 65% of their basic vocabulary. Thus both can be considered to be members of the Wahgi sub-family.

The chief informants were Mr. Tapi Gun, and Mr. Gum Yimange. Mr. Gun is a member of the Berepka clan, and Mr. Yimange is a member of the Konumbka clan. These clans are both located near the Administrative township of Minj on the south side of the Wahgi River.

I wish to thank Dr. A. Healey, of the Summer Institute of Linguistics, for his advice and comments throughout the period of the preparation of this material, and Professor Hammarström of Monash University, for his insightful suggestions as supervisor of this monograph.

Nevertheless, it goes without saying, they are in no way responsible for the correctness of its content.

That part which follows the chapter describing the nouns is based on material attributable to a concordance of 1,886 total morpheme and word types which occur as 27,624 total morpheme and word tokens of text in Wahgi, made on the IBM 1410 computer at the University of Oklahoma by the Linguistic Information Retrieval Project of the Summer Institute of

Linguistics and the University of Oklahoma Research Institute, and sponsored by Grant GS-270 of the National Science Foundation. This concordance enabled me to substantiate my conclusions about the language in a very short period of time.

For this assistance I would like to acknowledge my thanks to those conducting the Project; to the National Science Foundation; and to the University of Oklahoma Research Institute.

I would also like to acknowledge my gratitude to the Research Fund of the New Guinea Branch of the Summer Institute of Linguistics for the moneys provided to enable me to conduct the second series of tests mentioned in the chapter dealing with the Psycholinguistic approach to the Phonology of Wahgi.

1. SECTION 1

WAHGI PHONOLOGY

1.0. INTRODUCTION TO THE PHONOLOGY SECTION

The Phonology section of the monograph approaches the analysis of Wahgi from the traditional Trubetzkoy-Bloomfield-Pike standpoint referred to as Structuralist; from the Generative standpoint; and finally from the Psycholinguistic standpoint.

The main point of comparison lies in how the para-digmatic and the syntagmatic axes are used by these different theories to arrive at the psychologically appropriate sound units of the Wahgi's language.

The structuralist approach uses the minimal or subminimal pair, on the paradigmatic axis, to deduce whether certain phone differences are significant or insignificant to the speaker. On the syntagmatic axis phonically similar phones occurring as distributionally predictable variants are united in the nonphysical reality.

No phone in particular may be pointed to as being the phoneme, but all the phones which represent this entity are said to be the variants of the invariant.

By using the paradigmatic axis the structuralist is able to appreciate the positive mentalistic reality of the speaker. By using the syntagmatic axis, however, this theory makes use of linguistic logic; the analyst observes the phonic similarity of certain phones, then describes how these variations might be accounted for on the basis of phonic similarity and distributional criteria. The conclusion results in a phoneme composed of combinatory variants.

This shift from mentalistic concepts to physical entities is clear, however, whereas the linguist, by the lexical difference of the minimal pair, has been able to gain insight into how the speaker 'feels' for the phones in question, he has no way of gauging the speaker's feelings for the combinatory variants. He may conclude correctly that word-initial [p] is a combinatory variant of word-final [p^h] to the speaker's mind, but he has no way of knowing that this is actually so.

The structuralist theory handles neutralised contrasts of the language also from a logical standpoint. When, in English, the phone [p] occurs following [s] the contrast between /p/ and /b/ is said to be somehow a combination of both /b/ and /p/. This is a logical conclusion, but not one which necessarily reflects the empathy of the speaker for the units in question.

It is maintained here that neither the structuralist nor the generative approach is able to ascertain the empathy of the speaker for all sound units of his language. The linguist using these theories must be content with a result which arises out of conclusions he himself makes concerning his observations. The Psycholinguistic approach on the other hand, enables the linguist to resolve the meaningful sound units from the conclusions the speakers themselves make concerning their language. This is implied in the following quotation from G. Hammarström: 'Different phones which are in complimentary distribution and which are felt to belong together belong to the same phoneme.' (*Linguistische Einheiten im Rahmen der modernen Sprachwissenschaft*, p.20).

The Generative approach, which is described alongside that of the Structuralist, also uses the paradigmatic and syntagmatic axes for the discovery of the 'underlying' segments, or in other words the 'systematic phonemes'. These underlying segments are said to consist of distinctive features, that is features which have been found to be contrastive on the paradigmatic axis. Lexical items consist of matrices of columns and rows detailing the binary systems of these features. (Such features were first used by Jacobson, Fant, and Halle). The nondistinctive features used by the speaker in the enunciation of an utterance are said to be mapped onto the lexical items as they pass through the Phonological Component of the speaker's Grammar. Nondistinctive features consist of combinatory variants which are discovered on the syntagmatic axis, and the facultative variants which are discovered on the paradigmatic axis. Both axes therefore are used by the Generative approach, but as with the Structuralist approach there is a failure to provide a method for appreciating how the speaker 'feels' for the sounds of his own language. It would seem that 'the generativists are not very different from many structuralists: both trends have tendencies towards antimentalism...' (G. Hammarström, 'A Criticism of Generative Phonology', p.12 unpublished).

Despite these similarities between the Structuralist and Generative approaches to the phonological description of a language there are, as noted by Postal, basic areas of disagreement.

Assumptions acceptable to both Autonomous and Systematic phonology

- "1.1. Given two identical phonological representations, the utterance they represent, that is, the phonetic representations they are associated with, may or may not be identical but are necessarily not distinct. That is, the associated phonetic forms must be free variants or repetitions.

- 1.2. Given two phonetic representations which are not free variants (repetitions) and are hence necessarily not identical, their phonological representations are necessarily distinct."

Acceptable only to Autonomous phonology

- "1.3. Given two phonetic representations which are free variants, their phonological representations are necessarily identical.
- 1.4. Given two distinct phonological representations, the phonetic representations they are associated with are necessarily distinct."

Postal (1968:8-13).

(Not all phonologists, however, agree with the above points.)

Postal notes further that 'two distinct systematic representations may both be mapped onto the same phonetic string', and that this proves the irrelevance of points 1.3. and 1.4. (above).

From this it can be noted that the Generative approach postulates that a lack of contrast on the phonic level does not necessarily mean a lack of contrast at the lexical or deep structure level of representation.

On the other hand Postal says (p.28) that minimal pairs do not necessarily permit an immediate conclusion about underlying phonological contrasts. In other words, phonic oppositions are not necessarily phonemic differences. He notes that autonomous phonology requires four English stresses, but that English speakers are unable to hear them all.

Both theoretical approaches therefore postulate a psychological reality from different standpoints. To the Structuralist this reality must be shown to correspond with something in the phonic system - the physical manifestation, the Generative phonologist sees the importance of the physical manifestation, but notes that this does not always represent the underlying representation.

One further area of disagreement should be noted here: Structuralist phonology deals with phonemic change caused by such factors as assimilation, deletion, and others, in a special section referred to as Morphophonemics. In this section basic phonemic forms of words are noted alongside the changed forms, and simple rules are given to describe the change: i.e. Wahgi has the word aʔ *East*, and the suffix -te *-wards*. When this suffix is affixed to the stem the form ale occurs. A morphophonemic rule to account for this form is as follows: when -te is suffixed to aʔ, ʔ changes to l, and t is deleted. This rule is unordered and is a simple statement of fact.

In the Phonological Component of the Generative approach, however, such changes are handled by a system of ordered rules. The above change

would require two such rules (technical terms will be avoided at this stage):

Rule 1. $l \rightarrow l / \underline{\quad} t$

Rule 2. $t \rightarrow \emptyset / l \underline{\quad}$

That is in Rule 1 velar lateral is changed to alveolar lateral before alveolar t, and this rule is followed by Rule 2 which says alveolar t is deleted when occurring after alveolar lateral. (Other rules are necessary for the full description of this change, but these two rules are adequate for the purpose of this point).

In this way, it is claimed, the Generative approach accounts for forms which are otherwise unexplainable.

In this monograph the Generative approach is used primarily to describe this area of the Wahgi phonology, otherwise referred to as 'Morphophonemic'.

The third theoretical approach, which might be called the Psycholinguistic approach, attempts to discover the psychologically real phonological entities, referred to as 'psychosegments', on the basis of responses to certain stimuli put to the native speaker by the research linguist. In this approach the paradigmatic axis is the main one used but its use is questioned in some areas, as is also the use of the syntagmatic axis.

It will be shown that whereas both the Structuralist and Generative theories would conclude that certain Wahgi phones, for instance word initial [mb] are combinatory variants because they are phonically similar and because of the lack of observable opposition between them, the speaker distinguishes between them as psychologically distinct sounds.

Such linguists as Martinet and Lyons have discussed the idea of the value or the 'load' of the function which a particular contrast might carry in a language, but in general both of the above theoretical approaches ignore this aspect. In the Psycholinguistic section this idea is explored in relation to the type of context in which the contrast occurs. It is shown that the word context as used in the minimal pair is often not sufficient to determine the true psychological reality of two apparently opposed sounds, but that the Phrase and the Clause must be referred to as relevant phonological context.

The Psycholinguistic approach is also able to indicate whether neutralised contrasts in the language are in fact neutralised to the speaker or not, that is whether [b] would be as acceptable to the speaker after [s] as is [p] in the word 'spit'. Examples will also be given to demonstrate that the speaker is often aware of a form which is not

always discoverable in the phonics of the utterance but which is a direct expression of some underlying form.

1.1. A STRUCTURALIST AND GENERATIVE DESCRIPTION OF WAHGI PHONOLOGY

In the description of Wahgi Phonemes I will present first a Structuralist description, and then a Distinctive Feature description. These will then be contrasted with a Scaler description.

1.1.1.0. A Structuralist Description

This Structuralist description of the phonology of the Wahgi language is based on the framework of a hierarchy of levels. On each level units which occur are described in relation to units with which they contrast, their internal modes of variation, and their distribution. Each level is seen as having units which are in turn distributed on higher levels.

1.1.1.1. The Phoneme Level

Wahgi has 17 consonant phonemes occurring at bilabial, dental, alveolar, and velar points of articulation. Obstruent phonemes contrast in manner of articulation as to prenasalization versus non-prenasalization. Obstruents and nasals contrast at bilabial, dental, alveolar, and velar; and semi-vowels at bilabial and alveolar points of articulation.

1.1.1.1.1. Wahgi has 6 vowel phonemes. High, mid and low positioned vowels contrast at front and back positions.

1.1.1.1.2.

CHART 1

Consonants	Bilabial	Dental	Alveolar	Velar
Oral Obstruents	p	ɬ	t	k
Prenasalized Obstruents	mb	ndz	nd	ŋg
Nasals	m	n	n	ŋ
Laterals		l	l	l̥
Semi-vowels	w		y	
Vowels	Front		Back	
High	i			u
Mid	ɪ			o
Low	e			a

1.1.1.1.3. These phonemes contrast in the following sets of Wahgi words:

Obstruents: pù *go*, mbù *thought*, sù *try*, ɲɔzù *a name*, tù *bring*,
ndù *a name*, kù *stone*, ɲgù *a name*.

Nasals: kóm *barren*, kón *cheek*, kón *bag*, kón *pig*.

Laterals: à'ɬá *more*, à'ɬá *mistake*.
mbɬɬ *gather*, mbéɬ *read*, mbéɬ *as*

Semi-vowels: wà *come*, yà *here*.

Vowels: kím *rubbish*, kím *sniff*, kém *he threw*
kám *he saw*, kúm *to plant*, kóm *barren*.

1.1.1.1.4. The analysis of Wahgi tone will be dealt with more fully at word level, but note here that it has been analysed as having three tonemes: high, low, and rising. These are contrasted in the following words:

mí *to the river*, mì *taro*, mi *I am here*.

1.1.1.2. A Generative Description

The Distinctive Features

(The terminology is taken from *The Sound Pattern of English (SPE)* by N. Chomsky, and M. Halle).

Feature

	p	mb	t	nd	k	ɲg	ɔ	ɲɔz	ɬ	ɬ	ɬ	m	ɲ	n	ɲ	y	w	i	ɛ	a	o	u	
voc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+
cons	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-
low																		-	-	+	+	-	-
high	-	-	-	-	+	+	-	-	-	+	-	-	-	+	+	+		+	-	-	-	+	
back	-	-	-	-	+	+	-	-	-	+	-	-	-	+	-	+		-	-	-	+	+	+
round																		-	-	-	-	+	+
cor	-	-	+	+	-	-	+	+	+	+	-	-	+	+	-								
distr	-	-	-	-	-	-	+	+	+	-	-	-	+	-	-								
nas	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+								
lat	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-								
strid	-	-	-	-	-	-	+	+	+	+	+	-	-	-	-								
nas onset	-	+	-	+	-	+	-	+															

The symbol ɲɔz has been changed to ɲz for the Generative based description.

Discussion

Chomsky and Halle order the feature framework so that they might be able to present linguistically significant generalizations about the language being described (1968: 355). Appropriately therefore, segments with certain shared features which are involved in phonological changes in the Wahgi language have been highlighted in this framework. To this end the features of Lateral, Strident, Round, have been used so that this shared feature might be referred to in various formulas, even although either Lateral or Strident might have replaced each other in a framework designed solely to meet the requirements of simplicity metric.

Although Voicing occurs in Wahgi its use does not contrast with Voicelessness, and therefore is a nondistinctive feature, but there is a contrast between Prenasalised Obstruents, and Obstruents. As a result, the feature: Nasal-onset, has been used. Chomsky and Halle refer to this feature (1968: 316).

The feature, Distributed, is used by Chomsky and Halle (1968: 313), and adequately handles the Wahgi distinction between Dental and Alveolar consonants. It describes a constriction which extends for a considerable way along the airflow. The allophones of /s/ /l/ /nz/ and /n/ indicated in the Structuralist description are both Dental and Palatal, and demonstrate that such a constriction is present when these segments occur.

With respect to the vowels, I have ordered the description so that I might speak in certain formulas of both /o/ and /u/, characterised by plus Round, and /i/ /e/, characterised by minus High, and minus Back: see Wahgi Lateral Assimilation, and Vowel Harmony, see sections 1.1.3.2. and 1.1.3.4.

Chomsky and Halle indicate that only Nonstrident Laterals are plus Vocalic and plus Consonantal, therefore, since Wahgi Laterals are plus Strident, the term Lateral has been used to distinguish them from other consonants (1968: 317).

A Framework using terminology found in Harms (1968: 22) need differ from this chart only in the following manner: Back, which has a low functional use in the Chomsky-Halle chart, could be replaced by Grave; Flat would replace Round; and Retracted Articulator would replace Distributed. The rest of the Features would remain the same.

The Feature, Obstruent, which contrasts non-Lateral, non-Nasal consonants with Lateral and Nasal ones, has not been used because it has not been observed to have a function in the Rules of the phonology of the language.

1.1.1.3. A Scaler Description

A nonbinary Distinctive Feature Chart of Wahgi Phonemes. A Scaler description notes the degrees of features between extremes.

Feature

p mb t nd k ŋg ɕ ŋz l l | m n ŋ y w i e a o u

Manner

Vowel																				+	+	+	+	+	+							
Consonant	+	+			+	+	+	+	+	+	+	+	+	+	+	+	+	+	+													
Nasal																				+	+	+	+									
Lateral																									+	+	+					
Strident																											+	+	+	+		
Stop	+	+			+	+	+	+																								
Nas-onset					+																											

Area of Articulation

Bilabial	+	+																																+	
Dental																																			+
Alveolar																																			+
Velar																																			+
High																																			+
High close																																			+
Mid																																			+
Low																																			+
Back																																			+
Central																																			+
Front																																			+
Round																																			+

Discussion

The use of different terms for consonant and vowel segments coincides with the clearly different functions in phonology of consonants and vowels: Wahgi consonants are nonsyllabic, while vowels are always syllabic; consonants function as either onset or coda of syllables, while vowels act as the nucleus of syllables; vowels have no impedance of the airstream through the vocal cavity, whereas consonants do have some manner of impedance (even /y/ and /w/ may be described as having a greater degree of impedance than do vowels) vowels take a placement of stress or pitch, whereas consonants do not.

The use of Manner and Area of Articulation terminology is linguistically and physically significant. Harms has spoken of a need for a universally accepted terminology for describing the features. Such a

terminology is readily available in the traditionally used terms used here. Added to this, the term 'area' instead of 'point' allows a certain degree of variance to enter into the position of articulation, also it permits a better description of vowels, since the tongue does not in fact articulate at a particular 'point' but rather in a certain area of the oral cavity.

The Distinctive Feature terminology is subject to wide interpretation, as may be observed when Harms (1968: 38) indicates how different linguists have used the various terms, and is used primarily to set up a system of classification, rather than to give an accurate portrayal of the general phonetic category of segments involved. Articulatory terminology is open to very little interpretation.

The phonemes, described with my own terminology, equally mirror the 'general' or 'underlying' phonological areas of sound sought for by Chomsky and Halle (1968: 296). They are, however, more closely related to the phonetic shape of the segments, as is the Structuralist approach, than to the underlying substance. This distinction is seen in the different approaches to the morphophonemics. The Generative approach aims at describing the underlying phonological segments, while the Structuralist approach describes a generalised phonic shape of the morpheme. The desire, however, for a description which describes the most general features pertaining to a natural class of segments, as being its primary goal, Harms (1968: 26), and that description be given with respect to simplicity metric, will, I think, tend to make the analyst force his description of a language into a mould which may or may not be the true phonological nature of the language.

Although the binary approach often permits a conciseness of description to enter into formulaic diagrams of phonological behaviour, which is not possible with a nonbinary approach, the use of articulatory symbols, such as 't' and 'k', wherever possible, would help to assist the analyst towards a greater degree of simplicity with respect to reading the formulas. I have taken this approach in the formulas dealing with distribution of the /t/ phoneme.

1.1.2.0. *The Phonic Manifestation of Wahgi Phonemes: A Structuralist Description*

1.1.2.1. The prenasalised and non-prenasalised bilabial obstruents have the following manifestations. The Voiceless bilabial obstruents [p] and [mp] occurring word-initially and medially are in free variation with their voiced bilabial counterparts [b] and [mb] respectively. Voiceless bilabial aspirated obstruents [p^h] and [mp^h] occurring in

word-final position are in free variation with voiceless bilabial fricatives [ɸ] and [mɸ] respectively, and these both occur in free variation with the voiceless bilabial obstruent with vocoid release [p^o] and [mp^o] respectively in word-final position utterance medially before obstruents. The voiceless and voiced bilabial obstruents, with labial release [p^w] [b^w] occur in free variation when in word initial position before the vowels /ui/.

/'pénè/ ['pénè, 'bénè] *garden*
 /'mbònè/ ['mbònè, 'mpònè] *cargo*
 /'mápè/ ['mápè, 'mábè] *no!*
 /'túmbè/ ['túmbè, 'túmpè] *a name*
 /kúp kúp/ [kúp^h kúp^h, kúɸ kúp^h, kúp^o kúɸ] *to screw*
 /àmb tá!/ [àm^h tá!, àmɸ tá!, àmp^o tá!] *two women*
 /pùf/ [p^wf, b^wf] *go*

1.1.2.2. The phoneme /ɟ/ has seven phonic manifestations: the voiceless dental stop [ɟ], the voiceless dental grooved fricative [ɟ̥] and the voiceless dental grooved affricate [ɟ̥ɟ̥] which freely vary with the palatalized manifestations [ɟ̥ʝ] and [ɟ̥ɟ̥ʝ] in word-initial position, and and with the exception of [ɟ] freely vary in word-medial and final positions. [ɟ] never occurs word-finally, and only occurs medially as a second member of a consonant cluster. The voiceless dental grooved fricative with labial release [ɟ̥^w] occurs in word-initial position before the vowels /ui/, while the voiceless dental grooved fricative [ɟ̥] occurs word-final before a following [ʃ/ʃ̥] phone.

/ɟ̥imb/ [ɟ̥im^h, ɟ̥ɟ̥im^h, ɟ̥im^h, ɟ̥ʝim^h, ɟ̥ɟ̥ʝim^h] *leg*
 /'aŋfɟ̥/ ['àŋfɟ̥, 'àŋfɟ̥ɟ̥, 'àŋfɟ̥ʝ, 'àŋfɟ̥ɟ̥ʝ] *I stand*
 /ŋgòl'ɟ̥ft/ [ŋgòl'ɟ̥f̥] *a bird of paradise*
 /ɟ̥ùf/ [ɟ̥^wf] *a name*
 /pòɟ̥ tòm/ [pòɟ̥ ʃòm] *sharpen*

1.1.2.3. The prenasalized dental grooved affricate /ndz/ has eight phonic manifestations. The voiced prenasalized dental grooved affricate [ndz], the voiced prenasalized dental stop [nd] and the voiced prenasalized dental palatized affricative [ndz̥] occur in free variation with each other and with voiceless manifestations of each of these [nɟ̥ɟ̥, nɟ̥ɟ̥ʝ, nɟ̥] in word-initial and medial position. The voiceless manifestations occur in free variation with the prenasalized dental grooved fricative [nɟ̥], and with the prenasalized dental palatized fricative [nɟ̥ʝ] in word-final position.

/ndzú/ [ndzú, ndžú, ndú, ntzú, ntžú, ntú] *a name*
 /'éndzɪn/ 'éndzɪn, 'éndžɪn, 'éndɪn, 'éntsɪn, 'éntžɪn, 'éntɪn] *hair*
 /éndz/ [énts, éntž, énts, éntž, ént] *waste*

1.1.2.4. The phonic manifestations of the obstruent /t/ are unusual and number seven. Voiced alveolar flapped vibrant [ʔ] occurs in free variation with its trilled variety [ʔ̃] in word-medial position, and both occur in free variation with [ʔ̃] in utterance medial, word-final position. The voiceless alveolar trilled vibrant [ʔ̃] occurs in word-final position and never occurs as the second member of a consonant cluster. A voiceless alveolar unreleased stop manifestation [t̚] occurs before the phone [n], and is in mutually exclusive distribution with the other manifestations of /t/.

Voiceless alveolar stop with labial release [tʷ] occurs in word-initial position before the vowels /ui/. A voiceless alveolar stop [t] occurs in free variation with a voiced alveolar stop [d], in utterance-initial position, and both occur in mutually exclusive distribution with [ʔ] and [ʔ̃] in utterance-medial position following alveolars, velars, nasals and laterals. Following vowels, bilabials, grooved fricatives and affricatives, free variation between [ʔ̃] and [ʔ] occurs.

Examples of /t/ distribution

/'ètí/ ['èʔí, 'èʔ̃í] *alone*
 /ŋgát'mí/ [ŋgáʔ'mí, ŋgáʔ̃'mí, ŋgáʔ̃'mí] *I am at the house*
 /pít/ [píʔ̃] *swamp*
 /tá!/ [táʔ̃, dáʔ̃] *two*
 /mbàtním/ [mbàt̚ním] *he shaves*
 /tóp tònd/ [tóph ʔ̃ðnth, tóph ʔ̃ðnth] *I bought*
 /nà 'tóná!/ [na 'ʔ̃ónáʔ̃, na 'ʔ̃ónáʔ̃] *I will hit*
 /kès tòm/ [kès ʔ̃òm, kès ʔ̃òm] *sick*
 /kòŋ tòm/ [kòŋ tòm, kòŋ dòm] *he killed the pig*
 /è! tòm/ [è! 'tòm, è! 'dòm] *he hit him*
 /èr tòm/ [èʔ̃ tòm, èʔ̃ dòm] *he worked*
 /nok tòm/ [nok tòm, nok dòm] *a cold*
 /kéndz tòm/ [kéndz ʔ̃òm, kéndz ʔ̃òm] *scabies*
 /tùí/ [tʷí] *clear away*

1.1.2.5. The phoneme obstruent /nd/ has four phonic manifestations. Voiced prenasalized alveolar stop [nd] and the voiceless variety [nt] occur in free variation word-initially and medially. Voiceless prenasalized alveolar aspirated stop [ntʰ] occurs word-finally and in free variation with voiceless prenasalized alveolar stop with vocoid release [nt̚] in word-final utterance medial position.

/ndú!/ [ndú!, ntú!] *eye*
 /'pàndá/ ['pàndá, 'pàntá] *He will sleep*
 /ònd tónd/ [ònth tónth, ònt^a tónth] *I cut the tree*

1.1.2.6. The obstruent /k/ has five phonic manifestations; voiced velar stop [g] and the voiceless velar stop [k] occur in free variation in word-initial and medial position. A voiced and a voiceless velar stop with labial release [gʷ] [kʷ] occur in word-initial position preceding the vowel /o/ which is followed by /n/ or /ŋ/, but which phonemes are not followed by /e/. [gʷ] and [kʷ] also occur in word-initial position before the vowels /ui/ and /uɪ/. The voiceless velar aspirated stop [kʰ] occurs in word-final position. /k/ occurs in free variation with /ŋ/ following word-initial vowel.

/kõn/ [kõn, gõn, kʷõn] *bag*
 /'pàkám/ ['pàkám, 'pàgám] *forked branch*
 /kík/ [kíkʰ, gíkʰ] *inside wall*
 /'mòkínè/ ['mòŋínè] *food*
 /kùf/ [kʷf] *wait*
 /kù'fn/ [kù'fn] *thorn*

1.1.2.7. The obstruent /ŋg/ has three phonic manifestations: the prenasalized voiced velar stop [ŋg] and the prenasalized voiceless velar stop [ŋk]. These occur in free variation in word-initial and medial position. The prenasalized voiced velar stop with labial release [ŋgʷ] occurs in initial position before the vowels /ui/ and /uɪ/. The following words will illustrate these manifestations.

/ŋgõ!/ [ŋgõ!, ŋkõ!] *dance*
 /'àŋgá/ ['àŋgá, 'àŋká] *sweet potato*
 /'ŋgùf/ [ŋgʷf] *cold*

1.1.2.8. Nasal phonemes /m/. /n/, /ŋ/, each have a single variant. /m/ is manifested as a voiced bilabial nasal [m]. /n/ is manifested as a voiced alveolar nasal [n]. /ŋ/ is manifested as a voiced velar nasal [ŋ]. These all occur in word-initial, medial and final positions. The nasal /ŋ/ has two variants, a voiced dental nasal [ɲ] occurring in free fluctuation with a voiced dental palatalized nasal [ɲ̃] in all word positions.

/'nòmún/ ['nòmún] *he is eating*
 /mám/ [mám] *mother-his*
 /ŋìm/ [ŋìm, ɲìm] *you*
 /kòŋé/ [kòŋé kòŋé] *hungry*

/'ŋàŋnán/ ['ŋàŋnán] *my son*
 /kǒŋ/ [kǒŋ] *pig*
 /kĩŋ/ [kĩŋ, kiŋ] *us*

1.1.2.9. Lateral phonemes are not uncommon in New Guinea Highland languages, but it is unusual that a language has three lateral phonemes. The Wahgi language contrasts three such lateral phonemes: dental, alveolar and velar, and these in turn contrast with the oral obstruents at the same points of articulation.

/à'lá/ *more*, /à'lá/ *mistake*
 /à'ká/ *sweet potato*
 /mbìl/ *gather*, /mbèl/ *read*, /mbèl/ *as*, /mbít/ *noise*,
 /buk/ *book*
 /èl/ *this*
 /kèmbét/ *snake*

The lateral phonemes /l/, /l̥/ and /l̥/ each have voiceless and voiced allophones. The voiceless phones occur in word-medial and final position and freely vary with the respective voiced phones intervocalically. /l̥/ is manifested as a voiceless dental fricative lateral with voiceless grooved dental fricative release [l̥̥], and as a voiceless dental fricative lateral [l̥], by a voiced dental lateral fricative [l]. /l̥/ is manifested as a voiceless velar fricative lateral [l̥], by a voiced velar lateral fricative [l] and by a voiceless alveolar fricative lateral [l̥] occurring only before a following alveolar or dental phoneme, and by [ɾ] a voiced uvular flap which freely varies with [l̥] and [l] intervocalically, also by [k̥l̥] a voiceless velar lateral affricate which occurs in free variation with [l̥] and [l].

/l/ is manifested by a voiceless alveolar lateral flap [l̥], by a voiceless alveolar lateral retroflex flap [l̥̥]; and by a voiced alveolar lateral flap [l]. A voiceless alveolar lateral retroflex flap with voiceless alveolar aspirated stop release [l̥̥^h], and its voiced variety [ld], and the voiceless alveolar lateral retroflex with voiceless alveolar stop release followed by alveolar trilled release [l̥̥̃], and the voiceless alveolar lateral retroflex with voiceless alveolar trilled release [l̥̥̃] occur as idiolectal variations of /l/.

The lateral phones are charted below, and circled to indicate the phoneme.

CHART 2

	Dental	Alveolar	Velar
Voiceless			
Voiced			
	/ʎŋgólùm/ [ŋgólùm, ŋgólùm] a type of reed		
	/nò!/ [nò!, nòkʃ̥] water		
	/kù'!áŋ/ [kù'!áŋ, kù'!áŋ, kù'!áŋ, kù'!áŋ] spear		
	/nò! 'nòndf!/ [nò! 'nòndf!+] you will drink water		
	/è!/ ɛ! him		
	/à'!á/ [à'!á, à'!á] more		
	/mbè!/ [mbè!, mbè!, mbè!tʰ, mbè!t̪, mbè!t̪] read		

Although the Kuma dialect manifests three lateral phonemes, the Danga dialect manifests only two. These are the dental and alveolar laterals already described. The Danga alveolar lateral is the dialectal variant of the Kuma alveolar and velar lateral phonemes. Chart three demonstrates the lateral phonemes of these major dialects.

CHART 3

Dialects	Lateral Phonemes		
	Dental	Alveolar	Velar
Kuma			
Danga			

The circles indicate the area of dialectal overlap in the lateral phonemes.

Chomsky and Halle (1968:49) considers that dialects having arisen from the same glossoclect have the same underlying phonological segments. In that Kuma exhibits three lateral segments and Danga only two, this consideration cannot be applied to Wahgi. However, in that Kuma /l/ is found in comparatively few words, further investigations might show these words to be borrowed from Danga, and as yet not fully intergrated into the Kuma phonology. In which case each dialect would exhibit two laterals.

1.1.2.10. The consonants /w/ and /y/ occur in word-initial and medial positions. /w/ is manifested as a voiced bilabial high close back rounded semi-vocoid [w], and /y/ is manifested by a voiced high close front unrounded semi-vocoid [y]. The following words illustrate these occurrences:

/wò/ [wɔ̃] *come*
 /'òwó/ ['òwó] *yes*
 /yí/ [yí] *man*
 /'mìyám/ ['mìyám] *blood*

1.1.2.11. The vowel /i/ is manifested as a voiced high front unrounded close vocoid [i], and occurs word-medially and finally. The vowel /ɪ/ is manifested by a voiced high front unrounded open vocoid [ɪ], and occurs word-medially, and in free variation with a voiced high central unrounded open vocoid [ɪ] in the final unstressed syllable of words of two or more syllables. (See the section on Vowel Harmony and Consonant Influence for a description of this distribution). It also occurs in free variation with /i/ in the stem *nɪ* to *speak* in certain parts of this verb.

/e/ is manifested by a voiced mid front unrounded open vocoid [e] and may occur in any word position. Vowel harmony occurs in a limited area of the word and is described in binary formulaic terminology.

/a/ has three manifestations: a voiced low central unrounded open vocoid [a] which may occur in all word positions except before /k/ or /p/, a voiced low central unrounded close vocoid [ʌ] which occurs before /k/ or /p/, and a voiced low front unrounded close vocoid [æ] which occurs occasionally word-medially in free variation with [a].

/u/ is manifested by a voiced high back rounded close vocoid [u] which occurs in all word positions, however, [u] is elided when it occurs following a labially released obstruent, and is followed by /i/ or /ɪ/.

/o/ is manifested by a voiced mid back rounded open vocoid [ɔ] occurring in all vowel positions except before nasals, a voiced mid back rounded close vocoid [o] occurring word-finally in free variation with [ɔ], and a voiced low back rounded close vocoid [ɔ̃] which occurs preceding nasals.

The following words will illustrate these manifestations:

/kíp/ [kíp^h] *hawk*
 /pí/ [pí] *now*
 /mín/ [mín] *nest*
 /é'né/ [é'né] *sun*
 /kén/ [kén] *you threw*
 /ŋgùí/ [ŋgùí] *cold*
 /nì'námbè/ [nì'námbè, nì'námbè] *they two will speak*
 /kà/ [kà] *good*
 /ŋgǎt/ [ŋgǎt] *house*
 /ǎp/ [ǎp^h] *salt*

/'tək̥smfn/ ['tək̥smfn, 'tək̥smfn] *to fill*
 /ndú/ [ndú] *a name*
 /'kò mú̥/ ['kò mú̥] *ear*
 /ɔ̥/ [ɔ̥] *moon*
 /'mó̥ò/ ['mó̥ò] *you stay there*
 /kò̥/ [kò̥] *cheek*

1.1.3.0. "Morphophonemics": A Generative Description

I have said that the Binary Generative approach often permits a conciseness of description to enter into the diagrams. By taking some of the descriptions already given in the Structuralist section, I will attempt to show that this is so.

1.1.3.1. Rounding

It has been observed that when the fricative /ɣ/ and the stops /t/, /p/, /k/ and /ŋg/ occur word-initially before the vowels /ui/ or /ui/, with the stress pattern V'V allophones [tʷ], [pʷ], [kʷ] and [ŋgʷ] occur and /u/ is elided. Further, when /k/ occurs initially before /o/, when /o/ is followed by either /n/ and /ŋ/, which in turn are not followed by /e/, and when /o/ is followed by either /ŋdʒ/ or /nd/, once again the allophone [kʷ] occurs.

The Generative Model would handle the above problem in the following way:

The following rules are Disjunctively ordered:

Rule 1a

$$\left\{ \begin{array}{l} [-\text{nas onset}] \\ [+ \text{nas onset}] \\ +\text{back} \end{array} \right\} \rightarrow [+\text{round}] \quad / \# \text{ ______ } \begin{array}{l} [+ \text{round}] \\ +\text{high} \\ -\text{stress} \end{array} \left[\begin{array}{l} -\text{round} \\ -\text{low} \\ +\text{stress} \end{array} \right]$$

Rule 1b

$$\begin{array}{l} [+ \text{round}] \\ +\text{high} \\ -\text{stress} \end{array} \rightarrow \emptyset / [-\text{nas onset}] \left[\begin{array}{l} -\text{stress} \end{array} \right] \left[\begin{array}{l} -\text{round} \\ -\text{low} \\ +\text{stress} \end{array} \right]$$

Examples

/tu'i/ [tʷ'i] *wait*
 /ŋgu'i/ [ŋgʷ'i] *a name*

but not:

/'ŋgu:ɪŋdʒ/ ['ŋgu:ɪnz] *yellow*

Rule 2

$$\begin{bmatrix} +\text{high} \\ -\text{nas onset} \end{bmatrix} \rightarrow [+round] \# \begin{bmatrix} +\text{round} \\ -\text{high} \end{bmatrix} \left\{ \begin{array}{l} \begin{bmatrix} +\text{nas} \\ +\text{cor} \\ -\text{distr} \end{bmatrix} \\ \begin{bmatrix} +\text{nas onset} \\ +\text{cor} \end{bmatrix} \end{array} \right\} - \begin{bmatrix} +\text{voc} \\ +\text{low} \\ -\text{back} \end{bmatrix}$$

Examples

/kon/ [kʷon] *bag*

/koŋze/ [kʷoŋze] *ball*

but not:

/kone/ [kone] *place*

The concise use of terms and the clear formulaic presentation of the problem enables the reader to grasp the underlying generalization. Added to this the ordered Rules 1a and 1b delineate how the elision of Rule 1 occurs, while the Disjunctive nature of the ordering of Rules 1 and 2 permits elision to occur to forms fitting the feature specifications of Rule 1, but not to forms fitting the feature specifications of Rule 2.

The following formulas will also demonstrate the above claim.

1.1.3.2. Lateral Assimilation

In the Structuralist description it has been noted that the lateral phoneme /l/ has the allophone [ɭ]. In fact all lateral phonemes share this allophone. I have also mentioned that the phone [t] is deleted in Locational following assimilation. The following Generative type rules demonstrate this problem.

Rule 1

$$\left\{ \begin{array}{l} +\text{lat} \begin{bmatrix} \text{a} \text{back} \\ -\text{a} \text{distr} \end{bmatrix} \\ \left[\langle -\text{back} \rangle \right] \\ \left[\langle -\text{distr} \rangle \right] \end{array} \right\} \rightarrow \begin{bmatrix} -\text{back} \\ -\text{distr} \\ -\text{flap} \end{bmatrix} / \begin{array}{l} \{ \# \} \\ \{ \neq \} \end{array} \left[\begin{array}{l} [+cor] \\ \left[\langle +cor \rangle \right] \\ \left[\langle -\text{distr} \rangle \right] \end{array} \right]$$

(The nondistinctive feature '-flap' has been added for the sake of these rules).

