TOPICS IN THE PHONOLOGY AND MORPHOLOGY OF WUTUNG

by

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Abstract

This thesis describes several aspects of the grammar of Wutung, a language spoken on the far north-west coast of Papua New Guinea, straddling the border with Indonesia.

The thesis is divided into eight chapters falling broadly into two parts. The first part focuses primarily on phonology and phonetics, while the second details aspects of the verbal morphology, the structure of the clause and of the noun phrase.

Chapter 1, the introduction, provides a general background to the people, their village and their language and includes a brief discussion of the sociolinguistic context. Chapter 2 provides a brief typological overview and summary of the thesis.

Chapter 3 deals with the segmental phonology, laying out the segmental inventory and the basic phonemic and phonotactic organisation of the language, including a description of the nasal vowels and syllable structure. Chapter 4 discusses the segmental phonetics, dealing in particular with voice onset timing on obstruents and the acoustic realisation of the seven oral vowels. Chapter 5 focuses on the phonology and phonetics of tone. Tone is assigned to words, but manifests on syllables, its realisation depending on the number of syllables in the word and the location of an accent point. The phonetic analysis involves examination of the acoustics of the four tone melodies of Wutung.

Chapter 6 provides an overview of the structure of the simple clause, summarises the behaviour of the various word classes and describes how the major elements of the clause are combined. This chapter functions to provide a context for the following two chapters. Chapter 7 deals with the noun phrase and its constituents, primarily the noun, pronouns, and various modifiers. It presents a description of the structure of the noun phrase, definitions of the classes of word that act as NP constituents, and a summary of their morphology. Chapter 8 describes the morphology of the verbal word. It focuses in particular on describing the complex person/number/gender agreement marking found on the verb. This agreement marking is complex, manifesting via fusion of agreement prefixes with the verb root and involves substantial suppletion, especially on transitive verbs.

There are four appendices: the first presents a more detailed typological overview, based on the features from the World Atlas of Language Structures; appendix 2 is the

phonetic analysis wordlist; the third appendix lists the Wutung words used in the thesis, with tone marking; the fourth contains two short Wutung texts.

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Abbreviations and conventions

Abbreviations

The following list of abbreviations includes those that are used in interlinear glosses and in body text, in the description of phonology and phonetics (in particular, in the various tree-diagrams), and in the analysis of tone.

Abbreviation	Meaning
-	morpheme boundary
=	clitic boundary
*	non-attested form
#	word boundary
1SG>3SGM	first person singular subject, third person singular masculine object
1.DU.EXCL.M	first person dual exclusive masculine pronoun
1.DU.EXCL.F	first person dual exclusive feminine pronoun
1DU.INCL	first person dual inclusive pronoun
1PL	first person plural
1SG	first person singular
2PL	second person plural
2SG	second person singular
3PL	third person plural
3SG.F	third person singular feminine
3SG.M	third person singular masculine
AGENT	agentive suffix
ANAPH	anaphoric pronoun *una*

C	consonant
C_n	nasal consonant
Co	coda
C_{or}	oral consonant
CAUS	causative morpheme
COMP	complementiser
CONJ	conjunction *pa*
COP	copula particle
DEM.ANAPH	anaphoric demonstrative
DEM.DIST	distal demonstrative
DEM.NEAR	proximal demonstrative
DIM	diminutive
EMPH	emphatic morpheme
EXCL	exclusive morpheme
H	high tone melody
[h]	high syllable pitch (surface realisation of phonological tone)
(h)	optional tone
Ⓗ	deleted tone
HL	fall tone melody
IMPERF	imperfective aspect suffix (includes PNG marking)
INDEF.PL	plural indefinite article *a*
INDEF.SG	singular indefinite article *u*
INSTR	instrument suffix
INT	intensifier morpheme
IO	indirect object
IRR	irrealis clitic (includes PNG marking)
IRR/REDUP	irrealis reduplication on verb
L	low tone melody
[l]	low syllable pitch (surface realisation of phonological tone)
LHL	convex tone melody
N	nasal segment
NEG	negative particle
[NP]	bracketed NP
NP	noun phrase

NP$_{psm}$	NP representing 'possessor' in a possessive construction
NP$_{psr}$	NP representing 'possessum' in a possessive construction
Nu	nucleus
O	onset
OBJ	object
PL	plural
PLADJ	plural morpheme (adjectives only)
PNG	Papua New Guinea (where the context is not clear it will be spelled out)
PREP	preposition
PROG	progressive aspect morpheme
Q	question particle
R	rhyme
REFL	reflexive morpheme (pronouns only)
[$_{REL}$]	bracketed relative clause
SG	singular
SUBJ	subject
σ	syllable
σ'	accented syllable
$\sim$	swung dash: indicates items in free variation
V	vowel
ω	word

Conventions used in examples

Although Wutung is a tonal language tone is not normally marked within the body of this thesis unless it is relevant to the discussion. In Appendix C is a wordlist which includes all Wutung words that appear in the body of this thesis, with an indication of part of speech, a gloss, and tone marking. Where the tone of an item is not known, this is indicated. Within a vernacular example, English translations of a single unit which require more than one word have those words separated by full stops, for example, *ang* 'so.that'. Where a single item contains more than one morpheme and these could be segmented and individually glossed but are not, the words of the English gloss will be separated by a colon. Items in brackets immediately following the free translation of

interlinear examples are references to the source of the example and refer to it by name and sentence number for running texts (e.g. 'Me eme nie me?' 003 refers to sentence three of the text 'Me eme nie me?') and by book abbreviation and page number for loose examples (e.g. FNB5:62 indicates page 62 of field notebook number five).

Following is a list of morpheme glosses used in interlinear glosses. These abbreviations may also appear within the text.

When used in the text or in tables, Wutung words and phrases will be italicised. When they appear in an interlinearised example they will be in roman font (as they appear on their own line), while the interlinear gloss will also be in roman, with grammatical glosses set in small caps. In all cases, translations into English of Wutung material will be inside single quotes.

Transitive verbs may vary to index the PNG of both their subject and object NPs. This will be indicated using the following convention: 1SGM>3SGM, where the person/number/gender (PNG) of the subject is first, and the PNG of the object second.

Abbreviations used in Optimality Theory Tableaux

* violation

vertical dashed line between cells this indicates that the relative ranking of the two cells thus separated cannot at present be determined.

** violated twice

*** violated three times

! fatal violation

shaded cells these no longer matter as a higher-ranked constraint has been decisive

☞ indicates the winning form

Chapter 1

Introduction

1.1 Setting

'Wutung'[1] is the name of the language spoken in a single village of the same name. Wutung village is the north-westernmost community in Papua New Guinea (PNG), located on the north coast in the far west of Sandaun Province, immediately beside the border with the Indonesian province of Papua (formerly known as Irian Jaya). This location is indicated in Figure 1.1. The traditional lands of the people of Wutung extend across the border into the Indonesian province of Papua, as far as the Tami river (visible on the map as the river immediately to the west of Wutung village in Papua Province), approximately twelve kilometers west of the border. The language spoken by these people is known to them in Tok Pisin (the language of wider communication in this part of PNG) as *Wutung tok ples* or simply as *Wutung*, deriving from the name of the village; the latter name will be used throughout, while the village will be referred to as 'Wutung village' when necessary to avoid confusion.[2] According to the local health worker, there are approximately 580 people residing at Wutung, the great majority of whom were born and raised in the village.

Being located at the edge of the country of Papua New Guinea, and very far from the capital city Port Moresby, Wutung is in some respects extremely isolated. Apart from

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[1] ISO 639-3, Ethnologue abbreviation 'wut'; see http://www.sil.org/iso639-3/ for a discussion and explanation of ISO 639 codes and http://www.ethnologue.com/ethno_docs/introduction.asp for a discussion of the Ethnologue language codes.

[2] *Tok ples* means 'local language'.

Wutung villagers, the only people that come to this location are on their way to or from crossing the border. As such there is little transport between the village and the provincial capital of Vanimo, only 42 kms away to the east. Nevertheless, Wutung villagers typically speak good English. It is not unusual for those who travel more regularly across the border to Indonesia to have some command of Bahasa Indonesia, while some also speak the closely-related language of their western neighbours from across the border, Sko. These two facts are largely the product of their proximity to the border, literally only fifteen minutes walk away up a steep hill. The road to the border is unsealed, but from the border onwards it is sealed, allowing for relatively easy travel to the capital of the Indonesian province of Papua, Jayapura (and other nearby places such as Sentani). Indonesian taxis often wait immediately across the border for Wutung villagers (and occasional others, e.g. those from the nearby village of Waromo) who wish to travel to Jayapura to sell products such as crayfish and betel nut. In Jayapura they experience a major (Asian) city with a population of around 200,000 (plus over 100,000 in the adjacent region) and are able to purchase almost any item that is normally found in such a large city. Perhaps as a result of this combination of remoteness within their own country, but regular (if brief, being only as visitors) access to a major city, the people of Wutung have a strong awareness of the wider world and place great value on education. Several villagers have gone on to acquire a university education in Australia and at least two are currently working in professional occupations overseas. Having little support from their government (at either national or provincial level) they have been left to their own resources, and this appears to have been in many ways beneficial for them although there is resentment and a sense of having been ignored by their own administrators and officials. Being so close to the border has resulted in the presence of a sizeable government station adjacent to the village wherein reside the various police, customs officials, quarantine officers and other workers associated with the border, but this presence does not seem to have had much direct impact on the village.

1.2 Location and origin

Wutung is located on the beach, and immediately beside the border with the Indonesian province of Papua[3] at longitude 140.02° East and latitude 2.617° South. To the west and

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[3] Formerly known as Irian Jaya.
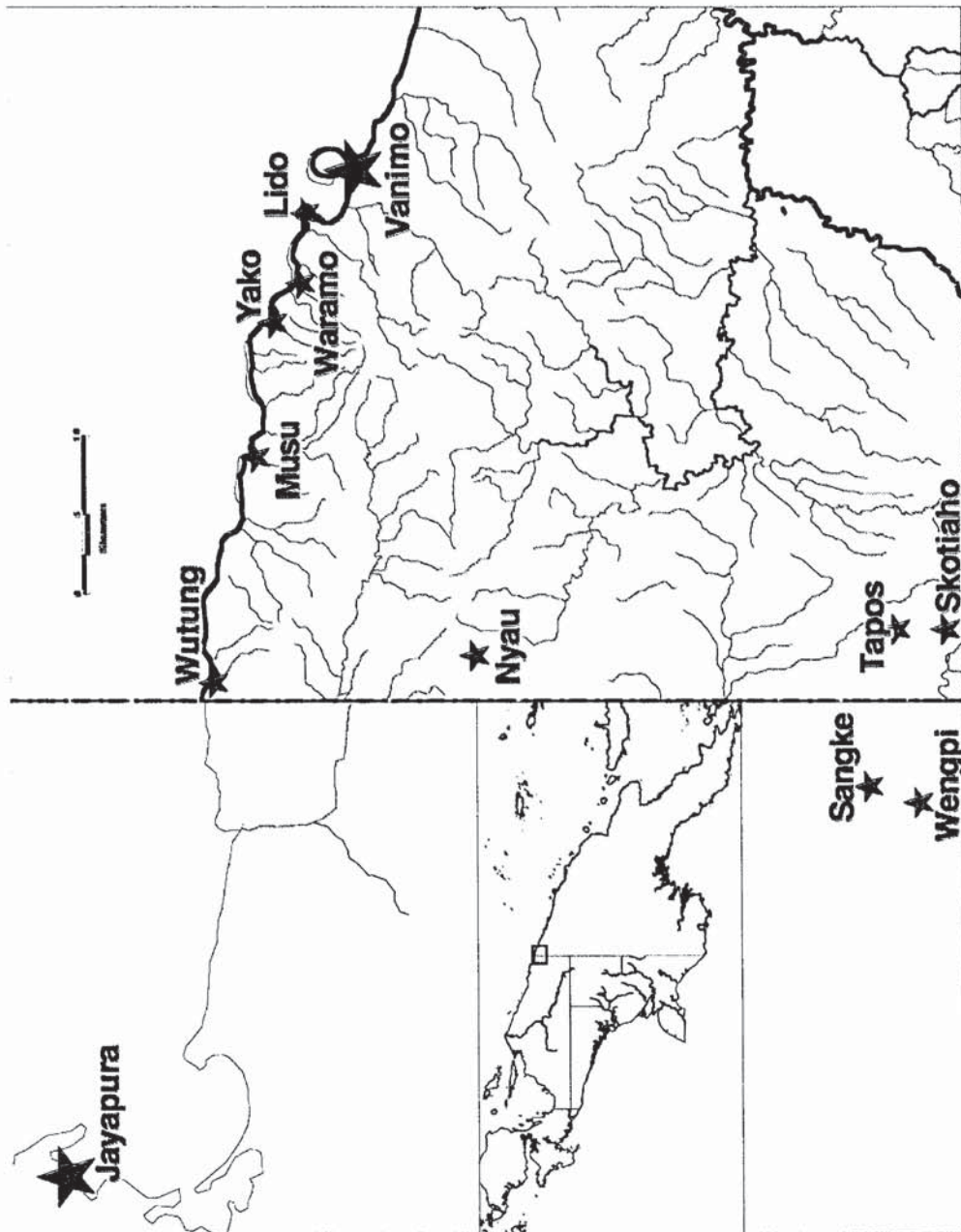
Figure 1.1: Map of Wutung showing its location within north-western Sandaun Province and the nearby portions of Indonesia, along with some neighbouring villages and an inset map indicating where the region is located within the island of New Guinea

east are rough limestone hills with shoreline cliffs covered with vegetation which drop to wide fringing reefs. The roads to Vanimo and Jayapura snake through these hills and often some way inland to find terrain suitable for vehicles, in particular to avoid the occasional fast-flowing rivers which drop down from the inland ranges.

The photograph in Figure 1.2 shows the view from just east of Wutung on the main road to Vanimo. At this point the road drops down from the coastal hills. In the far distance, across Yos Sudarso Bay (also known as Humboldt Bay), can be seen the faint outline of the eastern end of the Cyclops Range, where Jayapura lies. In the mid-distance is the headland on top of which the PNG-Indonesia border post is situated.

Figure 1.2: The road in to Wutung.

Behind Wutung the hills slope steeply upwards to the Oenake Mountains. The highest peak in this range is Mt. Bougainville which reaches a height of over 1220 m at a distance of around 5 kms from the sea, resulting in a very steep slope. These ranges are covered with thick tropical vegetation through which four small rivers run down, three of them meeting about a kilometre inland, with the last one meeting the main course about two

hundred metres inland and then flowing out to the sea at the eastern end of the village.[4] at a place called *Ca Long* (literally, 'rivermouth'). At this point it is possible to land a small boat (such as the 'banana boats'[5] used to ferry paying passengers to Vanimo and Jayapura) on the rocky beach.[6] To the west the village ends at the base of a steep hill, on top of which is the border post. Spread along the rough, rocky coastline at the base of this hill are the five border markers, of various sizes and spread out over about one hundred metres. From the border it is possible to continue walking westwards along the coast into Indonesia along an upraised reef platform, above which are sheer cliffs, for some distance.

The traditional country of the people of Wutung extends west across the border to the Tami River. The exact location of the international border in this area was in dispute for much of the twentieth century. It was originally proposed (van der Veur 1966b:61) that the border be the meridian of longitude at 141° East of Greenwich. Successive determinations of this location on the ground varied greatly, sometimes by hundreds of metres, and resulted in occasional tensions and strife. Today there are still five different markers (ranging from a two metre obelisk to a plaque cemented into the reef some tens of metres from the actual shoreline) which purport to indicate the actual border, and which are spread out along several hundred metres. The actual border post, on a hill above the sea-cliffs, is probably located slightly to the east of the precise border, and has a 'no-man's-land' over a hundred metres wide. Further south there are occasional border markers across the width of the island of New Guinea. The dirt road from Vanimo passes just behind Wutung village and changes to bitumen where it starts to ascend the hill to the border post. From there it continues to the Indonesian side and thence to Sentani and Jayapura.

The village sits on the white beach sand, on two levels. The upper, inland level is an ancient coastal plain from a time of higher sea-levels and runs from the edge of the limestone hills (some of which rise quite abruptly from the coastal plain) to the drop-down of the ancient beach. The step-up from the lower level of the village to the

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[4]The small rocky bay at this point is marked on maps as Bougainville Bay, but Wutung villagers I spoke with did not know this name.

[5]A large, curved dinghy with an outboard motor which can held around ten people often used for travel up and down the coast.

[6]Older villagers told me that this is because of the demolition of some of the reef by American soldiers in World War II to enable their landing craft to come ashore, and that before this it was not possible to land even small craft at this place.

higher is about two metres. The lower part of the village extends down nearly to the high-tide mark, where there is another steep slope of nearly two metres to the low-tide sea level. At this point the reef begins, covered with shallow water varying with the tide from a few cm deep to about 30 cm. The fringing reef here is about 50 metres wide, ending in a deep drop into the ocean with large waves constantly pounding. Traditional canoes with their shallow draught are easily able to be paddled across this shallow pool (or pulled along, if too shallow) and can be manoeuvred by a skilled paddler across the edge of the reef and out to the open waters of the Bismarck Sea.

Figure 1.3 shows an aerial view of Wutung, looking eastwards from directly above the border. At the top can be seen the cove into which the stream *Ca Long* flows. Also visible are the two roads, one running through the middle of the village and the other, further inland, is the major road which runs between Vanimo and the border post. At the top right is the government post, where the police, customs and quarantine officers live. Also evident is the fringing reef which runs the length of the village.

The climate of Wutung is typically tropical with daytime temperatures of over 30 °C being the norm, and nighttime temperatures rarely dropping lower than 15 °C. Winds vary with the season but are rarely very strong.

Jayapura is easily accessed from Wutung, with Indonesian taxis often waiting just across the border to take passengers the one-hour drive to the outskirts of the city, or to Lake Sentani. As travel between the border and the Indonesian towns is common it is not unusual to see taxis waiting for passengers on the Indonesian side of the border. Most adults make this trip reasonably regularly, typically to sell betelnut, daka (the Tok Pisin name for betel pepper, a plant which is mixed with betelnut for chewing) or crayfish, as well as to purchase items which either cannot be obtained in Vanimo, or are cheaper in Indonesia. This last includes food items, electrical equipment, radios, etc. Some Wutung villagers run small import businesses across the border; for example, one individual imports petrol and kerosene from Jayapura to sell in Wutung. As a result of this regular travel and trade many Wutung villagers have a fair command of Bahasa Indonesia and some speak it very well. People also commonly cross the border to access the extensive portion of their traditional lands which falls inside Indonesia though they normally walk to their gardens which may be up to around twelve kilometres west of the border, this being the western extent of Wutung territory (i.e. the Tami River). The governments of Indonesia and Papua New Guinea have agreed on a system of permits which facilitates such cross-border travel by people whose traditional lands straddle the (still relatively

Figure 1.3: View of Wutung village from the air (Photo by Mark Donohue)

new) border. These permits are known as Traditional Border Crossing permits or 'TBC' and are held by all villagers at Wutung, including those who have moved there from elsewhere (once they have been established in the village for sufficient time).

While many of the passengers using the taxis to/from the border are from Wutung, there are also other travellers, including international tourists, PNG officials, business people, etc., who tend to bypass the village entirely and so have little direct impact on life there. A trickle of western travellers come across the border from Indonesia, heading for Vanimo and beyond. Most obtain transport direct to Vanimo (typically having arranged it by phone from Jayapura) but occasionally one will be stuck at Wutung at nightfall and will have to be accommodated by the villagers, who put up with this imposition with kindness, seeing it as part of being beside the border.[7]

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[7]Such visitors who arrived at Wutung while I was there would always be brought to me and would stay as guest of my hosts, presumably being seen as my 'wantoks'.

The native language of Wutung village is spoken by virtually everyone in the village, certainly by almost all those who were born in the village.[8] There are no other villages which have the precise same speech variety as Wutung, though two neighbouring villages have similar varieties which appear to be closely-related dialects of the same language. The speech of the village of Musu, about twelve kilometres east of Wutung, is very similar, showing only slight phonological differences. The language of Nyao,[9] a village about ten kilometres inland from Wutung (but which requires a three-hour drive via Vanimo as there is no road crossing the steep Oenake Mountains)[10] is also very similar to that of Wutung. My preliminary investigation of Nyao indicates that it is similar phonologically to Wutung, but differs somewhat lexically, tonally and morphologically. It is likely that these three lects, Wutung, Musu and Nyao, form three dialects of a single language (§1.11 presents a brief discussion of some of the ways in which these other lects differ from Wutung). It is said that the people of Musu are originally from the Nyao area, having travelled down to their current position on the coast sometime about ninety years ago. It is possible that a similar history is true also of the people of Wutung, with their journey to the coast having happened earlier. There are, however, no stories that I heard at Wutung telling of a migration to the coast from inland. Instead, traditional origin stories at Wutung tell of a man who travelled westwards from the village of Leitre (on the coast east of Vanimo), settling at Wutung and marrying a woman there. He is said to have founded the main clan present at Wutung today. When asked about the people into whom this ancestor married the story-tellers say that they were the original Wutung people, and that they spoke the same language as is spoken there now. In reality, the origin stories describe the origin of particular clans, not villages. In fact, Wutung is considered to consist of two contiguous villages, each being the residence of one of the

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[8]There are a several adults at Wutung who have a passive competence in the language but who are not confident speakers. These are either Wutung people who have grown up in other places and returned to Wutung later in life, or people from other areas who have married in to the village. Of the latter group it is often claimed that none have succeeded in becoming confident speakers of Wutung, despite living there for decades. This is commonly cited as proof of the difficulty of learning Wutung. The people of this group that I spoke with (one of whom had indeed lived in the village for over thirty years) agreed that they were not confident in the language.

[9]My preferred spelling for this name, based on pronunciation, would be *nyau*, as in the map above; however the spelling used on official maps and signs is 'Nyao'.

[10]The sign in front of the Nyao school provides the following information: 'Nyao-Kono community school, 43 kms south-west of PNG border, 138° W and 3° S, pop. 400 in 2000'

two main clans. The several smaller clans appear to be more recent offshoots from these two major clans, though it was never made clear to me how a new clan is established. It seems these are historical incidents which are no longer easily effected.

1.3 Prehistory

As is the case for most of Papua New Guinea, little is known of the prehistory of this region. There has been some archaeological work but only at a couple of nearby sites and very brief. There are plans for more intensive archaeological work in the Sandaun border region so a better understanding of the pre-contact past may be forthcoming.

A study of museum items that were collected from along the Sandaun coast in the early twentieth century indicates that Wutung had the typical range of material culture. One of these studies, Moore & Romney (1994), suggests that Wutung material culture (and that of the Sko speaking people to their west) at the time was more similar to that of Austronesians than of other non-Austronesian groups to the east. This finding has been disputed (see Welsch et al. (1992); Welsch & Terrell (1994)).

Amongst Wutung people there is some knowledge of their recent pre-contact history, as well as a foundation story that may or may not reflect reality.

I was told that the village of Wutung was established many years ago, and that the ancestors of the present Wutung people formerly lived in a village called 'Sulu' which was inland about one kilometre along one of the rivers that runs from the mountains down to the sea at *calong* 'rivermouth'. I was told that there is still one old man alive who was born at Sulu, and that he is the last from that time.[11] My estimate of the man's age was that he was in his late seventies which suggests that the move from Sulu to the present village took place sometime before 1927 (his eldest child was born in 1947). Although I have not found any records from that time which mention a Sulu village in the region, it is likely that there was some kind of habitation with buildings on the Wutung site and that Sulu villagers were often in the area for fishing, using canoes, collecting coconuts and other foods, etc. In this situation it would be quite possible for this area to be taken by visitors to be the main village, and that Sulu was never actually visited by outsiders or, apparently, ever became known to them.

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[11]I was told that two weeks after his birth the entire village was moved down to the current Wutung site.

1.4 Contact history: the border

The nearby presence of the border between Papua New Guinea and Indonesia has had a profound impact on Wutung over the more than a century since the colonial powers of the Netherlands and Germany began attempting to precisely determine its location on the ground. Given the importance of the nearby international border to the village, it is useful to present a brief history of the formalising of the border and its impact on the people of Wutung.

In 1885 Britain and Germany agreed on a declaration which gave Germany control over the northeastern quarter of the island of New Guinea, along with the New Britain Archipelago (Ohff 2008:70). Figure 1.4 shows the division of New Guinea into areas controlled by the Netherlands, Germany and Britain.

The founding of the colony of German New Guinea in the nineteenth century was based on purely commercial considerations, according to Ohff (2008:vi), with both German and British governments reluctant to become involved in colonisation (at least, in this region). The German government initially gave the Neu Guinea Compagnie management of the operation of the colony, but took administrative and financial control in 1899.

Up until the end of the nineteenth century the border between the Netherlands and German possessions was located at 141° East of Greenwich. According to van der Veur (1966a:140) proposals were made in the early twentieth century to find a suitable natural feature to be the frontier between the two colonies. This began in 1901 with an exchange of letters and memoranda between the Netherlands and Germany urging that a commission be sent to determine such a natural frontier for the border; however the rigorous climate and the 'hostile attitude of the natives' rendered the plan impractical without careful preparation. Further, the Germans felt that in the absence of either border disputes or a settlement of Europeans in the vicinity, there was no urgency to the task (van der Veur 1966a:142). At this time the Germans had already set up an observation pillar at Angriffs-Hafen (the site of the present provincial capital of Vanimo) and had used this to determine the location of Huk Germania, a large cape immediately to the east of the mouth of the Tami River, this being seen as a potential natural frontier.

The determination of a 'working boundary', a natural frontier to replace the purely geographic line then demarcating the two colonies, began to move forward when the Netherlands engaged in a similar project with respect to its colony's boundary with the New Guinea possessions of Great Britain. As Germany would also now become

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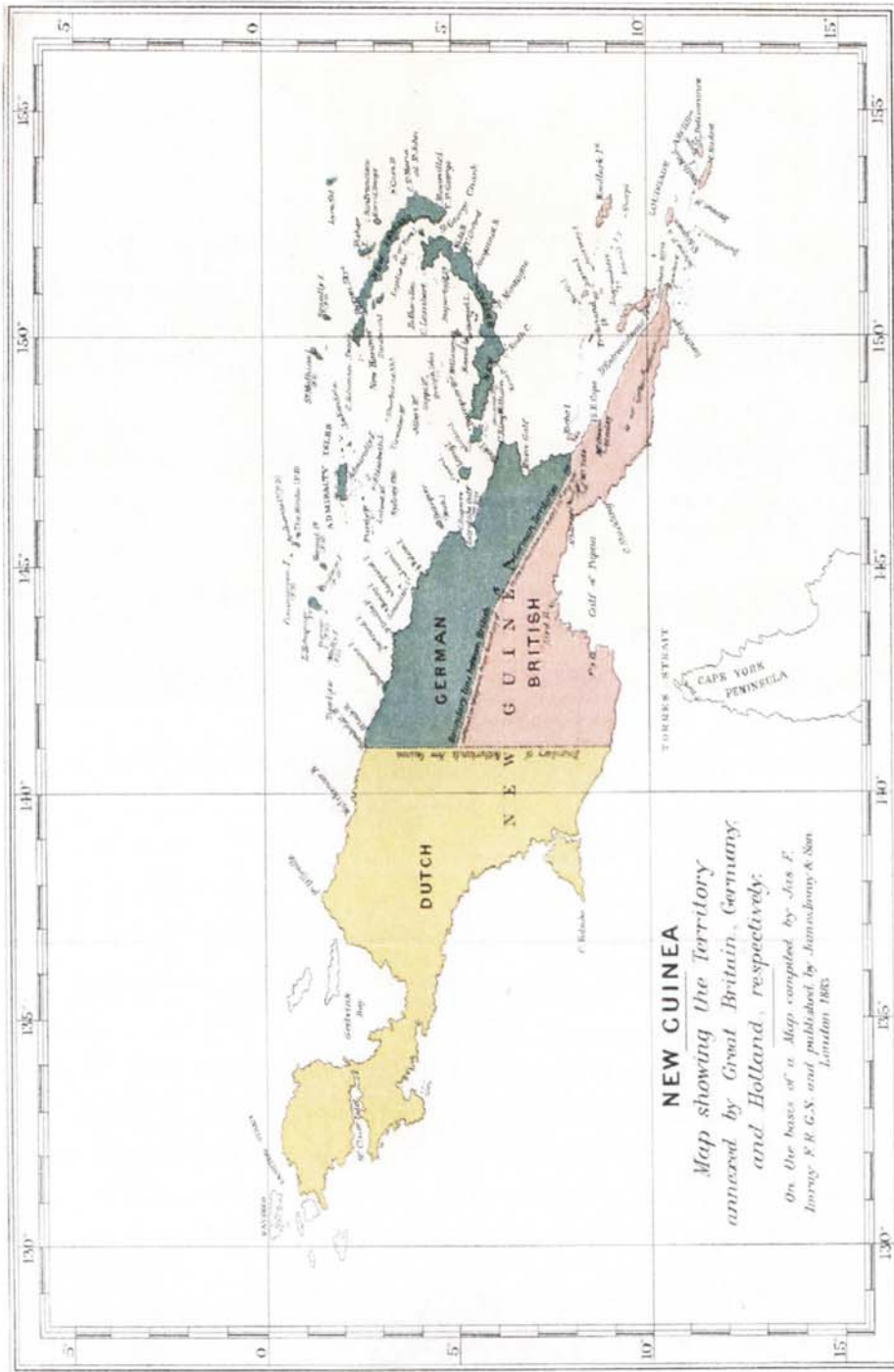
Figure 1.4: Map of New Guinea showing areas originally claimed by the Netherlands, Germany and Britain (Victorian Govt. Printer 1885, reproduced in Ohff (2008:endpaper))

engaged in determining its own boundary with Great Britain, it was felt opportune to also determine the boundary, on the ground, with the Netherlands. Finally, after the exchange of numerous diplomatic notes, a commission to determine a suitable natural frontier began, in 1911.

Mention is made in van der Veur (1966a:86) of a village called Njau Nemo being near the Mosso River (a tributary of the Tami R.) in 1928. In Cheesman (1938:67) another village called Njau-Limon is mentioned, which she says had been relocated and kept the name 'Njau' from the previous village, adding 'limon' due to newly-planted lime trees (*limon* being Malay for 'lemon'). At present there is a village called Nyao-kono about twelve kms. inland from Wutung. It seems likely that the same group of people have relocated their village several times, each time adding a different word to the name 'Nyao'. Cheesman (1938:67) says that Njau-limon was on the Dutch side of the border, so it is likely that they moved the village across the border at some point, renaming it Nyao-kono at the same time. Thus the village has been moved at least twice, with its name changing each time. Cheesman also reports landing at a village she calls 'Bosso'; from her description this could be Wutung but the name is more likely to be from the village of 'Musu'. This village is said to have begun when some people from Nyao moved down to the coast in (according to villagers' estimates) around 1935. This would accord with the timing of the move from Njau Nemo to Njau-limon. Cheesman's reference to the somewhat mysterious 'Bosso' village contrasts with Marshal (1937:499-500), who mentions 'Wutong' village, which he visited on his way from Aitape to Hollandia in 1936.

After World War I Australia took control of the former German colony. A district superintendent was appointed, based at Vanimo. Although there are mentions in the records of occasional patrols to Wutung and the border, the village appears to have played little role in the district activities. The Second World War still looms large in the minds of some of the older villagers who recall it as the time when the horizon was covered with ships, these presumably being Macarthur's fleet, based for a time at Jayapura (then known as Hollandia). A further remnant of that war is a Japanese section in the cemetery, with a number of Japanese headstones. Another outcome of the war is the bridge across the river on the eastern side of the village, which was initially built by Australian and American troops who also blasted the rocky reef in front of the rivermouth to create access for their landing craft. The same bridge remains in use and the reef-free area is still the one place that boats larger than a small canoe can approach the shore, between the

border and Musu village (twelve kilometres east). As villagers often travel to Jayapura by banana boat this is a very important point in the coastline for them.

1.5 Recent history

Under Australian control it was not uncommon for Wutung men to leave the village to work as police in other parts of the country. As a result a number of men have wide experience with other parts of PNG and there are some adults who grew up in other areas. These adults typically have a full passive knowledge of Wutung but claim to have great difficulty in speaking it well, a situation supporting a claim often made by Wutung villagers that no-one can learn their language without growing up in Wutung.

For some decades Wutung had a school staffed by (white) Australians; when Papua New Guinea attained independence this school closed and the staff departed.[12] At this time PNG citizens took over as teachers; presently the school has three teachers, one of whom is, fortuitously, from Wutung.

1.6 Language use in Wutung village

A number of languages are in daily use at Wutung: the indigenous language of Wutung, Tok Pisin and English. Wutung is spoken by most people; all older Wutung people speak it and most adults (apart from those who have married into the village, or who spent substantial parts of their youth away from it). It appears that there is no-one in the village who has acquired Wutung as an adult; certainly, I met no-one who had done so, and Wutung people consistently claimed that this was the case. There are several individuals who married into the village more than twenty years before, and have lived there since, but while they have a good understanding of the language, they claim not to be able to speak it, and I never heard them doing so. One man who has been resident for nearly thirty years stated that he is still unable to say much, although he can understand everything said to him in Wutung.[13] Even individuals who speak the closely-related language Skou

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[12]I was told that I was the first white person to live in the village since these teachers left, and that my three children were the first white children ever to live there.

[13]This assessment of his active competence in Wutung was backed up by several people I spoke to, as was the fact that no-one who did not grow up as a Wutung speaker has become a competent speaker of the language.

and who live at Wutung are reported to have very low levels of fluency in Wutung (Mark Donohue, pers. comm.).

Tok Pisin and English are the two main lingua francas of this region of PNG, and are the main languages used in education (at least, after the early years in which, in many villages, the local vernacular is commonly used). Across the northern half of PNG (the area formerly known as 'The Territory of New Guinea') Tok Pisin is known to most people, and is the common language of communication between those from different areas. As well, it is coming to be the first language for many children, especially those whose parents have no other language in common, or who live in towns, but also for those from villages where there is language shift away from the tok ples. All adults at Wutung are competent in Tok Pisin, and all children acquire it, some very early and seemingly at the same time as Wutung, some a little later. Some children, particularly those of mixed parentage (i.e. one parent not from Wutung), but also a few from Wutung couples, are growing up speaking Tok Pisin as their first language. In the case of my hosts, the mother (although a Wutung) had grown up in other parts of PNG due to her father's occupation and so had only partial command of the language. This meant that her main means of communication with her husband, and with her son, was in Tok Pisin, which had the result that her son was growing up with Tok Pisin as his first language. Judging from the several such children that I had regular contact with (the son of my hosts and some of his friends from nearby houses) the children of these 'mixed marriages' do seem to develop at least a passive competence in Wutung. As most of the village children have a good command of Tok Pisin from their earliest years those who do not have active control of Wutung are easily accommodated by their peers. While this accommodation may signal the start of the decline of Wutung, for most children of the village it remains the first language; certainly, from my own observation, Wutung is still the most common language of play amongst children.

English is known by many people, and certainly by most adults under 60 years of age, and most children over ten. English is used in the later years of primary school and is the medium of instruction at high school, so all children now acquire at least moderate competence (not all attend high school). I found that most of my adult informants have excellent English: this made initial communication easier, but had the result that my Tok Pisin acquisition proceeded very slowly.

Another language spoken (to varying degrees of fluency) by fair numbers at Wutung village is Bahasa Indonesia, the national language of Indonesia, whose border is less

than one km away. As described previously many Wutung villagers travel fairly regularly to the city of Jayapura, as well a to the main markets and towns (such as Abepura and Sentani, both in the Lake Sentani region) only 20 kms away.

Many Wutung villagers also have command of neighbouring languages, especially the two closely related varieties Sko and Dumo. It was often said to me that Wutung people have little trouble learning to speak Sko and Dumo, but the reverse is not true. People from those villages agreed, saying that they could not learn Wutung but Wutungs could learn their languages. Thus Sko speaking relatives would speak their own language and their Wutung relatives would speak Sko to them.

Finally, a number of Wutung people took pleasure in demonstrating that they could speak other languages of the wider region. These included One (Torricelli Phylum) and Leitre (Sko Phylum, but more distantly related than Sko or Dumo). It does seem that there is some truth to the claim often made by Wutung people that they are good at learning other people's languages, but no-one else learns Wutung. While I have carried out no particular work on this situation, it is possible that the fact that Wutung people grow up learning at least three or four languages from a very young age (Wutung, Tok Pisin, English, Bahasa Indonesia) may provide them with highly developed language learning skills. This number of lingua francas could also be part of the reason why Wutung has remained strong, while the villages of Vanimo and Leitre are experiencing a dramatic shift towards Tok Pisin amongst the children. The fact that there are several lingua francas competing for dominance (Tok Pisin, English and Bahasa Indonesia) perhaps lessens the possibility that one will come to displace Wutung. The people of Wutung with whom I discussed this issue seemed to have the view that each language is useful in a particular set of contexts, but less useful in others.

This situation at Wutung is of the kind described by Aikhenvald (2004) as 'stable polyglossia': the vernacular language is being maintained in the presence of (or perhaps despite the presence of) several other intrusive languages which have become established, each with their own role in the life of the villagers.

1.7 The mourning language, *huwurna* 'Cry talk'

Wutung speakers have a special register called *huwurna* which is used in situations of mourning, for giving a public lamentation over the loss. It has not proven possible to carry out any analysis of this register and only a very small sample has been recorded. It

is said by those speakers who still know it to use different words from standard Wutung but unfortunately no speakers were willing to demonstrate it (the sample collected was a quote in a story). It appears that it is usually spoken in a wailing voice, this being the reason for speakers giving it the Tok Pisin name 'kraitok' (rendered into English as 'cry talk'). This register appears to be declining in use as one informant said that few younger people now know it, and amongst the older it is mainly the women that are able to use it properly. Andrew Ingram (pers. comm.) advises that in his work on the neighbouring (and closely related) language Dumo (spoken in the village of Waromo, a few kilometres west of Vanimo) he found there to be an equivalent genre. Like *huwurna*, the Dumo lamentation genre was moribund and only known to a few.

1.8 Borrowings

1.8.1 Introduction

A few lexical items used in Wutung have clearly been borrowed from other languages. Some of these are true borrowings which have been modified to fit with the rules of Wutung phonology, but there are others that recur (that is, they are not one-off usages of 'foreign' words) but which have not been so modified, at least when used by speakers young enough to have command of the source language (usually Tok Pisin or English).

1.8.2 Modified borrowings

An example of a borrowing which has been modified to fit with Wutung grammar is *wo* 'work'. Several people thought that this is a new expression, borrowed from English 'work'. Given the vowel is 'o' and not the phonemic vowel /ə/, which would be the nearest correspondence to the English pronunciation, it seems more likely to be a borrowing from Tok Pisin 'wok' or perhaps from the variety of English spoken in Papua New Guinea. This word sounds entirely native and takes all the standard morphology for such a verb, as shown by its use in example (1.1), a passage from the story 'Cuscus and dog'.

(1.1) *Hmalu   bla   -bla   nie heme   fu*
        2SG.come.along 2SG.be.with -IRR/REDUP 1SG 2INCL.DU garden
        wodey   =dey
        -1PL.work =1PL.IRR
        'Come with me and we'll garden (i.e. work in the garden).'

This word is not accepted by all speakers as being good Wutung. One speaker suggested it would be better to use the verb *fudey* 'garden' instead of the form *fu wodey* in the story.

Two other modified borrowings are *be* 'bag' and *lesi* 'rice', both borrowed from Tok Pisin, or perhaps English. The former, *be*, is used in constructions such as *coffee be* 'coffee bag' with another clearly borrowed word *coffee*. The latter, *lesi*, is very likely the Wutung form of Tok Pisin *rais*.[14]

1.8.3 Unmodified borrowings

There are a large number of words that have been borrowed into Wutung with little or no change, although it is difficult to distinguish between borrowings and code-switching. This section will consider several words that have been borrowed from other languages and which retain their original form, despite not fitting with the Wutung phonology.

The word *save* 'know' is commonly heard within Wutung speech. This word retains the original [v] which normally appears only as an intervocalic allophone of /w/ in fast speech.

Another borrowing is *ka* 'car', which retains its initial velar stop when used in Wutung despite this segment not being a part of the Wutung inventory. A similar borrowing is *kacengceng* 'cicada', which is in daily use in this form as part of Wutung despite the presence of a velar stop, a sound not otherwise attested in the language. So far a source language for this word has not been identified, nor were Wutung speakers certain of its origin, although they agreed it was an exceptional word. One individual suggested it could be from Sko, which has a phonemic velar stop, but this is unlikely as that language does not have the affricate /c/. A more likely source would be Nyao, which attests all the segments found in *kacengceng*.

1.9 Previous work on Wutung

According to Capell (1962) some collection of data on Wutung was carried out by Friederici in 1912, by Gallis in 1950, and by Cowan during the 1950s. Unfortunately I have not yet been able to obtain copies of these documents so I cannot comment on

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[14]The fact that this is a borrowing rather than code-switching is shown by the fact that many Wutung people, when speaking Tok Pisin, will pronounce this with the initial rhotic; however when speaking Wutung will pronounce it with the lateral.

them. However, it does not appear that any of them contain substantial information on Wutung.[15]

Between 1969 and 1971 the late Donald Laycock carried out a survey of languages in the Sepik area, collecting 28 notebook pages of information (Laycock nd) on Wutung, material which has informed this thesis. In 1999 Mark Donohue collected some information on Wutung while surveying the languages of the Sandaun coast area (p.c.).

There has been very little other research work bearing on Wutung. One of the exceptions to this is an analysis of the connection between material culture, linguistic relationships and geographic dispersion in northern New Guinea reported in Welsch et al. (1992). This work used museum assemblages of items collected early in the twentieth century along the coast between Jayapura and Madang to argue that there is little connection between language and (material) culture in this area. Unfortunately, although it is said that there are eighty-six items from Wutung (Welsch et al. 1992574), there is no information as to who was the collector. Nevertheless this indicates that Wutung was known and visited by researchers before World War I. Following the appearance of this first paper a brief debate on the topic ensued, including a commentary and reanalysis disputing their results (Moore & Romney 1994), followed by a reply from the authors of the original paper (Welsch & Terrell 1994).

Apart from this there had been no other research on Wutung until I began my work in 2000.

1.10 Relationships within the Sko family

On the basis of his survey work Laycock (1975:851) classified Wutung as a member of the Sko phylum which he describes as having the members and structure shown below in figure 1.5.

Mark Donohue has made a number of proposals (e.g. Donohue (2003a) and Donohue (2001b)) regarding relationships between the various members of the postulated Skou Family. On the basis of his detailed work with the Sko language (spoken in Irian Jaya immediately to the west of the Tami River) and survey work on a number of the other languages in Laycock's Sko Phylum. Donohue has suggested (pers. comm.) that they may be divided into two groups which he calls the Sko and Serra Hills groups, but that

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[15]Cowan (1952) is noteworthy for being perhaps the earliest mention of tone in a Sko family language.
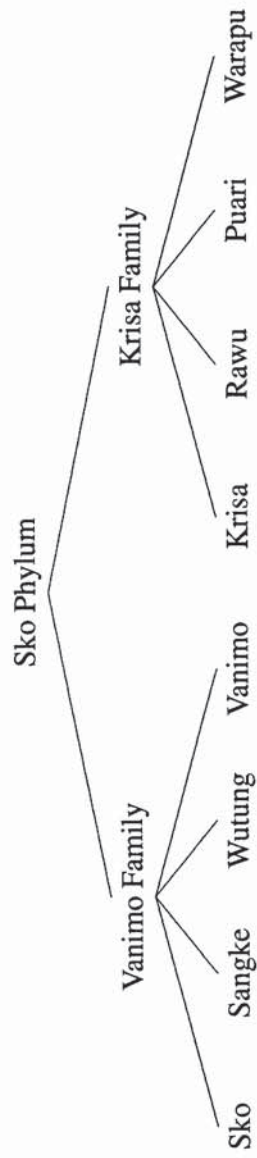
Figure 1.5: Laycock's Sko Phylum

there is at present no clear evidence that the two groups are related. This Sko grouping then would have the following members: Dumo, Leitre, Wutung, Sko (the others would be in the Serra Hills group). The most obvious change, apart from avoiding speculative higher-level groupings, is the inclusion of Leitre, and the removal of Sangke. Leitre is spoken in the village of that name, on the coast to the west of Vanimo, and, according to Donohue's (pers. comm.) work there, is a close relative of the Dumo, Wutung and Sko languages. 'Sangke' is the name of a village immediately across the border in Indonesia, and approximately thirty kilometres inland. None of the researchers currently working on Sko languages have yet had the opportunity to visit Sangke. However I have spoken to old people at Wutung who say they have been there and that the language is like Wutung. Determining whether or not there is a distinct 'Sangke' language, and whether or not it is appropriate to group it with the other Sko languages will have to await further investigation.

It is possible that further research will add one or more languages to this group as there are villages inland from Wutung, in addition to Sangke, which are said (by Wutung people) to have languages similar to Wutung. Much further work is required to fully understand the membership and internal relations of this group of languages, and to investigate the possibility of a genetic connection with the so-called Serra Hills group.

In more recent work (for example Donohue & San Roque (2004)) Donohue posits a set of relationships among a large number of languages of the Sandaun coastal region, including Wutung and the others mentioned above. Donohue & San Roque (2004:6–8) link these languages together into a group they label 'Macro-Skou', which includes I'saka, the Piore and Serra Hills groups and a group they term 'Skou'. The tree they present (Donohue & San Roque 2004:7) for this latter group is shown in 1.6 (double lines and italics indicate linkages where there are no clear language boundaries, while roman font names indicate separate languages and vertical lines indicate genetic relationships).

While Wutung is clearly related to a number of nearby languages including Skou, Dumo, Leitre, Isaka, Puare and others as listed above, (Donohue 2003b:361) suggests that these languages (the Sko family) may have a distant relationship with the Lakes Plains languages of the upper western Mamberamo River region in Indonesian New Guinea, pointing out that there are strong similarities in the tonal system along with a few possibly cognate lexical items. As Donohue goes on to say, the evidence is still only slight and a conclusive statement is not possible at this stage.
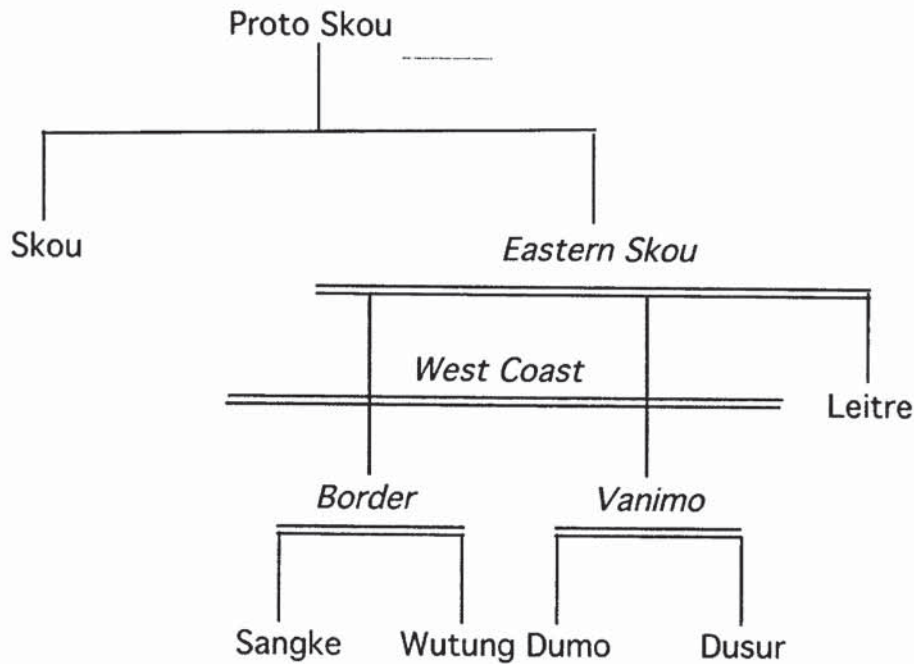
Figure 1.6: Donohue's Proto Skou

1.11 Neighbouring and related languages

The nearest neighbours of Wutung are: three villages over the border in Indonesia where the Sko language is spoken; Musu, a small village about twelve kms to the east; and inland (over the mountains and therefore accessible only by travelling via Vanimo) is the village of Nyao (sometimes called Nyao Kono).

The Sko language is closely related to Wutung but is a distinct language. Speakers from the Sko village occasionally visit Wutung, and vice versa, there having been some intermarriage between individuals from the two areas in the past (though apparently little today—it may well be that this has lessened since colonisation). Sko has been described in a series of publications by Donohue (2002, 2003a, 2003b, 2006).