Rule 2

$$\begin{bmatrix} +\text{cor} \\ -\text{nas onset} \\ -\text{strid} \end{bmatrix} \rightarrow \emptyset / \begin{bmatrix} -\text{back} \\ -\text{distr} \\ -\text{flap} \end{bmatrix} \neq \begin{bmatrix} +\text{low} \\ -\text{round} \end{bmatrix} \#$$

+ Locational

The above rules indicate that Laterals which are either plus Back and minus Distributed, or minus Back and plus Distributed (/l/, /ɫ/), or minus Back and minus Distributed (/l/), assimilate to a nonflap alveolar lateral phone when occurring in word or morpheme final position, before any alveolar or dental consonant in the case of /l/ and /ɫ/, and before alveolar consonants in the case of /l/.

The second rule delineates that Locationals suffixing a morpheme with initial [t], for instance *-te*, *-wards*, have the [t] deleted subsequent to the application of Rule 1. For example: Rule 1 demonstrates that for the stem *wuʔ* *West* and the suffix *-te -wards*, [ɬ], is assimilated to [ɬ] before the [t]. Rule 2 denotes that then [t] is deleted following $\begin{matrix} + \\ \uparrow \\ \text{[ɬ]} \end{matrix}$. This results in the form $\begin{matrix} + \\ \uparrow \\ \text{[wuɬe]} \end{matrix}$.

If one does not use such ordered rules it would be possible to observe that ['áɪ̀è] *eastwards* subminimally contrasts with ['áɪ̀à] *mistake*, and ['wúɪ̀è] *westwards* subminimally contrasts with ['múɪ̀è] *hot*. In which case a forth lateral phoneme, the alveolar nonflap lateral, might be posited. However, with ordered rules the underlying formulation of the surface forms can be appealed to against this assumption. The nondistinctive feature Flap is therefore necessary for the actual phonic utterance, but insignificant to the distinctive feature network.

1.1.3.3. Neutralization

As noted before both the Generative and Structuralist approaches posit some type of archiphoneme when a contrast between two or more segments is neutralized. The Psycholinguistic approach, however, demonstrates that despite such neutralization the speaker is still sometimes aware of certain phones occurring in the neutralized location.

All contrasts between the vowels of the Wahgi language occurring in final unstressed but closed syllables of multisyllabic words are neutralized. The occurrence of word-final clitics do not affect this rule.

This can be expressed by the Generative approach in the following way:

Neutralization Rule

Rule 1

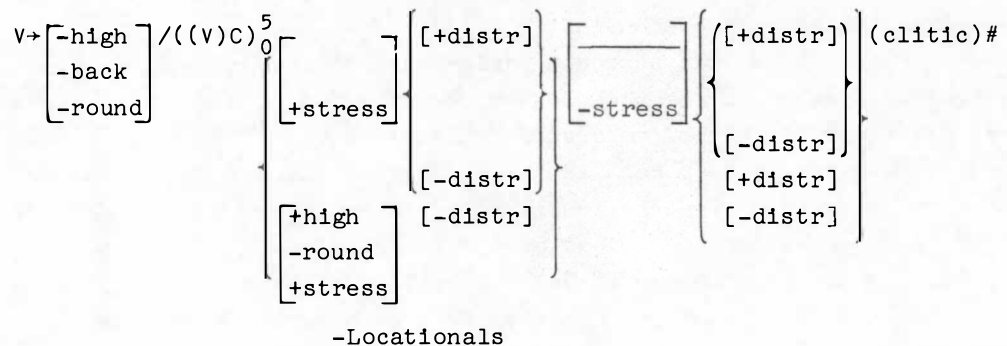
$$\begin{bmatrix} +\text{voc} \\ -\text{con} \end{bmatrix} \rightarrow \text{v} / ((\text{v})\text{c})_0^5 \text{v} \text{c}_1^2 \begin{bmatrix} \text{---} \\ -\text{stress} \end{bmatrix} \text{C (clitic) \#}$$

That is the vowels occurring in the final closed unstressed syllable of words of from two to seven syllables are only marked for vowel. Such words are optionally postcliticized. Further, the unstressed syllable in question has an onset of from one to two consonants, and a coda of one consonant.

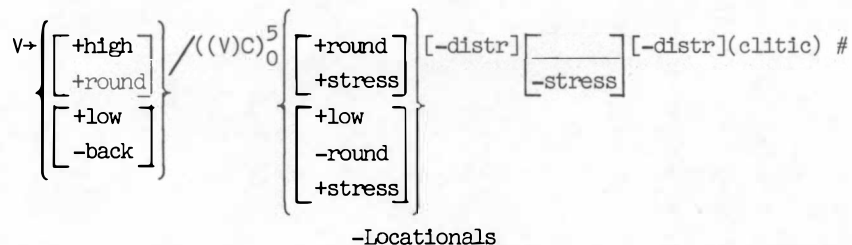
The preceding rule fits the traditional Structuralist approach to phonology as noted by King (1969:120): "Phonological change is regular, and its environment can be stated in strictly phonetic terms", but subsequent to the application of the above rule, a further series of rules must be applied which deal with Vowel Harmony and Consonant Influence. These rules can not be applied throughout the language and must be restricted to all NonLocationals. King (1969:121) notes the modification of the above hypothesis as "Phonological change is regular, but its environment cannot always be stated in strictly phonetic terms." Such restrictions were also placed on Rule 1b dealing with Lateral Assimilation and the deletion of /t/.

1.1.3.4. Vowel Harmony and Consonant Influence

Rule 2



Rule 3



The above two rules generalize many individual rules which are needed to cope with this problem and are applicable to the neutralized Vowel which is the output of the Neutralization Rule (Rule 1 in this sequence of rules). All three rules note that the word in question may be from two to seven syllables in length, to which form may be added a clitic, but only the last two rules note that the penultimate syllable must be stressed. All three rules note the consonant onset and coda of the ultimate syllable and their restrictions, but only the last two rules note that consonants must be marked for either plus or minus Distributed.

The last two rules also detail how that apart from the Consonant Influence features, the Rounding and Height of articulation of the stressed and unstressed vowels of the last two syllables, agree.

These three rules have detailed therefore that all vowels in a certain context are Neutralized, and that this rule applies throughout the language. They further delineate that in all NonLocationals certain features of stress, vowel height and rounding, and Consonant Influence, determine the vowel which occurs in the ultimate unstressed syllable.

The Neutralizing Rule is described in Generative terminology as the rule demonstrating the deepest level of the underlying form, whereas the Vowel Harmony and Consonant Influence Rules might be said to be closer to the phonetic representation of the actual utterance. Nevertheless Rules 2 and 3 only approximate the actual articulation of the form in question, and many other Rules are needed in order to specify the exact shape of the enunciation.

The Psycholinguistic approach indicates that the speaker of the language is aware of the phonological Rules 2 and 3, but not of that of Rule 1, or of that of more surface level rules. For instance Rule 1 would write the verb *to hold* as /ambvɪ/, while Rules 2 and 3 would write it as /ambeɪ/, but more shallow level rules would write it as /ambɪ/. This last form would be refined even further.

Locationals are subject to Rule 1, but not to Rules 2 and 3, for instance the form /ɒmp-tɪŋ/ *frontwards* does occur. Any of the allomorphs -tɪŋ, -tʊŋ, -teŋ, -taŋ might occur with any of the Locational stems. At this stage the choice made by the speaker for any one of these allomorphs for a particular stem, appears to be governed by his own idiolect and preference at the time of utterance.

1.1.3.5. Elision

The following rules handle certain aspects of Elision, Assimilation, and Lowering of vowels.

$$\left[\begin{array}{l} +\text{high} \\ +\text{round} \\ +\text{low} \\ -\text{back} \\ -\text{low} \\ -\text{high} \\ -\text{back} \end{array} \right] \rightarrow \emptyset / [+stress] \left[\begin{array}{l} \text{---} \\ -\text{stress} \end{array} \right] \left[\begin{array}{l} +\text{stress} \\ \text{---} \end{array} \right] +\text{rapid speech}$$

The three readings of the above Rule indicate that the vowels /u/, /e/ and /ɪ/ are elided when occurring in an unstressed syllable between two stressed syllables in rapid speech. Various linguists who have been

associated with the Wahgi language have discussed the above problem in various ways (see Lutzbetak). The vowels occurring in the unstressed syllable have been called 'nonphonemic transitions', or 'facultative transitions' on the one hand, and 'word forming schwas' and 'mid central allophones of /e/' on the other. In order to predict the occurrence of such sounds these linguists have referred to the consonants juxtaposed to the unstressed syllable, and to the voicing of these consonants, however, as the following examples indicate, these hypothesis are incorrect. They do, however, agree that the syllable in question is unstressed.

Two factors of the above rule need to be discussed. The Wahgi language exhibits at least two degrees of stress, but because of the presence of high tone in most words it is difficult to distinguish whether one is hearing primary stress or high tone in the words in question. As a consequence of this the degree of stress, whether primary or secondary, has not been noted in the above rule.

Secondly, the feature of 'rapid speech' is crucial to the environment of the rule. In nonrapid speech the vowels occurring in the unstressed syllable are not elided.

The linguists referred to before, were, at the time of their investigation, using the Structuralist approach. From my present point of view their conclusions are unsatisfactory. On the other hand the Generative approach demonstrates that even in rapid speech the vowels are still present as underlying segments. This appears to be intuitively correct. It is, however, only by the use of the Psycholinguistic method that the linguist is able to ascertain whether the speaker is psychologically aware of the elided vowels of rapid speech. From the data I have gathered, and from that gathered by other linguists, it would appear that the speaker is aware of the phonically elided vowels.

Examples

/'petep'ka/ ['peʔp'ka] *clan name*
 /'kapu!'ka/ ['kap!'ka] *all right*
 /'mambu'num/ ['mamb'num] *custom*
 /'pakiŋ'min/ ['pakŋ'min] *to place*
 /'mo!miŋ'e/ ['mo!mŋ'e] *they are*
 /'moki'ŋe/ ['mok'ŋe] *food*
 /'ati'mbi!/ ['aʔ'mbi!] *tongue*

Phrases:

/ta! e'ndi ka/ [ta! nde ka] *three*
 /e'ndi e'ti/ [e'ndi ʔi] *one only*
 /'koŋe tom/ [koŋ ʔom] *hungry*
 /'peŋe'aŋ/ ['peŋ'aŋ] *at the garden*

The Structuralist approach is able to handle this problem by stating the factor of rapid speech as the cause of elision. Both approaches may also be used to describe the in-between degrees of representation between rapid and nonrapid speech.

1.1.3.6. *Consonant Assimilation Rule*

$$\begin{bmatrix} \text{-nas onset} \\ \text{-back} \\ \alpha\text{cor} \end{bmatrix} \rightarrow \emptyset / \begin{bmatrix} \alpha\text{cor} \\ \text{(+nas onset)} \end{bmatrix} \neq \text{_____}$$

The two readings of this rule state that across a morpheme boundary /p/ assimilates to the stop feature of either /p/ or /mb/, and /t/ assimilates to /t/. (The combination of /nd/ and /t/ within the word does not occur).

Examples

/et-'tən/ [er'aŋ] *working*
 /'ap-pe/ ['ape] *salt*
 /'omb-pe/ ['ombe] *sugar*

1.1.3.7. *Vowel Assimilation Rule*

$$\begin{bmatrix} \text{-low} \\ \text{-high} \\ \text{-back} \end{bmatrix} \rightarrow \begin{bmatrix} \text{+high} \\ \text{-round} \end{bmatrix} / \begin{bmatrix} \text{+high} \\ \text{-round} \end{bmatrix}$$

The above rule states that [ɪ] assimilates to [i] when it occurs contiguous to [i]. This accounts for the assimilation in the following words:

/'ni-ɪpɪm/ ['nipɪm] *he spoke*
 /'pi-ɪpɪm/ ['pipɪm] *he knew*

1.1.3.8. *Vowel Lowering Rule*

$$\begin{bmatrix} \text{+high} \\ \text{-round} \\ \text{-stress} \end{bmatrix} \rightarrow \begin{bmatrix} \text{+low} \\ \text{-back} \end{bmatrix} / \text{_____} \# \begin{bmatrix} \text{+back} \\ \text{-nas onset} \\ \text{+stress} \end{bmatrix}$$

This rule states that high /i/ is lowered to /e/ when occurring in an unstressed syllable, word-finally before a stressed syllable with the onset of /k/.

Example

/'taɪ en'di 'ka/ ['taɪ nde 'ka] *three*

In order to arrive at the surface form ['taɿ nde 'ka] from the systematic phonemic form /'taɿ e'ndi 'ka/ *three*, one requires the application of three rules:

Base Form:	/'taɿ e'ndi 'ka/
Rule 1. Elision	'taɿ 'ndi 'ka
Rule 2. Stress deletion	'taɿ ndi 'ka
Rule 3. Lowering	'taɿ nde 'ka

The Elision rule may now be applied again to the output of Rule 3, so:

Rule 4. Elision 'taɿ nd 'ka

The output of Rule 3 is the most frequently used form, but the output of Rule 4 also occurs.

1.1.3.9. Stress Deletion Rule

[+stress] → [-stress] / [+stress] _____ [+stress]

The Stress Deletion Rule states that three placements of stress cannot occur on three sequential syllables, and that where such is the case the middle syllable loses its stress. In the sequence noted above, i.e. ['taɿ nde 'ka] the Stress Deletion Rule has the effect of producing a form which, although in the underlying Base Form is three free morphemes, it is similar in every respect to a word consisting of three syllables, for example: /'petep'ka/ ['perp'ka] *clan name* is similar to the output of Rule 2 /'taɿ en'di 'ka/ ['taɿ ndi 'ka] *three*. The subsequent Vowel Lowering Rule makes it possible for the Elision Rule to be reapplied, as the vowel /i/ in the word /en'di/ is not subject to the Elision Rule, but [e] is.

1.1.3.10. Epenthesis

∅ → $\left[\begin{array}{l} -\text{voc} \\ -\text{cons} \\ -\text{back} \end{array} \right] / \left\{ \begin{array}{l} [+round] \\ [+low] \end{array} \right\} \text{ ——— } \neq \left[\begin{array}{l} +\text{low} \\ +\text{back} \\ +\text{stress} \end{array} \right] \text{ Imp PN}$

The Epenthesis Rule notes that the phone [y] occurs after the vowels [o], [u], [e], [a] when they occur before the stressed Person-Number morpheme of the Imperative Verb which manifests the vowel [a].

/no-'a/ [no'ya] *you eat!*
 /pu-'a/ [pʷ'ya] *you go!*
 /se-'a/ [se'ya] *you place it!*
 /wa-'a/ [wa'ya] *you come!*

1.1.3.11. *The Distribution of /t/*

In the Generative Chart /t/ is described as [-nasal onset], [+coronal], [-strident]. The following diagram contrasts the allophones of /t/ on the basis of features.

Feature	t	d	ř	ʎ	ř̃	t ^ɰ	t ^w
Voice	-	+	+	+	-	-	-
Continuance	-	-	+	-	+	-	-
Delayed Release	-	-	-	-	-	+	-
Flap	-	-	-	+	-	-	-
Labial Release	-	-	-	-	-	-	+

In the following formulas, which demonstrate the distribution of the above mentioned allophones, I have used a binary feature description wherever such a generalization is both possible, and more indicative than the use of normal notation for segments. Otherwise I have used symbols.

FORMULA 1

Initial Position:

$$\begin{array}{l}
 /t/ \rightarrow \left\{ \begin{array}{l} [t] / \emptyset \\ \left\{ \begin{array}{l} [t] \\ [d] \end{array} \right\} / \left\{ \begin{array}{l} [\check{r}] \\ [nt] \\ [k] \\ [+strid] \end{array} \right\} \\ \left\{ \begin{array}{l} [\check{y}] \\ [\check{r}] \\ [t] \end{array} \right\} / \left\{ \begin{array}{l} [+voc] \\ [+bilab] \end{array} \right\} \end{array} \right\} \# \text{---} [-stress] \\
 [t^w] \# \text{---} \left\{ \begin{array}{l} [-stress] \\ +high \\ +round \end{array} \right\} \left\{ \begin{array}{l} +stress \\ +high \\ -round \end{array} \right\}
 \end{array}$$

Discussion

The phoneme /t/ is rewritten as phonic [t] in word-initial position before an unstressed vowel.

It is rewritten as either phonic [t] or [d] in word-initial position before an unstressed vowel, when it is preceded by either phonic [ř̃], [nt], [k] or a strident consonant.

It is rewritten as either phonic [ř], [ʎ], [t], in word-initial position before an unstressed vowel, when it is preceded by either a vowel, or a bilabial consonant.

It is rewritten as phonic [t^w] in word-initial position before unstressed /u/ followed by stressed /i/.

FORMULA 2

$$/t/ \rightarrow \left\{ \begin{array}{l} \left\{ \begin{array}{l} [\tilde{r}] \\ [r] \end{array} \right\} / [+voc] \text{ ______ } [+voc] \\ \left\{ \begin{array}{l} [t] \\ [d] \end{array} \right\} / [lat] \neq \text{ ______ } [+stress] \\ [t^h] \text{ ______ } \neq \left\{ \begin{array}{l} +nas \\ -bilab \\ -velar \end{array} \right\} \end{array} \right\}$$

Discussion

The phoneme /t/ is rewritten as trilled or flap phonetic [r] between two vowels.

It is rewritten as either phonetic [t] or [d] before a stressed vowel and following a morpheme final lateral.

It is rewritten as unreleased phonetic [t^h] before dental and alveolar nasal consonants, which occur at the beginning of a morpheme.

FORMULA 3

$$/t/ \left[\begin{array}{l} [\tilde{r}] \\ \langle [\alpha\tilde{r}] \rangle \end{array} \right] / \text{ ______ } \# \langle [aseg] \rangle$$

Discussion

The phoneme /t/ is rewritten as the phonetic voiceless trilled [r̥] in word-final position when not followed by another segment, or as either the phonetic trilled [r̥] or the voiceless trilled [r̥] when followed by another segment, when the /t/ occurs in word-final position.

Discussion

The three preceding rules refer to the distribution of the /t/ in word-initial, medial and final position as it occurs within the phrase and word. The use of several different types of terminology, stressing + and - only where necessary for the description of phones, appears, at this stage, to be extremely economical both with respect to writing the formula and to reading it. Many of the restricting environments are of such a nature that generalizations concerning certain shared phonological features are particularly difficult to arrive at, and if possible would mean a complete revision and expansion of terms.

The following sections are dealt with from the Structuralist approach.

1.1.4.0. *The Syllable Level*

The Syllable is defined as a simple nucleus consisting of one vowel with optional margin onset or coda, and has a unit of potential stress placement. There are six patterns: V, VC, VCC, CV, CVC, CVCC, that may be summarized as $\pm C+V\pm C\pm C$.

1.1.4.1. Any consonant may occur as onset except the laterals: /l/. /l/. /l/. Any consonant may occur as coda in the syllable except /w/. /y/, and /ŋg/. As the first consonant in the consonant cluster of the syllable type VCC or CVCC only /l/, /l/, /p/, /t/, and /k/ occur; and as the second consonant only /m/ and /s/ occur.

Any vowel may occur as the nucleus in syllable types VC, CVC, CVCC, CV, and any vowel except /ɪ/ may occur as the nucleus of syllable type V.

The following words will illustrate these syllable patterns and their distribution.

V. occurs in word-initial and final position:

/ò.'pí/ *now*
/'tú.à/ *old*

VC. occurs in word-initial, medial, and final positions:

/'éɪ.kà/ *far*
/ŋgò!'áɪ.wà/ *you two die*
/'sù.úɪ/ *soot*

VCC. occurs in word-initial position:

/èrm.ɣé/ *they worked*

CV. occurs in word-initial, medial, and final positions:

/'tú.à/ *old*
/'nó.mì.ɣè./ *they ate*
/'pé.pé./ *fast*

CVC. occurs in word-initial, medial and final positions:

/'nò.mbùɪ.ɣánè./ *they two having eaten*
/'kòn.ɣán./ *work*

CVCC. occurs in word-initial and medial positions:

/'mòks.mbfɪ/ *they placed*
/'pà.kfɪm.ɣè/ *they having placed*
/'à.mbeɪm.ɣè/ *they having held*

All syllable types vary non-contrastively in length according to the placement of stress.

The Elision Rule, discussed in Generative terminology, indicates that certain vowels elide in rapid speech. The syllable types VCC, and CVCC only occur in rapid speech after the application of the Elision Rule, otherwise the other syllable types occur.

1.1.4.2. Certain transition features both on the syllable level and on the word level will be handled at this point.

- a. When the nucleus of the syllable is filled by /o/ and the coda by /l/, a non-syllabic non-phonemic transition vocoid [ɪ] occurs between nucleus and coda.

/ɔ̃l/ [ɔ̃^ɪɫ] *moon*
/tɔ̃l/ [tɔ̃^ɪɫ] *a name*

- b. The phone [ɪ] further occurs on the word level as a non-syllabic non-phonemic transition vocoid between the lateral /l/ occurring as the coda of one syllable and /e/ occurring as the nucleus of the following syllable filled by the vowel /e/;

/'éɫé/ ['éɫ^ɪè] *here*

- c. Syllabic nasals have been interpreted as the first element of complex phonemes which occur in word-initial and medial consonant position. They take a noncontrastive low tone, but are never stressed.

/'pɪ̃ɫmbé/ ['pɪ̃ɫ[̃]mbé] *we know*
/ŋgùɫm'bɪ̃ŋé/ [ŋgùɫ[̃]m'bɪ̃ŋé] *grass-hopper*
/koɪ ŋ'gà!úm/ [kòɪ ŋ'gà!úm] *dammed*
/m'bà/ [m̃'ba] *but*

1.1.5.0. *The Word Level*

The Phonological Word in Wahgi is defined by a unit of stress placement, tone placement, CV patterns, and juncture characteristics.

1.1.5.1. The subject of Wahgi stress has been the most difficult problem in the phonological analysis of Wahgi. In many words it is indistinguishable from the tonal patterns of those words, however, stress has been analyzed as being phonemic on the basis of its unpredictability, and is divided into primary stress and secondary stress on the word level. The phonological word carries a unit of primary stress placement, and in words of more than one syllable a possible unit of secondary stress placement. Stress is distinguished by the length and loudness.

The following words will illustrate these placements:

' indicates primary stress, and " indicates secondary stress when indicated in phonic brackets.

/'nènfkà/ [nènf''kà] *a clan name*
 /kòn'díkà/ [k^wòn'dí''kà] *a clan name*
 /'káṅḍzìp/ ['káṅ''ḍzìp^h] *star*
 /'kàṅḍzìp/ ['kàṅ''ḍzìp^h] *they saw*
 /taḥ/ [taḥ] *two*
 /pù'púà/ ["pùpúà] *let us go*
 /kòṅḍzì'ká/ ["kòṅḍzì'ká] *forked stick*
 /nàkáu'námbe!mò/ [nà''káu 'námḅū!mò] *will not two people carry?*

1.1.5.2. Phonological words have been observed ranging from one to nine syllables. With the exception of the V syllable pattern, each of the other syllable patterns, not subject to the Elision Rule, may form a mono-syllabic phonological word. The possible combinations of syllables coming together to form phonological words of from two to nine syllables are as follows:

Limitations

1. Although in di-syllabic words two syllables of the V type may occur a.i. a name, only one V type syllable may occur in a sequence contiguous to the nucleus of other syllable types unless /o/ fills that second V type syllable. a.i.o. a name.

2. Combinations of more than two CVC or VC syllable types in sequence have not been observed.

Possible combinations:

With the above limitations all other combinations of syllable types in sequence may occur.

Phonemes may occur in the phonological word with the following limitations:

None of /i/ /ɪ/ /ɪ̃/ /i/ /ĩ/ occur initially.

None of /ɪ/ /ŋg/ /w/ /y/ occur finally.

Charts 4 and 5, with examples, will illustrate combinations of vowels and consonants respectively which have been observed in sequence.

1.1.5.3. *Vowel Combinations*

CHART 4

Chart of vowel combinations of two vowels.

	Second vowel of cluster					
First	i	I	e	a	u	o
Vowel i	ii	iI	ie	<u>ia</u>	<u>iu</u>	<u>io</u>
I	<u>Ii</u>	II	Ie	Ia	Iu	<u>Io</u>
e	<u>ei</u>	eI	ee	ea	<u>eu</u>	<u>eo</u>
a	<u>ai</u>	<u>aI</u>	<u>ae</u>	<u>aa</u>	<u>au</u>	ao
u	<u>ui</u>	<u>uI</u>	ue	ua	<u>uu</u>	uo
o	<u>oi</u>	<u>oI</u>	oe	oa	ou	<u>oo</u>

The underlined clusters are the clusters which have been observed.

Words which illustrate these clusters:

kì.'á.	<i>a small house</i>
'tà.pí.ò	<i>a name</i>
'pè.ím.	<i>fell down</i>
'té.ù.	<i>banana</i>
'sè.ó.	<i>bring</i>
'mà.í.	<i>introduction</i>
mù].á.ìm.	<i>branch</i>
nà.'ẹ́.mìn.	<i>we do not do it</i>
nà.ám̄b.è].	<i>do not hold it</i>
'kà.ú.	<i>carry</i>
'kú.ìŋ	<i>thorn</i>
'ŋgù.fɲɔz	<i>yellow</i>
'tú.à.	<i>old</i>
'nɪ.im	<i>he spoke</i> (This form is elided to [nim])
'sù.ú]	<i>smoke</i>
kò.'f:	<i>rat</i>
'pó.ò.	<i>go</i>
mò'].á.ù.ò.	<i>you remain</i>
'áfò	<i>a name</i>

This evidence supports the conclusion that only the vowel combinations ia, io, ii, ei, io, eu, eo, ai, aI, ae, aa, au, ui, uI, ua, uu, oi, and oo occur as sequences of two vowels, and that vowel combinations of three are manifested by auo, aio.

1.1.5.4. Consonant combinations of two.

CHART 5

Second consonant of cluster:

	mb	p	nd	t	k	ɲdz	ɲ	m	ɲ	n	ŋ	l	l	l	w	y
mb		mbp		mbt				mbm								
p		pp		pt		ɲɲdz	pɲ	pm								
nd		ndp						ndm								
t	tmb	tp	tnd					tm	tɲ	tn	tŋ					
ŋg																
k		kp						kɲ	km							
ɲdz		ɲdzp						ɲdzm								
ɲ	ɲmb	ɲp	ɲnd		ɲk	ɲɲdz		ɲm		ɲn						
m		mp				mɲdz		mm			mŋ					
ɲ		ɲp						ɲm								
n		np						nm			nŋ					
ŋ	ŋmb	ŋp				ŋɲdz	ŋɲ	ŋm		ŋn						
l	lmb	lp		lt	lk		lɲ	lm			lŋ	l		lw		
l	lmb		lnd													
l	lmb	lp		lt		lɲdz		lm		ln	lŋ			lw		
w																
y																

Words which illustrate these clusters:

'àm.ŋá yawn	'mòl.pé to remain
'kòn.ŋán work	kòlɲ star
ŋàŋ.'nán my brother	pìl.ŋe to know
'páŋ.ɲdzì! to help	'mbàt.nfɲ you shave
kìɲ.'pé a name	'mbàt.ndfɲ you peel
'èɲ.mbf! we work	'á!mò eastward?
kìl.'mbé shred	'ámb.mò wife?
'áp.mò salt?	'ét.pè worked
'ónd.mò tree?	'mín.pè you are there!
ŋgát.mò house?	'é.lìm.pè that!
'kón.mò pig?	'ámb.pè woman!
'éɲdz.mò waste?	'áp.pè salt!
kón.mò cheek?	'ónd.pè tree!
àmb.tá.mbì! they will hold	'kón.pè a pig!
òn.'mám track	'éɲdz.pè waste!
'púm.mò he went?	'ndók.mò frog?
ɲèk.'ɲa.mbi! they will rouse	'ndók.pè frog!
'kéɲ.mò is it bad?	'kfɲ.pè us!

àǰ.'kí sneeze	'kóŋ.mò pig?
'mìŋ.mbf! to climb	'mbèl.mbf! they read
'kìl.pé we two	'mbèl.ndf! he will read
'màl.má road	'kùǰ.ŋǰf! to sweat
'kèl.mbé let go	màl.'kám leg
'ŋàl.ŋǰf! our child	'mbìl.mán track
'ŋgìl.mán fir tree	'é].tít decoration
'mbàt.mbf! to peel	'tàp.ŋǰfp friend
'mbàt.mfn we all peel	'mèŋ.ǰŋǰ strike
'é].kè far	'ók.ǰm avoid
'ép.tìŋ up	pàm.'ŋǰfk.ò as
'màl.nán my ground	'pòǰ.ndf! sharpen
'mól.wà you remain	gòl.'tft bird
'pìl.wà you know	'kòm.ŋǰf! barren
'ngòl.ŋá.nè they died	'à.kfǰ.nìn dart aside

1.1.5.5. Consonant Combinations

Consonant combinations of three which occur in rapid speech are as follows:

'pàkǰ.mbf! they plead	'kòpǰ.ndé cut open
'mòlm.ŋé they were	'òkǰ.ná! avoid
'pìlm.ŋé they knew	'ètm.ŋé to work
'ǰékǰ.mìn to rouse	

1.1.5.6. Juncture Characteristics

The juncture characteristics of the phonological word fall into two categories: 1. Allophonic distribution: the allophones [ʔ] [ŋǰ] [ŋǰ] indicate word juncture as they occur only in word-final position. [t] indicates word juncture as it occurs only in word-initial position. 2. Phonetic segments: aspiration [h], the transition vowel [ə], and glottal [ʔ] indicate word juncture as they occur only in word-final position. The usage of the aspiration and the transition vowel have been described. Glottal occurs between two words when word-final V is contiguous to word-initial V.

1.1.6.0. Tonal Analysis

1.1.6.1. Tonal analysis method A.

Three tonemes have been analyzed in the Wahgi language: high tone, low tone, and rising tone. I will discuss first the various manifestations of these tonemes, and then present how tone is related to the phonological word.

1.1.6.1.1. High tone /' / is manifested as high tone (´) which may occur on any syllable of the word, and which freely varies with extra high tone (´´) on stressed syllables.

Low tone /` / is manifested as falling tone (˘) which occurs on mono-syllabic words and on the final unstressed syllable of utterance final multi-syllabic words. Another manifestation of low tone is mid tone (ˉ) which occurs word-medially between a high tone and a low tone and vice versa. Low tone (˘) may occur on multi-syllabic words in all other circumstances.

Rising tone /ˊ / is manifested as rising tone (ˊ) and occurs on mono-syllabic words.

The following words will illustrate these tones:

/éɸ/ [éɸ^h] *up*
 /móí/ [mó'í, mó'í] *wild cane*
 /'mfɪnètè/ ['mfɪnḗřḗ]
 /'mfɪnètè'pùnáɪ/ ['mfɪnḗřḗ'pùnáɪ] *I will go up*
 /tò/ [tḍ] *hit*
 /mí/ [mí] *I am here*
 /kándzɪp/ ['káɳd͡zɪp^h] *star*

1.1.6.1.2. Although at first the tonal analysis was undertaken on the premise that tone may be contrastive on the syllable level, it was found to be impossible to contrast one syllable of the word while maintaining the other syllables in a stable condition. I could contrast /'káɳd͡zɪp/ *star* and /'kàɳd͡zɪp/ *they saw*, but never /'kándzɪp/ or /kàndzɪp/. It was found to be possible to contrast tone on mono-syllabic words in a three way contrast, but in multi-syllabic words it was impossible to realise the matrix possible contrasts. It was observed, however, that each word pattern of from one to four syllables was manifested by up to three contrastive tonal patterns. Since, therefore, tones on individual syllables in words cannot be contrasted with tone on individual syllables in other words while the other tones in those words remain constant, but rather entire tonal patterns uttered over the length of the words must be contrasted, it has been concluded that phonemic tone is related to the phonological word.

The following words will illustrate the possible tonal patterns and contrasts:

On mono-syllabic words:

/mí/ *I am here*
 /mì/ *taro*
 /mí/ *down*

On bi-syllabic words:

<i>/'mòf/ I am here</i>	<i>/'èné/ work</i>
<i>/'móf/ small reed</i>	<i>/é'né/ sun</i>
<i>/'káù/ carry</i>	<i>/'émbè/ like</i>

On tri-syllabic words:

/kòn'díkà/ a clan name
/'kándzìpmò/ is it a star
/'kòndzìká/ a forked stick

On four syllable words:

/nàṅò'námbè!/ they will not give
/'tònàmbèlé/ they having hit
/'sì'námémò/ will we take?

On five syllable words:

/nàwò'námbé!é/ they having come
/nààmb'támbé!mò/ will they not hold?

On six syllable words:

/nà'ámbè!tángnàmbè!/ they will not always hold

On seven syllable words:

/nà'ámbè!táng'nàmbè!mò/ will they not always hold?

On eight syllable words:

/nà'ámbè!tángé'nàmbè!mò/ will they not always hold?

On nine syllable words:

/nà'ámbè!tángé'nàmbè!kènè/ will they not always hold?

1.1.6.2. Tonal analysis method B

A second method by which Wahgi tone might be analyzed is to describe the tones on mono-syllabic words as contour tones, and then to analyze these contours according to end points. This would mean that the three tonemes found on monosyllabic words would alter in the following way:

high (level) /'/	would become high high ''
high (rising) /ʌ/	would become low high ``
low (falling) /ʌ/	would become high low ``

This type of analysis would reduce the number of tonemes by one, and since the length of time taken to say the mono-syllabic word is regularly the same as that of bisyllabic words of the pattern CVV this is a justified second approach to the analysis of tone. Such an analysis

would give the identical three patterns which are found on bisyllabic words. However, if this method is adopted, the analyst is led to the position of considering monosyllabic open syllable type words as bisyllabic on the basis of tone placement and the time taken to say these words.

Arguing against this approach I would note that monosyllabic words of the pattern VC and CVC are shorter in their utterance time than words of the pattern VCVC, or CVCVC.

<i>/ap/ salt</i>	<i>/a'lamb/ people</i>
<i>/ep/ up</i>	<i>/da'nən/ my father</i>
<i>/noɪ/ water</i>	<i>/'noɪəŋ/ on the water</i>

Only words of the pattern CV display a similarity in length to bisyllabic words of the pattern CVV.

<i>/mi/ [mi·] I am here</i>	<i>/mo'ɪ/ I am here</i>
<i>/na/ [na·] me</i>	<i>/'seɪ/ place it!</i>

In conclusion, therefore, it is noted that two approaches to the analysis of tone are possible. The former is preferred from the standpoint of having one tone placement per syllable, while the second is preferred because it reduces the number of tonemes by one.

1.2. THE PSYCHOLINGUISTIC APPROACH TO WAHGI PHONOLOGY AND ITS APPLICATION

1.2.0. Introduction

During 1969 and 1970 psycholinguistic tests were conducted on new literates in the Wahgi community of New Guinea. These were run in order to establish the degree of influence which English and Pidgin English were having on the Wahgi semi-literate: whether education in these languages had changed the basic phonemic responses of the Wahgi to his own language, and whether it had introduced new ones. As a result of the tests it was hoped that certain facts would be established from which the most suitable alphabet in which to produce literature for the literate Wahgi speaker could be devised.

During the period 1963-69 an alphabet of 23 symbols had been developed from the 23 phonemes posited under the Structuralist approach to the phonology, and used to print literature in the Wahgi language. The informants used to assist with this analysis were primarily illiterate, and our attempts to teach them and others to read and write with this alphabet proved successful.

During 1969 certain factors forced our attention to focus on the emerging group of literates arising from the joint effort of administration and mission schools. These were being taught to read and write in English, and also became literate in Pidgin English. A survey of this situation indicated that 3,283 students were daily attending class under the instruction of 98 teachers, see Table 1.

TABLE 1

A detailed list of the schools, students, and teachers in the Wahgi Valley area (i.e. Minj sub-district) as of 1969.

Location	Schools Run By Mission/Admin.	Teachers:		Pupils
		Indigene	European	
Minj	+	3	1	110
Nondugl	+	5	1	231
Kukmil	+	3	-	138
Kerewil	+	4	-	123
Kimil	+	3	-	100
Tombil	+	1	2	60
Minj	RC	6	3	321
Ambang	RC	7	1	241
Fatima	RC	6	10	479
Milip	RC	2	-	71
Nondugl	RC	4	1	182
Banz	RC	5	3	282
Mondemil	Swiss	3	1	130
Sigmil	Swiss	3	2	196
Kugark	Swiss	1	4	201
Kudjip	Nazarene	2	5	157
Banz	Lutheran	5	-	240
Pukamil	Lutheran	1	-	21
		<u>= 64</u>	<u>= 34</u>	<u>= 3283</u>

From discussions with some of these teachers it was deduced that three to four thousand students had already passed through their schools and were now living in and around the language area. This newly literate section of the society, which we shall estimate to be 7,000 persons, formed therefore an immediate literate public for the literature which we or others might produce.

Nevertheless in presenting our books to members of this literate group we met with disinterest, ridicule, and an inability on their part to read them without real difficulty.