Particularly closely related to Wutung are the varieties spoken in the nearby village of Musu (with a population of around 120 people) and in the inland village of Nyao (population unknown: for locations of these villages see the map in figure 1.1). At Wutung I had the opportunity to work with a woman visiting from Musu who had lived in Nyao. Although the conclusions are preliminary, the data I collected from her shows that the Musu and Nyao varieties are very similar to Wutung, differing in the forms of

some lexical items (perhaps on the order of 10%, based on a rough count). In many cases these are clearly cognate, for example the Musu 1SG pronoun is *ni* where Wutung has *nie*). A significant difference between the two varieties is in the realisation of at least one phoneme, Musu having the tap [ɾ] where Wutung has the lateral [l]. Thus, for example, Wutung /fli/ [fli] 'mountain' is [fɾi] in Musu/Nyao. There are several variants of some word forms which may be due to Musu forms becoming used to the point that they are interchangeable with the (originally) Wutung form. All of these variants involve the presence are absence of the lateral following a bilabial or labiodental consonant. Some examples are:

(1.2)   *ifa* ~ *ifla* 'sleep' (noun)

(1.3)   *ungfling* ~ *ungfing* 'forget' (verb)

(1.4)   *bu* ~ *blu* 'suck'

(1.5)   *hapi* ~ *hapli* 'stingray'

I was told that the form *blu* is from Musu, but this is odd as Musu generally has the tap [ɾ] where Wutung has the phoneme /l/. It might be that the Musu form is *bru* and that this has entered Wutung usage as *blu*. Several other such alternants have been recorded, e.g. *baba* vs. *blabla* '1SG.be.with'. A study of Musu will be required to clarify this issue.

Wutung speakers claimed that Nyao speakers use [k] but this was not evident in the speech of the Musu-speaking informant. I was told that Musu was originally settled by people from Nyao who moved down to the coast in around 1920. There used to be a road that went fairly directly from Musu, inland to Nyao, but it has become overgrown and is now only useful for walking. A number of Wutung people have visited Nyao and while they report that the speech there is not too different to Wutung (i.e. there is a high degree of mutual intelligibility between the two), it was often said that it is much less like Wutung than is Musu.

In 2002 I was able to visit the inland village of Nyao briefly and collected a small comparative wordlist of Nyao, Skotiaho and Tapos from a Nyao villager whose mother was from Skotiaho.[16] The wordlist was collected with the assistance of one of my main Wutung informants, M3, who travelled with me to Nyao. Given my lack of skill in Wutung and less than fluent level of Tok Pisin, I asked for the words in English and M3 translated my requests into Wutung, which the Nyao villager understands. Where there

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[16]Tapos and Skotiaho are villages to the south of Nyao.

were any, M3 employed Tok Pisin. Given this double-translation elicitation process the wordlist cannot be considered definitive. However it does give a strong indication that Nyao is closely related to Wutung (and therefore to other Sko languages) while Skotiaho and Tapos, on this evidence, are unlikely to be related to Wutung. While this wordlist has not been properly analysed it is included for comparison in the wordlist in Appendix C together with Wutung equivalents.

While Musu and Nyao both differ phonologically and lexically from Wutung, all three are mutually intelligible.

Some older people have also visited villages further to the south and west and report that at some of these places the speech is similar to that at Nyao. Often mentioned mentioned were the villages of Skotiaho and Sangke, although very few had ever visited these as they are across the border in Indonesia and in areas away from the main roads[17]). One old man who had visited both these villages in his youth (while guiding an Australian Patrol Officer through the area) said that he thought the language they spoke was closer to Sko than to Wutung.

Donohue (2002:205) presents a tentative tree model of the Skou Family which has, at its lowest-level, the 'Border' group, consisting of Sangke and Wutung. This latter actually consists of the mutually intelligible varieties Wutung, Nyau and Musu, which I refer to collectively as the 'Wutung subgroup'. Donohue (2002:173) treats Sangke and Nyao as referring to the same variety. However in my view this is unclear. While only a few of my informants had heard the name 'Sangke', one had actually visited the village and was of the view that it was more like Sko than Wutung. So while Sangke may also be mutually intelligible with Wutung (in which case Donohue's Border group consists of several dialects of a single language), for the purposes of the present work I am not including it in the Wutung Subgroup. While the people of Wutung village have been living on the coast (or near it when they were at Sulu village, see §1.3) for long enough that there is no memory (apart from traditional stories) of an earlier residence, the people of Musu say that their predecessors moved to that location from Nyao around the 1920s (see §1.11). Based on this background alone, one would expect that Musu and Nyao are more closely related to each other than either is to Wutung.

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[17]Ryan (1970:87) describes Sangke (which he writes as 'Sengke' or 'Senek') as literally straddling the border with Indonesia and therefore being required eventually to choose which citizenship to take up; it is now an Indonesian village and some distance west of the border.

However, based on the small amount of information which I collected on the Musu and Nyao speech varieties, as well as on Wutung people's own opinions on the three varieties, Musu is more similar to Wutung than is Nyao; this relationship is shown in Figure 1.7.
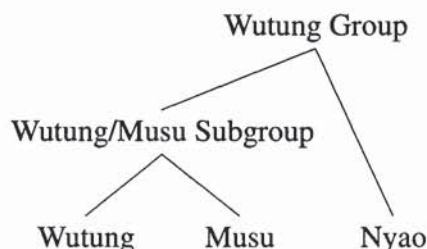
Figure 1.7: Relationships of dialects in the Wutung Group, based on wordlists and Wutung speakers' judgements

Given the amount of movement, intermarriage, and regular communication between Wutung and Musu, along with the fact that Nyao is by comparison quite isolated, it is probable that the current similarities reflect a recent period of intense borrowing and convergence between Wutung and Musu. The map in Figure 1.8 illustrates the relative locations of Wutung and its close relatives, Skou, Nyao, Musu, Dumo and Dusur (these last two being spoken in and near Vanimo). However as the map is planimetric (that is, not showing relief), it does not make sufficiently clear the relative remoteness of Nyao from both Wutung and Musu that results from the steepness of the terrain.

1.12 Literacy

The PNG Education Department has a policy that all pre-schools use the vernacular for any literacy teaching. This means that before a village can have a pre-school they must have both an orthography for their language and at least a basic dictionary, preferably trilingual (English-Tok Pisin-Vernacular). People at Wutung place much emphasis on education[18] and are very keen to have a pre-school. As I agreed to help develop an orthography and a dictionary, they were very happy to have me working on their language and very supportive of all my work. To assist me with working towards this end I met

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[18] As previously mentioned, two individuals from Wutung have gone on to university, one in Australia and one at the University of PNG, where they have completed degrees.

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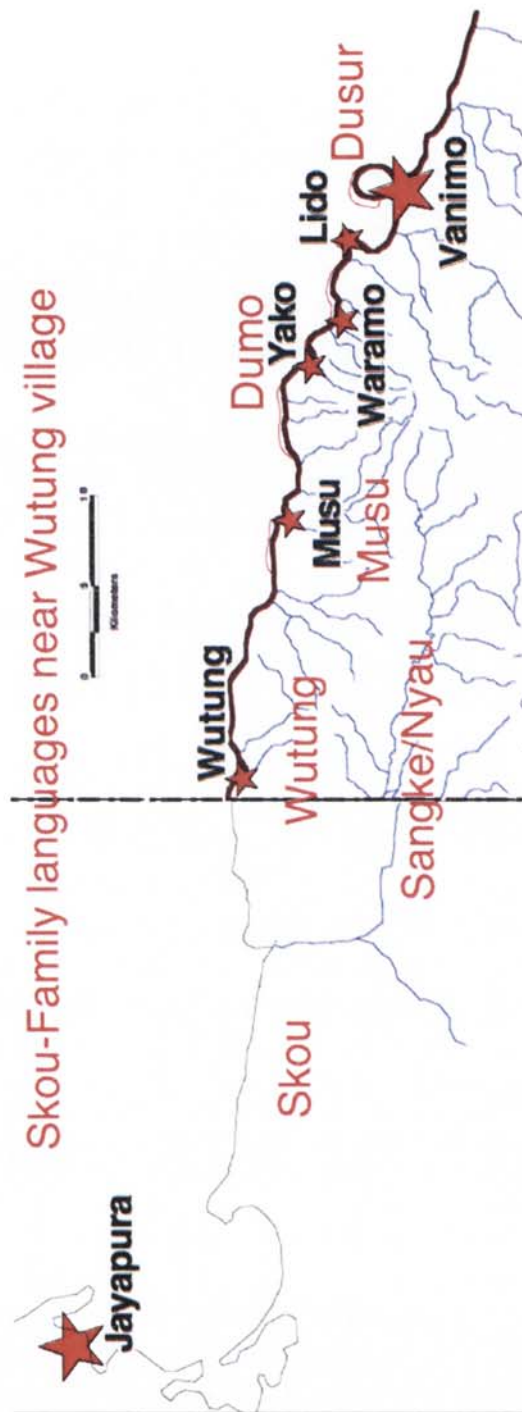
Figure 1.8: Wutung and its close relatives (language names in red)

regularly with a working group consisting of one of the teachers (a Wutung speaker) and several other interested people (two of whom were my main informants) to work through the issues surrounding developing an orthography. A tentative orthography was developed in 2003, and was trialled by teachers and others at Wutung. When the teachers and villagers are satisfied that it is suitable it will be presented to the Education dept. after which, hopefully, Wutung will get a pre-school.

1.13 Social structure within the village

The village of Wutung is viewed by residents as comprising two distinct villages, *Cawu* and *Pamuahur*, which can be rendered into English as 'Waterside' and 'High Village', respectively. These names derive from the relative locations of the two 'sub-villages', *Pamuahur* being on the high side of Wutung, to the west[19], while *Cawu* is adjacent to the river. While these two sub-villages abut so closely that an outsider would not see them as being other than a single village, to Wutung people the distinction between them is obvious and important, each sub-village being identified with one of the two main clans (*pasaqo*, 'clan') as its main area of residence. The space between the two sub-villages serves as the village meeting area.

All individuals of Wutung origin are members of one of several clans, which consist of individuals held to be descendants of a single founding ancestor. Each clan has a story of how its founder came to be in the village and how they founded their clan. There are two main clans in Wutung, *Hlongtur* and *Taleng*[20]. *Hlongtur* consists of three smaller 'sub-clans', *Nyimi*, *Tingqwua* and *Nyiaqwey*. Each of these sub-clans has its own chief, one of them, the chief of *Nyiaqwey*, also being the Paramount Chief of the clan.[21] *Taleng* on the other hand is a single clan with a single chief. There is another, smaller clan at Wutung, but I do not know its name and have no information relating it to any of the other clans.

Each clan has ownership over particular areas of land, which only its members have the right to farm.[22] As well, individual families have more detailed rights to specific

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[19]The direction west is described as being 'upwards' while east is described as 'downwards'

[20]One of the oldest men at Wutung also said there had once been another clan, called *Hlongcey*, but its members had died out many years before.

[21]'Paramount Chief' is the title by which Wutung villagers refer to this person in English.

[22]I was not able to clarify the extent to which this is also true of sub-clans.

areas of land within the larger clan lands, and even to particular trees which a family member or ancestor planted. I witnessed a lengthy dispute between two families that arose from the felling of a tree belonging to *Nyimi* subclan by a member of a *Taleng* family. This was considered a serious indiscretion and one that was resolved only with much discussion and apology, and restitution. At least one subclan, *Nyimi*, has lands which are not very well suited to producing food as they extend up the slopes of the mountains behind Wutung. Members of this clan are allowed to farm areas belonging to the larger clan, *Hlongtur*. In exchange, all members of *Hlongtur* are allowed to go hunting in *Nyimi* lands.

Wutung people also have names for particular clusters of houses where closely related families dwell. These names are informal and often jocular and perhaps mildly deprecatory.

Clan membership descends through the male line, so that the children of a *Hlongtur* man married to a *Taleng* woman are themselves members of *Hlongtur* clan. Marriage is across clans, never within a clan, unless the clan has subclans, in which case marriage should at least be across subclans. I was told that in the past marriage was arranged, but that now partners are chosen freely (given the necessity of marrying into a different clan/subclan).

Chiefs are generally expected to be exemplars of good behaviour (as this is defined at Wutung). They do carry out certain mediatory roles in disputes within their own clan or, for the paramount chief, within the whole village and for larger disputes. The clan chiefs do not appear to derive much privilege from this position, but do have larger houses which are necessary to accommodate the clan meetings (and feasts, celebrations, etc.) which are occasionally held for various reasons, in particular to settle disputes. While men generally build their own house with (varying amounts of) extended family assistance, it would be reasonable to assume that the entire clan gives assistance in the building of the chief's house. As arbiter of usage of clan lands, chiefs are able to benefit monetarily from giving rights of use to outsiders. For example one clan at Wutung has rights to land which extends across the border into Indonesia about 20 kilometres. The members of this clan who are working land across the border may make the daily trip of up to twelve kilometres into Indonesia for this work. When an Indonesian company wanted to carry out some work on this clan's lands within Indonesia they came to see the clan chief and paid him a substantial sum for the right to use 'his' land. Clan chiefs do distribute monies

to other members of their family and their clan and may sponsor feasts, celebrations and necessary expenses such as for funerals.

Most houses are family residences, typically being occupied by a couple along with their children, and possibly their parents (if too old to live independently). I have been told that in earlier times men lived in a *haus boi*, a men's house, with women and children occupying separate dwellings. There is still a small *haus boi* in Wutung but it is now only used as a quiet retreat for men, being a place where women do not go. There are also areas along the beach which are designated as men's and women's areas. It was difficult to get a clear idea as to how long ago the *haus boi* stopped being the main residence for men, but the impression was that it was at least two generations ago, shortly after World War II. Mark Donohue (pers. comm.) suggests that it was earlier, around the time of World War I, as this was when this occurred amongst the neighbouring Skou people.

1.14 Kinship terminology

1.14.1 Basic kin terms

Tables 1.1 lists the basic kin terms that I was able to record, 'basic' here indicating that they are monomorphemic. Although these kin terms are commonly used in possessive constructions, they are also used without any possessive marking, particularly when speaking of these relationships in the abstract, not tied to any individual.

(1.6) *Qey lurqung menie nie*
     3SGM look   sister 1SG
     'He looked at my sister.'

While kin terms are most often found possessed they may also occur unpossessed, most commonly when used in a copula clause, as in (1.7).

(1.7) *Nie na apa*
     1SG COP father
     'I'm (a) father.'

While these kin terms are described as being 'basic', many of them do show signs of fossilised morphology. *menie*, 'sister' and *puaninie* 'brother's wife' both appear to bear fossilised possessive marking with *nie* 1SG; that this is no longer active is illustrated by

Table 1.1: Kinship terminology, excluding uncles/aunts

mother	eme
father	apa
son	enyua
daughter	emua
brother	nyune
sister	menie
brother's son/daughter	eng
sister's son/daughter	engwata
mother-in-law	atey (wungawunga)
grandfather	atey panyua
grandmother	atey wungawunga
uncle's children	lala
aunt's children	paduami (also may be used for brother/sister)
brother-in-law	palupu
brother's wife	puaninie
mother's brother	popo

(1.6). *engwata* 'sister's son/daughter' includes *eng* 'child'. *paduami* 'aunt's children' and *palupu* 'brother-in-law' both contain *pa* 'person/man'. The terms for 'son' *enyua* and 'daughter' *emua* are likely based on *eng* 'child/baby', with the initial vowel losing its contrastive nasality under the influence of the following nasal consonant. Finally, both *popo* 'mother's brother' and *lala* 'uncle's children' appear to be reduplicated forms.

1.14.2 Complex kin terms

As well as the basic kin terms, Wutung has two sets of morphologically complex terms, one set for referring to uncles and aunts of differing levels of seniority, and one for referring to the 'mother' of oneself, or any particular individual or group. In both cases the morphology is quite transparent and is recognised by speakers who are able to segment the morphemes when explaining the meaning of the words. Of the second set, possessive terms for 'mother', so far the following forms are known:

These terms are in daily use amongst all members of the village, when referring to, or addressing, relatives. One elderly informant made the claim that the kin term *apa* 'father'

Table 1.2: Morphology of 'mother' + POSS

Possessed form	Morphology	Translation
emenie	*eme* mother + *nie* 1SG	my mother
engqeme	*eng* child + *qey* 3SGM + *eme* mother	his mother
engceme	*eng* child + *cey* 3SG.F + *eme* mother	her mother
emene	*eme* mother + *ne* 1PL	our mother
engteme	*eng* child + *te* 3PL + *eme* mother	their mother

is not an original Wutung word and that it is borrowed from Leitre. This informant gave the original Wutung word for 'father' as *jie*.

(1.8) *Qey   na   jie   me*
        3SG.M COP father 2SG
        'He is your father.'

The terms used to refer to uncles and aunts distinguish between oldest, youngest, and middle uncle or aunt; these are laid out in Table 1.3.

Table 1.3: Uncle/aunt kinship terminology

	eldest	middle	youngest
father's brother	jeti	jeu	jelua
father's sister	engti	engu	englua
mother's sister	fati	fame	falua

These appear to be compound words, comprising two parts, one indicating the nature of the relationship, followed by one indicating seniority. The exceptions to this are 'mother's middle sister', which is exceptionally *fame*, and 'mother's brother', which is *popo* in all cases. The structure of these terms is presented in Table 1.4.

Table 1.4: Uncle/aunt kinship morphology

Relationship		Seniority
Father's brother *je*		*-ti* eldest
Father's sister *eng*	+	*-u* middle
Mother's sister *fa*		*-lua* youngest

1.15 Fieldwork and background to the study

1.15.1 Fieldwork visits

My research at Wutung was carried out over a number of years with a series of visits to the village. My first visit was for one month in 2000, during a 'scouting trip' to find a suitable fieldwork location. On this trip I met a number of villagers, including the chair of the village council, Patrick Muliale. At this time Patrick was also acting Governor of Sandaun Province. The people of Wutung were very friendly and delighted that someone from the outside world could be interested in their village and their language.

In September 2000 I travelled to Wutung with my wife and three children for an intended stay of around eight months. On this trip the villagers insisted that, as I had my family with me I should stay in a house at the nearby government station, where there is housing for the government officials based at Wutung.[23] One of the government officials is the Kiap (Tok Pisin for Patrol Officer). At this time there was no Kiap at Wutung so we were given the use of this house. While it was pleasant (particularly for my family) to have the amenities of the house, it meant we were about one kilometre from the actual village and surrounded by people who were not Wutung speakers. This meant that working with Wutung speakers required a special trip. This distance, though short, was enough to provide something of a barrier so that there was not the regular immersion in Wutung that I had desired.

This period in Wutung was interrupted by a dispute between the Indonesia government and the OPM, the Free Papua Organisation.[24] The Wutung villagers, who had regular contact with the OPM, were concerned that they would retaliate by kidnapping the foreigners (my family and myself) living on the edge of the village, and urged us to move to Vanimo until it was safe to return. We did this and wound up staying in Vanimo for nearly two months. We returned to the village in February 2001, but after another month

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[23]The list of officials is somewhat unusual for a remote village in PNG as it included border officials of various sorts (quarantine, customs, immigration) as well as the more common teachers, clinic worker and police.

[24]The OPM raised their flag in Jayapura in December 2000 and then fled the military reprisal. These individuals hastily crossed the border into PNG and hid in their 'bush camps' in the vicinity of Wutung. Meanwhile their families, in fear of persecution, followed them but were not allowed into PNG. As a result they were stuck in the 'no man's land' between the two borders.

the villagers again expressed concerns for our safety and asked us to leave. We therefore decided to return to Australia, cutting our visit to a little over five months.

For my three subsequent fieldwork trips to Wutung I travelled there alone, staying each time for around six weeks. On each of these occasions I stayed in the village with a Wutung family. This has been a far better situation for recording and learning Wutung than living at the government station, and has enabled me to hear (and attempt to use) Wutung on a regular basis. As Wutung people are typically busy in the mornings, I normally spent afternoons working with assistants and mornings working through the data recorded the previous day, developing further questions, and preparing for the afternoon's work.

My research on Wutung focused for some time on understanding the complex system of lexical tone.[25] While some researchers working on other tonal languages have been able to find informants who could sing, whistle, or in some other way make their tones explicit, this was not the case with speakers of Wutung, who typically appeared not to have awareness that there was such a thing as tone in their language. This is similar to the situation with I'saka described by Donohue & San Roque (2004:34–37), who comments on the difficulty of finding a vocabulary for discussing tone, a circumstance that applied almost universally at Wutung. Indeed working with informants to categorise monosyllabic words according to their tone produced quite different lists with different informants, and no-one was found who had any systematic way of discussing or describing tones or tonal contrasts. One young boy described the pronunciation of some words as being 'pulled' by which I took him to be referring to some particular tonal contour.[26] A number of people at Wutung told me that their language sounds like Chinese[27], a joke they seemed to enjoy, but it seems to reflect some level of recognition of the presence of tonal phenomena

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[25]Pike (1948:19) describes phenomena, such as 'mental metathesis', the hearing of stressed vowels as high pitch and unstressed as low even when the reverse situation is true, which can make it difficult for the researcher new to a tonal language to hear tones clearly.

[26]Although this is a term that other researchers have told me their informants used this was the only time I heard this usage at Wutung.

[27]It is a common statement amongst Wutung people that they must originally have come from China because their language 'sounds like Chinese' (which suggests an awareness of the presence of tonal contrasts) and they have an eating utensil which they refer to in English as 'chopsticks'—actually two long sticks bound near one end so that they form a kind of pincer, or tongs—which they use to handle sago jelly (Mark Donohue points out that this utensil is not as unusual as Wutung people think, being found across north-central New Guinea).

in their language. In discussions of tone with my main informants they reported to me their impressions of it in their language. Often these impressions were contradictory and unclear, but occasionally they had useful insights (e.g. the contrast on verbs reported in §5.4. All my informants agreed however that they did not feel a need to indicate tone when writing their language; this consensus has played an important role in the development of a practical orthography for Wutung (see §3.7.2).

The main problem I experienced in working with tone in Wutung was that I tended to hear phonetically rather than phonemically. It took a long time and a lot of listening to recordings before I could start to feel confident in consistently and accurately recognising the contrastive tones, rather than hearing the phonetic detail.

The people of Wutung had a very appreciative attitude towards my fieldwork. People would often bring me small gifts of fruit and thank me for visiting their village and being interested in their language. My suspicion is that this stems from their feeling that they have been ignored by governments (both provincial and national), as well as by the outside world in general. They have a fair understanding of the outside world, which may result in part from the proximity of Jayapura, a major city which they visit quite often. It may also result from the several Wutung people who have careers in other parts of PNG or the world. Certainly, Wutung people wish to be a part of the wider world, but are reluctant to give up what they recognise are the many benefits of their village life. But being ignored can have its benefits: although the government put powerlines through the village, they were never connected to houses, and the power station is barely able to provide sufficient power for the residents in the government village adjacent. Eventually people gave up waiting for the power to be connected to their houses and decided to solve the problem themselves by buying solar power cells in Jayapura and hooking them up to radios, fridges, battery chargers, etc. As a result a kind of appropriate development has taken place, driven by people's needs and wants, and facilitated by the proximity of a large city, but with their traditional lifestyle being preserved largely intact (to the extent that they themselves wish to maintain it). That this works is a result of many factors, including the fact that they are in control of who comes to Wutung and in fact, being at the end of the line, do not get many visitors. Also of course, while they are able to use the resources of Jayapura for their own purposes, the reverse is not true.

Figures 1.9 to 1.11 show several of the people who assisted in my work on Wutung. Jenny Wilie and Eddy Tanfa in particular provided much assistance and guidance, helped find me accommodation, and introduced me to various storytellers. Figure 1.9 shows

Jenny Wilie carrying a load of firewood in the traditional way. Figure 1.10 shows Eddy Tanfa, son of the chief of Nyimi clan, in front of his home, a typical Wutung house. Figure 1.11 shows Eddy again, here with his daughter Elizabeth, and Samson Sie, a senior Wutung man.

Figure 1.9: Jenny Wilie
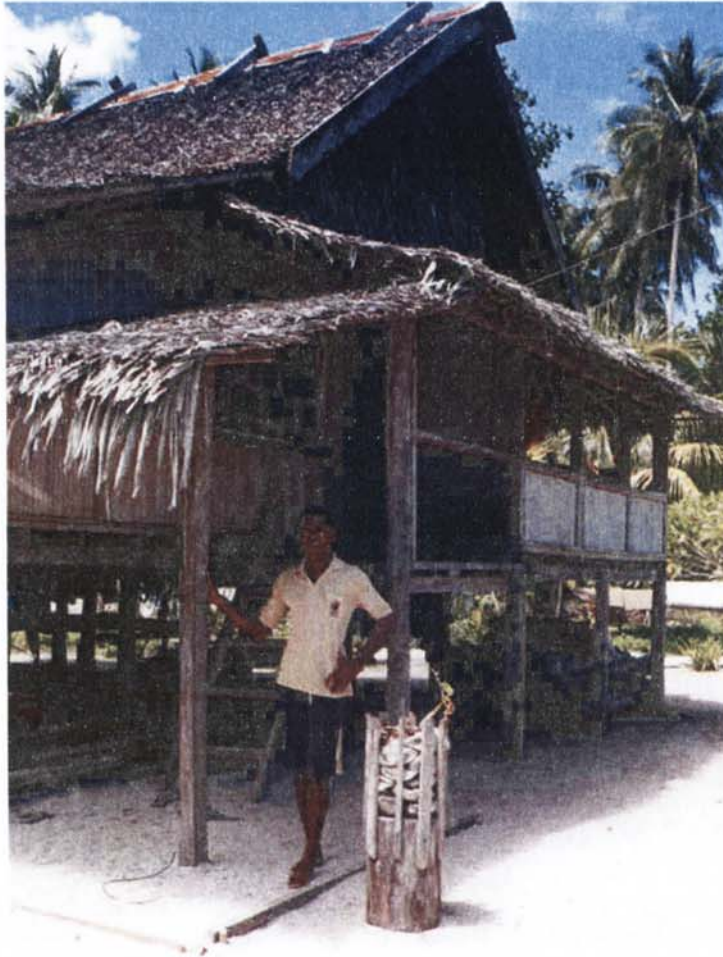
Figure 1.10: Eddy Tanfa, in front of his house

Figure 1.11: Eddy Tanfa with his daughter Elizabeth and uncle Samson Sie

1.15.2 Data collection and the Wutung dataset

The information on the language of Wutung collected during my stays consists of:

1. 24 hours of tape recordings;

2. About 700 pages of field notes by myself. Approximately 60 pages of this is texts, while the rest is mostly elicited data);

3. Some short writings by Wutung speakers (including mainly hymns, some short stories, and comments on drafts of the Wutung dictionary).

All analysis in this thesis is based on the first two sets of material, with some support coming from materials of the third kind.

A small but significant additional dataset that I obtained well after my work was underway is the materials recorded by the late Donald Laycock, who visited Wutung village in 1970 (see brief discussion in §5.3). The Laycock materials are not used in this

thesis but their agreement with my materials, in terms of transcription, provided valuable reassurance in the early stages of my work.

The material collected has been entered into a lexical database using Shoebox.[28] This database, which now amounts to over 1,500 words, has facilitated analysis and has enabled the production of a draft dictionary, copies of which have been provided to the Wutung community.

While most of the audio recordings have been digitised, the acoustic analysis presented in Chapters 4 and 5 is based on a relatively small selection of material, some of which was elicited precisely for this purpose, and some of which was chosen from the larger body of material as a check on the accuracy and applicability of the analysis. Most of my audio recordings have much background noise and so are not of a high enough quality for acoustic analysis; some have so much noise that they have not been transcribed.

The majority of the data presented in this thesis is either from audio recordings or texts recorded in my field notes. Occasionally examples will be used which have been constructed by me without the assistance of a Wutung speaker: in every case this will be noted by being described as a 'constructed example'. No crucial points of analysis rest on any such constructed examples.

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[28]Shoebox is software developed by the SIL (Summer Institute of Linguistics) for the purpose of automating the interlinearisation of texts, developing and maintaining a lexical database, and outputting this database as a formatted dictionary.

Chapter 2

A typological overview of Wutung grammar and summary of the thesis

2.1 Introduction

This chapter outlines the organisation of the thesis and summarises the main features of the description in order to provide a typological overview of the language while providing guidance on the location of parts of the description. In addition to this chapter, Appendix A steps through the features found in the World Atlas of Language Structures online (Haspelmath et al. 2008), describing where Wutung fits with respect to each feature.

This dissertation contains nine chapters and five appendices. As indicated by its title, the dissertation does not pretend to be a complete 'grammar' of Wutung, but rather presents an analysis of a number of aspects of the language which stand out as being of particular interest. There is an emphasis on the sound system—I see an understanding of this aspect of the language as being an essential prerequisite to any attempt to understand other parts of the grammar. Leaving aside Chapter 1 'Introduction', it can be thought of as being comprised of three parts: the first deals with phonetics and phonology; the second presents the word classes and the basics of clause structure; the third part presents an analysis of the noun phrase and its constituents, and verbal morphology.

The first chapter, 'Introduction' sets the scene, introducing the village of Wutung, its inhabitants and the physical/geographical environment, as well as the language, its linguistic context and present status, and an overview of previous work in the area. The

following sections step through the remaining chapters of the grammar in their presentation order, summarising the major features of the analysis and providing references to pages where more detail may be found.

2.2 Segmental phonology, chapter 3

Chapter Three, titled 'Segmental Phonology', delineates the segmental inventory and phonotactics of the language, along with an optimality-theoretic analysis of syllable structure and a discussion of orthography issues.

The segmental inventory of Wutung consists of fifteen consonants and thirteen contrastive vowels. The consonants (§3.2.1) show a voicing contrast in the plosives and include glottal stop. There are two typologically unusual gaps; an absence of velars and no rhotic. Re the latter, the neighbouring (and mutually intelligible) variety spoken at the village of Musu shows a rhotic where Wutung has a lateral. One phoneme, /d/, is highly marginal with most of its very few occurrences being in verbs where it results from the morphophonology of agreement.

There are seven oral vowels (§3.3.2). The most unusual feature of the oral vowels is the presence of a close-mid front central vowel, /ɵ/. As well as oral vowels there are six nasals (§3.3.3). For each oral vowel quality there is a corresponding nasal vowel, except for the close-mid central vowel which does not have a nasal counterpart.

Wutung syllable structure is quite complex (§3.4.1.1). Onsets may contain up to four consonants, although are only a very few examples of onsets of this size. Clusters consisting of two or three consonants or common and include a wide range of consonant combinations. Syllables with a nasal vowel differ in their onset possibilities from those containing an oral vowel in that their onset may not contain either a nasal consonant or a voiced obstruent. The variety of syllables with a nasal vowel in the rhyme is greatly restricted as all onsets with more than two consonants contain at least one nasal.

While the vast majority of syllables in Wutung are open, there is a very small number that have a coda; only six such syllables have been recorded (§3.4.1.7). Section 3.4.1.8 presents an optimality-theoretic analysis of these syllables which shows how a combination of constraints can interact to occasionally allow a small number of non-final syllables to have a coda.

The word in Wutung is always vowel-final but all consonants may occur word-initially (§3.4.2). All but two consonant clusters occur word-initially with these two only occurring

in intervocalic position; the absence of these two clusters word-initially may simply be a gap in the data collected.

Stress is not phonemic (§3.6) but is likely to play a role in intonation and the higher-level organisation of utterances. Section 3.7 describes the development and interpretation of the practical orthography employed in the thesis.

2.3 Segmental phonetics, chapter 4

Chapter Four, 'Segmental phonetics', provides an acoustic analysis of two aspects of the language: the oral vowels and the voice onset time characteristics of the two sets of obstruents (the 'voiced' and 'voiceless' stops and affricates).

The analysis of features of the phonetic behaviour of Wutung required collection of appropriate data, which is described in §4.2.1. The two aspects of Wutung phonetics that were analysed are: vowel acoustics; and voice onset time of plosives.

The acoustics of vowels were investigated by measuring the frequencies of their first and second formants, and plotting these frequencies on the standard chart, F_1 being placed on the vertical axis and F_2 on the horizontal; this mapping presents them vowels in the familiar height/backness layout (§4.3). This was done for four speakers, two male and two female. The results are presented individually, combined by gender, and as an average of all four (§4.3.2). For three of the speakers the vowels show distinct ranges of variation, with no overlap evident. For one speaker this was not true of the vowel pair /i/ (the high front vowel) and /e/ (close-mid front vowel), these two having ranges that overlapped. This accorded with my own difficulty in perceiving the contrast between these two vowels with some speakers. The comparison by gender showed that, for these four informants, there appeared to be a contrast in production, with the females having a 'high front' vowel /i/ that was no higher (and often somewhat lower) than the 'close-mid front vowel', /e/. There is not yet consensus on how best to carry out acoustic analysis of nasal vowels so this was not attempted.

The analysis of voice onset time used the same data set as previously (which had been designed to meet both needs). The data set was used to investigate voice onset timing within the stop pairs /p,b/ and /t,d/, and the affricate pair /c,j/ (§4.4.1). The results of this investigation are presented in tables and also in 'box and whisker' plots of the timings that present the five-number summary (the lower quartile, the median, the upper quartile, and the lowest and largest observations) for each analysis (§4.4.2.2 for discussion of the

results with stops, and §4.4.3.2 for the affricates). The results show that there, in the data collected, there is no overlap in voice onset time between the corresponding pairs of voiced and voiceless plosives. The voiceless plosives show a consistent pattern of having a very small range of variation, with voicing beginning coincident with the release of closure, or immediately after it. For the voiced plosives the variation is much greater with the onset of glottal vibration being very early, often coinciding with the beginning of stop closure and sometimes even preceding it (though here it is difficult to be certain in the absence of synchronised video of the lips to give precise timing of the beginning of stop closure). The statistical analysis used shows that the pairs of plosives investigated do form distinct populations.

2.4 Phonology and phonetics of tone, chapter 5

Chapter Five, 'Tone: Phonology and Phonetics', describes the principal lexical prosodic phenomena in Wutung, focusing on the system of lexically contrastive tone melodies and also discussing some aspects of the acoustics of tone.

Wutung has lexically contrastive tone, with there being minimal pairs which are distinguished only be consistent differences in the pitch contours (§5.4). The number of tonal contours occurring is quite limited and does not necessary increase with syllable number, suggesting that the tone-bearing unit is not the syllable but the word. There final analysis presented is that the tone-bearing unit is the word, with tone melodies applying to the whole word and being realised as pitch levels on the individual syllables. There are four contrastive tonal melodies occurring, with only three being found on monosyllabic words and all four occurring on words of two or more syllables (§5.5.1.1). In addition to the pitches, there is an optional accent which may be present, in which case it serves to attract neighbouring pitches (§5.5.1.2). These two systems, the tone melodies and optional accent point, interact to give rise to the surface sequence of pitches which manifest on the syllables of the word (§5.5.1). The following sections of the chapter (§5.5.2 and following) describe the realisation of the tones on monosyllabic, disyllabic and trisyllabic words.

Section 5.6 discusses the phonetics of tone, describing the range of realisations of each tonal melody for each of the four speakers, as they occur on monosyllabic words (thus excluding the presence of an accent point), excepting the LHL tone, which (as it only occurs on words of two or more syllables) is described as it occurs on disyllabic words.

Also described are various interactions between the tonal melodies, phonotactics and the presence of particular phonemes.

2.5 Structure of the simple clause, chapter 6

Chapter Six, 'Clause structure: the simple clause', presents an analysis of the structure of non-verbal predications and simple verbal clauses.

Non-verbal predications (§6.2) involve juxtaposing a noun phrase and a non-verbal predicate. A copula may be inserted between the two other elements, but is not obligatory. Non-verbal predications without a copula evince three functions: predicate noun, predicate adjective and predicate possessive. Non-verbal predications with a copula show the same range of functions, with the addition of predicate location.

Section 6.3 presents the structure of verbal predications, which is:

Subject–Object–Verb–Indirect Object

Word order in the clause is relatively fixed but may occasionally be varied so that the object is clause-initial; this seems to occur for pragmatic reasons and is quite rare. All arguments are required to be overt at some point. Wutung is a topic-drop language, so once a subject is presented it may be omitted thereafter. The only case marking of instruments, all other NPs being invariant in form (apart from nominal morphology).

There are four main types of verbal clause. Intransitive clauses consists minimally of a single verb with a single subject argument (§6.3.2).[1]

Transitive clauses (§6.3.3) take two obligatory arguments, subject and object (with the same qualifications as before re imperatives). Adjuncts are post-verbal. Ditransitive clauses have three obligatory arguments, subject, object and indirect object. While subject and object always precede the verb, indirect object is post-verbal, but precedes all adjuncts. Only two ditransitive verbs are known, 'give' and 'put' (§6.3.4). The final of the four clause types described is the semi-transitive. This clause type takes two obligatory arguments, one in subject position and one in indirect object position, following the verb (§6.3.5). Wutung has at least one verb that forms reflexive clauses (§6.3.6). These clauses

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[1] Although the subject is not present in imperatives

have a ditransitive structure, taking an obligatory post-verbal noun phrase as well as subject and object.

Wutung has two types of interrogative clause, polar questions and content questions (§6.4). Polar questions employ a clause-final interrogative particle on a clause to indicate that it is a question. Polar questions usually only require an affirmative or negative response. Content questions use one of a set of question words, roughly equivalent to English 'wh-words', and require a more complex answer.

There is a small set of prepositions that are used to add non-obligatory, non-core NPs to a clause (§6.5). Prepositions take no morphology and normally precede the post-verbal NP. Prepositions always follow the verb and any obligatory post-verbal arguments. At least two of the prepositions also function as verbs with equivalent prepositional meaning.

Wutung adverbs (§6.6) have no morphology and have relatively free positioning, always being external to the verb phrase and usually on the margins of the clause (some adverbs may follow the subject). The adverbs may be subgrouped according to whether they express temporal, spatial or manner meanings.

The final part of speech discussed in this chapter is the illocutionary particles (§6.7). This is a small, closed group of words which take no morphology. The illocutionary particles can have scope over any clausal constituent (unlike adverbs and prepositions, which are limited to having scope over particular elements). Each of these particles has their own slot (or set of slots) wherein they may occur. Being highly heterogeneous in meaning they are difficult to characterise so are best listed: they are: *hla* 'also/as well', the interrogative particle *me*, the negative particles *upe* and *qe*, causative *qo*, and *su*, 'can'.

2.6 Noun phrases, their structure and constituents, chapter 7

Chapter Seven 'The Noun Phrase', discusses noun phrase constituents, their morphology, and the structure of noun phrases.

The chapter begins by outlining the structure of the noun phrase (§7.2), and the order in which elements occur within the NP. All elements in a NP follow the head noun, occurring in the following order (though this is a theoretical maximal constituency which is not

actually attested): head noun–possessor pronoun–adjective phrase–determiner—-relative clause. The various elements are discussed below.

Nouns in Wutung include common nouns, proper nouns and pronouns (§7.3.2). Common nouns have one of two genders, masculine or feminine, though this is covert, only being evident in the agreement morphology on verbs. The only case marking present is the instrumental, which is marked by a suffix. Instrument NPs may precede the verb or follow it, with no apparent difference in meaning or function. Nouns can take the exclusive suffix to indicate that there is 'nothing but' that item present. Nouns may also take the agentive suffix, giving a form which refers to the agent of the action (e.g. equivalent to forms such as 'gardener' in English) (§7.4).

Personal pronouns (§7.5) occur in three persons (first, second and third) and in three numbers (singular, dual and plural). There are dual pronouns in each person. Those in first are elaborated, there being the following three forms: *heqey* 'me and him'; *hecey* 'me and her'; and *hemey* 'you.sg and me'. Reflexive pronouns are formed by the addition of the reflexive suffix to the personal pronouns. As well as the personal pronouns there is an anaphoric pronoun which, unlike the personal pronouns, is able to take modifiers.

Adjectives (§7.6) modify nouns and serve as head of the adjective phrase, being able to take degree modifiers. Adjectives can take various suffixes, including: a plural, an intensifier (which has the same form as the reflexive morpheme on pronouns), and a diminutive.

The determiners is a large category, covering a variety of subcategories, all of which indicate the number and/or specificity of the head noun (§7.7). Members of the determiner category are mutually exclusive, only one being able to occur in any clause; apart from a couple of exceptions that appear to be idiomatic, no cases have been recorded of multiple determiners occurring in the one clause. Determiners follow the noun, and follow adjectives (if present), and any elements that precede adjectives in the NP. The subcategories of determiner are: articles, quantifiers, demonstratives and numerals. There are two indefinite articles, a singular and a plural. The quantifiers comprise a set of seven (known) words that modify the noun to indicate how much of the entity is present, equating to English terms such as 'some', 'all', 'half', 'none'. When quantifiers occur they are usually the sole modifier in the NP, but they do also occasionally co-occur with adjectives. There are three demonstratives, two spatial (glossed as 'this/these' and 'that/those'), and one anaphoric (glossed as 'the one/s previously mentioned'). These three forms fill both the demonstrative adjective and demonstrative pronoun functions,

being able to modify a noun or function as head noun. Of the three, only the proximal has gender forms, one masculine and one feminine. Wutung numerals follow a decimal system (though there is some evidence that a different system prevailed in pre-contact times) which may be used to construct numbers up to ninety-nine, although the highest Wutung numbers recorded in use were in the twenties, higher numbers normally being given in Tok Pisin or English.

Nominal possession is expressed by a personal pronoun following the thing possessed, and agreeing with the possessor. The possessor may also be indicated by a noun preceding the possessum, but this is optional (§7.8).

There are a variety of types of compound, which are discussed in §7.9.

Finally, there are three types of conjunction in Wutung: list conjunction, which is indicated by intonation; pronominal conjunction, which employs the third person dual pronoun to join two NPs; and, NP conjunction, which uses the form *pa* (equivalent to 'and') to join any number of NPs.

2.7 Verb morphology, chapter 8

Chapter Eight 'Verb morphology', deals with verbal morphology with a focus on agreement marking for person/number/gender of arguments and tense/aspect/mood marking, along with an overview of other types of verb morphology.

The verb is the most morphologically complex lexical category, showing complex agreement marking and also undergoing various morphological processes to mark mood and aspect. Subject/object agreement marking is not uniform: some verbs take no agreement marking, some agree with the subject and a few agree with both subject and object (§8.2). Where it occurs, the marking reflects person, number and gender (for third person singular). The marking is analysed as resulting from the fusion of a set of prefixes with the verb (§8.2.2), these prefixes showing some relationship with the personal pronouns and possibly deriving from them, historically. Virtually all of the verbs may be treated as falling into one of four inflectional classes, depending on their initial consonant: alveolar, bilabial, palatal or glottal. The inflectional prefixes interact with the particular initial consonant/s[2] and vowel of the verb to produce the actual verbal word. While some

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[2]Particular, as there are in most cases at least two segments in each inflectional class, each giving rise to a different outcome after fusion with an inflectional prefix.

verbal predicates consist of a single verb morpheme, most consist of a number of verb morphemes, which are analysed as being compounded into a single, morphologically complex, word. In many cases each such morpheme within the verbal word inflects according to its initial segments; Section 8.3.2) summarises the reasons why this view is to be preferred over an analysis of the complex verbal predicates as serial verb constructions. Section 8.2.3 presents in detail the inflectional behaviour of the monomorphemic verb, while Section 8.3 does the same for the morphologically complex verbs. There is a great deal of irregularity, with most verb paradigms showing some deviation from the canonical forms that would be expected from the process of fusion with the inflectional prefixes. Section 8.3.5 deals with the issue of the presence of these inflectional prefixes in what is, otherwise, an entirely suffixing language.

Mood and aspect both may be indicated by verbal morphology. The base form of the verb indicates realis (§8.4.2), while irrealis is indicated by a combination of reduplication of the rightmost onset and following segments, and the addition of a clause-final clitic (§8.4.3). Imperfective aspect (§8.4.4.1) is marked by the suffixing of the verb *lie* 'be' to the realis form of the verb. This suffix agrees in person/number/gender with the subject of the verb. In the absence of any other indication of temporal location, the imperfective implies that the event is happening in the present. The realis form of the verb without the imperfective usually implies that the event is in the past. There is a suffix (§8.4.4.2) that attaches to the realis form of the verb, to indicate progressive aspect, and a habitual suffix (§8.4.4.3).

There is a continuous imperative suffix (§8.4.5.2), but no corresponding punctual imperative, this being indicated by the realis form with no overt subject argument, and appropriate intonation and pragmatics. A negative imperative consists of the irrealis (reduplicated) form of the verb, together with the clause-final negative particle, again, with no overt subject argument and appropriate intonation and pragmatics (§8.4.5.3).

2.8 Appendices

The appendices present material that supports the analyses presented in the thesis but which it is felt is better kept outside the main body of the work. These appendices present the following material: Appendix A the typological features of Wutung, summarised according to the list of features in the World Atlas of Linguistic Structures (WALS); Appendix B the elicitation wordlist used for the phonetic analysis; a wordlist with simple

glosses and marking for tone (Appendix C);[3] and, several sample texts with interlinear glosses, one of which is heavily annotated so as to give some insight into linguistic structures not analysed in this thesis (Appendix D).

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[3]It should be noted that while tone is not normally marked in this thesis except where it is the object of analysis, all words used are represented in this wordlist with their tone, if this is known.

Chapter 3

Segmental phonology and orthography

3.1 Introduction

Wutung is typically Papuan in its inventory of fifteen consonants, both in terms of the size of the inventory and of its membership. It is however fairly unusual for a Papuan language in that it has seven contrasting vowel qualities. According to Foley (1986:54) Papuan languages with more than this number of vowels are extremely rare, the only examples he cites being other languages of the Sko Phylum, the putative genetic grouping within which Wutung is located (see §1.9). There are however a number of other languages, particularly in Sandaun Province, which have this number or greater. One such example is Imonda, which has ten vowels (Seiler 1985:16); another is Kwomtari, which has eight (Drew 2008:23). The vowel system in Wutung is further complicated by the presence of a nasal contrast for six of the vowel qualities giving a total set of thirteen contrasting vowel phonemes (see §3.3). The vowels and consonants combine to give a total of twenty-eight segmental phonemes, slightly more than the 'two dozen' given by Foley (2000:367) as being the maximum number found in languages of the New Guinea region (although he allows the single exception of Yeletne, clearly there are others). In addition Wutung has lexical tone, with every word taking one of four tone melodies, these being realised as pitch on each vowel.

These features are fairly typical for a Western Sko language (for information on the phonology of other languages in this group, see Ross (1980) and Donohue (2002)). In terms of phonology Wutung differs from its close relatives in this group chiefly in that it allows complex clusters of up to four consonants to occur in syllable-initial position. This

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contrasts with Dumo which, according to Ross (1980:78–79),[1] only allows a maximum of two consonants in a cluster and Skou (Donohue 2000:3), which does not allow any consonant clusters at all. Musu, spoken in the nearby village of the same name and mutually-intelligible with Wutung, allows similarly complex initial clusters and has a very similar phonological inventory (see §1.11).

3.2 Consonants

3.2.1 Consonant inventory

Wutung has fifteen consonant phonemes found in words indigenous to the language.[2] The primary phonetic values of these are shown in Table 3.1; allophonic variation is dealt with further below in Section 3.2.3.

Table 3.1: Consonant phonemes

	Bilabial	Labiodental	Alveolar	Postalveolar	Palatal	Velar	Glottal
Plosive	p b		t d	ʧ ʤ			ʔ
Nasal	m		n		ɲ		
Fricative		f	s				h
Lateral			l				
Approximant	w						

Although the bilabial and labiodental consonants are distinguished in this table, there is some evidence that they could be grouped together in the fact that they are involved in the same process, described in §1.11.

The voiceless velar stop [k] is not shown in Table 3.1 although it does occur, being found in the single word, *kacengceng* 'cicada'.[3] As this segment is not found (phonetically or phonemically) in any other Wutung word it seems likely that it is a recent borrowing,

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[1]Ross referred to this language as 'Vanimo'; in this thesis it will be referred to as 'Dumo', this being the name preferred by speakers (A. Ingram, pers. comm.).

[2]The detailed phonological characteristics of loan words—some of which retain their foreign phonemes even though used fairly regularly in Wutung—will not be discussed in this thesis, although examples containing loan words will occasionally be used.

[3]I never saw this creature, but I often heard the very loud sound that it makes. Wutung people described it as a 'cicada', so I am glossing it this way despite being uncertain as to its precise nature.

perhaps from Sko or Nyao (two related languages which both have a velar stop [k] in their phonological inventories) but I was never able to confirm this. The Wutung speaker that I put this to (who has a fair knowledge of the Sko language) did not know of the word in Sko, but said he thought it was possible that it was borrowed from that language or perhaps from Nyao an inland village which has a Skou language likely to be mutually intelligible with Wutung.

3.2.2 Consonant contrasts

The various consonant contrasts found in Wutung are demonstrated by the near-minimal set presented in Table 3.2. The members listed in the first column of this table have the form /Ca/, with all phonemic consonants being represented as well as /Øa/, which indicates the absence of an initial consonant.

As well as a sizeable segmental inventory (for a Papuan language) Wutung also has phonemic tone (see Chapter 5) which takes the word as its domain but manfests on the syllable. In order to demonstrate the lack of evidence of any interaction between the realisation of tone on a vowel (as phonetic pitch) and the preceding consonant, the third column in Table 3.2 provides as many examples as possible of that row's particulare consonant combined with the various tones. The realisation of tone on individual vowels is marked with the following diacritics (nasalisation is included here as, in some examples, it co-occurs with tone):

falling: â
low: à
high: á
nasalisation: ã

In some cases, due to the lack of examples with the same vowel, different vowels have been used.[4] Also, as the phoneme /d/ is a relatively rare phoneme (mainly occurring in agreement marking on verbs) I have no suitable examples where the tone is known, so this row remains empty.

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[4]It should be noted that as the domain of tone is the word, the realisation of tone on individual vowels is actually phonetic (i.e. pitch, rather than 'tone'), although these coincide to a large degree on monosyllabic words. To ensure clarity on this issue the forms are enclosed in square brackets.

Table 3.2: Consonant minimal & near-minimal set /Ca/, with tonal variants

Minimal forms	gloss	Tonal variants
a	'sky'	[â] 'a fruit'; [à] 'sky'; [ácèy] 'mango'
da	'1PL.be.with'	
ʤaʔo	'Yako village'	[ʤáʔò] 'Yako village'
ɲa	'gall bladder'	[ɲî] 'banana'; [ɲìflà] 'bee'
ba	'2SG.3SG.M.hit'	[báqwûwè] 'beside';
ʧa	'water'	[ʧâ] 'water'; [ʧà] 'pig'; [ʧápèʧî] 'blister'
pa	'person'	[pâ] 'person'; [Pácâ] 'a village name'
sa	'grass'	[sà] 'traditional music'; [sá] 'grass'; [sâ] 'thing'
fa	'edge'	[fê] 'betelnut'; [félàì] 'good'; [fὲ] 'wind (n.)'
tafa	'completely'	[tô] 'language'; [tò] 'bone awl'; [tósùr] 'true'
wa	'3SG.F.be.with'	[wâng] 'sail (n.)'; [wácî] 'broken';
ma	'skin'	[mà] 'skin (n.)'; [máhùr] 'frog'; [mê] '2SG'
na	'taro'	[ná] 'digging stick'; [nà] 'sago basket'; [nâ] 'taro'
ʔa	'3SG.M.3SG.M.hit'	[ʔâ] '1SG.scratch'; [ʔṹ] 'tooth';
ha	'limbum leaf bag'	[hâ] 'leaf bag'; [há] 'k.o. shell'; [hàfô] 'clothing'
la	'go.with'	[lô] 'sharp'; [lólófà] 'long ago'; [lí] 'sea'

Additionally, the contrast between the presence or absence of word initial /w/ and /ʔ/ as the onset is shown in Table 3.3 (cross-linguistically, these commonly serve as phonetic epentheses). While glottal stop occurs as a phoneme, there is also a non-phonemic, epenthetic glottal stop; this is discussed in §3.5.

3.2.3 Consonant allophony

3.2.3.1 Invariant consonants

In terms of their phonetic realisation, the consonants largely conform to the prototypical values that are associated with the IPA symbols used to represent them in Table 3.1, above. In particular, the following eight consonants show little or no discernible allophonic variation:

Table 3.3: Glottal and glide contrasts

#ʔV vs #V				
	ʔa	'3SGM go'	a	'round fruit'
	ʔɛ̃	'bone'	ɛ̃	'child'
	ʔu	'bellybutton'	u	'other'
#wV vs #V				
	wa	'beach'	a	'round fruit'
	wi	'5'	i	'arise'
	wθ	'a fight'	θ	'thorn'

/p/ — voiceless bilabial stop, normally unaspirated, although it may occur with a brief, slight aspiration, especially when non-initial.

/b/ — voiced bilabial stop

/d/ — voiced alveolar stop

/m/ — bilabial nasal

/n/ — alveolar nasal

/ɲ/ — palatal nasal

/f/ — labiodental fricative

/s/ — alveolar fricative

The small amount of variation that does exist amongst the other consonants is discussed further in the following sections.

3.2.3.2 Voiceless alveolar stop /t/

The only voiceless stop that shows any significant variation is /t/, which has dental and alveolar allophones with no apparent conditioning factor. For some speakers the dental allophone is uncommon, while for others it seems to be the default pronunciation. As far as can be determined then, these allophones appear to be in free variation, as shown in

Figure 3.1.[5] As my dataset indicates that the alveolar form predominates, it is referred to by this description.

$$/t/ \rightarrow [t] \sim [\underset{\sim}{t}]$$

Figure 3.1: Alveolar stop allophones

Table 3.4 presents some examples of the allophones of the voiceless alveolar stop:

Table 3.4: Examples of free variation in /t/

Informant	$\underset{\sim}{t}$	t
F1	tey [$\underset{\sim}{t}$ey]	tur [tɵ]

3.2.3.3 Glottal stop /ʔ/

The glottal stop phoneme is usually reduced to a voiced glottal fricative (which could alternatively be described as a brief period of glottal creak) when it occurs between vowels. It differs from the postvocalic allophone of /h/ in that it manifests creak. It should be noted that it also differs slightly from the epenthetic glottal stop (see §3.5) in this behaviour.

$$/ʔ/ \rightarrow \begin{cases} [\underset{\sim}{ɦ}] \,/\, V \_\_ V \\ [ʔ] \quad \text{elsewhere} \end{cases}$$

Figure 3.2: Glottal stop allophones

3.2.3.4 The glottal fricative /h/

There are three fricatives, all voiceless. As mentioned above, two of these show no perceptible allophonic variation, always being realised with their canonical IPA values. However, the glottal fricative (which only occurs as the first element in a syllable) is normally voiceless, but becomes voiced when between vowels.[6] As well, it may be

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[5]The swung dash (∼) here indicates free variation
[6][h] is never a fricative phonetically, but is so phonologically.

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completely elided when preceding a sonorant consonant. For example /hɲo/ 'squeezings' commonly has the following realisation, particularly when uttered in isolation:

(3.1)   /hɲo/ → [ɲo]
        'squeezings'

The allophonic variation of /h/ may be summarised as follows:[7]

$$/h/ \rightarrow \begin{cases} [h] \sim [\emptyset] / \_C_{\text{SON}} \\ [ɦ] / V\_V \\ [h] \quad \text{elsewhere} \end{cases}$$

Figure 3.3: Allophonic variation of /h/

3.2.3.5 The affricates /tʃ/ and /dʒ/

Both /tʃ/ and /dʒ/ (the latter in its phonetic affricate allophone) show some variation, depending largely on the particular speaker. Some speakers manifest a clear stop phase followed by a fricative release (i.e. they are true affricates) articulated at the alveolum. Other speakers production of them involves a longer stop phase, though still with some friction in the release, further back in the post-alveolar region and with laminal contact, as [t̻ʲ] and [d̻ʲ]. Some speakers articulate /dʒ/ with a very reduced fricative phase, closer to [dʰ], such that it is may be difficult to be certain whether they were producing /dʒ/ or /d/.

The voiceless affricate /tʃ/ has two main allophones in free variation, aspirated and unaspirated.

$$/tʃ/ \rightarrow [tʃʰ] \sim [tʃ]$$

Figure 3.4: Allophones of /tʃ/

An example of this, from informant F2, is the following:

(3.2)   /ci/ [tʃʰi]~[tʃi] 'tapa cloth'

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[7]As discussed in §3.4, the phoneme /h/ only occurs as the first element in a syllable, and in clusters of up to four consonants. These positional constraints are presumed in the formula describing the allophonic variation .

The voiced affricate /ʤ/ shows the most substantial allophony of the affricates. It sometimes surfaces as the palatal approximant [j], when it occurs in an intervocalic environment, though this is more common with some words than with others, and appears to depend on its position within the word. This variation is represented by the formula in Figure 3.5.

$$/j/ \rightarrow \begin{cases} \text{[j] / V \_ V} & \text{(\textit{optional})} \\ \text{[ʤ]} \sim \text{[d^{j}]} & \text{elsewhere} \end{cases}$$

Figure 3.5: Allophonic variation of the voiced affricate

Some examples are:

(3.3)   /atejaja/ → [atejaja],   [ateʤaʤa] or (for some speakers) [ateḍʲaḍʲa] 'grandparent'

(3.4)   /weʔefileja/ → [weʔefileja] 'scorpion'

The following examples indicate that the [j] allophone does not occur in all words:

(3.5)   /fijiɛ/ → [fiʤiɛ] 'put down'

(3.6)   /hweju/ → [hweʤu] 'search'

The counter-examples are both verbs and also have the voiced affricate occurring in either the first or second syllable. The examples with the glide, on the other hand, are both nouns and both have the allophone in question occurring in post-second syllable position. As a result it is not possible to determine which (if either) of these criteria are decisive.

The inability of the glide [j] to occur in word-initial position is demonstrated both by its absence in this position in indigenous words as well as by the Wutung pronunciation of borrowed words containing initial [j], such as the name of a nearby village known to its (Dumo speaking) inhabitants as [jako] but which is usually pronounced as [ʤaʔo] when used by Wutung speakers. For many Wutung speakers this also applies when they are speaking English: words such as 'yellow' are commonly pronounced as [ʤɛlou].

3.2.3.6 Lateral

Wutung has a single lateral, /l/. This is normally voiced, but after word-initial /h/ it is realised without voicing and commonly with substantial aspiration. The degree of the aspiration also seems to vary with other factors, for example it is greater post-pause. Like the approximant (§3.2.3.7) the lateral also has a nasal allophone which occurs preceding nasal vowels.

$$/l/ \rightarrow \begin{cases} [\mathring{l}^h] \ / \ \#h \ \underline{\quad} \\ [\tilde{l}] \ / \ \underline{\quad} \tilde{V} \\ [l] \quad \text{elsewhere} \end{cases}$$

Figure 3.6: /l/ allophonic variation

The variation seen in Figure 3.6 is illustrated by /hlɛhli/ 'tree', which is realised as [hlɛfili]. The first /h/ phoneme is realised by its voiceless allophone as it is not post-vocalic; as such, it triggers the first /l/ to manifest its voiceless allophone. The second /h/, however, is voiced due to the preceding vowel (as described in §3.2.3.4) and so the subsequent /l/ is similarly voiced.

An example of the nasal allophone is /hlũ/ which may be realised as [hlũ] or as [hl̃ũ].

As discussed in §1.11, the closely related lects spoken in the nearby villages of Musu and Nyao have the tap [ɾ] in place of the lateral found in Wutung. Some examples of this are provided in Table 3.5: further examples may be found in the aforementioned section.

Table 3.5: Wutung vs Musu lects

English	Wutung	Musu
'mountain'	[fli]	[fri]
'squeezing'	[hmbləhmblə]	[hmbɾəhmbɾə]
'mouth'	[lalə]	[ɾaɾə]

Some words in Wutung having a consonant cluster containing the lateral have alternative forms without the lateral (for example, *hapi* ∼*hapli* 'stingray'). As described in §1.11 this may be due to the influence of the Musu language.

3.2.3.7 Approximant /w/

The approximant /w/ shows the most complex allophony. Like the lateral, the approximant is usually voiced, but has a voiceless allophone which occurs after /h/. As well, the approximant is often realized as [β] between vowels or between a word break and a vowel. This occurs for example in the demonstrative pronouns:

(3.7) /wɛnɑ/ → [βɛnɑ] [wɛnɑ] 'this'

(3.8) /ɑwe/ → [ɑβe] [ɑwe] 'here'

The allophones [β] and /w/ are in free or stylistic variation. Possibly [β] is more common in rapid speech.[8]

As with the lateral (see §3.2.3.6) when /w/ occurs before a phonemic nasal vowel it becomes nasalised. This results in a sound perceptually very similar to [m], although it differs in that there is never complete closure of the lips, only the usual rounding and partial closure typical this segment. Some examples of this process are shown in Table 3.6.

Table 3.6: Approximant nasalisation

wũawũa 'woman'	→	[w̃ũaw̃ũa]
hwãciɛ '3sg.f.go'	→	[hw̃ãciɛ]
hle hwõ 'ashes'	→	[hle hw̃õ]

The full range of allophones of /w/ is shown in Figure 3.7.

Although not included in the preceding formula, /w/ also shows variation depending on stress placement (see §3.6) in the context of certain vowels. The clearest example of this is *huwur* 'stomach', shown in (3.9) where the approximant /w/ varies between a consonant and a vowel, depending on the placement of stress. As stress is neither phonemic nor predictable (see §3.6), the two forms of the word are in free variation.

(3.9) /huwɵ/ 'stomach' → [huˈwɵ] ~ [ˈhuːɵ]

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[8]While the bilabial fricative [β] only occurs in Wutung as an allophone of /w/, it is found as a distinct phoneme in a number of languages along the north coast of New Guinea (A. Ingram, pers. comm.).

$$/w/ \rightarrow \begin{cases} [\mathring{w}] \: / \: h \: \underline{\hspace{1em}} & \\ [\beta] \: / \: \# \: \underline{\hspace{1em}} \: V & (optional) \\ [\beta] \: / \: V \: \underline{\hspace{1em}} \: V & (optional) \\ [\tilde{w}] \: / \: \underline{\hspace{1em}} \: \tilde{V} & \\ [w] \quad \text{elsewhere} & \end{cases}$$

Figure 3.7: Allophonic variation of /w/

3.2.4 Consonant frequencies

Table 3.7 shows the raw numbers and frequencies for each consonant, based on a list of 800 words. It should be noted that the frequencies of segments in such a list is always biased by the choice of verb form to be included, as particular consonants occur as part of the verb stem indicating person, number and gender. In this case the first person singular form of the verb was used which would produce a bias towards the segments /l/, /h/, /p/ and /ʔ/.

As with Table 3.2 the consonants are arranged in order of increasing frequency. It can be seen that /d/, /ʤ/ and /ɲ/ are the least commonly occurring consonants, between them constituting 3 percent of the total. At the other extreme /ʔ/, /h/ and /l/ are the most frequent each contributing more than 10 percent of the total.[9] /d/ in particular is a rare segment, being largely restricted to verbs, but all the voiced plosives, along with /ɲ/, have very low frequencies of occurrence.

Table 3.7 may be usefully contrasted with Table 3.28 which shows the rates of occurrence of consonants in inter-vocalic position; these differ somewhat from the overall rates presented here.

3.2.5 Distinctive features analysis of Wutung consonants

The relatively modest fifteen member consonant inventory of Wutung may be adequately specified by the six distinctive features shown in Table 3.8. The six features used are (in order): SONorant, CONTinuant, NASal, VOICE, PLACE and ANTerior (this analysis largely follows the description of these features given in Spencer 1996:113–114). PLACE

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[9]Due to rounding the total is less than 100 percent.

Table 3.7: Numbers and percentages of consonants, based on 800-word list

Cons	number	%age
d	11	0.6
ʤ	19	1
ɲ	26	1.4
b	45	2.5
ʧ	68	3.7
p	76	4.2
s	95	5.2
f	128	7
t	136	7.4
w	139	7.6
m	145	7.9
n	169	9.2
ʔ	197	10.8
h	243	13.3
l	330	18.1
Total	1827	99.9

is a unary feature for which each segment takes one of the specifications L (LABIAL), or C (CORONAL), apart from the two glottal segments /ʔ/ and /h/, which are treated as having no specification for place.[10]. Those segments that are specified as CORONAL for PLACE are further specified as ±ANTERIOR; this feature does not apply to any other place specifications (i.e. those where the tongue is not the main articulator), hence the resulting gaps in the table on the ANTERIOR row. The feature ANTERIOR has a low functional load as it operates only to distinguish the nasals /n/ and /ɲ/.

The approximant /w/ is distinguished from the vowels by the restriction that it may not occur as the nucleus of a syllable, but only in the onset. In feature terminology it would be marked as −SYLLABIC, whereas the vowels are +SYLLABIC. However, as syllable

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[10]According to most recent work in autosegmental phonology, glottal segments are considered as having no value for PLACE.

structure distinguishes between vowels and the glide there is no need to add the feature SYLLABIC to the feature inventory used to describe consonants.

The affricate pair /ʧ/ and /ʤ/ are each marked as being both −CONTINUANT and +CONTINUANT. This approach to the problem of affricates is endorsed by Spencer (1996:138–139) who says that, as affricates are contour segments with the properties of both stops and fricatives, it is reasonable to analyse them as having this seemingly contradictory feature value.

Table 3.8: Consonant distinctive features

	p	b	t	d	f	s	ʧ	ʤ	ʔ	h	m	n	ɲ	w	l
SON	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+
CONT	−	−	−	−	+	+	±	±	−	+	−	−	−	+	+
NAS	−	−	−	−	−	−	−	−	−	−	+	+	+	−	−
VOICE	−	+	−	+	−	−	−	+	−	−	+	+	+	+	+
PLACE	L	L	C	C	L	C	C	C	−	−	L	C	C	L	C
ANT		+	+			+	+	+				+	−		+

3.3 Vowels

3.3.1 Introduction and typological comments

Wutung has seven distinctive vowel qualities, as shown in Figure 3.9. Nasalisation is contrastive for six of these giving a total of thirteen contrasting vowel segments (ignoring tonal contrasts, for which see Chapter 5).

This vowel inventory is, typologically, a little unusual in its number. Table 8.3 in Maddieson (1984:126) shows less than fourteen per cent of the languages in his database (i.e. 42 out of the 317 languages included in his survey) as having more than thirteen phonemic vowels. However, apart from the close-mid central rounded vowel [ɵ], the actual vowels found in Wutung are those that his database (p. 125) would predict as most likely to occur in a system of seven vowel qualities. As well, the structure of the Wutung vowel system is in agreement with the features said by Lindblom (1986:15) to be usual amongst the world's languages: that is, the number of front-back distinctions is no greater

than the number of height distinctions, the number of central vowels is no greater than the number of front vowels or back vowels and the number of height distinctions among the back vowels is no greater than that found amongst the front vowels. Thus, while the Wutung vowel system is a little larger than the world average, it is not unusual in the structure of its inventory.

For the purposes of the segmental analysis presented in this section tone will be ignored (tone is dealt with in detail in Chapter 5). It should therefore be noted that where 'minimal sets' are presented it will often be the case that they are actually near-minimal sets as the environments may differ in tone.

3.3.2 Oral vowels

Table 3.9 presents the oral vowels in terms of a three-way height contrast and a three-way front-back contrast.[11]

Table 3.9: Oral vowel phonemes

	Front	Central	Back
Close	i		ʊ
Mid	e	ɵ	o
Open	ɛ		ɐ

The oral vowel contrasts are demonstrated by the near-minimal set shown in Table 3.10. Table 3.11 presents another minimal set demonstrating the same contrasts (apart from /ɵ/, for which see below), but within syllables with a minimal onset.

Figure 3.8 shows the seven oral vowels placed on the standard vowel quadrilateral to more clearly indicate the typical qualities of the vowels. As already mentioned, in this quadrilateral the vowels are each represented by the IPA symbol and placement that represents their most common allophone.

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[11]Throughout this chapter vowel phonemes will be represented by the same symbols as used in Table 3.9. The phonetic details of these phonemes is presented in §4.3.

Table 3.10: Oral vowel minimal set

/i/	'growing'
/ʔe/	'3SGM'
/ɛ/	'rope'
/ɐ/	'cloud'
/o/	'crab'
/ʊ/	'other'
/ɵ/	'thorn'

Table 3.11: Oral vowel minimal sets, with simple onset

/fi/	'breadfruit'
/fe/	'tomorrow'
/fɛ/	'betel nut'
/fɐ/	'morota needle'
/fo/	'drying rack'
/fʊ/	'garden'
/fɵ/	'rain'
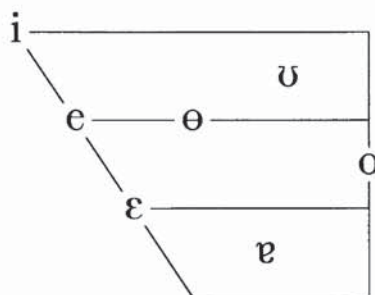
Figure 3.8: Oral vowel quadrilateral

3.3.2.1 Oral vowel allophony

Most of the vowels show little allophonic variation; the variation that does occur seems to be more the result of pragmatic aspects of the utterance and therefore not easily amenable to phonological specification. The most important variation is described below.

/e/ — the mid front vowel /e/ may occur somewhat raised, as [e̞], which can at times make it difficult to distinguish from the high front vowel /i/.

/a/ — the low central vowel has the major allophones [ɑ], [æ] and [a]. These three are in free variation: /a/ → [ɑ] ~ [æ] ~ [a]

/o/ — is occasionally lowered to [ɔ], the two realisations being in free or stylistic variation: /o/ → [o] ~ [ɔ]. At least one speaker was noted who showed a preference for the [ɔ] realisation, though for most speakers [o] predominates.

/ɵ/ — This, the mid central rounded vowel, shows the most varied allophony, having the variants [ɵ], [œ], [ʉ] and [ə]. These segments are in free variation: /ɵ/ → [ɵ] ~ [œ] ~ [ʉ] ~ [ə]. This segment is almost always fully rounded, is most commonly mid to close-mid in height, and varies evenly between central and front.

The other oral vowel phonemes, /ʊ/, /i/ and /ɛ/ show no significant allophonic variation in their place of articulation. However, all vowels which occur after a nasal consonant are weakly nasalised. This would suggest that these vowels are underlyingly oral as it seems more likely that an oral vowel would be realised as phonetically nasal following a nasal consonant than that a phonemically nasal vowel would be realised as a (phonetically) less strongly nasalised vowel. As there is no morphological process which postposes vowels to consonants there is no way to test these hypotheses; therefore the first hypothesis, that these are phonemically oral vowels with phonetic nasalisation, will be assumed to be correct.

$$/V/ \rightarrow \begin{cases} [\tilde{V}] \:/\: C_{[n]}\_\_ \\ [V] \quad \text{elsewhere} \end{cases}$$

Figure 3.9: Phonetic nasalisation of oral vowels

3.3.3 Nasal vowels

Nasal vowels are not particularly rare cross-linguistically. Maddieson (1984:130–132), for example, states that nearly a quarter of his database of languages have phonemically contrasting nasal vowels. They do however appear to be an unusual phenomenon amongst Papuan languages: no mention of nasal vowels is made in two recent general works on Papuan languages, (Foley 1986, 2000) although, admittedly, the sections on phonology in these works are quite brief considering the number of languages involved. An earlier survey, *The Papuan Languages of Oceania* by Wurm (1982), says (p. 56) that they are rare amongst the Sepik-Ramu Phylum but frequent in some areas of the Trans-New Guinea Phylum.

Phonemic nasal vowels have been described as occurring in the neighbouring Sko languages. Ross (1980:78), for example, discusses nasal vowels in Dumo, and Donohue (2003b) discusses their presence in Sko, while in the more distantly related language I'saka, nasality features prominently (Donohue & San Roque 2004). Nasalisation in Wutung was noted by previous field workers—the data in the field notebooks of Laycock (nd) show that he marked nasality as being contrastive on vowels; his transcriptions in all cases accord with mine.

Wutung has six phonemic nasal vowels, one corresponding to each phonemic oral vowel with the exception of the close-mid unrounded vowel /ɘ/, for which there is no nasal equivalent. The nasal vowels are shown in Table 3.12 using the same feature set as is used for the oral vowels in Table 3.3.2 (that is, three contrasts in both height and backness).

Table 3.12: Nasal vowel phonemes

	Front	Central	Back
Close	ĩ		ũ
mid	ẽ		õ
Open	ɛ̃		ã

The contrast between the oral and nasal vowels is demonstrated by the minimal and near-minimal sets in Table 3.13.

The nasal contrast in vowels is neutralised immediately adjacent to a tautosyllabic nasal consonant, as described in §3.3.2. The vowels found in this environment are always

Table 3.13: Nasal vs. oral vowel contrasts

dali	'Vanimo'	vs.	alĩ	'root'
mlohe	'liver'	vs.	hẽbe	'a yawn'
fɛ	'ripe'	vs.	fɛ̃	'wind'
tʃa	'pig'	vs.	tʃã	'blossom'
hlo	'colour'	vs.	hlõ	'rotten'
ʊ	'copulation'	vs.	ʊ̃	'backbone'

nasalised, but only weakly; nevertheless, the degree of nasalisation is sufficient that the contrast is neutralised. This process of phonetic nasalisation is further discussed as part of a discussion of general syllable structure constraints, in §3.4.1.1. It should be noted that it can produce phonetically nasal equivalents to the close-mid unrounded vowel /ɵ/, although such a vowel does not exist phonemically.

Phonemic nasal vowels vary somewhat in the degree to which they are nasalised. This variation ranges from being about equal to that found on phonetically nasal oral vowels (i.e. those following a nasal consonant), to being 'fully' nasalised; that is, nasalised to the full degree usual amongst phonemic nasal vowels and which is distinctively greater than that found on phonetically nasal oral vowels. As phonemic nasal vowels only occur after oral consonants there is no possibility of confusion. Kawasaki (1986:86–87) gives the explanation that whatever a speaker expects to hear (i.e. automatic or commonly encountered variation) is factored out of the phonemic interpretation made by them of the utterance, and that it is this process that enables such allophonic variation in vowel nasalisation to occur but not be interpreted as distinctive.

Nasal vowel tokens occur much less frequently than oral vowels, another feature which is common cross-linguistically in languages where they are found. In a database of nearly 800 Wutung words there were 195 occurrences of nasal vowels and 2,712 occurrences of oral vowels; in this sample then, oral vowels are 13.5 times more common than nasal.

In Wutung two of the three mid vowels have nasal equivalents, but the central mid vowel does not. The lack of a nasal vowel corresponding to the central oral vowel is unsurprising typologically. According to Wright (1986:46) if a set of nasal vowels is incomplete (that is, there is not a phonemic nasal vowel equivalent for every phonemic oral vowel in the language) then generally this will be due to one of the mid vowels not being present. This situation may be motivated by the reduced contrast within nasal vowel

sets due to the spectral changes resulting from vowel nasalisation (Wright 1986:64). It is well established that vowel nasalisation has a strong influence on the F_1 region of the vowel spectrum, which primarily correlates with vowel height.

The result is that nasal high vowels are perceived as lower, and nasal low vowels as higher, when compared to their oral equivalents (Beddor nd:7). Most relevant here is the 'lower' quality of high and mid nasal vowels in comparison with their equivalent oral vowels (Wright 1986:46). Given that there is a smaller perceptual difference amongst the low vowels than there is amongst the high vowels this would create a very crowded perceptual space with three mid nasal vowels contrasting along the front-back continuum, a situation that would conflict strongly with the universal tendency in languages for their phonemic systems to maximise perceptual contrast in vocalic systems. An alternative explanation for this imbalance in the nasal vowel inventory is given in Burquest (1998:50–51). He says that with a smaller velic opening, as occurs with close vowels, nasalisation is harder to produce and is also perceptually less distinct. It is possible that both of these explanations are correct as they are not mutually exclusive.[12]

The set of vowels in Table 3.12 may be placed on the standard vowel quadrilateral to give the layout shown in Figure 3.10. The effects of nasalisation on high and mid vowels (a slight lowering) and low vowels (a slight raising) is not shown on this chart.
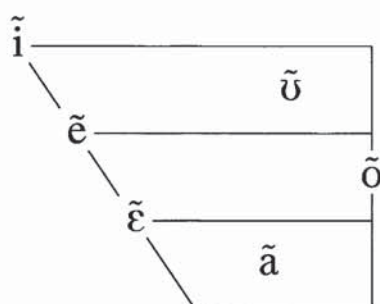
Figure 3.10: Nasal vowel chart

The distinction between the nasal vowels is demonstrated by the set of contrasts in Table 3.14. It should be noted that only a few words have been documented which consist

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[12]The relative numbers of oral and nasal vowels accords with the statement by Maddieson (1984:134) that no language has more phonemic vowels in a secondary articulation set (i.e. vowels which are nasalised, pharyngealised, etc.) than it has in its primary articulation set but that many have fewer, as is the case with Wutung.

of a single nasal vowel, unlike the situation with the oral vowels (as seen in Table 3.10). This may be an accidental gap arising from the much lower rate of occurrence of the nasal vowels.

Table 3.14: Nasal vowel contrasts

alĩ	'root'
ẽ	'child'
sũ	'ant'
ã	'1SG.go to'
lõ	'hole, opening'
ũ	'a cough'

The allophonic variation of the nasal vowels appears to be slight compared to that of the oral vowels. It is possible that this is due to the much lower rate of occurrence of nasal vowels compared to the oral vowels; they are simply not recorded in as many environments so they do not show the same variation. Also of course the oral vowel with the greatest allophony does not have a nasal counterpart.

Ross (1980:78) mentions that phonemic nasal vowels in Dumo sometimes manifest as the nasal consonant ng (presumably forming a phonetic coda). This has not been observed for Wutung. Although the village (and language name) itself is pronounced with a final nasal consonant, this appears to be the result of the adoption by Wutung people of the non-Wutung speakers version of their name, [wutũ].

3.3.4 Vowel distinctive features

Table 3.15 lays out the distinctive feature set for the vowels. The thirteen contrasting vowels may be fully specified with five features: ±HIGH, ±LOW, ±BACK, ±ROUND and ±NASAL.

Most analyses treat central vowels as +BACK, although this is not considered essential (Spencer 1996:120). If this approach was applied to /ə/ then the distinction between it and /o/ would disappear as they are both +ROUND, −HIGH and −LOW. One solution would be the approach suggested by (Lass 1984:86–87), to use the feature ±FRONT to enable three degrees of articulation along a front-back continuum to be captured with two features (much as three degrees of height are captured with the two features ±HIGH and

±BACK). In this case however, the fact that the allophones of /ɵ/ are all central or front, and none are back, suggests a strong case for specifying it as −BACK, thus capturing the contrast without enlarging the feature set.

Table 3.15: Vowel distinctive features

	i	ĩ	e	ẽ	ɛ	ɛ̃	a	ã	o	õ	u	ũ	ɵ
HIGH	+	+	−	−	−	−	−	−	−	−	+	+	−
LOW	−	−	−	−	+	+	+	+	−	−	−	−	−
BACK	−	−	−	−	−	−	+	+	+	+	+	+	−
ROUND	−	−	−	−	−	−	+	+	+	+	+	+	+
NASAL	−	+	−	+	−	+	−	+	−	+	−	+	−

3.4 Phonotactics

3.4.1 The syllable

3.4.1.1 Overview of syllable structure

The syllable has significance in Wutung as the domain within which constraints on nasalisation apply, and within which tonal melodies are realised as pitch levels on each syllabic nucleus.

Wutung strongly prefers open syllables. All words end with an open syllable and borrowed words (most known examples are monosyllabic) are always modified by deletion of the coda (where this is present). Two examples are: *be* from English 'bag', and *wo* from 'work' (either directly from English or via Tok Pisin). There are however a very few cases of closed syllables occurring, discussed in 3.4.1.7.

A listing of the syllable types known to occur in Wutung, with examples, is presented in Table 3.16, which also contains all known examples of CCCV and CCCCV syllables.[13]

Only vowels may occur as the nucleus of a syllable. All consonants may occur as the onset in syllables of the form CV_o. Onsets are progressively more constrained with

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[13]Syllable breaks are indicated by full stops, N indicates a nasal consonant, and V_o and V_n indicate oral and nasal vowels respectively.

Table 3.16: Syllable types

V_o	a.bo	'some'	V_n	õ.ɛ	'refuse'
	ɛ.ũ	'middle aunt'		ɛ.ũ	'middle aunt'
	ɛ.fa.tu.a	'wall'		ɲɛ.õ	'cat'
	fu.i.ʔe	'afraid'		ã.ʧi	'half'
VN	ɛn.de	'neck'	CV_oN	tim.bliɛ	'eagle'
				nam.hli	'bitter taste'
				tum.be	'chicken'
CV_o	wi.na.ʔi	'strong'	CV_n	tɛ.hĩ	'3DU'
	lo.lo.fa	'long ago'		hɛ̃.su	'chest'
	ho	'sago leaf'		ʧɛ̃	'pus'
CCV_o	ʔli	'a boil'	CCV_n	hlã	'day'
	tã.plu.a	'kunai grass'		ha.plõ	'net bag'
	ə.blu	'deaf'		plõ.ta	'bush'
CCCV	hnʤɛ.ʔe	'red'	CCCCV	hmbliɛ	'left hand'
	ũ.ʔblɛ	'beads'		hmblə.hmblə	'squeezing'
	no.ʔmla	'wrist'			
	mu.hmbe	'freshwater eel'			
	tu.a.ʔblo	'shin'			

increasing onset complexity or if they are in a syllable with a nasal vowel. The coda if present may only consist of a single nasal, all known examples (only a handful) being either /m/ or /n/. Syllables may only take a coda in certain unusual circumstances, as described below in §3.4.1.8.

It can be proposed therefore that Wutung syllables are all underlyingly open, with the constraint NoCoda applying as dominant in initial syllabification. The template for the underlying syllable is shown in Figure 3.11:

$$[(C)(C)(C)(C)V]$$

Figure 3.11: Underlying syllable template

Thus, the Wutung syllable may contain up to five segments, although there are only a very few such examples as the largest onsets are quite rare, with most onsets being of one or two consonants. Syllabification proceeds from right to left, assigning each vowel to a single syllabic nucleus and all consonants to its left to the onset to that syllable, except in certain cases which violate the constraints on tautosyllabic clusters, as described in §3.4.1.7.

The internal structure of the maximal syllable, and in particular, the structure of the onset, is shown in Figure 3.12; H = glottals, N = nasals, T = obstruents (i.e. non-glottal segments which are −SON), R = sonorants (apart from the nasals, which have their own slot).
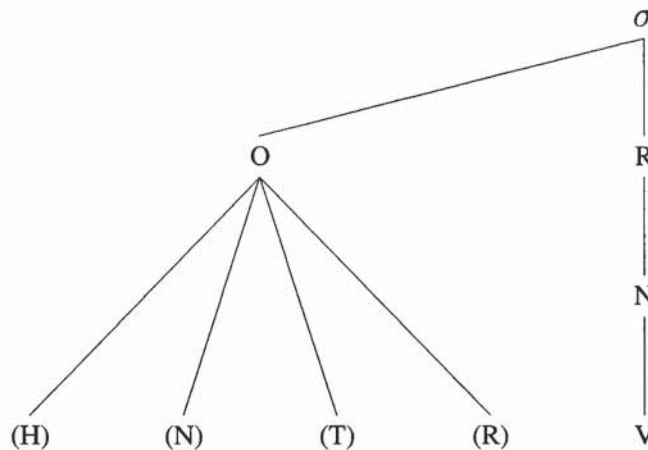
Figure 3.12: Structure of the oral syllable

It should be noted that the number of different consonant clusters which may occur is progressively more limited as the number of consonants in the cluster increases—for this reason the different sizes of syllables are discussed in the following sections. The maximal syllable actually attested is CCCCV, which contains a highly complex (and heavily constrained) onset. Although there is only the one syllable template, syllables with nasal vowels are considerably more restricted in the size and variety of their onsets. These latter will be referred to as 'nasal syllables' (σ_n) while those containing an oral vowel will be referred to as 'oral syllables' (σ_o) as this feature of the nucleus plays a role in determining permissible onsets.

A restriction which applies only to nasal syllables is that the onset may not contain nasals or voiced obstruents.[14] This runs counter to the statement in (Blevins 1995:209, fn 8) that '...there are few if any feature co-occurence [sic] constraints that appear to take the syllable as their domain.' However, as Blevins goes on to say, such a constraint is evidence for the syllable as a phonological constituent.

As all onsets larger than two segments contain a nasal, and as the only segments that occur as a coda are nasals, there can be no syllables of the forms shown in Figure 3.13.

$$*[(C)CCCV_n]$$
$$*[(C)(C)(C)(C)V_o N]$$

Figure 3.13: Unacceptable syllable forms

The corollary of this is that all onsets which contain a nasal segment will be followed by a rhyme consisting solely of an oral vowel nucleus, and no coda.

An example of this in the morphology is verb paradigms which contain a nasal vowel. Many verbs index the person/number/gender (abbreviated as PNG where the context is clear: this feature of verbs is discussed in detail in Chapter 8) of their subject by modification of the initial consonant/s, which in some PNG combinations may produce a nasal consonant in the syllable onset. If the verb root has a nasal vowel then this process would result in a syllable containing two phonemically nasal segments, something which is normally not permitted. This is exemplified in Table 3.17 which shows the paradigm

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[14]While there has been substantial study of the effects on vowels of immediately adjacent consonants, there does not appear to have been much work on the effect of onset consonants which are not immediately adjacent to the vowel. Thus the constraint in Wutung against any nasal segments within the onset preceding a nasal vowel, no matter how far removed from the vowel, is important as it suggests that there is some effect.

for the realis forms of the verb *lung* '1SG.speak'. In this verb the vowel is nasal in five of the forms but manifests as oral in the forms which take an initial nasal consonant, the second singular *mlu* and first plural *nu*. It appears that where a morphological process produces a clash of tautosyllabic nasal segments the consonant wins, with the vowel being denasalised.

Table 3.17: Verb 'to speak'

Person/Number/Gender	verb
1SG	lung
2SG	mlu
3SGM	qlung
3SG.F	hlung
1PL	nu
2PL	lung
3PL	sung

There are no examples of a closed syllable with a nasal vowel. This is perhaps due to the fact that the only allowed coda (only permitted in exceptional circumstances) is a nasal consonant.[15]

3.4.1.2 V syllables

The minimal oral syllable consists of a single vowel, and for all but one of the vowels there is indeed a single-syllable word consisting solely of that vowel, as listed in Table 3.10,[16] as well as numerous occurrences of such syllables within larger words.

While syllables consisting of a single nasal vowel are not uncommon they are not nearly as numerous as those consisting of a single oral vowel. As well, there are only a few examples of words consisting of a single nasal vowel; most of these are listed in Table 3.14. A particularly important distinction between oral vowel syllables and nasal vowel syllables is that there are fewer nasal vowels than oral (and therefore also fewer possible words) as the close-mid central vowel ɵ does not have a nasal counterpart.

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[15]There are of course oral syllables containing two nasal segments, but these are always both consonants.
[16]The lack of a word consisting of the vowel /e/ is likely to be an accidental gap.

3.4.1.3 CV syllables

Every possible combination of a single consonant and a vowel has been found to occur as an oral syllable[17]. Most such combinations are also attested as a word (Table 3.26 shows the frequencies of these).

Syllables of the form CV_n are much more constrained than the equivalent oral syllables. While the latter may take any C as onset, nasal syllables are restricted to the unvoiced obstruents and the two non-nasal sonorants /w/ and /l/. Examples of the possible CV_n syllables are presented in Table 3.18.

Table 3.18: Examples of CV_n syllables

sũ	ant
hɛ̃	wind
fĩ	breadfruit
tõ	cassowary bone awl
pũwa	steam
ʔũ	tooth
tʃã	blossom, flower
lõ	hole, opening
wã	a sail

3.4.1.4 CCV syllables

Table 3.19 shows the numbers recorded of each type of CC cluster, along with numbers of each found in a search of the Wutung lexicon, which (at the time of the search) contained around 1000 items.[18] The numbers in parentheses indicate those clusters which have not been found to occur word-initially, only medially; there are only two such clusters, these being problematic cases where the first C constitutes a coda—these are dealt with below. Apart from these two anomalous clusters, all the others are tautosyllabic, being found only as onsets.

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[17]Not all theoretically possible combinations of (C)V and tone have been recorded, but this most probably reflects the limited nature of any dataset.

[18]These numbers cannot be taken as indicative of the relative frequencies of these clusters as the lexicon only includes one member from each verb paradigm; including all members would greatly increase the numbers of certain clusters—see §8

Table 3.19: Rate of occurrence of each consonant combination recorded

C1	b	ʄ	d	f	h	ʤ	l	m	n	ɲ	p	ʔ	s	t	w	Total
b							18									18
ʄ																
d																
f							15									15
h	1	1				2	66	7	1		4				13	95
ʤ																
l							19									19 (2)
m	(2)															(2)
n		(2)														
ɲ																
p							8									8
ʔ	10	2				1	46	3							24	86
s																
t																
w																
Total	13	5				3	172	10	1		4				37	245

It is evident from Table 3.19 that there are two kinds of CC onsets; those combining a glottal (which has no place feature) followed by a +VOICE segment (which may be from any of the N, T or R categories), and those combining a labial initial segment with the coronal, non-nasal sonorant, /l/. With the stipulation that the ordering of onset slots must be as in Figure 3.12, these two clusters can be minimally schematised as in (3.10).[19]

(3.10)   a.   [glottal][+VOICE]

   b.   [LABIAL] $\begin{bmatrix} +\text{SON} \\ \text{CORONAL} \end{bmatrix}$

In contrast, the nasal syllable is restricted to only a very few onset clusters, listed (with examples) in Table 3.20.

Table 3.20: Attested CCV_n syllables

CC	example	gloss
ql	qlū	1SG.speak
qw	hleqwãqwã	sandfly
hl	hlā	sun
hw	fuhwã	saliva
pl	əsiplã	lightning
fl	hũflĩ	1SG.forget

These amount to the same set as for CCV_o, but excluding those that contain a nasal or a voiced obstruent, the same restriction that applies to onsets in CV_n syllables. With the stipulation that there may be no nasals or voiced obstruents in the onset (as the syllable contains a nasal vowel), the composition of these onsets may be represented as in (3.11).

(3.11)   a.   [glottal][+SON]

   b. $\begin{bmatrix} -\text{VOICE} \\ \text{LABIAL} \end{bmatrix} \begin{bmatrix} +\text{SON} \\ \text{CORONAL} \end{bmatrix}$

---

[19]It should be noted that [glottal] is not a feature specification, but rather is used here as a convenient way of referring to those segments which lack a specification for place—it is also for this reason that it is in lowercase.

3.4.1.5 CCCV syllables

There are only four attested onsets which consist of a sequence of three consonants: /hɲʤ/, /hmb/, /ʔbl/ and /ʔml/. The latter two are predictable on the basis of the CC structures laid out in (3.10a) and (3.10b), amounting to the two permissible combinations of those CC sequences. They constitute the sequence shown in (3.12).

$$(3.12) \quad [\text{glottal}] \begin{bmatrix} +\text{VOICE} \\ \text{LABIAL} \end{bmatrix} \begin{bmatrix} +\text{SON} \\ \text{CORONAL} \end{bmatrix}$$

The other two clusters are more problematic as they both contain sequences which do not occur in the CC onset clusters, /ɲʤ/ and /mb/. These are both homorganic sequences and to that extent are unsurprising, however the third such cluster */nd/ is not attested, though this may simply be a gap in the dataset.

All four of these clusters conform to the HNTR onset segment order laid out in Figure 3.12.

Unsurprisingly, there are no nasal syllables of the form $CCCV_n$ as the restriction that nasal syllables cannot contain nasals or voiced obstruents in the onset rules out all of the $CCCV_o$ onsets.

3.4.1.6 CCCCV syllables

There is a single attested syllable onset of this form, /hmbl/. Both two-consonant sequences within this cluster (that is, /hm/ and /bl/) are also attested CC onsets, so this largest syllable amounts to the single possible union of the two syllable structures laid out in (3.10a) and (3.10b), in that order.

As with the CCCV syllables, there are no nasal syllables having the form $CCCCV_n$, and for the same reason: the restriction against nasals or voiced obstruents co-occurring with a (phonemically) nasal vowel prevents the single CCCC onset (which contains both kinds of segment) from being part of a nasal syllable.

3.4.1.7 Closed syllables

This syllable structure is very rare, being attested in only five words, where it is always medial. These are listed in Table 3.21, with syllable breaks indicated.

Table 3.21: Closed syllables

Syllabified word	meaning
hmam.ba	question
tum.be	chicken
nam.hli	bitter
ɛn.de	nape of neck
tan.de	thigh
nim.be	2sg.paddle

Given that nasalisation may spread (but only phonetically) and that most codas are homorganic with a following voiced oral stop it firstly must be shown that the apparent nasal coda is not simply an epenthesis caused by a nasal vowel; this is demonstrated by the pair of words in (3.13 which illustrates the contrast of a nasal vowel with a nasal coda.

(3.13)   *ɛnde*   *vs.* *ɛ̃de*
         'nape.of.neck' vs. '1PL.give.birth'

The syllable breaks which produce codas appear to be necessary to repair what would otherwise be unacceptable onsets. In most of the words the syllable breaks produce common onsets, but in two cases (*hma.mbey* and *ni.mbey*) the onsets produced are not elsewhere attested.

A formal mechanism which accounts for these atypical syllables (both those with codas and those with idiosyncratic onsets), as well as all other syllables in Wutung, is proposed in §3.4.1.8.

3.4.1.8 A formal account of the syllable

A majority of the syllables found in Wutung may be described very simply as having no coda. If all syllables conformed to this structure then it would be possible to state this with a rule that assigned all consonants to the next vowel to the right (i.e. all consonants are in onsets). Such a rule would work by moving from right to left, beginning with the word-final vowel and assigning all consonants to syllable onsets. There is however a small but significant number of syllables which do not conform to this rule, requiring a more complicated set of rules to capture the circumstances which produce a coda. The syllable

structures attested in Wutung are hard to account for in generative phonology without some kind of syllabification process which is sensitive to the number of nasal segments in each syllable and the combination of consonants in clusters. This is however easily handled within Optimality Theory (OT). Optimality theory involves generating a set of potential output candidates which are filtered by constraints to reduce them to a single successful candidate. These constraints are drawn from a set which is held within OT to be universal, they applying to all languages. Variation between languages is considered to result from language-specific differences in the ranking of these constraints.

OT has two main kinds of constraints, faithfulness constraints and markedness constraints. Faithfulness constraints work to preserve the underlying form while markedness constraints operate to filter out particular forms. Throughout the following analysis, although they are not shown, it is assumed that faithfulness constraints are in operation which ensure that the input and output segments are identical. In OT terms it is assumed that the constraint commonly labelled IDENT-IO (which ensures that output segments are identical to input segments) filters out all candidates except the ones shown, which are then filtered as shown by the markedness constraints. Thus all and only the possible outputs which are compliant with IDENT-IO are considered.

Given the above, a set of four markedness constraints, with appropriate ranking, is sufficient to produce the correct syllable structure for all words in Wutung. The markedness constraints are, in no particular order:

NOCODA : There should be no coda; all Cs are assigned to onsets.

SONORITYPROFILE (SonPr): Syllables should have a sharp sonority increase early in the syllable.

MAXNASAL : No more than a single nasal segment is allowed in any syllable.

ALIGN-L[H, SYL] : Glottal segments must be syllable-initial.

The fundamental constraint—in the sense that it alone applies to virtually all of the lexicon of Wutung—is NOCODA. This constraint has the effect that consonants are always assigned as onsets to the following nucleus, rather than as coda to the preceding nucleus. There is only a small group of words that are exceptions to this rule, and they are satisfactorily handled by the other three constraints. SONORITYPROFILE disallows the sequence of a syllable-initial nasal segment followed by an obstruent. This accords

with the Sonority Sequencing Generalisation, as described by Goldsmith (1990:111), requiring that all adjacent segments within an onset (or coda) should vary significantly in sonority, ranging from lowest at the syllable periphery to highest at the nucleus[20] Alternatively, in the case of complex clusters, it requires that the sonority of adjacent segments be significantly different[21]. MAXNASAL prevents two nasals from occurring within one syllable. ALIGN-L[H, SYLLABLE] requires that segments having the Place specification [GLOTTAL] be syllable-initial, disallowing such sequences as tautosyllabic /mh/ or /nʔ/.

These constraints function as shown in the tableaux presented in Tables 3.22–3.24 (in each tableau, only those constraints that are relevant to the word in question are shown).[22]

The tableau in Table 3.22 shows that SONORITYPROFILE outranks NOCODA; the coda is tolerated where the alternative would be an onset beginning with a fall in sonority. A single violation of NOCODA is preferred to a double violation.

The tableau for *hmamba* 'question' in Table 3.23 shows that SONORITYPROFILE is outranked by MAXNASAL; an onset-initial fall in sonority is preferred over the presence of two nasal segments within the one syllable.

Finally, there is a single word in the corpus which requires the constraint ALIGN-L[H, SYLLABLE] to output the correct syllabification: *namhli* 'bitter taste'. ALIGN-L[H, SYLLABLE] is the highest-ranking markedness constraint necessary to produce the correct outputs. The tableau giving the syllabification of *namhli* is shown in Table 3.24.

The examples in Tables 3.22–3.24 demonstrate the relative ranking of the markedness constraints required to produce the correct syllabification of Wutung words. This ranking can be summarised as follows (wherein constraints to the left of the guillemet outrank those to the right):

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[20]Most languages of the world seem to follow this principle, with onset clusters comprising a sequence of consonants whose sonority rises, from the initial consonant to the pre-vocalic. There are numerous exceptions to this principle however, with languages such as Taba (Bowden 2001) allowing onsets which contain sequences of voiceless consonants.