The educated Wahgi's natural desire to improve himself, and his consequent tendency to consider his own language to be inferior to English, was taken into account, but these factors did not explain his difficulty with the alphabet used for his own language.

The problems were restricted to certain areas: Firstly, the Wahgi language exhibited two phonemes in an area occupied by only one in English and Pidgin English. Wahgi has both a dental nasal /ɲ/ and alveolar nasal /n/, while English and Pidgin English have only the alveolar nasal; Wahgi has both a /k/ phoneme and a velar lateral phoneme /l/, whereas the other languages have only the /k/ phoneme. Secondly, there was not a one to one correspondence between English and Pidgin English phonemes and Wahgi phonemes which did occur. For instance, English and Pidgin English exhibit the cluster of phonemes /m/ and /b/ in the words 'number' and 'Namba', whereas Wahgi exhibits a corresponding complex phoneme /mb/ in the same area of the word - /embe/ same. By definition a complex phoneme consists of two or more segments which in this case act as a unit to the native mind Pike (1947:128-138). Wahgi has both /m/, and /p/, but no contrast between [p] and [b]. The contrast is between /mb/ and /p/. This second point was added to when it was observed that there was a divergence in the symbolization used for phones which were similar to Wahgi, English, and Pidgin English. For instance, the Wahgi phoneme /t/ has both [t] and [r] allophones, but only the symbol r had been used to symbolize it, this was because this was the most frequent allophone. (The arbitrary decision in the Structuralist Phonology description to symbolize the phoneme as /t/ rather than as /r/ was made because of the linguists desire to preserve an appearance of symmetry in the obstruent chart). The new literates in English and Pidgin English reacted against the symbol r in the Wahgi word when they perceived the phone [t], and preferred to use the symbol t in those locations. Thirdly, difficulties were observed where digraphs had been used for phonemes where no suitable single symbol was available.

The following list indicates the respective symbolization chosen for the twenty three Wahgi phonemes.

TABLE 2

The first alphabet listed beside the respective phonemes.

Phoneme	Alphabet Symbol	
/mb/	b	
/p/	p	
/nd/	d	
/t/	r	
/ŋg/	g	
/k/	k	
/nd/	j	
/s/	s	
/m/	m	
/ɲ/	ny	
/n/	n	
/ŋ/	ng	
/l/	l	Dental lateral
/l/	l	Medially
	lt	In final position)
		Alveolar lateral
/l/	ll	Velar lateral
/w/	w	
/y/	y	
/i/	ii	
/i/	i	
/e/	e	
/a/	a	
/u/	u	
/o/	o	

This list indicates that prenasalized obstruents were being treated as complex phonemes, and that the Wahgi was expected to respond to b, d, g, and j by uttering a prenasalized obstruent of the correct phonic quality according to its distribution. By use of the symbol r it was indicated that the wahgi was expected to utter a [t] in response to this symbol when the distribution of the phoneme determined it, and to utter [ʔ], [ã] and [ř] elsewhere respectively. Accordingly the Wahgi was expected to respond to the digraphy ny, ll, and ii and ng by uttering a single phone.

These expectations were realized when I was able to instruct illiterates and some literates in actual literacy classes, but the uninfluenced literate section of the community had difficulty in responding in this way.

Research therefore, was centred in those areas which gave greatest concern. These areas are entitled as follows:

- A. Low Function Contrasts - in general covering those areas where Wahgi has two phonemes to the single English phoneme;
- B. Diverse Symbolization of one Phoneme - this area deals with the lack of isomorphic correspondence of phonemes between the languages, and the awareness of the allophone;
- C. Digraphical Symbolization

1.2.0.1. *The Tests*

The tests consisted of three stages: a set of (185) flash cards which exemplified the various problem areas; a set of (58) words which the informants wrote as they were dictated to them; and a set of short texts which the informants read on to tape recordings. (See section 1.2.6. for the materials used).

Certain restrictions were imposed on those being tested: it was insisted on that they should not have been influenced in any way by any of the books which I had published in their language, or by the alphabet which I was using; that they receive no instruction prior to the tests; and that they have completed or be attending grade 5-6 at school.

The scheme of testing which was followed was to present the dictation test to a massed class, or individual who may not be attending school at that time, then to select from the class, on the advice of the teacher, some of the brighter students who would sit for the flash card and reading tests. The results of the dictation test were simply noted and assessed. The informant was marked either right or wrong for his response to the flash card test, or the incorrect response which he gave was noted. In the flash card test the student was given a period of approximately five seconds to respond to the word presented. He generally required much less than this. In assessing the recordings of the reading tests I looked only for the student's ability to respond to certain symbolization used in the texts. The symbolization being investigated has been underlined in the texts in section 1.2.6.3., but was not underlined in the original texts used.

There were 242 students used in the Dictation tests; and 58 students were used for both the Flash Card and Reading tests.

The proposed alphabet arrived at as a result of these tests indicates the present day subconscious responses of the Wahgi to the sound of his own language as seen in the symbols which were placed before him.

1.2.1. Research Area A: Low Function Contrasts

Contrasts between /i/ and /i/, /ŋ/ and /n/, /!/ and /k/.

The Trubetzkoy-Bloomfield contrast-distribution type of analysis used to resolve the phonemes of the Wahgi language was a reasonably systematic and rigid method, but it gave little opportunity for a study of the functional load which the phonemic contrasts carried. For instance it is possible to establish by minimal word pairs that a phonemic contrast exists between /i/ and /i/ (see list of minimal word pairs which follows - Table 3), but these same pairs show that for the most part the words used in the contrast come from different word classes. This being so it means that these words would very seldom occur in identical environments in conversation, and such contrasts therefore carry a low functional capacity. (See discussion to follow of morphology of those verbs which may occur in identical environments).

The concept of the phoneme is based on the principle that it is a functional unit within the system of a language. Consequently it must function on the paradigmatic axis at the utterance level, and not simply as a phonic segment which might be contrasted with another phonic segment if the contexts in which they occur are isolated and reduced to word level. If one reduces the contexts in this way one changes a syntagmatic relationship into a paradigmatic one, or makes a function which is relevant to the Process, relevant to the System (Dinneen 1967: 337). For instance the words used to establish the /i/ and /i/ contrast might also stand syntagmatically related to each other:

/ka kip kip enim/	<i>The hawk is charred.</i>
<i>bird hawk charred</i>	

/ka kip pu ka mim mim/	<i>The hawk is in the nest.</i>
<i>bird hawk go bird nest is</i>	

/e!im ŋim ŋim/	<i>He spoke to you.</i>
<i>he you spoke</i>	

By ignoring the contexts and merely comparing these words on the word level we can contrast the segments paradigmatically. But in actual language context this is almost impossible. This might also be applied to the other phonemes in question in this section.

TABLE 3

A list of minimal pairs which were used to establish the phonemic contrast between certain phonemes which has later been considered to be a low function contrast.

Phoneme	Minimal Pair	Translation	Word Class
/i/	/ɒim/	<i>he spoke before</i>	Verb
/ɪ/	/ɒɪm/	<i>you</i>	Pronoun
/i/	/kip/	<i>hawk</i>	Noun
/ɪ/	/kɪp/	<i>charred</i>	Verb specifier
/i/	/mim/	<i>he is</i>	Verb
/ɪ/	/mɪm/	<i>nest</i>	Noun
/i/	/sim/	<i>it is</i>	Verb (used of inanimate subjects)
/ɪ/	/sɪm/	<i>he took</i>	Verb (used with animate subjects)
/i/	/pim/	<i>he knew before</i>	Verb
/ɪ/	/pɪm/	<i>he knew</i>	Verb
/i/	/ɒim/	<i>he spoke before</i>	Verb
/ɪ/	/ɒɪm/	<i>he spoke</i>	Verb
/ɒ/	/kɒne/	<i>hungry</i>	Verb specifier
/n/	/kɒne/	<i>rain</i>	Noun
/ɒ/	/kɒɒ/	<i>cheek</i>	Noun
/n/	/kɒn/	<i>bag</i>	Noun
/ɒ/	/eɒne/	<i>sun</i>	Noun
/n/	/ene/	<i>he works</i>	Verb
/ɒ/	/eɒɪm/	<i>you all</i>	Pronoun
/n/	/enɪm/	<i>they worked</i>	Verb
/ɒ/	/kɒɒɪm/	<i>he sees</i>	Verb
/n/	/kɒnɪm/	<i>they see</i>	Verb
/k/	/aka/	<i>sweet potato</i>	Noun
/ɪ/	/aɪa/	<i>mistake</i>	Verb specifier
/k/	/kek/	<i>scare</i>	Verb specifier
/ɪ/	/keɪ/	<i>send</i>	Verb
/k/	/nok/	<i>cold</i>	Verb specifier
/ɪ/	/noɪ/	<i>water</i>	Noun
/k/	/mbok/	<i>fall</i> (of animate subjects)	Verb specifier
/ɪ/	/mboɪ/	<i>ripe</i> (of inanimate subjects)	Verb specifier

These are all the minimal pairs discovered in the language to date which contrast the phonemes in question.

The psycholinguistic tests indicated that on the one hand when contrastive symbolization was used to represent these phonemes (/i/ and /ɪ/, /n/ and /ɲ/, /k/ and /!/) there was no consistency of response by the Wahgi to that symbolization, but rather that the Wahgi was confused in his response, for instance he would write either 'niim' or 'nim' for [ɲim]. On the other hand no ambiguity was experienced when contrastive symbolization was not used for the above phonemes, for instance, when only 'nim' was used for both /ɲim/ and /ɲim/ he responded correctly according to context. The following statistics taken from Section 1.2.7. illustrate these points:

When /ɲ/ was symbolized as ny and then as n the following percentages in the Flash Card tests (see Section 7.1.) were recorded.

Flash Card Tests	Word-Initial	Word-Medial	Word-Final
/n/ as ny	17/27	23/27	13/24
/n/ as n	63/63	63/63	62/63

Note: 17/27 means - 17 correct responses out of 27 responses.

The Flash Card tests also demonstrated that when /n/ was symbolized as n that the students responded with practically 100 per cent correct responses.

The dictation tests indicated that the students used no contrastive symbolization to distinguish /ɲ/ and /n/, while the Reading tests revealed that when /ɲ/ was symbolized as 'ny' and 'n' the following statistics occurred:

Reading Tests	Word-Initial	Word-Medial	Word-Final
/ɲ/ as ny	21/26	13/20	14/60
/ɲ/ as n	100%	100%	100%

These statistics reveal that the symbol 'ny' is either unnecessary or unsuitable, (the reasons for its unsuitability will be discussed under Problem area C, Section 1.2.4.), but they also indicate that the symbol 'n' is fully acceptable when it is used to symbolize both /ɲ/ and /n/.

Following are the statistics for both /i/ and /ɪ/, and /!/ and /k/.

Flash Card Tests	Word-Medial	Word-Final
/i/ as i	62/72	45/45
as ii	24/30	25/27
/!/ as k	65/68	55/57
as ḳ	11/11	11/11
as ḳ̣	3/3	3/3
/k/ as k	No actual test but observations indicate 100% acceptance.	

Dictation Test	Word-Medial	Word-Final
/!/ written as k	44 times	84 times
written as g	36 times	3 times
/i/ written as i	47 times	53 times
written as ii	1 time	7 times
Reading Tests	Word-Medial	Word-Final
/i/ as ii	92/97	38/46
as i	184/204	141/165

Note: With respect to Reading Tests the figure 92/97 means 92 correct responses out of 97 responses, etc.
 /!/ - as the results of these tests for /!/ are too numerous to add here, the reader is referred to Section 1.2.7.3. 'Results of the Reading Tests' to view the statistics and symbols used.

As a result of the minimal word pairs used to contrast these phonemes, and these statistics, it is postulated that these phonemic contrasts in the language carry a low function load. They may be established only at the word level, and only at that level by comparing words of diverse word classes. (Albeit, a few cases might be observed at a higher level, that is within the same Word Classes). The members of these contrasts, therefore, are not established phonemes in the light of the present synchronic stage of the analysis, but might represent a diachronic metamorphosis: a phonemic contrast developing in the language, or one which is fading away. To support this argument it is noted that /ŋ/ and /n/ are used in a partial mutually exclusive distribution in the following way:

- /ŋ/ before /i/, /ɪ/ and /e/ in word-initial position.
- /n/ before /a/, /u/ and /o/ in word-initial position.
- /ŋ/ before /ɪ/, and /e/ in word-medial position.
- /n/ before /ɪ/, /e/, /a/, /u/ and /o/ word-medially.

Likewise the vowels /i/ and /ɪ/ are used in a partial mutually exclusive distribution:

- /i/ occurs in word-medial and final position.
- /ɪ/ occurs only in word-medial position.

Further to this, these two vowels are used interchangeably in certain words:

- Either [sinambe!e] or [sinambe!e] *They both took.*
- Either [ninambe!e] or [ninambe!e] *They both spoke.*

The consonants /k/ and /!/ are also used in a partially mutual exclusive distribution:

/k/ in all word positions

/!/ only in word-medial and final positions

The minimal pairs given, and the test statistics, indicate that if only one symbol is used to symbolize both members of these phonemic contrasts there would be little or no ambiguity in the text as a result. On the other hand if one symbol was chosen to represent the contrasting phonemes /p/ and /mb/ the resultant ambiguity would be considerable.

The conclusion which may be drawn from these facts, therefore, is that the contrast between these phones has not been conclusively proven, and that contrastive symbolization in the orthography is not required.

It is felt that the Prague and Bloomfieldian type of analysis used to arrive at the original phonemes of Wahgi, and consequently their symbolization in the orthography, by not taking note of degrees of function in a context larger than the word as described here, and the relevance of minimal pairs from within a word class, tends to ferret out all the phonic contrasts establishable on the word level within the language, and attribute to them a rank of importance which is not shared by the native speakers, and consequently to overload the language with signalling entities in the alphabet. Context, as noted by Martinet (1960:266) and Lyons (1969:81-84) must play an important part in establishing the status of such contrasts.

To simplify the task of searching for parallel contexts I suggest the following two procedures: firstly and primarily that minimal word pairs used in establishing a phonemic contrast be required to come from the same word class; and secondly that twelve to twenty such pairs at least, be sought to prove the status of the contrast. Although the first of these requirements seems to be reasonable, the second may appear to be arbitrary and unnecessary. My point, however, is that definite proof, of say more than six pairs, should be sought. In a preliminary analysis these requirements might be relaxed, but at a subsequent time, when the linguist has a better grasp of the language, they should be made imperative.

Two further points concerning these entities must be considered before this part of the discussion is complete: first of all whether these segments constitute different phonemes, or are in fact allophones of the same phoneme; and secondly the influence of the national languages on the final decision as to their status in the orthography.

Since the contrasts occurring between these pairs of phones have been shown to be of low functional value within the system of the

language, can they be considered to be allophones of the same phoneme? Such an allophonic relationship cannot properly be established on the word level, for minimal contrasts of words devoid of their linguistic context can establish them as phonemes. But on the grammatical, phrase and clause level of analysis, a detailed description of the contexts in which these entities occur would establish that they never occur in identical environments, that is except for the contrast established between [i] and [ɪ] when used in two verbs, one indicating the Completive Aspect [C], the other the Absolute Completive Aspect [AC]. But even in these cases certain Temporal Phrases co-occurring in the text would prove the context to be less than minimal. Added to this, as noted in the Phonological section 1.1.3.7. and the Verb chapter Matrix 6a, the deep morphemic structure of the verb /nim/ *he spoke before* is as follows:

nɪ - i - m

 stem AC 3sg,

the vowels /ɪ/ and /i/ are assimilated to /i/. This description also copes with /pim/ *he knew before* which has the morphemes

pɪ - i - m

 stem AC 3sg.

The vowels are assimilated to /i/. Further, these forms of the Verb, in these Aspects, are often used interchangeably that is -

either /yek nim/ or /yek nɪm/ *he spoke*
 he spoke before *before he spoke*

This further serves to support the point being made here, that the value of the contrast is of a secondary nature.

The tonal analysis of Wahgi supports this contention. But for the occurrence of one pair of multisyllabic verbs which have identical tone patterns, it would be possible to say that /ɪ/ occurs with the low toneme, and /i/ never with a low toneme. There are grounds therefore for postulating that the members of those low function contrasts are in fact allophones of the same phoneme. This point will be developed further in the section which deals more fully with the psychosegment.

The second point discussed here must have a strong bearing on the consideration of these entities from a sociolinguistic standing.

Luzbetak recognized the need for a modified alphabet when one considered the growing number of Pidgin English and English speakers of the area Luzbetak (1954:3). Statements by Don Laycock and Stephen Wurm, supporting the argument that Pidgin English will develop into the national language of New Guinea, and pointing out that when there is government recognition of such development it 'could mean education in Pidgin in primary schools (and) expansion of literacy in Pidgin...' Laycock (1969: 14) demonstrate the importance of national tongues and future development. If it is possible to predict diachronic developments within languages, and in particular in Wahgi, although I am not propounding that such predictions are possible, then because of the prestige of the national tongue it would seem possible that change would be in favour of the national tongue, rather than away from it. Such changes in the vocabulary of the language are occurring continuously, but they have also been noticed to be occurring in the phonology of the language. For instance the lack of consonant clusters in word-initial position is now under attack. Such words as 'store' and 'stone' have been assimilated into the language as vocabulary items, but whereas members of the older generation pronounce them as [sɿto] and [sɿton], some members of the younger generation are able to say [sto] and [ston]. Other developments might be quoted.

Where, therefore, the status of certain segments which might be interpreted as either different phonemes or allophones of the one phoneme is open to question, and those segments if interpreted as phonemes would mean two phonemes in areas where the national tongue has only one, it would seem wise and practical to interpret them as allophones.

Under Research Area A, Low Function Contrasts, I have attempted to show how the method of analysis used to arrive at the phonemes of the language was unable to indicate the degree of function a phonemic contrast carried in this language. Under Research Area B, Diverse Symbolization of One Phoneme, I discuss how that method also failed to indicate the degree of response which the speaker might have to a phoneme in different areas of the word.

1.2.2. Research Area B: Diverse Symbolization Of One Phoneme

The previous method of analysis used to discover the phonemes ruled that should the consonant cluster [mb] occur in word-initial, medial, and final positions, but that language only exhibits nonsuspect clusters (according to Pike, phonic clusters such as [ph], [ts], [mb], [tw], [ʔy] are suspect of being either one or more phonemes, but that clusters such as [km], [nb], [st] etc. are clearly a cluster of two consonant

phonemes, (1947:131) in word-medial and or final positions, then on the basis of [mb] occurring in a word position where no nonsuspect cluster occurs, the cluster should be interpreted as a complex phoneme throughout the word. Wahgi has nonsuspect consonant clusters in word-medial position, but not in word-initial and final positions.

The word, [koɣ̥ɣ̥] *star* with the word-final consonant cluster [ɣ̥ɣ̥] does occur, and may prove to be a consonant cluster of the nonsuspect type, but because the segments are homorganic, and fricativized, and [ɣ̥] may be considered as an offglide of [ɣ̥], it is here interpreted as a complex segment, an allophone of the dental lateral /l̥/. The alveolar lateral flap phoneme /l̥/ allophone [ɣ̥tʰ] is described as an alveolar lateral retroflex flap, with voiceless alveolar aspirated stop release, and is interpreted as a complex segment. It occurs in word-final position: [mbeɣ̥tʰ] *read*.

Nonsuspect Clusters: moɣ̥mɣ̥e [moɣ̥mɣ̥e] *They remain...* Suspect consonant clusters occur in all three word positions.

Suspect Clusters: [mba] *but* [ŋga] *name*
 [embe] *same* [eŋɣ̥ɣ̥ɪŋ] *hair*
 [ampʰ] *woman* [ontʰ] *tree*

and unprenasalized clusters such as:

[ɣ̥ɣ̥ɪmpʰ] *leg* [kaɣ̥ɣ̥ɪm] *waste*
 [kʷon] *bag* [geɣ̥tʰ] *read*

Therefore the correct interpretation of the suspect clusters, according to the theory of structural pressure used, was to interpret the consonants of these clusters as acting as one complex phoneme where they occurred.

The Psycholinguistic tests (see Section 1.2.7.) indicated that in word-initial position the informants responded to the complex phonemes: /mb/, /ŋdɣ̥/, /nd/, and /ŋg/ as one unit of sound, that is as complex phonemes, but that in word-medial and final positions they were able to perceive up to two articulated segments.

In word-initial position [mb] was heard as [ᵐb] or even as [b], but elsewhere in the word it was perceived as two segments [m] and [b], or [m] and [p], the other complex phonemes were perceived in a similar way. (By raising the nasal as in [ᵐb] I intend to indicate that it is neither perceived as a strong nasal, nor pronounced with as much emphasis as word-medial and final [mb]).

When orthographical symbolization was used to symbolize both pre-nasalization and the obstruent segment in word-initial position, the result was that the informant demonstrated his inability to pronounce the complex phonemes correctly. With such words as

/mba/ *but*, and /ndop/ *fire* symbolized as mba and ndop the informant inserted a vowel between the nasal and the obstruent and pronounced [maba] and [nadop^h]. On the other hand when such words as these were symbolized as ba and dop there was a high degree of accurate response, the informant pronouncing such words as [mba] and [ndop^h].

The following statistics, taken from Section 1.2.7. support these facts:

Complex Phonemes in Word-Initial Position

Flash Card Tests	Dictation Tests	Reading Tests
Symbol used:		
/ndz/ j 42/42	used 103 times	103/110
ns 6/42	not used	zero response
nj 10/38	not used	2 correct responses
/mb/ b 77/81	used 61 times	134/142
mp 6/42	not used	2 correct responses
mb 11/42	used 2 times	2 correct responses
/nd/ d 9/9	used 123 times	44/46
nd 21/42	used once	2 correct responses
nt 9/42	not used	not tested

/ŋg/ This phoneme was not tested in all tests and its interpretation is therefore based on the other prenasalized complex phonemes where it was tested in the Flash Card test no choice of symbolization other than g was given to the students.

In word-medial and final positions the informant showed a marked preference for symbolization which represented both the prenasalization and the obstruent, and also a symbolization which indicated that the obstruent was voiced in both of these positions. Note especially the Dictation Tests.

Statistics for these Complex Phonemes in Medial Position

Flash Card Tests	Dictation Tests	Reading Tests
Symbol used:		
/ndz/ j 53/54	used 10 times	153/166
ns 27/28	used 8 times	151/160
nj 60/63	used 91 times	92/114
	other clusters used	35 times
/mb/ b 37/45	used 15 times	163/204
mp 42/42	used 6 times	6 correct responses
mb 43/45	used 74 times	86/105
/nd/ d 45/45	used 8 times	36/39
nt 42/42	used 10 times	9 correct responses
nd 45/45	used 100 times	166/176

Statistics for these Complex Phonemes in Final Position

Flash Card Tests Dictation Tests Reading Tests'

Symbols used:

/ndz/	j	53/89	used 6 times	46/103
	ns	44/47	used 108 times	131/167
	nj	42/47	used 245 times	77/95
/mb/	b	34/45	not used	175/237
	mp	26/27	used 96 times	66/77
	mb	26/29	used 211 times	81/93
/nd/	d	29/45	used 10 times	13/19
	nt	34/39	used 73 times	16/20
	nd	39/42	used 358 times	no test

From this evidence it can be concluded that the informant preferred a single unprenasalized symbol in word-initial position, and a prenasalized symbol consisting of two segments in word-medial and final positions. It can further be concluded that he showed a preference for a voiced obstruent symbol in all three positions.

The following diagram uses the phoneme /mb/ as an example of all the the prenasalized Wahgi phonemes, and compares the preferred symbolization evidenced in the tests with those symbols used both in English and Pidgin English alphabets: (English and Pidgin have no word-initial [mb] and use [p] or [b] in that position).

Phoneme /mb/:

allophones - Word-initial [mb] medial [mb] final [mp^h] positions

Preferred
symbolization:

b mb mb

English
language
symbols

b mb/mp mb/mp

Pidgin
English
symbols

b mb/mp /m

The question arises therefore as to whether the varied response of the literate Wahgi to the complex phonemes is also indicative of the illiterate informant's response, or whether the new influence of English and Pidgin English, as taught in the schools to the literate Wahgis, has developed new phonemic responses, so that now the literate Wahgis can perceive, in certain areas of the word, the several segments of the complex phonemes?

Arguing in favour that these responses also represent those of the illiterate Wahgi I would note that English does have word-initial

consonant clusters, as found in the words 'tree', 'spy', 'crime', 'brew', etc., but this pattern has not influenced the literate Wahgi into perceiving both segments of Wahgi complex phonemes in word-initial position. Added to this is the point that when the literate Wahgi pronounces such English words as 'store', and 'stone', he tends to give to them the Wahgi pronunciation of the Pidgin English words 'ston' and 'sto', that is by inserting a vowel between the 's' and the 't': [sɪto] [sɪton].

If my conclusions are correct, and the literate's responses also indicate the illiterate's responses, and are not those of subjects merely influenced by English and Pidgin English, then it may be said that the procedures used to arrive at the original interpretation of the complex phonemes are insufficient, and fail to indicate certain important factors. That is they fail to indicate the speaker's perception of the phoneme as it occurs in diverse parts of the world.

Hjelmslev insisted that only paradigmatic relationships be regarded in discovering the relevant relations in a system Helmslev (1961:74) Dinneen (1967:337). These tests give support to this argument. To assert that phonically similar phones are allophones of the one phoneme, although they occur in different areas of the word, is to state an arbitrary assumption which may result in correct, but sometimes, also incorrect results.

This whole question is important for the following reasons: the original orthography chosen for the language represented the complex phonemes with the obstruent segment of the cluster: /mb/ symbolized as 'b' in all its distribution etc. The result was only partial failure in obtaining fluency in reading: that is some students read 'b' as [b] and [p], rather than as [mb] and [mp]. If the symbol 'mb' had been used in all word positions the tests indicate that the texts produced would have been completely unintelligible to the people because of such symbols occurring in word-initial position.

If, on the other hand, English and Pidgin English have developed new phonemic responses in the literate Wahgi, then wherever indigenes are being educated in these languages, such psycholinguistic testing procedures as indicated in this paper should play a major role in determining new alphabets for the indigenous language of those areas, or in modifying the old alphabets. In this way linguists will demonstrate that they are not ignoring the new situation which has arisen, and will avoid problems associated with attempting to force literates to use an alphabet which does not account for this new awareness.

Referring once again to the paradigmatic and syntagmatic axes within the system of language the following assertions are noted. The evidence presented here suggests that only the paradigmatic relationship is

reliable for establishing what is and what is not a phonemic contrast, that is, what is the mentalistic response of the indigenous speaker to the phones of his language, or putting it another way, what are the psychosegments used by the speaker to indicate the sound-image in his mind.

Taking /mb/ once again as a representative of the complex phonemes, it is evidence from the tests, that the Wahgi perceives this phoneme in two ways: initially as [^mb], elsewhere as [m] and [b]. The Structuralist phonological description of Wahgi indicates that in word-initial position [mb] and [mp] occur, in word-medial position both occur again, while in word-final position both occur again, while in word-final position [mp^h], and [m^h] [mp^h] occur. Therefore the Wahgi's perception of this phoneme is not an accurate or even near accurate phonic portrayal.

The general Trubetzkoy approach to establishing phonemes necessitates that contrasts must be capable of producing intellectual distinctions, and that where no such contrasts can be established the phonically similar forms be treated as either facultative phonic variants, or combinatory variants Trubetzkoy (1968:7-10). Consequently the paradigmatically phonically similar phones, referred to above, would be interpreted as facultative variants, while the syntagmatically phonically similar phones would be seen as combinatory variants.

This procedure includes the syntagmatic axis which Hjelmslev later rejected, and which the psycholinguistic tests applied to subjects in the Wahgi language have shown to be insufficient for interpreting certain phonic material.

The following questions must be answered: if the data collected represents the psychosegmental (by this I mean - the psychological reality to the speaker) responses of the Wahgi to the phonic substance of his language, then does he in fact have two prenasalised bilabial stop phonemes, irrespective of whether these two phonically related units are contrastable or not? Secondly: if this interpretation of the facts is incorrect, does the Wahgi have a single phoneme of this type in his subconsciousness, or at the form level of his language, but that this form entity, /mb/, having the phonic manifestation described above, is responded to by others at the allophone level rather than at the phoneme level, or at the diallophone level? Hammarstrom (1972:12) defines phones as 'the smallest, or shortest, segments which are produced by the speaker, single or in sequences, to contribute to forming spoken words (or lexes) and which the hearer identifies, among other things, when he understands a word (a lex).' He defines allophones in the following way: 'Phones having definite relevant 'positions', or,

said in another way, a definite distribution, and differing among themselves only through free (point two above) and facultative (point 3-5 above) variation form a set called allophones.'

Applying these definitions to the discussion in hand it is noted that /mb/ has allophones as follows: word-initially [mb],[mp], medially [mb] [mp], finally [mp^h] [mp^o] [mɸ]. (The presence of [mɸ] is doubted by myself, but has been heard by other linguists). Stratifying the relations within the allophones it is noted that word-initially the allophone [ᵐb] is exhibited by the diallophones [mb] [mp], word-medially the allophone [mb] is exhibited by the diallophones [mp] [mb], word-finally the allophone [mp^h] is exhibited by the diallophones [mp^h] [mp^o] [mɸ]. Further detailed descriptions of the genetic, gennemic, and energemic aspects of these phones would reveal other strata such as triallophones and tetrallophones.

'(a) Although the term articulation is sometimes used in such a wide sense that it includes phonation, it would not be appropriate to let it also include activities in nerves muscles and brain. If one wants to refer to a more complete account of the production of speech sounds by the speaker, the term genetic could, however, be used. (b) The term gennemic could be used in roughly the same meaning as acoustic. (c) The term energemic could include all processes involved when a hearer decodes speech sounds whereas auditory would refer exclusively to the auditory impressions.' Hammarström (1972:6-7).

From such data it would be possible to establish that the allophone [ᵐb] differs from the allophone [mb] by onset features, by degrees of length over the sequence, and by emphasis given to each segment of the sequence.

If the Wahgi is responding to the phoneme at the noncontrastable allophonic level as this data would suggest, then the orthographic representation of the phonemes should also symbolize this level and not that of the phoneme level.

Statistics from the tests have already been quoted to substantiate this line of argument with respect to the prenasalized obstruents, but the following statistics indicate that this is the case also with phonemes /t/ and /l/.

Statistics for the phoneme /l/, as it occurs in medial position.

Symbol Used	Flash Card Tests		Dictation Tests		Reading Tests	
	Sth	Nth	Sth	Nth	Sth	Nth
/l/ l	99/106	7/9	used 123	used 10	not used	
lt	19/45	3/3	used 6	not used	∅	3 correct
ld	13/24	-	used 23	not used	44/73	10/17
lr	8/19	0/6			25/53	6/24
ll	22/22	5/6			not used	
r			used 3	not used	not used	

Statistics for the phoneme /l/ as it occurs in final position.

Symbol Used	Flash Card Tests		Dictation Tests		Reading Tests	
	Sth	Nth	Sth	Nth	Sth	Nth
/l/ l	3/22	1/6	used 26	used 3	not used	
lt	62/68	5/6	used 12	used 2	13/17	-
ld	45/59	5/9	used 18	not used	3/5	-
lr	27/56	1/6	not used	not used	9/13	-
ll	12/19	4/5	not used	not used	not used	
other digraphs used			9 times	not used		

Statistics for the phoneme /t/ in word-initial position.

Symbol Used	Flash Card Tests		Dictation Tests		Reading Tests	
	Sth	Nth	Sth	Nth	Sth	Nth
/t/ r	not tested		4/14		14/78	
t	not tested		10/14		100% correct	
/t/ t	not tested		12/14 after na-		after C 100% correct	
r	not tested		2/14 after na-		100% correct except after na-, then 10/20	

An over-all summation of the tests demonstrates that the literate Wahgi perceives the alveolar lateral flap /l/ phoneme as a single segment in word-medial position, and as two segments in word-final position. They also indicate that for the phoneme /t/ the Wahgi perceives [t] in word-initial position, and word-medially after the negative prefix na-, and as the second member of a cluster (see Section 1.2.7.) but word-medially elsewhere and word-finally as [ʔ]. In other words the Wahgi is responding to allophonic differences.

The phonological description describes the alveolar lateral flap phoneme /l/ as having seven phonic variants (see Generative Phonology

section for the shared allophone [ɬ]). These are sub-grouped into allophones and diallophones in the following way: the allophone [ɬ̥] occurs in word-medial position and has the diallophones [ɬ̥] [ɬ̥̥] [ɬ̥̥̥]; the allophone [ɬ̥tʰ] occurs in word-final position and has the diallophones [ɬ̥tʰ] [ɬ̥tʰ̃] [ɬ̥̃] [ɬ̥̃d].

The phonological description further describes the phoneme /t/ as having seven phonic variants. These are subgrouped into allophones and diallophones in the following way: the allophone [t] with the diallophones [t] [d] [tʰ] and [tʷ]; the allophone [ɬ̥] with the diallophones [ɬ̥] [ɬ̥̥] [ɬ̥̃]. (See phonological description for details of distribution of these diallophones). The diallophones attributed to the allophone [ɬ̥] might be redistributed accordingly: the allophone [ɬ̥] having the diallophones [ɬ̥] [ɬ̥̥]; the allophone [ɬ̥̃] having the diallophones [ɬ̥̃] [ɬ̥̃̃].

The following list of allophones of all prenasalized obstruents and the phonemes /l/ and /t/, together with the symbolisation preferred by the Wahgi as indicated in the tests, reveal an extremely close association of allophone and symbol. (By 'preferred' is meant 'generalized from the overall results noted in Section 1.2.5.2.)

Diagram of certain Phonemes with allophones, and the Preferred Symbolisation indicated as a result of the tests:

Phoneme	Allophones			Preferred Symbolisation		
	ini	med	fin	ini	med	fin
/mb/	[^m b]	[mb]	[mp ^h]	b	mb	mb
/nd/	[ⁿ d]	[nd]	[nt ^h]	d	nd	nd
/ndz/	[ⁿ d̥z]	[nd̥z]	[n̥z]	j	nj	nj
/ŋg/	[ŋg]*			g		
/l/		[ɬ̥]	[ɬ̥tʰ]		l	lt
/t/	[t]	[ɬ̥]	[t][ɬ̥̃]	t	r/t	r

(By raising the nasal prior to the obstruent it is indicated that this nasal is less pronounced than other nasals).

*/ŋg/ was not tested in all tests because initially it caused no problems, medially in indivisible words it occurred only once, while medially in verbs prefixing na- it constituted a special problem of the nature of the /t-r/ phoneme - see page 56.

The preceding line of argument substantiates the hypothesis put forward here concerning the Wahgi's unconscious response more to the allophonic level than to the phonemic level with respect to certain phonemes, but the force of the argument is limited to word-initial and word-medial positions for prenasalised obstruents. It does not really

answer why the Wahgi prefers the above voiced indicating symbolisation for allophones which are voiceless in character in word-final position. The statistics quoted previously (page 51) supporting the above preferred symbolisation for prenasalized obstruents demonstrates that the Flash Card Tests revealed that the Wahgi would respond to either the voiced or voiceless indicating symbols, in word-final position, for instance, either mb or mp. The Reading Tests revealed a similar result. But the Dictation Test, in which a far greater number of students were tested, revealed a definite preference for the voiced indicating symbolisation, for instance mbg in this final position. There is no ready answer to this problem.

The equivalent phonic cluster in English is both phonically voiceless and also has symbolisation indicating the same: i.e. the English word 'plump' [plʌmp^h]. The English symbols mb occurring in word-final position have the phonic equivalent of [m], as seen in the word 'plumb'. The phonic segments [mp^h] do not occur in Pidgin English in word-final position, only the segment [m]. It can be concluded therefore that neither English or Pidgin English are exerting influence on the Wahgi's choice of symbolisation in this case.

Basing my thoughts on the preferred symbolisation for the prenasalized obstruents as demonstrated throughout the tests, I would put forward the following hypothesis: the Wahgi is responding to the allophonic level of Wahgi phonology, not to the phonemic nor diallophonic levels, but he shows a conclusive bias for perceiving just two of the three or more possible allophones attributable to a phoneme. One of these allophones occurs word-initially, the other word medially and finally.

1.2.3. Research Area C: Digraphical Symbolisation

The digraph as an alternate form of symbolisation in the place of a single symbol was turned to whenever a single symbol was not available. For instance in the initial analysis Wahgi evidently had two phonemes in the high frontal region: /i/ and /ɪ/; and two nasal phonemes in the dental alveolar region: /ŋ/ and /n/. The symbol 'i' was used to indicate /ɪ/, while the symbol 'ii' was used to indicate /i/. The digraph was used for /i/ firstly because its occurrence in word-final position often was stressed and therefore nonphonemically lengthened [mi:] *I am*; secondly because English often used a double symbol to represent the same sound: 'ee' as in the word 'feet', 'ea' is used in the word 'beat', etc. The symbolisation 'ee' was considered, but rejected because had it been accepted Wahgi would then exhibit a cluster of three 'e's, as in the word *se-ee* [sei] *place*, and also because of the basic phonic

correspondence signalled by symbols in the Wahgi alphabet. The symbol n was used to indicate the alveolar /n/, while the digraph ny was used to symbolize /ŋ/. Initially the symbol ñ was suggested for /n/ but rejected because of printing difficulties. ny was chosen because the dentalization of the nasal appearance, such as indicated by the symbol y. It was also chosen because it would facilitate easier typing on the average typewriter.