[21]There are obvious problems with the notion of 'significantly different'. However, these will not be addressed here.

[22]These tableaux use standard OT conventions: output candidates are listed to the left of the double-line; constraints head the columns to the right of the double-line; the pointing hand indicates the winning candidate; * indicates a constraint violation; *! indicates a fatal constraint violation; shading of cells indicates these are irrelevant since a higher ranked constraint is decisive. These conventions are listed on p. xxxi.

Table 3.22: Syllabification of *tumbe* 'chicken'

	tumbe	SONORITYPROFILE	NOCODA
☞	σ σ | | tum be		*
	σ σ | | tumb e		**!
	σ σ | | tu mbe	*!	

Table 3.23: Tableau for syllabification of *hmamba* 'question'

	hmamba	MAXNASAL	SONORITYPROFILE	NOCODA
☞	σ σ | | hma mba		*	
	σ σ | | hmam ba	*!		*
	σ σ | | hmamb a	*!		**!

Table 3.24: Tableau for syllabification of *namhli* 'bitter taste'

namhli	ALIGN-L[H, SYL]	MaxNasal	SonPr	NoCoda
☞ σ σ | | nam hli		*		*
σ σ | | na mhli	*!		*	
σ σ | | namh li	**!	*		**
σ σ | | namhl i	***!	*		***

ALIGN-L[H, SYLLABLE] » MaxNasal » SonorityProfile » NoCoda

3.4.2 Structure of the word

3.4.2.1 Syllable numbers

The word in Wutung consists minimally of a single syllable and may contain up to five. Most words in Wutung consist of one, two or three syllables, with those of two syllables making up half of the total. There are many examples of words with more, but the frequency decreases with an increase in the number of syllables; the largest words documented consist of five syllables but are very few. Table 3.25 provides some examples of words of each syllable number as well as the number of monomorphemic words occurring in the database with each number of syllables, and their percentage.[23].

The main constraint on the structure of the word is that it must end with a vowel, i.e. a syllable with no coda. Although rare, syllables with a coda do occur (for discussion of this see §3.4.1.1), but never in word-final position.

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[23]The percentages do not add up to 100% due to rounding.

Table 3.25: Examples of different word sizes

Number of syllables	Examples	Number occurring	% of total
1 σ	bli 'full'	150	20%
2 σ	mlohɛ 'liver'	368	49%
3 σ	ʧapɛʧi 'blister'	181	24%
4 σ	halaʔlafa 'alike'	40	5%
5 σ	wɵʔefilɵʤa 'scorpion'	9	1%

As well there are constraints on possible word-initial consonant clusters. A number of consonant clusters which occur as onsets to non-initial syllables do not occur (at least, in the present database) word-initially (see Table 3.19). These constraints are discussed in more detail in §3.4.2.5, below.

Thus the shape of the phonological word in Wutung is defined by several factors: it must be vowel-final; it has constraints on initial consonant clusters; it is subject to the insertion of phonetic initial consonants as a result of hiatus avoidance (see §3.5).

3.4.2.2 Word initial CV$_o$

All consonants are found word-initially; the various combinations of word-initial C and oral V are shown in Table 3.26, along with the number of each such CV combination in my database. Not all possible C+V combinations have been found, however it is likely that least some of these gaps are accidental and not indicative of any constraints. Nevertheless, it is worth noting that out of the 105 potential CV combinations only 96 have actually been documented, giving nine gaps. Six of these gaps are associated with the nasal consonants: for all three of /n/, /m/ and /ɲ/ there are no examples of word-initial /C_ne/ or //C_nɵ/. This is probably true for the same reason that there is no nasal equivalent to the close-mid rounded vowel /ɵ/, as discussed in §3.3.3; that is, the phonetic nasalisation has much the same effect as phonemic nasalisation in terms of making it more difficult to distinguish between these segments, leading to their not occurring in this

position. As a result, /ə̃/ neither occurs as a phoneme, nor does it occur as an allophone of /ə/. The segment /ẽ/ however remains somewhat mysterious; there are only a very few examples known[24] so while it does occur phonemically, it does not occur as an allophone of /e/.

Of all the phonemes /d/ is the rarest word-initially, occurring only in verbs, where it is associated with first person plural subject (see Chapter 8). As the database has verbs recorded in the first person singular form, the /d/-initial forms do not occur which makes a simple count of the number of such occurrences pointless. A search through all recorded verbs for /dV/ combinations that do occur gives the CV combinations that are indicated with a 'V' in the table. /d/ also occurs word-medially, both between vowels (See Table 3.28) and within consonant clusters, but again it is a rare segment. The fact that it seems well-established only as a medial consonant and in consonant clusters suggests that it has been largely lost in word-initial position but retained in the relatively well-protected environment of the cluster, and on verbs where it is part of the system of agreement marking.

3.4.2.3 Word initial CV_n

Word initial CV_n shows a quite different pattern of occurrence from that described previously for CV_o, but one that corresponds with the structure of nasal syllables generally. Table 3.27 lists all possible combinations, along with the rates of occurrence of each. As expected, there are no examples of a nasal vowel with a nasal consonant onset, nor do the voiced obstruents /b/, /d/ and /dʒ/ ever appear as onset to a word-initial syllable containing a nasal vowel. No consonant is attested occurring with every nasal vowel, and only a few co-occur with most.

3.4.2.4 Intervocalic consonants

The frequency of each consonant in the intervocalic environment is shown in Table 3.28, with the consonants in ascending order of occurrence. It will be noticed that /d/ is found in the intervocalic environment, occurring at a higher rate than several other segments, unlike word-initially. This table differs substantially from Table 3.7 which shows a different ordering of the consonants when counting total occurrences, not just intervocalic.

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[24]Two are (/hlẽʔwãʔwã/, 'sandfly') and /ẽsõ/ 'chips, small pieces'.

Table 3.26: Frequencies of word-initial CV$_o$ combinations

	i	e	ɛ	a	o	u	ɵ	Total	%
b	—	1	1	4	1	1	1	9	1.7%
ʧ	7	1	—	18	1	1	1	29	5.5%
d	V	V	V	V	V	V	V	V	
f	8	3	7	6	2	6	2	34	6.5%
h	4	4	16	11	9	12	10	66	12.6%
ʤ	5	1	2	1	1	1	1	12	2.3%
l	12	1	2	11	7	2	10	45	8.6%
m	5	—	8	12	1	27	—	53	10.1%
n	13	—	4	20	27	6	—	70	13.4%
ɲ	7	—	2	1	1	3	—	14	2.7%
p	1	1	6	19	1	4	—	32	6.1%
ʔ	1	2	2	4	2	4	1	16	3.0%
s	9	1	1	21	3	9	3	47	9.0%
t	20	1	4	6	10	8	2	51	9.7%
w	10	1	6	3	2	10	14	46	8.8%
Total	102	17	61	137	68	94	45	524	
%	19.5%	3.2%	11.6%	26.1%	13.0%	17.9%	8.6%		100%

Finally, Table 3.29 presents a comparison of the rates of occurrence of consonants in the two environments, word-initial CV and intervocalic along with the total numbers for all consonant occurrences, regardless of environment (repeated here from Table 3.7); the table is ordered by the latter numbers. For each consonant, the rates of occurrence in word-initial CV and intervocalic environments are broadly similar, except for the glottals. The glottal stop is the most frequent consonant in intervocalic position and the fourth rarest in word-initial; for /h/ however the situation is reversed, it being the second most frequent in initial position and fifth rarest in intervocalic.

Table 3.27: Frequencies of word-initial CV_n combinations

	ĩ	ẽ	ɛ̃	ã	õ	ũ	Total	%
b	—	—	—	—	—	—	0	0%
ʧ	—	—	1	4	—	—	5	7.5%
d	—	—	—	—	—	—	0	0%
f	2	—	1	1	2	—	6	9.0%
h	2	1	8	1	—	1	13	19.4%
ʤ	—	—	—	—	—	—	0	0%
l	—	—	—	7	1	3	11	16.4
m	—	—	—	—	—	—	0	0%
n	—	—	—	—	—	—	0	0%
ɲ	—	—	—	—	—	—	0	0%
p	—	—	—	—	—	1	1	1.5%
ʔ	—	—	1	—	—	1	2	3%
s	—	—	—	3	—	2	5	7.5%
t	6	—	1	10	1	2	20	29.8%
w	1	—	—	2	2	1	6	9.0%
Total	11	1	12	28	6	10	68	
%	16.4%	1.5%	17.6%	41.8%	9.0%	14.9%		100%

3.4.2.5 Word initial consonant clusters

Table 3.19 shows the number and type of CC clusters found in Wutung. There are twenty-two different clusters altogether, of which two only occur word-medially, while the rest occur in both positions. Possible word-initial clusters of shapes CCC and CCCC are the same as for onsets (as described in §3.4.1.5 and 3.4.1.6), with the exception that the glottal stop-initial clusters /ʔbl/ and /ʔml/ have not yet been found to occur word-initially.

Table 3.28: Intervocalic consonant frequencies

Consonant	number occurring	Percentage of total
ʤ	3	0.7%
ɲ	5	1%
b	6	1.3%
d	8	1.7%
h	17	3.6%
p	19	4%
s	25	5.3%
ʧ	26	5.5%
w	34	7.2%
t	41	8.6%
m	46	9.7%
n	50	10.6%
l	56	11.8%
f	58	12.2%
ʔ	80	16.9%
Total	474	100%

3.4.3 Vowel phonotactics

3.4.3.1 Frequencies of vowels

As described earlier the overwhelming majority of syllables are open, while all words are vowel final. The frequencies of the different vowel qualities[25], as well as of both nasal and oral vowels, is given in Table 3.30. This information is derived from calculations made on my lexicon of Wutung which consists of 791 words containing 1,758 vowel tokens[26].

It can be seen from the table that the three vowel qualities /i/, /a/ and /u/ are the most common, while the least common are /e/ and /ə/. In descending order of frequency, the vowels are: /a/, /i/, /u/, /ɛ/, /o/, /e/ and /ə/. This order also holds true for the oral vowels.

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[25]That is to say, ignoring secondary articulations such as nasality.

[26]Due to rounding the percentages in the tables in this section do not always add up to 100%.

Table 3.29: Comparison of the frequencies of consonants in word-initial and intervocalic positions

Consonant	percentage of #Cv	Percentage of vCv	Percentage of all C
d	0%	1.7%	0.6%
ʤ	1.6%	0.7%	1%
ɲ	2.4%	1%	1.4%
b	1.6%	1.3%	2.5%
ʧ	5.3%	5.5%	3.7%
p	6.1%	4%	4.2%
s	8.3%	5.3%	5.2%
f	6.3%	12.2%	7%
t	10.1%	8.6%	7.4%
w	9.1%	7.2%	7.6%
m	10.5%	9.7%	7.9%
n	13.9%	10.6%	9.2%
ʔ	2.8%	16.9%	10.8%
h	13%	3.6%	13.3%
l	8.9%	11.8%	18.1%
Total	99.9%	100%	99.9

The rates of occurrence of nasal vowels differs somewhat, being (again, in descending order) /ã/, /ũ/, /ɛ̃/, /ĩ/, /õ/ and /ẽ/. This order differs in two respects: that the high front vowel has moved from second most common to fourth; and, as there is no nasal equivalent for /ə/, there is no vowel /ə̃/.

Finally, the oral vowels greatly outnumber the nasal vowels, at a rate of nearly nine to one.

3.4.3.2 Vowel sequences

Sequences of two vowels are not uncommon, and sequences of three are also attested. Table 3.31 shows examples of various sequences of vowel, including sequences of nasal and oral vowel. Every vowel is the nucleus of a distinct syllable.

Table 3.30: Frequencies of vowels, oral, nasal and total.

Vowel quality	V_o number	V_o %age	V_n number	V_n %age	Total occurring
i	322	20.4%	26	14.5%	348
e	113	7.2%	3	1.7%	116
ɛ	208	13.2%	28	15.6%	236
a	436	27.6%	67	37.4%	503
o	164	10.4%	23	12.8%	187
u	226	14.3%	32	17.9%	258
ɵ	110	6.7%	—	—	110
TOTAL	1579	99.8%	179	99.9%	1758

Table 3.31: Example vowel sequences

qaiolu	1SG>3SGM.bring
qaiolua	3SGM>3SGM.bring
luolu	3PL>3SGM.bring
lie	1SG.stay
qao	chew
ungpieng	1SG.laugh (shows sequence V_oV_n)
feqai	1SG.harvest betelnut
nyiaqbey	2SG.harvest bananas

3.5 Hiatus avoidance

Hiatus in Wutung may arise through either of two processes, syntactic concatenation or morphological reduplication, each of which may produce a sequence of adjacent heterosyllabic vowels. The first process, syntactic concatenation, is common in Wutung as all words are vowel-final and many are vowel-initial. The second process, reduplication, is less common as it only occurs with the very few verb roots which consist of a single vowel. As is common in many languages, sequences of vowels across word or morpheme boundaries are not tolerated in Wutung and are avoided through the insertion of an epenthetic consonant such as a glide or glottal stop (Spencer 1996:234). The effect of this is to make the second syllable (phonetically) consonant-initial.

The segment most commonly inserted to break up hiatus between words is the glottal stop [ʔ]. Thus the example in (3.14a) is often realised as in (3.14b).

(3.14)   a. *Pe   ε*
            house 2PL
            'Your(.PL) house.'

         b. *[Pe ʔε]*

In some cases a glide [j] may be heard at interword hiatus so that an example such as (3.15a) may be realised as in (3.15b). Typically this occurs where the word-final vowel (that is, the first vowel in the hiatus pair) is the high front vowel [i].

(3.15)   a. *niε moi ʔε*
            1SG like NEG
            'I don't like/want it.'

         b. *[niε mɔi je]*

The epenthetic segment inserted to avoid hiatus in reduplication is always the glottal stop: (3.16a) shows the realis form of the verb *o* 'grow' while (3.16b) shows the irrealis form, wherein the verb root is reduplicated and a glottal stop has been inserted.[27] In normal speech this word may actually show both types of epenthetic glottal stop, as illustrated in (3.16c).

(3.16)   a. *Nie o   -lie*
            1SG grow -1SG.IMPERF
            'I'm growing.'

         b. *Nie o   -[q]o -ley*
            1SG grow -grow -1SG.IRR/REDUP
            'I will grow.'

         c. *Nie [q]o -[q]o -ley*
            1SG grow -grow -1SG.IRR/REDUP
            'I will grow.'

The epenthetic glottal stop is not always realised as a true stop; in more rapid speech it may be reduced to a brief period of glottal friction, as in (3.17) wherein the first two

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[27]The epenthetic segment is enclosed in square brackets in recognition of its non-phonemic status.

words may be realised as [mɛˤɛmɛ]; the degree of reduction of the glottal corresponds with the speed of utterance. This behaviour is the same as that described for the phonemic glottal stop in §3.2.3.2.

(3.17) *Mɛ ɛmɛ   niɛ mɛ?*
       2SG mother 1SG Q
       'Are you my mother?'

Given that all words end in vowels, underlyingly vowel-initial words only show this form when utterance-initial or in careful speech, otherwise typically beginning with the epenthetic glottal stop or glide. This situation may be contrasted with Example (3.18) wherein the glottal stop is always present.

(3.18) *Nie na   qa*
       1SG COP dry
       'I'm dry.'

This means that there are two kinds of glottal stop, phonemic and epenthetic. Interestingly the situation is different for the other epenthetic segment, the glide [j], which does not have a phonemic equivalent and which Wutung speakers find very difficult to pronounce when speaking Tok Pisin or English.

Hiatus avoidance then can provide a useful means for defining the notion of 'phonological word' in Wutung: a vowel which triggers hiatus avoidance glottal stop or glide insertion before the following vowel is word-final, while the point of insertion of the glottal stop is word-initial. This interword hiatus must be distinguished from that caused by reduplication; however, this is rare and easily detected (see §8.3.2).

3.6 Stress

Stress, in the sense of the presence within the word of a syllable nucleus bearing increased amplitude, pitch excursion or length, is not contrastive in Wutung. That is, there are no lexical items which contrast solely on the basis of the placement of such stress.

However, there is phonetic stress, with each word able to bear only a single primary stress. Typically the primary stress appears in penultimate position. This location is mainly a feature of tri-syllabic words and also found on disyllabic words, although in rapid speech these latter may be heard as having even stress. Words of greater than two

syllables always exhibit prominence on one of them, however this is neither regular nor predictable.

While individual speakers tend to have preferred patterns for some words this varies quite freely, both between speakers and within idiolects. The same speaker may stress one syllable in a word on one occasion, and a different one (in the same word) on another occasion, without there being any contrast. For example:

(3.19)   ʰlapã̃ ~ hla'pã̃
        'night'

As described in §3.2.3.7, this variability in the location of stress placement can result in quite substantial variation in the realisation of certain strings of phonemes; this applies especially to those that are more susceptible to variation due to the presence or absence of stress.[28]

Of course, it is possible that there is some sort of regularity to stress assignment, but if so it is very complex and involves an interaction between prosody (both lexical tone and intonation) and pragmatic factors.

Chapter 5 presents an analysis of tone which incorporates a tone-attracting accent which is always present on the second syllable of polysyllabic words. This accent does not appear to manifest in any other way; stress is not audibly present on the second syllable any more than on any other syllable. Nor has any acoustic evidence for this accent been found, either in terms of length or amplitude.

3.7 Orthography

3.7.1 Descriptive orthography

For the purpose of writing Wutung words and text in this thesis a 'descriptive orthography' will be used. This is an orthography that is somewhat simpler and more convenient than the IPA used so far in that it replaces the specialised IPA symbols with standard Roman symbols, but preserves all phonemic contrasts. This orthography is not used in Chapters 3, 4 or 5 as these deal with phonetic detail and so require the use of standard IPA.

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[28]Odé (2002:51) describes a similar situation in Mpur (also a tonal language, spoken in the Bird's Head peninsula of the westernmost part of the island of New Guinea) and Curnow (1997:46) for Awa Pit (a language spoken in Colombia).

In the descriptive orthography the affricates /ʧ/ and /ʤ/ will be represented by *c* and *j* respectively, the glottal /ʔ/ by *q* and the nasal /ɲ/ by *ny*. The two IPA vowel symbols not part of the standard Roman alphabet will be replaced by digraphs. Phonemic nasalisation will usually be indicated by the digraph *ng* being postposed to vowels but the standard IPA convention of a tilde over the vowel (and over the first symbol in digraphs) will also be used in some contexts (for example, when discussing phonetic details of nasalisation).

For marking tone, two systems are employed, depending on the context. Chao tone staffs will be used when discussing the phonetic details of tone in order to provide a reasonably precise representation of the contours; this occurs mostly in Chapter 5. In other parts of this work where indication of tone is necessary, it will be shown by diacritic symbols above the vowels, but these will represent the surface tone as it manifests syllable-by-syllable, rather than the underlying tone, as this obviates the need for showing the location of the tone-attracting accent point as well as making the actual pronunciation immediately available. This convention is most useful as it gives a clear indication of the precise pitches to be employed on each syllable of each word, rather than requiring calculation to determine what surface pitches arise from the interaction of the tonal melody with syllable number and the pitch-attracting accent point. The tone-marking is demonstrated in (3.20).[29]

While the chapter dealing explicitly with tonal phenomena mainly uses data from audio recordings of sufficient quality that tone can be determined, much of the language data was collected in situations where it was not possible to determine the tones. In some cases the audio recordings are simply not of a quality to enable any determination of tone, but the segmental aspects are clear, in others the data was recorded on paper and there is no way to determine the tone, short of further fieldwork.[30] Given this situation it seems poor practise to mark tone in some cases and not in others. For this reason tone is not marked in the body of this work (except where the discussion is dealing explicitly with tonal phenomena, most notably Chapter 5), but it is marked in the wordlist in Appendix C, where brief English glosses are given and tone, where known, is shown. Donohue (2005:289) supports this approach, arguing that a grammar of a tonal language which does not show words marked for (phonemic) tone (even where they are not so marked in

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[29]It should be noted that use of the circumflex diacritic to indicate a high-low (or falling) pitch will only be necessary where this pitch manifests on a single syllable.

[30]This indeterminancy is due in some cases to lack of clarity in speech (some texts being recorded in very informal circumstances), in others to poor recording quality.

the orthography) is a serious omission, but allowing that a suitable alternative is to show tone in an attached wordlist, such as is done here. Following are some examples of tone marking, using the diacritic symbols, on words of one, two and three syllables.

(3.20)   *hó,*   *hô,*   *hò*
         'morota' h, 'grease' hl, 'star' l

         wésú,   *hléqì,*   *nyìflà*
         'bald' h-h, 'blunt' h-l, 'bee' l-l

         hléláqì,   *súànè*
         'dirty' h-h-l, 'cuscus' h-l-l

Table 3.32 shows the IPA phonemic representation alongside the practical orthography. As the descriptive orthography is almost identical to the proposed practical orthography (apart from the latter not, at this point, using tone-marking, and the alternative marking of nasality by tilde within the descriptive orthography) there is no need to include it separately.

3.7.2 Practical orthography

A start on the development of a suitable practical orthography has begun in conjunction with a group of interested people at Wutung village[31]. This orthography is intended to be suitable for use in the Wutung school, as well as for the writing of hymns, secular songs, letters, public notices and for any other daily use.

The practical orthography so far proposed by the Working Group is almost identical to that used as the descriptive orthography in this thesis (§3.7.1), making use of the symbols from the Roman alphabet which are available on standard (i. e. 'QWERTY'-style) keyboards, both on typewriters and on computers, as well as being known to the people of Wutung from its use for writing English, Tok Pisin, and Bahasa Indonesia, the languages of wider communication with which most Wutung people are very familiar, and which many can read.

As already described in the preceding section, representation of the consonants of is straightforward, requiring only a single grapheme for all of the phonemes except /ɲ/, for which the digraph *ny* is used. The five vowel symbols of the Roman alphabet are used to

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[31]This group will be referred to as the 'Wutung Orthography Working Group'.

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represent five of the Wutung vowels, while two of them are combined with the otherwise unused consonant symbols 'y' and 'r' to form the digraphs *ey* and *ur* to represent the mid front vowel [e] and the central vowel [ɵ], respectively; these digraphs seem to accord reasonably happily with people's expectations of how to represent the vowels, probably due to their familiarity with English orthography and similar usages therein (such as 'grey' and 'fur').

Nasalisation is represented by 'ng' being appended to the vowel symbol in question. This unfortunately makes for a somewhat cumbersome system as it results in five trigraphs (symbols consisting of three characters) and a tetragraph (a symbol consisting of four characters), each representing a single phoneme. The Wutung orthography working group discussed various other options for representing nasality on vowels such as reducing the 'ng' to 'g' (another symbol not otherwise needed in Wutung) or actually writing the tilde. However, the present arrangement was felt by all to be a satisfactory compromise between clarity and simplicity. The whole system is laid out in Table 3.32 along with the IPA-based phonemic representation used in this chapter.

Table 3.32: Wutung orthographies

Phonemic (IPA)	Practical	Phonemic (IPA)	Practical
p	p	w	w
b	b	i	i
t	t	ĩ	ing
d	d	e	ey
ʔ	q	ẽ	eyng
m	m	ɛ	e
n	n	ɛ̃	eng
ɲ	ny	a	a
f	f	ã	ang
s	s	o	o
h	h	õ	ong
ʧ	c	u	u
ʤ	j	ũ	ung
l	l	ɵ	ur

Groups of adults have been given a brief introduction to the practical orthography after which they were presented with written texts with no tone marking. Despite the absence of any overt indication of tone they were all readily able to read the texts. This indicates that the practical orthography is quickly grasped by adult Wutung speakers who are already literate in one of the other languages of wider communication. However, further testing with pre-literate children is necessary to determine if it is suitable for use in the Wutung pre-school. It also suggests that it may not be necessary to represent tone in the practical orthography, although it will be necessary to test this further. In particular, children of school age may require tone marking, at least in the early stages of acquiring literacy. As mentioned previously (§3.7.1), tone, where known, will be marked for the purpose of description using diacritics over the vowels.

The result of this orthography is a fairly consistent correlation between the complexity of the graphemes and the frequencies in speech of the phonemes which they represent. The phonemes that are least frequent have the most complex graphemes. This means that the burden of the nasal vowel trigraphs and tetragraphs for reading and writing is not too great. In particular, given that /ẽ/ (/eyng/ in the practical orthography) is amongst the least frequently-used phonemes, the tetragraph is one of the least-used symbols.

Chapter 4

Segmental phonetics

4.1 Introduction

Many (perhaps most) grammars of previously undescribed languages do not include acoustic analysis of any part of the sound system of that language. As a result, descriptions of sound systems rely almost completely on field linguists being able to imitate the articulatory movements of native speakers. From this is derived an impressionistic analysis of the segmental inventory, forcing the reader to trust to the judgement of the researcher. While it is to be expected that many of the sounds of the world's languages would be accurately perceived and described by any competent field linguist, there are aspects of every language which it is more difficult to describe precisely in this manner, and which others in the field could reasonably expect to see justified rather than simply being asserted. In some languages there will be (relatively) unusual segments that should be verified by phonetic analysis; in another, perhaps a complex vocalic system.

Wutung forms a useful case in point. Much of its segmental phonology is fairly straightforward and easily described. However, there are three aspects in particular that are more elusive and worth quantifying in some detail. Firstly, there are two sets of obstruents, constituting three pairs of segments with almost identical articulation, which differ systematically in some fashion. Commonly this is referred to as a voicing contrast, but the precise nature of the contrast can only be verified by acoustic analysis. Secondly, Wutung has a somewhat complicated vocalic system (particularly for New Guinea) including a proposed phonemic vowel (the close-mid central rounded vowel /ɵ/) which is quite rare cross-linguistically. Acoustic analysis is the only way to reliably establish the

actual articulation of these vowels. Finally, there is a lexical tone system; as pitch is a physical phenomenon demonstrating continuous variation acoustic analysis is important to quantify it and determine the variation that is present.

For the above reasons, at least the three aspects of Wutung phonetics listed above are worthy of description. Accordingly, this chapter presents an acoustic analysis of: the formant structure of the oral vowels, dealt with §4.3 (while nasal vowels are discussed briefly they are excluded from the vowel analysis due to the complexity of analysing nasal vowels); the timing of voice onset on stop and affricate consonants, presented in §4.4; and finally, in §5.6, a preliminary analysis of lexical tone, giving a description of the typical contours of the tones and some aspects of their variation.[1]

4.2 Data collection and analysis

4.2.1 Data collection

The data was collected in the village of Wutung from five informants, four of whom provided substantial amounts of citation type material which forms the basis for the following analysis. The five informants were:[2]

M1 male, 30 years old

F1 female, early 40s

F2 female, 45 years old

M2 male, 32 years old

M3 male, 28 years old

All five informants grew up in Wutung though one, F1, spent several of her primary school years at the neighbouring village of Musu where a very closely related (and mutually intelligible) language is spoken (see Section 1.11). Despite this, as well as the fact that F1's mother is from Musu, when questioned about her speech people in Wutung

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[1]Going beyond this, or to a full acoustic study of Wutung would be beyond the scope of a single chapter and could constitute an entire dissertation in itself.

[2]The designations M1, F1, etc., have been used to preserve their anonymity.

stated that it is perfectly typical of 'Wutung tokples'[3]. All five speakers have spent most of their lives living in Wutung and all five acquired Wutung as their first language.

The recordings were made in a traditional house.[4] The whole village is situated very near the sea and as there are almost always large waves crashing on the fringing reef this background noise is nearly always present. Nevertheless at the time of the recordings used in this analysis the sea was relatively calm and the sound of waves is barely discernible in the background, so this does not interfere with the analysis. The material used for this study was recorded on a Sony TCM-5000EV analogue cassette recorder using Lavalier (lapel) microphones attached to the speakers' clothing, preserving a constant distance from the source. Material from the tapes was digitised using an Onkyo MSE-U33HB audio digitising hub connected to a Power Macintosh computer. The software used to carry out the digitising was Bias Peak LE, set to a sixteen-bit sample size and a sampling rate of 44.1 KHz. Apart from the digitising process itself, no noise reduction, compression, filtering or any sort of modification of the signal was carried out. The acoustic analysis was carried out on a Power Macintosh computer using two pieces of acoustic analysis software, the very powerful *Praat*[5] and the plug-in *Akustyk*.[6] Waveform images used in this chapter were produced with Praat, while the vowel charts were created with Akustyk.

The aim was to collect as many different monosyllabic words as possible in order to have representation of every possible combination of consonant and vowel. Examples of every possible CV were obtained, but only by allowing some examples containing consonant clusters, and in a few cases by accepting words of two syllables.

The data collection procedure was as follows: the speakers worked in pairs and were given a written list of the words to be spoken. This list contained the Wutung words along with their English equivalents; this was necessary due to the limited familiarity of some

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[3] 'tokples' is the Tok Pisin word used to refer to the language of a given location, often a village. In this case 'Wutung tokples' refers to the language of Wutung village.

[4] These are constructed using local timbers, have a sago thatch roof and are set on large posts which raise them more than a metre above the ground.

[5] Praat is freely available from http://www.praat.org. I am extremely grateful to Paul Boersma and David Weenink of the Institute of Phonetic Sciences, University of Amsterdam for their generosity in creating and providing this powerful and free acoustic analysis package.

[6] *Akustyk*, created by Bartek Plichta of Michigan State University and available at http://bartus.org/akustyk/, is a plug-in to Praat which facilitates analysis, particularly of vowel systems and statistics. I am grateful to Bartek Plichta for this software and also for his responsiveness to comments and suggestions.

of the informants with the Wutung orthography used, whereas all had a good command of English. The speakers were asked to say each word four times: three times consecutively, and then once within a sentence frame. This frame is shown in the following example wherein *ca* 'water' is the citation word. Each pair of speakers worked through the entire list of 141 words in a single sitting.

(4.1) *Cey   hlung 'ca'   hwanglu nie*
       3SG.F say   'water' go.to   1SG
       'She said "ca" to me.'

The set of words thus elicited, and used for the analyses presented below, is presented in Table 4.1. For convenience they it is presented arranged in alphabetical order, primarily according to the vowel in question (although they were not recorded in this order—Appendix B presents the words in the order of recording), then by the immediately prevocalic consonant (consonants preceding this are ignored) and lastly by the order of the English glosses. In most cases, the grammatical information encoded in the word is not glossed, but only the core semantic content, for convenience in exposition.[7] There are several words which are larger than a single syllable (for example *mlohe*, 'liver')—these are listed twice as they contain two different vowels. Thus *mlohe* is included both with the /e/ words and with the /o/ words. There are 142 different words in this table; six are repeated for the reasons given above so the table contains a total of 148 vowel tokens.

The set of words in Table 4.1 was originally collected solely for the purpose of the analysis of the oral vowels (detailed in §4.3). Although at the time of data collection it was not anticipated that a voice onset time analysis would be carried out, the dataset is adequate for this particular piece of analysis, which is presented in §4.4.

Table 4.1: Acoustic analysis wordlist, with English gloss

aqo	no	*qbaqba*	hit	*be*	take
bey	do	*bo*	rub	*hmbu*	stone
ca	dug	*ca*	pig	*ca*	wash
ca	water	*ceyca*	wobbly	*ce*	chopped
ce	collected	*cey*	3SG.F	*ceyca*	wobbly
ci	tapa cloth	*ci*	do	*co*	rub

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[7]All of these words are included in the wordlist in Appendix C where they are given a full gloss.

Table 4.1: Acoustic analysis wordlist, with English gloss *(continued)*

cu	a scream	*cur*	come out	*cur*	a blowhole
da	harvested	*de*	chopped	*dey*	did
di	fought	*do*	rubbed	*du*	come
du	got	*dur*	threw away	*fa*	bad potato
fa	edge	*fe*	betelnut	*fe*	ripe
fey	tomorrow	*fi*	breadfruit	*fofo*	pawpaw
fo	drying rack	*fu*	garden	*fur*	bottom
ha	k.o. shell	*he*	leaf	*mlohe*	liver
hey	excreta	*hi*	ouch!	*ho*	morota (sago thatch)
maho	where	*ho*	star	*ho*	grease
hu	watery	*hur*	ground	*jeyja*	shaking
jey	shake	*ji*	fought	*jo*	malformed
juwa	collect greens	*juwa*	rub off	*jur*	all of them
la	go with	*hle*	fire	*ley*	do
li	sea	*lo*	front	*lo*	sharp
lu	come	*lur*	boundary	*plur*	bunch
ma	skin	*maho*	where	*me*	you
meya	you!	*mi*	tail	*mo*	spear shaft
mo	drown	*mu*	fish	*na*	taro
na	reef worm	*na*	sago basket	*na*	digging stick
na	noise	*napey*	bush knife	*ne*	we
ne	eat	*ney*	armband	*ni*	paddle
no	wake up	*no*	breast	*hnu*	drink
nua	skin	*nya*	gall bladder	*nyi*	banana
nyo	left-overs	*hnyo*	squeezings	*nyu*	fight
pa	person	*pa*	and	*pey*	house
napey	bush knife	*pi*	get	*niepo*	myself
popo	uncle	*pu*	greens	*qa*	hit
qe	limbum leaf	*qey*	bone	*qey*	timber
qi	cooked	*qi*	growing	*aqo*	no
qo	a smell	*qo*	laulau bunch	*qu*	beetle
qu	firewood pile	*qur*	ripe greens	*qur*	a stain

continued on next page

Table 4.1: Acoustic analysis wordlist, with English gloss *(continued)*

sa	sea	*sa*	a thing	*sa*	grass
se	dog call	*sey*	good one!	*si*	sago
si	a fight	*si*	got	*so*	okay
so	come on!	*so*	taro part	*su*	lid
su	can	*su*	got	*sur*	flood
sur	come out	*sur*	bananas	*nyi sur*	k.o. banana
tey	3PL	*ti*	a handle	*ti*	do
to	seed	*to*	language	*tu*	bush border
tur	money	*wa*	cave	*juwa*	collect greens
juwa	rub off	*we*	take	*wey*	swamp
wi	five	*wo*	k.o. song	*wo*	work
wu	reef gully				

Not all of the vowels shown in Table 4.1 are analysed for each speaker as, in some cases, there are particular difficulties. One such is voice quality which, for one speaker, was very rough and resulted in his F_2 values occasionally being very difficult to measure.

Another effect on analysis was from preceding nasal consonants. As mentioned in §3.3.3 vowels following a nasal consonant are always nasalised, at least weakly. This nasalisation is sometimes strong enough that it affects formant structures on the following vowel and so impairs analysis. As the duration of this nasalisation was variable it was usually possible to find a token which could be analysed, but in some cases it was not. No attempt was made at analysis of the true nasal vowels as these are much more complex than oral vowels, consisting of (what may be analysed as) a pair of linked complexly resonant tubes rather than just a single tube (as with oral vowels). Nasal vowel acoustics involves not only formants, but also (so-called) anti-formants. As these anti-formants are very difficult to analyse, and as there is still no general consensus amongst phoneticians (Phil Rose 2002, pers. comm.) as to how it should best be done, no attempt will be made herein to do so.

4.3 Oral vowel acoustics

4.3.1 Procedure

The number of vowel tokens in the collection list (see Table 4.1 above) is 158; as each word was spoken four times (three times in isolation and once in a sentence frame) a total of 632 vowel tokens were recorded from each speaker. Table 4.2 gives a breakdown of the tokens ordered by vowel and initial consonant. It will be seen that no vowel is represented by less than fifteen exemplars, and most CV combinations are represented, some to a greater degree than others. This is to be expected as there are CV co-occurrence restrictions (§3.4.2.2), some consonants are rare in word-initial position (§3.4.2.2) and the different vowels vary a fair amount in their frequency (see §3.4.3 for a discussion of vowel phonotactics).

Table 4.2: Vowel tokens per speaker by CV combination

	i	ey	e	a	o	u	ur	Total
Ø	–	–	1	3	–	–	–	4
b	–	1	1	2	1	1	–	6
c	2	2	2	5	1	1	2	15
d	1	1	1	1	1	2	1	8
f	1	1	2	2	3	1	1	11
h	1	1	2	1	4	1	1	11
j	1	2	–	1	1	2	1	8
l	1	1	1	1	3	1	2	10
m	1	1	1	2	2	1	–	8
n	2	1	2	6	2	2	–	15
ny	2	–	–	1	2	1	–	6
p	1	1	1	2	3	1	–	9
q	2	2	1	1	3	2	2	13
s	3	1	1	3	3	3	4	18
t	2	1	–	–	2	1	1	7
w	1	1	1	3	2	1	–	9
Total	21	17	17	34	33	21	15	158

Analysis of the vowels was carried out by using Praat to generate amplitude-time waveforms and spectrograms, the latter of which also displayed the formants. The formants were scrutinized to assess their structure and to locate a stable, 'steady-state' section near the middle of the formant, far enough from the onset and offset to minimise interference from neighbouring segments, and avoiding any part of the formant that shows any 'edge effects'.[8]

Having chosen a satisfactory point for analysis, a 'Quick LPC' (Linear Prediction Coefficient) analysis was made, which enables determination of the appropriate LPC filter order for use in the actual formant analysis. This initial analysis uses pitch-synchronous filter ordering, with increments, and uses what is assumed by the software to be the optimal filter ordering, along with a set of results for the two filter orders on each side, above and below (i. e. if the software uses an order of 11, it will also give the results for filter orders of 9, 10, 12 and 13). The results will show the frequencies for formants F_1, F_2 and F_3,[9] in both Hertz and Bark units, along with formant amplitudes and bandwidths. This makes it possible to decide what filter order will produce the most accurate result. Once this has been done a full formant analysis is made (using the previously-determined filter order) which calculates the F_1, F_2 and F_3, (again, in both Bark and Hertz units) as well as the bandwidth and amplitude for each formant. This information is recorded by Akustyk which stores it in a spreadsheet for later display. Akustyk can use this spreadsheet to calculate average F_1 and F_2 values for each vowel, along with their standard deviations, and to create a standard vowel chart to display this information.

The tables in the following section, §4.3.2, give the results for each speaker of the measurements of average frequencies of the first and second formants for selected tokens from each word, along with charts showing the average values and standard deviations for each vowel.

4.3.2 Measurements

The following tables (in §4.3.2.1, §4.3.2.2, §4.3.2.3 and §4.3.2.4) present the acoustic analysis wordlist in alphabetical order along with measurements for the first two formants

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[8]As there are no examples with a coda there is no possibility of influence from a post-vocalic, tautosyllabic consonant. Praat takes measurements across a window of samples so a point measurement of a formant which was taken too early in the vowel would be influenced by the onset even if it fell after the affected portion of the vowel.

[9]These represent the first, second and third formants, respectively.

(F$_1$ and F$_2$. Words which contain two or more vowels are repeated in the table, with the vowel to which that row's measurements pertain indicated in **bold**.

4.3.2.1 Formant measurements and vowel chart: speaker F1

Table 4.3: Vowel formant measurements: speaker F1

word	definition	F$_1$	F$_2$	word	definition	F$_1$	F$_2$
aqo	no	841	1342	aq**o**	no	556	1011
be	take it	551	2250	bey	you did it	483	2481
bor	rub	472	848	ca	dug	741	988
ca	pig	700	1405	ca	wash	669	1488
ca	water	749	1538	ce	chopped	550	2457
ce	collected	529	2533	cey	she	475	2543
ceyca	wobbly	503	2447	cey**ca**	wobbly	748	1616
ci	she did it	445	2714	ci	tapa cloth	584	2658
co	rub	513	762	c**u**na	scream	497	975
cu**na**	scream	890	1322	cur	blowhole	511	1944
cur	come out	472	2037	da	harvested	834	1400
de	chopped	575	2518	dey	did	457	2244
di	fought	502	2715	do	rubbed	510	851
du	come	430	1110	du	got	470	1027
dur	threw away	479	2014	fa	bad potato	874	1330
fa	edge	849	1317	fe	buai	545	2433
fe	ripe	572	2512	fey	tomorrow	518	2545
fi	breadfruit	477	2625	fo	drying rack	578	817
fofo	pawpaw	534	824	fo**fo**	pawpaw	496	887
fu	garden	342	682	fur	bottom	487	1950
ha	shell	1017	1476	he	leaf	620	2452
hey	excreta	552	2666	hi·	ouch	523	2430
hle	fire	599	2476	hmbu	stone	463	772
hnu	we drink	446	1756	hnyor	squeezings	456	988
ho	grease	529	796	ho	morota	603	931
ho	star	558	830	hu	watery	306	790

Table 4.3: *continued*

word	definition	F_1	F_2	word	definition	F_1	F_2
hur	ground	508	1923	jey	shake	484	2438
jeyja	shaking	466	2630	jeyja	shaking	733	1753
ji	fought	508	2520	jo	misgrown	558	948
jur	all of them	443	1940	juwa	collecte greens	369	834
juwa	collect greens	623	1320	juwa	rub off	279	920
juwa	rub off	651	1337	la	go with	928	1387
ley	do	526	2625	li	sea	593	2696
lor	front	487	846	lor	sharp	510	964
lu	come	421	803	lur	boundary	448	1834
ma	skin	865	1437	maho	where	856	1383
maho	where	536	834	me	you	494	2162
mi	tail	437	2338	mlohe	liver	546	870
mlohe	liver	563	2455	mor	drowning	504	812
mor	spearshaft	766	957	mu	fish	306	810
na	digging stick	839	1561	na	noise	927	1481
na	reef work	680	1629	na	sago basket	961	1595
na	taro	969	1724	napey	bush knife	963	1565
napey	bush knife	486	2767	ne	armband	637	2373
ne	we	608	2469	ne	we ate	568	2374
ni	a paddle	499	2739	niepo	myself	485	2068
niepo	myself	495	842	no	breast	491	913
no	wake up	443	890	nua	skin	325	637
nua	skin	717	1425	nya	gall bladder	807	1573
nyi	banana	470	2719	nyisur	ko banana	547	2808
nyisur	k.o. banana	475	2072	nyo	leftovers	461	931
nyu	she fought	485	1114	pa	and	1012	1456
pa	person	792	1372	pe	house	538	2615
pi	I got her	491	2493	plur	bunch	493	1758
popo	uncle	574	934	popo	uncle	511	865
pu	greens	401	741	qa	hit	858	1281

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Table 4.3: *continued*

word	definition	F_1	F_2	word	definition	F_1	F_2
qbaqba	hit him	878	1387	qbaqba	hit him	861	1330
qe	limbum leaf	623	2319	qey	bone	468	2573
qey	timber	459	2455	qi	cooked	257	2481
qi	growing	520	2628	qor	laulau bunch	581	839
qo	smell	579	837	qu	beetle	516	846
qu	firewood	304	781	qur	ripe greens	646	2063
qur	stain	587	1991	sa	grass	856	1515
sa	sea	794	1279	sa	thing	873	1517
se	dog call	555	2161	sey	good one	550	2328
si	fight	480	2408	si	got	472	2127
si	sago	555	2628	so	come one	573	1290
so	okay	541	968	so	taro part	582	963
su	can	398	668	su	got	435	1161
su	lid	593	1304	sur	banana hand	528	1878
sur	come out	505	1802	sur	flood	467	1974
tey	they	467	2516	ti	do	434	2655
ti	handle	546	2643	to	language	544	1084
to	seed	566	1062	tu	bush border	471	813
tur	money	539	2011	wa	cave	1002	1280
we	take it	585	1983	wey	swamp	500	2668
wi	five	569	2847	wor	song	383	802
wor	work	498	752	wu	reef gully	374	774

The results of the vowel analysis and measuremets for F1 are shown in the vowel chart in Figure 4.1. The IPA symbol for each vowel is shown, surrounded by a solid circle, at the average value for the measurements of F_1 and F_2. Surrounding this is a dotted circle, which indicates the standard deviation.

The only two vowels which are entirely separated from all others (that is, the ranges of their standard deviations do not overlap with that of any other vowel) are [ɵ] and [a]. The other vowels all show overlap, to at least some degree, with at least one other. The vowels [i] and [e] overlap each other substantially, but examination of their measurements in
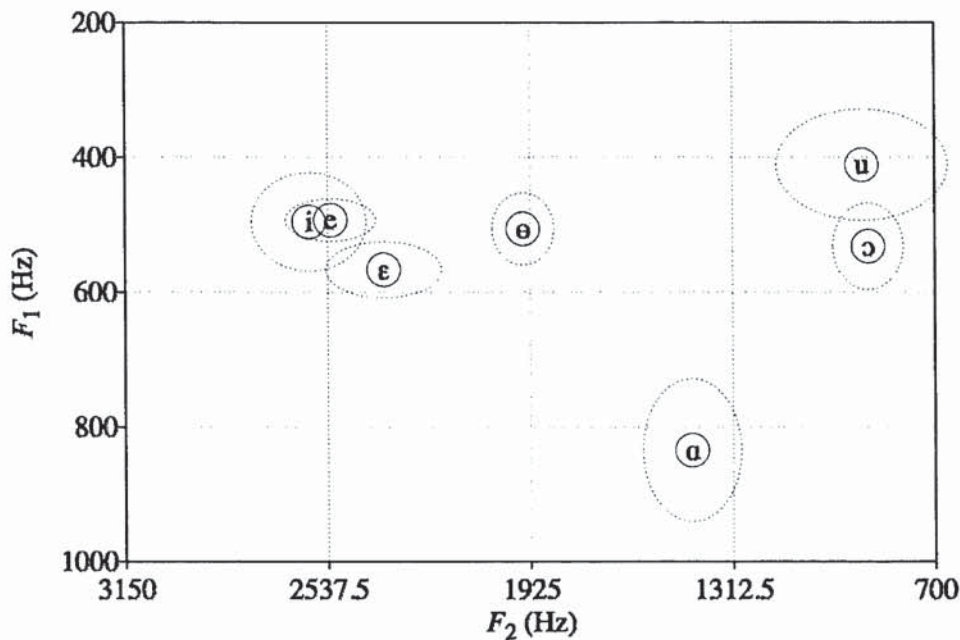
Figure 4.1: Vowel averages and standard deviations:speaker F1

specific environments (i. e. following particular consonants) reveals that they are mostly largely separate in these contexts. Thus, while [i] and [e] are indeed very similar, to the extent that their measurements overlap almost completely (and such that they are often difficult for a non-speaker to distinguish) they do indeed differ, as indicated by the minimal pairs. Interestingly they are often of the same height (that is to say, they often have similar F_1 measurements) and seem to differ more in backness (i. e. F_2).

There was some co-articulation affecting the vowels in the examples spoken within a sentence frame, particularly noticeable in the speech of F1. The frame word following the token is *hwangli*, which F1 often pronounced as *[hwanglu]* (the reason for this is not clear, and F1, when asked about this, was not sure and seemed not to notice the phenomenon).[10] However, the *hw* caused an anticipatory gesture towards a high back vowel /u/ in the later stages of the final vowel of the token. For this reason, where this

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[10]hwangli is the 3SG.F form of the verb meaning 'go.to'; it is commonly used with the meaning 'to/towards'.

coarticulation effect was noticed this less stable portion of the vowel was not included in the measurement

4.3.2.2 Formant measurements and vowel chart: speaker M1

Table 4.4: Vowel formant measurements: speaker M1

word	definition	F_1	F_2	word	definition	F_1	F_2
aqo	no	748	1214	**aqo**	no	460	710
be	take it	486	2031	bey	you did it	403	2297
bo	rub	456	742	ca	dug	690	1217
ca	pig	638	1256	ca	wash	703	1220
ca	water	650	1215	ce	chopped	533	2192
ce	collected	476	2159	cey	she	416	2143
ceyca	wobbly	449	2255	**ceyca**	wobbly	692	1207
ci	she did it	295	2427	ci	tapa cloth	308	2562
co	rub	472	802	**cuna**	scream	270	976
cuna	scream	706	1270	cur	blowhole	341	1228
cur	come out	284	1157	da	harvested	672	1213
de	chopped	494	2221	dey	did	385	2352
di	fought	274	2261	do	rubbed	440	755
du	come	251	823	du	got	286	716
dur	threw away	362	1816	fa	bad potato	720	1117
fa	edge	589	1076	fe	buai	461	2235
fe	ripe	462	2164	fey	tomorrow	309	2430
fi	breadfruit	321	2488	fofo	pawpaw	487	1419
for	drying rack	390	748	fu	garden	347	720
fur	bottom	384	1447	ha	ko shell	579	829
ha	ko shell	710	1239	he	leaf	482	2171
hey	excreta	394	2143	hi	ouch	361	2353
hle	fire	519	2180	hmbu	stone	270	691
hnu	we drink	339	739	hnyor	squeezings	445	729
ho	morota	469	752	hor	grease	448	797
hor	star	425	833	hu	watery	285	712

Table 4.4: *continued*

word	definition	F_1	F_2	word	definition	F_1	F_2
hur	ground	401	1630	jey	shake	435	2272
jeyja	shaking	394	2144	jeyja	shaking	630	1445
ji	fought	274	2393	jo	mis-grown	440	746
jur	all of them	333	1920	juwa	collect greens	310	1017
juwa	collect greens	527	893	juwa	rub off	325	855
juwa	rub off	562	1179	la	go with	709	1172
ley	did	431	2345	li	sea	297	2411
lo	front	521	729	lo	sharp	460	719
lu	come	393	632	lur	boundary	368	1676
ma	skin	885	1226	maho	where	574	1199
maho	where	444	775	me	you	634	2113
mi	tail	331	2418	mlohe	liver	523	946
mlohe	liver	487	1947	mo	spearshaft	409	798
mor	drowning	440	707	mu	fish	334	634
na	digging stick	672	1247	na	noise	842	1183
na	reef worm	664	1280	na	sago basket	670	1314
na	taro	788	1410	napey	bush knife	702	1403
napey	bush knife	358	2215	ne	armband	558	2003
ne	ate	502	2248	ne	we	625	2121
no	breast	594	867	no	wake up	546	945
nya	gall bladder	567	1226	nyi	banana	342	2299
nyisur	ko banana	396	2454	nyisur	ko banana	329	1726
nyo	leftovers	303	802	nyu	she fought	295	744
pa	and	667	1207	pa	person	710	1192
pe	house	480	2141	pi	I got her	374	2342
plur	bunch	431	1895	popo	uncle	488	760
popo	uncle	434	654	pu	greens	234	642
qa	hit	758	1208	qbaqba	hit him	747	1217
qbaqba	hit him	767	1139	qe	limbum leaf	507	2285
qi	cooked	287	2377	qi	growing	260	2465

Table 4.4: *continued*

word	definition	F_1	F_2	word	definition	F_1	F_2
qo	laulau bunch	432	715	qo	smell	417	710
qu	beetle	209	708	qu	firewood pile	279	696
qur	ripe greens	311	1658	qur	stain	310	1832
sa	grass	617	1228	sa	sea	639	1166
sa	thing	645	1112	se	dog call	451	2067
si	got	257	2448	so	c'mon	462	784
so	ok	527	816	so	taro part	493	725
su	got	276	670	sur	banana hand	481	1476
sur	flood	329	1745	tey	they	330	2421
ti	do	299	2398	ti	handle	316	2431
to	language	458	764	to	seed	422	797
tu	bush border	288	646	tur	money	401	2090
wa	cave	671	1201	we	take it	524	2223
wey	swamp	363	2426	wi	five	373	2413
wo	song	496	1464	wu	reef gully	288	659

Analysis of this speaker's speech proved difficult due to his rough voice quality and tendency to murmur, which made precise vowel measurements difficult. The effect of this was to make his F_2 and F_3, in many cases, quite indistinct and impossible to locate with any precision. In all there were fifteen words that could not be included in the analysis for this reason, the most of the four speakers. Nevertheless, enough satisfactory samples were available to analyse all vowels in most contexts, and to produce the vowel chart in Figure 4.2.

It will be seen from the charts of M1 and F1 that their vowels are broadly similar in most respects, differing mainly in the high front vowel /i/. In F1's speech this vowel differs from its near neighbour /e/ mainly in terms of the front-back dimension, whereas in the speech of M1 it is clearly mainly a height contrast, although backness is involved. Furthermore, there is no overlap between any of M1's vowels, and they are mostly much more constrained, with their standard deviations being smaller. However, this generalisation does not hold for M1's close-mid central vowel /ə/, which shows greater variation than that of F1, particularly in the front-back dimension. Nevertheless, apart
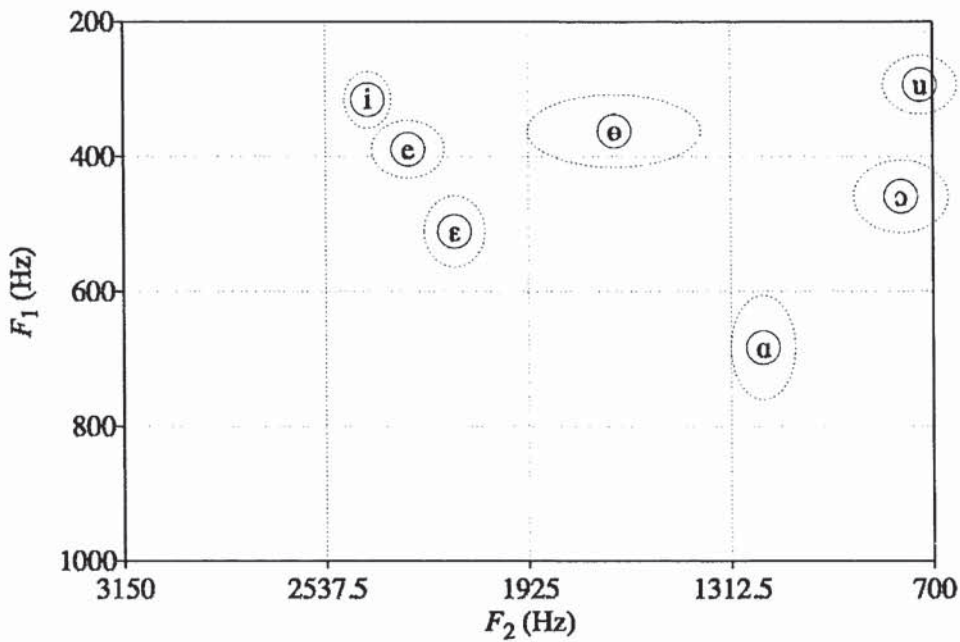
Figure 4.2: Vowel averages and standard deviations: speaker M1

from the /e/~/ɛ/ variation, and the difference in the sizes of their standard deviations, the relative positions of the vowels for the two speakers are identical.

4.3.2.3 Vowel formant measurements and vowel chart: speaker F2

Table 4.5: Vowel formant measurements: speaker F2

word	definition	F_1	F_2	word	definition	F_1	F_2
aqo	no	668	1010	aqo	no	561	918
be	take it	625	2379	bey	you did it	514	2538
bo	rub	531	859	ca	dug	788	1389
ca	pig	875	1347	ca	wash	850	1316
ca	water	740	1006	ce	chopped	598	2506
ce	collected	563	2611	cey	she	484	2590
ceyca	wobbly	533	2548	ceyca	wobbly	856	1555

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Table 4.5: *continued*

word	definition	F_1	F_2	word	definition	F_1	F_2
ci	she did it	507	2707	ci	tapa cloth	529	2535
co	rub	600	963	cu	scream	528	1230
cur	blowhole	552	2327	cur	come out	575	2267
da	harvested	917	1405	de	chopped	580	2591
dey	did	537	2624	di	fought	474	2648
do	rubbed	532	820	du	come	488	1276
du	got	476	1474	dur	threw away	533	1908
fa	bad kaukau	921	1356	fa	edge	970	1367
fe	buai	626	2341	fe	ripe	621	2468
fey	tomorrow	516	2603	fi	breadfruit	464	2827
fo	drying rack	514	826	fofo	pawpaw	521	973
fofo	pawpaw	571	997	fu	garden	426	876
fur	bottom	510	1699	ha	shell	775	1344
he	leaf	666	2482	hey	pekpek	519	2661
hi	ouch	486	2658	hle	fire	607	2460
hmbu	stone	390	900	hnu	we drink	417	806
hnyo	squeezings	579	968	ho	grease	606	947
ho	borata	626	820	ho	star	470	714
hu	watery	478	774	hur	ground	528	1696
jey	shake	483	2218	jeyja	shaking	496	2639
jeyja	shaking	728	1789	ji	fought	464	2817
jo	growing wrong	592	955	jur	all of them	491	1562
juwa	collect greens	440	1106	juwa	collect greens	634	1329
juwa	rub off	404	1257	juwa	rub off	699	1407
la	go with	885	1452	ley	did	562	2327
li	sea	476	2890	lo	front	623	1126
lo	sharp	671	1079	lu	come	442	1001
lur	boundary	539	1784	ma	skin	1034	1539
maho	where	948	1287	maho	where	610	955
me	you	706	2418	meya	you	768	1207

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Table 4.5: *continued*

word	definition	F₁	F₂	word	definition	F₁	F₂
mi	tail	339	778	mi	tail	527	2877
mlohe	liver	669	2275	mlohe	liver	741	1050
mo	drowning	554	795	mo	spear shaft	591	801
mu	fish	313	766	na	digging stick	912	1386
na	noise	993	1311	na	reef worm	1029	1490
na	sago basket	1073	1502	na	taro	1114	1447
napey	bush knife	890	1630	napey	bush knife	529	2407
ne	armband	727	2533	ne	we	705	2467
ne	we ate	704	2304	ni	paddle	583	2831
no	breast	657	947	no	wakeUp	786	1121
nua	skin	336	759	nua	skin	776	1396
nya	gall bladder	1021	1696	nyi	banana	570	2981
nyisur	kind of banana	571	2631	nyisur	kind of banana	548	1970
nyu	she fought	435	941	pa	and	835	1414
pa	person	891	1387	pe	house	572	2407
pi	I got her	494	2739	plur	bunch	544	1737
popo	uncle	575	987	popo	uncle	577	944
pu	greens	470	817	qa	hit	860	1308
qbaqba	hit him	819	1321	qbaqba	hit him	825	1252
qe	limbum leaf	585	2452	qey	bone	545	2561
qey	timber	513	2561	qi	cooked	567	2701
qi	growing	638	2581	qo	laulau bunch	544	832
qo	smell	528	858	qu	beetle	294	717
qu	firewood pile	370	869	qur	greens ready	587	1781
qur	stain	510	1792	sa	grass	842	1275
sa	sea	911	1314	sa	thing	868	1537
sahnyo	leftovers	857	1773	sahnyo	leftovers	618	1333
se	call dogs	711	2131	sey	good one	697	2181
si	fight	609	2550	si	got	655	2629
si	Sago	599	2760	so	c'mon	571	1048

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Table 4.5: *continued*

word	definition	F_1	F_2	word	definition	F_1	F_2
so	Ok	685	1117	so	taro part	566	957
su	able	494	845	su	got	480	1143
su	lid	579	1073	sur	banana hand	624	1984
sur	come out	626	2005	sur	lood	612	1984
tey	they	516	2720	ti	do	658	2679
ti	handle	598	2766	to	language	508	1046
to	seed	618	1086	tu	bush border	376	992
tur	money	678	1699	wa	cave	868	1252
we	swamp	573	2242	we	take it	607	2410
wi	five	487	2824	wo	song	477	914
wo	work	556	912	wu	reefgully	557	1024

As with F1 and M1, the results of the vowel analysis and measuremets for F2 are shown in the vowel chart in Figure 4.3.

This speaker's relative vowel positions correspond largely with those of the previous speakers, particularly with those of the other female speaker, F1. However, unlike F1, F2's vowels are like those of M1 in showing little overlap. In terms of /i/ and /e/ they agree with those of F1 rather than M1 in showing a contrast in terms of backness rather than height.

4.3.2.4 Vowel formant measurements and vowel chart: speaker M2

Table 4.6: Vowel formant measurements: speaker M2

word	definition	F_1	F_2	word	definition	F_1	F_2
aqo	no	732	1253	**aqo**	no	469	964
be	take it	534	1981	bey	you did it	393	2316
bo	rub	440	784	ca	dug	618	1270
ca	pig	674	1309	ca	wash	636	1451
ca	water	605	1441	ce	chopped	480	1974
ce	collected	385	2136	cey	she	379	2132

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Table 4.6: *continued*

word	definition	F_1	F_2	word	definition	F_1	F_2
cey	she	395	2108	ceyca	wobbly	431	2100
ceyca	wobbly	624	1389	ci	she did it	295	2193
ci	tapa cloth	369	2111	co	rub	483	937
cu	scream	358	1274	cur	blowhole	419	1903
cur	come out	417	1963	da	harvested	709	1354
de	chopped	494	2051	dey	did	396	2231
di	fought	289	2137	do	rubbed	489	880
du	come	308	920	du	got	384	904
dur	threw away	393	1849	fa	bad kaukau	749	1269
fa	edge	702	1280	fe	buai	517	1971
fe	ripe	505	1882	fey	tomorrow	442	2125
fi	breadfruit	288	2344	fo	drying rack	485	819
fofo	pawpaw	475	856	fofo	pawpaw	435	862
fu	garden	357	821	fur	bottom	393	1710
ha	shell	742	1304	he	leaf	526	1965
hey	pekpek	396	2082	hle	fire	531	1933
hmbu	stone	376	878	hnu	we drink	411	839
hnyo	squeezings	581	1030	ho	grease	445	863
ho	morota	509	906	ho	star	434	855
hu	watery	369	981	hur	ground	391	1796
jey	shake	383	2083	jeyja	shaking	394	1953
jeyja	shaking	653	1455	ji	fought	338	2136
jo	growing wrong	507	955	jur	all	438	1900
juwa	collect greens	382	1217	juwa	collect greens	539	1436
juwa	rub off	389	1229	juwa	rub off	528	1459
la	go with	691	1472	le	did	470	1946
ley	did	437	1931	li	sea	278	1814
lo	front	518	965	lo	sharp	489	965
lu	come	372	1090	lur	boundary	385	1923
ma	skin	650	1234	maho	where	767	1363

Table 4.6: *continued*

word	definition	F₁	F₂	word	definition	F₁	F₂
maho	where	489	891	me	you	616	1784
mi	tail	303	2258	mlohe	liver	598	1145
mlohe	liver	463	1973	mo	drowning	596	881
mo	spear shaft	536	920	mu	fish	300	795
na	digging stick	726	1429	na	noise	642	1370
na	reef worm	756	1343	na	sago basket	689	1541
na	taro	698	1422	napey	bush knife	583	1445
napey	bush knife	339	2222	ne	armband	585	1850
ne	we	591	1837	ne	we ate	552	1854
ni	paddle	308	2298	niepo	myself	481	810
no	breast	555	961	no	wake up	573	1075
nua	skin	574	1470	nya	gall bladder	701	1503
nyi	banana	310	2252	nyisur	ko banana	395	2365
nyisur	ko banana	370	1879	nyu	she fought	291	1133
pa	and	765	1210	pa	person	738	1256
pe	house	519	2033	pi	I got her	381	2224
plur	bunch	413	1482	popo	uncle	463	835
popo	uncle	427	802	pu	greens	291	796
qa	hit	666	1345	qbaqba	hit him	703	1238
qbaqba	hit him	760	1253	qe	limbum leaf	469	1976
qey	bone	404	2129	qey	timber	410	2334
qi	cooked	281	2233	qi	growing	302	2046
qo	laulau bunch	471	873	qo	smell	494	750
qu	beetle	368	712	qu	firewood pile	307	843
qur	greens ready	462	1812	qur	stain	431	1755
sa	grass	660	1331	sa	sea	709	1270
sa	thing	693	1392	sanyo	leftovers	718	1407
sanyo	leftovers	474	1152	si	fight	377	2177
si	got	370	2327	si	sago	337	2191
so	c'mon	466	916	so	ok	563	1022

Table 4.6: *continued*

word	definition	F_1	F_2	word	definition	F_1	F_2
so	taro part	480	910	su	able	314	958
su	got	292	843	su	lid	392	975
sur	banana hand	522	1938	sur	flood	401	1905
tey	they	354	2343	ti	do	327	2129
ti	handle	330	2125	to	language	492	915
to	seed	501	842	tu	bush border	329	875
tur	money	407	1790	wa	cave	718	1251
we	swamp	433	2193	we	take it	483	2002
wi	five	368	2133	wo	ko song	512	930
wo	work	479	870	wu	reef gully	324	853

The results for M2 are in most respects the same as for the preceding speakers.[11] Like those of M1 they differ from the female measurements in that the two high front vowels, /i/ and /e/ vary primarily by height rather than by backness. As would be expected in comparing a male speaker to female speakers F_1 and F_2 measurements for M2 typically have lower values than for F1 and F2. On the vowel chart this shows as all vowels being noticeably higher (a low F_1 being represented as a high vowel on the chart) and further back than those of the female speakers. As well, all vowels have less variation, with the standard deviation (indicated by the dotted circle) being much smaller in most cases. M2's vowels differ from all three of the other speakers in showing less diversity and forming a more compact pattern on the vowel chart.

4.3.3 Analysis

The combined results of the vowel analysis are presented in Figure 4.5 which shows the average value for each vowel, along with standard deviations. The formant values were first normalised (using the Lobanov normalisation algorithm provided by the Akustyk/Praat combination) to enable values from both male and female speakers to be combined in the one analysis.

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[11]Several words were not included in this speaker's analysis due to interference from background noises which hindered analysis.
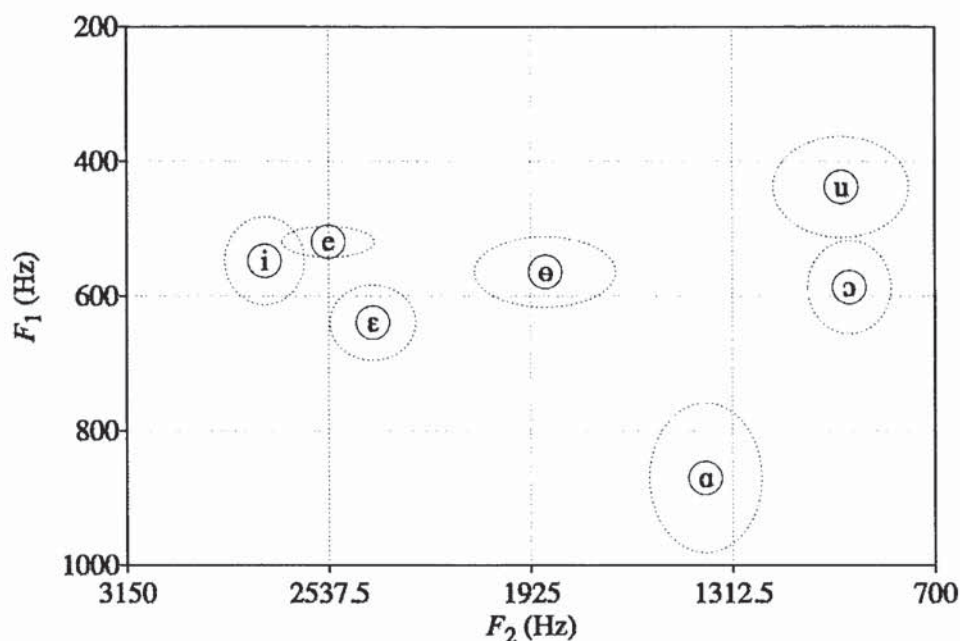
Figure 4.3: Vowel averages and standard deviations: speaker F2

This chart shows that the realisations of the two vowels /i/ and /e/ are extremely similar, as they show substantial overlap. However if we look at separate vowel charts for the male (Figure 4.6) and female (Figure 4.7) speakers the distinction becomes much clearer. While there is some variation in overall height, with the female vowels having higher F_1 values, the most interesting items are the high front vowels /i/ and /e/, which manifest in quite different ways for speakers, depending on their gender. For the female speakers /i/ and /e/ differ primarily in their degree of backness (although they overlap considerably) whereas for the male speakers they differ mainly by height. Thus, while these two vowels differ substantially in how they are realised by individual speakers, they remain distinct phonemes, as indicated by the minimal pair analysis in §3.3.2. This situation may simply be a feature of the speech of the particular two female informants who provided the tokens for this study, but it is quite possible that it is representative of the Wutung community as a whole. A similar result was found by (Henton 1992:Figure 3) for British English Received Pronunciation (RP) and British English Modified Northern (MN). Based on samples of forty speakers of each dialect, half of whom were female, for male speakers
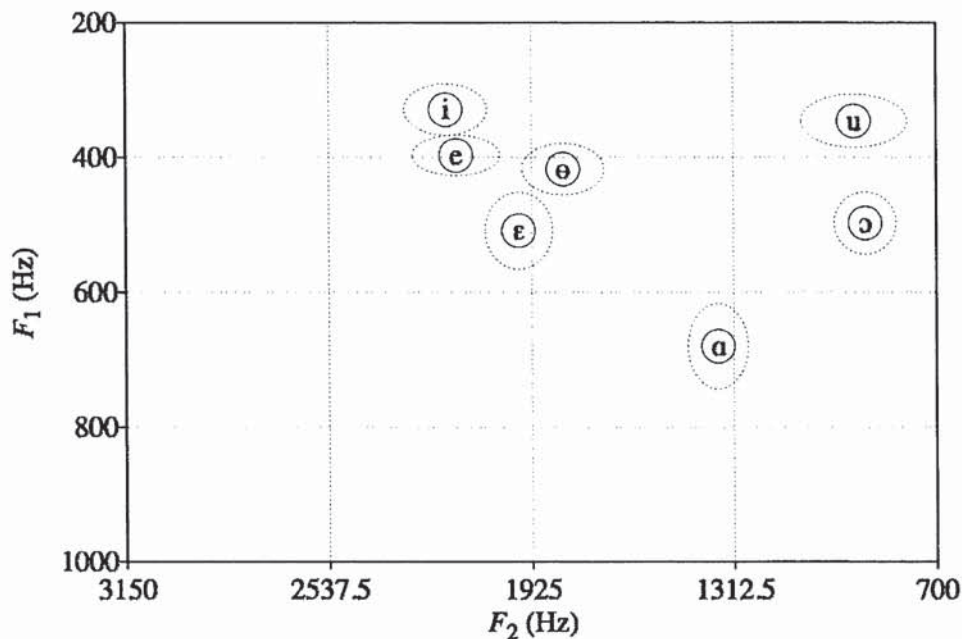
Figure 4.4: Vowel averages and standard deviations: speaker M2

of both dialects the vowels i and ɪ differed both in height and backness (i.e. F_1 and F_2), whereas for females they differed only in backness (F_2). This suggests there may be some cross-linguistic tendency for female speakers to contrast close front vowels more by backness than by height, although Henton (1992) otherwise shows that the female vowel space tends to differ from that of males by varying more in the height (F_1) dimension (the result that female speakers tend to be more 'open-mouthed' in their vowel articulations).

Overall, this supports the phonemic analysis of Wutung as having the seven oral vowels /i/, /e/, /ɛ/, /a/, /ɔ/, /u/ and /ɵ/, although the contrast between /i/ and /e/ is, as discussed, variable in the phonetic details of its realisation. It also demonstrates that the choice of the IPA symbol [ɵ] to represent the central vowel is entirely justified, this analysis showing that it is indeed close-mid and central, although it also has a realisation as the higher [ʉ].

It is possible that one of the pairs of speakers, male or female (or, conceivably, all four) are not representative of the Wutung population, but determination of this will require a larger sample of the population be studied.

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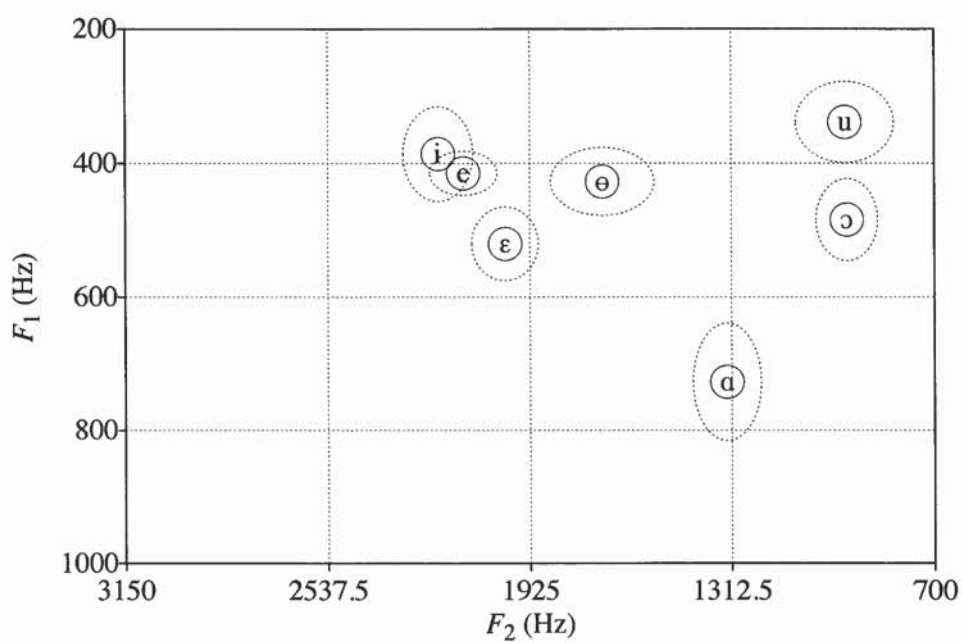
Figure 4.5: Averages and standard deviations (normalised): all speakers
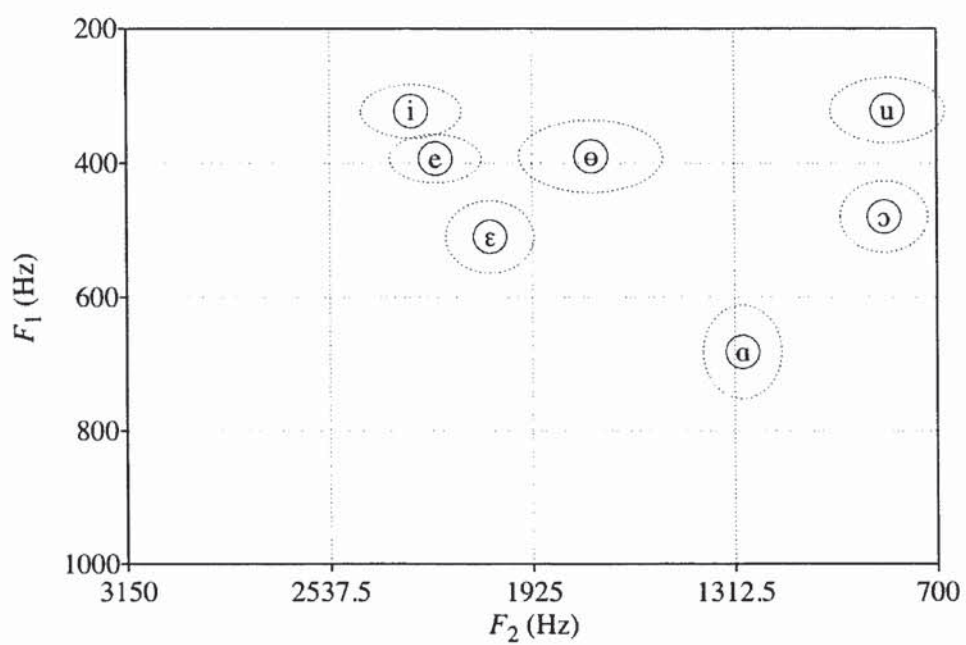
Figure 4.6: Averages and standard deviations: male speakers
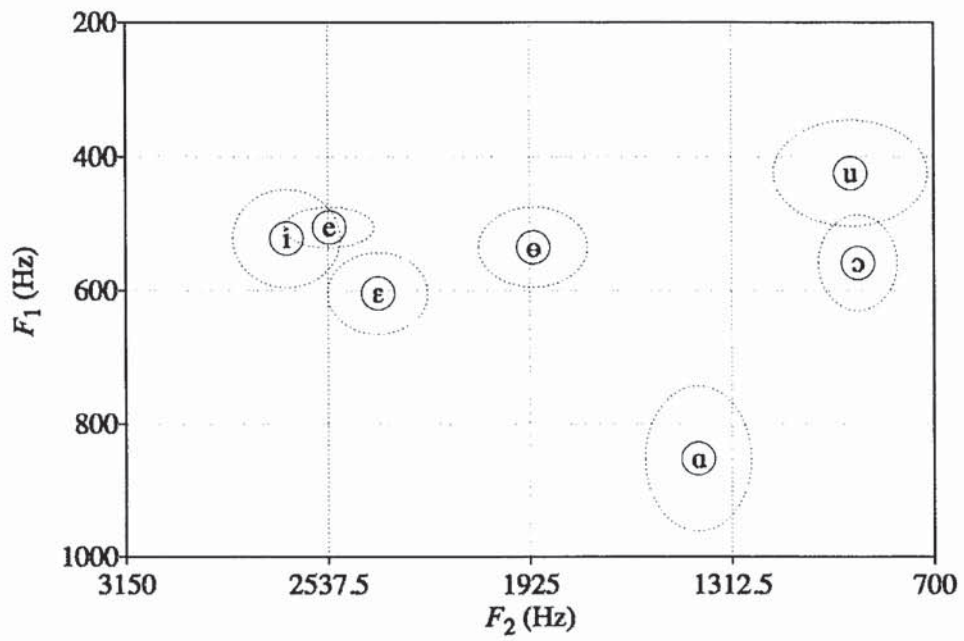
Figure 4.7: Averages and standard deviations: female speakers

4.4 Voice onset time of plosive consonants

4.4.1 Dataset and methodology

There are three pairs of segments which have been analysed as contrasting solely in the presence or absence of voicing (§3.2.1). These sets of segments, which have been grouped together under the term 'plosives' (see §3.2.1), comprise the stop pairs p/b and t/d, and the affricate pair c/j: they are presented in Table 4.7.

Table 4.7: Pairs of segments which contrast primarily by voicing

	voiceless	voiced
bilabial stop	p	b
apico-alveolar stop	t	d
lamino-alveolar affricate	c	j

Although the contrast can be clearly heard, and gives the impression of being a voiced/unvoiced contrast, the precise nature of this distinction can only be truly determined by acoustic analysis and by determining the voice onset timing typical for each series. As affricates appear to participate in much the same voicing contrast as stops, analysis will be made of their their VOT; however, as their articulation potentially differs in significant ways from that of stops they will be dealt with separately.

Voice onset time (VOT) is defined by Ladefoged (2003:94) as the interval between the release of the consonant (usually a stop) and the start of voicing on the following vowel. There are three basic categories of VOT: the start of voicing may coincide with release of the stop; there may be some gap after the release burst, during which aspiration occurs, followed by the start of vowel voicing; or voicing may begin before stop release. Languages typically may make a contrast employing any or all of these three positions, or alternatively may use points in between as these form a continuum of possibilities.

The words used for the analysis of VOT are shown in Table 4.8. This list of words is drawn from those recorded for vowel analysis (with four speakers, as described in §4.2.1). As far as possible the consonants in question are word-initial however in some cases suitable words are not available so there are some which contain an intervocalic consonant.

Table 4.8: Words used in VOT analysis

−vC	gloss	+v C	gloss
pi	1Sg/3Sg.F.get		
napey	bush knife	bey	2sg/3sgM.do
pe	house	be	take.IMP
pa	and	qbaqba	hit him
pa	person		
popo	uncle	bo	3sgM.rub
niepo	myself		
pu	greens	hmbu	stone
ti	do	di	fought
ti	handle		
tey	3pl	dey	did
		de	chopped
		da	harvested
to	language	do	rubbed
to	seed		
tur	money	dur	threw away
tu	bush border	du	come
		du	got
ci	she did it	ji	fought
ci	tapa cloth		
cey	she	jey	shake
ceyca	wobbly	jeyja	shaking
ce	chopped		
ce	collected		
ca	dug		
ca	pig		
ca	wash		
ca	water		
co	rub	jo	grown wrongly
cu na	scream	juwa	collect greens
		juwa	rub off
cur	blowhole		
cur	come out	jur	all of them

Every word in Table 4.8 was recorded four times from each speaker: three times in a row as citations then once as part of a sentence (in the frame described in §4.2.1). Measurements were made of the VOT of two tokens for each word: the second citation example and the sentence frame example. Where these two were in close agreement the figure used in VOT calculations is that from the citation example. Where there was disagreement between these two measurements the other two (citation) tokens were also measured and the figures presented below are averages based on all four of the measurements (but excluding any that are obviously problematic).

The measurements were made by displaying the audio signal of the word being analysed in the acoustic analysis software (Praat) in two forms: as an amplitude-time waveform and as a spectrograph, these two displays being temporally aligned. The VOT measurements were taken by identifying two points, the release burst of the consonant and the point of the beginning of voicing, and then measuring the time difference between them. The precise location of the measurements is from the beginning of the release of the stop (or affricate) to the zero-crossing in the waveform at the beginning of the first clear vocal fold vibration. The moment of consonant release is counted as zero time: if voicing begins after this point the measurement will be positive while if voicing begins before then it will be negative. All measurements are in milliseconds. It should be mentioned that there are some difficulties inherent in making such measurements due to the fact that the onset of vocal fold vibration is determined solely by waveform analysis rather than by some more direct method of observation of the vocal folds.

4.4.2 VOT analysis of stops

4.4.2.1 Stop VOT data

Tables 4.9, 4.10, 4.11 and 4.12 present the VOT measurements for the four speakers, F1, M1, F2 and M2, in that order. These tables are organised by initial consonant with voiceless and voiced counterparts adjacent. All time measurements are in milliseconds: Gaps indicate there is no appropriate word recorded. '−vC' indicates the voiceless consonants while '+vC' indicates the voiced consonants. Some comments are given where there are individual peculiarities or difficulties in making the VOT measurements.

F1 is the individual whose speech might be expected to be atypical as she grew up in the neighbouring village of Musu which has a speech variety closely related to Wutung and mutually intelligible with it, but differing in a number of respects (see §1.11). As

Table 4.9: Stop VOT measurements: speaker F1

−vC	VOT (ms)	+vC	VOT (ms)
pi	8		
napey	12	bey	−130
pe	10	be	−107
pa	7	qbaqba	−73
pa	13		
popo	14	bo	−143
niepo	12		
pu	19	hmbu	−60
ti	24	di	−113
ti	15		
tey	20	dey	−139
		de	−128
		da	−188
to	20	do	−162
to	15		
tur	14	dur	−138
tu		du	−126
		du	−164

these two varieties differ phonologically, one might expect the acoustic data from F1 to differ from that of the other speakers. However, this is not the case. In fact, the data from F1 shows none of the idiosyncrasies found in that of some of the other speakers.[12]

In several cases tokens from M1 (Table 4.10) with an initial voiced consonant showed no detectable release spike; this occurred, for example, on *bo* 'rub'. As a result in these cases it was not possible to measure the VOT although it was clear from the waveform that had the measurement been possible it would have been large and negative. In every case at least one of the other tokens for the same word did have a sufficiently visible release spike to enable measurements to be taken. This lack of a release spike on voiced consonants was not found with any of the other speakers.

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[12]Other speakers of Wutung agreed that her use of the language was quite normal.

Table 4.10: Stop VOT measurements: speaker M1

−v C	VOT (ms)	+v C	VOT (ms)
pi	13		
napey	9	bey	−147
pe	5	be	−88
pa	15	qbaqba	−68
pa	10		
popo	21	bo	−104
niepo	19		
pu	18	hmbu	−47
ti	21	di	−108
ti	24		
tey	18	dey	−120
		de	−77
		da	−86
to	17	do	−98
to	20		
tur	13	dur	−126
tu	20	du	−116
		du	−128

As with F1 and M1, F2 (see Table 4.11) typically shows a small or virtually zero VOT on words with an initial voiceless consonant, e.g. *pa* CONJ and *ti* 'do'. Unlike the other speakers however the /p/-initial (i.e. voiceless, in contrast to M1, as described above) citation tokens recorded by F2 often show almost no release spike. Another feature of F2's tokens was that they occasionally show complete stopping of a voiced consonant before release, resulting in a voiceless phase within a voiced stop. This occurred for example in the sentence frame token of *be* 'take it'. What appears to have happened in such cases is that the subglottal and oral pressures have equalised rapidly enough that voicing cannot continue, although glottal activation continues. While this is not an uncommon feature cross-linguistically (Johnson 1997:131–133) it was only found with two of the present speakers.

Table 4.11: Stop VOT measurements: speaker F2

−v C	VOT	+v C	VOT
pi	10		
napey	13	bey	−111
pe	14	be	−102
pa	9	qbaqba	−88
pa	9		
popo	11	bo	−111
niepo	27		
pu	22	hmbu	−93
ti	2	di	−108
ti	10		
tey	5	dey	−76
		de	−106
		da	−114
to	9	do	−128
to	10		
tur	15	dur	−103
tu	11	du	−137
		du	−130

Table 4.12: Stop VOT measurements: speaker M2

−v C	VOT	+v C	VOT
pi	3		
napey	21	bey	−83
pe	8	be	−126
pa	10	qbaqba	−46
pa	6		
popo	12	bo	−102
niepo	10		
pu	6	hmbu	−75
ti	14	di	
ti	25		
tey	16	dey	−145
		de	−100
		da	−59
to	9	do	−125
to	7		
tur	17	dur	−100
tu	12	du	−145
		du	−96

4.4.2.2 Stop VOT: analysis and discussion

Tables 4.13, 4.14, 4.15 and 4.16 show summary statistics for the stop VOT times measured from speakers F1, M1, F2 and M2, respectively. Figures 4.8, 4.9, 4.10 and 4.11 show boxplots of these stop VOT measurements for the same speakers.[13] The boxplots, also known as 'box-and-whisker' plots, conveniently present the five-number summary for each dataset: the lower quartile (represented by the lower edge of the box, or 'lower hinge'), the median (the line through the middle of the box), the upper quartile (indicated by the upper hinge) and the the lowest and largest observations, both of which are connected to the box by 'whiskers'.[14] The boxes are drawn with widths proportional to the square-roots of the number of observations in each group so as to give a visual representation of the sample sizes.

Table 4.17 shows summary statistics based on the combined stop VOT data from the four speakers while Figure 4.12 shows the boxplots of the combined data. As expected, the statistics and boxplots based on the combined data shows precisely the same contrast as found in the individual statistics and boxplots: a clear distinction between the VOT of the two stop series, with the 'voiced' series having a very early onset of glottal vibration, coincident with the beginning of the stop closure, possibly even preceding it. The boxplots show that there is no overlap between the VOT times within each voiced/voiceless pair. In fact, there is no overlap at all between the voiced and voiceless stops, although the ranges are much greater than for the individual datasets. The 'voiceless' series shows a clear and consistent pattern of voicing beginning after release of the stop. In most cases this release is so soon after the release that it would be perceived by hearers as coincident with it.

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[13] Both the calculations presented in the tables of summary statistics and the boxplots were produced using R (R Development Core Team 2006), a free environment for statistical computing and graphics. I am grateful to the creators of R for making this powerful, free statistical package available. More information on R can be found at http://www.r-project.org/.

[14] In the standard definition of a boxplot the 'lowest' and 'largest' observations are restricted to those lying no more than 1.5 times the interquartile range (the height of the box) away from the sides of the box (i.e. the lower and upper quartiles), with any values further away being considered 'outliers' and indicated by circles unconnected to the box or whiskers. I have chosen to have the whiskers end at the true highest and lowest observations as this emphasises the fact that there is no overlap between the distributions, and strongly supports the interpretation that they represent distinct populations.

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Table 4.13: Summary statistics for stop VOT: speaker F1

	pV	bV	tV	dV
Min.	7.00	-143.0	14.00	-188.0
1st Qu.	9.50	-130.0	15.00	-162.5
Median	12.00	-107.0	15.00	-138.5
Mean	11.88	-102.6	17.57	-144.8
3rd Qu.	13.25	-73.0	20.00	-127.5
Max.	19.00	-60.0	24.00	-113.0
NA's		3.0	1.00	

Particularly noteworthy in the data from F1, and also found in the data from the other speakers, is that the voiceless stops have a much smaller range of variation than the voiced.
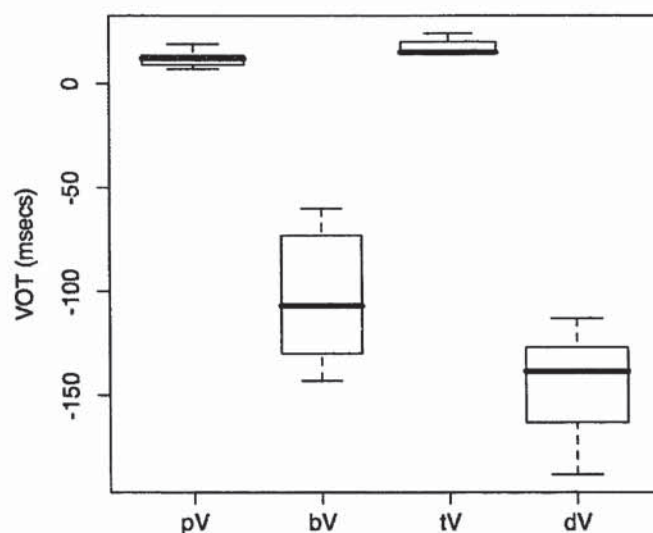
Figure 4.8: Box-plot of stop VOT: speaker F1

The most immediately obvious point about the VOT measurements is that those associated with the voiced series of stops are negative, with the smallest interval between voicing onset and stop release being 60 ms. All measurements show that voicing begins well before stop release (hence the negative measurements), and possibly even before the beginning of closure for the stop (although it is difficult to be certain about this without

Table 4.14: Summary statistics for stop VOT: speaker M1

	pV	bV	tV	dV
Min.	5.00	-147.0	13.0	-128.0
1st Qu.	9.75	-104.0	17.5	-121.5
Median	14.00	-88.0	20.0	-112.0
Mean	13.75	-90.8	19.0	-107.4
3rd Qu.	18.25	-68.0	20.5	-95.0
Max.	21.00	-47.0	24.0	-77.0
NA's		3.0	1.0	
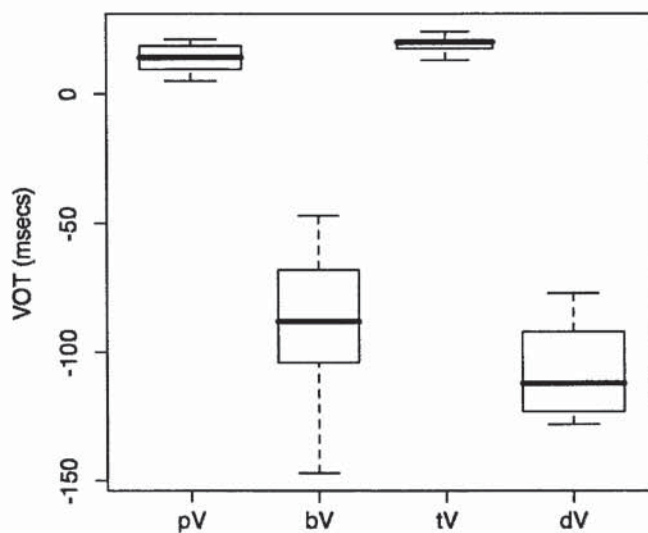
Figure 4.9: Box-plot of stop VOT: speaker M1

video of the lips synchronised with the audio). Mark Donohue (pers. comm.) has pointed out that the syllable structure proposed in Figure 3.12 provides an explanation for this extremely early voicing. The leftmost slot in the onset structure is reserved for glottals; voicing is a glottal gesture and so is able to occupy this slot. This enables it to begin substantially before the actual voiced consonant gesture is underway.

The voiced consonants show glottal activity that continues throughout the stop closure phase. The waveform shows that, beginning in about the middle of the stop, glottal activity begins to weaken, with the amplitude of the glottal pulses decreasing and their shape changing. This is caused by the increase in oral pressure which is due to the stop

Table 4.15: Summary statistics for stop VOT: speaker F2

	pV	bV	tV	dV
Min.	9.00	-111	2.000	-137.0
1st Qu.	9.75	-111	7.000	-128.5
Median	12.00	-102	10.000	-111.0
Mean	14.38	-101	8.857	-112.8
3rd Qu.	16.00	-93	10.500	-105.2
Max.	27.00	-88	15.000	-76.0
NA's		3	1.000	
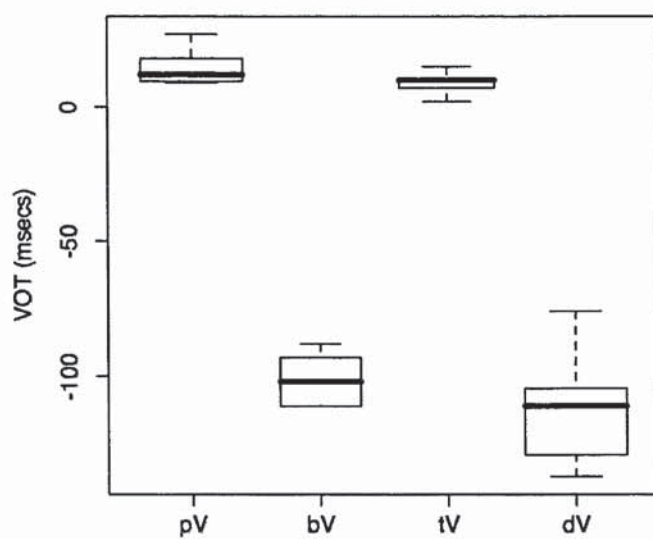
Figure 4.10: Boxplot of stop VOT: speaker F2

Table 4.16: Summary statistics for stop VOT: speaker M2

	pV	bV	tV	dV
Min.	3.0	-126.0	7.00	-145.0
1st Qu.	6.0	-102.0	10.50	-130.0
Median	9.0	-83.0	14.00	-103.5
Mean	9.5	-86.4	14.29	-109.6
3rd Qu.	10.5	-75.0	16.50	-99.0
Max.	21.0	-46.0	25.00	-59.0
NA's		3.0	1.00	
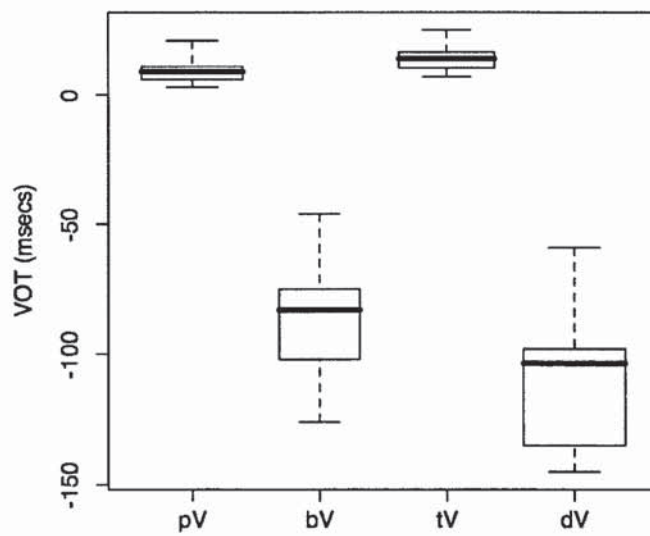
Figure 4.11: Boxplot of stop VOT: speaker M2

Table 4.17: Summary statistics for stop VOT: all speakers

	pV	bV	tV	dV
Min.	3.00	-147.0	2.00	-188.0
1st Qu.	9.00	-111.0	10.75	-131.8
Median	11.50	-97.5	15.00	-118.0
Mean	12.38	-95.2	14.93	-118.6
3rd Qu.	14.25	-74.5	20.00	-102.2
Max.	27.00	-46.0	25.00	-59.0
NA's		12.0	4.00	
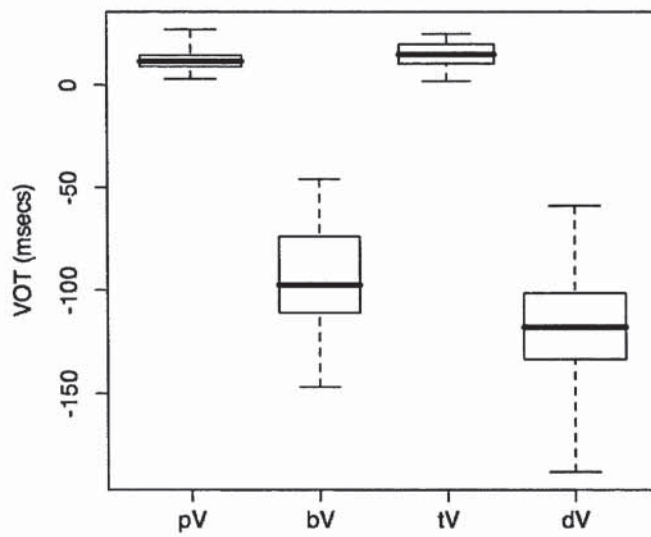
Figure 4.12: Boxplot of stop VOT: all speakers

remaining closed. As oral pressure approaches the same level as sub-glottal pressure the airflow diminishes, producing the changes in the waveform. Although this is not audible it is obvious in the waveform. The stop release occurs before complete equalisation of oral and sub-glottal pressure (and the concomitant cessation of voicing) with voicing continuing throughout and carrying on into the vowel. This can be seen quite clearly in Figure 4.13 which shows the word *be* '2SG/3SG.M.take' ('You took him/it'). The waveform comprises two parts: the stop and the vowel, and displays the spectrograph at the top with an amplitude-time waveform beneath. The stop comprises three parts: the initial strongly voiced phase, the reduction in glottal activity commencing about half-way through the stop (and appearing to be about to cease as burst is attained), and the release burst followed by a brief period during which glottal activity again accelerates, culminating in the vowel. The vertical line in the Figure indicates the beginning of the vowel.
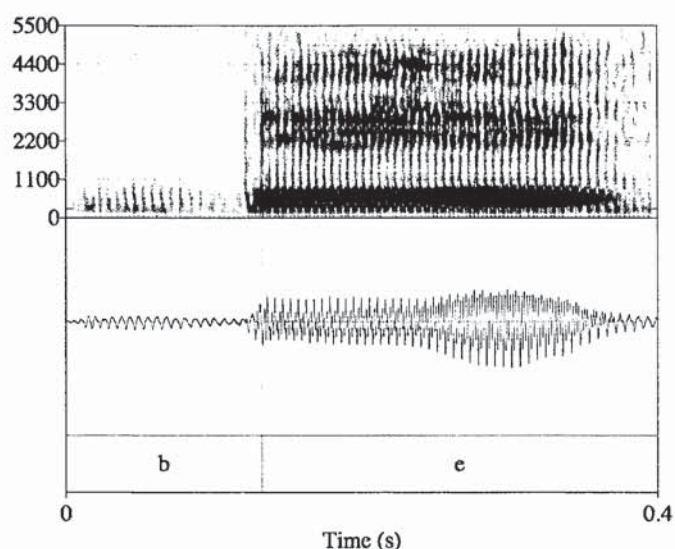
Figure 4.13: Waveform of *be* '2SG>3SG.M.take': speaker F1

Figure 4.14 shows the spectrograph and waveform for the word *tey* 'they', with the portions corresponding to the phonemes /t/ and /ey/ indicated. The spike of the release burst is clearly visible at the end of the stop phase, late in /t/ and immediately preceding the start of the vowel. Also evident is the brief period of aspiration following stop release.