The occurrence of three lateral phonemes in the Southern dialect caused acute problems in the choice of suitable alphabetical symbols. The auditory properties of the dental lateral most closely approximated those of the English alveolar lateral, so the dental lateral was symbolized by the l symbol. The alveolar lateral flap in word-medial position was also similar to the English alveolar lateral and so symbolized with the symbol l, but its occurrence in word-final position had the auditory appearance of [l] plus [t^h], consequently the symbol lt was used. The velar lateral was the most difficult phoneme to symbolize. Because this phoneme had the allophone [kɭ], the kl symbol was the first symbolization used, but this was later rejected when evidence demonstrated a dialectical overlap between the Northern alveolar lateral flap phoneme, and the Southern velar lateral fricative. Principles and procedures by which I worked necessitated that the alphabet, if possible, be made suitable for the entire language. The advantages of this approach: such as one printing of all literature; the unifying effect of such an alphabet, etc. are self evident. Consequently a neutral symbol, the symbol ll was chosen. This symbol was already in use in English: in the word 'tell' (although there was no correspondence between the phonic properties indicated in the two languages); and Luzbetak had suggested the symbol in a previous work (Luzbetak 1954:13). My first impressions were that it was a suitably neutral symbol which might bridge the gap between the two dialects.

The digraph ng was chosen for the velar nasal /ŋ/ because English used this symbol for an identical phoneme: as in the word 'sing' [sɪŋ].

The following diagram demonstrates certain preferences of the Wahgi for letters by which to symbolize phonemes which had previously been symbolized by digraphs.

Diagram of Symbols chosen by the Wahgi for Phonemes which had previously been symbolized with digraphs:

Phoneme & Symbol	Flash Card			Reading			Dictation			
	ini	med	fin	ini	med	fin	ini	med	fin	
/i/ i	not occur	62/72	45/45	-	184/204	141/165	-	47/70	53/74	
	ii	24/30	25/27	-	92/97	38/46	-	1/70	7/74	
	e	"	"	-	"	"	-	22/70	8/74	
/p/ n	63/63	63/63	62/63	100%	100%	100%	100%	100%	100%	
	ny	17/27	23/27	13/24	18/23	13/20	14/60	no occurrence		
/ŋ/ ng				5/100	15/100	5/100	6/31	2/5	2/5	
							25/31	3/5	3/5	
/l/	ll	0/11	3/33	3/3	8/9	00/50	5/60			
	kl	2/33	9/19	1/3	zero					
	gl	5/11	4/11	0/3	0/3	13/19	13/44	8/26	9/15	
	k	65/68	55/57	0/12	0/9	80/81	168/168	zero	zero	44/81 84/100
	c				50/56	118/120				
	<u>k</u>	11/11	11/11	0/3	0/3					
	<u>l</u>				33/73	37/120	zero	36/36		
	g				30/45	145/168			38/81	3/100
	ʔ	7/11	20/33	3/3	8/9	23/34	89/121	43/45	135/136	
	/l/ l	99/106	3/22	7/9	1/6					123/156
lt		19/45	62/68	3/3	5/6	13/17		6/156	22/135	
ll		22/22	12/19	5/6	4/5					
r									44/135	
other digraphs									39/135	

These statistics show that the symbol i is preferred in all tests for the phoneme /i/, but that recognition of the digraph ii as the phoneme

/i/ is not out of the question. My experience in literacy work in the language, however, indicated that there was a low degree of consistency in the use of ii in writing, and in its recognition in texts. The Reading figure for i 47/70 and 53/74 is accounted for by dialect differences. This also accounts for the high occurrence of e 22/70.

The new literates had little alternative but to write the symbol n for the dental phoneme /ɲ/, however, the tests indicated that the use of n for both nasal phonemes /n/ and /ɲ/ was unproblematic.

The tests also showed that the use of the digraph ny caused recognition difficulties, particularly in word-final position. In this position the Wahgi wanted to sound the y symbol of the cluster as in the English word 'any'.

The use of the digraph ng for the velar nasal phoneme /ŋ/ proved totally unsatisfactory. The Wahgi continually pronounced it as either [n] plus [g], or simply as [n]. But since both English and Pidgin English use this digraph, the practical considerations of conforming to those alphabets dictates that it must also be used in the Wahgi alphabet, otherwise the symbol ŋ is the most suitable.

The tests demonstrated that the digraph for the velar lateral was unacceptable in both medial and final positions, and that in the Southern dialect k, c, or g, in that order, were the preferred symbolization. However, because of the dialect overlap with respect to this phoneme it was necessary to discover a symbol which when used would call forth the response of the Northern alveolar lateral flap phoneme /l/ from the people of the northern dialect, and the velar lateral phoneme /ɭ/ from the people of the southern dialect. The only symbol proved to fulfil these requirements was the symbol † or ‡. That is the lateral symbol with either a hyphen or equals symbol passing through it.

The need to avoid a symbol which indicated either the velar or alveolar places of articulation is reasonably self evident, but why † should be more successful than other symbols such as ɭ is difficult to ascertain. Possibly the symbol † to the Southern Wahgi indicates primarily the alveolar region, whereas ‡ enables him to conclude that the velar region is, in some way, being indicated.

This symbol proved to be problematic, however, when it was observed that its hand written form was very similar to the hand written t symbol as now taught in New Guinea's schools. The † symbol was usually written as † while the t symbol was taught as t. This problem was solved by writing the lateral symbol with a double stroke, or equals sign, passing through it, as in the following symbol ‡. This solution proved satisfactory.

Finally the digraph used for the phoneme /l/ in word-final position proved to be highly satisfactory, with the digraph lt being the most satisfactory symbol. In word-medial position the overall choice was for a single symbol, with a general preference for the symbol l. But some notable exceptions should be noticed. In the dictation tests the symbol r was the main choice for this phoneme in word-final position, while in the Flash Card tests the digraph ll was an alternative choice to l. It must also be borne in mind that in New Guinea the articulated response to the English and Pidgin English symbol r is either the trilled or flapped phone. To the Wahgi, therefore, the sensed double articulation of the lateral in word-final position, might easily be accommodated by the symbol r. Further to this, some dialects represented in the Tests exhibit the /t-r/ phoneme as a dialectical variant of the lateral /l/ in word-final position. These points might account for the high frequency of occurrence of the symbol r in word-final position. Because the symbol r is already being used for the /t-r/ phoneme as it occurs in certain locations, it is unable to be used for the /l/ phoneme. Equally, the total absence of ll in the dictation tests results is sufficient evidence to presume that its use for /l/ in word-medial position would not be complied with by the Wahgi. Further, the symbol ll in word-medial position often caused the enunciation of the word-final allophone [lt].

1.2.4. Some Conclusions

What has been the influence of English and or Pidgin English alphabetization on the Wahgi's choice of symbols for his alphabet? Firstly it should be noted that where a digraphical symbolization had been chosen for a sound: the phoneme, or the allophone, which he perceived as a single segment, the digraph was rejected. The English and Pidgin English symbol ng for the phoneme /ŋ/ is the most obvious example; the use of the symbols mb, nd, nj, in word-initial position and their rejection in that position are other examples. The use of the digraph gl, which has been a common form of symbolization used by Europeans in New Guinea for the velar lateral, also proved unsatisfactory.

It can be concluded therefore that education in either English or Pidgin English had not prepared the Wahgi for the use of digraphs in his own language for sounds which he perceived as a single segment. Since the subjects chosen to act in the tests represent reasonably well educated students - relative to New Guinea - it can be presumed that it would be incorrect to conclude that because a student can use these digraphs in English or Pidgin English texts he can also use them in his own language.

It would appear therefore that the student has been able to gain, from an education in English and/or Pidgin English, an appreciation of the general English phonic quality signalled by the letters of the alphabet, but that he prefers to equate these with how he perceives his own psychosegments. He is not prepared to view a symbol in an abstract way, that is, he will not view the symbol ll as the representation of the velar lateral fricative merely because the educationalist presents it to him in this way. For him the symbol ll stands for a double segment occurring in the general dental and alveolar regions of the mouth. Similarly he will not accept the idea that because the Wahgi language has the phoneme /t/ that it should be given a single symbol to represent it in the alphabet. Pike says, and I quote:

A basic phonemic assumption in linguistics is that the easiest alphabet for an illiterate native to learn to read is a phonemic one - one significant sound to each symbol, and one symbol to each significant sound. It is assumed that the essential feature of learning to read is to form a conscious or unconscious connection between an acoustic symbol and a written one. This can most readily be done when there is a one to one correspondence between spoken and written symbol. Every departure from this ideal slows down the learning process - although there is available no test to determine the amount of such interference Pike(1947:87).

Pike's highlighted part above limits the above statement to the illiterate, but I feel that the following facts should be borne in mind:

- a) the subjects chosen to undergo the tests would be considered to be semi-literate by the average Australian standard of literateness;
- b) they were also newly literate in a language other than their own;
- c) and they were in effect illiterate in their own language.

By point (a) above I mean that the student's speed of reading, and his comprehension of what he read, because of the language difficulty, would be relatively low when compared with the Australian schoolboy of similar age. By point (b) I mean that a student newly literate in a language other than his own does not produce normal phonemic responses equated with the symbols written in the text, but rather produces an approximation of what he has been taught to say. His response is further modified by interference from his own language, his ability to remember what it is he should be saying, and his ability to handle the new and often difficult pronunciation of the new language. By point (c) I mean that since little translation work into his language has been done by others apart from myself, and my own work had not come to the attention of the students in question, it is a justifiable assumption to believe that these students had read no literature in their own language.

With these three points as a background I think that Pike's statement might be studied in the light of what the tests have shown: The

tests have shown that the idea of an isomorphic correspondence between phoneme and symbol needs to be modified to an isomorphic correspondence between, on the one hand, certain phonemes and symbols, and on the other, certain allophones and symbols. Concerning departures from Pike's ideal slowing down the process of learning to read, these tests have shown that sometimes the reverse of this is the truth: that is where a one to one correspondence was maintained the readers were retarded in their ability to read the text.

English, and Pidgin English, therefore, have given to the Wahgi an awareness of the general English and Pidgin English phonic qualities which symbols stand for. Now, acutely aware of some of his own allophones, he equates the most likely available symbols to those allophones. The resultant alphabet is highly usable and satisfactory to the Wahgi, although it does not fulfil the ideal of the linguist approaching the phonology from the Structuralistic viewpoint.

W.C.E. Hammarström has pointed out that as the Wahgi literate identifies more closely with English and Pidgin English, he may reject the unusual symbol ɣ, chosen for the velar lateral fricative, in preference for the more acceptable symbol ll, or some other symbol used in English or Pidgin English. My own observations indicate that the Wahgi of the Southern dialect, will use the symbol k for the velar lateral, and the Wahgi of the Northern dialect, will use either lt or r for that dialect's variant of the velar lateral. Nevertheless for some time to come speakers of both dialects will respond to the symbol ɣ when used in text with the diaphoneme of their respective dialects.

With the exception of the symbols chosen for /j/ and /ŋ/ it is postulated that the entities symbolized represent the psychologically real sound units of the Wahgi. (For further discussion of the psychosegment see the Summary Conclusion to the phonological chapter of this monograph).

1.2.5. Alphabet and Test Results

1.2.5.1. *The Proposed Alphabet as a Result of the Tests*

Phoneme	Word Position		
	ini	med	fin
/mb/	b	mb	mb
/p/	p	p	p
/nd/	d	nd	nd
/t/	t	r/t	r
/ŋg/	g	g	
/k/	k	k	k

Phoneme	ini	med	fin
/ndz/	j	nj	nj
/s/	s	s	s
/m/	m	m	m
/n/	n	n	n
/n/	n	n	n
/ŋ/	ng	ng	ng
/l/		l	l
/l/		l	lt
/ɫ/		ɫ (ɫ)	ɫ (ɫ)
/w/	w	w	
/y/	y	y	
/i/		i	i
/ɪ/		i	i
/e/	e	e	e
/a/	a	a	a
/u/	u	u	u
/o/	o	o	o

1.2.5.2. A Brief Summary of all the Tests

This summary indicates the dominant choices made by the students in all three types of tests.

	Flash Cards			Dictation			Reading		
	ini	med	fin	ini	med	fin	ini	med	fin
/ndz/	j	nj	nj	j	nj	nj	j	nj	nj
		ns	ns					ns	ns
		j							
/mb/	b	mb	mb	b	mb	mb	b	mb	mb
		mp	mp						
/nd/	d	nd	nd	d	nd	nd	d	nd	nd
		nt	nt						
		d							
/n/	n	n	n	n	n	n	n	n	n
/ŋg/				g	g				
/t/					nat*			nat	
/i/				i	i		i	i	
Both dialects									
/l/	ɫ			k/l	k/l		ɫ	ɫ	
/l/	l	lt		l	r		lr	lr	
	ll						lt		

	Flash Cards			Dictation			Reading		
	ini	med	fin	ini	med	fin	ini	med	fin

Clusters

/lmb/	either	ɿmb		/ɿt/	either	lt			
		ɿb							
		lmb							
		lb							
/lmŋ/		ɿmŋ							

Where no definite choice was made the results have not been indicated here.

*For an explanation of nat see page 56.

It should be borne in mind when considering the tests that not all the students mentioned sat for all the words and texts used, but that extra words and new texts in different alphabets, were added to the series as new problem areas were discovered. For instance when we began testing, the problem associated with /ɿ/ was realised, but because of the dialect problem, considered to be unsolvable. However as the tests progressed it was observed that the /ɿ/ was one of the major areas of difficulty and that it should be investigated more extensively. Subsequently several extra texts were added to the series which, beside testing certain other symbols, were in the main used to test symbols for this phoneme.

The results of the tests therefore indicate the overall response of the students throughout the period of testing.

In Section 1.2.7. the areas of the highest frequency of response to the symbols used have been placed in parenthesis in order to aid the reader of this paper.

1.2.6. Materials Used in the Tests

1.2.6.1. Words Used in the Flash Card Tests

/ndʒ/	nju	name	punjin	we went	kenj	matter
	njel	another	anja	outside	kanj	I saw
	njek	mark			pinj	I knew
	nson	name	kansip	star	kens	matter
	nse	where	wansip	wander	kans	I saw
	nsi	cold			pins	I knew
	ju	name	pujin	we went	kej	matter
	jek	mark			kaj	I saw
					pij	I knew
					aj	do

/mb/	mbek	as	embe	as	amb	woman
	mbu	thought	ambuk	girl	akamb	people
	mbil	full				
	mpa	but	ampuk	girl	amp	woman
	mpi	cold	ompun	heavy		
	mpuk	book	empe	as		
	bok	fall	ebe	as	ab	woman

Others with /mb/

	mokmbe	be			pakilmbe	place
	ambikmbe	held	pilmbe	know	pilbe	know
	ambikbe	hold	pakilbe	place	mokbe	place
/nd/	ndom	he said	wonda	he will come	ond	tree
	ndum	try			bond	wrote
	ndok	frog			pund	I went
	ntok	frog	ente	a	ont	tree
	nto	hit	ontum	his tree		
	ntop	fire	puntum	shape		
	dop	fire	woda	he will come	od	tree

/ŋg/	golum					
	gal	reed	nagok	not die		
	gak	cook	nagak	not cook		
	gelt	read				
	ga nel	tear				
	gok	die				

/ŋ/	nim	you	kone tom	rain	kin	us
	nyim	you	konye tom	rain	kiny	us

/l/			aklamb	people	nokl	water
			noklum	water	ambukl	girl
			pulum	root	no l	water
					al	east
			a†amb	people	no†	water
			no†um	water	bo†	bed
			a†te	west		
			a†e	east		
			mo†mbe	be		

/!/ continued

ambi#mbe	<i>hold</i>		
mo#mnge	<i>be</i>		
aglamb	<i>people</i>	nogl	<i>water</i>
boglum	<i>bridge</i>	ambugl	<i>girl</i>
akamb	<i>people</i>	nagok	<i>not die</i>
nokum	<i>water</i>	bok	<i>bed</i>
axamb	<i>people</i>	kex	<i>send</i>
boxum	<i>bridge</i>	nex	<i>water</i>
allamb	<i>people</i>	kell	<i>send</i>
nollum	<i>water</i>	noll	<i>water</i>
mullum	<i>egg</i>	ambull	<i>girl</i>
gollum	<i>die</i>	gall	<i>cook</i>
pullum	<i>root</i>		
akamb	<i>people</i>	kek	<i>send</i>
nokum	<i>water</i>	nok	<i>water</i>
pokum	<i>root</i>	ambuk	<i>girl</i>
		nagak	<i>not cook</i>
		gak	<i>cook</i>
akamb	<i>people</i>	no ^k	<i>water</i>
a ^h amb	<i>people</i>	no ^h	<i>water</i>
agamb	<i>people</i>	nog	<i>water</i>
		gog	<i>die</i>
		ambug	<i>girl</i>
		nagag	<i>not die</i>
acamb	<i>people</i>	noc	<i>water</i>
		ambuc	<i>girl</i>
		nagoc	<i>not die</i>
		gac	<i>cook</i>
gollum	<i>reed</i>	gell	<i>read</i>
pullum	<i>root</i>	ga	<i>tear</i>
		nell	
pultum	<i>root</i>	ga	<i>tear</i>
		nelt	
goltum		gelt	<i>read</i>
gal	<i>reed</i>		
puldum	<i>root</i>	ga	<i>tear</i>
		neld	

/!/

/l/ continued	golum		reed	geld	read
	gal				
	pulum		root	gel	read
	golum		reed	ga nel	tear
	gal				
	golrum		reed	gelr	read
	pulrum		root	ga	tear
				nelr	
				belr	read
				gel	read

			bel	read
--	--	--	-----	------

1.2.6.2. Words Used in the Dictation Tests

/ɲ/	ɲim	you				
	eɲe	sun				
	mokiɲe	food				
	kiɲ	us				
/ɲdʒ/	kiɲjin	us	pɪns	I knew		
	punjin	we go	kans	I saw		
	nju	a name	ans	matter		
	kenj	matter	anja	outside		
	tomɪns	post				
	njɪmbil	place				
/mb/	amb	woman				
	omb	sugar				
	mba	but				
	mbok	fall				
	embe	as				
	nombuɭ	we eat				
/nd/	ndop	fire	tonda	I will	ond	wood
	ndonum	burning		hit	tond	I hit
			ende	a		
			wonda	he will		
				come		
/i/	yi	man	mi	I am	pimamni	many
	mim	he is	nipim	he said		
/l/	ɲgel	read	pulum	root		
	ɲgolum	reed	mbelndil	read		
	mbel	read	ga nel	tear		

/l/	no! water a!amb people nga! cook
	nga!e cook ku!a! a place na! child
/ŋ/	ku!aŋ spear ŋaŋ young man
	ŋa! child aŋanan my brother
/t/	natonam do not hit
/ŋg/	naŋga] do not cook
	naŋgor I am not dying
	ŋgor I am dying

Clusters used.

mo!mbe	he is	konŋan	work
paki!mbe	place	mo!mŋe	they are
mo!mbi!	they are		

1.2.6.3. *The Texts Used in the Reading Tests*

(The underlined letter in all tests except Test 9 indicate the letter being tested, in Test 9 it indicates both the letter being tested and the symbol i.e. underlined lateral l).

Text 1. This text does not contrast i/ii, n/ny, and uses t word-initially.

Ju elim angip yi l2 pela wi tonge, elim mom kone wojip. Wominge, yi tall ni eri kone yem yem allab mojip kone ni kem. Kellbe, "Na er kere, enim pu kipe kes kubullang moram allab el er ori keram.

Pi enim punam el apull eri abill si punam.

Yap pore pore mokine na, kon na, ku moni na, na sinam.

Kon tuall edi eri sib, sib su sib, er si punam.

Punabe, allab pede mollub, 'enim ele nawonam.

Kin enim yu napisamin,' pa nijip ken, enim 'Kell punamin,' ni enam. Erib, sib tol kibak ni mokil sekellib, kell punam.

Ebe enabe, allab buse pilib, 'Ju angip kem yi ya ele, 'Ma,' ni enim,' ni pisam," pa nipim.

Ninge, enim enim pu ori allab mojip kone kangip to ninam.

Nib, kipe kes pore pore kubullang mom allab er sekellib, kes erim allab kopungum ka wei ngob, er ka ejip.

Text 2. This text uses the original alphabet used. That is it uses contrastive symbolization for all phonemes, but does not use prenasalization.

Ju ala ebe nyim, "Ya opii kunum allab el allab na bell miim? Na bu se pis. Allab make rojip kunum ngall pu ngall jel keny ebe

nyijip, 'Kiny enyim keny gising rojin ba, enyim gol naesim. Naenabe, kiny enim keny ga ejin ba, enyim kiny keny ga naejip.' Nyijip bell el, ya allabe ebe miim. Jon allab noll pangim yii wom. Mokinye beres na noll dongal namom ba, enim, 'Jon kiipe miim,' pa nyijip. Na yii ngall ya wob, noll na mokinye nod ba, enyim mollub, 'Yii el mokine dang no numan wile pum pii. Ku rakis siirangjip allab na yap kes erangjip allab se nom yii miim.

Text 3. This text uses the alphabet of Text 1, but introduces the use of prenasalization of obstruents in medial and final positions.

Se nonjino. Enim allamp ken kilal nagoram. Allamp wo enim ngans eri to goram. Yap jel naenam. Ju elim ngans to gollmbe, minman dopang kera, pa'im el, na mung ni enim ngont. Pilimp, elim ken kilal goram. Kai winu pimamni kes mim ba, endi ende pu tai pundan elpunde, Ju elim aure nandom. Enim bu se pilimp, 'kai winu el yap kisi, kinjin yap wei mimin, 'ni pil kilal nagosim. Enim peng enjin pimamni kes borum ba, Ju elim gelt kanim.

Text 4. This text uses the alphabet of Text 3, but replaces nt, mp, ns with nd, mb, nj.

Yi nom ende ku moni pimamni sem. Senge, kunum kunum kon konull ka eri erangim. Ermbe, mokine ka eri pimamni kes norangim. No mom kone elim gar dallming ya mallang yap nasem yi ende mom. Mom yi el elim nganjim kanj pimamni kes tom. Tom yi el, elim kangum Enj. Elim mollmbe, 'yi nom mokine bollang boi ni mene pum en aper nonal, 'mi er mom en, tu pende womb, elim kisingamb pen to nonjip. Enim enim angam angam kanimb moram. Morambe, anganjip yi ende yap kes er nim ken, enim mollumb, 'Nim embe naendil, 'pa ninambe, elim, 'Na kaimb gar, 'pa ni nim ken, elim endan yap el enim aure ninam, 'pa nim.

Text 5. This text uses the alphabet of Text 4, but replaces ll with c.

Yi ende mocmbe, Ju mokine nondil, pa. Ninge, Ju pu elim gar gakring pu bocang ame ni mom. Mocnge, amb ende moc pim en, elim pu ambuc mom kone embe nim, Nim pu aka gac, a nim. Ninge, ambuc pu ac garing aka gam, Gacmbe, aka tu amb tua ngom. Amb en noc sip si Ju ngom. Ju elim noc el na aka pende si yi ende ngom. Ngombe, elip elip tap to nonjic. Nombuc, Ju embe nim, 'Na pi kec wuc punal, pa nim.

Text 6. This text uses the alphabet of Text 4 but replaces ll with g.

Agamb make to monjip kone ambug tag tuage mog mbug, wi to kawa ni embe ninjig, Nim manim ka wei. Nim ngag ka wei kangig nom. Nombe,

elim kumbug ka wei sim, pa nim. Ninge, agamb mogumb, Nim Yi ka. Nim agamb bug bag ngonun. Agamb yem yem wug ag pore nim kangum ambug si mine kesim. Nim yi wugma wei min, pa ninjip. Ni pore nim kunum el yi nom en agamb enim enim gar yem kem.

Text 7. This text uses the alphabet of Text 4, but replaces ll with k.

Yi tak wonjk. Wombuk, embe ninjk, 'Akamb kombo, pisam. Kil yek ak pu akamb ken embe ninjk, 'Enim ala yi amb kukang naroya. Kisi moka. Yem yem akamb, wuk ak pa mim akamb embe moram, ' pa ni pa ninjk. Nimbk, pi ak mene sekekmbk, ya wonjk. Wombuk enim ken embe ninambk, 'Enim akamb kukang naronam, 'pa ninjk. Ni pore ninjk, yi tak kek wuk mene punjk.

Text 8. This text uses the alphabet of Text 4, but replaces ll with ʒ, and uses t medially after na-.

Yi taʒ wonjiʒ. Wombuʒ, embe ninjiʒ, Aʒamb kombo, pisam. Kil yek aʒ pu aʒamb ken embe ninjiʒ, Enim ala yi amb kuʒang naʒoya. Yem yem aʒamb, wuʒ aʒ pa nim aʒamb embe moram, pa ni embe ninjiʒ. Nimbʒ, pi aʒ mene sekeʒmbʒ, ya wonjiʒ. Wombuʒ, enim ken embe ninambʒ, Enim aʒamb kuʒang naʒonam, pa ninjiʒ. Ni pore ninjiʒ, yi taʒ keʒ wuʒ mene punjiʒ.

Text 9. This text uses the alphabet of Text 4, but replaces ll with l. This underlined symbol is the symbol tested in this text.

Alamb make to monjip kone ambul tal tuale molmbul, wi to kawa ni embe ninjil, Nim manim ka wei. Nim ngal ka wei kangil nom. Nombe, elim kumbul ka wei sim, pa nim. Ninge, alamb molumb, Nim yi wulma wei min, pa ninjip. Ni pore nim kunum el yi nom en alamb enim gar yem kem.

Text 10. This text uses the basic alphabet of Text 4, but replaces ll with x, and introduces the symbols d-, n-, r-, and -lt-, -naru-, and -j, -x, and uses no prenasalization.

Ya tax mojix, ede kangum Ej, ede Pultum. Moxbux, dei ede pu runabux, pa nijix ba, yi ede, Ej kin ebe nim, Ma, dei ede runarudil, pa, Pultum kin ebe nim, Nim dei rudil, kaj kin, na popux si elip runal, pa nim. Yi tax yu el pilbix, kex pujix.

Text 11. This text uses the basic alphabet of Text 4, but replaces ll with gl, and introduces the symbols: nd-, nj-, mb-, and -ld-gl-, and -gl, -l, -nd.

Ndok na ngunj kone ende moglbugl embe ninjigl. Ndok moglmbe, Nim ond puldum kaninmo ma? a nim. Ngunj molmbe, Ond puldum nje sim? a nim. Ndok moglmbe, yemʔo mbogl mande sim puldum, pa nim, ngunj

moglmbe, pil el na kanj pa nagl pa ndon? ndok moglmbe. Ond puldum el kamb walpe gar ende sim. Kil pu kanambigl, pa nim.

Text 12. This text uses the basic alphabet of Text 4, but replaces ll with l, and introduces the symbols: nt-, ns-, mp-, and -lr-, -nt-, -mp-, -ns-, -l-, and -l, -lr.

Kil ntansil pore yu pulrum el napinsil, mpa, ampim yu pulrum pinsip. Pinsip wo kin yu pulrum tan to ninsip. Pi pisil. Pinsip amp pi nse mim? Pi wulte amp ente mim. Molmpe, yek nim yu alamp empe tan tonta pum. Aling nsisas wonta kin pore pulrum pisamin.

Text 13. This text uses the basic alphabet of Text 4, but replaces ll with ł (that is lateral plus the hyphen passing through it), and uses the t symbol shaped as †.

Yi †ał monjuł, ende kangum Enj, ende Pulum. Mołmbuł, dei ende pu †unambuł, pa ninjił, ba, yi ende, Enj ken embe nim, Ma, dei ende †u na†undil, pa, Pulum ken embe nim, Nim dei †undil, Kanj ken, na popuł si elip †onal, pa nim. Yi †ał yu el pilmbił, keł punjił.

1.2.7. Results of Tests

1.2.7.1. Results of Flash Card Tests

(Parenthesis indicates area of highest frequency of response).

Phoneme	Symbol used and Position in Word				
		ini	med	fin	
/ndz/	nj	10/38	(60/63)	(42/47)	
	ns	6/42	(27/28)	(44/47)	
	j	(42/42)	(53/54)	53/89	
/mb/	mb	11/42	(43/45)	26/29	
	mp	6/42	(42/42)	26/27	
	b	(77/81)	37/45	34/45	
/nd/	nd	21/42	(45/45)	(39/42)	
	nt	9/42	(42/42)	(34/39)	
	d	(9/9)	(45/45)	29/45	
		Sth. Dia.		Nth. Dia.	
		med	fin	med	fin
/l/	k	(65/68)	(55/57)	0/12	0/9
	kl	2/33	9/19	1/3	
	g	4/8	(43/47)		3/12
	c	(17/19)	5/8	1/3	1/3
	l		4/9		(3/3)
	ł	(7/11)	20/33	(3/3)	(8/9)

	Stn. Dia.		Nth. Dia.	
	med	fin	med	fin
g l	5/11	4/11	0/3	0/3
<u>k</u>	(11/11)	(11/11)	0/3	0/3
x	(7/7)	5/7	0/3	0/3
l l	0/11	3/33	(3/3)	(8/9)
<u>ʃ</u>	(3/3)	(3/3)	(3/3)	(3/3)
ʌ	0/2	0/3	1/3	1/3
/l/ l	(99/106)	3/22	7/9	1/6
lt	19/45	(62/68)	3/3	(5/6)
ld	13/24	45/59		5/9
lr	8/19	27/56	0/6	1/6
ll	(22/22)	12/19	5/6	(4/5)
/ɹ/	ini	med	fin	
n	(63/63)	(63/63)	(62/63)	
ny	17/27	23/27	13/24	

Clusters

	med
/ɹmb/ ɹmb	(21/25)
ɹb	(24/24)
lmb	(24/24)
lb	(24/28)
/ɹmŋ/ ɹmŋ	0/10
ɹmiŋ	(4/4)

Vowels

	med	fin
/i/ i	62/72	45/45
ii	24/30	25/27

1.2.7.2. Results of Dictation Tests

Phoneme	Position	Symbol used and number of times used
/mb/	Initial	b(61), mb 2,
	Medial	b15, mb(74), mp6, ml.
	Final	mb(211), mp96
/nd/	Initial	d(123), nd1, t4,
	Medial	d8, nd(100), nt10,
	Final	d10, nd(358), nt73, nl, nsl,
/ŋg/	Initial	g(100%),
	Medial	g(40), ŋl.
		Medially after na- (negative prefix) g(20), ŋg2,

Phoneme	Position	Symbol used and number of times used
/ndz/	Initial	j(103), g2, z4, d8, s6, t3,
	Medial	j10, nj(91), ns8, nd3, nz1, nt13, ng18,
	Final	j6, nj(245), ns108, z2, nt5, nz5, njs6, ncl, ng4, s7,
/n/		In all positions written as (n).
/ŋ/	Initial	ng6, n(25),
	Medial	ng2, n(3), gl,
	Final	ng2, n(3),
/t/	Initial	r4, t(10),
	Medially	after na- (negative prefix) t(12), r2,
/l/	Medial	g36, k(44), ll Sthn dialect
		g4, k2, l(6), r2 Nthn dialect
		g(5), k(5), Over 25y
	Final	g3, k(84), l6, gkl, cl2, c4,
		gl, k4, l(8), lel, Nthn dialect
	k(9), ll, gkl, Over 25y	
/l/	Medial	l(123), r3, ld23, lt6, Sthn dialect
		rd1, Nthn dialect
	Final	l(10), Nthn dialect
		126, r(43), ld28, lt22, Sthn dialect
	t3, ln2, rd3, rt2, rll, rn1, k2, l3, 3(8), lt2, Nthn dialect	
/i/	Medial	i(47), e22, (dialect) iil,
	Final	i(53), e8, (dialect), ii7, ee6,

Clusters investigated

/lnd/	Medial	rnd3, rd2, ld4, nd1, Sthn dialect
		ld2, lt1, lj1, nd2 Nthn dialect
/lt/	Medial	lt7, kt3, l(9), k3, Sthn dialect
		lt1, ld3, l(4), nd1, Nthn dialect
/lmb/	Medial	kmb3, kimb3, kamb1, Sthn dialect
		lmb1, kb(12), lb3, sb1, lb1, Nthn dialect
		gmb1, lmb1, kbl, lb1 Over 25y
/lmg/	Medial	km(7), kim1, knl, nm2, Sthn dialect
		knml, ln1, Nthn dialect
		lm1, Over 25y
		kml, gmng1, lml, ll,

/kɪsmb/	Medial	ksb1, kesb2, kelb1, klb1, sebl, Sthn. dialect lmb1, klmb2, gsbl, klb1	Over 25y
/nŋ/	Medial	ng(14), nn5, nkl, n12, g2, ng3, nnl, ngn2, nl,	Sthn. dialect Over 25y

All statistics dealing with responses from persons over 25 years are not included in those statistics inserted in the body of this chapter.

1.2.7.3. Results of the Reading Tests

Phoneme	Symbol & Position	Articulated Response	25 years		
			25 years	Sth Dia	Nth Dia
/ndz/	nj-	nVnj	1	6	
		∅	1		
		Vnj		5	1
		nj		4	1
		nje			1
		ne			1
	-nj-	nj		(92/114)	
	-nj	nj		(77/95)	
	j-	s	3		
		j		(103/110)	10
		nj	6	21	1
		∅	1	5	
		nd		1	
		n		1	
		-j	ns	26	
		s	10		
		wron	10		
		l	2		
		nd	1		
		n	1		
	-j-	nj	(153/156)		
-ns-	nj	7	(151/160)	20	
	s	3	11	2	
	∅	1	3	2	
-ns	ns		(131/167)		
ns-	n	2			
	nans	1			
	∅	2	1		

Phoneme	Symbol & Position	Articulated Response				
		25 years	Sth Dia	Nth Dia		
/ndz/ contd.		send		1		
		nVs	5	3		
		s		3		
/nd/	nt-	nVc	(11)	(10)	6	
		nd		4	1	
		nV			1	
		Vn			1	
		∅			1	
	-nt-	nd	5	9		
		∅	1			
	-nt	nt	(16/20)			
	-nd	no test				
	nd-	nVd	6	1		
		nVnd	3	(20)	6	
		nV	3	4	2	
		nd	1	2	5	
		nok		6		
		∅		2		
		ndVn		2		
		-nd-	nd		(166/176)	
		-d	nt		13/19	
		d-	nd	9	(44/46)	12
	end			4		
	-d-	nd		36/39		
	/mb/	b-	mb		(134/142)	
		mb-	mV	2	6	6
			mb		163/204	
		mb-	mb		2	
		-b	mp		175/237	
		mb-	∅	1		1
		mb-	amb			1
		-mb	mb	(81/93)		
mp-		mb	2	6		
		mV		3	4	
-mp		mb	4	(66/77)	8	
-mp-		mb	5	6	9	
		mVc	2	3		
		mV			1	
		∅			1	

Phoneme	Symbol & Position	Articulated Response		
		25 years	Sth Dia	Nth Dia
/mb/ contd.				
	lmp	l	2	3
		p		1
				∅
	-mb-	mb		(86/105)
/ɱ/	n	n		
	all positions	total		(total)
	-ny-			13/20
	-ny			14/60
	ny-			21/26
/nat-/	nar	t	2	21
		r		3
		∅	1	2
		nd		3
/t/	t-		(100%)	(100%)
	r-	t	10	14
		∅	2	26
		r		26
	nat-	t		6
/l/	Velar	ɬ	(50)	(23)
	lateral	l	1	12
	-ɬ-	∅	2	1
		r		1
	naɬ	ɬ	4	4
	-ɬ	ɬ	(137)	(89)
		l	9+1 18	31 k 1
		p	3+2	1
		∅	6	
	-l-	ɬ	(11)	33
		l	2	(36)
		∅	8	4
	-l	ɬ	(32)	37
		l	11	(70)
		∅	7	8
		p	3	4
		s		
	-x-	ɬ	5	5
		s		2
		ks		1
		k		1
		l		1

Phoneme	Symbol & Position	Articulated Response				
		25 years	Sth Dia	Nth Dia		
/l/ contd.						
	-x	ɫ	(22)	(52)	8	
		∅	5	10		
		s		24	1	
		ks		18	3	
		r		1		
		l		4	(12)	
	-l	ɫ	1	5	!	2
		l	2	13	!	4
		∅	1			
	-l-	ɫ		1		1
		l	2	3		2
		lr		3	!	4
	-gl-	gel	3			
		l	6	13		6
		g-l	2	5		12
		kl		1	!	8
		∅	3			
	-gl	ɫ	7	13	!	9
		l	2	15		
		g-l	1	3		
		gel	1		g!	5
		p		2		
		∅	2	1	no	1
	-c-	!		50/56		
	-c	!		118/120		
	-g-	!/k		30/45		
	-g	!/k		145/168		
	-ll-	l-l		50/50		
	-ll	lal		55/60		
	-k-	!/k		80/81		
	-k	!/k		168/168		
	-lr-	l	3	(25)		6
		lr	3	13		(7)
		l	2	3		4
		lt		6		6
		∅		6		2
	-lt-	l	1		!	(3)
		lt	2	1		1
		∅		1		
/l/ Alveolar lateral flap						

Phoneme	Symbol & Position	Articulated Response		
		25 years	Sth Dia	Nth Dia
/l/ contd.				
	-lt	y l	(13/17)	
	-ld-	y l	9	29
		l-d	22	23
		ø	5	6
	-ld	y l		12
		ø		3
		l		7
		g-l		
				6
				1
/i/	-i-	i	(184/204)	
	-i	i	(141/165)	
	-ii	i	38/46	
	-ii-	i	92/97	

1.3. SUMMARY CONCLUSION TO THE PHONOLOGY SECTION

The psycholinguistic approach gives weight to the argument that the phonemes of the structuralist analysis do not always represent the psychologically real sound entities of the language, but are units which result from the application of mechanical rules and procedures. These phonemes must always be relatable to the phonic data observable in the language. They are in fact units which may be arrived at by linguists who are nonspeakers of the language who need only determine the phonic similarity of phones and whether or not the signalled meaning of the compared words is the same or different.

The synthesis approach towards phonology, as described by Chomsky and Halle, unlike the analytic approach described above, arrives at the distinctive features of a language by subtracting all phonological features which might be predicted by rule, or by the modification of the underlying representation of forms to conform to those rules. There is a clear understanding by the users of this method that the underlying representation of the forms as represented by the distinctive features is not equatable to the phonics of the language, and may not be accessible to speakers of the language. Nevertheless as the segments pass through the phonological component Chomsky and Halle refer to a further level of representation, the phonic representation. This level consists of both distinctive and nondistinctive features, but which although being accessible to speakers of the language is not accessible to non-native speakers.

When discussing the reality of phonic representation, with reference to English stress, Chomsky and Halle say:

...a speaker...should 'hear' the stress contour of the utterance that he perceives and understands, whether or not it is physically present in any detail. In fact, there is no evidence from experimental phonetics to suggest that the contours are actually present as physical properties of utterances in anything like the detail with which they are perceived. Accordingly there seems to be no reason to suppose that a well-trained phonetician could detect such contours with any reliability or precision in a language that he does not know, a language for which he cannot determine the surface structure of utterances.

Chomsky and Halle fail us, however, in that they do not provide a method by which nonspeakers can discover this level which is phonically real to speakers. The structuralist approach is not satisfactory since it is always relatable to the phonic data. It would appear that the only way open to the linguist is through native intuition.

The tests, as presented in the section dealing with the psycholinguistic approach to the phonology, enable the linguist, the nonspeaker, to discover this crucial level of phonic representation. The units which are thereby discovered are referred to as the 'psycho-segments' because they are both psychologically real to the speakers, and while being segmentable from the linear sequence of speech, are not always relatable to the phonics of the utterance. For example the Wahgi perceives the psychosegment =t= (the equals symbol is used to indicate the psychosegment) after the negative na-, when in fact the phone (r) occurs--as in the word (naro) *do not hit*. He perceives the psychosegment =b= in word-initial position when the phones (m) and (b) occur, as in (mba) *but*.

Although the structuralist approach may arrive at sound units which are equatable to the psychosegments, they are not the same. As stated above, the phoneme is discoverable by a set of procedures applied to the phonics of the language, while the psychosegments are discoverable only from the responses of the speakers to the stimuli which they have been subjected.

It is the psychosegmental level, or according to Chomsky and Halle, the level of 'phonetic reality' which should be symbolized in the alphabet for the language. It is possibly the main level of reality

By way of comparison it should be noted that one psychosegment might cover the same phonic units attributable to two low function phonemes. For instance the psychosegment =i= includes both /i/ and /ɪ/ phonemes in Wahgi. On the other hand one phoneme might cover the units attributable to two psychosegments. For instance the phoneme /nd/ covers the psychosegments =d= and =nd=. Nevertheless the phoneme /m/ is fully equatable to the psychosegment =m=, as is the phoneme /s/ to the psychosegment =s=.

With reference to the proposed alphabet for the Wahgi language, it should be borne in mind that although most of the symbols represent the

psychosegments, those used for the phonemes /l/ and /ŋ/ do not. As noted in the psycholinguistic section, the symbols chosen are the result of dialect and national language considerations.

2. SECTION 2

WAHGI MORPHOLOGY

2.0. INTRODUCTION TO THE MORPHOLOGY SECTION

In order to demonstrate the full scope and usage of Wahgi morphology it has been necessary to describe all word and phrase types which occur. This description is based primarily on the Tagmemic model as described by Dr. Longacre in his *Grammar Discovery Procedures*, but despite a full discussion of the formal features involved, in some areas of the description I have used meaning in a fuller way than Longacre intended it to be used.

The alphabetical symbolization used throughout the rest of the paper is as stated in Section 1.2.5.1. in Part 1.2. of this thesis, that is, the alphabet which has been proposed as a result of the psycholinguistic tests.

2.1. CONSTRUCTION AND USAGE OF WAHGI VERBS

2.1.0. Introduction

The description of the verb in the Wahgi language constitutes by far the major part of the grammar, and the verb is in fact the only obligatory item in a clause.

Before this present research was undertaken Dr. Luzbetak had studied the Wahgi language and produced a grammatical description of the language which included a section about the verb, however, his description was said to be incomplete, and was aimed at serving both the layman and the linguist. It was issued in a mimeographed volume. In this present work I have sought to be more detailed in the description of the verb, and to aim at giving the linguist an insight into its behaviour.

More recently S. Wurm has briefly recorded some of his conclusions concerning Wahgi.¹

Dichotomies:

There are five major dichotomous divisions in the Wahgi verb system. These are (1) Transitive and Intransitive Verbs; (2) Simple and Complex Verbs; (3) Indicative and Imperative Verbs; (4) Dependent and Independent Verbs; (5) Dependent Secondary and Dependent Primary Verbs.

The verb is inflected to indicate the Absolute Completive (a, b and c), the Completive, the Continuative, the Potential, the Habitative

and the Similitude aspects. The Desiderative, Purposive, Durative, and Punctiliar aspects are indicated by combinations of verbs.

2.1.0.0. Discussion of Verbs and Verb Classes

2.1.0.1. Verb Classes

Each verb stem is classified according to the Class-Marker morpheme (CM) which is suffixed to its stem. There are seven such classes of verb stems. Each Class-Marker has several allomorphs.

Matrices 1a and 1b demonstrate these allomorphs and where they occur.

It is suggested that if the Class-Marker allomorph used with the second person singular of the Emphatic Command, and the Class-Marker allomorph used with the first person singular of the Continuative Aspect of the Simple Verb are known, then the class of the stem can be identified unambiguously. These particular Class-Marker allomorphs are demonstrated under Reference Numbers 1 and 2 in Matrix 1a.

The following suggestions are given for using Matrices 1a and 1b. If only one form of the verb is known, one may ascertain the classes to which the stem could possibly belong, by tracing its aspect and Person-Number under the section entitled Verb Inflection of Matrix 1a and by comparing the segment following the stem with those Class-Marker morphemes shown on that particular line. But since some of the Class-Marker morphemes for certain classes are identical, it is essential that two or more forms of the verb be known to identify its class with certainty. If possible the second person singular of the Emphatic Command and first person singular of the Continuative aspect should be elicited, then by comparing the segment following the stem with those Class-Marker morphemes indicated under Reference Numbers 1 and 2 of Matrix 1a the particular class of the verb can be determined.

MATRICES

Matrix 1a. Class-Marker morphemes and their allomorphs. These are shown inside double lines.

Ref. No.	Verb Inflection	Class of Verb Stem and Typical Stem						
		A no	B go	C pi	D ka	E e	F pa	G mo
1.	Emp Com; Cf ^a ; Gr Com; S-Sub; D-Sub-P; D-Sub ldl; lpl and Imp; H(Req ldl & lpl); H(Cf ^b ldl & lpl); ACc pl; SV; CFC	∅	-i	-l	-n	-r	∅	-i

Matrix 1a. contd.

Ref. No.	Verb Inflection	Class of Verb Stem and Typical Stem						
		A no	B go	C pi	D ka	E e	F pa	G mo
2.	Ct. 1sg	∅	-r	-s	-nj	-r	-i	∅
3.	D-sub 3sg	-nd	-r	-s	-nj	-nd	-nd	-r
4.	Ct 2sg & 3sg	-n	-r	-s	-n	-n	-i	∅
5.	H(Req 3sg, Cf ^b 3sg); P 2sg, 3sg.	-nd	-r	-s	-n	-nd	-nd	-r
6.	P 1sg dl pl; H(Req 1sg 3dl 3pl), Cf ^b 1sg, 3dl, 3pl; D-sub 1sg, 2dl, 2pl, 3dl, 3pl.	-n	-r	-s	-n	-n	-n	-r
7.	Ct, dl, pl	∅	-s	-s	-n	-s	-i	-∅
8.	ACa sg & pl.	∅	∅	∅	-nd	∅	∅	∅
9.	ACa dl.	∅	∅	∅	-n	∅	∅	∅
10.	C sg.	∅	∅	∅	∅	-r	∅	∅
11.	C dl & pl.	∅	∅	∅	∅	∅	∅	∅
12.	ACb sg.	∅	∅	∅	-n	-r	∅	∅
13.	ACb pl.	∅	-ʔ	-l	-n/nd-r	∅	∅	-ʔ
14.	ACc sg.	∅	-ʔ	∅	∅	-r	∅	-ʔ

See list of abbreviations.

Matrix 1b. Verb Inflections and their classification into types using the reference numbers of Matrix 1a.

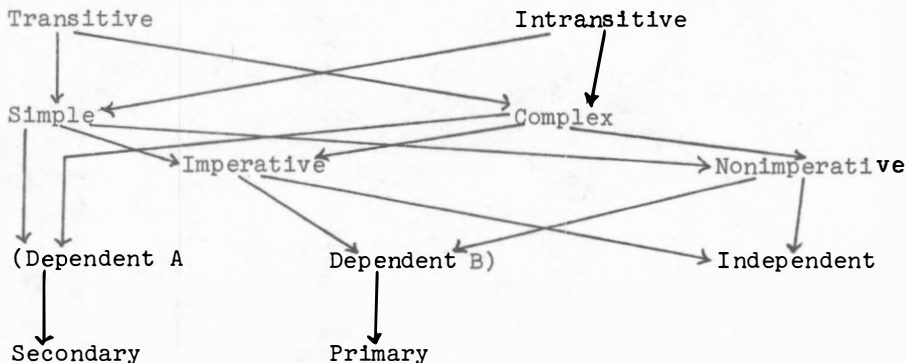
Verb Inflection Category	PERSON-NUMBER								
	Sg: 1	2	3	Dl: 1	2	3	Pl: 1	2	3
ACa	8	8	8	9	9	9	8	8	8
C	10	10	10	11	11	11	11	11	11
Ct	2	4	4	7	7	7	7	7	7
P	6	5	5	6	6	6	6	6	6
SV	1	1	1	1	1	1	1	1	1
S-Sub	1	1	1	1	1	1	1	1	1
D-Sub-P	1	1	1	1	1	1	1	1	1
D-Sub	6	-	3	1	6	6	1	6	6
D-Sub Imp	1	1	1	1	1	1	1	1	1
CFC	1	1	1	1	1	1	1	1	1
Emp Com	-	1	-	-	1	-	-	1	-
(H) Req	6	-	5	1	-	6	1	-	6
Cf ² Com	-	1	-	-	1	-	-	1	-
(H) Cf ^b Com	6	-	5	1	-	6	1	-	6
Gr Com	1	1	1	1	1	1	1	1	1
ACb	12	12	12	13	13	13	13	13	13
ACc	14	14	14	1	1	1	1	1	1

Matrix 1b is given to enable the reader to more readily discover in Matrix 1a the appropriate Class-Marker for a particular aspect and Person-Number of a verb. Both the verb inflection category and the Person-Number are listed. Should the reader desire to know where in Matrix 1a he can find the correct Class-Marker morpheme for the second person dual of the Different-Subject (D-Sub) dependent form of a verb, then under 'Verb Inflection Category' he finds that section marked D-Sub, and under that section marked Person-Number he finds the second person dual. These two references are then traced until they meet on the chart. In this case they will meet at the number 6. This six is the reference number which refers to Matrix 1a, and at the right of that reference number in Matrix 1a the reader will find Class-Marker morphemes which are suffixed to verb stems of the various classes for that particular inflectional category.

To assist the reader further in gaining a knowledge of the different classes of the verb a list of ninety-four Simple Verbs, listed under their respective classes, has been given in Section 2.1.6. Each verb has been listed in both the second person singular of the Emphatic Command, and the first person singular of the Continuative aspect of the verb. Although this list is not exhaustive it is felt that there are few other Simple Verbs to be found in the language. Where only one form of the verb is used, these verbs are inflected only for third person singular.

The paradigms given in this paper use verb stems which illustrate only the three largest classes: class A, *no eat*, class B, *go die*; class C, *pi hear*.

DIAGRAM 1:
THE FIVE DICHOTOMIES OF THE VERB SYSTEM AND RELATIONS EXISTING
BETWEEN THEM



Discussion

Dichotomous relationships exist between items standing on the same line, while a flow-on relationship exists between items which are connected by the arrows: in other words Transitive verbs might be Complex verbs; - Dependent verbs; - and Secondary verbs, and so on.

Although Dependent verbs are divided into two sub-sections, Dependent verbs as a whole have a dichotomous relation to Independent verbs. This is indicated by the brackets (...).

The diagram therefore demonstrates that a dichotomous division exists between Transitive and Intransitive Verbs, between Simple and Complex Verbs, between Imperative and Non-imperative Verbs, between Dependent and Independent Verbs, and between Secondary and Primary Verbs. It further indicates that all Transitive or Intransitive Verbs may be Simple or Complex Verbs, that all Simple or Complex Verbs may be either Imperative or Nonimperative Verbs, that all Imperative or Nonimperative Verbs may be either Dependent or Independent Verbs. It further shows that there are two types of Dependent Verbs: Secondary and Primary. Secondary Verbs are either Simple or Complex Verbs, while Primary Verbs are either Imperative or Nonimperative.

2.1.0.2. *Transitive and Intransitive Verbs*

Verbs which potentially or obligatorily occur with an object are Transitive Verbs, and verbs which never occur with an object are Intransitive Verbs.

Transitive Verb:	nim to-nd	<i>I hit you</i>
	<i>you hit-lsg</i>	
Intransitive Verb:	wo-n	<i>You came</i>
	<i>come-2sg</i>	

2.1.0.3. *Simple and Complex Verbs*

The Complex Verb differs from the Simple Verb only in that the Complex Verb consists of two or three forms which combine to fill the head slot of the Verb Phrase, whereas the Simple Verb consists of one free form filling this same slot. All the forms of the verb discussed in Sections 2.1.2. - 2.1.3. will be illustrated with Simple Verbs. The Complex Verb will be discussed in Section 2.1.4.

2.1.0.4. *Imperative and Nonimperative Verbs*

Imperative Verbs are discussed under Section 2.1.2., while Non-imperative Verbs are discussed under Section 2.1.1. Imperative Verbs are used on the one hand to address first and third persons (H), and

on the other, to address second person (Com). Nonimperative Verbs are used to address all persons.

2.1.0.5. *Dependent and Independent Verbs*

The Dependent (Dep) and Independent (Ind) forms of the verbs contrast with each other in the following ways: (i) by Distribution, and (ii) by Form.

(i) Distribution

(a) An Independent form of the verb usually fills the predicate of a sentence final clause.

na pu-nd	<i>I went</i>
<i>I go-lsg</i>	

Dependent forms of the verb always occur filling the predicate of a sentence medial clause.

Med Cl.	
na pu-mb, mokine no-nd	<i>I went and ate food</i>
<i>I go-lsg food eat-lsg</i>	

Independent forms of the verb may fill the predicates of sentence medial clauses which are connected by conjunctions and which exhibit a dependency. See below.

Dep Cl.	Ind Cl.	
nim pu-n kone	na pu-nd	<i>I went because you went</i>
<i>you go-2sg because I go-lsg</i>		
na pu-n-al beɬ embe, nim pu-nd-il		<i>As I will go, you will go</i>
<i>I go-CM-lsg as you go-CM-2sg</i>		

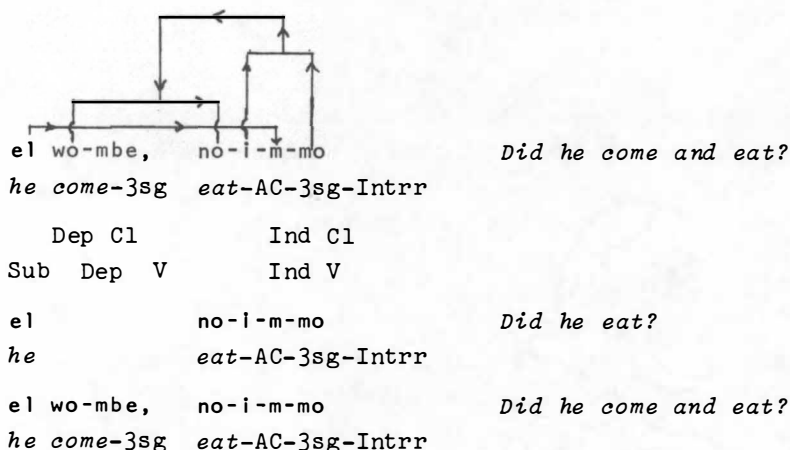
Some of the conjunctions used to link these type of clauses into sentences are: *ba but, ken If...then, beɬ as, embe like, beɬ embe as, kone because, palm el so.*

There is no limitation on the aspects used by the speaker in inflecting the respective verbs except when the conjunction *ken If...then* is used. In this case the verb filling the predicate of the Sentence medial clause, occurs in the Completive aspect, and the verb filling the predicate of the Independent Clause occurs in the Potential aspect.

(b) An Independent form of the verb has no formal dependent relationship with another clause in the sentence with regard to aspect or Person-Number. A Dependent form of the verb has a dependent relationship with an Independent form which completes the sentence and indicate its aspect and mood.

From point (b) above it is observed that the aspect and mood morphemes of the Independent form of the verb influence the whole sentence. Fillmore notes: 'There are probably good reasons for regarding negation tense, mood as associated directly with the sentence as a whole...' (Fillmore 1968:23). Diagram 2 demonstrates this point.

DIAGRAM 2



(11) Form

(a) Independent Verbs are inflected for aspect and mood. Dependent forms are inflected for tense. (See Section 2.1.3.1.).

(b) Dependent Verbs indicate that the subject of the following clause is to be the same as or different from the clause in which the Dependent Verb occurs. Independent Verbs do not indicate relationship to the following sentence. (See Section 2.1.3.1.).

No change of subject

Sub Dep V Sub Ind V
 el wo-mbe, el no-i-m *He came and ate*
 he come-3sg he eat-AC-3sg

(b) Change of Subject

Sub Dep V Sub Ind V
 elip wo-mbuł-nge nlm no-i-n *You both came, then you ate*
 2dl come-dl-Pt 2sg eat-AC-2sg

(c) Change of Subject

Sub Dep V Sub Ind V
 kin wo-p-e, elim no-nd-a *When we come he will eat!*
 we come-lpl-D-Sub 3sg eat-CM-3sg

The Independent form of the verb is discussed under Sections 2.1.1. and 2.1.2. The Dependent form of the verb is discussed under Section 2.1.3.

2.1.0.6. *Primary and Secondary Verbs*

The fifth major dichotomy mentioned in the introduction is the subdivision of the Dependent form of the verb into Primary (Pr) and Secondary (S) verbs. This dichotomy is based on form and distribution.

(a) Form

The Primary Verb takes a set of suffixes which indicate Person-Number and tense, and a morpheme which anticipates whether the subject of the following clause will be the same as or different from the one in which the Primary Verb occurs. The Secondary Verb suffixes only a Class-Marker.

(b) Distribution

The Primary Verb fills the predicate slot of the Primary Dependent Clause. The Secondary Verb fills the predicate slot of the Secondary Dependent Clause.

Primary Dependent Clauses take intonation contours distinct from those on Independent Clauses, i.e. a sharply falling contour on the final syllable of the verb, and never occur in sentence final position. Secondary Dependent Clauses take intonation contours distinct from those on the Independent and Primary Dependent Clauses, i.e. a sustained contour on the verb. Primary Dependent Clauses exhibit a gradual falling contour over the verb.

The maximum expansion of the Primary Verb is:

±N	Stem	+CM	±Ft	±PN	±T
na-	pi	-s	-a	-mbiɪ	-e
<i>not-hear</i>		-CM ^C	<i>-will</i>	-dl	<i>-will</i>
<i>napisambiɪe</i>			<i>We will not know, (but)...</i>		

Note that the negative prefix is optional, while the Class-Marker is obligatory. The Future tense morpheme is optional, but the Person-Number morpheme is obligatory. The tense marker morpheme is optional to the Primary Verb except those indicating change of subject in the next clause. Note that where no evident Person-Number morpheme occurs a zero Person-Number morpheme is posited.

2.1.1. Independent Indicative Verbs

The Simple Verb is here identified as a unit which is obligatorily suffixed with a Class-Marker except in the Similitude Aspect (2.1.1.1.5.),

and which is optionally prefixed with the negative *na-*. There are two compound forms of the verb which constitute the Habitutive Aspect (2.1.1.1.4.). The verb constitutes the Predicate of a clause either alone, or as the head of a Verb Phrase.

The third dichotomy mentioned in the Introduction was between Indicative and Imperative mood forms of the verb. The Independent Indicative is discussed in Section 2.1.1. and the Independent Imperative in Section 2.1.2. (but polite imperative in 2.1.1.1.3.).

The Independent Indicative form of the verb comprises a stem and one or more affixes:

Prefix		Suffixes				
Negative	Stem	Class-Marker	Aspect	Tense	Person-Number	Mood
± N	+	+ CM	± Asp T		+ PN	± Mo

A maximum expansion of this verb may be illustrated by:

±N	Stem	+CM	±Asp T	+PN	±Mo
<i>na-</i>	<i>pi</i>	<i>-s</i>	<i>-a</i>	<i>-mbi</i>	<i>-mo</i>
<i>not</i>	<i>near</i>	<i>-Class C</i>	<i>-Ft</i>	<i>-dl</i>	<i>-Intrr</i>
<i>napisambi</i> mo <i>Will you two not hear?</i>					

See list of abbreviations.

2.1.1.1. Aspects of the Verb

The Indicative forms of the verb distinguish six ASPECTS:² The Absolute Completive (a,b, and c), the Completive, the Continuative, the Potential, the Habitutive and the Similitude aspects. MATRIX 2 demonstrates the aspect morphemes of these aspects. It may be noted that although there is no aspect suffix in the Continuative and Potential forms of the verb, these two aspects are unambiguously indicated by the total form of the suffixation of the verb, as may be seen by comparing Matrices 10a and 11a.

The Absolute Completive aspect has two allomorphs: *-i*, and *-ipi*. The allomorph *-i* is suffixed by all Person-Number morphemes while the singular and plural persons suffix *-ipi*. The Completive aspect suffixes *-nj* in the dual and plural persons to indicate aspect, but has no aspect suffix in the singular person. The Habitutive aspect is indicated by *-tang*. The Similitude aspect is marked by allomorphs *-l*, *-nil*, and *-ril* for all persons.

Matrix 2. Aspect morphemes of the Independent Indicative Verb

Aspect	Number		
	Sg	Dl	Pl
Aca	-i/-ipi	-i	-i
ACc	-s	-s/-il in Class G	-s/-il in Class G
ACb	-r	-p	-p
C	∅	-nj	-nj
P & Ct	∅	∅	∅
Hab	-tang	-tang	-tang

2.1.1.1.1. Absolute Completive and Completive Aspects of the Verb

The Absolute Completive and Completive aspects of the verb are often used interchangeably and indicate completed action. However the Absolute Completive aspect is usually used when speaking of an event which took place a long time ago, while the Completive aspect is usually used when speaking of an event which took place more recently.

When used without a Time word the Absolute Completive aspect usually refers to events which took place in the distant past, but may refer to events which took place as recently as a couple of days ago. The Completive aspect when used without a Time word usually refers to actions which have taken place recently, but is also used to refer to events of the distant past. Consequently it can be seen that there is a degree of overlapping in the usage of these two aspects.

Absolute Completive pi-ipi-m *They had heard*
hear-AC-3pl

Completive pi-nj-ip *They heard*
hear-C-3pl

Matrix 3 demonstrates the limitations of occurrence when either of these two aspects occurs together with a Time word. From this it is observed that although the Absolute Completive aspect may only occur with *yek before*, the Completive aspect may occur with all Time words except *tuŋpa tomorrow*.

Absolute Completive yek pi-ipi-m *They had heard before*
before hear-AC-3pl

Completive ailing pi-nj-ip *Later they will have heard*
later hear-C-3pl

Matrix 3. Limitations of occurrence of a Time word with either the Absolute Completive a, Completive, Continuative, or potential aspects

Time word:		AC	C	Ct	P
yek	<i>before</i>	X	X	X	--
tamaning	<i>yesterday</i>	--	X	--	--
pi	<i>now</i>	--	X	X	X
tułpa	<i>tomorrow</i>	--	--	--	X
aling	<i>later</i>	--	X	--	X

These aspects are often used together in the same text when the text is dealing with an action which took place in the distant past. From informant reaction and from analysis of texts it would seem that to use the Absolute Completive aspect every time that an Independent Verb is used would be to overload the text with unnecessary information. In practice, the distant past time of the action is shown by the occasional use of the Absolute Completive aspect of the verb in various parts of the narrative, while the speaker uses a predominance of verbs indicating the Completive aspect. It may be said that when the Absolute Completive and the Completive aspects of the verb are used together in a paragraph the one or two occurrences of the Absolute Completive aspect places the whole of the action of that paragraph in the distant past despite the fact that various other aspects of the verb have been used throughout the rest of the paragraph.

Elim yek no-m. No-mbe, pu yu pi-ipi-m.
He before eat-3sg eat-S-Sub3sg go word hear-AC-3sg
He ate previously, and having eaten he went and listened to the speech.

2.1.1.1.2. Continuative Aspect of the Verb

The Continuative aspect of the verb is indicated by the total form of the suffixation of the verb. It is used to signify a continuative action which may occur in the vague past or the present, as indicated by the context of the passage. When a verb in this aspect is used in isolation it is understood to denote that the action is happening at the present time.

Elim mokine no-n-um He is eating food
he food eat-CM-3sg

2.1.1.1.3. Potential Aspect of the Verb

The Potential aspect of the verb is also indicated by the total form of the suffixation of verb, and suffixes a future tense marker -a in

the non-singular persons of the verb. The Potential aspect is used to indicate that the action is yet to take place at the time being spoken about. When used in isolation it is understood that the action is yet to take place in the future.

The Potential aspect may be used as a Polite Imperative when used with the second persons. It is also used in combinations with other verbs to indicate the Desiderative and Purposive aspects of the verb. These aspects will be described under the section dealing with the Complex Verb type Mb and Mc. The Polite Imperative is illustrated below.

no-nd-il	<i>You can eat</i>
eat-Cm-2sg	
elip no-a-mbiꞤ	<i>You two can eat</i>
2dl eat-Ft-dl	

Matrix 3 demonstrates the limitations of the usage of Time words with these two aspects.

2.1.1.1.4. Habituaive Aspect of the Verb

There are two compound forms of the verb in Wahgi i.e. verbs made up of two or three verb stems which are grammatically bound.

Both compounds constitute the Habituaive Aspect of the verb and both appear to have the same meaning, signifying that the subject of the clause has been or will be in the habit of performing the action of the verb. These Habituaive compounds only occur in Independent Indicative forms of the verb.

The Habituaive aspect type a is formed by suffixing to any verb stem: its Class-Marker, plus the verb stem tang, plus its own Class A Marker, plus other affixes for Aspect-Tense, Person-Number and Mood. Type a Habituaive verbs are inflected for either Absolute Completive, Completive, or Potential Aspects, but not for Continuative.

Absolute Completive with Habituaive:

na-pi-l-tang-i-mbiꞤ-mo	<i>Have the two of them not always heard?</i>
n-hear-CM-Hab-AC-dl-Intrr	

Completive with the Habituaive:

na-pi-l-tang-nj-lꞤ-mo	<i>Have the two of them not always heard?</i>
N-hear-CM-Hab-C-dl-Intrr	

Na mokine no-tang-ind	<i>I always ate food</i>
I food eat-Hab-lsg	

Potential with the Habitulative:

na-pi-l-tang-n-a-mbił-mo *Will the two of them always not
N-hear-CM-Hab-CM-Ft-dl-Intrr* *hear?*

Aling na wo-tang-n-al *Later I will always come*
Later I come-Hab-CM-lsg

The Habitulative aspect type b is formed by suffixing to any verb stem: its Class-Marker, plus the verb stem tang, plus the verb stem e, plus its own Class E Marker, plus other affixes for Aspect Tense, Person-Number, and Mood. Type b Habitulative Verbs are inflected for any one of the four Aspects - Absolute Completive, Completive, Continuative, or Potential.

Absolute Completive aspect:

ni-tang-e-l-mbił *We always conversed*
speak-Hab-act-AC-dl

Completive aspect:

wo-tang-e-nj-ił *We always came*
come-Hab-act-C-dl

Continuative aspect:

no-tang-e-s-mbił *We are always eating*
eat-Hab-act-CM-dl

Potential aspect:

pi-l-tang-e-n-a-mbił *We will always hear*
hear-CM-Hab-act-CM-Ft-dl

The negative prefix is prefixed to the first stem of the Compound Verb form.

na-no-tang-e-r-ind *I do not always eat*
N-eat-Hab-act-CM-lsg

na-no-tang-ind *I did not always eat*
N-eat-Hab-lsg

The verb stem tang although most frequently used in the way described above is in fact a Class A verb stem.

Nn Simp.V
yu tang-n-al *I will converse*
word Hab-CM-lsg

The verb stem e act is also used uncompounded as a Class E verb:

na e-n-al *I will act*
I act-CM-lsg

Because of the complexity found in conjugating the Habituated form of the verb, each aspect of the verb which is used with the Compound Verb type a is conjugated twice in the paradigms, once with and once without the Compound Verb type a. The Continuative aspect is conjugated once with the Compound Verb type b and once without in order to illustrate this Habituated type.

2.1.1.1.5. Similitude Aspect of the Verb

The Similitude Aspect of the verb is formed by suffixing to the stem of the Simple Verb one of the allomorphs -l, -nil, and -ril. These are suffixed to the seven classes of verbs in the following way:

Class of Verb Stem:	A	B	C	D	E	F	G
Similitude suffix:	-l	-l	-l	-nil	-ril	-l	-l
Typical stem with suffix:	noł	goł	pił	kanil	eril	pał	moł
Meaning of stem:	<i>eat</i>	<i>die</i>	<i>know</i>	<i>see</i>	<i>act</i>	<i>sleep</i>	<i>be</i>

The Similitude Aspect of the verb is a Secondary Dependent Verb which is dependent on the Primary or Independent form of the verb of the sentence to indicate Person-Number and other features of those verbs, (see Section 2.1.3.2.). It optionally prefixes the negative morpheme.

The Similitude Aspect indicates that the action being spoken of was not actually experienced by the speaker or actor, but that it is as though it had happened to him. In the negative the reverse meaning is true.

Elim ka-nil beł embe do-m <i>he saw-Sm as spoke-3sg</i>	<i>He spoke as though he had been there (but he had not been)</i>
Na ambi-l dał e-r-ind <i>I hold-Sm as act-CM-1sg</i>	<i>I work as though nobody is helping (but they are)</i>
Ngał komuł ngo-l e-r-im <i>child ear give-Sm act-CM-3sg</i>	<i>The child imagined it</i>
Elim na-no-l beł e-r-im <i>he neg-eat-Sm as act-CM-3sg</i>	<i>He did not act as though he ate it (but he had)</i>

2.1.1.2. Subject Person-Number Morphemes

Subject Person-Number markers are obligatorily suffixed to the Indicative form of the verb. Matrix 4 shows the Person-Number marker allomorphs as used with all aspects of this verb. Where there are phonologically determined diallomorphs of the allomorphs they have been indicated by the braces <>. (I am indebted to Goran Hammarström for the terms 'diallomorph/triallomorph'. See his forthcoming book

Linguistic Units, Acts and Items). Matrix 5 details the phonological conditioning factors determining these diallomorphs.

The Imperative Verb Person-Number morpheme -a is manifested by the two allomorphs: -a and -e. These by the diallomorphs: [-a] and [-ya], [-e] and [-ye]. [-ya] occurs when -a occurs following the stem vowel. [-ye] occurs when -a occurs following the stem vowel and before -i. [-e] occurs when followed by -i. Otherwise [-a] occurs. (Matrix 17).

Matrix 4 indicates the distribution of the Person-Number morphemes as discussed here. The first person singular is indicated in the AC and Ct aspects by the Zero allomorph, in C aspect by the allomorph -nd, and in the Potential aspect by the allomorph -a. The allomorph -nd is manifested by the morphologically determined diallomorphs [-nd] and [-nj]. The diallomorph [-nd] is manifested by the phonologically determined triallomorphs [-end], [-ind], [-und], [-nd]. The second person singular is indicated in all aspects except the Potential by the allomorph -n. In the Potential aspect it is indicated by the allomorph -il. The allomorph -n is manifested by the phonologically determined diallomorphs [-n], [-in], [-en], and [-un]. The third person singular is indicated in all aspects except the Potential aspect by the allomorph -m. In the Potential aspect it is indicated by the allomorph -a. The allomorph -m is manifested by the phonologically determined diallomorphs [-im], [-um], [-em], [-m]. The allomorph -a is manifested by the ideolectical diallomorphs [-a] and [-an].

The dual person is indicated in all aspects except the AC b and c, and the C aspects by the allomorph -mbiɿ. In the Absolute Completive aspects b, and c, and the Completive aspect, this person is indicated by the allomorph -iɿ. The allomorph -mbiɿ is manifested by the phonologically determined diallomorphs [-mbiɿ], [-mbeɿ] and [-mbuɿ].

The plural first person is indicated in all aspects except AC b and c, and the C aspects this person is indicated by -in. The allomorph -min is manifested by the phonologically determined diallomorphs [-min], [-men], and [-mun]. The allomorph -in is manifested by the phonologically determined diallomorphs [-in], [-en], and [-un]. The plural second and third persons are indicated in all aspects except the AC b and c, and the C aspect by the allomorph -m. In the AC b and c, and the Completive aspects it is indicated by the allomorph -ip. The allomorph -m is manifested by the phonologically determined diallomorphs [-m], [-im], [-em], [-um]. For a full discussion of the Phonological factors determining the manifestation of the Person-Number morphemes, see the Vowel Harmony and Consonant Influence section in the Phonology chapter.

Matrix 4. Subject Person-Number allomorphs of the Independent Simple verb.

Simple verb

Person					Number							
	Sg				Pl				Pl			
Aspect	AC	C	Ct	P	AC ^a	AC ^{b-c} , C	Ct	P	AC ^a	C	Ct	P
1	∅	<-nd>/<-nj>	∅	-al	<-mbiɬ>	-iɬ	<mbiɬ>		<-min><-in><-min>	AC ^{bc}	<-in>	
2	<-n>	<-n>	<-n>	-il					<-m>			
3	<-m>	<-m>	<-m>	-a/-an					AC ^{bc}	-ip	<-m>	

Matrix 5. Phonologically determined variants of the Person-Number allomorphs.

	1		2		3		4	
	i__	o__	iC__	oC__	inj__	onj__	is__	os__
		u__		uC__		unj__		us__
Environments	e__		eC__		enj__		es__	
	a__		aC__		anj__		as__	

C is any consonant other than s or nj.

Ind V

2sg	-n	-n	-n	-en	-in	-un				
3sg	-m	-m	-m	-em	-im	-um				
dl	-mbeɬ	-mbiɬ	-mbuɬ	-mbeɬ	-mbiɬ	-mbuɬ	-iɬ	-iɬ	-mbiɬ	-mbiɬ
2pl, 3pl							-ip	-ip	-im	-im
DP V										
1sg, 2pl, 3pl	-mb	-mb	-mb	-emb	-imb	-umb				
1pl	-men	-min	-mun	-men	-min	-mun	-in	-in	-min	-min
2sg	-mben	-mbin	-mbun	-mben	-mbin	-mbun				
dl	-mbeɬ	-mbiɬ	-mbuɬ	-mbeɬ	-mbiɬ	-mbuɬ				

Command

dl	-yaɬ	-yaɬ	-yaɬ	-aɬ	-aɬ	-aɬ				
pl	-ya/-ye	-ya/-ye	-ya/-ye	-a/-e	-a/-e	.a/-e				(See Matrix 17)

2.1.1.3. Mood Morphemes

The Mood morphemes indicate the attitude of the actor to the referential object of the clause. They indicate either interrogative (Intrr) or polite reply (Po). The Indicative mood has no mood suffix. This interrogative requires either a simple answer of 'yes' or 'no', or a reply which repeats the utterance in the indicative, or a reply which repeats the utterance with the polite reply marker suffixed. The interrogative allomorphs are -mo or -mei or -kene, and the polite reply allomorphs are -pe or -pei or -kena.