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Comparing the figures for /be/ and /tey/ the earlier onset of voicing (well before stop release) in the voiced phoneme is clear.
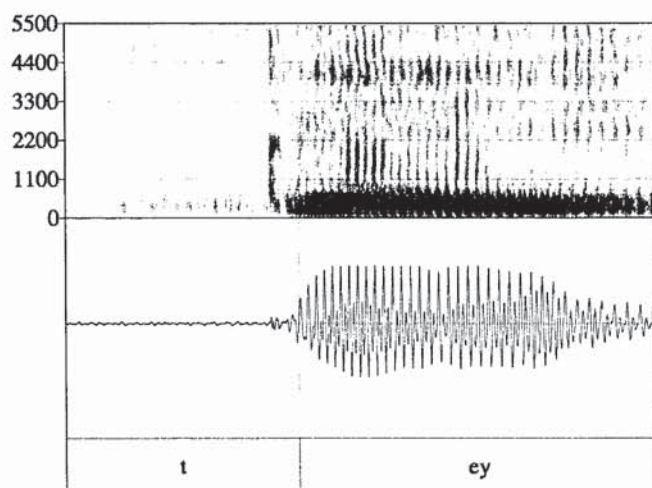
Figure 4.14: Waveform of *tey* '3SG.M (they)': speaker M1

The use of VOT as a salient acoustic measurement that enables the categorising of stop consonants was first proposed by Lisker & Abramson (1964), a cross-linguistic study of voicing of initial stops in eleven languages. They found that VOT distributions are trimodal with ranges centering at -100 ms, $+10$ ms and $+75$ ms, categories which they termed 'lead', 'short lag' and 'long lag', respectively. Many languages with two series of stops will differ as to which of the three VOT categories is used: English has short-lag and long-lag stops while those in Spanish are lead and short-lag. From the measurements presented herein it can be seen that Wutung stop consonants are lead and short-lag, with the means for the VOT for stops of each type, and for each individual, being very close to the canonical numbers given above.

Precise analysis of the voiced stops in the sentence frame is very difficult. As Wutung words end only in vowels the voiced stops are preceded by a vowel and so there is continuous voicing from the vowel, through the stop and into the next vowel. The spectrogram makes it easier to identify the vowel to consonant transition. However as the preceding vowel is nasalised, the formants are fainter (in particular F1) and there is extra energy in some of the space between formants. This all makes finding the transition from

the nasal vowel to the voiced stop problematic. This problem also applies to *hmbu* which has a voiced nasal consonant preceding the voiced stop. This produces a continuous pattern of glottal activity which is very difficult to distinguish from the voicing that occurs during the voiced stop. As well, the gap between the stop release burst and the start of the following vowel is much shorter in the sentence examples. Nonetheless the same glottal quality is found throughout this transition, with the amplitude of the waveform diminishing throughout the closure phase of the stop.

An acoustic analysis cannot be used to prove a phonemic contrast, but may be used to explain what underlies a demonstrated contrast such as that between voiced and voiceless consonants. This analysis of voice onset timing for stops shows a clear and consistent contrast in voice onset timing which correlates with the already demonstrated phonemic contrast. This is strongly supported by a statistical analysis of the data. As the voiced and unvoiced datasets clearly differ substantially in both mean and standard deviation the t-test is inappropriate. For this reason an analysis was undertaken using the Kolmogorov-Smirnov (the K-S test) test, which unlike the t-test does not require that the samples have similar standard deviations. As well, the K-S test is nonparametric and so does not require that the samples follow a normal distribution.[15] The data was analysed by stop pair (p/b and t/d) and was pooled by gender, as there is some evidence in the literature that VOT can vary with gender.

A Female speakers, p/b and t/d comparisons K-S tests were carried out using the pooled data for the stop pair /p/ and /b/, and that for /t/ and /d/, from the two female speakers. These tests gave the following results:

/p/ and /b/ K-S test statistic (D) = 1.00 with p = 0.000. This is very strong indication that the two datasets, for /p/ and /b/, comprise two distinct populations, i. e. two phonemes.

/t/ and /d/ K-S test statistic (D) = 1.00 with p = 0.000. This is very strong indication that the two datasets, for /t/ and /d/, comprise two distinct populations, i. e. two phonemes.

B Male speakers, p/b and t/d comparisons K-S tests were carried out using the pooled data for the stop pair /p/ and /b/, and that for /t/ and /d/, from the two female speakers. These tests gave the following results:

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[15]It was initially thought to be likely that they do so however the K-S test showed that at least one of the datasets does not conform to a normal distribution

/p/ and /b/ K-S test statistic (D) = 1.00 with p = 0.000. This is very strong indication that the two datasets, for /p/ and /b/, comprise two distinct populations, i. e. two phonemes.

/t/ and /d/ K-S test statistic (D) = 1.00 with p = 0.000. This is very strong indication that the two datasets, for /t/ and /d/, comprise two distinct populations, i. e. two phonemes.

Figure 4.15 presents a schematic representation of the VOT continuum with the position of Wutung stops indicated; English stop positions are included for comparison (figure adapted from Khattab (2000:96)).

<u>English stops</u>

		b d g	p t k
lead	0	short	long
voicing		lag	lag

<u>Wutung stops</u>

b d		p t	
lead	0	short	long
voicing		lag	lag
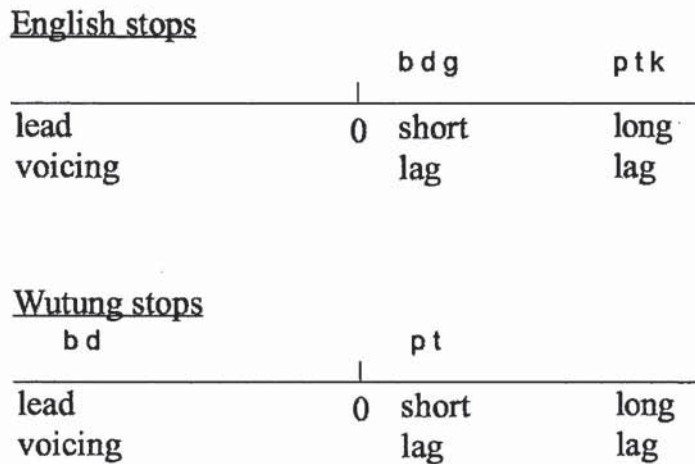
Figure 4.15: Schematic display of VOT continuum, comparing Wutung and English stop VOT

4.4.3 VOT analysis of fricatives

4.4.3.1 Affricate VOT data

Affricates consist of a stop phase followed by a fricative phase. While this fricative phase is analogous to the aspiration or VOT phase in stop consonants it makes affricates phonetically quite different to stops. The measurements taken were of the duration of the two phases, the stop and the fricative, the latter beginning with stop release and ending with the onset of the following vowel. In the voiceless affricate /tʃ/ the stop phase is voiceless while in the voiced affricate /dʒ/ the stop phase is voiced, at least partially. In both however the fricative is voiceless.

Table 4.18: Affricate VOT measurements: speaker F1

−vC	VOT	+vC	VOT
ci	80	ji	−171
ci	96		
cey	85	jey	−169
ceyca	70	jey(ja)	−120
ce	71		
ce	89		
ca	82	(jey)ja	−78
ca	70		
ca	57		
ca	60		
co	75	jo	−185
cu na	61	juwa	−155
		juwa	−138
cur	86		
cur	66	jur	−136

F2 showed occasional aberrant /j/ affricates which were produced with little or no voicing either in the stop phase or the fricative phase.

Table 4.19: Affricate VOT measurements: speaker M1

−v C	VOT	+v C	VOT
ci	81	ji	−115
ci	62		
cey	81	jey	−78
ceyca	46	jeyja	−80
ce	40		
ce	70		
ca	62		
ca	61		
ca	39		
ca	82		
co	60	jo	−79
cu na	62	juwa	−135
		juwa	−114
cur	72		
cur	46	jur	−104

Table 4.20: Affricate VOT measurements: speaker F2

−v C	VOT	+v C	VOT
ci	39	ji	−91
ci	36		
cey	39	jey	−80
ceyca	47	jeyja	−86
ce	44		
ce	48		
ca	35		
ca	50		
ca	35		
ca	32		
co	30	jo	−114
cu na	37	juwa	−118
		juwa	−122
cur	38		
cur	30	jur	−117

Table 4.21: Affricate VOT measurements: speaker M2

−vC	VOT	+vC	VOT
ci	55	ji	−148
ci	64		
cey	61	jey	−15
ceyca	60	jeyja	−162
ce	67		
ce	65		
ca	65		
ca	58		
ca	56		
ca	60		
co	38	jo	−105
cu na	63	juwa	−38
		juwa	−94
cur	65		
cur	40	jur	−106

4.4.3.2 Affricate VOT: analysis and discussion

As with the stops affricate VOT was measured from release to the onset of voicing. Whereas for stops release is the start of the aspiration phase, for affricates it is the start of the fricative phase. As voicing begins during (or perhaps even before) the stop phase of voiced affricates the value of VOT is negative. Voicing ceases during much of the fricative phase of the affricate so VOT could conceivably be measured from the onset of the fricative phase to the beginning of voicing following this, however this would produce a result at odds with the measurements for voiced stops.

The following tables and figures present the affricate VOT summary statistics and boxplots for the four speakers F1, M1, F2 and M2, in that order.

Table 4.22: Summary statistics for affricate VOT: speaker F1

	cV	jV
Min.	57.00	-185.0
1st Qu.	67.00	-169.5
Median	73.00	-146.5
Mean	74.86	-144.0
3rd Qu.	84.25	-132.0
Max.	96.00	-78.0
NA's		6.0

The data from F1 shows a substantial gap between the voiced and voiceless VOT ranges. In this respect F1's data is representative of the four speakers, with the exception of M2 (see below). The F1 data also shows that the variation in VOT for the voiceless affricate is much less than that for the voiced. This is also true of the data from the other three speakers.

The boxplot of VOT measurements from M2 shows the smallest gap between the voiced and voiceless datasets of any of the speakers, being 53 msecs; the next smallest gap is 84 msecs for M1. Nevertheless there is a clear distinction between the two datasets for M2.

Table 4.26 shows the summary statistics calculated for all speakers while Figure 4.26 shows a boxplot of the combined affricate voice onset timing data for all four speakers. As with the equivalent descriptions of the stop VOT data this combined summary is
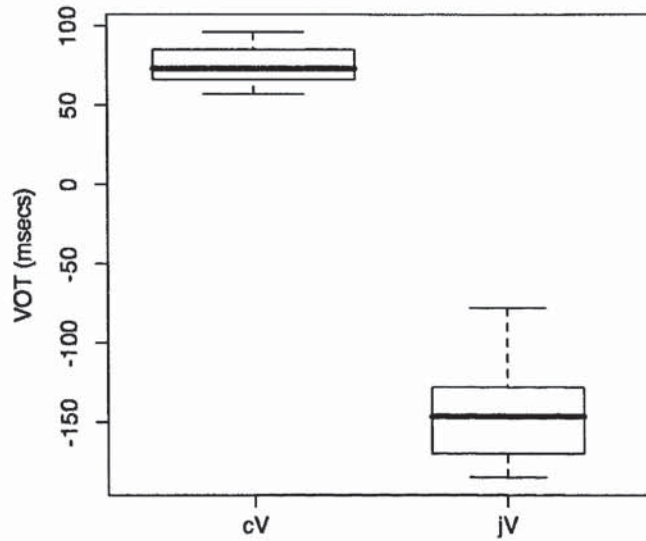
Figure 4.16: Box-plot of affricate VOT: speaker F1

Table 4.23: Summary statistics for affricate VOT: speaker M1

	cV	jV
Min.	39.00	-135.00
1st Qu.	49.50	-114.25
Median	62.00	-92.00
Mean	61.71	-93.75
3rd Qu.	71.50	-78.75
Max.	82.00	-45.00
NA's		6.00
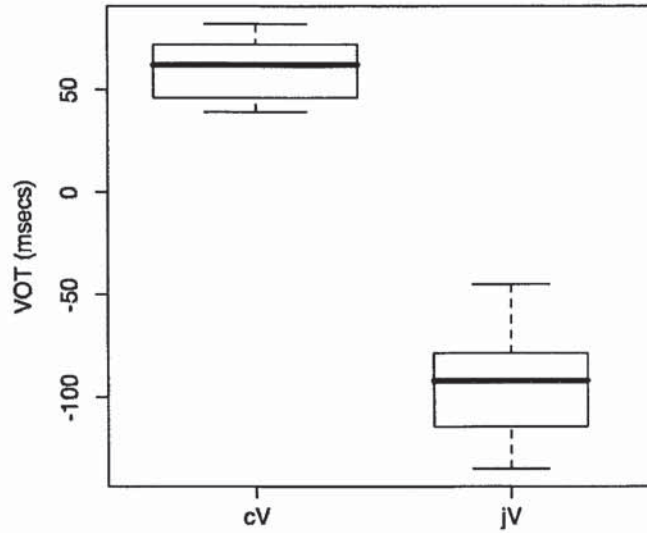
Figure 4.17: Box-plot of affricate VOT: speaker M1

Table 4.24: Summary statistics for affricate VOT: speaker F2

	cV	jV
Min.	30.00	-122.0
1st Qu.	35.00	-117.2
Median	37.50	-102.5
Mean	38.57	-98.5
3rd Qu.	42.75	-84.5
Max.	50.00	-60.0
NA's		6.0
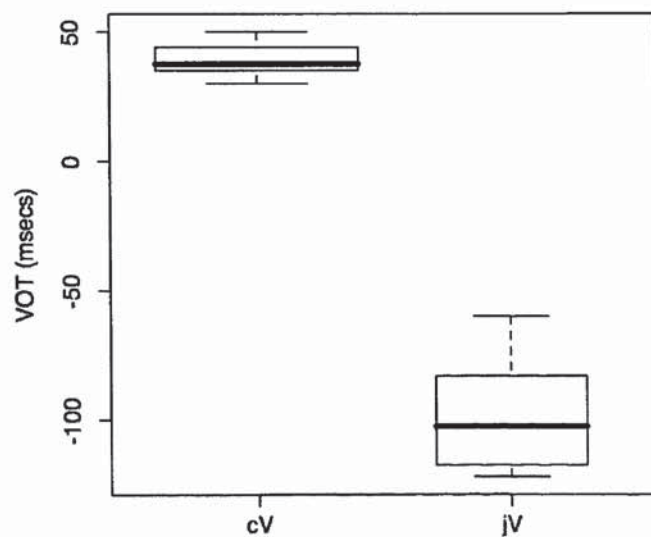
Figure 4.18: Boxplot of affricate VOT: speaker F2

Table 4.25: Summary statistics for affricate VOT: speaker M2

	cV	jV
Min.	38.00	-162.0
1st Qu.	56.50	-116.5
Median	60.50	-99.5
Mean	58.36	-92.5
3rd Qu.	64.75	-63.5
Max.	67.00	-15.0
NA's		6.0
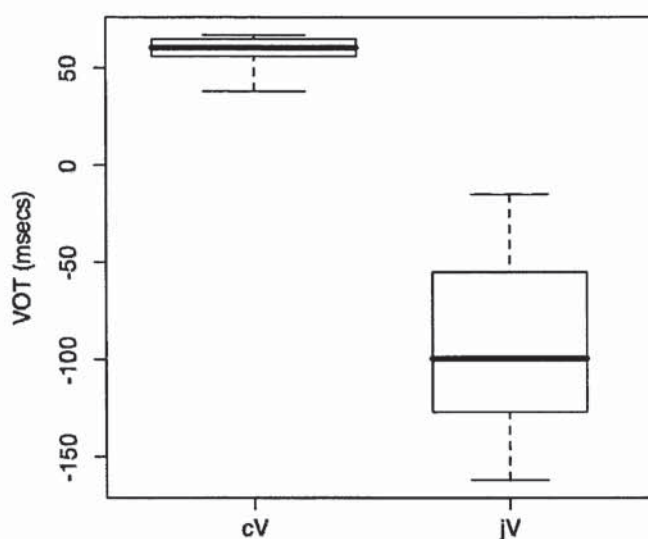
Figure 4.19: Boxplot of affricate VOT: speaker M2

indicative of the acoustic environment within which Wutung speakers operate. The boxplot in particular shows how this acoustic environment is not as clearcut as the individual data would indicate. While the means for the two affricates are wide apart at 58 msecs for /c/ and −92 msecs for /j/, the boxplot shows the outliers for both as being quite close, with the latest VOT for /j/ being −15 msecs and the earliest for /c/ being 30 msecs. While this difference is sufficient to allow a perceptual contrast it shows the possibility of occasional utterances in which the contrast is not made clear. Nevertheless, the means for the two are over 150 msecs apart so for most utterances the two affricates will be very distinct. Certainly my own perceptions were that the early onset of voicing for the voiced segment was very obvious and distinctive. In fact it is not uncommon for voicing to be quite clearly heard beginning before closure of the stop phase, as evident from the extreme value of −185 msecs as the earliest recorded VOT for /j/.

The voiceless affricate tokens, which have a stop phase followed by release and then the fricative phase, show a long VOT compared with the voiceless stops. This is clearly visible in Figure 4.21, which shows the word *ca* 'pig'. Also voiceless affricates show a much greater variation of VOT than the voiceless stops.

The voiced affricate (an example waveform and spectrograph is shown in Figure 4.22) typically shows a weaker release burst than the voiceless. It also shows a much greater range in VOT than the voiceless affricate, parallel to the situation for the stops. The

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Table 4.26: Summary statistics for affricate VOT: all speakers

	cV	jV
Min.	30.00	-185.00
1st Qu.	43.00	-135.25
Median	60.50	-110.00
Mean	58.38	-107.19
3rd Qu.	70.00	-79.75
Max.	96.00	-15.00
NA's		24.00
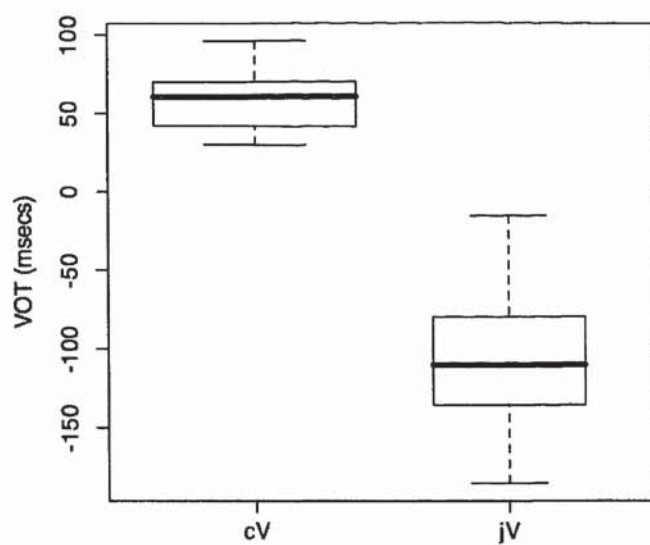
Figure 4.20: Boxplot of affricate VOT: all speakers

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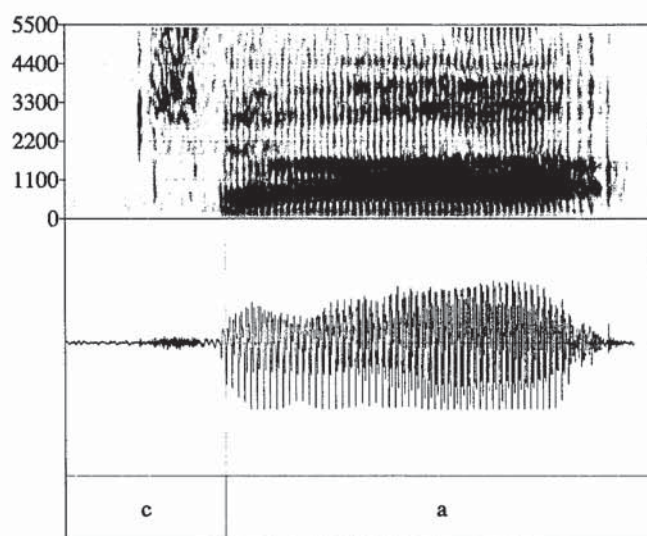
Figure 4.21: Waveform of *ca* 'pig': speaker F1

ranges of VOT for the two affricates, across all speakers, shows a gap of 45 msecs, much
the same as that found with the stops (48 msecs),

On the spectrogram for the voiced affricate /j/ the stop and fricative phases are both
very clear, as would be expected, however the fricative phase often has no voicing. This
is particularly the case for F1; every /j/ token recorded from this speaker shows a very
early onset of voicing with it ceasing altogether during the fricative phase. The same is
true but to a lesser extent for M1, whose tokens of /j/ sometimes show the early onset of
voicing (i.e. probably before stop closure) together with a voiceless period, sometimes
very brief, during the fricative. This feature is highly variable though; it is not unusual
for two tokens of the same word to show one with this feature and one without. For these
two speakers stop closure is held sufficiently long that glottal activity virtually stops due
to equalisation of sub-glottal and oral pressure. For F1 this effect is extreme enough that
voicing ceases during the stop phase and from this point on the phoneme is virtually
identical to the voiceless affricate /c/. Following this voiceless phase (which lasts nearly
as long as the voiced phase) there is a brief burst followed by the fricative phase. This
phase lasts about as long as the voiceless stop phase, i.e. a little shorter than the voiced
stop phase. Figure 4.23 shows an example waveform and spectrogram of this.
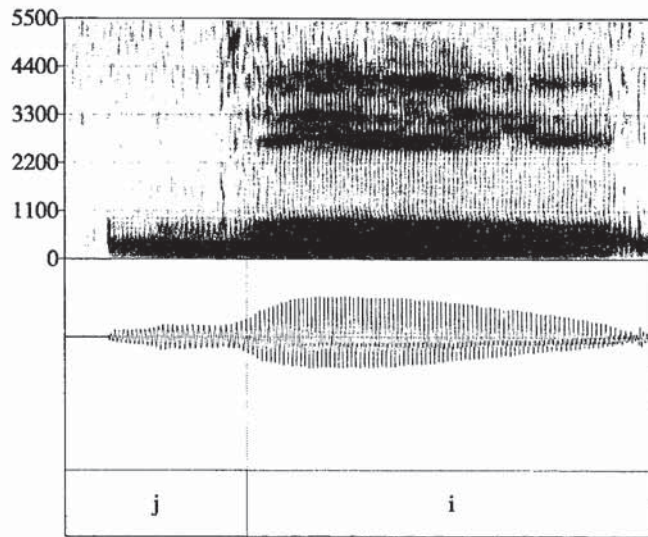
Figure 4.22: Waveform of *ji* 'fought': speaker F2
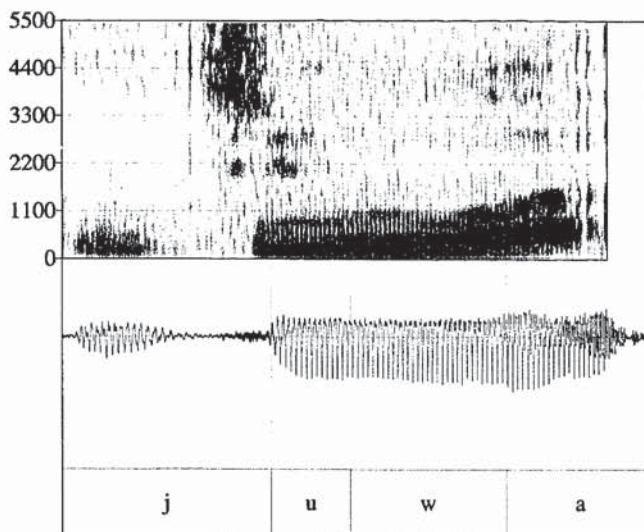
Figure 4.23: Waveform of *juwa* 'rub off': speaker F1

This form of /j/ is typical of the tokens recorded from F1, but is also found in the tokens from M2 and, more sporadically, in those from F2.

Possible phonetic representations of this phoneme would be [dʧ], or alternatively, [ddʃ]. The phoneme begins with [d], but as the close phase continues glottal activity decreases until there is no voicing. There is continuing glottal activity, as is evident in the waveform, but this takes the form of aperiodic movements, so is best described as a voiceless [d] rather than [t]. The final phase of the phoneme is release and the period of fricative activity.

Chapter 5

Tone: phonology and phonetics

5.1 Introduction

This chapter presents an analysis of lexical tone in Wutung. The following analysis of tone is however highly restricted: intonation is not discussed in any systematic way although occasional comments on particular patterns are given, while stress, which is not lexically contrastive (and seems able to vary freely), has been discussed briefly in Section 3.6.

While the tone system of Wutung is broadly similar to that of its near neighbour Skou, as described by Donohue (2003b), it shows a number of differences in the details of how tone is manifested. Wutung employs word tones (melodies); there is an optional accent to which tone units are attracted and which is the mechanism by which the varying attested pitch patterns are produced. Although tone in Wutung plays no role in the grammar (unlike in Skou (Donohue 1997:346ff)) morphology has an effect on the realisation of tone; this is discussed in §5.5.6.3.

The discussion of tone in Wutung will make use of the standard mechanism of autosegmental theory, as developed originally by Leben (1978) and described in detail by Goldsmith (1990). A similar approach has been employed by Donohue (2003b) and Donohue & San Roque (2004) in descriptions of tone in other Sko family languages.

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5.2 Tone languages and their analysis

Pike (1948:3) describes a 'tone language' as one in which there is '...lexically significant, contrastive but relative pitch on each syllable.', where 'pitch' refers to perceptually salient variations in the fundamental frequency of the utterance. Pike couched this description in terms of the domain of contrastive pitch, in this case, the syllable. Welmers (1959:2) takes issue with Pike's definition of tone as being based on the syllable, providing his own definition of a tone language as '...a language in which both pitch phonemes and segmental phonemes enter into the composition of at least some morphemes.' This definition allows for tone languages in which at least some morphemes are not associated with a particular toneme and/or some tonemes are not associated with a particular set of segments (grammatical tone). Yip (2002:1) gives the definition 'A language is a "tone language" if the pitch of the word can change the meaning of the word', a definition that restates that of Welmers but in different terms. All languages have a pitch contour on words. Essentially, lexical tone is distinguished from the lexical realisation of intonation in non-tonal languages in that the pitch on a lexical item is determined by that item and not by the phrasal message.

It is useful at this point to clarify my use of the terms F_0, pitch and tone. F_0 is the fundamental frequency in an utterance which shows periodicity in the waveform. It results from periodic vibration of the vocal folds which produces vibrations in the column of air within the articulatory cavities. The articulatory cavity can produce resonance which amplifies (or diminishes) particular harmonics, a grouping of amplified harmonics (or spectral peak) being referred to as a 'formant'. Pitch is the perception of F_0 frequency and does not bear a straightforward relationship to F_0. One simple illustration of this is the fact that all vowels have an intrinsic F_0, that of high vowels being slightly higher while low vowels have an intrinsically lower pitch. This means that a high vowel produced with a given tone will have a higher actual F_0 than a low vowel produced with the same tone. Human perception accommodates for this so that the intrinsic variation is factored out (this is discussed in some detail in Rose (1989)). The final, phonemic tone that a native-speaking hearer perceives (and which is one of the cues assisting them to determine what lexical item is being spoken) is based on that hearer's perception of the pitch level of an utterance and may be affected by many things including the intensity of the utterance, its duration, the phonetic manifestation of the phonological segments on which it is realised

as well as the pitch context. All of these factors can vary substantially, and independently, with the same tone phoneme still being perceived by the speaker.

A central point in the debate about the analysis of tone languages is the domain of operation of pitch and the phonological unit on which pitch is realised. Beginning with (Goldsmith 1972:104), and followed by numerous others, including Donohue (1997) (with particular reference to Papuan languages), Yip (2002) and Gussenhoven (2004), the domain on which contrastive pitch (i.e. tone) is realised is known as the 'tone-bearing unit' or TBU.

In the analysis of Wutung tone it is necessary to distinguish between the domain on which phonetic pitch manifests and the domain on which the phonemically contrasting quality of 'tone' is realised, this latter being referred to as the TBU (tone-bearing unit). For many of the tonal languages of the world the two domains are the same, commonly being the syllable (or vowel or mora, depending on the most appropriate analysis for the language in question). For Wutung however this is not the case; the unit on which phonemic tone manifests is the word, while the domain in which pitch is manifest, and on which it may be measured as F_0, is the syllable or vowel. As every syllable contains a single vowel (and every vowel constitutes the nucleus of a single syllable) it is neither necessary nor possible to distinguish between these as bearers of pitch. In this analysis then the syllable will be treated as the pitch-bearing unit.

Wutung shows Pike's '...contrastive but relative...' pitch, having lexical items which contrast solely in terms of the level and contour of pitch present on those items; as already mentioned, the TBU is not the syllable, but the word. Another kind of tonal system is the so-called 'pitch-accent' system. This is found in some varieties of Japanese (Yip 2002:259–260) as well as amongst Papuan languages, which are commonly described as having this feature. While not as well studied as syllable tone, pitch-accent systems have been described for numerous languages.[1] Word tone on the other hand has only relatively recently been recognised as a distinct tonal system although both Leben (1978) and Welmers (1959) mention the possibility of the word being the domain of contrast for tone. An important recent description of such a system is that by Donohue & San Roque (2004) of I'saka, a language of Sandaun Province in Papua New Guinea which is thought to be distantly related to Wutung. As mentioned in Donohue (1997) there are a number of Papuan languages which show such word tone systems.

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[1]This term is imprecise as it is used to refer to a variety of different phenomena.

5.3 Tone in New Guinea

While tonal features have been described in a number of Papuan languages it is an aspect that is often overlooked or given minimal attention, though that has started to change recently. The main work summarising the tone systems of New Guinea is Donohue (1997), which shows that there is tremendous variety in the tone systems found and that they appear to be numerous, perhaps predominating. Although Donohue is only able to make mention of a very few Papuan languages, the tone systems of some of those mentioned in his section on 'word tone' languages show some striking similarities with the system in Wutung.

The earliest mention of tone in a Sko family language is by Cowan (1952), who mentions it in regard to the Skou language. This was later supported by Laycock (1975) who carried out survey work in the Sandaun coast area in 1970, which included collecting some basic Wutung data. Laycock (p. 851) says of the Sko languages: 'The phylum as a whole is characterised phonologically by the presence of some semantic tone and complex consonant clusters;'. He provides no examples in this paper, but in his field notebook (Laycock (nd)) containing his notes on Wutung he marks tone for a number of words and uses Chao tone staffs to indicate more precisely the tone on two words (*ca* 'pig' and *ca* 'water').[2]

Ross (1980) describes the tonal contrasts found in Dumo, the Sko-family language to the east of Wutung (spoken in and around the provincial capital of Vanimo), providing the first analysis of tone in this language family.

The tonal system of Skou has been described by Donohue (2003b). Skou is very close to Wutung, both geographically and genealogically. Skou is located immediately to the west of Wutung, in the Indonesian province of Papua. Skou territory extends from the mouth of the Tami River westwards, in which area there are three Skou-speaking villages. The following analysis draws substantially on Donohue's analysis of Skou tone and comparisons and contrasts are drawn at a number of points.

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[2]It is pleasing to note that where Laycock marks words for tone, his description is entirely in agreement with mine.

5.4 Tone in Wutung: overview

As mentioned in §5.1 Wutung has lexically contrastive word tone. Thus words which are segmentally identical, such as the following three, differ in meaning with this difference being signalled by their pitch contours, which are systematically distinctive.[3]

(5.1) *hô*
'grease'
fall

(5.2) *hó*
'morota' (sago thatch)
high

(5.3) *hò*
'star'
low

The above words differ systematically in their pitch contours, so constituting a minimal triplet for tone. This constitutes a lexical tone system in the sense that it primarily distinguishes lexical items (as well as having some grammatical functions). There are three contrastive tonal contours occurring on monosyllables, as demonstrated by the following minimal set; tone contours are here indicated by use of the Chao tone staff (Chao 1930), as well as by the abbreviations H, L and F.

Table 5.1: Phonemic tones

˥	high	H	*ná* 'digging stick'
˧	low	L	*nà* 'sago basket'
˩	fall	HL	*nâ* 'taro'

The characterisations of these tones as HIGH, LOW and FALL reflect purely phonological relationships. In many cases they are not accurate descriptions of the precise acoustic nature of the typical realisations of these tones. Nevertheless, they provide reasonable referent values for the tones, based on comparison of their typical structures and distinctive features. The exact realisation of each tone varies considerably, depending

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[3]See §1.15.1 for a brief discussion of some the practical difficulties encountered in analysing tone in Wutung.

on neighbouring segments, stylistics, position within the utterance, sentential accent, pragmatics, as well as external factors to do with the context of usage. A summary acoustic analysis of the tones is presented in §5.6, which includes a brief description of the structure of the tones.

In analysing Wutung tone it has been found useful to describe the pitches that are realised at the surface in terms of [h] (high) and [l] (low), meaning that the falling tone is labelled [hl] (or the sequence high-low). As will be seen in the following sections, this enables a concise description of how tones are manifested on the constituent syllables of their tone-bearing units. As outlined in the discussion of orthography in §3.7.1, tones will be marked as they appear on individual syllables using an acute accent to indicate a high tone, a grave to indicate a low tone and circumflex to indicate a falling tone (which can also be considered equivalent to both a high and a low tone, in that order, being present on the one syllable), for example: high tone *mí* 'a tail'; low tone *sà* 'singsing'; falling tone *fî* 'day after tomorrow'.

The tonal system carries a low functional load; only a small number of minimal pairs have been identified along with a very few three-way minimal sets. There are probably more pairs of monosyllables which are identical both segmentally and tonally than there are pairs which are segmentally identical but bear contrasting tones. There are very few minimal sets of words of two syllables, and only one minimal pair of three syllable words has been recorded. Experiments in orthography have shown that native speakers of Wutung who are literate in English generally have little trouble deciphering their language when in writing (using the practical orthography described in §3.7.2) without any indication of tone.[4] Bird (1999) discusses this situation with regard to African languages. The situation for native speakers appears, impressionistically, to be similar to that for English stress which is also not marked in any standard orthography.

There are numerous homonyms in Wutung, some examples for each of the three tones H, L, HL being shown in Table 5.2. These are true homonyms, being formally identical both in their segments and their tone but having meanings that are (synchronically, at least) unrelated.

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[4]This should be understood with the qualification that all such testing was done with texts comprising at least a small sequence of clauses. It is certain that examples could be constructed which would cause difficulty in comprehension, however these would be either very small (i.e. consisting of no more than a few words) or very rare.

Table 5.2: Example of distinct lexemes with identical form

fà	'rotten potato'; 'edge'
lô	'front'; 'sharp'
cí	'she did it'; 'tapa cloth'

Table 5.3 shows some exemplar sets of identical monosyllabic words which have the same tone, and contrasts these with ones that are segmentally identical but differ in tone.

Table 5.3: Segmentally identical sets with tone marked

cà 'dig', cà 'pig', câ 'wash', câ 'water'
hô 'grease', hó 'morata', hò 'star'

There are only two examples of minimal tone contrasts involving verbs. One that has been established via audio recordings is that between the verbs meaning 'sit' and 'see', shown in (5.4). The 1SG and 2PL forms of these two verbs are segmentally identical, differing only in the tone melodies.

Table 5.4: Comparison of tones of 'sit' and 'see'

	'sit' HL	'see' HH
1SG	húngpùà	húngpúà
1SG	hmúmùà	hmúfúr
3SG.M	qúmùà	qúqwúà
3SG.F	húngmà	hmúsúr
1PL	hnúmà	hnúqwúà
2PL	húngpùà	húngpúà
3PL	hnyúmà	hnyúqwúà

The other example involves the verbs meaning 'lift up' and 'put down', as shown in 5.4.

(5.4) a. *Níè mê qaijie   -jie*   [tone of verb not known]
        1SG 2SG 1SG>2SG.lift.up -IRR/REDUP
        'I'll lift you up.'

b. *Nîè mê qaijie*   *-jie*   [tone of verb not known]
1SG 2SG 1SG/2SG.put.down -IRR/REDUP
'I'll put you down.'

Unfortunately these latter were collected in a situation where audio recording facilities were not available so it is not possible to say what their tonal melodies are; however, they seemed (impressionistically) to be clearly distinct.[5] The informant, with whom I had previously been discussing tones, confirmed my impression, saying that the two words are the same but seem to him to be different, due to their tones. It is interesting that the two verbs are antonyms though it is difficult to see what more can be said about this at present. Certainly, it seems unlikely that their tonal contours have any bearing on their antonymic semantics.

The set of tone patterns found across words of varying syllable sizes is listed in Table 5.5 for words of one and two syllables, and in Table 5.6 for words of three syllables.[6] It should be noted that no monomorphemic words of more than three syllables have been found. It is immediately evident that for words of any given number of syllables there are a limited set of tone patterns occurring. This indicates that there are distinct tonal melodies, which are associated with words in differing ways, depending on the number of syllables, as opposed to the type of tone system commonly found in Asia wherein the tonal contrasts are located on the syllable, resulting in an increase in the number of potential contrasts with increasing number of syllables in the word.[7] The questions that arise then are, firstly, how many tone melodies are there, what is the underlying shape of these melodies (if this can be determined), and secondly, what are the tone-mapping rules via which these tone melodies are manifested on syllables, the actual pitch-bearing units.

From Tables 5.5 and 5.6 it is clear that although there are a number of tonal structures there are not enough to justify an analysis in terms of the syllable. There are three contrasting tones on monosyllables which, if extrapolated to polysyllabic words should

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[5]My impression was that they were H (manifesting as h-h-h-l) and HL (h-l-l-l) respectively however a confident statement in this regard will have to wait until they can be recorded and analysed properly.

[6]Table 5.5 shows tone patterns which are likely to represent the same underlying tone melody aligned in rows.

[7]Thus, for such a syllable-tone language with three contrasting tones the theoretical number of disyllabic words contrasting by tone would be $3 \times 3 = 9$. Similarly for three syllable words the total number will be 27. In both cases of course, there will be restrictions that reduce the actual number occurring however it will still be substantially greater than the numbers found in a word-tone language such as Wutung.

Table 5.5: Tone patterns on words of one and two syllables

σ	σ-σ
ˉ	ˉˉ
˩	˩˩
˅	ˉ˩
	ˉ˅
	˅˩
	˩˅

Table 5.6: Tone patterns on words of three syllables

σ-σ-σ
ˉ˩˩
ˉˉ˩
ˉ˅˩
˩ˉ˩
˅˩˩

generate nine tone patterns on disyllabic words twenty-seven on words of three syllables.[8] As there are only six disyllabic tonal patterns and five of three syllables it is more likely that what we see here is a tonal system in which the word is the domain across which tone patterns are operating. A particular point to note is the alignment of what appear to be identical tonal melodies in Table 5.5. Tonal patterns on words of three syllables is shown separately, in Table 5.6, as their identification with the mono- and di-syllabic tonal patterns is not straightforward. The central task then is to determine how many underlying tone patterns exist and how they link to the various words of different syllable numbers to give the patterns shown in the table. The following sections begin with a brief outlining of the operation of tone, followed by a more detailed examination of tonal association on words containing different numbers of syllables, beginning with monosyllabic words and moving on to words of two, three and four syllables respectively.

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[8]It is typical that syllable tone languages do not actually generate so many patterns due to co-occurrence constraints, however the numbers shown in the table are well below what could be expected to occur.

This separation is necessary as the realisation of tone is clearest on monosyllables, but quite different on larger words.

From Table 5.5 it is evident that three tone patterns occur on monosyllabic words, six on words of two syllables and five on words of three. This indicates that the minimum number of melodies present is three, as on the monosyllables, which would however require some mechanism that generates the contrasting melodies on larger words. There is no need to assume that there are more than six melodies, moreover even this number requires rules that collapse them to five on trisyllabic words and three on monosyllables. The simplest solution appears to be one that posits the optional presence of an accent on one syllable in polysyllabic words. This accent serves as an attractor, causing tones on neighbouring syllables to link to it. The same mechanism is used in Donohue (2003b) in much the same way as here, to enable a small set of underlying tone melodies to generate a larger number of surface melodies. A number of tone melodies which combine with an optional accent point is proposed in the following section.

Table 5.7 lists the tone patterns and provides examples (with glosses) of words bearing each pattern. It should be noted that while most of the words in this table are monomorphemic, some are not (such as *hnyûhlùà*) or their morphemic constituency may be uncertain (for example *ápìnà* and *hêmè*).

5.5 Tonal structure

5.5.1 Principles of mapping

5.5.1.1 The tone melodies

Wutung tone is lexical, the domain of operation of phonemic tone being the whole word, with tone 'melodies' applying to the entire word and being realised as pitch levels on each syllable. There are four tonal melodies, H (high), L (low) and HL (fall, comprising the sequence [h-l] attached to a single syllable) and LHL (comprising the sequence [l-h-l]). It should be pointed out that these terms are chosen on the basis of the major contrasts between the tones, and not because they necessarily are accurate descriptions of their phonetic manifestations. The simplest manifestation of the tone melodies is on monosyllables where they occur in their basic forms which correspond precisely to the H, L and HL names (the LHL contour does not manifest on monosyllables, but only on

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Table 5.7: Examples of tone patterns

tone pattern	example	gloss
h	sá	grass
l	hò	star
hl	câ	water
h-h	hénó	three
l-l	àbò	some
h-l	óngtòng	yesterday
h-hl	blúqî	thick
hl-l	hêmè	we two
l-hl	àqû	fish poison root
h-l-l	ápìnà	that (distal demonstrative)
h-h-l	hléfúnyà	smoked
h-hl-l	báqwûwè	beside
l-h-l	hlèlíhlèy	a stick
hl-l-l	hnyûhlùà	they're standing

words of two or more syllables). Here it needs to be noted that there is a rule preventing a rise ([lh] sequence) from occurring on a single syllable. Secondly, there is an optional accent point which servers to attract neighbouring tones (this is discussed further in §5.5.1.2).

While the tone-bearing unit is the word, the level at which the surface pitches are realised is the syllable. Figure 5.1 presents a schematic illustration of how a tone melody (T) is firstly mapped onto a monosyllabic word, with the lexical tone melody then spelling-out as a series of specific pitch levels ([t]) on each of the syllables.

In polysyllabic words tone melodies attach at the left edge of the word and then spread to the right to the extent possible, this being limited to the first two syllables of three syllable words for the H, L and HL melodies while the LHL melody can spread its three tones across a three syllable word. Where words of three syllables take a melody comprising only two tones a default [l] tone is assigned to the last syllable. This is shown as a schematic in Figure 5.2, which illustrates how tone melodies map onto words of two or more syllables (round brackets indicate optionality). The melodies H, L and HL only

$$
\begin{array}{ccccc}
\omega & & \omega & & \omega \\
| & & | & & | \\
| & & | & & | \\
\sigma & \rightarrow & \sigma & \rightarrow & \sigma \\
& & | & & | \\
& & | & & | \\
T & & T & & [t]
\end{array}
$$
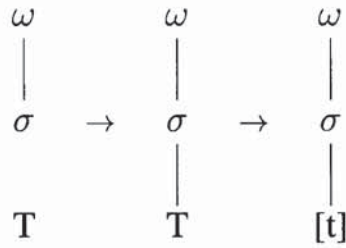
Figure 5.1: Schematic of tone melody association

occupy the first two syllables, with a default low pitch being inserted onto subsequent syllables (this default pitch is indicated by the encircled 'l'). The LHL melody spreads across three syllables, however if occurring on a four-syllable word a default [l] pitch is inserted on subsequent syllables.

$$
\begin{array}{ccccc}
\omega & & \omega & & \omega \\
& & & & \\
\sigma\ (\sigma)\ (\sigma)... & \rightarrow & \sigma\ (\sigma)\ (\sigma)... & \rightarrow & \sigma\ (\sigma)\ (\sigma)... \\
& & & & \\
T & & T & & [t]\ ([t])\ \textcircled{l}
\end{array}
$$
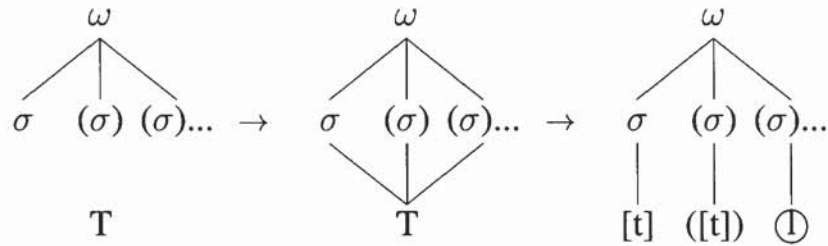
Figure 5.2: Schematic of tone melody association on polysyllabic words

The four contrastive, abstract, pitch contours will be referred to as 'melodies' while the individual instantiation of a particular melody on an individual syllable within a word will be referred to as a 'tone' or 'pitch'. This distinction is necessary to describe the way in which the tonal melodies are manifested on words of different syllable numbers. The diagrams of words, their syllables and tone associations show the melodies (which will be represented using the upper-case letters L, H and F) attaching to words and then manifesting as a series of high and low tones, which will be represented lower-case letters [h] and [l], the enclosure by square brackets reinforcing that these are the (phonetic) surface realisations of the underlying phonemic tones.

5.5.1.2 Pitch-attracting accent point

The system of tone mapping described in §5.5.1.1 does not generate all of the observed pitch patterns. The addition of an accent point, to which tonal melodies are attracted as their initial link (in place of the leftmost initial linking) allows for a straightforward modelling of all occurring pitch patterns; this is schematised in Figures 5.3 and 5.4. Firstly, all words bear either no accent, an accent on the first, or on second syllable (or on the sole syllable or syllables in the case of monosyllables and disyllables) which manifests as a point to which the tonal melodies are initially attracted. In the figures this is shown by a prime symbol adjacent to the appropriate syllable (thus: σ'). In the case of monosyllabic words the tone melody attaches to the sole syllable, as illustrated in Figure 5.3.
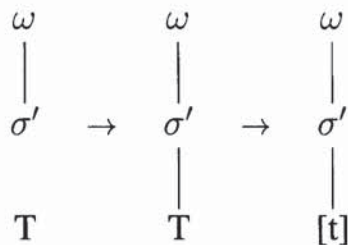
Figure 5.3: Tone melody association on monosyllabic words

In disyllabic words the tone melody attaches initially to the accented syllable; following this, it spreads to neighbouring syllables, where it manifests as surface pitch. A circled tone indicates a default low pitch which is inserted on the third and subsequent syllables in cases involving melodies other than LF.
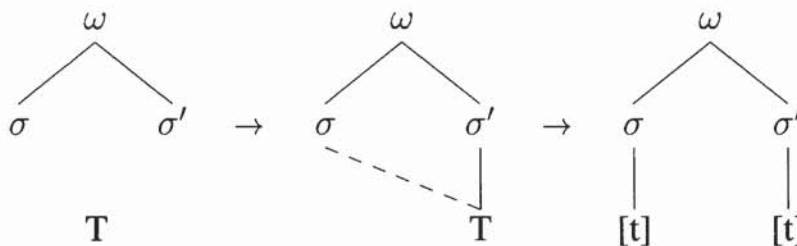
Figure 5.4: Tone melody association on disyllabic words

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Trisyllabic words work in much the same way, with the melody attaching initially to the accented syllable, then spreading to the other available syllables. Once the tonal melody has occupied the available slots, a default [l] tone is added any final syllable/s that would otherwise not bear a pitch.
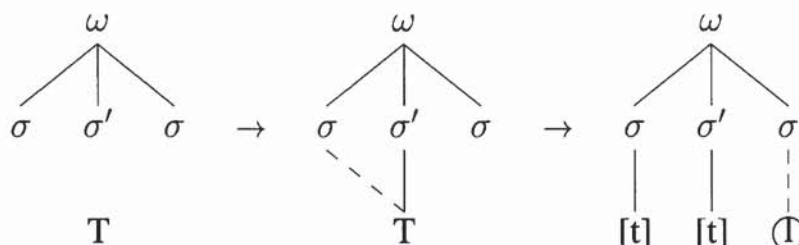
Figure 5.5: Tone melody association on trisyllabic words

The convex LHL tone is restricted to polysyllabic words and is limited in its surface manifestations, as discussed further in §5.5.3.