It may be noted that various speakers use a variety of vowels for the first vowel of the allomorphs cited above except for those allomorphs of -kene and -kena. Those allomorphs listed contain the most frequently used vowels.

Matrices 6a-11b summarise the conjugation of the Independent Indicative Verb in the aspects described in Section 2.1.1.

Matrix 6a. Paradigm of the Simple verb in the Absolute Completive^a, aspect.

Person- Number	Classes		
	A	B	C
1sg	no-i/no-ipi	go-i/go-ipi	pi-i/ipi
2sg	no-i-n/no-ipi-n	go-i-n/go-ipi-n	pi-i-n/pi-ipi-n
d1	no-i-mbiɿ	go-i-mbiɿ	pi-i-mbiɿ
1pl	no-i-min	go-i-min	pi-i-min
3sg)			
2pl)	no-i-m	go-i-m	pi-i-m
3pl)			

Matrix 6b. Paradigm of the Compound verb in the Absolute Completive^a, and Habituaive aspect. Only one form is given in those persons where two variant forms have been indicated in Matrix 6a.

Person- Number	Classes		
	A	B	C
1sg	no-tang-i	go-ɿ-tang-i	pi-l-tang-i
2sg	no-tang-i-n	go-ɿ-tang-i-n	pi-i-tang-i-n
d1	no-tang-i-mbiɿ	go-ɿ-tang-i-mbiɿ	pi-l-tang-i-mbiɿ
1pl	no-tang-i-min	go-ɿ-tang-i-min	pi-l-tang-i-min
3sg,			
2pl 3pl)	no-tang-i-m	go-ɿ-tang-i-m	pi-l-tang-i-m

Matrix 7a. Paradigm of the Simple verb in the Absolute Completive b, aspect.

Person- Number	Classes		
	A	B	C
1sg	no-tang-ir	go-ł-tang-ir	pi-l-tang-ir
2sg	no-tang-r-in	go-ł-tang-r-in	pi-l-tang-r-in
3sg	no-tang-r-im	go-ł-tang-r-im	pi-l-tang-r-im
dl	no-tang-p-ił	go-ł-tang-p-ił	pi-l-tang-p-ił
lpl	no-tang-p-in	go-ł-tang-p-in	pi-l-tang-p-in
2 & 3pl	no-tang-ip	go-ł-tang-ip	pi-l-tang-ip

Matrix 8a. Paradigm of the Simple verb in the Absolute Completive c, aspect.

Person- Number	Classes		
	A	B	C
1sg	no-s	go-ł-is	pi-s
2sg	no-s-in	go-ł-s-in	pi-s-in
3sg	no-s-im	go-ł-s-im	pi-s-im
dl	no-s-ił	go-ł-s-ił	pi-l-s-ił
lpl	no-s-in	go-ł-s-in	pi-l-s-in
2 & 3pl	no-s	go-ł-is	pi-l-is

Matrix 8b. Paradigm of the Simple verb in the Absolute Completive c and Habituaive aspects.

Person- Number	Classes		
	A	B	C
1sg	no-tang-is	go-ł-tang-is	pi-l-tang-is
2sg	no-tang-is-in	go-ł-tang-is-in	pi-l-tang-is-in
3sg	no-tang-is-im	go-ł-tang-is-im	pi-l-tang-is-im
dl	no-tang-is-ił	go-ł-tang-is-ił	pi-l-tang-is-ił
lpl	no-tang-is-in	go-ł-tang-is-in	pi-l-tang-is-in
2 & 3pl	no-tang-is	go-ł-tang-is	pi-l-tang-is

Matrix 9a. Paradigm of the Simple verb in the Completive aspect

Person- Number	Classes		
	A	B	C
1sg	no-nd	go-nd	pi-nj
2sg	no-n	go-n	pi-n
3sg	no-m	go-m	pi-m
dl	no-nj-ił	go-nj-ił	pi-nj-ił
lpl	no-nj-in	go-nj-in	pi-nj-in
2 & 3pl	no-nj-ip	go-nj-ip	pi-nj-ip

Matrix 9b. Paradigm of the Compound verb in the Completive and Habitutive aspects.

Person- Number	Classes		
	A	B	C
1sg	no-tang-ind	go-ʔ-tang-ind	pi-l-tang-ind
2sg	no-tang-ln	go-ʔ-tang-ln	pi-l-tang-ln
3sg	no-tang-lm	go-ʔ-tang-lm	pi-l-tang-lm
dl	no-tang-nj-iʔ	go-ʔ-tang-nj-iʔ	pi-l-tang-nj-iʔ
lpl	no-tang-nj-in	go-ʔ-tang-nj-ln	pi-l-tang-nj-in
2 & 3pl	no-tang-nj-lp	go-ʔ-tang-nj-ip	pi-l-tang-nj-ip

Matrix 10a. Paradigm of the Simple verb in the Continuative aspect.

Person- Number	Classes		
	A	B	C
1sg	no-nd	go-r	pi-s
2sg	no-n-un	go-r-un	pi-s-ln
3sg	no-n-um	go-r-um	pi-s-lm
dl	no-mbuʔ	go-s-mbiʔ	pi-s-mbiʔ
lpl	no-mun	go-s-min	pi-s-min
2 & 3pl	no-m	go-s-im	pi-s-im

As noted before, the Continuative aspect, although not used with the Compound type 1, is used with the Compound type 2.

Matrix 10b. Paradigm of the Compound verb in the Continuative and Habitutive aspects.

Person- Number	Classes		
	A	B	C
1sg	no-tang-e-r-ind	go-ʔ-tang-e-r-i nd	pi-l-tang-e-r-ind
2sg	no-tang-e-n-in	go-ʔ-tang-e-n-in	pi-l-tang-e-n-in
3sg	no-tang-e-n-im	go-ʔ-tang-e-n-im	pi-l-tang-e-n-im
dl	no-tang-e-s-mbiʔ	go-ʔ-tang-e-s-mbiʔ	pi-l-tang-e-s-mbiʔ
lpl	no-tang-e-s-min	go-ʔ-tang-e-s-min	pi-l-tang-e-s-min
2 & 3pl	no-tang-e-s-lm	go-ʔ-tang-e-s-im	pi-l-tang-e-s-lm

Matrix 11a. Paradigm of the Simple verb in the Potential aspect.

Person- Number	Classes		
	A	B	C
1sg	no-n-a-l	go-r-a-l	pi-s-a-l
2sg	no-nd-il	go-r-ii	pi-s-il
3sg	no-nd-a/-an	go-r-a/-an	pi-s-a/-an
dl	no-n-a-mbiʔ	go-r-a-mbiʔ	pi-s-a-mbiʔ
lpl	no-n-a-min	go-r-a-min	pi-s-a-min
2 & 3pl	no-n-a-m	go-r-a-m	pi-s-a-m

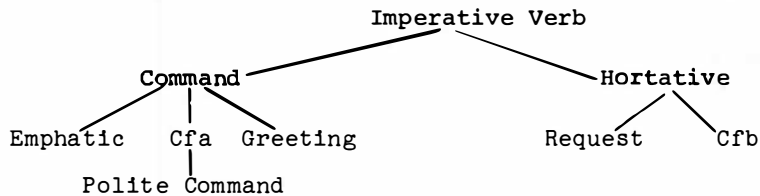
Matrix 11b. Paradigm of the Simple verb in the Potential Habitutive aspects.

Person- Number	Classes		
	A	B	C
1sg	no-tang-n-al	go-ł-tang-n-al	pi-l-tang-n-al
2sg	no-tang-nd-il	go-ł-tang-nd-il	pi-l-tang-nd-al
3sg	no-tang-nd-a	go-ł-tang-nd-a	pi-l-tang-nd-a
dl	no-tang-n-a-mbił	go-ł-tang-n-a-mbił	pi-l-tang-n-a-mbił
1pl	bo-tang-n-a-min	go-ł-tang-n-a-min	pi-l-tang-n-a-min
2 & 3pl	no-tang-n-a-m	go-ł-tang-n-a-m	pi-l-tang-n-a-m

2.1.2. Independent Imperative Verbs

DIAGRAM 3

THE SUBDIVISIONS OF THE INDEPENDENT IMPERATIVE VERB



The Imperative Verb is divided into Command (Com) and Hortative (H) on the basis of: (a) Class-Markers used in the singular person (see Matrix 1a, Ref. No.1, and No.5 and 6) and (b) the subject persons addressed. The Command addresses the Second person, while the Hortative addresses the first and third persons.

2.1.2.1. Command

The Command is subdivided into three moods on the basis of the Mood suffixes: Emphatic by *ł*, Confirmatory by *-wa*, and Greeting by *-oo*. The Mood suffixes indicate the Intention of the speaker in addressing the referential hearer.

2.1.2.1.1. Emphatic Command

The Emphatic Mood is used to indicate an emphatic command.

pi-l-ał	<i>You two listen.</i>
hear-CM-dl	
dop ga-ł	<i>Light the fire.</i>
fire light-CM	

2.1.2.1.2. Confirmatory Type 'a' Command

The confirmatory a (CF^a) mood is used in replying to the Hortative and to confirm the action which the Hortative requests to be done. It is also used as a Polite Command.

Hortative	Confirmatory ^a	
no-n-ua	no-wa	<i>May I eat?</i>
eat-CM-H	eat-Cf ^a	<i>Yes, eat.</i>
pu-mb-ua	pu-yał-wa	<i>Let us go</i>
go-l dl-H	go-dl-Cf ^a	<i>Yes, you two go.</i>

As a Polite Command:

wo-wa	<i>Please come.</i>
come-Cf ^a	

2.1.2.1.3. Greeting Command

The Greeting Mood is used to indicate that the speaker requires the person addressed to 'please continue' that which he is doing, or desires to do. It is used only in greetings and farewells.

mo-ł-ał-oo	<i>Please remain.</i>
to be-CM-dl-Grt	
pu-ya-oo	<i>All right, you go.</i>
go-pl-Grt	

The Subject Person-Number markers are the same for each of the three moods mentioned above. Singular is marked by \emptyset , dual person by -ał, while plural person is marked by -a. The allomorphic alterations of these suffixes are tabulated in Matrix 5.

The Emphatic Command Verb may be prefixed with the negative, while the Confirmatory a and Greeting Verbs do not prefix the negative.

Matrix 12 illustrates the Emphatic Command. To these forms of the verb may be added the mood suffixes in order to arrive at the other categories of the Command Verb.

Matrix 12. Paradigm of the Emphatic Command verb.

Person- Number	Classes A	B	C
2sg	no	go-ł	pi-l
2dl	no-yał	go-ł-ał	pi-l-ał
2pl	no-ya	go-ł-a	pi-l-a

2.1.2.2. *Hortative Forms*2.1.2.2.1. *Hortative*

The Hortative (H) is sub-divided into two moods: Request (Req) and Confirmatory^b (Cf^b).

2.1.2.2.2. *Hortative Request*

The Request mood is used to request that an action be undertaken, or to be confirmed. The Request mood is indicated by -ua.

pi-s-ua *May I hear?*

hear-CM-Req

pi-s-a-mb-ua *May they hear?*

hear-CM-Ft-3pl-Req

It is noted that the speaker never uses the Request in addressing the second person, and that the statement which it makes is almost a mild question. This mild question, however, is more of a suggestion than a question. This is brought out more forcefully when the speaker addresses another person together with himself.

pi-l-mb-ua *Let us hear?!*

hear-CM-ldl-Req

pu-mb-ua *Let us go?!*

go-ldl-Req

2.1.2.2.3. *Hortative Confirmatory Type 'b'*

The Confirmatory^b Mood is indicated by -a, and is used to mark a polite reply to a question requesting that an action be permitted to be done. Matrix 13 demonstrates how the Request and Confirmatory^b Verbs are conjugated.

Although it is usual for the Request Verb to be used with the suffix -ua, and for the Confirmatory^b Verb to be used with the suffix -e, these suffixes are interchangeable.

One may say either:-

no-n-ua no-n-e *Can I eat? Yes, eat.*

eat-CM-Req eat-CM-Cf^b

OR: no-n-e no-n-ua *Can I eat? Yes, eat!*

eat-CM-Req eat-CM-Cf^b

Statements of request are made in the first person. When the dual or plural number is used there may arise some ambiguity as to whether the speaker is including or excluding the person addressed.

no-mb-ua *Can we eat?*
eat-dl-Req

The person making the statement therefore may clarify any ambiguity by using a subject pronoun which makes the distinction.

kil no-mb-ua *Can we eat?*
ldl excl eat-dl-Req

The person addressed will indicate his understanding of the request by his reply. If he is excluded then he will use the form of the verb which we have referred to as Confirmatory^a,

no-yał-wa *Eat!*
eat-dl-Cf^a

but if he is included then he will use the form of the verb which we have referred to as Confirmatory^b,

no-mb-e *Let us eat.*
eat-dl-Cf^b

or he may reply by using a verb in the Request mood.

no-mb-ua *Let us eat!*
eat-dl-Req.

Matrix 13. Paradigm of the Request Command verb, Confirmatory^b, and Dependent Primary D-Sub Independent Verbs.

Person-Number	Classes		
	A	B	C
1sg	no-n-ua/-e	go-r-ua/-e	pi-s-ua/-e
3sg	no-nd-ua/-e	go-r-ua/-e	pi-s-ua/-e
ldl	no-mb-ua/-e	go-ł-mb-ua/-e	pi-l-mb-ua/-e
lpl	no-p-ua/-e	go-ł-p-ua/-e	pi-l-mb-ua/-e
3dl	no-n-a-mbił-ua/-o	go-r-a-mbił-ua/-e	pi-s-a-mbił-ua/-e
3pl	no-n-a-mb-ua/-e	go-r-a-mb-ua/-e	pi-s-a-mb-ua/-e

2.1.2.2.4. Subject Person-Number Morphemes of Request Verbs

The Subject Person-Number markers suffixed to the Request and Confirmatory^b Verbs are as follows: Singular persons are indicated by ∅, first person dual and third person plural by -mb, first person plural by -p, and third person dual by -mbił. The following examples give the Request form for all persons of the Class A verb *eat*, as well as some possible reply sequences using the Confirmatory^a and ^b moods.

The Class-Marker allomorphs suffixed to the stem of the Request and Confirmatory^b are those found in environments 1, 6 and 5 of Matrix 1a.

Request	Confirmatory ^a	Confirmatory ^b	
no-n-ua/-e eat-CM-Req	no-wa eat-Cf ^a	no-n-e/ua eat-CM-Cf ^b	<i>May I eat?</i> <i>Yes.</i>
no-nd-ua/-e eat-CM-Req		no-nd-e/-ua eat-CM-Cf ^b	<i>May he eat?!</i> <i>Yes.</i>
no-mb-ua/-e eat-ldl-Req	no-yał-wa eat-dl-Cf ^a		<i>Let us eat?!</i> <i>Yes you two eat.</i>
		no-mb-e/-ua eat-ldl-Cf ^b	<i>Yes let us eat.</i>
no-p-ua/-e eat-lpl-Req	no-ya-wa eat-pl-Cf ^a		<i>Let us all eat.</i> <i>Yes you all eat.</i>
		no-p-e/-ua eat-lpl-Cf ^b	<i>Yes let us eat.</i>
no-n-a-mbił-ua/-e eat-CM-Ft-dl-Req		no-n-a-mbił-e/-ua eat-CM-Ft-dl-Cf ^b	<i>Can they both eat?</i> <i>Yes...</i>
no-n-a-mb-ua/-e eat-CM-Ft-3pl-Req		no-n-a-mb-e/-ua eat-CM-Ft-3pl-Cf ^b	<i>Can they eat?</i> <i>Yes...</i>

The Confirmatory^a (2.1.2.1.2.), and the Request (2.1.2.2.2.) have been categorized as different verb forms on the basis of: (1) different suffixation; (a) Confirmatory^a verbs in the singular person are inflected for class with suffixes other than those suffixed to the Request verb in the singular person (see Matrix 1a Ref. No.1 and 6 and 5), (b) Confirmatory^a verbs are inflected for dual and plural Person-Number with suffixes other than those suffixed to the Request verb (see Section 2.1.2.1.2. and 2.1.2.2.4.).

(2) the suffixes -wa and -ua are not phonologically determined allomorphs, as the following examples will demonstrate:

no-yał-wa eat-dl-Cf ^a	<i>You two please eat.</i>
no-n-a-mbił-ua eat-CM-Ft-dl-Req	<i>Will they two please eat?!</i>
sip-wa take-Cf ^a	<i>Please take it away.</i>
si-p-ua take-lpl-Req	<i>We will all please take it.</i>

2.1.3. Dependent Verbs

2.1.3.1. Primary Dependent Verbs

There are four types of Primary Verb forms:

- (i) Same Subject (S-Sub)* which indicates that the subject will remain the same in the clause which follows.
- (ii) Different Subject in the Past (D-Sub-P) which indicates that the subject of the following clause will be different, and that the action which it describes took place prior to the time when the action is being related.
- (iii) Different Subject (D-Sub) which indicates that the subject of the following clause will be different.
- (iv) Different Subject in the Imperative (D-Sub-Imp) which indicates that the subject of the following clause will be different.

	Sub	D.PV	Sub	Ind	V	Meaning
S-Sub	el	pi-l-mbe, 3sg hear-CM-3sg	el	no-m	eat-3sg	<i>He heard and ate.</i>
D-Sub-P	el	pi-l-nge, 3sg hear-CM-Pt	nim	no-n	eat-2sg	<i>He heard, you ate.</i>
D-Sub	el	pi-s-e, 3sg hear-CM-Ft	nim	no-nd-il	eat-CM-2sg	<i>He hearing, you will eat.</i>
D-Sub-Imp	nim	pi-l-i, you hear-CM-Imp	elim	no-nd-a	eat-CM-3sg	<i>You listen (then) he will eat.</i>

The Class-Markers for all Dependent forms of the verb are given in environments 1, 3 and 6 in Matrix 1a.

The Future tense morpheme -a is suffixed to D-Sub Primary Verb, but is limited in distribution to the second and third persons dual and plural:

		Classes		
		A	B	C
2dl	3dl	no-n-a-mbił-e	go-r-a-mbił-e	pi-s-a-mbił-e
2pl	3pl	no-n-a-mb-e	go-r-a-mb-e	pi-s-a-mb-e

Matrices 15-17 demonstrate the various forms of the Primary Verb.

The Person-Number morphemes of the Primary verb are shown in Matrix 14, while the phonological allomorphs of these morphemes are shown in Matrix 5.

* See list of abbreviations.

Matrix 14. Person-Number morphemes of the Primary Dependent Verb.

Person- Number	Primary verb type			
	S-Sub	D-Sub-P	D-Sub	D-Sub-Imp
1	<-mb>	∅	∅	--
sg 2	<-mbin>	∅	--	∅
3	<-mbe>	∅	∅	--
1	<-mbiʔ>	<-mbiʔ>	-mb	--
dl 2	<-mbiʔ>	<-mbiʔ>	-mbiʔ	<-aʔ>
3	<-mbiʔ>	<-mbiʔ>	-mbiʔ	--
1	<-min>	-mi	-p	--
pl 2	<-mb>	-mi	-mb	<-e>
3	<-mb>	-mi	-mb	--

Matrix 14 shows that the S-Sub Primary Verb marks the 1sg by -mb, 2sg by -mbin, and 3sg by -mbe. It marks all dual persons by -mbiʔ, and it marks 1pl by -min, and 2pl and 3pl by -mb. It also shows that the D-Sub-P Primary Verb indicates singular persons by ∅, dual persons by -mbiʔ, and plural persons by -mi. It shows that the D-Sub Primary Verb in the Indicative Mood marks 2sg and 3dl by mbiʔ. It marks 1pl by -p, and 2pl and 3pl and 1dl by -mb.

Finally it demonstrates that D-Sub in the Imperative Mood indicates 2sg by ∅, 2dl by -aʔ, and 2pl by -e. The other persons do not occur.

There are three morphemes which are suffixed to the end of the Primary Verb following the Person-Number suffixes. We have been referring to them as Tense markers (see 2.1.0.5. (11)), but it should be noted here that these morphemes are also indicative as to the change of subject in the following clause. Thus D-Sub-P is marked by -nge, D-Sub is marked by -e, and D-Sub-Imp by -i. The S-Sub is indicated by lack of a suffix.

It has been noted that Independent forms of the verb fill the predicate slot of the Independent Clause, while Primary Verbs fill the predicate slot of the Dependent Primary Clause. The limitations on occurrence of each type of Primary Dependent Verb with each type of Independent Verb in the following clause are indicated in Matrix 18.

Matrix 18 demonstrates that Primary Verbs may be followed by Independent Verb forms of all aspects except that the Continuative and Potential aspects do not follow the D-Sub-P; and the Absolute Completive aspect does not follow D-Sub, and the D-Sub-Imp may only be followed by the Potential aspect. (This last observation needs further investigation).

Other limitations of occurrence are observed when a Temporal is added to the sentence. Matrices 19, 20 and 21 show these limitations with respect to the S-Sub, D-Sub-P, D-Sub verbs.

Matrix 15. Paradigm of the Dependent Primary S-Sub verb.

Person- Number	Classes A	B	C
1sg, 2pl 3pl	no-mb	go-ł-umb	pi-l-imb
2sg	no-mbun	go-ł-mbun	pi-l-mbin
3sg	no-mbe	go-ł-mbe	pi-l-mbe
dl	no-mbuł	go-ł-mbuł	pi-l-mbił
lpl	no-mun	go-ł-mun	pi-l-min

Matrix 16. Paradigm of the Dependent Primary D-Sub-P verb.

Person- Number	Classes A	B	C
sg	no-nge	go-ł-nge	pi-l-nge
dl	no-mbuł-nge	go-ł-mbuł-nge	pi-l-mbił-nge
pl	no-mu-nge	go-ł-mu-nge	pi-l-mi-nge

Matrix 17. Paradigm of the Dependent Primary D-Sub-Imp verb.

Person- Number	Classes A	B	C
2sg	no-i	go-ł-i	pi-l-i
2dl	no-yał-i	go-ł-a -i	pi-l-ał-i
2pl	no-ye-i	go-ł-e-i	pi-l-e-i

Matrix 18. Showing limitations of co-occurrence of Primary verbs preceding Independent verbs in the absence of a Time word.

Primary verb type	Independent verb type			
	ACa	C	Ct	P
S-Sub	X	X	X	X
D-Sub-P	X	X	--	--
D-Sub	--	X	X	X
D-Sub-Imp	--	--	--	X

Matrix 19. Showing the limitations of co-occurrence when Temporals, Primary S-Sub verb, and an Independent verb are used together.

Temporal		Primary	Independent verb type			
			ACa	C	Ct	P
<i>previously</i>	yek		X	X	X	X
<i>yesterday</i>	tamaning		--	X	X	--
<i>now</i>	pi	S-Sub	--	X	X	X
<i>tomorrow</i>	tuɬpa		--	--	--	X
<i>later</i>	aling		--	X	--	X

Matrix 20. Showing limitations of co-occurrence when Temporals, Primary D-Sub-P, and an Independent verb are used together.

Temporal		Primary	Independent verb type			
			ACa	C	Ct	P
<i>previously</i>	yek		X	X	--	--
<i>yesterday</i>	tamaning		--	X	--	--
<i>now</i>	pi	D-Sub-P	--	X	X	--
<i>tomorrow</i>	tuɬpa		--	--	--	--
<i>later</i>	aling		X	X	--	--

Matrix 21. Showing limitations of co-occurrence when Temporals, Primary D-Sub and an Independent verb are used together.

Temporal		Primary	Independent verb type			
			ACa	C	Ct	P
<i>previously</i>	yek		X	X	X	X
<i>yesterday</i>	tamaning		--	X	X	--
<i>now</i>	pi	D-Sub	--	X	X	X
<i>tomorrow</i>	tuɬpa		--	--	--	X
<i>later</i>	aling		--	--	X	X

2.1.3.2. Secondary Dependent Verbs

The Secondary Dependent form of the verb consists of the verb stem which is optionally prefixed by the negative *na-*, and obligatorily suffixed by a Class-Marker morpheme.

The maximum expansion of the Secondary Verb is:

±N	Stem	+CM
na-	pi	-l
neg	hear	-CM

Secondary Verbs fill the predicate of the Dependent Secondary Clause. They are reliant on the Primary or Independent form of the verb to

indicate subject Person-Number, and aspect, and/or Future tense. They are followed by other Secondary and/or Primary and/or Independent verbs to signify sequential action.

(a) All the following sequences and constructions contain the same semantic content: *I will go and eat and work.*

- (1) na pu no e-n-a1
 lsg go eat act-CM-lsg
 Pr SV SV Ind V
- (ii) na pu no-mb e-n-a1
 lsg go eat-lsg act-CM-lsg
 Pr SV PV Ind V
- (iii) na pu-mb no-mb e-n-a1
 lsg go-lsg eat-lsg act-CM-lsg
 Pr PV PV Ind V

Although further research needs to be done before a definite statement can be made with respect to the differences in usage and meaning felt to be present in these three examples, I have touched on this matter in my paper 'The Semantic Sentence in Wahgi'.* It is believed that each of the above examples exhibits different semantic sentence relationships and therefore different sequential restraints.

(b) The following examples show how the various types of verbs are used in combination when (1) the D-Sub-P is indicated, and (2) the D-Sub is indicated.

- (1) na pu no-nge, nim pi-l wo-n
 lsg go eat-D-Sub-P 2sg hear-CM come-2sg
 Pr SV PV Pr SV Ind V
 I went and ate, and you heard (of it) and came.
- (2) kil pu no-mb-e, elip pi-l wo-n-a-mbiꞤ
 ldl go eat-ldl-Ft 2dl hear-CM come-CM-Ft-dl
 Pr SV PV Pr SV Ind V
 We will go and eat, and you two will hear (of it) and come.

2.1.3.3. Contrary to Fact Condition Verbs

Contrary to Fact Condition (CFC) is indicated in Wahgi by a verb form whose morphology is similar to that of the Primary Dependent Verb, but which is similar in distribution to both the Dependent and Independent forms of the verb.

The morphology of the Contrary to Fact Condition Verb is as for the the D-Sub-P Verb. That is, it indicates the class of the stem by

* (To appear)

suffixing those types of Class-Markers found in environment 1 of Matrix 1a. It indicates singular dual, and plural by suffixing the Number morphemes listed in Matrix 14 under the section labelled D-Sub-P.

To these suffixes the CFC Verb suffixes the morpheme -ngane instead of -nge. This morpheme indicates contrary to fact condition. Matrix 22 shows the form of the CFC Verb.

The CFC Verb may fill the Predicate slot of either a Primary Dependent Clause, or of an Independent Clause. It is usual for both of these types of clauses to occur together with a CFC Verb filling the slot of each, however, an Independent Clause with a CFC Verb filling its Predicate slot may be used in isolation. Although this verb predominantly occurs filling the Predicate slots in a sequence of just one Primary Dependent Clause and one Independent Clause, two or more Primary Dependent Clauses with their Predicate slots filled by a CFC Verb, may occur in a sentence together with a CFC Verb filling the Predicate slot of an Independent Clause. The final clause is always an Independent Clause.

- | | | | |
|-------|---|---------------------|----------------|
| (i) | Pr Dep Cl | Pr Dep Cl | Ind Cl |
| | elip to-mbuɿ-ngane | | na go-ɿ ngane |
| | 2dl hit-dl-CFC | | lsg die-CM-CFC |
| | <i>If you two had hit (me), I would have died.</i> | | |
| (ii) | el ni-ngane | elip to-mbuɿ-ngane, | na go-ɿ-ngane |
| | 3sg -CFC | 2dl -dl-CFC | lsg die-CM-CFC |
| | <i>If he had spoken, and you two had have hit (me) I would have died.</i> | | |
| (iii) | | | na go-ɿ-ngane |
| | <i>I would have died.</i> | | |

The CFC Verb signals that an action which might have taken place did not in fact occur. This action is spoken of in reference to the time indicated by the time word of the sentence in which it occurs. If it is used in isolation, then the action is understood to have taken place in the past.

Matrix 22. Paradigm of the Contrary to Fact Condition Verb.

Person- Number	Classes		
	A	B	C
sg	no-ngane	go-ɿ-ngane	pi-l-ngane
dl	no-mbuɿ-ngane	go-ɿ-mbuɿ-ngane	pi-l-mbiɿ-ngane
pl	no-mu-ngane	go-ɿ-mi-ngane	pi-l-mi-ngane

2.1.4. Complex Verbs

The Complex Verb (CV) is defined as a sequence of two or more free forms which together act as a unit and fill the head slot of the verb phrase.

The Complex Verbs are subdivided into four different categories referred to as L, M, N, O. (See Matrix 23 which compares these Complex Verb Types).

These verb types constitute more than 50% of all verb construction in text.

Each component of Complex Verb type L, M, and N except for the Verb Specifier (VS) occurs in other grammatical contexts, and has a basic meaning. However, when these components occur in the Complex Verbs L, M, N, they lose their basic meaning. Complex Verb type O is used to intensify the non-intensive meaning of a two-word verb phrase which parallels this complex verb type.

Verbalizers (VZ) occur together with the Specifiers in a great many different combinations and it is these combinations which carry a unique semantic load, rather than each separate part.

VS	VZ	
	do-m speak-3sg	<i>He speaks.</i>
akan	do-m	<i>It is summer.</i>
?	?-3sg	
aure	do-m	<i>He forgets.</i>
?	?-3sg	
jil	do-m	<i>It is packed.</i>
?	?-3sg	

Complex Verbs have been treated as consisting of two or three words on the basis of the number of Primary stresses, since each Wahgi word has one primary stress. In addition, the negative prefix is always prefixed to the final component word of the Complex Verb.

VS	VZ	
bi	na-ni-m	<i>He did not cover it.</i>
?	N-speak-3sg	
tuk	na-e-n-im	<i>He did not laugh.</i>
?	N-act-CM-3sg	

Matrix 23. A Comparison of Complex verb types.

CV type	Free Components of verb			Meaning
L	±VS	+VS	+VZ	Not indicated by parts
M		+SV	+VZ	" " " "
N		+SV	+CV-L	" " " "
O	+SV	+Aj	+SimpV	Intensified

2.1.4.1. Complex Verb Types L (i), (ii), and (iii)

Complex Verb type L sub-class (i) consists of an obligatory Verb Specifier, plus an obligatory Verbalizer. The Verbalizer is identical to the Simple Verb as previously described (see Section 2.1.0.3.), and is inflectable.

The Verb Specifier component of the Complex Verb has been so named because in a few Complex Verbs the Specifier appears to carry a meaning similar to that which it carries when occurring as an Adjective, and with this meaning it appears to denote the meaning of the Complex Verb without any semantic contribution from the Verbalizer.

pake when used as an Adjective:

tau pake *A prop used to support a banana tree.*
banana help

pake when used as a Specifier:

pake to-m *He helped.*
help hit-3sg

kunumb when used as an Adjective:

yi kunumb *A thief.*
man steal

kunumb used as a Specifier:

kunumb no-m *He stole. or He committed adultery.*
 ? *eat-1sg*

The Verbalizer component of the Complex Verb has been so named in the example given above in which the Specifier pake is placed together with the Verbalizer to-m, the Verbalizer appears to lose its usual meaning *hit* and to be used merely as a base which is inflected, as is the Simple Verb, and which verbalizes the Specifier.

The following examples, however, emphasize the fact that it is the the combination which carries the semantic load.

VS		VZ	
bi		e-n-im	<i>It is cold.</i>
?		act-CM-3sg	
bi		ni-m	<i>He covered it.</i>
?		speak-3sg	

Complex Verb type L sub-type (ii) consists of a Verbalizer preceded by a Specifier which is optionally reduplicated. This sub-class of Complex Verbs has onomatopoeic overtones.

VS	VS	VZ	
muke	muke	ni-m	<i>Quickly.</i>
?	?	speak-3sg	
ki	ki	ni-m	<i>Quietly.</i>
?	?	speak-3sg	

Complex Verb type L sub-type (iii) consists of a Specifier and a Verbalizer which occurs in the third person singular, and which is not inflectable for any other person-number. The person occurring in the apparent Object of the clause is the Experiencer of the action and usually appears as the subject in the English translation. Fillmore's Case Grammar ideas as applied to Wahgi will be described in a paper yet to appear.

Obj	VS	VZ	
na	kusin	e-n-im	<i>I am sweating.</i>
lsg	?	act-CM-3sg	
na	ombun	e-n-im	<i>I am heavy.</i>
lsg	?	act-CM-3sg	
na	kes	e-n-im	<i>I am sick.</i>
lsg	?	act-CM-3sg	

Examples of other Complex Verbs type L are shown below. The three Verbalizers selected are typical of Simple Verbs which have a high frequency of occurrence in Complex Verb constructions.

The verb stem to having the basic meaning of *hit* Class A.

VS		VZ	
kone		to-m	<i>It rained.</i>
bok		to-m	<i>He fell.</i>
top		to-m	<i>He bought.</i>

The verb stem *go* having the basic meaning of *die* class B.

VS	VZ	
<i>kaimb</i>	<i>go-m</i>	<i>He was sorry.</i>
<i>kilal</i>	<i>go-m</i>	<i>He was frightened.</i>
<i>nganjil</i>	<i>go-m</i>	<i>He was ashamed.</i>

The verb stem *e* having the basic meaning of *act* class E.

VS	VZ	
<i>amnge</i>	<i>e-r-im</i>	<i>He yawned.</i>
<i>tuk</i>	<i>e-r-im</i>	<i>He laughed.</i>
<i>ga</i>	<i>e-r-im</i>	<i>He cried.</i>

2.1.4.2. Complex Verb Types Ma, Mb and Mc.

Complex Verb type Ma is idiomatic and semantically unpredictable, and consists of a sequence of a Secondary Verb, which is uninflected other than for class, and a Simple Verb.

SV	Simp V	
<i>to</i>	<i>go-r-al</i>	<i>I will kill.</i>
<i>hit</i>	<i>die-CM-lsg</i>	
<i>ni</i>	<i>pi-s-al</i>	<i>I will ask.</i>
<i>speak</i>	<i>hear-CM-lsg</i>	
<i>se</i>	<i>pi-s-al</i>	<i>I will think.</i>
<i>put</i>	<i>hear-CM-lsg</i>	

Complex Verb type Mb consists of the Secondary Verb *ni*, which is uninflected other than for a zero Class-Marker, plus a Simple Verb inflected for the Completive aspect. This Complex Verb type is used to indicate the Purposive aspect and occurs following a direct quote.

Quote	CV-Mb	
" <i>Pu-n-al.</i> "	<i>ni e-r-in</i>	<i>You acted intending to go</i>
<i>go-CM-lsg</i>	<i>speak act-CM-2sg</i>	
" <i>No-n-al.</i> "	<i>ni wo-m</i>	<i>He has come in order to eat.</i>
<i>eat-CM-lsg</i>	<i>speak eat-3sg</i>	
" <i>To-n-a-mbi!</i> "	<i>ni wo-nj-i!</i>	<i>We have come intending to</i>
<i>hit-CM-Ft-dl</i>	<i>speak come-C-dl</i>	<i>kill.</i>

The verb filling the head slot of the quote is inflected for first person, and the Simple Verb component of the Complex Verb agrees in

number with this Verb. The Simple Verb slot is usually filled by verbs which express such actions as *to act e*, *to come wo*, *to go pu*.

The Puspositive aspect is used to indicate that one action is being carried out in order to perform another one.

Complex Verb type Mc consists of the Secondary Verb ni, which is uninflected other than for a zero Class-Marker plus the Simple Verb pi. This Complex Verb type is used to indicate the desiderative aspect and occurs following a direct quote.

Quote	CV-Mc	
"Go-r-aI," <i>die</i> -CM-lsg	ni pi-s <i>speak know</i> -lsg	<i>I desire to die.</i>
"Pu-n-a-mbiĭ," <i>go</i> -CM-Ft-dl	ni pi-nj-iĭ <i>speak know</i> -C-dl	<i>We desired to go.</i>

The last verb within the predicate slot of the quote is inflected for first person, and the Simple Verb component of the Complex Verb agrees in number with this verb.

The Desiderative aspect is used to indicate that the speaker desires to perform the action mentioned in the quote.

2.1.4.3. Complex Verb Type N

Complex Verb type N consists of a Secondary Verb which is inflected for class, plus a Complex Verb type L¹.