This analysis shows some similarity to pitch-accent systems, which have an 'accent point' which is very significant in terms of the association of tonal contours (melodies) to words.[9] It is important however to be clear about the distinction between such pitch-accent languages as Standard Japanese (SJ), and the type of tonal system found in Wutung. In Standard Japanese, as described by Yoshida (2004), there are two types of word; those which bear a lexical accent and those which do not. On words which bear an accent there is a single tonal melody, with words before the accent being high and the accent determining the point at which a drop in pitch occurs. This is quite different to the system in Wutung where the tonal melody associates to the word, with the accent being a point of attraction to which neighbouring syllable pitches associate, *in addition* to their original syllable mapping.

The following sections present diagrams and brief descriptions of the association of the three tonal melodies to words of one, two and three syllables, these constituting the majority of words in Wutung.

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[9]In some pitch-accent languages every word has such an accent, whereas in others it is a subset of all words.

5.5.2 Tone melody association on monosyllabic words

Assuming that there are at least the three tone melodies found on monosyllables, the mapping of these melodies to the syllable is straightforward. H melody association is shown in Figure 5.6.
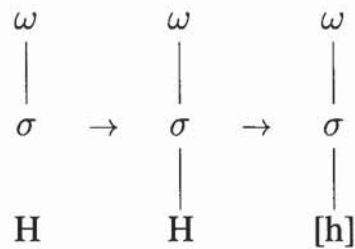
Figure 5.6: H tone melody association on monosyllabic words

The association of a L tone melody follows an identical process to that of H, and is shown in Figure 5.7.
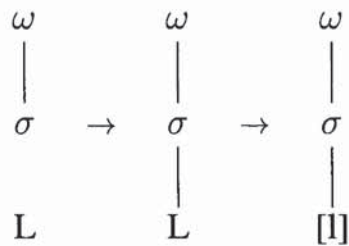
Figure 5.7: L tone melody association on monosyllabic words

The schematic in Figure 5.8 shows the HL melody attaching to the sole syllable in a monosyllabic word as the tone sequence [h-l] which manifests as a falling pitch.

5.5.3 Tone melody association on disyllabic words

As shown in Table 5.5 there are six pitch patterns found on words of two syllables. Rather than doubling the complexity of the system by increasing the number of tone melodies to six (and adding the problem of why there are only five patterns found on three syllable words) a simpler approach is to postulate the presence of an optional accent which serves to attract neighbouring syllable tones, a mechanism that has been used in analyses of a
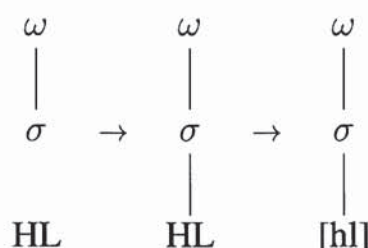
Figure 5.8: HL tone melody association on monosyllabic words

number of Papuan languages (Donohue 1997) as well as in other languages around the world (see §5.5.5).[10] This mechanism enables four tone melodies to produce all of the attested patterns.

For reasons that become clear when analysing the tone melodies of words of three syllables (§ 5.5.3), it is best to analyse the tone melodies as they appear on disyllabic words as being basic, their shapes being: [h.h] (H melody), [l.l] (L melody), [h.l] (HL melody) and [l.hl] (LHL melody—see below). These tones link to the word, initially to the accented syllable, which is either the first or second. Following this, they spread to the other available syllable, spreading from left to right, one pitch per syllable if possible. The preferred state is one tone level attached to one syllable but this cannot be achieved with all combinations of tone melody and word shape.

To begin, we see the most straightforward situations, the association of the H and L melodies to words with no accent (or possibly with initial accent, the situations being indistinguishable). In the first, Figure 5.9, is shown the association of an H melody to a disyllabic word. The two [h] tone elements attach, one to each syllable, giving the surface form comprising two syllables each with high pitch.

The L melody associates to disyllabic words in the same way, the tone melody associating to the word, then spelling-out, the first pitch element linking to the first syllable and the second linking to the second syllable, as shown in Figure 5.10.

The HL melody is more complex as the manner of association depends on whether or not there is an accent and if so, its location. Figure 5.11 shows the HL melody linked to a disyllabic word with no accent. Here, as in the previous examples, the tone melody links

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[10]This usage of the term 'accent' should be distinguished from its better-known usage in descriptions of Japanese tone phenomena.
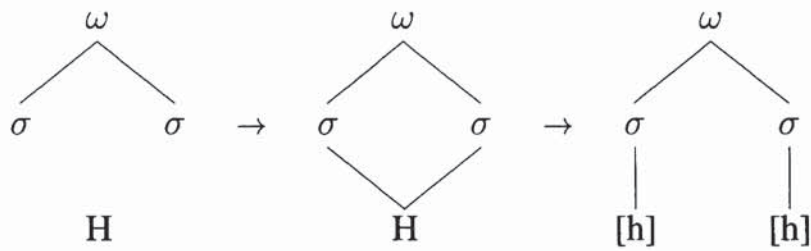
Figure 5.9: H melody on disyllables
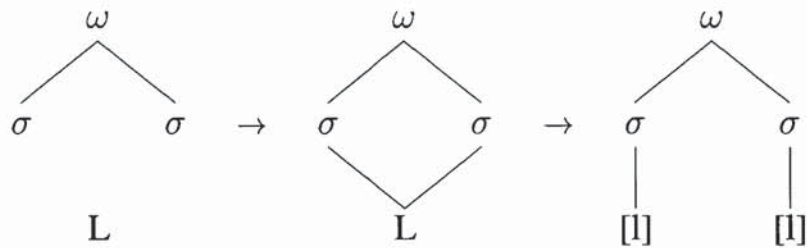
Figure 5.10: L melody on disyllables

to the two syllables, with the pitches lining up from left to right, giving the result shown in Figure 5.11.
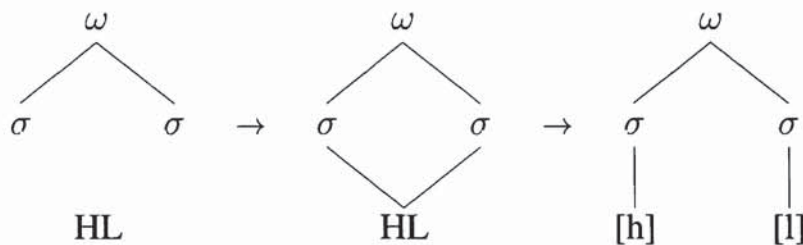
Figure 5.11: HL melody on disyllables (unaccented)

Figure 5.12 shows the HL melody associating to a disyllabic word with accent on the second syllable. While the melody attaches to the two syllables in much the same way as shown in Figure 5.11, the accent acts as an attractor so the tone melody is initially linked to the second syllable. Following this it spreads to link to the second syllable with the surface pitches manifesting as a high followed by a falling pitch. The word as a whole having the tone pattern [h-hl].
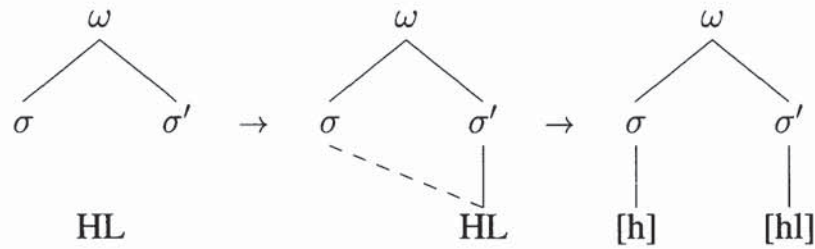
Figure 5.12: HL melody on disyllables (accent on second syllable)

The final pattern produced by the HL melody is shown in Figure 5.13. In this case the accent is on the first syllable so after initial linking of the tones to the appropriate syllables the tone on the second syllable links to the accented first syllable. This results in a falling tone on the first syllable and produces the word tone pattern hl-l.
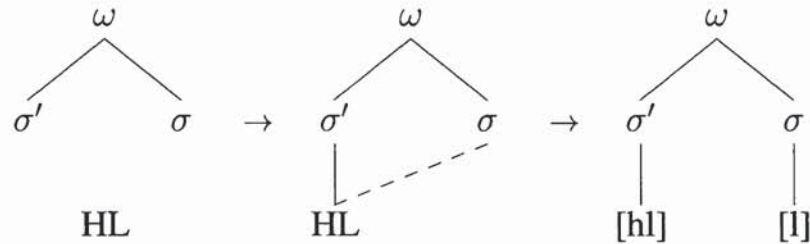
Figure 5.13: HL melody on disyllables (accent on first syllable)

The preceding discussion accounts for five of the six pitch patterns attested on disyllabic words with three tone melodies. The final pitch pattern however is not explained by any of these, this being the [l-hl] (or convex) pattern. This tone pattern requires the postulation of a fourth underlying tone melody, LHL, which associates as shown in Figure 5.14. As with the preceding examples the melody attaches by lining up one tone pitch per syllable from left to right. This results in the [l] element linking to the first syllable and the remainder ([hl]) linking to the second syllable.

This tone melody is not able to attach to disyllables which bear an accent as the result would be one or the other syllable bearing the pitch [lh]. Given that this sequence is not found occurring on a single syllable anywhere in the Wutung tone system, as well as the facts that the LHL melody does not manifest on monosyllables, and is never manifested tautosyllabically (despite the sequence occurring in the LHL melody) indicates that there
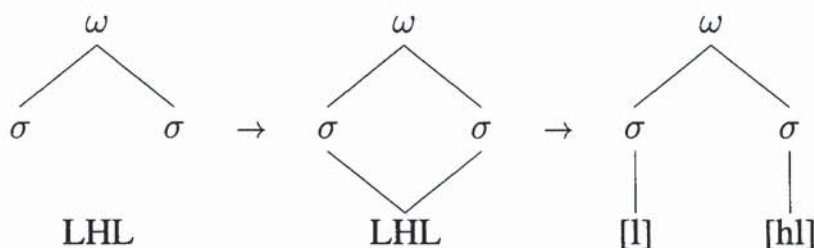
Figure 5.14: LHL melody on disyllables

is a strong restriction against it, a rule also described by Donohue (1997:335) as being present in Skou.

This prohibition against a rising contour (that is, the sequence lh) occurring on a single syllable may be formalised as shown in Rule 5.1.

Rule 5.1
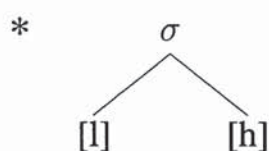
5.5.4 Tone mapping on trisyllabic words

The tone melodies attach to trisyllabic words in much the same way as happens with words of two syllables with the difference that a default low pitch is inserted on a vacant final syllable. For analytical purposes the tone melodies H and L, like the HL melody, are best thought of as comprising a sequence of two tones, which are assigned as described previously. This would however leave the third syllable toneless; this situation is avoided by the insertion of a default [l] tone on the third syllable (Figure 5.15).
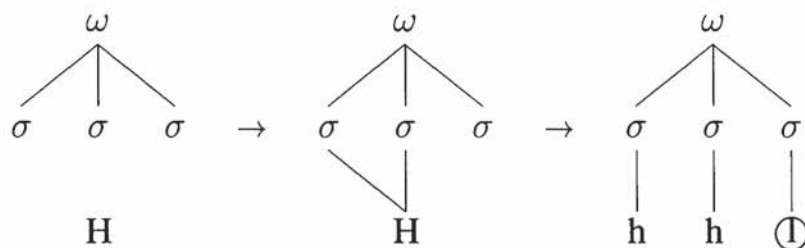
Figure 5.15: H melody on trisyllables

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The H melody always produces the same tone pattern regardless of the presence or location of an accent. It appears that accents are limited to the first two syllables as an accent on the third syllable would produce the unattested [h-h-hl] tone pattern. With disyllabic words, the HL melody produces differing results depending on the location of an accent, if present. On unaccented trisyllables the HL melody results in a [h] tone on the first syllable, and a [l] tone on the second. As this leaves the third syllable unoccupied a default [l] tone is inserted.
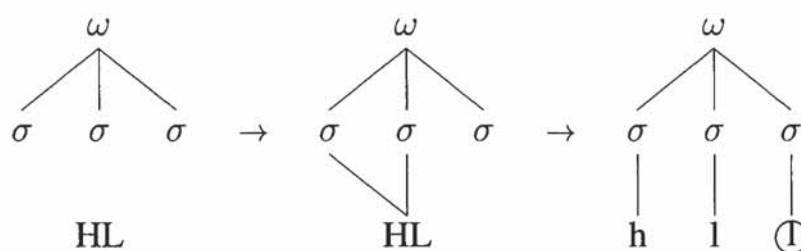
Figure 5.16: HL melody on trisyllables (unaccented)

In terms of the initial linking of the HL melody, much the same process occurs with accented trisyllabic words as with unaccented, except that the tone melody is initially attracted to the accented syllable, secondarily spreading to the unaccented, as shown by the association lines in 5.17 and 5.18.
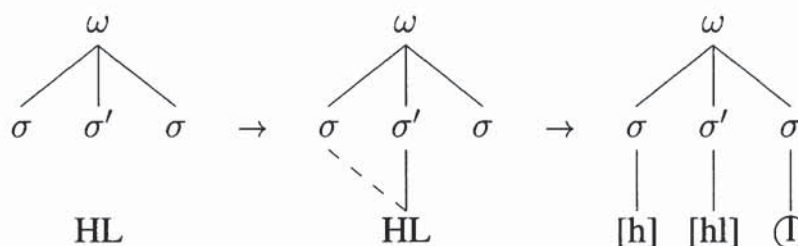
Figure 5.17: HL melody on trisyllables (accent on second syllable)

The HL melody produces the result shown in Figure 5.18 when applied to a trisyllabic word bearing an accent on the first syllable.

The LHL melody is shown in Figure 5.19. As with the other melodies the LHL links initially to the accented syllable, if present, and otherwise one-to-one from left to right. As there are three components these are able to link to each syllable so no default [l]
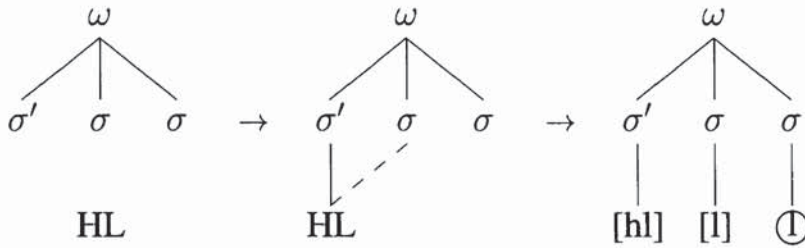
Figure 5.18: HL melody on trisyllables (accent on first syllable)

tone is inserted. As is the situation with disyllabic words, an accent is not allowed on words that take the LHL melody as this would produce the disallowed situation of a single syllable linked to a rising tone, [lh].
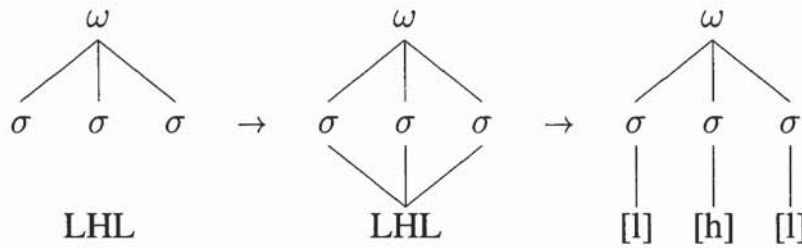
Figure 5.19: LHL melody on trisyllables

Finally, it should be noted that there are no three syllable words bearing the L tone melody. Were such a combination to occur it would have the structure shown in Figure 5.20.
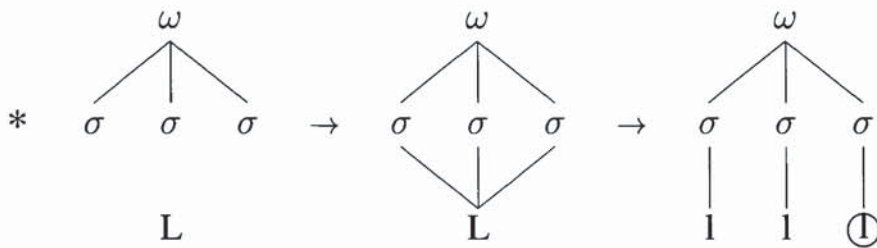
Figure 5.20: Non-occurring L melody on trisyllables

This prohibition can be seen as an expression of the restriction of the type proposed by Leben (1978) and commonly referred to as the obligatory contour principle (OCP), which

prohibits identical sequences in underlying representations. Although the L melody comprises the sequence [l.l] of two low pitches, it behaves as a unit and so does not, in itself, breach the OCP. However if applied to a word of three syllables it would amount to combining the L tone melody with the inserted [l] pitch (which must therefore be seen as being present at a deep level as well as at the surface level) and would constitute a breach of the OCP.

5.5.5 Summary

The following list summarises the major features of the Wutung tone system.

- There are four tone melodies, H, L, HL and LHL; H, L and HL each comprise two elements, respectively, [h.h], [l.l] and [h.l]. The LHL melody comprises three elements, [l.h.l].

- The tone melodies attach to the word, its elements aligning one-by-one to each syllable of the word, beginning at the left edge.

- An optional accent may occur on one of the first two syllables; this accent serves as an attractor to which neighbouring tones link.

- Individual syllables may not bear the tone sequence [l.h]

- A default [l] tone attaches to the unoccupied final syllable in three syllable words.

- The sequence [l.l.l] is not allowed; this means that the [L] melody does not occur on trisyllabic words.

This system of word-tone melodies is very similar to that found in Kairi, as described in Newman & Petterson (1990), although the accent in Kairi is quite different in character to that found in the Wutung system, which has no effect on the mapping of the tone melody onto the word but rather acts as a tone-attractor after this mapping has happened.[11] It is even more similar to the Sko tone system as described in Donohue (2003b), although the number and types of tone melodies are different.

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[11] Kairi also has tone sandhi rules in its morphology, unlike Wutung.

The system described above has elements in common with descriptions of tone in languages from various parts of the world. Kagaya (1992), for example, gives a description of Bakueri, a Bantu language spoken in the Cameroon, which also has an accented syllable to which tone is attracted. As well, rather than a default tone as described here, Bakueri has a floating tone which attaches to any syllables preceding the one bearing accent, and also spreads to preceding words in compounds. Gussenhoven (2004:39) briefly outlines tonal processes in Barasana, a language of Brazil, wherein at least some words have a tone-attracting accent on the second mora. In these words the initial toneless mora gets low tone by default. Leben (1978:186) describes tone association rules for Mende, a language in which there are five lexical tones which associate to the first syllable. If there are succeeding syllables tones associate, if possible, individually to each syllable with the final tone associating to all remaining syllables, this proceeding from left to right.

5.5.6 Tone and the grammar

5.5.6.1 Tone and suffixes

Tone does not play a large part in the grammar unlike, for example, the closely-related Skou language, which uses tone to indicate past tense and has tonal morphemes marking genitive and dative pronouns (Donohue 1997:346–348). Nevertheless there is some interaction with the morphosyntax as word melodies on base forms are extended to deal with affixation.

Morphological affixation involves the tone of the base form spreading to the affix. The following present examples of this in the morphology of verbs and pronouns.

Irrealis mood is marked on verbs by reduplication, which results in the addition of a syllable to the verbal root. When this happens the same tone melody as occurs on the unreduplicated form is applied, but is extended to cover the extra syllable. An example of this is shown in Figure 5.21 for the word *qma* 'scratching'.

Verbs retain the same tone melody throughout their various person/number/gender forms though it is modified as the number of syllables changes, in accord with the rules summarised in §5.5.5. In both of Examples 5.5 and 5.6 the verb retains the same tone melody and accent placement (HL melody with accent on the second syllable).

(5.5) *Mê mú   -mû   mé?*
      2SG 2SG.drink -IRR/REDUP Q
      'Do you want a drink?'
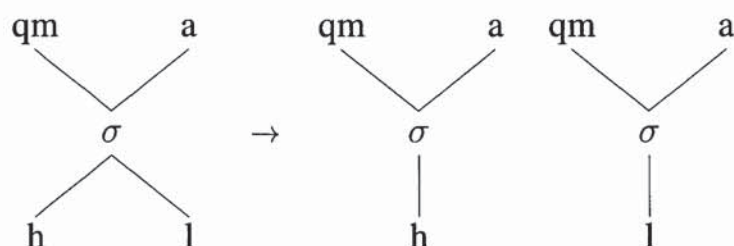
Figure 5.21: Tone and verbal reduplication: *qma* 'scratching'

(5.6)   *Nîè câ hú   -hû*
      1SG water 1SG.drink -IRR/REDUP
      'I want a drink.'

Pronouns show the same process, with the falling tone melody found on all pronouns spreading onto the suffix. Thus *qey* '3SGM' has the tone melody hl whereas *qey -po* '3SGM -EMPH' has hl-l.

Other areas of affixation show the same pattern, that the tone melody remains the same but adjusts to the number of syllables following the rules laid out previously. A question that remains to be answered however is whether monosyllabic words show evidence of accent. By examining enough examples of monosyllabic words with the HL melody taking suffixes we should be able to determine of they all produce the same tone pattern or if they vary in the placement of the accent (if present). Unfortunately the limited database available (and, in particular, the varying quality which prevents accurate assessment of tones) means this is not currently possible, but it would be an important aspect to research further.

5.5.6.2 Tone in compound words

In all but one situation compounding has no effect on tone as the two forms joined both retain their own tonal melodies. The following Examples (5.7) and (5.8) are typical cases:

(5.7)   *tîng* 'bird' + *tàng* 'hair' → *tîngtàng* 'feather'

(5.8)   *hléhlí* 'tree' + *mà* 'skin' → *hléhlímà* 'bark'

There is however one combination in which the final result is not simply a concatenation of the individual tone melodies. This occurs when two monosyllabic words, each bearing the HL melody, are compounded. In this case the first HL becomes H, as shown in Examples (5.9) and (5.10).

(5.9) *tîng* 'bird' + *qwâng* 'beach' → *tíngqwâng* 'seagull'

(5.10) *pâ* 'person' + *nyúà* 'male' → *pányúà* 'man'

This situation can be described by the following tone rule. This is similar to a rule shown by Ross (1980:81) to apply in Dumo which converts a fall tone to a high when it precedes either of a fall or high tone. Donohue (2003b:333) discusses this rule, presenting it as shown in Rule (5.2), and recasts it in autosegmental terms as shown in Rule (5.3). Donohue finds that the same rule applies in Skou.

Rule 5.2 *HL → H / __ HL, H*

Rule 5.3
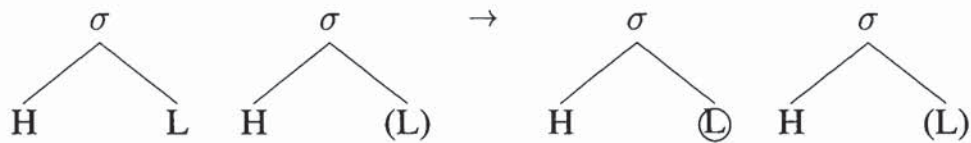
This rule also applies in Wutung word compounding although there are no examples known of a compound bringing together fall and high melodies but only two successive falls, as shown in Example (5.8). Thus while it seems possible that the same rule as applies in Dumo and Skou also applies in Wutung, on the basis of the available data a similar but slightly more constrained rule is all that can be postulated. This rule deletes the [l] of an [hl] sequence in a syllable which precedes another syllable which bears [hl]. As affixes do not have their own tones, this rule only applies in a compound of two monosyllabic words. This rule is shown in Rule 5.4).

Rule 5.4
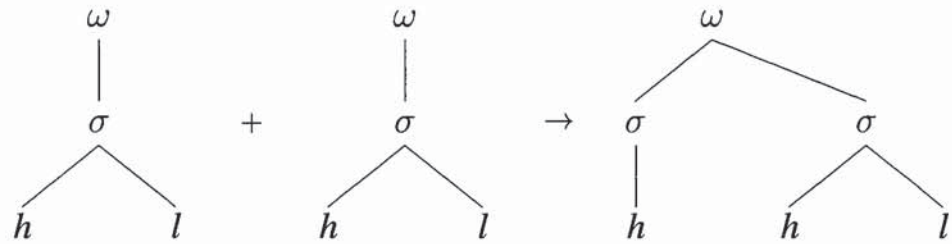
5.5.6.3 Grammatical tone

While no examples have been found of (purely) tonal morphemes playing a role in the grammar, there is at least one pattern that seems to provide some link between tone and the grammar. This is found in the personal pronouns, which are listed in Table 5.8 together with their pitch patterns.

Table 5.8: Pitch patterns and tone melodies on pronouns

pronoun	gloss	pitch pattern	tone melody
nîè	I (1SG)	hl-l	HL
mê	you (2SG)	hl	HL
qêy	he (3SG.M)	hl	HL
cêy	she (3SG.F)	hl	HL
hêmè	you and I (1DU.INCL)	hl-l	HL
hêqèy	he and I (1DU.EXCL.M)	hl-l	HL
hêcèy	she and I (1DU.EXCL.F)	hl-l	HL
pêhìng	you two (2DU)	hl-l	HL
têhìng	those two (3DU)	hl-l	HL
nêtù	we (1PL)	hl-l	HL
êtù	you (2PL)	hl-l	HL
têtù	they (3PL)	hl-l	HL

The monosyllabic pronouns all have the [hl] pitch pattern while the disyllabic forms all show the [hl.l] pattern, suggesting that they all have the same tone melody, HL. The disyllabic forms bear an accent on the first syllable which, as shown in §5.5.3, realises the HL melody as [hl.l]. Assuming homogeneity in the tonal features of the pronouns holds for accent as well as for tone melody, this indicates that monosyllables may also

bear accents which are, however, not able to be manifested overtly. This is demonstrated to be true by the discussion in §5.5.6.1 where it is shown that addition of the EMPH suffix *-po* produces a form with the tone sequence [hl.l], a HL tone with initial accent.

5.5.6.4 Tone in borrowed words

There are few words which are unambiguous borrowings, as opposed to involving code-switching (which is very common, given the highly multilingual Wutung community). One such is *wo*, most probably borrowed from Tok Pisin (or perhaps direct from English) *wok*, having a similar meaning to English 'work' (from which the Tok Pisin word was borrowed). Example (5.11) shows this word, which has a HL melody, and its pitch contour which, as expected, instantiates as the sequence [h.l].

(5.11) *Qêy   wó   =qlèy*
        3SGM work =3SG.M.IRR
        'He'll work.'

Unsurprisingly, this word has been assigned a tone melody. Unfortunately there are not enough examples of borrowed words (the recorded examples are listed and discussed in §1.8) to be able to determine if there is any pattern to the way in which they have been assigned tone melodies.

5.6 Phonetics of tone: a brief overview

5.6.1 General comments

This section presents a brief overview of the acoustics of tone in Wutung. A set of CV minimal pairs which differ only in the phonemic tone on the vowel are analysed and the pitch contours found on these are compared, abstracting away from coarticulation effects, to arrive at an analysis of the typical pitch contour for the three monosyllabic melodies as well as their typical ranges of variation. It should be emphasised that this is only examining the melodies as they surface on monosyllabic words. There are only three tone options for any syllable (high, low or falling tone), and these are identical to the tone melodies found on monosyllables (H, L and HL), so analysis of the monosyllabic melodies should provide insight into how the tones instantiate on any syllable. As the fourth melody, LHL, is only found on polysyllabic words and then instantiates as a

sequence of low and falling tones (which are being described anyway) this is only discussed briefly, and only as it occurs on disyllabic words. As well, the analysis of the phonetics of the LHL melody is based on a smaller dataset as there are fewer examples than of the other three melodies.

A more complete account would describe all the variations in realisation of the four tone melodies: on words of all syllable numbers, and in both accent locations (that is, examples of accents on the first and second syllables). The various possible configurations are shown in Table 5.9. The total number of variations possible is 27; however as some of the configurations result in the precise same contour, the total number actually occurring will be less than this.

The four tone melodies each vary substantially in their phonetic realisations, but nevertheless have typical forms which may be captured. It should be noted once again that this analysis is based on a set of words collected from four speakers, two male and two female, who are considered by their community to be good, representative speakers of Wutung. Nevertheless, it is possible that they do not represent the full range of variation of these tones as might be found with a larger sample. In particular it is likely that children realise the tones differently to adults given their size, different physiology and changed (and changing) life experiences, and in particular the fact that language transmission in the village is no longer certain for all children.

Prevocalic consonants have a marked effect on the pitch of the following vowel. Clark & Yallop (1990:282–284) describe the effect as being a lowering of pitch following a voiced stop and a raising of pitch following a voiceless stop. This is evident for all speakers. Intrinsic pitch of vowels also has an effect on pitch. Connell (2002) discusses the effect of the intrinsic pitch of vowels on their tonal realisation. Vowels are produced by distinctive articulatory gestures, each gesture intrinsically producing a slightly different pitch from that of other vowels. While in some languages this effect appears to be compensated for by the speakers, in other languages this effect can result in the vowels showing allophonic variation depending on which vowel the tone is being realised on. These two effects, prevocalic consonants and vowel intrinsic pitch, combine to produce a set of rather complex allophonic variations.

Tones also vary somewhat from instance to instance. Some speakers have fairly significant variation in pitch contour, particularly in the level tones, even in successive utterances of the same word. While this may be at least partially due to the less precise vocal control of some individuals it may indicate that the targetting of the tones is not

Table 5.9: Number of variant realisations of tone melodies

	1 σ	2 σ	3 σ	4 σ
no accent	3 (H, L, HL)	4 (H, L, HL, LHL)	4 (H, L, HL, LHL)	4 (H, L, HL, LHL)
initial accent	?	4 (H, L, HL, LHL)	4 (H, L, HL, LHL)	4 (H, L, HL, LHL)
second accent	na	4 (H, L, HL, LHL)	4 (H, L, HL, LHL)	4 (H, L, HL, LHL)

very precise and can vary quite a bit. This variation seems to occur more with adult men than with anyone else, so it may be due to the greater difficulty of achieving pitch precision in the lower reaches of the male voice.

(Donohue 2003b:350) mentions two restrictions on the interaction between tone and segments in Skou: a lack of contrast between high pitch and low pitch on syllables with voiced stop onsets (in Skou this is limited to *b* and *j*-initial syllables); falling pitch does not occur on syllables with an initial [+back] consonant or backing gesture, barring falling pitch from occurring in syllables with *k*, *j*, *w* or *y* as their onset (in Wutung the relevant consonants are *j*, *q* and *w*). Neither of these rules is found to apply in Wutung.

While micro-prosody (defined by Ladefoged (2003:87) as small pitch perturbations commonly resulting from variations in the rate of airflow) will be mentioned where it may intrude upon or obscure some part of the analysis, in general it will not be discussed. Instead, this analysis will focus on the structure of the typical frequency contours which correspond with the word tone melodies as used in Wutung.

5.6.2 The high tone

This tone is the most complex, typically having one of two contours: either a high-falling contour, initially level with a falling tail, or a convex rising-falling contour. Typically it begins high with a slight rise to a brief level portion followed by a slight fall. As the initial rise and high plateau can sometimes be abbreviated (particularly in more rapid speech) it may be confused with the falling tone. The fall portion of the melody may also be so truncated that it consists primarily of a level tone, making it similar to the low tone although higher.[12] Unless pronounced clearly and with a particularly high pitch it is usually the least distinctive tone perceptually.[13] It seems that if a tone is not clearly low or falling then it is most likely high.

The contours are illustrated by examples with Chao tone staffs in Examples (5.12) and (5.13). There does not appear to be any conditioning factor responsible for the variation in the contours.

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[12]To my learner's ears the contrast in trajectory of the tonal melodies was a much more useful clue to the identity of the tone than the contrast in pitch height.

[13]Comments on the ease or difficulty of perception of tones are based solely on my own subjective experience and not on any objective data.

(5.12)   *ha* ⌐

       'kind of shell'

(5.13)   *su* ⌐

       'lid'

Figures 5.22 and 5.23 show the word *li* 'sea' as produced by a male speaker and a female speaker, respectively. Figure 5.22 shows an example of the convex contour, displaying the initial rise, brief peak and then fall. The peak approaches near to 150 Hz, a fairly typical value for a male speaker.

Figure 5.23 shows the other most common contour for the high tone with the pitch being high (just over 200 Hz, a typical level for female speakers) and fairly level for the first 30% to 50% of the duration of the vowel and then falling gradually but steadily as the vowel ends. Although these examples come from different speakers each speaker uses both contours, the two being in free variation.

5.6.3 The low tone

The Low tone has the simplest contour in terms of structure, and also shows the least variation. It is quite simply a low pitch held constant over the duration of the vowel. While the contour can vary slightly to a gentle rise or fall, this is usually fairly minimal. A gentle fall is common towards the end of the tonal contour, probably explicable in articulatory terms by the gradual fall in subglottal air pressure as the air supply reduces.

The variation in pitch level of the voices of male speakers is quite limited, sometimes being small enough that it can be hard to distinguish the Low tone from the High tone (this is only true on monosyllabic words), but for female speakers this is rarely a problem. The most common variant form of the low tone is that it is sometimes realised with a slight rising contour. This seems to be an individual trait as some speakers do this fairly consistently, whereas for most speakers this does not seem to occur at all. Amongst the informants who provided the data for this analysis the rising low tone is found to occur most commonly in the speech of one (the older female), while occurring very rarely in that of the others. The low tone is quite distinctive, being the only tone that is (usually) clearly heard as level; in contrast the high and falling tones both involve some degree
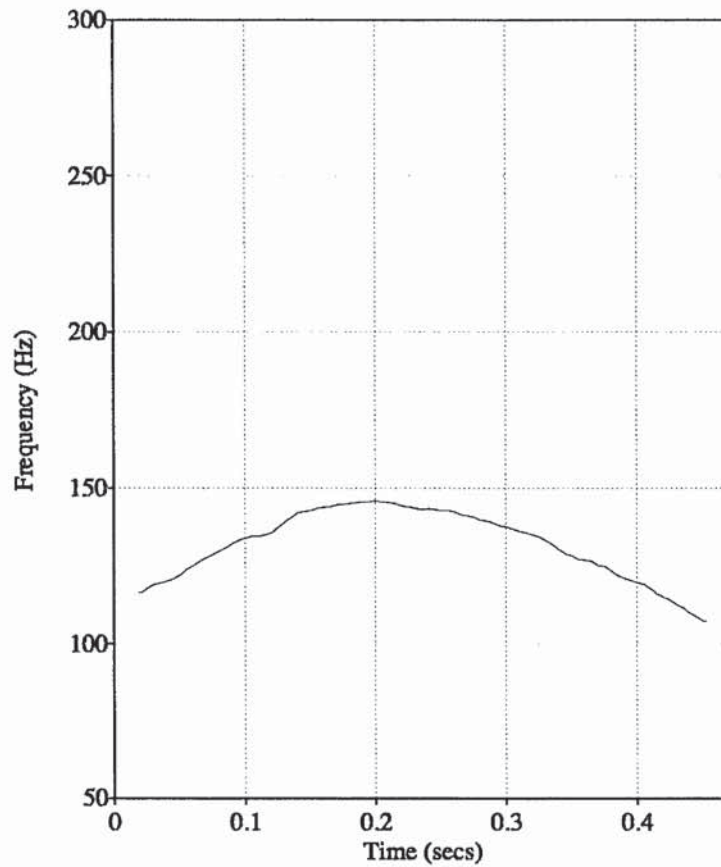
Figure 5.22: F_0 contour for high tone *lí* 'sea': High convex shape (male speaker)

of fall in pitch which can make distinguishing them from each other relatively more problematic.

Vowels bearing the Low tone commonly show greater length than the same vowel (in the same context) carrying the other tones, similar to the situation described by Chida (nd:7). This increased vowel length is not phonemic but is quite noticeable and distinctive.

Example 5.14 shows a low tone monosyllabic word with a tone staff illustrating the typical low tone contour.

(5.14)   *ca* ⊣
         'pig'
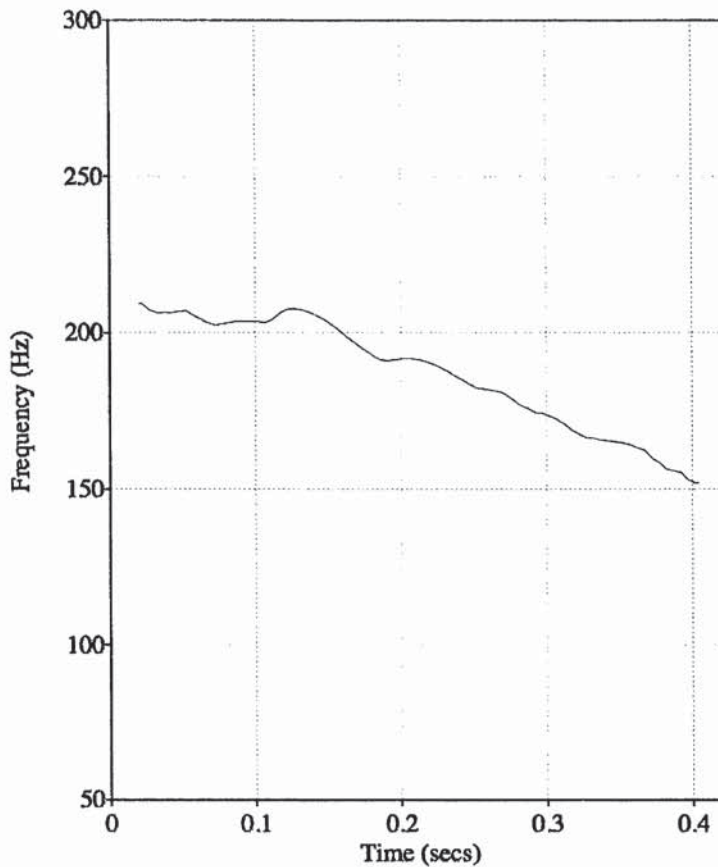
Figure 5.23: F_0 contour for high tone *lí* 'sea': High-falling shape (female speaker)

Figures 5.24 and 5.25 show the low tone *ma* 'skin' as produced by a male and a female speaker, respectively.

We see here that as well as staying quite level, the male speaker keeps the pitch of the low tone well below 150 Hz, in fact probably below 130 Hz, while for the female speaker it remains mostly below 180 Hz. These appear to be fairly typical values.

5.6.4 The falling tone

NP Of all the tonal contours, the falling tone is the most easily identifiable from visual inspection of a trace of the pitch contour, as well as being the most distinctive to hear
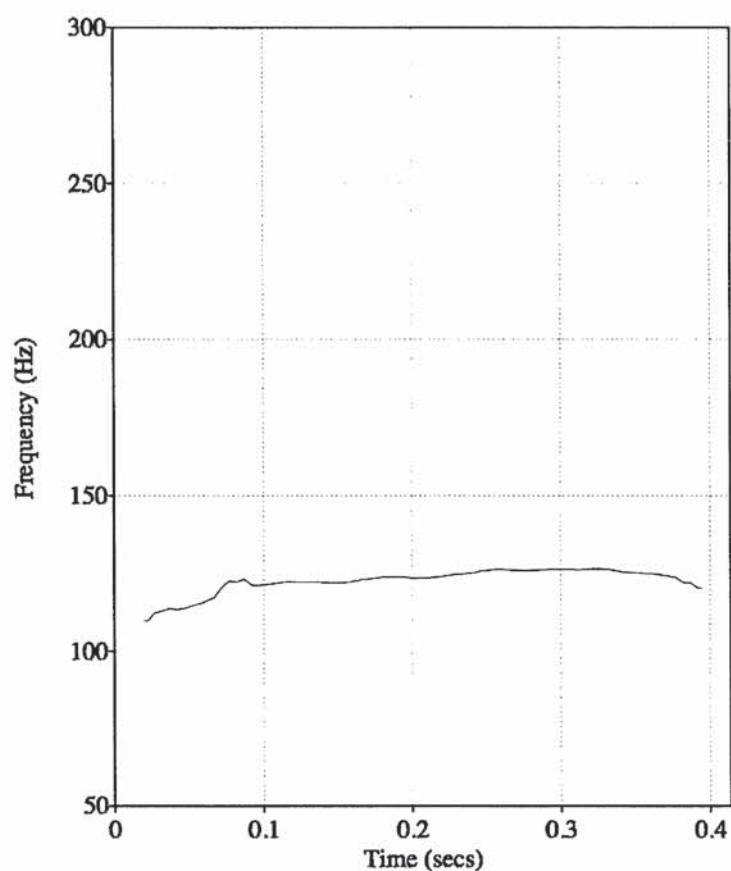
Figure 5.24: F$_0$ contour for low tone *mà* 'skin' (male speaker)

(and was also the most easily recognised for this learner). It consists simply of a rapid fall from a high start to a low finish, often followed by a final brief, level period.

This tone begins relatively high and falls steadily throughout its duration. It contrasts clearly with the low tone but it is sometimes difficult to distinguish it from the high tone, which may also show a fall in the latter half of its duration and may start with a brief level period, making them less distinct. This is particularly true in rapid speech, where the duration of the level portions in both tones seems to be somewhat contracted. Normally, however, the falling tone is short in comparison with both the H and L melodies, the fall in pitch usually being quite rapid and immediate. The fall often begins slightly higher than the high tone, and falls to around the same level as a typical low tone.
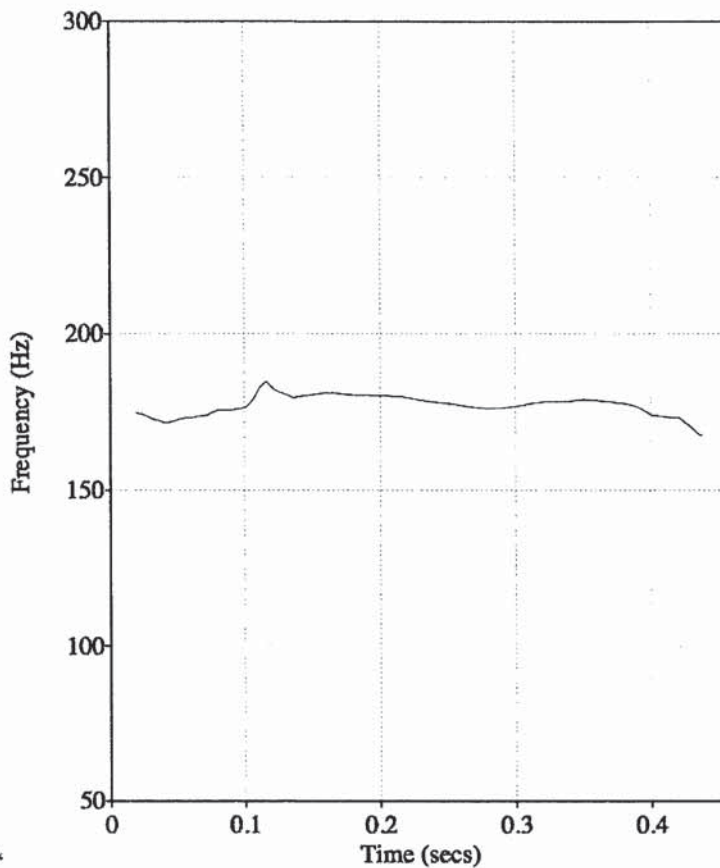
Figure 5.25: F_0 contour for low tone *mà* 'skin' (female speaker)

The contour of the falling tone melody is similar to that of the high tone shown in Figure 5.23 with the difference that the high tone shows an initial plateau whereas the falling tone falls from the beginning of the vowel and has a level portion at the end. Apart from that the two contours can be quite similar and in normal, rapid speech can be very difficult to distinguish as the initial plateau portion of the H tone can become quite contracted.

5.6.5 The Low-Fall tone

This melody appears only on words of two or more syllables and is the least common melody, even if only considering polysyllabic words. In the same way as the falling
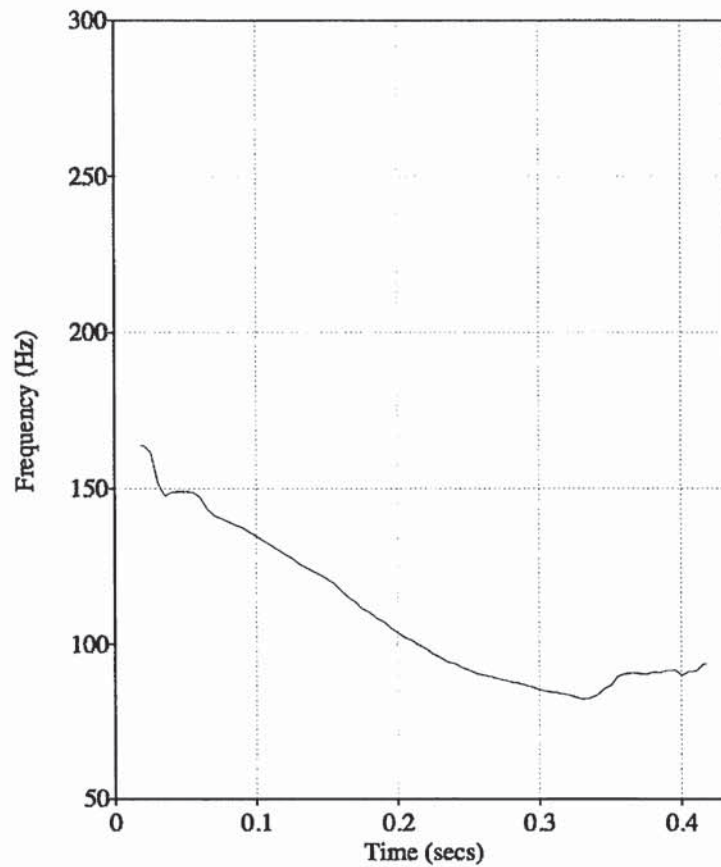
Figure 5.26: F_0 contour for falling tone *pâ* 'person' (male speaker)

tone can be considered to comprise the sequence high-low on a single syllable, the LHL melody can be considered to comprise the sequence low-high-low, with the restriction that the initial two components cannot attach to the one syllable (as presented in Rule 5.1). Figures 5.28 and 5.29 show examples of *àqû* 'fish poison root' spoken by a male and a female speaker, respectively. It is noteworthy that these two examples are quite dissimilar; the male example is, phonetically, very similar to the separate Low and Fall contours but the female example is more complex, showing a rise-fall structure. As there are only a few known examples of this tonal melody it is not possible at this point to determine which (if either) is the most common form in which it occurs.
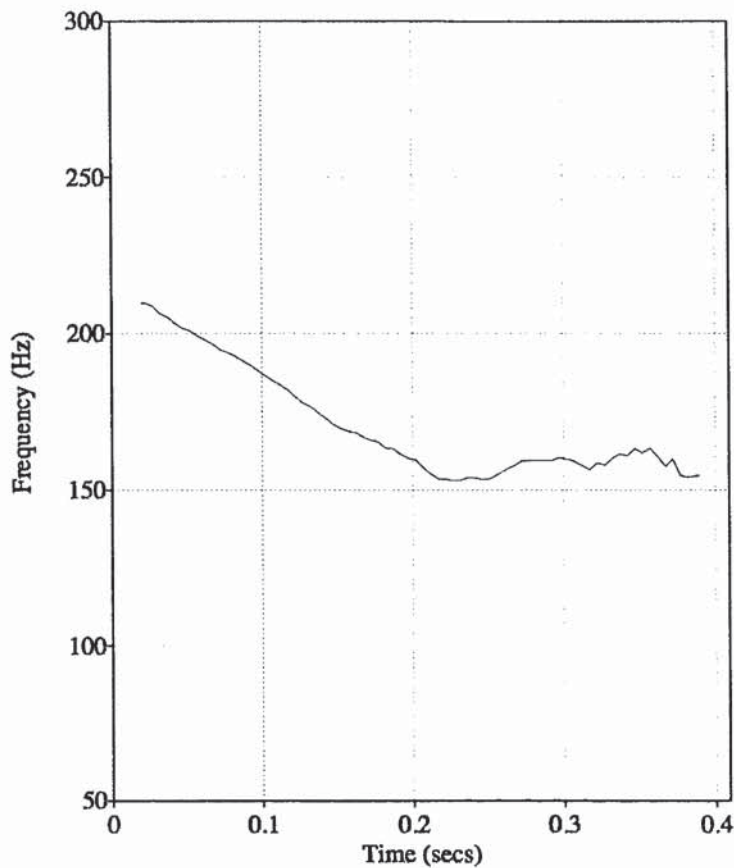
Figure 5.27: F$_0$ contour for falling tone *pâ* 'person' (female speaker)

This is the least commonly occurring tone melody, probably due at least in part to its more restricted domain of application, being restricted to polysyllabic words unlike the other three melodies.