SV		CV L ¹	
	VS	VZ	
pi-l <i>hear</i> -CM ?	poĭ	to-m <i>hit</i> -3sg	<i>He understands.</i>
pi-l <i>hear</i> -CM ?	gi	ni-m <i>speak</i> -3sg	<i>He believes.</i>
ka-n <i>see</i> -CM ?	poĭ	to-m <i>hit</i> -3sg	<i>He comprehends.</i>

Although the Complex Verb type L¹ of this unit may occur in an utterance independent of the Secondary Verb, when these three formatives occur filling the head slot of the predicate of a verb phrase they are grammatically and semantically related as a complex word. Grammatically the Secondary Verb is dependent on the inflection of the Verbalizers for Person-Number, Aspect, and Mood; Semantically the parts have separate meanings to the whole: as used in the example above.

pi-l	to-m	has no meaning, whereas
hear-CM	hit-3sg	
poł	to-m	means to urinate.
?	hit-3sg	

2.1.4.4. Complex Verb Type 0

Complex Verb type 0 consists of a Secondary Verb which is inflected for class, plus an Adjective and an Independent or Primary Verb. The verb stems of both the Secondary and Independent or Primary Verb in this Complex Verb, are the same.

The function of this Complex Verb type is to intensify the meaning of a Verb Phrase (2.1.5.4.), the structure of which parallels this Complex type except for the presence of the Secondary Verb.

Complex Verb type 0:

SV	Aj	Simp V	
ka-n	ka	ka-m	<i>He loved.</i>
see-CM	good	see-3sg	
pi-l	ka	pi-m	<i>He liked.</i>
hear-CM	good	hear-3sg	
e-r	ka	e-r-im	<i>He corrected.</i>
act-CM	good	act-CM-3sg	

Non-intensive Verb Phrase type (See Section 2.1.5.4.)

Aj	Simp V	
ka	ka-m	<i>He saw clearly.</i>
good	see-3sg	
ka	pi-m	<i>He heard well.</i>
good	hear-3sg	
ka	e-r-im	<i>He acted well.</i>
good	act-CM-3sg	

My observations indicate that this verb type is limited to the above three examples with the exception that *ka good* may be replaced by *kes evil*, in which case the meanings of the three examples would be *hated*, *disliked*, and *corrupted*, respectively.

A comparison of the meanings of the comparable Complex Verb type 0 and the Verb Phrase indicates that in English one may not derive the Verb Phrase meaning from the Complex Verb, however, apart from saying that the Complex Verb meaning is therefore idiomatic, I would add that a knowledge of the Wahgi language permits one to respond to these derived meanings.

2.1.5. The Verb Phrase

The Verb Phrase is defined as a sequence of two or more components which exhibit a modifier-head relationship. One of the components is a verb. Matrix 24 illustrates the four types of Verb Phrase used in the Wahgi language.

The Complex Verb sequences are distinct from the Verb Phrase sequences on the basis of meaning and co-occurrence. A Complex Verb consists of components which occur together in a close knit sequence in order to give a particular meaning. When occurring in this sequence the components usually lose the meaning they had in isolation. A Verb Phrase, on the other hand, consists of a modifier slot which may be filled by various modifiers, and a head slot which may be filled by any verb. When these words occur filling their respective slots in the Verb Phrase they do not lose the meaning which they have in isolation except for *paki* in the *paki* Periphrase. (See Section 2.1.5.1.). These differences are illustrated by the following:

(a) The close knit sequences of Complex Verbs:

VS	VZ	
gi	ni-m	<i>It smouldered.</i>
?	<i>speak-3sg</i>	
gi	e-n-im	<i>He flinched.</i>
?	<i>act-CM-3sg</i>	
ame	e-n-im	<i>He sat.</i>
?	<i>act-CM-3sg</i>	

In isolation *nim* means *He spoke*, and *enim* *He acted*, but no consistent meaning has been observed for either Verb Specifier when they occur in complex verbs. The symbol ? indicates that no meaning can be identified.

(b) One modifier may modify any verb in a Verb Phrase:

Mod	V	
<i>muke ni</i>	pu-m	<i>He went quickly.</i>
<i>quickly</i>	<i>go-3sg</i>	
<i>muke ni</i>	no-m	<i>He ate quickly.</i>
<i>quickly</i>	<i>eat-3sg</i>	
<i>muke ni</i>	ngo-m	<i>He gave quickly.</i>
<i>quickly</i>	<i>give-3sg</i>	

(c) One verb may occur with any modifier in a Verb Phrase:

Mod	V	Mod	
	e-r	paki-l	<i>Act.</i>
	act-CM	place-CM	
	e-r-ind	mi	<i>I am acting.</i>
	act-CM-lsg	being	
ka	e-r-ind		<i>I will act.</i>
good	act-CM-lsg		
muke ni	e-r-ind		<i>I act quickly.</i>
quickly	act-CM-lsg		
	e-r-ind	ma	<i>I did not act.</i>
	act-CM-lsg	negative	

Matrix 24. Compares Verb Phrase types.

Verb Phrase type	Structure	Meaning
paki Periphrase	+SV +AuxV	(See description)
Durative "	+SV +StV	Duration
Reduplicative "	+SV +PV/IndV	Continuance
General Verb Phrase	±Mn ±Mod +Hd ±L	(See description)

2.1.5.1. paki Periphrase

The paki Periphrase consists of any Secondary Verb which is inflected only for class, plus an Auxiliary Verb (Aux V). The Auxiliary Verb consists of any form of the verb paki *place* which in this case loses its basic meaning and acts as a base by which the Secondary Verb, in effect, might be inflected for the various categories (in addition to Class-Marker) appropriate to a Primary Dependent or Independent Verb.

The Auxiliary Verb does not add lexical meaning to the Secondary Verb when this phrase type is composed of a Secondary Verb plus a Primary Verb. In fact, this form of the paki Periphrase has the same meaning as the ordinary Primary Verb.

SV	Aux V:PV	
ngo	paki-l-mbe	<i>He gives and...</i>
give	Aux-CM-3sg	
	PV	
	ngo-mbe	<i>He gives and...</i>
	give-3sg	

When the *paki* Periphrase consists of a Secondary Verb plus an Independent Verb, then an extra semantic component of completeness is added to the Verb Phrase that is not present in the corresponding aspect of an Independent Verb. This 'completeness' is referred to as the Punctiliar aspect.

SV	Aux V: Ind V	
ngo	paki-m	<i>He has finished giving.</i>
<i>give</i>	Aux-3sg	
to	paki-m	<i>He has finished hitting.</i>
<i>hit</i>	Aux-3sg	

When the Independent Verb is used with out the Auxilliary it gives a slightly different meaning: that is the action loses its sense of finality.

Ind V	
ngo-m	<i>He gave</i>
<i>give-3sg</i>	
to-m	<i>He hit</i>
<i>hit-3sg</i>	

The verbs *moki-l to place*, and *seke-ɪ to raise* also act as Auxilliary verbs with the same meaning as *paki-l*, but they occur less frequently.

to moki-l-mbin	<i>you hit</i>
<i>hit place-CM-3sg</i>	
no seke-ɪ-mbin	<i>you eat</i>
<i>eat rouse-CM-3sg</i>	

The *paki* Periphrase has been found to be of crucial importance to the analysis of the Semantic Sentence Structure and has been described more fully in 'The Semantic Sentence in Wahgi' (to appear).

2.1.5.2. Durative Periphrase

The Durative Periphrase consists of any Simple or Complex Verb, plus the Stative Verb *mi to be* (St V) and is used to indicate the Durative aspect. The Simple or Complex Verb component is either a Secondary or Independent Verb, and denotes the lexical meaning of the phrase, whereas the Stative Verb indicates that the action is enduring.

V	St V	
e-r-ind		<i>I am working.</i>
<i>act-CM-1sg</i>		

V	St V	
e-r-ind	mi	<i>I am continuing to work.</i>
act-CM-lsg	be	
e-r	mo-nd	<i>I was working.</i>
act-CM	be-lsg	

The Stative Verb agrees in Person-Number with the Person-Number of the Independent Verb, and with the Person-Number of the Secondary Verb which has been indicated in the sentence containing the Secondary Verb:

nim konngan	e-r	mi-n	<i>You are continuing to work.</i>
<i>you work</i>	act-CM-be-2sg		

The Independent Verb always occurs in the Continuous Aspect and is, together with the Secondary Verb, reliant on the Stative Verb inflection for indicating either AC, C, Ct, or P aspects. The Stative Verb therefore details when the continuous action of the other verbs is being carried out.

no-nd	mo-i	<i>I was eating.</i>
eat-lsg	be-AC	
pi-l	mo-r-a-mbiꞤ	<i>We will be listening.</i>
hear-CM	be-CM-Pt-dl	

Any one of three such Stative Verbs 'to be' fill the modifier slot of this type of phrase.

Type:	Animate	Animate-Inanimate	Inanimate			
	mi-m	He is	pa-i-m	He/it is	s-i-m	It is
	be-3sg		be-Ct-3sg		be-Ct-3sg	

2.1.5.3. Reduplicative Periphrase Types (a) and (b)

The Reduplicative Periphrase type (a) consists of one or more Secondary Verb stems which reduplicate the Primary or Independent Verb stems of that clause. The reduplicated form always precedes the head verb of that periphrase and is inflected only for class.

Reduplicated verb stem	PV	Ind V		
go-Ꞥ	go-Ꞥ	go-Ꞥ-mbe	go-m	<i>He kept on dying.</i>
die-CM	die-CM	die-CM-3sg	die-3sg	
to	to	to-mbe	to-m	<i>He kept on hitting.</i>
hit	hit	hit-3sg	hit-3sg	

This Verb Phrase type indicates continuative action. Sub-type (b) is a Negative Reduplicated Periphrase. This periphrase type consists

of a Secondary Verb which is inflected only for class, and a Primary or Independent Verb which prefixes the negative morpheme. The Secondary Verb stem is a reduplication of the Primary or Independent Verb stem. The negative prefix of the Primary or Independent Verb also negates the action of the Secondary Verb.

This Periphrase type parallels the Independent or Primary Verb when it is prefixed by the negative, and is used to emphasize the negation of the action.

SV	PV	Ind V	
seke-ɪ		na-seke-r-il	<i>Definitely do not throw</i>
cast-CM		N-cast-CM-2sg	<i>(it) out.</i>
seke-ɪ	na-seke-ɪ-mbin		<i>Definitely do not throw</i>
cast-CM	N-cast-CM-2sg		<i>(it) out.</i>
		na-seke-r-il	<i>Do not throw (it) out.</i>
		N-cast-CM-2sg	

It is noted here that Wahgi expresses the fact that an action takes place over an extended time in several ways:

- (1) by use of the Habitutive: (See Section 2.1.1.1.4.)

no-rang-ind	<i>I always ate.</i>
eat-Hab-lsg	

- (2) by use of the Durative Periphrase: (See Section 2.1.5.2.)

no-nd mo-nd	<i>I was eating.</i>
eat-lsg to be-lsg	

- (3) by use of a Temporal phrase:

T Phr	V	
kunum kunum no-nd		<i>I always ate.</i>
time time eat-lsg		

- (4) by use of the Continuative aspect: (See Section 2.1.1.1.2.)

no-nd	<i>I eat.</i>
eat-lsg	

- (5) by use of the Reduplicative Periphrase: (See Section 2.1.5.3.)

no no no no no-nd	<i>I kept eating.</i>
eat eat eat eat eat-lsg	

2.1.5.4. *General Verb Phrase and Fillers*

The General Verb Phrase is presented in formula form:

Gen VPhr =	±Manner:CV-L ¹¹	±Mod:	ka	+Hd:	V	±Lat:	ma
			kes		paki Peri		eri
			dongal		Dur Peri		kos
			pepe		Redip Peri		
			Adv P				

That is a General Verb Phrase consists of an optional Manner Slot filled by Complex Verb type L¹¹, plus an optional Modifier slot filled by either *ka good*; or *kes evil*, or *dongal strong*, or *pepe quick*, plus obligatory Head slot filled by either any Verb, or a *paki Periphrase*, or a *Durative Periphrase*, or a *Reduplicative Periphrase*, plus an optional Lateral slot filled by either *ma negative*, or *eri only*, or *kos only*.

The fillers of the Manner slot have already been described under Complex Verb type L¹¹.

The fillers of the Modifier slot add to the meaning of the verb by describing some attributive quality.

Mod	V	
<i>ka</i>	<i>e-nd-il</i>	<i>You will act well.</i>
<i>good</i>	<i>act-CM-2sg</i>	
<i>dongal</i>	<i>mo-ɬ</i>	<i>Be strong.</i>
<i>strong</i>	<i>to be-CM</i>	

There is often some ambiguity as to whether the modifier is actually modifying the verb, or whether it is modifying a contiguous noun.

Pr	Nn	Mod	V	
<i>nim</i>		<i>ka</i>	<i>e-nd-il</i>	<i>You will act well</i>
<i>2sg</i>		<i>good</i>	<i>act-CM-2sg</i>	<i>OR You being good will act.</i>
<i>nim</i>	<i>konngan</i>	<i>ka</i>	<i>e-nd-il</i>	<i>You will work well</i>
<i>2sg</i>	<i>work</i>	<i>good</i>	<i>act-CM-2sg</i>	<i>OR You will do good work.</i>

The fillers of the Head slot have already been fully described under their respective sections, (for the verb see Section 2.1.2.-2.1.4.).

The fillers of the Lateral slot are *ma not*, and *eri so*, or *just*, and *kos so*. These fillers tend to either limit or emphatically negate the action of the filler of the Head slot.

V	L	
<i>ni-nd</i>	<i>eri</i>	<i>I said so. or I just said.</i>
<i>speak-lsg</i>	<i>so/just/only</i>	
<i>ni-nd</i>	<i>ma</i>	<i>I did not say.</i>
<i>speak-lsg</i>	<i>not</i>	

2.1.5.5. Complex Verb Phrases

Complex Verbs expand into Complex Verb Phrases (C V Phr) by the addition of *wei very!*

To the Complex Verb types Lⁱ, Lⁱⁱⁱ, N and O *wei* is optionally added either preceding the Verb Specifier or the Verbalizer, but *wei* may only occur once in the phrase.

CV L ⁱ	muke wei ni-m ? very speak-3sg	<i>Very quickly.</i>
or	wei muke ni-m very ? speak-3sg	
CV L ⁱⁱⁱ	kusin wei e-n-im ? very act-CM-3sg	<i>Really sweating.</i>
or	wei kusin e-n-im very ? act-CM-3sg	
N	Pil poł wei to-m know ? very hit-3sg	<i>Really comprehend.</i>
or	wei pil poł to-m very know ? hit-3sg	
O	kan ka wei ka-m ? good very see-3sg	<i>Really love.</i>
or	wei ka-n ka ka-m very see-CM good see-3sg	

To the Complex Verb types Lⁱⁱ, and Ma, *wei* is optionally added before the Complex Verb.

L ⁱⁱ	wei muke muke ni-m very ? ? speak-3sg	<i>Very very quickly.</i>
Ma	wei to go-r-al very hit die-CM-lsg	<i>Really murder.</i>

Complex Verb types Mb and Mc do not add *wei*, but *wei* is added in the quoted clause.

Mb	wei pu-n-al ni e-r-ind very go-CM-lsg I act-CM-lsg	<i>I really want to go.</i>
Mc	wei go-r-al ni pi-s very die-CM-lsg I hear-CM	<i>I really desire to die.</i>

2.1.6. List of Simple Verbs in their Respective Classes

Each verb stem will be given in the second person singular imperative, and the first person singular continuative aspect. These two parts of the verb unambiguously determine the class of the verb:

Meaning	Class of the Verb, and Class Marker Allomorph
	A \emptyset & \emptyset B - $\dot{\iota}$ & -r C -l & -s D -n & -ni E -r & -r F - \emptyset & -i G - $\dot{\iota}$ & \emptyset
<i>eat</i>	no no-nd
<i>hit</i>	to to-nd
<i>mate</i>	to to-nd
<i>give</i>	ngo ngo-nd
<i>go</i>	po pu-nd
<i>come</i>	wo wo-nd
<i>thatch</i>	koi koi-nd
<i>burn</i>	do do-nd
<i>shine</i>	do-m
<i>sharpen</i>	pos pos-ind
<i>slice</i>	tong tong-ind
<i>shave</i>	bar bar-ind
<i>converse</i>	tang tang-ind
<i>pluck</i>	tang tang-ind
<i>read</i>	belt bel-ind
<i>read</i>	gelt gel-ind
<i>hearken</i>	kau kau-nd
<i>build</i>	tau tau-nd
<i>cut banana</i>	tau tau-nd
<i>grow</i>	au au-nd
<i>carry</i>	kau kau-nd
<i>squeeze</i>	dau dau-nd
<i>scrape</i>	manger manger-ind
<i>crack</i>	ger ger-ind
<i>shave</i>	gu gu-nd
<i>wash</i>	kur kur-und
<i>find</i>	kur kur-und
<i>bring</i>	tu tu-nd
<i>extinguish</i>	mung-um
<i>bring</i>	wur wur-und
<i>pluck</i>	wur wur-und
<i>soak</i>	bur bur-und
<i>decompose</i>	bur-um
<i>shear</i>	wur wur-und
<i>sharpen</i>	kus kus-ind

Meaning	Class of the Verb, and Class Marker Allomorph
	A \emptyset & \emptyset B - $\dot{\text{z}}$ & -r C -l & -s D -n & -ni E -r & -r F - \emptyset & -i G - $\dot{\text{z}}$ & - \emptyset
<i>joke</i>	kus kus-ind
<i>shut eyes</i>	kupis kupis-ind
<i>bind arrow</i>	kupis kupis-ind
<i>shut door</i>	tung tung-und
<i>run</i>	sikir sikir-ind
<i>take away</i>	sip sip-ind
<i>carry on back</i>	ming ming-ind
<i>climb tree</i>	ming ming-ind
<i>cover up</i>	bis bis-ind
<i>reverse</i>	singind singing-ind
<i>house collapse</i>	per-im
<i>clear ground for gutter</i>	per per-ind
<i>take</i>	se si-nd
<i>speak</i>	ne ni-nd
<i>to be</i>	si-m
<i>dart aside</i>	okis okis-ind
<i>die</i>	go- $\dot{\text{z}}$ go-r
<i>pierce</i>	bo- $\dot{\text{z}}$ bo-r
<i>conceived</i>	bo- $\dot{\text{z}}$ bo-r
<i>dig</i>	bo- $\dot{\text{z}}$ bo-r
<i>write</i>	bo- $\dot{\text{z}}$ bo-r
<i>act</i>	da- $\dot{\text{z}}$ da-r
<i>speak</i>	da- $\dot{\text{z}}$ da-r
<i>dry up</i>	da-s-im
<i>plant</i>	ta- $\dot{\text{z}}$ ta-r
<i>cook</i>	ga- $\dot{\text{z}}$ ga-r
<i>rouse</i>	seke- $\dot{\text{z}}$ seke-r
<i>send</i>	ke- $\dot{\text{z}}$ ke-r
<i>fold</i>	kimbi- $\dot{\text{z}}$ kimbi-r
<i>dress</i>	ke- $\dot{\text{z}}$ ke-r
<i>give birth</i>	kangi- $\dot{\text{z}}$ kangi-r
<i>hoïd</i>	ambi- $\dot{\text{z}}$ ambi-r
<i>build bridge</i>	ku- $\dot{\text{z}}$ ku-
<i>fill</i>	ku- $\dot{\text{z}}$ ku-r
<i>plant</i>	ku- $\dot{\text{z}}$ ku-r
<i>bake</i>	bu- $\dot{\text{z}}$ bu-r
<i>tie up</i>	tumbu- $\dot{\text{z}}$ tumbu-r
<i>undress</i>	gu- $\dot{\text{z}}$ gu-r

Meaning	Class of the Verb, and Class Marker Allomorph	
	A Ø & Ø B -ɪ & -ɾ C -l & -s D -n & -ni E -r & -r F -Ø & -i G -ɪ & -Ø	
<i>elect</i>	moki-l	moki-s
<i>bite</i>	kongi-l	kongi-s
<i>place</i>	paki-l	paki-s
<i>stand</i>	angi-l	angi-s
<i>dig</i>	aki-l	aki-s
<i>dig</i>	waki-l	waki-s
<i>stamp</i>	kambi-l	kambi-s
<i>exchange</i>	bengi-l	bengi-s
<i>chop</i>	tuki-l	tuki-s
<i>hear</i>	pi-l	pi-s
<i>believe</i>	pi-l	pi-s
<i>understand</i>	pi-l	pi-s
<i>lay flat</i>		
<i>covering</i>	kupi-l	kupi-s
<i>cut</i>	kopi-l	kopi-s
<i>see</i>		ka-n ka-nj
<i>wander</i>		wa-n wa-nj
<i>act-work</i>		e-r e-r-ind
<i>sleep</i>		pa-i pa-i
<i>place</i>		se-i si
<i>to be</i>		moɪ mi

Some of the verbs only take the 3sg form. This form has been given for these verbs under their respective classes.

2.2. NOUNS AND PRONOUNS

2.2.1. Introductory Discussion

Nouns are forms which fill the head slot in a noun phrase. There are ten sub-classes of Nouns. These are defined on the basis of three criteria: (1) by the presence or absence of diagnostic affixation, (2) by the possibility of possession in the noun phrase as noted in Chart 6, and (3) by its position in a noun phrase, as indicated in Matrix A.

2.2.1.1. Comparison of Noun Sub-Classes

The ten sub-classes are referred to by a numbering system from 111 to 120. The following chart and examples demonstrate the affixation possible for nouns, and the Possessor-Possessed relationship combinations possible between the sub-classes of nouns.

CHART 6

The Distinctive Morphological Features of Wahgi Noun Sub-classes

Sub-class	Example	FEATURES		
		Diagnostic Morpheme	Possessed	Possessor
111	Komis	none*	-	±
	Jimbin	± loc: -mil	-	±
112	Tapi	± loc: -ang/gender	±	±
113	Berep	± loc: -ang/±-ka	-	±
114	mambunum	± loc: -ang	±	±
115	gar	± loc: -ang/pos/ps	±	±
116	bu	± em/±pos/±loc:-ang	+	±
117	dam	+ pos/loc:-ang	+	±
118	tau nol	none*	±	±
119	se nond	none*	+	±
120	konme amb	none*	±	±

*Although no diagnostic morphology - see discussion in body of the chapter.

All noun types may be used as possessor in a noun phrase.

All noun types may be suffixed with the interrogative and polite reply clitics:

Interrogative clitics	-mo/-kene
Polite Reply clitics	-pe/-kena

For the order of morphemes affixed to the noun stem, and the possibility of combinations of these morphemes see Chart 8.

Examples of the Possessor-Possessed relationship indicated in Chart 6.

Sub-class	As Possessed	As Possessor
111	not	Komis yi <i>A Hagen man</i> <i>place-name man</i>
112	Kupe Tapi <i>name name</i>	<i>Kupe's Tapi</i> Tapi gar <i>Tapi's house</i> <i>name house</i>
113	not	Berepka yi <i>A Berepka clan man</i> <i>clan-name man</i>
114	Tapi mambunum <i>name custom</i>	<i>Tapi's custom</i> mambunum bu <i>Cultural thought</i> <i>custom thought</i>
115	yi gar <i>man house</i>	<i>a man's house</i> gar mambunum <i>The custom of the house</i> <i>house custom</i>
116	Tapi bu <i>name thought</i>	<i>Tapi's thought</i> bu mambunum <i>The way of thought</i> <i>thought custom</i>

	Sub-class As Possessed		As Possessor	
117	elim dam he father	his father	dam gar father house	his father's house
118	na tau nol me friend	my close friend	tau nol gar friend house	A friend's house
119	na se nond me friend	my friend	se nond gar friend house	My friend's house
120	dam konme amb	His father's konme amb	konme amb gar	The girl konme amb's house

These examples have demonstrated that certain noun types in combination exhibit relationships of possessed-possessor, however within these possessive structure relationships there are eight different semantic based relationships. These relationships are based on the the lexical items used in the possible noun combinations of the noun phrases.

2.2.1.2. Semantic Relationships Exhibited in the Noun Phrases.

CHART 7

The Semantic Relationships Exhibited by Nouns in Combination

Types occurring within the possessive combination:

Coordination (Co)	
Source-Person (SP)	+
Possession (Pos)	+
Whole-Part (WP)	+
Part-Whole (PW)	+
Source-Thing (STh)	+
Apposition (A)	
Location-Thing (LTh)	+
Location-Place (Lpl)	
Location-Person (LP)	
Generic-Specific (GS)	
Possessed-Possessor (PP)	+

Examples of the combinations noted in Chart 7

- (1) Those within the possessive relationship:
- (SP) mambunum yi *A man of the law*
custom man
 - (Pos) Tapi Kupe *Tapi's wife Kupe*
name name

- | | | | |
|----|-------|--------------------------------|--|
| 3. | (WP) | Berepka Tapi
clan-name name | A man of the Berepka clan
called Tapi |
| 4. | (PW) | Kupe Kondika
name clan-name | A woman called Kupe of the
Kondika clan |
| 5. | (STh) | Tapi mambunum
name custom | It is Tapi's custom |
| 6. | (LTh) | Komis gar
name-place house | A house at Hagen |
| 7. | (PP) | gar dam
house father | The head of the household |
- (ii) Those outside the possessive relationship:
- | | | | |
|----|-------|---|---------------------------------|
| 1. | (Co) | Berepka Kondika...
clan-name clan-name | The Berepka and Kondika...clans |
| 2. | (A) | dam Tapi
father name | ...his father, Tapi |
| 3. | (Lp1) | Komis komeng
place-name mountain | The mountain at Hagen |
| 4. | (LP) | Komis tau nol
place-name close-friend | A close friend from Hagen |
| 5. | (GS) | gar ond
house wood | A piece of wood of the house |

It is noted that the phrases of Chart 7:

- | | | | |
|---------|-------|--------------|----------------------------|
| (ii) 3. | (Lp1) | Komis komeng | The mountain at Hagen; and |
| (i) 6. | (LTh) | Komis gar | A house at Hagen |

are considered to be different noun phrase types on the basis of different types of nouns occurring in the slot following *Komis*. *Komeng* is noun type 114, while *gar* is noun type 115.

Matrix A Possible Combinations of Wahgi Nouns and the Semantic relationship thereby exhibited.

For ease of reference only the final figure of the noun sub-class will be used i.e. 112 will be referred to as 2, and each cross reference section in the Matrix will receive two figures i.e. the first figure represents the first noun of the noun phrase, and the second figure the second noun.

Matrix A. Possible Combinations of Wahgi Nouns.

Sub-class Reference

	1	2	3	4	5	6	7	8	9	10
	Komis	Tapi	Berep	mambunum	gar	bu	dam	tau nol	se nond	konme amb
1	Co 11	SP 12	13	STh 14	Lth 15	Lpl 16	SP 17	LP 18	LP 19	LTh 10
Komis					LP					
2	21	Pos 22	FW 23	STh 24	Pos 25	Pos 26	Pos 27	Pos 28	Pos 29	Pos 20
Tapi		Co				STh				
3	Co 31	WP 32	Co 33	Sth 34	SP 35	Pos 36	Pos 37	WP 38	Pos 39	WP 30
Berep					Lth,Pos					
4	41	42	43	Co 44	Pos 45	46	47	48	49	40
mambunum					SP STh		PP			
5	51	52	53	STh 54	Pos 55	56	Pos 57	58	59	GS 50
gar					Co GS		PP			
6	61	62	63	STh 64	STh 65	Co 66	Pos 67	68	69	60
bu							PP			
7	71	Pos 72	73	STh 74	Pos 75	Pos 76	Pos 77	Pos 78	Pos 79	Pos 70
dam		A				STh	Co			
8	81	Pos 82	FW 83	STh 84	Pos 85	Pos 86	Pos 87	Pos 88	Pos 89	Pos 80
tau nol		A				STh		Co		
9	91	Pos 92	93	STh 94	Pos 95	Pos 96	Pos 97	98	Pos 99	Pos 90
se nond		A				STh				
0	01	Pos 02	03	STh 04	Pos 05	STh 06	Pos 07	Pos 08	Pos 09	Co 00
konme amb										

Key to Matrix abbreviations:

Summarized as:

In Chart 7	In Matrix A	
Co	Co	Co-ordination
Pos	SP	Source-Person
Pos	Pos	Possession
Pos	WP	Whole-Part
A	A	Apposition
Pos	P.W.	Part-Whole
Pos	STh	Source-Thing
Pos	LTh	Location-Thing
GS	GS	Generic Specific
Lpl	Lpl	Location Place
Pos	PP	Possessed-Possessor
LP	LP	Location-Person

Summary of Matrix A

1. Two words of the same noun Sub-class may be combined in a coordinate noun phrase except 99. Apart from these geminate combinations, 31 also occurs as a coordinate noun phrase. Combinations 72, 82 and 92 may also occur but are infrequent.

2. Within the Possessed-Possessor relationship the following occur: SP - 42.

Pos- 22, 25, 26, 27, 28, 29, 20, 36, 37, 39, 45, 55, 57, 67, 75, 76-77, 78, 79, 70, 82, 85, 86, 87, 88, 89, 80, 92, 95, 96, 97, 99, 90, 01, 05, 07, 08, 09.

WP - 32, 38, 30, 37.

PW - 28, 83.

STh- 14, 26, 34, 45, 54, 64, 65, 74, 76, 84, 86, 94, 96, 04, 06.

LTh- 15, 10.

PP - 47, 57, 67.

3. Outside the Possessed-Possessor relationship the following occur: GS - 55, 50.

A - 72, 82, 92.

Lp1- 16.

LP - 15, 18, 19.

2.2.1.3. Noun Morphemes and their Occurrence

CHART 8

Morpheme Order and Suffixes Relative to Sub-class of Nouns

Noun Type	Example of Stem	Order of Suffix			
		1	2	3	4
111	Komis <i>Hagen</i>				
	Jimbin <i>A place</i>	± mi l			
112	Tapi <i>A name</i>			± ang	
		± gender			± o
113	Berep <i>A clan name</i>	± ka		± ang	
114	mambunum <i>custom</i>			± ang	
115	gar <i>house</i>		± possessive person	± ang	
		± nge			± mo ± kene ± pe
116	bu <i>thought</i>	± ai	± possessive persons	± ang	± kena with all nouns

Noun Type	Example of Stem	1	2	3	4
117	da <i>father</i>		± possessive persons	± ang	
			± possessive persons	± na	± o
		± p/m			± o
Complex Nouns					
118	tau no <i>banana friend</i>	± l fully inflected verb stem			± o
119	se no <i>friend</i>	+ Asp	+ PN	± ang	± o
120	konme amb <i>a sweet potato name</i>				

2.2.1.4. Detailed Discussion of the Noun Types 111-120

Sub Class 111 consists of place names which are further sub-divided on the basis of affixation, but which consist of nouns which may not be possessed in a noun phrase but which may optionally be used as possessor of another noun in a noun phrase.

Sub-sub-class 1111 consists of simple place names which do not take affixes of order 1-3.

Komis *Hagen*
Hagen

Sub-sub-class 1112 consists of simple place names which are optionally suffixed with *-mil*. This morpheme indicates that the noun stem is a botanical derivative.

Monde-mil *Mondemil*
tree name -bt

Sub Class 112 consists of personal names which are optionally affixed for location and gender, which are optionally possessed in a noun phrase, and which may be used as possessor in a noun phrase.

The locative morpheme *-ang/-aɬ* or the allomorphs of *-ang*: *~ing ~eng ~ung*, although grammatically attached to the whole of a noun phrase, is phonologically bound to the noun. (This morpheme will simply be referred to as the locative morpheme *-ang* from now on.)

Tapi-ang *towards Tapi*
Tapi-to/at/on

The gender morphemes *-yi male* and *-amb female* may be suffixed to this noun type to indicate whether the owner of the name is either 'male' or 'female'. Since names are not sex differentiated these morphemes are used to clarify the issue.

Tapi-amb *The woman Tapi*
 Tapi-female

Sub Class 113 consists of clan names which are optionally affixed for location and for fraternity. The morpheme *-ka* *fraternity* is suffixed to the stem.

Kondi-ka *The Kondika clan*
 Kondi-fr

These nouns are not possessed, but may be used as the possessor in a noun phrase.

Kondi-ka yi *A Kondika man*
 Kondi-fr man

Sub Class 114 consists of nouns which may be optionally affixed with the locative suffix *-ang*, and which may optionally be possessed or act as the possessor in a noun phrase.

mambunum-ang *in the behaviour*
 behaviour-loc

Sub Class 115 consists of nouns which are optionally suffixed with the possessive, personification, and locative morphemes, and which may be optionally possessed or used to act as the possessor in a noun phrase. This noun class is numerically the largest.

gar-nan-ang *at my house*
 house-my-loc

mał-njił-ang *on our land*
 ground-our-loc

opur-nge *the lizard (said)*
 lizard-ps

The possessive morphemes which may be suffixed to this Sub-class and of Sub-classes 116, and 117 are listed in Matrix B.

Matrix B. Possessive morphemes which suffix to noun Sub-classes as indicated in Charts 6 and 8.

Person	Singular	Number	
		Dual	Plural
1	-nan	-njił	-njin
2	-nim	-njił	-njip
3	-m	-njił	-njip

Sub-class 115 nouns may optionally be suffixed with the pluralizer clitic *-na*. When this is suffixed it is obligatory to also suffix the possessive morphemes.

tu-nan-na
dog-my-pl

my dogs

The pluralizer *-na* is referred to as a clitic because its function is to pluralize either one or more nouns of Sub-classes 115 and 117 when they occur in a coordinating noun phrase. It is suffixed to the final noun of the phrase.

Example from
Sub-class 115

tu-nan kong-nan-na
dog-my pig-my-pl

my many dogs and pigs

Example from
Sub-class 117

da-m ma-m-na
father-his mother-his-pl

his fathers and mothers

Sub-class 116 consists of nouns which are optionally affixed and which are obligatorily possessed in a noun phrase, but which are optionally used to act as the possessor in a noun phrase. These nouns are similar to Sub-class 115 but are optionally affixed with an extra suffix *-ai* *Emphasis* to emphasize the aspect of possession. The Sub-class is a small class of nouns including the following:

bu	<i>thought/will</i>	koɪ	<i>friend</i>
yu	<i>speech</i>	noɪ	<i>water</i>
kone	<i>place</i>	ond	<i>tree</i>
numan	<i>mind</i>	maɪ	<i>ground</i>
	bu-ai-nan-ing		<i>My own thought/will</i>
	<i>thought-em-pos-loc</i>		
	kone-ei-m-ing		<i>His own place</i>
	<i>place-em-pos-loc</i>		

Restriction of occurrence of these morphemes is described by the following formula:

Noun Type 116: St $\left[\begin{array}{c} + \\ \text{em} \end{array} \right] \text{pos} \pm \text{loc}$

That is all suffixes are optionally suffixed. Nevertheless when the suffix *-ai* occurs the possessive suffix obligatorily occurs.

It is noted that the emphasis morpheme *-ai* has the allomorph *-ei* (when noun stem vowel final is *e*.) It is further noted that when the noun stem *numan* *mind* is used the emphasis morpheme *-ai* is only used with the first person singular form.

numan-ai-nan-ing
mind-em-pos-loc

My own mind

Sub Class 117 consists of kinship terms which are obligatorily affixed for possessive, and which are obligatorily possessed in a noun phrase, but which are optionally used as the possessor in a noun phrase; that is with the exception of two noun forms occurring in the vocative case. Nouns of this Sub-class are optionally affixed for location.

da-nan-ang *to my father*
 father-pos-loc

Nouns of this Sub-class are optionally affixed with the clitic *-na pluralizer*.

ma-m-na *his mothers*
 mother-pos-pl

The two noun forms which are used in the vocative case are:

da-p *father*
 father-vo

a-m *mother*
 mother-vo

The form *dap* *father* is used to refer to men to whom an exact kinship relationship is not specified. The form *am* is used by children when addressing their mothers. To Sub-class 117 may optionally be affixed the polite-address clitic *-o*.

da-nan-o *my father,...*
 father-pos-poA

da-p-o *Father...*
 father-voc-poA

Sub-class 118 consists of complex nouns which are obligatorily affixed with the similitude morpheme *-l* and which are optionally possessed or used as the possessor in a noun phrase.

This complex noun type may also be described as one type of nominalized clause, in that it has what might be referred to as an Object slot and a Predicate slot.

Obj	Prd	
tau	no-l	<i>banana eater</i>
		<i>banana eat-sm</i>

The Predicate slot is filled by a verb stem *no to eat* and the suffix *-l similitude*. This suffix is a regular feature of the Independent Verb and demonstrates that in actuality the action is not really being performed as the observer imagines.

elim go-l er mim *he is as though dead*
 he die-sm *being*

Consequently when the similitude morpheme -l is used in this noun type it is referring to some relationship which is not immediately obvious to the observer. In point of fact tau no-l *banana eating friend* is referring to an instance which took place when the addressed and the addressor shared a banana, or some such food. Subsequent to that experience these two have and will refer to each other only by this term and not by their given personal names.

The polite address clitic -o may optionally be suffixed to the final member of this complex noun type.

tau no-l-o	<i>Banana eating, eh...</i>
banana St-pl-poA	

The Object slot is filled by nouns of Sub-class 115, which are optionally inflected for Possession.

tau-njił no-l	<i>Our two banana eating friends</i>
banana-dl eat-sm	

Sub-class 119 consists of two complex nouns which are obligatory affixed for possession, and are obligatorily possessed in a noun phrase, but which are optionally used as possessor in a noun phrase. They are also optionally suffixed with the polite address clitic -o.

This complex noun type may also be described as one type of nominalized verb phrase, the second part of which is fully inflected as in an independent verb.

Verb phrase	
se no-nd	<i>my friend</i> (idiomatic meaning)
to place st-lsg	
to place I ate	(literal meaning)

The first part of this complex noun is *se to place* or *kan to see* which are secondary dependent verb stems. The second part of the verb stem is *no to eat*, plus its affixation. But in this case the Person-Number suffixes (see Verb chapter Section 2.1.1.2. Matrix 4) although agreeing with Subject of the clause in which this noun occurs, denotes possession, or a special relationship with one addressed. Nevertheless the aspect morphemes of this verb stem denote the time when this relationship is in vogue, and the negative prefix *na-* of the verb, when it occurs, negates this relationship.

se na-no-nj-ił wombuł	<i>Those two who were not friends</i>
to place ng-st-C-dl are coming	<i>are coming</i>
se no-nd-o	<i>My friend, eh...</i>
to place st-lsg-poA	

Sub-class 120 consists of complex nouns which are not affixed, but which are optionally possessed, or used to act as the possessor in a noun phrase. This complex noun type is comprised of the names of sweet potato and taro and other vegetables. It consists of a name plus the word *amb femine* which is indicative of the feminine nature of the plant i.e. fruit bearing.

konme amb	<i>The sweet potato called Konme.</i>
konme fem	
pim amb	<i>The taro called Pim.</i>
Pim fem	

2.2.2. Pronouns

Pronouns are a closed class of inflectable free forms which substitute for noun phrases. They also fill the possessor slot in a noun phrase.

2.2.2.1. Basic Pronouns

The Basic Pronouns, that is non-emphatic pronouns, are as follows:

CHART 9

Basic Pronouns

Person	Number		
	Singular	Dual	Plural
1st exclusive	na	ki-l	ki-n
1st inclusive		ki-l-ip	ki-n-im
2nd	nim	e-l-ip	e-n-im
3rd	eI/e	e-l-ip e-l-ip	e-n-im e-n-im

A feature of these basic pronouns is that singular pronouns are indivisible in structure, whereas nonsingular are divisible. -l indicates dual number, -ip indicates dual inclusiveness, -n indicates plural number, -im indicates inclusiveness. The non-singular pronoun roots are: ki which indicates first person non-singular, and e which indicates non-singular.

2.2.2.2. Emphatic Pronouns

The emphatic pronouns are used as reflexives and possessives, and consist mainly of a reduplication of the initial pronoun root plus additional morphology. Each cell of Chart 10 demonstrates the variant forms for a particular Person-Number of the Emphatic Pronouns.

CHART 10

Emphatic Pronouns And Their Variant Forms

	Singular	Dual Exclusive	Plural Exclusive
1st exclusive	na-n-im	ki-nj-ił	ki-nj-in
	na-n-im na-n-im	ki-l	ki-n
	na-m	ki-l ki-nj-ił	ki-n ki-nj-in
	na-m na-m	ki-nj-ił ki-nj-ił	ki-nj-in ki-nj-in
	na na-m	Inclusive ki-l-ip	Inclusive ki-n-im
	na na-n-im	ki-l-ip ki-l-ip	ki-n-im ki-n-im
2nd	ni-n-im	e-l-ip	e-n-im
	ni-n-im ni-n-im	e-l-ip e-l-ip	e-n-im e-n-im
	ni-m		
	ni-m ni-m		
3rd	ni-m ni-n-im		
	el-im	e-l-ip	e-n-im
	el-im el-im	e-l-ip e-l-ip	e-n-im e-n-im
	el el-im		

Once again there is a clear division in these pronouns in that singular person emphatic pronouns suffix one type of morpheme -m̃-im, whereas non-singular persons suffix diverse morphemes. In the singular number the first and second and third persons pronouns parallel each other in their morpheme descriptions.

In the first and second persons the pronoun root is reduplicated to form a new stem. In this new stem the vowel of the basic root is lost or assimilated by the emphatic morpheme -m̃ -im.

Stem			
Root	Root	Eph	
na	- n -	im	<i>mine</i>
me	- me -	self	
ni	- n -	im	<i>yours</i>
you	- you -	self	

This emphatic form may be repeated.

ni	- n -	im	ni	- n -	im	<i>yours</i>
you	- you -	self	you	- you -	self	

In other forms the emphatic morpheme for this number -m̃ -im is suffixed directly to the unreduplicated root. This form may also be repeated to give another form:

na - m		<i>mine</i>
me - self		
na - m	na - m	<i>mine</i>
me - self	me - self	

This structure also occurs in the third person.

In contrast to these the basic pronoun is coupled to the emphatic form to give another emphatic pronoun type.

el el-im		<i>his</i>
he he-self		
na na-m		<i>mine</i>
me me-self		

The multiple person emphatic pronouns, except for the exclusive category, either use the basic form or repeat that form.

ki-l-ip	ki-l-ip	<i>ours</i>
lmlt-dl-incl	lmlt-dl-incl	

The exclusive persons add to the basic pronoun, a pronoun form which suffixes to the pronoun root the morphemes -njiḷ which indicates dual number, and -njin which indicates plural number.

ki-l	ki-njin	<i>ours</i>
lmlt-dl	lmlt-pl	

These two forms are used either separately or in various combinations as indicated in Chart 9.

Several things are noted concerning these pronoun forms. Firstly the morphemes -njiḷ and -njin are found also as morphemes in the Completive aspect of the Independent Verb.

no - nj - iḷ	<i>they both ate</i>
eat - C - dl	
no - nj - in	<i>We all ate</i>
eat - C - lpl	

Secondly it is noted that the plural inclusive forms are the nasalized forms of the dual inclusive forms, in that the alveolar l is replaced by the alveolar n, and the bilabial p is replaced by the bilabial m.

elip	>	enim
------	---	------

2.3. LOCATIONALS

Apart from the Verb and Noun Phrases, the Locative Phrase is by far the most expansive and complicated, and contrasts with the Temporal

Phrase, which is relatively simple in construction. Both the Locative and Temporal Phrases co-occur in the same Sentence and in the same areas of the Sentence. (Distribution of this type will be detailed in the Description of the Sentence.)

2.3.1. The Expanded Locative Phrase

Several types of Locationals are used by the Wahgi speaker. These are referred to by the following terms: Directionals (Dr); Elevationals (El); Definitionals (Df); Positionals (Ps); and Specifics (Sp). These occur singly and in combinations of different types. The most expanded combination is described here:

Sp.	Dr.	El.	Df.		Sp.	Ps.	
ya	ep	mine	gar	kone	ele	ori	(wonum)
<i>here</i>	<i>up</i>	<i>up</i>	<i>house</i>	<i>place</i>	<i>here</i>	<i>outside</i>	<i>(he comes)</i>
<i>He is coming outside of the house up here/there.</i>							

Each of the items occurring is optional to the phrase, and may occur more than once. Nevertheless stylistics determine certain restrictions. For instance the occurrence of the Specific more than twice would tend to overload the phrase with Specific derived emphasis. Added to this there is generally no need to use more than one occurrence of a particular Locational in the Expanded Phrase.

The position of each Locational relative to the other Locationals, except the Specific, is fixed. The Specific placement may occur before and after all the Locationals when combined in the Expanded Phrase, except before Elevationals. That is the Phrases *ya ep mine here up up* and *ep mine ele up up here* do occur, but *ep ele mine* up here up* does not. With this type of exception all combinations of locationals and Specific are possible.

Another approach to the description of the Expanded Phrase would be to consider Directionals as Generic in character, and all other Locationals, except Specific, as Determiners, with varying degrees of specificity. This would adequately cope with the phrase *ep mine up up* which is a combination of Dr + El. The paraphrased translation would then be *In the general direction of up, up is referred to*. Other phrases of this type would be *wuł mene West down* which is paraphrased as *In the direction of West, down is referred to*.

Nevertheless, the Generic-Specific implication applied to this combination can also be used to describe each Locational combination, so that *mene gar down house* can be paraphrased as *the house which is down*, and *gar ori house outside* can be paraphrased as *outside the house*. In other words the Locationals which are placed after other Locationals

tend to refine, with ever increasing degrees of accuracy, the location being referred to.

With this as background therefore it can be appreciated that the Wahgi uses the Locative Phrase with progressively greater precision as it is uttered. A paraphrased translation of the Expanded Locative Phrase given before (*ya ep mine gar kone ele ori wonum*) would therefore be more accurately: *In the general direction of up there, up (at) that house, (X is coming) outside.* The parenthesized words are not relevant to the Phrase, but are added in translation.

It is apparent therefore that the term Generic-Specific cannot be applied to any of the combinations in particular, but must be applied to the Semantic characteristics of all the combinations in general.

2.3.2. The Possible Combinations of Two Locationals

	Sp.		Dr.		El.		Df.		P.	
Sp.	ya	ele	ya	wuɫ	ya	mene	ya	Minj	ya	ori
	<i>here</i>	<i>here</i>	<i>here</i>	<i>West</i>	<i>here</i>	<i>down</i>	<i>here</i>	<i>Minj</i>	<i>here</i>	<i>outside</i>
Dr.	mi	ele	wuɫ	aɫ	wuɫ	mene	mi	Minj	wuɫta	ori
	<i>down</i>	<i>here</i>	<i>West</i>	<i>East</i>	<i>West</i>	<i>down</i>	<i>down</i>	<i>Minj</i>	<i>West</i>	<i>outside</i>
El.	mine	ele	-		mine	mene	mine	Minj	mine	ori
	<i>up</i>	<i>here</i>			<i>up</i>	<i>down</i>	<i>up</i>	<i>Minj</i>	<i>up</i>	<i>outside</i>
Df.	Minj	ele	gar	mi	gar	mene	Minj	Waki	kone	ori
	<i>Minj</i>	<i>here</i>	<i>house</i>	<i>down</i>	<i>house</i>	<i>down</i>	<i>Minj</i>	<i>Wahgi</i>	<i>place</i>	<i>outside</i>
P.	ori	ele	-		-		ori	Minj	ori	yem yem
	<i>outside</i>	<i>here</i>					<i>outside</i>	<i>Minj</i>	<i>outside</i>	<i>there there</i>

That is, all combinations occur except Positional plus Directional; Positional plus Elevational; and Elevational plus Directional. The restrictions on the distribution of the specific noted before, is limited to the Expanded Phrase.

The Semantic characteristics of Generic-Specific have been described as applying to combinations of two or more Locationals. This characteristic is lost when combinations of the same Locationals occur, for instance: Specific plus Specific merely implies 'here'. This combination does, however, add a degree of emphasis to the statement 'here'. The combination Directional plus Directional *wuɫ aɫ West East*, which might be expanded to *wuɫ aɫ mi ep West East down up* implies total inclusion of locations within the scope of the Directionals used. This same implication is present in the combinations: Elevational plus Elevational; Definitional plus Definitional; and Positional plus Positional. For illustration see Section 2.3.3.

2.3.3. Combinations of the Same Locationals

Combination	Example	Paraphrased Translation
Sp. + Sp.	ya ele	Here, inclusive of this exact location
Dr. + Dr.	wuʔ aʔ	Within the total scope of West and East
El. + El.	mine mene	Within the total scope of up and down
Df. + Df.	Minj Waki	At Minj and the Wahgi
Ps. + Ps.	ori yem yem	Everywhere outside of X

The emphasis characteristic referred to with reference to the combination of Sp. plus Sp. has been interpreted in the above paraphrased translation as being of the same nature as all the other combinations except that of Df. plus Df. Nevertheless the Sp. plus Sp. combination does differ from the other combinations. They may be interpreted as also expressing a sequential location, while it may not. For instance Dr. plus Dr. *wuʔ aʔ West East* also means *I went from West to East..* The El. plus El. might also express *I went up and down..* The Df. plus Df. combination also implies *I went from Minj to the Waki..*, and finally the Ps. plus Ps. combination also implies that *I went outside and everywhere..* These relationships are indicated in Section 2.3.4.

2.3.4. The Semantic Characteristics of Locational Combinations

Type of Combination	Semantic Characteristic	
A. Different Locationals	Generic Specific	
B. Same Locationals:		
Sp. + Sp.	Inclusive	-
Dr. + Dr.	"	Sequential
El. + El.	"	"
Df. + Df.	-	"
Ps. + Ps.	"	"

The limitations of lexical items and naturalness restrict the upper limit of possible combinations of the same types of Locationals. For instance there are only four Directionals included in the Lexicon. These may all occur in a combinatory sequence: *wuʔ aʔ mi ep West, East, down, up..* There are only two Locational Specifics in the Lexicon, and these may occur in combination: *ya ele here here*. Likewise there are only two Elevationals, and these may occur in combination *mine mene up and down..* There are however several Positionals, but combinations of more than two have not yet been observed except for the following combinations: *ori yem yem outside everywhere*, or *gake yem yem inside everywhere..* The combination *yem yem* although consisting of two Positionals, is used as a unit with the translation of *everywhere* and

The suffix *-a/-sa* indicates that a near location in a particular direction is referred to. The other suffixes indicate that a further location than the near one in a particular direction is being referred to.

The Elevationals and Positionals suffix only the *-te*, and *-ting* referred to above.

The allomorph *-ting* is also manifested by *-tang*, *-tung*, *-teng*, and *-tong*.

2.4. TEMPORALS

Wahgi exhibits five types of Temporals filling the Temporal tagmeme in the Sentence. These are referred to by the following terms: Generic, Generic-Specific, Specific, Extra-Specific, and Time.

2.4.1. Generic (G)

These terms consist of forms which do not accept affixation, and which refer to general time concepts such as *yek before*, *opi now*, *aling later*, *kumna first*.

2.4.2. Generic-Specific (GS)

These terms consist of forms which do not accept affixation, and which refer to time concepts which although still general in nature, display some degree of specificity. They are: *tolnge/tamaning yesterday*, *pi now/today*, *tuŋpa tomorrow*.

The Generic *opi now* refers to a concept which includes an extended period, such as *this generation*, or *since that happened*, while the Generic-Specific *pi now* refers to the more immediate and shorter period of time, such as *today* or *at this moment*.

2.4.3. Specific (Sp)

These terms consist of forms which accept suffixation, and refer to concepts of time such as *kupire morning*, *tangaling noon*, *pou ninde afternoon*, and *emil pande night*. These forms are sub-categorized into Nonverbals and Verbals.

1) Nonverbals consist of a stem plus suffixation, but since no discernable meaning difference can be attributed to the different suffixes it is merely the grammatical shape which is different:

Stem Suffixual allomorphs

kupi -re, -mil, -kin, ing

morning time

The form *tangaling noon* consists of the morphemes: *tang to continue* (a verb) , and *aling later* (a Temporal Generic) but since these morphemes act as a unit in the Temporal tagmeme, no advantage is gained by noting the morphology.

2) Verbals are forms which exhibit a Verb as one of its constituents. The form *pou ninde afternoon* consists of a Verb Specifier, and a Verbalizer:

Verb Specifier	Verbalizer	
<i>pou</i>	<i>ninde</i>	<i>afternoon</i>

(For a full discussion of these forms see the Verb chapter, Section 2.1.4. Complex Verb.)

The form *emil pande night* consists of a Noun and the Verb 'to be' *pa*.

Noun	Verb	
<i>emil</i>	<i>pande</i>	<i>night</i>

The suffixation of both types 1 and 2 are fully discussed in the Verb chapter, Section 2.1.

2.4.4. Extra-Specific (ExS)

These terms consist of forms which are Noun Phrases. They are either idiomatic expressions, or forms which express an exact Temporal concept. They refer to concepts of time such as:

<i>krismas wan yia</i> <i>Christmas one year</i>	<i>a year</i>
<i>konngan de</i> <i>work day</i>	<i>a work day</i>
<i>sarere</i> <i>Saturday</i>	<i>Saturday</i>
<i>kong gar</i> <i>pig house</i>	<i>a year</i>

Idiomatic expression: <i>kong gar</i> <i>pig house</i>	<i>a year</i>
---	---------------

In Wahgi society a 'pig house' festival is held approximately every year. This festival therefore is used to mark the passage of years. One might say:

<i>na kong gar taɬ endi ka no-nd</i>	<i>I ate three pig houses</i>
<i>I pig house three I- ate</i>	

which equates with *I spent three years*. In other expressions the 'pig

house' term is replaced with the Pidgin *wan yia one year*, but the idea of 'eating' those years is still retained.

The final noun of the Noun Phrase may suffix *-ang*. This morpheme has been described in the Locational chapter as a Locational suffix. It is considered that when *-ang* is suffixed to nouns in the Temporal phrase, it has a similar connotation to its use in the Location phrases:

Temporal:	<i>sarer-ang</i>	<i>on Saturday</i>
Locational:	<i>boɫ-ang</i>	<i>on the table</i>

2.4.5. Time (T)

These forms consist of the Nouns: *kunum*, *kunam*, or *pakam*. They all mean 'time'.

It is noted here that the categorized concepts of Time might be described with reference to a hierarchy of delineation: that is each level of the hierarchy comes within the time concept of the level above it:

Hierarchy	Term	Paraphrased Translation
Generic	<i>opi</i>	at this general time
Generic-Specific	<i>pi</i>	today
Specific	<i>kupire</i>	this morning
Extra-Specific	<i>ap pas 8-ang</i>	at half-past-eight
Time	<i>kunum</i>	time

2.4.6. Possible Combinations of Two Temporals & Examples

	G	GS	Sp	ExS	T
G	<i>Yek opi</i>	-	<i>opi kupire</i>	<i>opi konngan de</i>	<i>opi kunum</i>
GS	<i>pi opi</i>	<i>tuɫpa tuɫpa</i>	<i>pi kupire</i>	<i>pi konngan de</i>	<i>tuɫpa kunum</i>
Sp	<i>kupire yek</i>	-	<i>kupire pou ninde</i>	-	<i>kupire kunum</i>
ExS	-	-	<i>konngan de kupire</i>	-	<i>konngan de kunum</i>
T	<i>kunum yek</i>	-	-	-	<i>kunum kunum</i>

Meanings: *yek before*, *pi now*, *kupire morning*, *kunum time*, *opi now*, *pou ninde afternoon*, *konngan de work day*, *tuɫpa tomorrow*, *kunum time*.

Combinations of more than two types of Temporals are not usual in Wahgi, but such multiple combinations based on those which are acceptable to the speaker as illustrated above, are syntactically possible. I do not think, however, that such multiple combinations are used by the Wahgi. More specifically, combinations of those shown to be acceptable on the syntagmatic axis may syntactically add the second member of each of the Temporal combinations on that axis:

To GS may be added all the Temporals:

pi opi tułpa kupire konngan de kunum
now now tomorrow morning work-day time

but to T only G and T may be added: kunum yek kunum
time before time

Combinations of the same Temporals convey sequential time:

tułpa tułpa *the day before yesterday*; or kupire pou ninde *this morning then this afternoon*. Other combinations convey a Generic-Specific, Head-Modifier relationship: konngan de kupire *on the work day morning*.

Although pi opi, a combination of GS + S may be translated as *now at this time*, in parallel with other GS + G combinations, generally when pi occurs before a Generic it is used as an Introducer equivalent to the English *now* in the Sentence *Now, later...I will... .*

In my paper *Identifying Paragraphs in Wahgi Text* (in manuscript form), I have described how opi, a Generic Temporal, is also used to introduce paragraphs, and how pi, a Generic-Specific Temporal, is used to introduce the semantic sentence.

2.5. CONJUNCTIONS

Forms filling the Conjunction Tagmeme are subdivided on the basis of their distribution.

1) Paragraph Level Conjunctions (Pcj)

The conjunction pi is used within the Paragraph to introduce the new semantic sentence:

Berepka erminge, pi ala Kondika...punjip.
clan did it now more clan they went.
The Berepka clan did it. Now, more people of the
Kondika clan...went.

or: kanand ni er wanj. pi amb sind.
courting act I did. now woman married I
I went around courting. Now, I am married.

The Coordinating Compounding Conjunction na is used to link Grammatical sentences into sequences of related events:

...monjip Na, kil kauka tał...
they were. And we Kauka two...
they remained. and Kauka and I...

Other forms filling the Conjunction tagmeme at this level are described in the chapter dealing with Paragraphs. (To appear at a later stage.)

2) Sentence Level Conjunctions (Scj)

i) The Antithetical Conjunction *ba but* joins two Clauses into one sentence: Kanjin *ba*, punamin *We saw but we will go.*
we-saw but we-will-go

ii) The Reason Conjunction: *paim el/kone el because* conjoins two Clauses into one sentence:

Na erind *kone el*, elim wom. *Because I acted he came.*
I acted because he came

iii) The Simile Conjunction: *beɪ/beɪ embe/embe as* conjoins two Clauses into one sentence:

Erind *beɪ embe endil* *As I did you do.*
I-acted as you-act

iv) The Conditional Conjunction: *ken/ende* conjoins two Clauses into one sentence:

Enjin *ende*, punam *If we do then they will go.*
we did if-then they-will-go

The other sentence level conjunctions are used without restrictions being imposed on the sentence components, but when the Conditional Conjunction is used, the Verb preceding it must be in the Completive Aspect, while the Verb following it must be in the Potential Aspect (See Verb chapter).

v) Other conjunction types linking Clauses into sentences consist of paraphrased repetitions of verbs. These are discussed fully in my paper describing the Semantic sentence (in manuscript form).

3) Noun Phrase Level Conjunctions (NPCj)

Conjunctions linking Nouns or Noun Phrases into Serial Noun Phrases are divided into Simple and Complex types:

Simple NPCj: consist of the following forms: *pi/na/ken and*.

When a Serial Noun Phrase occurs conjoined by the above Conjunctions, all the Conjunctions must conform to the form of the first Conjunction:

aki pi.tau pi.kong pi *Sweet potato, banana, and pork.*
sweet potato and banana and pig and

Complex NPCj: these forms are restricted as is the Simple NPCj, but they differ in that they consist of Verbals: *se to place*

Kumi *se-nge*.Pundi *se-nge*.Tapi *se-nge*... *Kumi, Pundi, and Tapi*
name and name and name and

Simple NPcj may conjoin all types of Nouns, but Complex NPcj conjoin only Nouns which are marked for Human.

The Verbal filling the Complex NPcj tagmeme usually suffixes suffixation described in the Verb Chapter under Section 2.1.3: Dependent Verbs. There is agreement in Person-Number between the Noun and the Conjunction.

2.6. ARTICLES

Wahgi manifests three articles: ende *a*, en/el *this/these*. The Article ende modifies a Noun Phrase:

yi ende *A man*
man *a*

The Articles en/el modify Noun Phrases and Clauses:

ngał en *this child* wonjił en *this coming*
child this *two-came this*

2.7. QUESTIONS AND INTERROGATIVES

The categories Question and Interrogative are delineated by suffixation and the answer they stimulate.

2.7.1. Questions

Questions affix clitics or the suffix -ua, and stimulate an answer which need only be 'Yes' or 'No'.

2.7.1.1. Questions Type 1

The Clitics -mei/-mo/-kene may be affixed to any form which occurs at the end of an utterance: aka-mo *Sweet potato?* pundil-mo *Will you go?* wuł-mo *West?*

The answer may be owo *yes* or ma *no* or a paraphrase of the question punal/ owo punal *yes, I will go*, or the negative form na-punal *no, I will not go*.

The clitic -mo also occurs in combination with the negative form ma *no* and conveys the alternative phrase: pundil-mo ma *Will you go or not?*, aka-mo ma tau *Sweet potato or banana?*

2.7.1.2. Questions Type 2

The Suffix -ua and its use are described fully in the Verb chapter under 2.1.2.2.2. Hortative Request. The Request mood is used to request that an action be undertaken or be confirmed: non-ua *May I eat?* The reply to the -ua Question is similar to that to the Clitic Question: a simple affirmative or negative response, but in this case the forms

owo *yes* or ma *no* are replaced by the Confirmatory^a type Command of the Verb - See Verb chapter Section 2.1.2.1.2.

Question	Reply	
non-ua	no-wa	<i>May I eat? Yes eat.</i>
pumb-ua	puyał-wa	<i>May we go? Yes let us go.</i>

Despite the similarities between these two Questions the Clitic form is less restricted than the Suffixual form in the answers it stimulates: these have been indicated above. The negative is not expected as a reply to the Suffixual form, and if it occurs it is restricted to na-no *Do not eat.*

2.7.2. Interrogatives

Interrogatives stimulate replies other than simply 'Yes' or 'No'. There are three categories of Interrogatives, here referred to as: nał (*What*) Interrogatives, nenj (*When/where*) Interrogatives, and na (*Who*) Interrogatives.

2.7.2.1. nał (*What*) Interrogatives

All nał Interrogatives consist of an obligatory placement of nał plus an optional unit. When the optional unit occurs the relationship between the two units is Generic-Specific.

nał	<i>what/which</i>
-----	-------------------

The Generic nał is used either by itself or in combination with other words: nał yap *what thing?* or *what is it?*, nał bisnis *what/which business?*, nał erin *what are you doing?*. The Generic-Specific relationship is emphasized by a further placement of a Specific prior to the Generic: kung nał kung *pig which pig?*.

nał nał	<i>how many?</i>	yi nał nał	<i>How many men?</i>
<i>what what</i>		<i>man what what</i>	
nał beł	<i>how?</i>	nim nał beł erin	<i>How did you</i>
<i>what as</i>		<i>you what as act</i>	<i>do it?</i>
nał ende	<i>why?</i>	nał ende erin	<i>Why did you</i>
<i>what a/one</i>		<i>what ? act</i>	<i>do it?</i>

2.7.2.2. nenj (*When/where*) Interrogatives

As noted in the description of Locational and Temporals there is a close association between the usage of these two aspects of the Wahgi language. This is further reflected in the use of the Interrogative words which are equivalent to the English 'where' and 'when': Loca-

tional and Temporal Interrogatives. Both Wahgi types make use of a similar basic unit, referred to here as *nenj*. Each Interrogative type modifies this form to signal the semantic differences *nenj when/while*, and *nenje where*.

Temporal Interrogatives *when/while*. Although *nenj* does occur by itself, it most frequently occurs in combination with the Temporals *pakam/kunum/kunam time*: *pakam nenj wondil When will you come?*

Locational Interrogatives. The form *nenje/je where* frequently occurs by itself in the Locational Interrogative tagmeme, but it also occurs following Locationals or Locational Phrases:

<i>nim nenje punun</i>	<i>Where are you going?</i>
<i>you where going</i>	
<i>nim ori je punun</i>	<i>Where are you going outside?</i>
<i>you outside where going</i>	

2.7.2.3. *na (Who/whose) Interrogatives*

The *na* Interrogative occurs either alone or with a Noun Phrase: *na Who?*, *yi na What man?*. When *na* occurs following a NP containing a noun marked for Human, its connotation is 'who', but when it is marked for minus Human, its connotation is 'whose': *kong na whose pig?*. However, when *na* occurs between two NP's its connotation is 'whose' whether the noun is marked for Human or not: *amb na amb whose woman?*

The reply stimulated by each of the Interrogative types must either contain the explicit information requested, or an explicit denial of it.

Interrogatives	Reply
<i>nał erin What did you do?</i>	<i>na el erind I did this.</i>
<i>kong nał nał How many pigs?</i>	<i>kong tał three pigs</i>
<i>nenje punun Where are you going?</i>	<i>gar punal I'm going to my house.</i>
<i>amb na amb Whose woman?</i>	<i>Na napis I do not know.</i>

2.8. ADVERBS AND ADVERBIAL PHRASES

These forms fill the Modifier slot in a Verb Phrase (see Verb Chapter Section 2.1.5.4.), and consist of Simple and Complex units.

Simple Adverbs are free forms which do not affix suffixation, and which also occur modifying Nouns.

<i>pepe</i>	<i>quick</i>
<i>pepe erim</i>	<i>He acted quickly.</i>
<i>yi pepe</i>	<i>A quick man.</i>

(When the Simple Adverb occurs modifying a noun I postulate an underlying Verb. In other words *yi pepe* clearly refers to some action which the man has performed quickly. The Adverb *pepe* therefore is not described as an Adjective in this case since its correct relationship is to the unspoken Verb.)

Complex Adverbs consist of forms which are Complex Verbs (as described in Section 2.1.4. and 2.1.5. of the Verb chapter) filling the Modifier tagmeme of the Verb Phrase. They do not occur modifying a Noun, but are always attached to the Verb:

<i>muke ni erim</i>	<i>He acted quickly.</i>
<i>quickly he-acted</i>	

Adverbial Phrases. To both of the Adverbial types described may be added a Modifier of Degree Phrase (M DgrP), or a Modifier of Degree (M Dgr).

Modifier of Degree	Modifier of Degree Phrase
<i>pepe wei very quickly or quick very</i>	<i>pepe kes wei very very quickly quick very very</i>
<i>muke ni wei very quickly or quickly very</i>	<i>muke ni kes wei very very quickly</i>

Emphasis is added to the Adverbial Phrases both by the use of the Modifiers of Degree, and by repetitions of the adverbs: the occurrence of one is mutually exclusive to the other. The Simple Adverb may be repeated up to three times, but is usually repeated only twice: *pepe pepe erim He did it very very quickly.* Only the Verb Specifier of the Complex Adverb is repeated when emphasis is required, and this may be repeated up to three times, but is usually repeated only twice: *muke muke ni erim He did it very very quickly.* It is possible to add the Modifier of Degree Phrase, or the simple Modifier of Degree: *pepe pepe kes wei erim Very very very quickly he did it.* and *muke muke ni kes wei erim He did it very very very quickly.* but such emphasis is seldom used.

2.9. NUMERAL PHRASES AND NUMERALS

Cardinal Numerals

These forms occur filling the Modifier Tagmeme in a Noun Phrase. The counting system used by Wahgis is a simple counting and subtracting of the fingers and toes. Few young men are now able to use the full system beyond seven, or beyond ten, and the European system is replacing the indigenous system.

After number two the other numerals consist of Noun Phrases. *endi one*, *taɫ two*, are single words. Noun phrases are used for:

<i>three</i>	<i>taɫ endi ka</i> <i>two one good</i>
<i>four</i>	<i>taɫ si taɫ si or kapuɫe kapuɫe</i> <i>two take two take all-right all-right</i>
<i>five</i>	<i>angiɫ gi yemte</i> <i>hand hold here</i>
<i>six</i>	<i>angiɫ gi yem mamte</i> <i>hand hold here thumb</i>
<i>seven</i>	<i>angiɫ gi yem mam taɫ to</i> <i>hand hold here thumb two</i>
<i>eight</i>	<i>angiɫ gi yem gi yem mam yiyi taɫ ma</i> <i>hand hold here hold here thumb man two not</i>
<i>nine</i>	<i>angiɫ gi yem gi yem mam ma</i> <i>hand hold here hold here thumb not</i>
<i>ten</i>	<i>angiɫ gi yem gi yemte</i> <i>hand hold here hold here</i>

The terms for numerals higher than 'five' indicate that numerals are highly idiomatic.

Ordinal Numerals

The forms *yek before* and *aling later* both optionally affix the suffix *-se ordinal numeral*, and occur as modifiers of the Verb. No other forms occur.

<i>elim yekse wom</i>	<i>He came first</i>
<i>he first came</i>	

The form *yek before* also optionally affixes the suffix *-ril* which although conveying the meaning of 'first', conveys the idea of completion. The total form is therefore translated as *already*.

<i>elim yekril erim</i>	<i>He has already done it</i>
<i>he already acted</i>	

Numbers belong to the Adjective class:

<i>yi endi</i>	<i>one man</i>
<i>man one</i>	

2.10. ADJECTIVES AND ADJECTIVAL PHRASES

Adjectives are forms which occur in the Modifier slot of the Noun Phrase, and which optionally affix the locational suffix *-ang*: *yi bang a red man*, or *a European*; *ka good*, *yi ka-ang at the good man's place*.
man good-loc

The Coordinate Adjectival Phrase (CoAjP) consists of an obligatory Head tagmeme filled by an Adjective, which tagmeme may be repeated up to two times:

+H:Aj ±H:aj₂ *bang wuɪma red big*.

The expansion of this phrase type is usually limited to two tagmemes as noted, but up to three tagmemes are sometimes acceptable. When more than two adjectives are used the speaker shows a preference for repeating the noun head of the modified Noun Phrase, thereby placing several modified Noun Phrases in apposition. The unusual combination *yi tua bang ka The old good European* might occur, but the preference *man old red good*

is for the following combination: *yi tua yi bang yi ka* , but even
man old man red man good

this phrase is unusual in that more than two adjectives are used. The preference is for just two repetitions of Adjectives:

yi tua yi bang The old European.
man old man red

2.11. MODIFIER OF DEGREE PHRASES

These fill the modifier tagmeme in Noun, Temporal, Adjectival, and Adverbial Phrases. The Modifier of Degree Phrases consist of the two forms *kes bad/very* and *wei true/very*. As noted, the other meanings of these two forms are *bad* and *true*, but these meanings are deleted when they act as Modifiers of Degree. The Modifier of Degree Phrase consists of an obligatory Head filled by either *kes* or *wei*, plus an optional Head tagmeme filled by *wei*.

+H:kes/wei +H:wei *kes wei or wei wei very very*

Modified Noun Phrase (MoNP)

The Modified Np consists of an obligatory Head filled by a Noun or NP, plus an optional Modifier filled by an Adjectival Phrase (AjP) or an Adjective.

+H:NP/Nn ±Mod:AjP/Aj

yi ka man good	<i>A good man</i>
yi ka wei man good very	<i>A very good man</i>
Komis yi ka wei Hagen man good very	<i>A very good man from Hagen</i>

Serial Noun Phrase (SNP)

Nouns occur together in sequence to form a Serial NP. Such conjoining might be exhibited by overt conjunctions or by covert conjoining. The overt conjunctions have been described in the chapter dealing with NP conjunctions:

Overt: tau na, aka na, kong na, *Banana, sweet potato and pork.*
banana and sweet potato and pig and

Covert: tau, aka, kong

The Serial NP consists of an obligatory Head filled by a Noun plus optional Conjunction tagmeme filled a NP conjunction or Noun Phrase, plus any number of optional repetitions of other Head tagmemes filled by Nouns or Noun Phrases, plus an equivalent number of repetitions of optional Conjunction tagmemes filled by NP conjunctions:

$$+H:NP/Nn \pm Cj:NPcj \pm H:NP/Nn_n \pm Cj:NPcj_n$$

(Repetitions of _n agree where mentioned.)

N O T E S

1. Wurm, S.A., Australian New Guinea Highlands Languages and the Distribution of their Typological Features, *American Anthropologist*, (1964) Vol.66(4), part 2.83-85. Two of the features listed in Table 1 and described succinctly deserve a comment. Under his feature 1b it is stated that the majority of sentence-medial verbal forms do not change for person and number in cases of identity of the subjects. For Wahgi the term 'majority' is hardly appropriate, since of the two dependent forms of the verb indicating the same subject in the next clause, one (S-Sub) does inflect for person and number and the other (SV) does not.

Under his feature 111b it is stated that medial verbs appearing in cases of non-identity of the subjects consist largely of sentence final verbs and special suffixes. It is true that the Dependent Imperative consists of the Independent Emphatic Imperative plus the suffix -i, and that the Dependent Primary D-Sub is identical to the Independent Hortative, but the Dependent Primary D-Sub-P is not formed from any of the Independent paradigms.

2. For those wishing to compare Luzbetak's tenses demonstrated in his work Luzbetak (1954:90-107) they have been listed below together with the equivalent verbs used in this paper.

Luzbetak	Page	This paper	Section
Present	114	Continuative Aspect	2.1.1.1.2.
Perfect	115	Completive Aspect	2.1.1.1.1.
Indefinite	115	Completive Aspect	2.1.1.1.1.
Remote Past	116	Absolute Completive Aspect	2.1.1.1.1.
Absolute Historical Perfect	116	Different Subject in the Past	2.1.3.1.

Luzbetak	Page	This paper	Section
Simple Future	117	Potential Aspect	2.1.1.1.3.
Immediate Future	117	Different Subject	2.1.3.1.
Imperative	110	Command	2.1.2.1.
Hortative	110	Confirmatory type ^b	2.1.2.2.3.
Optative	112	Request	2.1.2.2.2.
Irrealis	113	Contrary to Fact Condition	2.1.3.3.
Participle	122	Same Subject	2.1.3.1.
Emphatic	127	Confirmatory type ^a	2.1.2.1.2.

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