5.6.6 Comparison of the three monosyllabic tones

To facilitate comparison of the three tonal contours which occur on monosyllables, Figure 5.30 presents a single graph showing the pitch tracks superimposed of the three monosyllabic words exemplified previously in this section: *lí* 'sea', *mà* 'skin' and *pâ* 'person'. This image makes clear the distinguishing aspects of the three contours.
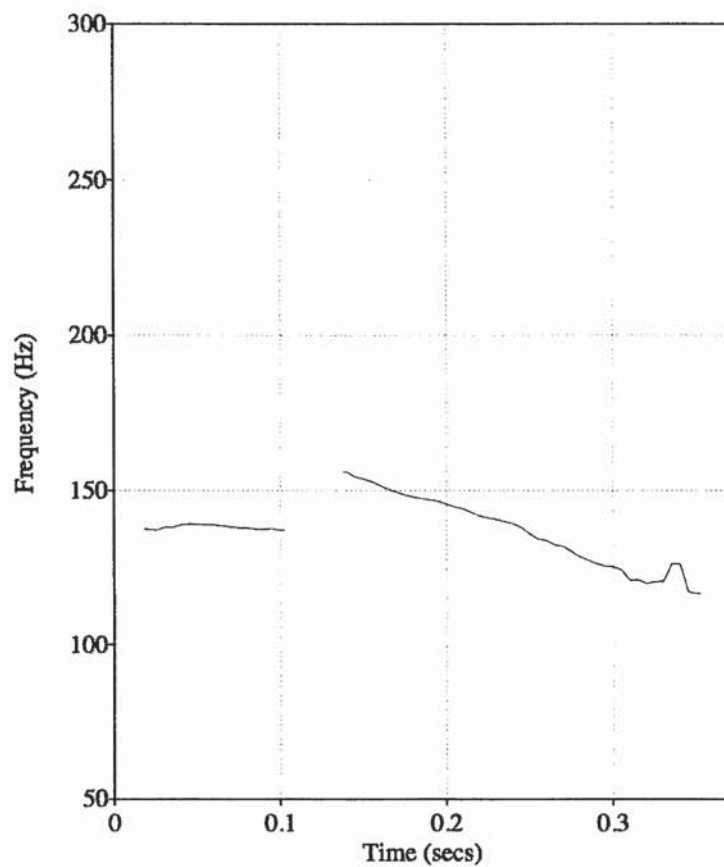
Figure 5.28: F_0 contour for low-fall tone *àqû* 'fish poison root' (male speaker)
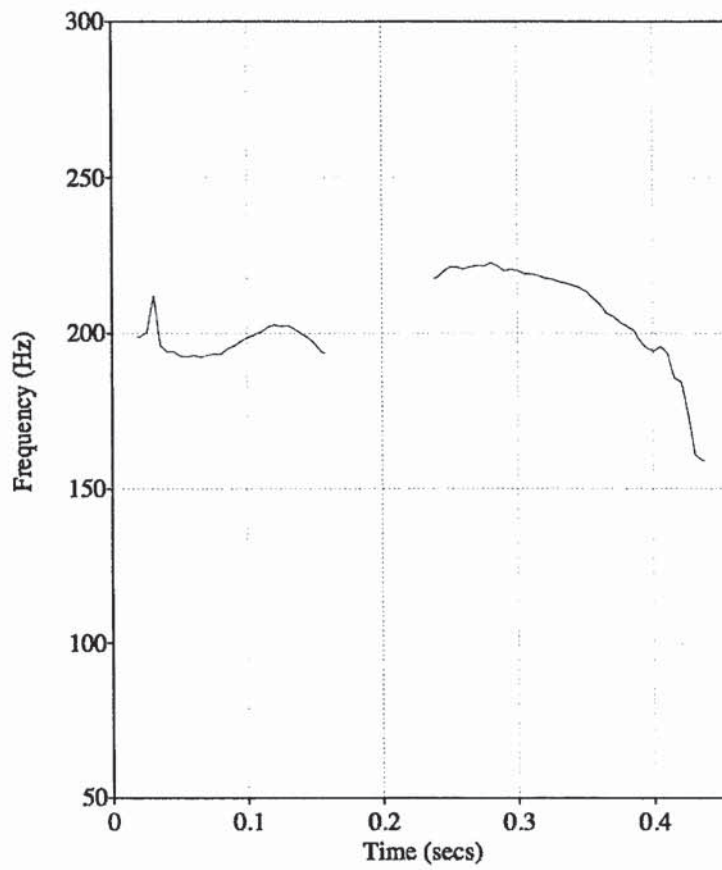
Figure 5.29: F$_0$ contour for low-fall tone *àqû* 'fish poison root' (female speaker)

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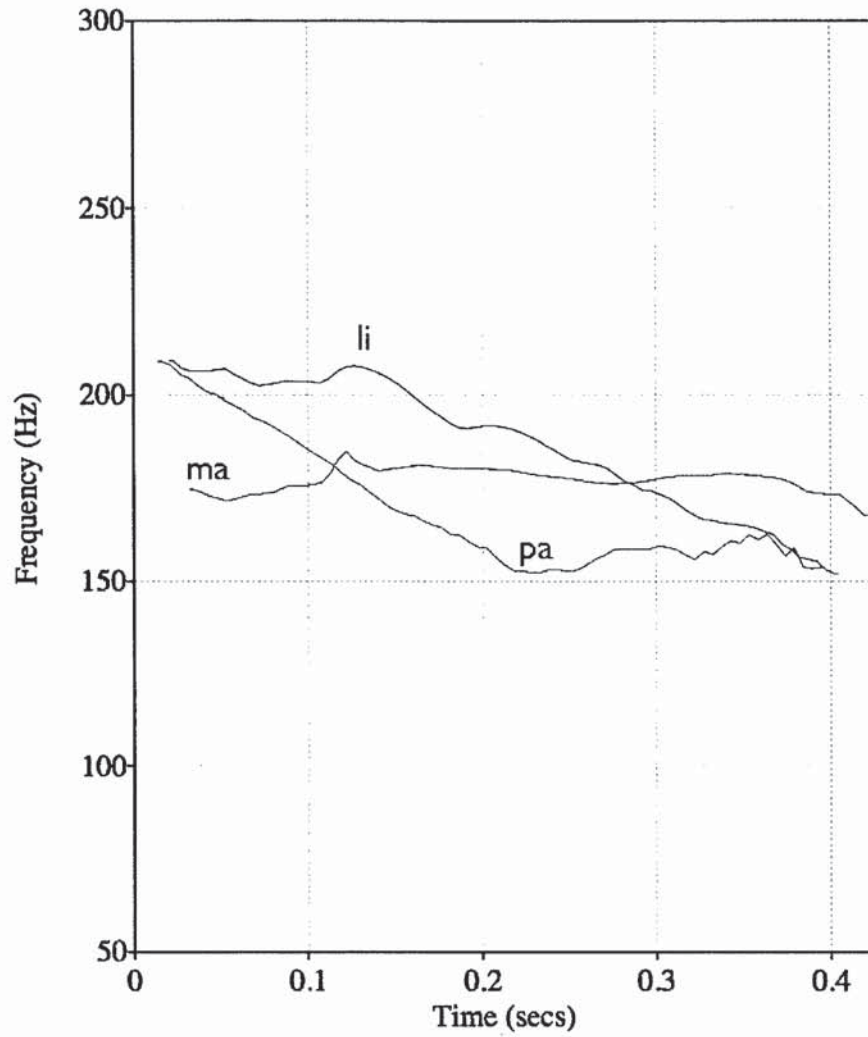
Figure 5.30: F$_0$ contours of the three monosyllabic tones, overlaid: *lí* H 'sea', *mà* L 'skin' and *pâ* HL 'person' (female speaker)

Chapter 6

An overview of clause structure

6.1 Introduction

The aim of this chapter is to present an overview of the structure of the simple clause. This will serve as a backdrop to the final two chapters of this thesis, which deal with the noun phrase and verb morphology. For the purposes of this chapter, a 'simple clause' is taken to be one which contains only a single predicate, one that consists of either a single verbal word, or a non-verbal predicate. It therefore excludes clauses with subordinate or coordinate clauses. This chapter describes the structures both of clauses that contain non-verbal predicates (§6.2), and those that contain verbal predicates (§6.3).

Andrews (1985:71) describes the three basic systems languages use to code syntactic functions: 'order and arrangement, NP-marking (case marking), and cross-referencing (agreement).' While Wutung has quite rigid word order, it also has agreement on the verb. As the agreement marking varies depending on the verb (some showing no agreement (§8.2.4), most showing agreement with the subject only (§8.2.3), and a few showing agreement with both subject and object (§8.2.5)) it can be considered to use the first of these, 'order and arrangement' as the primary indication of the role of NPs, especially the core arguments. As Andrews goes on to say (about morphosyntactic coding in general), it is the order 'relative to the verb' that is crucial.

Basic word order in the Wutung verbal clause is SOV, with the core arguments always preceding the verb (a detailed discussion of the structure of the verb is presented in Chapter 8). Numerous typical examples of Wutung clauses are found in Appendix D; several are shown in the following examples (6.1)–(6.4).

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(6.1) *Wena   suane.*
DEM.NEAR cuscus
'This is a cuscus.'

(6.2) *Wuang una   tine   tehing timaqalong tie   hang ofa.*
time   ANAPH white.cockatoo 3DU   crow   3PL.be place one
'One day Crow and Cockatoo were together.'

(6.3) *Nie urlur nie hurlang.*
1SG ear   1SG 1sg.cut
'I cut off my ears.'

(6.4) *Ella pey   si   -si*
Ella house 3SG.F>3SG.F.get -IRR/REDUP
'Ella will/may get a house.'

Argument deletion is unusual although permissible in certain circumstance. (6.5) shows an example of a clause with an elided subject argument.

(6.5) *Ca   mu   -mu   me?*
water 2SG.drink -REDUP Q
'Do you want to drink?'

Another circumstance where an argument may be deleted is when it is indefinite, as in the example in (6.6).[1] Here the agreement marking on the verb makes it clear that the overt argument is not the subject.

(6.6) *Nie hlung   hamawena*
1SG 3SG.F.speak like.that
'Someone spoke to me like that.'

Imperative clauses, as is typologically common ((Leszek 1995:25)) also show elision of subjects, as illustrated in (6.7).

(6.7) *Hmama!*
2SG.go
'Go!'

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[1]As discussed in §7.3.5, feminine gender is the default.

6.2 Non-verbal predication

6.2.1 Introduction

Although most predication in Wutung is verbal, Wutung also uses non-verbal predication (NVP), this being predication which does not employ a verb. NVP involves juxtaposing a noun phrase and a predicate which is from some part of speech other than the category 'verb'. A copula may be inserted between these two parts, but this is not obligatory. Non-verbal predications are not very common in Wutung, verb-based constructions being preferred.

Below are some examples of typical non-verbal predications.

(6.8)   *Nie na   wutung*
         1SG COP Wutung
         'I'm a Wutung (ie. from Wutung).'

(6.9)   *Qey   na   ca   -pacey*
         3SGM COP water -AGENT
         'He's a drinker.'

(6.10) *Naqi apina   naqi nie*
         dog DEM.ANAPH dog 1SG
         'That (understood) dog is mine.'

Hengeveld (1992:26) defines non-verbal predication as '...the application of a non-verbal predicate to an appropriate number of arguments.' He goes on to say that this term refers to all constructions with a non-verbal main predicate whether or not it is accompanied by a copula, and distinguishes between non-verbal predications and verbless sentences. Following Hengeveld we can define a non-verbal predicate as differing from a verb in that the former can be put to some non-predicative use without any particular measures being necessary, unlike the verb which requires some kind of modification (e.g. nominalisation or participialisation) before it may be used in a non-predicative function.

Hengeveld (1992:27–29) shows that the non-verbal predicate should be considered the main predicate of a non-verbal predication even where it is accompanied by a copula. In other words, the copula is not a predicate. In Wutung this is very clear as the copula is mostly optional.

The precise status of the parts of Wutung non-verbal predications is not entirely clear. Drawing a parallel with verbal predication we could refer to the argument NP in a NVP as 'subject'. This is not entirely unsatisfactory, however, as it differs significantly from the subject argument in a verbal predication in one major respect: in verbal predication the subject argument is always indexed on the verb, either on the verb stem or on the modal clitic, or on both. While there are some verbs stems which do not index the subject (and in past tense the subject-agreeing modal clitic is absent so in this situation the subject is not indexed at all) simply changing the mood to irrealis makes the indexing explicit. Thus, all verbs will show subject agreement in some part of their paradigm. Non-verbal predicates however are invariant in form and so do not index the subject on the verb stem. Nor do they take the modal clitic and so do not index their argument at any time, regardless of mood or tense. As such it is arguable that the argument is not a true 'subject' and is perhaps better described as a topic. As well, the argument of a NVP is not always a noun as it is with verbs, but may be a bare adjective. Despite these quite substantial differences between the two kinds of predication, as non-verbal predicates are show a number of parallels to verbal predication, in this section the argument NP of a non-verbal predicate will be referred to as a subject.

Given that the copula is semantically empty and is in fact optional, it is clear that the predicate of a non-verbal predicate is the main predicate. In Hengeveld (1992:33) a copula is described as providing a locus for the expression of distinctions which the main predicate in a non-verbal expression is unable to carry. In Wutung however there does not appear to be any particular distinction which the copula enables, it being simply an alternative way to construct a non-verbal predication. It does however have a role in the disambiguation of structure which is discussed further in §6.2.3.2.

Wutung non-verbal predication makes use of the following parts of speech as predicates: nouns, adjectives, possessive phrases, locative phrases and interrogatives. Each of these types of NVP are discussed further in §6.2.3.

6.2.2 Copular and non-copular NVPs

There are two formal means for constructing non-verbal predications: (1) by juxtaposition of the subject and predicate elements ('non-copular NVPs'), and (2), by means of the copula particle ('copular NVPs'). These two NVP types can be collapsed into the following structure, where the optional nature of the copula particle is indicated by

brackets (the order of the elements is crucial).[2]

NVP structure:

Rule 6.1 SUBJECT NP–(COP)–PREDICATE

Examples of NVP without copula:

(6.11)   a.   *Otong   qey   saci*
             yesterday 3SGM sick

             'Yesterday he was sick.'

        b.   *Wena   safa? wena   suane*
             DEM.NEAR what DEM.NEAR cuscus

             'What's this? This is a cuscus.'

Examples of NVP with copula:

(6.12)   a.   *Qey   ina   Wili*
             3SGM COP Wili [a personal name]

             'He is Wili.'

        b.   *Hnjie nie   na   'red'*
             blood 1SG COP 'red'

             'My blood is red.' (NB with the word 'red', borrowed from English/Tok
             Pisin)

Non-copular non-verbal predications manifest the following three functions: predicate noun, predicate adjective, predicate possessive. Copular NVPs show the same range of functions with the addition of predicate location, for which there is a single example. The lack of a non-copular NVP of location may simply be an accidental gap in the data collected. However there is a clear tendency for certain types of predicate to use the construction with copula in preference to that without. This is discussed further in §6.2.3.2.

The copula particle occurs in three forms, *wena*, of which there is only a single example, *ina* and *na*, the latter being the more commonly used. These latter two forms are both also found as a form of demonstrative, in particular as the distal demonstrative

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[2]It should be noted that these are labelled as 'rules', but this is simply a title for what is intended only as a descriptive statement.

ina. That these are indeed functioning as copulas, and not as demonstratives, may be determined by examining NVPs which have a pronoun argument. Pronouns may not be modified by demonstratives so examples such as (6.13) (repeated here from (6.8) above) show that the form *na* is functioning here not as a demonstrative but as a copula.

(6.13) *Nie na wutung*
      1SG COP Wutung
      'I'm a Wutung (ie. from Wutung).'

There is still some room for ambiguity as a sentence such as (6.14)[3] could have either of the two, slightly different, meanings indicated. The ambiguity would however seem to be quite minor, and probably easily clarified via the pragmatics of the situation. No naturally-occurring sentences showing this ambiguity have been recorded, so this remains merely a theoretical problem until actually observed.

(6.14) *Naqi ina   naqi nie*
      dog DEM.NEAR/COP dog 1SG
      'This dog is mine.'/'The dog is mine.'

The sole occurrence of the proximal demonstrative *wena* as copula is in the following example (6.15). It is possible that proximity is relevant here, and so given that reference is by the speaker to their own body part the proximal is preferred.

(6.15) *Tang nie wena   hlumong*
      hair 1SG DEM.NEAR straight
      'My hair is straight.'

In the terminology of Hengeveld (1992:190–191) the Wutung copula is a 'discriminating copula': it is not a predicate but functions as an indicator of non-verbal predication and does not take, or enable the predication to take, the usual categories expressed by predicates (i.e. person, number and gender). According to Hengeveld's (1992:188) classification of copulas it is common that a pronoun (in this case, a demonstrative pronoun) be used as a discriminating copula. Stassen (1997:77) gives these the name 'pronominal copulas' or 'pro-copulas' and says that there are three areas with noteworthy proportions of languages having pro-copulas, one of these being eastern Indonesia and Melanesia.

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[3]It should be noted that this is a constructed example, but one endorsed by speakers as realistic.

It should be noted that the syntax of the copula usage of this form contrasts with their use as demonstratives: the two functions never co-occur. There is no example of a NVP in which the subject has a demonstrative modifier and the copula is used. An interesting case occurs when a demonstrative constitutes the entire subject of a NVP as in (7.104). Such cases are always non-copular NVPs.

There are a range of interrogative constructions which are also non-verbal: these are dealt with in §6.4.

6.2.3 Types of non-verbal predication

6.2.3.1 Predicate nouns

Hengeveld (1992:76) defines the semantics of nominal predication as being 'status assignment'. There are two kinds of predicate noun, those that uniquely identify the subject and those that specify the class membership of the subject. These two may be formed as laid out in (6.2) and (6.3).[4]

Rule 6.2 N_{sub} (COP) N_{proper} *Identification*

Examples of Rule 6.2:

(6.16)   a. *Qey ina Wili*
                3SGM COP Wili [a personal name]
                'He is Wili.'

           b. *Nie na   wutung*
                1SG COP Wutung
                'I'm a Wutung (ie. from Wutung).'

Rule 6.3 N_{sub} (COP) N_{common} *Class membership*

Examples of Rule 6.3:

(6.17)   a. *Qey na ca   -pacey*
                3SGM COP water -AGENT
                'He's a drinker.'

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[4]Again, these 'rules' are intended as purely descriptive statements.

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b. *Qey   pa   na   qwa*
   3SGM person COP dead
   'That man is dead.'

Twenty examples of predicate nouns are presented below, seventeen specifying the class membership of the subject and three uniquely identifying the subject. In one case, (6.24), the subject is uniquely identified by their personal name. In the other two cases, (6.23) and (6.27), this 'unique identification' is by the village of origin of the subject. Thus the majority of predicate nouns indicate class membership. It should be noted that, as shown by the example in 6.22, the predicate may be a noun phrase and not just a noun, although this is fairly rare. The subject NPs are mostly pronouns (personal or demonstrative) with a few being common nouns. There are no examples of proper nouns as subject of a predicate noun. Finally, it should be noted that eight of these twenty examples employ the copula.

The following are examples of non-copular predicate nouns.

(6.18) *Eya, ina   naqi nie*
        yes, DEM.NEAR dog 1SG
        'Yes, that's my dog.'

(6.19) *Naqi apina   naqi nie*
        dog DEM.ANAPH dog 1SG
        'That (understood) dog is my dog.'

(6.20) *Wena   safa? wena   suane*
        DEM.NEAR what DEM.NEAR cuscus
        'What's this? This is a cuscus.'

(6.21) *te elema*
        3PL children
        'They are children.'

(6.22) *me pa   huwur*
        2SG person old
        'You're an old person.'

The next examples use the copula.

(6.23) *Nie na wutung*
      1SG COP Wutung
      'I'm a Wutung (ie. from Wutung).'

(6.24) *Qey ina Wili*
      3SGM COP Wili [a personal name]
      'He is Wili.'

(6.25) *Qey na ca -pacey*
      3SGM COP water -AGENT
      'He's a drinker.'

Example (6.26) shows negation of a predicate noun.

(6.26) *Nie na naqi pe*
      1SG COP dog NEG
      'I'm not a dog.'

The following example refers to two men in a traditional story who are both from the Skou village of Paca.[5] The placename *Paca* is used here to mean 'people from Paca', a common formulation in Wutung and also seen above in (6.23).

(6.27) *Fihlunga tehing Hehlua tehing na paca*
      Fihlunga 3DU Hehlua 3DU COP Paca
      'Fihlunga and Hehlua are both (from) Paca.'

A possessive NP may function as the predicate in a NVP, as shown in (6.28).

(6.28) *Naqi nyie -qlie pey ina naqi nie*
      dog 3SGM.live.at -3SGM house DEM.DIST dog 1SG
      'The dog in the house is mine.'

Finally, example (6.29) contains a complex predicate NP consisting of a noun modified by a relative clause.

(6.29) *Me na wungawunga apina bie -bie qwang*
      2SG COP woman DEM.ANAPH 3SG.F.be -IRR/REDUP beach
      'You are a woman that stays on the beach.'

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[5]*Paca* is the Wutung name for the Skou village that is nearest to Wutung, in Skou called Te Bapúbi, and also commonly known as Skou Sai.

6.2.3.2 Predicate adjective

Predicate adjectives (which, following Hengeveld (1992:76), may be described as having the semantic function of 'property assignment') almost always employ the copula. Given that in Wutung modifiers follow the NP (as will be described later in Chapter 7) the structure (N)P(ADJ) is ambiguous in that it has the same form as a noun phrase. The copula therefore enables avoiding the possibility of ambiguity between the structures (NP)(ADJ) and (NP)(PRED) and ensures that it can only be interpreted as a predication. Those predicate adjectives with a pronoun (or a possessive phrase) as subject are unlikely to be misunderstood in this way (as pronouns do not take modification) and so are commonly found as non-copular NVPs.

Of the examples of predicate adjectives in this section four are non-copular structures, three having either a pronoun or a possessive phrase as subject. One, example (6.32), when decontextualised as shown here has the appearance of a NP. It was however used as an entire utterance and so was clearly intended as an NVP rather than as an NP.

The following are non-copular predicate adjectives.

(6.30) *nie huwurti*
1SG big
'I'm big.'

(6.31) *Nie nua laqlie*
1SG skin cold
'I'm cold.' [lit. 'I'm skin cold']

(6.32) *Ca   qai*
water dry
'(The) river is dry.'

(6.33) *Nie na   saci*
1SG COP sick
'I'm sick.'

The following example has an exact equivalent, but without the copula, in (6.32).

(6.34) *Ca   na   qai*
water COP dry
'(The) river is dry.'

The following examples are formed with the copula.

(6.35)   *Cey   na   hlefieng*
         3SG.F COP short
         'She's short.'

(6.36)   *Hnjie nie na   'red'*
         blood 1SG COP 'red'
         'My blood is red.' (NB with the word 'red', borrowed from English/Tok Pisin)

(6.37)   *Fe   haqa -qa   na plaie*
         betelnut climb -IRR/REDUP COP difficult
         'Climbing betelnut trees is difficult.'

(6.38)   *Qey pa   na   qwa*
         3SGM person COP dead
         'That man is dead.'

(6.39)   *Me ina   hnjequrpihley*
         2SG DEM.DIST lazy
         'You are lazy!'

(6.40)   *Ifla na muti*
         sleep COP good
         'Sleep is good.'

(6.41)   *Qey na huwurti*
         3SGM COP big
         'He's big.'

(6.42)   *Cey   na ey   wingefa*
         3SG.F COP bone thin
         'She is thin.'

(6.43)   *Qey na ey   hluaqwi*
         3SGM COP bone tall
         'He is tall.'

The next two examples illustrate the fact that an adjective used as a predicate may still take its plural form.

(6.44) *Nie na huwurti*
1SG COP big
'I'm big.'

(6.45) *Ne na huwur -fa*
1PL COP big   -PL
'We're big.'

The tense of a NVP may be indicated by use of a temporal adverb as shown in (6.46) and (6.47), which are both non-copular, and in (6.48) and (6.49), both of which use the copula. Where a temporal adverb is present it is possible to have a single non-verbal predication with two copulas. In both of the following examples two copulas, as shown, are acceptable, the bracketed one being optional.

(6.46) *Otong   qey   saci*
yesterday 3SGM sick
'Yesterday he was sick.'

(6.47) *Qey   lolofa   saci*
3SGM long.ago sick
'He used to be sick.'

(6.48) *Cey (na) lolofa   na ey wingefa*
3SG.F COP long.ago COP bone thin
'Long ago she was thin.'

(6.49) *Qey (na) lolofa   na ey hluaqwi*
3SGM (COP) long.ago COP bone tall
'Long ago he was tall.'

In (6.49) the copula following the pronoun is not required, but the copula preceding the predication is obligatory. It should be noted that (6.50) was not acceptable.

(6.50)   * *Qey   lolofa   hluaqwi*
3SGM long.ago tall
'He used to be tall.'

(6.51) *Qey enyua -qlie ey   na ey hluaqwi*
3SGM young -3SGM 3SGM COP bone tall
'When he was young he was tall.'

Example (6.52) illustrates negation of a predicate adjective.

(6.52) *Naqi nie huwur -ti   pe*
      dog 1SG big   -INT NEG
      'My dog isn't big.'

This final example, (6.53), shows a polar question containing a predicate adjective.

(6.53) *Me felai me?*
      2SG good Q
      'Are you good?'

6.2.3.3 Predicate possessive

There are only a very few examples of predicate possessives in my corpus. All show the same structure, having a pronoun as predicate, which is taken to indicate the possessor.

The three examples of predicate possessive all employ the non-copular NVP structure. It may be that this results from the fact that the recorded examples all contain demonstratives, which cannot co-occur with the copula as they have the same form.

(6.54) *Eya, ina   nie*
      yes, DEM.DIST 1SG
      'Yes, that is mine.'

(6.55) *Wena   nie, ina   nie pe*
      DEM.NEAR 1SG, DEM.FAR 1SG NEG
      'This is mine, that is not mine.'

6.2.3.4 Predicate location

There is a single recorded example of locational predication, using the copula.

(6.56) *Nie na   qwang tuama*
      1SG COP beach near
      'I'm near the beach.'

Predicates of location can also be expressed with verbs, as in (6.57). Interestingly this verbal locational predication uses the same verb as do existential predicates. Hengeveld (1992:94) combines predicates of location with existential predicates under the cover

term 'localizing predicates', saying that they behave similarly in several respects. While in Wutung this is true of the verbal predicate location, the NVP of location does not have a non-verbal existential predicate equivalent.

(6.57) *Nie lie   panyua tuqung*
        1SG 1SG.stay man   under
        'I'm under the man.'

Hengeveld (1992:96–97) discusses the view that an existential predication is the same as a locative predication, but with the location unspecified. According to this view existential predicates are a subtype of locative predicates. While the two types of predicate appear to be closely related in their semantics, they are distinct in how they may be realised. The fact of the non-occurrence of a non-verbal existential predicate actually fits in well with how NVPs are formed. If existential predicates are a subtype of predicate location, they differ mainly in that their location is left unspecified (presumably recoverable from context). In Wutung this would require that they have the same structure as a predicate location but without the predicate. While according to Hengeveld (1992:99) there are languages (for example, Tamil) which allow a subject and copula with no overt predicate, in Wutung the copula cannot appear without a predicate. The result is that both the predicate location and the existential predicate may occur with a verbal predicate (and use the same verb), but only the predicate location may occur as a non-verbal predicate.

6.2.3.5 Predicate interrogatives

One of the more common types of NVP is that employing an interrogative as the predicate. Two fairly typical examples are shown in 6.58 and 6.59. In the latter example it is not clear whether *ina* is the demonstrative or the copula, in either case it is a non-verbal predication.

(6.58) *Patey ey   hofa*
        name 3SG.M where
        'What's his name?'

(6.59) *Mu ina hlelefa?*
        fish COP how.much/many
        'How much is the fish?'

The interrogatives are discussed further in §6.4.

6.3 Verbal clauses

6.3.1 Overview of verbal clause structure

The order of the elements of the verbal clause in Wutung is:

Subject–Object–Verb–Indirect Object

This structure is laid out in the diagram in Figure 6.1, and shown in the following example.

(6.60) *Cey   naqi nie ungcu*
      3SG.F dog 1SG 3SG.F.bit
      'She bit my dog.'

Reversing the order of the NPs changes the meaning, as can be seen in (6.61) wherein the NPs from (6.60) have been reordered. As the verb agrees with the subject, and as female is the default gender, it retains the same form unless the dog in question is male.

(6.61) *Naqi nie cey   ungcu*
      dog   1SG 3SG.F 3SG.F.bit
      'My dog bit her.'

The status of NPs as subject or object is indicated by their position within the clause rather than by the morphology on the noun. Indirect objects follow the verb. Core arguments that precede the verb may be indexed by it, but not all verbs index both, or either, of their preverbal arguments (see Chapter 8). Those arguments that follow the verb are never indexed on it. The below example (6.62) is of a transitive verb that indexes both subject and object.

(6.62) *Jenny Tanfa qwa*
      Jenny Tanfa 3SG.F>3SG.M.hit
      'Jenny hit Tanfa.'

Other possible elements of the clause include adjunct NPs, adverbs and particles, the latter of which occur on the margins of the clause, either clause-finally or clause-initially.

Wutung verbs show four argument structures: intransitive, with one argument, subject; semi-transitive, with two arguments, subject and indirect object; transitive, with two

arguments, subject and object; and ditransitive, with three arguments, subject, object and indirect object. These are dealt with in the following four sections.
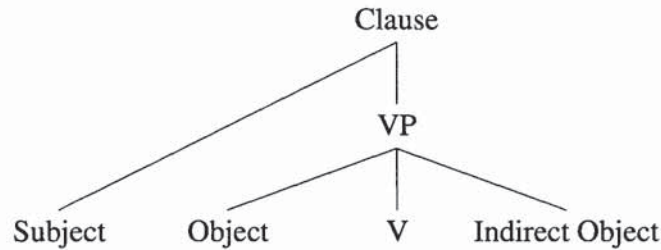
Figure 6.1: Structure of the core elements of the verbal clause

The correlation between argument structures and agreement marking is shown in Table 6.1, showing that verbs may mark fewer than all their obligatory arguments.

Table 6.1: Correlation between argument structure and agreement marking types

Argument structure	attested agreement marking
intransitive	none, subject
semi-transitive	subject
transitive	subject, double

All other NPs always follow the verb except for instruments which may appear anywhere after the subject—having the instrument NP precede the subject is not acceptable. In fact, NPs following the verb are interpreted with their most logical interpretation, for Example (6.63) which has a bare pronoun as post-verbal NP.[6]

(6.63) *Me   ba   -ba   qey*
         2SG 2SG.go.with -IRR/REDUP 3SGM
         'You go with him.'

Other semantic roles of the post-verbal NP may be indicated by a variety of prepositions.

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[6]While this post-verbal NP is described later as an indirect object, alternative analyses are possible. The general issue of these post-verbal second arguments is an issue in the language that requires more detailed attention.

Occasionally transitive clauses will have the order Object-Subject-Verb, but this is quite unusual and seems to be done for pragmatic reasons. Examples (6.64) and (6.65) show the variation in order.

(6.64)   *Cey   nie   nyu*
         3SG.F 1SG 3SG.F.fight
         'She fought me.'

(6.65)   *Nie cey   nyu*
         1SG 3SG.F 3SG.F.fight
         'She fought *me*.'

The cross-referencing of person/number/gender on the verb usually is sufficient to de-termine which argument is subject and which is object. Clauses without overt argument/s (i.e. arguments represented by independent NPs) are very unusual, except in the case of imperatives. Word order appears to be invariant although given that the arguments are cross-referenced on the verb their order may be changed while preserving the meaning of the clause. Several such examples (constructed by myself) were actually presented to speakers, who always interpreted them as expected. These examples were said by the speakers to be acceptable, but not normal.

Adverbial modifiers can take almost any position within the clause, following the verb or clause-initial, or even preceding the verb as in (6.66).

(6.66)   *Qey   pa   wusawunga otong   qeng*
         3SGM person yam   yesterday 3SGM.eat
         'The man ate yams yesterday.'

The verb 'say' takes the thing said as the default post-verbal NP: that is, it has no ad-position or marking, unlike the target of the speech which is indicated with a preposition. This is further exemplified in the following.

(6.67)   *Suane qlung   'aqo'*
         cuscus 3SG.M.say 'no'
         'Dog said "no".'

Example (6.68) shows an example of this with a clause containing two post-verbal constituents.

(6.68) *Suane qlung   hwangli   naqi 'hmalu...'*
cuscus 3SG.M.say 3SG.F.go.to dog 'come...'
'Cuscus said to Dog "Come...".'

Given the above situation where there are two post-verbal elements, the utterance and the target of the utterance, the question arises as to what orders are possible. For the above utterance the following orders were acceptable, and equally so.[7]

(6.69) *naqi qlung 'hmalu' hwangli suane*

(6.70) *naqi qlung hwangli suane 'hmalu'*

The informants were uncertain about the following order, saying that it might be acceptable but they wouldn't use it.

(6.71) *'hmalu' naqi qlung hwangli suane*

It seems that the SV ordering is obligatory, while the ordering of the other arguments may have some flexibility.

Instrument noun phrases normally have the following form (described in §7.4.1), with the morpheme *-ci* suffixed to the instrument NP, which follows both the subject and object NPs.

(6.72) *Nie qey   wolong -ci   qa   -lie*
1SG 3SG.M stone   -INST 1SG>3SG.M.hit -1SG.IMPERF
'I'm hitting him with a rock.'

The following order, with the instrument-marked NP after the subject NP and before the object, was said to be acceptable but 'funny'.

(6.73) *Nie wolong -ci   qey   qa   -lie*
1SG stone   -INST 3SG.M 1SG>3SG.M.hit -1SG.IMPERF
'I'm hitting him with a rock.'

While, as shown above, instrument NPs are preverbal, all other adjuncts follow the verb, most taking no morphological marking. An example of this follows with an intransitive verb with a post-verbal adjunct.

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[7]It should be noted that *hwangli* '3SG.F.go.to' also functions as a preposition meaning 'go to/towards'.

(6.74) *Nie fuiqe -lie   manu*
        1SG scared -1SG crocodile
        'I'm scared of the crocodile.'

In this case the NP *manu* is assigned the appropriate semantic role expected for a post-verbal argument of this verb.

6.3.2 Intransitive clauses

Intransitive clauses consist minimally of a single verb with a single obligatory argument. All intransitive clauses have the constituent order SV (subject–verb). Most intransitive verbs have marking to agree with the subject, but there is a small number that do not. Examples of both types are shown below: example (6.75) (with an optional adjunct NP) shows the verb *ungwa* 'laugh', which does not vary to agree with the subject, while (6.76) shows the 1SG form *ha* 'go', which does.

(6.75) *Cey   ungwa -cie   qey*
        3SG.F laugh -3SG.F.IMPERF 3SG.M
        'She's laughing at him.'

(6.76) *nie   ha*
        1SG 1SG.go
        'I went.'

The absence of subject-agreement marking appears to be a feature only of verbs that are derived from some other part of speech,[8] and is not related to any other aspect of the verb or the clause.[9]

6.3.3 Transitive clauses

Transitive clauses are those that require two obligatory arguments, a subject NP and an object NP. The normal order is SOV (subject–object–verb), as shown in (6.77).

(6.77) *Nie Nella lang*
        1SG Nella 1SG>3SG.F.fight
        'I fought Nella.'

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[8]Discussed further in §8.2.4.

[9]Unlike for example, Klon (Baird 2008:120), which signals distinct grammatical roles of the subject NP by the presence or absence of agreement marking on the verb.

A few verbs index both of these arguments, but regardless of agreement marking, both NPs are required. This is illustrated in (6.78) where the subject and object NPs are both present, and both indexed on the verb. This in addition to their being redundantly marked on the reduplicated portion of the verb, as well as on the irrealis clitic.

(6.78)   *Panyua huwur -fa -po te   ti   -ti   =tey*
        man   big   -PL -INT 3PL 3PL>3PL.hit -IRR/REDUP =3PL.IRR
        'The really big men will/might hit them.'

When an adjunct is added to the clause it normally follows the verb. The example in (6.79) shows the verb *lung* 'say'. This occurs both as a transitive and as an intransitive verb. When used as a transitive verb it takes the speaker as subject and the utterance as object, with the target of the utterance in an adjunct, following the verb (the intransitive usage of this verb is discussed in §8.4.3.1).

(6.79)   *Naqi aqo qlung   hwangli   Suane*
        dog 'no' 3SG.M.say 3SG.F.go.to cuscus
        'Dog said "no" to Cuscus.'

Example (6.80) is a transitive clause with an adjunct following the verb. The subject is *te pa huwur* 'the old people', while the object is *cey* (3SG.F). The adjunct NP *to ne* 'our language' follows the verb.

(6.80)   *Te pa   huwur cey   toha -tie   to   ne*
        3PL person big   3SG.F teach -3PL.IMPERF language 1PL
        'The old people are teaching her our language.'

The verb meaning 'forget' is one of the few verbs that is transitive yet takes no agreement marking whatsoever. It can take a variety of argument types, including a clause.

(6.81)   *Nie qey   ungfling*
        1SG 3SG.M forget
        'I forgot him.'

(6.82)   *Nie ha   -ha   ungfling*
        1SG 1SG.go -IRR/REDUP forget
        'I forgot to go.'

(6.83) *Nie flaqur   -qur   ungfling*
        1SG 1SG.swim -IRR/REDUP forget
        'I forgot swimming.' (i.e. 'I forgot how to swim')

6.3.4 Ditransitive clauses

Ditransitive clauses have three arguments and have the structure S O V IO (subject–object–verb–indirect object). There are only two known ditransitive verbs in Wutung, *qaili* 'give' and *qeyjie* 'put'. Some examples of the former are shown below. With this verb the recipient is represented by the indirect object, which follows the verb, with the theme being the object.

(6.84) *Qey   cey   wiqli   -qlie   qey*
        3SG.M 3SG.F 3SG.M>3SG.F.give -3SG.M.IMPERF 3SG.M
        'He's giving her to him.'

(6.85) *Nie muqa   qaili   ca*
        1SG sweet.potato 1SG>3SG.M.give pig
        'I give the pig sweet potato.'

(6.86) *Cey   mu ofa wini   -cie   me*
        3SG.F fish one 3SG.F>2SG.give -3SG.F.IMPERF 2SG
        'She's giving you a fish.'

The verb *qeyjie* 'put' takes a location as the indirect object. Example (6.87) shows the case where there is a specific location, here indicated by the possessive phrase 'my house'. In (6.88) on the other hand, the location is the direction 'down'.

(6.87) *Nie heng   lujie   pey nie*
        1SG coconut 1SG>.3SG.M.put house 1SG
        'I put (the) coconut in my house.'

(6.88) *Tine   hafo wi   -cie   ung*
        white.cockatoo clothes 3SG.F>3SG.M.put -3SG.F.IMPERF down
        'White Cockatoo is putting the clothes down.'

These two verbs occur quite frequently, especially 'give'. They occur most commonly in the imperative, where the subject argument is not overtly present, but indicated by context; an example of this is found in (8.39) in §8.4.5, repeated here as (6.89).

(6.89) *Mu bimi*   *nie*
         fish 2SG>3SG.M.give 1SG
         'Give me fish!'

6.3.5 Semi-transitive clauses

Semi-transitive clauses have two obligatory NPs, one of which is in subject position, preceding the verb, and one that follows the verb. Thus it differs from intransitives in that a second NP is required, and from transitives in that the second NP is not an object (or at least not the same kind of object as in the transitives) and is not indexed on the verb in any way.[10] A semi-transitive verb that takes agreement marking will index only the NP in subject position.

Semi-transitive clauses have identical structure to an intransitive clause with an adjunct NP with the exception that these latter normally require a preposition to indicate the grammatical role of the post-verbal NP. This is never the case with semi-transitive verbs as their post-verbal argument NP does not take a preposition. Most semi-transitive verbs have a specific locational meaning, with the post-verbal NP providing this information.

An example of this kind of verb is shown in (6.90a), where the post-verbal NP, *cafalang* 'riverbank', is obligatory as demonstrated by the unacceptability of both (6.90b) and (6.90c).

(6.90)   a. *Nie laqwua*   *cafalang*
            1SG 1SG.stand.beside riverbank
            'I'm standing beside (a/the) riverbank.'

         b. * *Nie laqwua*
              1SG 1SG.stand.beside
              *'I'm standing beside (...).'

         c. * *Nie cafalang laqwua*
              1SG riverbank 1SG.stand.beside
              *'I'm standing beside riverbank.'

Another semi-transitive verb is *la* 'go.with'. In (6.91) this verb is shown in the irrealis, demonstrating that the required post-verbal NP takes the irrealis clitic, as occurs with non-obligatory post-verbal NPs.

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[10]For this reason these could alternatively be analysed as a subcategory of transitive verbs, as they obligatory take two arguments, one being an indirect object.

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(6.91) *Nie la   -la   cey   =ley*
      1SG 1SG.go.with -1SG.go.with 3SG.F =1SG.IRR
      'I'll go with her.'

Most semi-transitive verbs specify a locational component, not requiring a preposition but taking the location as the obligatory non-core NP. A variant of this is found with *halur* 'come.via', which takes an obligatory post-verbal NP which describes the path taken. An example of this is (6.92).

(6.92) *Nie halur   qwang -fa*
      1SG 1SG.come.via beach -EXCL
      'I came along the beach (and only the beach).'

Finally, the verb *namie* 'think.about', shown in (6.93), takes a somewhat different obligatory post-verbal NP that indicates the topic, rather than a location.

(6.93) *Nie namie   -lie   Canberra*
      1SG 1SG.think.about -1SG.IMPERF Canberra
      'I'm thinking about Canberra.'

6.3.6 Reflexive verbs

In reflexive verbs the subject and object refer to the same entity. In Wutung there is at least one reflexive verb, which takes three arguments. Two, the subject and object are co-referential while the third is post-verbal. As such, this verb could be considered ditransitive and included in that section, however as it is distinctive in that it requires coreferential arguments it is placed here in its own section. This verb is *lehama* 'pretend to be...'. The paradigm is shown in Table 6.2.

This verb is used as shown in (6.94).

(6.94) *Qey   qey   -po leyhama   tifi*
      3SG.M 3SG.M -REFL 3SG.M.pretend surfboard
      'He's pretending (himself) to be a surfboard.'

This verb appears to be derived from the complementizer *hama* COMP.

Table 6.2: Paradigm for *lehama* 'pretend oneself to be...'

SUBJ	OBJ	pretend
nie	niepo	leyhama
me	mepo	beyhama
qey	qeypo	leyhama
cey	ceypo	cihama
netu	nepo	deyhama
etu	eypo	leyhama
tetu	tepo	tihama

6.4 Interrogative clauses

6.4.1 Introduction

There are two types of interrogative clause: those that use the interrogative particle to produce polar questions, and those that use interrogative words (or so-called 'wh-words') to form content questions. Polar questions employ the interrogative particle *me* to create a question while content questions make use of a set of specific question words. While the former only require a 'yes/no' answer, the latter require a relatively complex answer. The interrogative particle is dealt with in §6.7.3, in the section on the illocutionary particle, while the content questions are dealt with in §6.4.2, below.

6.4.2 Content questions

Content questions are used to obtain substantive information, unlike polar questions, which require only an affirmative or negative response. To form a content question requires use of one of a set of words that can conveniently be termed 'question words'. (Payne 1997:300-301) describes question words as accomplishing two tasks: the marking of the clause of which they are member as a question, and to indicate the type of information that is being sought. Table 6.3 lists the question words found in Wutung along with their glosses and their morphemic composition.

Most of the interrogatives are transparently formed by the affixing of the element *-fa* to a noun, for example *pa* 'person'+*-fa* gives *pafa* 'who'. The question word word *temhofa*

Table 6.3: Question words

question word	composition	gloss
pafa	*pa* 'person' + *-fa*	who/someone
safa	*sa* 'thing' + *-fa*	what, what for, why
hofa	*ho* ? + *-fa*	where
maho	*ma* ? + *ho* ?	where
temhofa	*tem* 'time'? + *ho* ? + *-fa*	when
hlelefa	*hlele* ? + *-fa*	how much/many

is probably derived from Tok Pisin 'taim'. These question words are also used as the indefinite pronouns, 'someone', 'somewhere', etc.

pafa 'who?'

This question word is used to seek the identity of a human referent, where this is not known. A number of examples of the usage of *pafa* 'who' are given in (6.95), with the question word occurring in both subject and object position. In example 6.95b the verbal agreement morphology shows that *pafa* is interpreted in this case as plural. Example 6.95c shows *pafa* used in object position, but here the verbal agreement shows that it is interpreted as singular.

(6.95)   a.   *Pafa iflaqley   -qlie?*
            who 3SG.M.sleep -3SG.M.IMPERF
            'Who's sleeping?'

   b.   *Pafa Stanis sa?*
            who 3SG.M 3PL>3SG.M.hit
            'Who hit Stanis?'

   c.   *Qey   pafa qa?*
            3SG.M who 3SG.M>3SG.M.hit
            'He hit who?'

safa 'what?'

This question word parallels *pafa* in that it is used to seek the identity of a referent, but is only used with those that are not human. In (6.96) are shown a number of examples of how this interrogative is used. No examples of this occurring in subject position were

recorded, nor of it in object position in a clause with a double-marking verb (regarding which see §8.1.4). As a result there are no recorded examples where *safa* is an argument indexed on the verb. But this is most likely to be a gap in data collection resulting from the fact that humans are the most common entity in this position in the clause. The evidence is that in all other ways this word follows the same syntactic behaviours as *pafa*.

(6.96) a. *wena   safa*
          DEM.NEAR what
          'What is this?'

       b. *[dragonfly] safa*
          [dragonfly] what
          'What's "dragonfly" ?' (i. e. asking how to say 'dragonfly' in Wutung)

       c. *Me moi safa*
          2SG want what
          'What do you want?'

       d. *Me safa bey   -bie*
          2SG what 2SG.do -2SG.IMPERF
          'What are you doing?'

hofa 'where'

The question word *hofa* 'where' is used to seek information about locations. Some examples of the usage of *hofa* are shown in (6.97), along with an example of the occasionally used alternative, *maho* 'where', in (6.97c).

(6.97) a. *Hlungpong hofa*
          road   where
          'Which road?'

       b. *Me hma -hma   hofa*
          2SG 2SG.go -IRR/REDUP where
          'Where will you go?'

       c. *Suane henghengqley 'qurlur me maho?'*
          cuscus 3SG.M.ask   'ear   2SG where?'
          'Cuscus asked "Where are your ears?" '

This question word is also used to ask someone's name:

(6.98) *Patey ey   hofa*
       name 3SG.M where
       'What's his name?'

Finally, *hofa* may also be used in seeking information about the time when an event will occur, as shown in the examples in (6.99). This usage of *hofa* is only possible when it is explicitly combined with a time word, normally *wunga* 'time'.

(6.99) a. *Wunga hofa me hma   -hma*
         time   when 2SG 2SG.go IRR/REDUP
         'When are you going?'

       b. *Wunga wena   wunga hofa*
         time   DEM.NEAR time   when
         'What day is it?'

hlelefa 'how much/many'

hlelefa is used when seeking information as to the amount of some entity. It may be used to simply ask how many/much there is of something, or it may be used to ask how much something costs. The result is that there is ambiguity in the meaning, as shown in (6.100). Usually the interpretation is clear from the context and pragmatics.

(6.100) *Mu hlelefa*
        fish DEM.DIST how much
        'How much is fish?' ~ 'How many fish?'

6.5 Prepositions

Wutung has a small, closed class of prepositions which may be used to add adjunct NPs to a clause. Prepositions take no morphology and normally occur preceding an adjunct NP, although they do occasionally occur without an NP. Prepositions always follow the verb and any obligatory post-verbal material. They are used to add information about a variety of aspects of the action represented in the clause, including: location, setting, purpose.

The prepositions are listed in Table 6.4, and are discussed and exemplified in the following sections.

Table 6.4: Prepositions

preposition	gloss
fong	after
hur	above
hwangli	to/towards
lo	before
(tua)ma	near
ocie	generic preposition

It is important to note that at least two of the forms listed here as prepositions (*hwangli* and *ocie*) are also found functioning as verbs. It appears that the process of grammatical-ization is underway, with these words changing function from being verbs to prepositions, but that this process is still underway.[11]

fong 'after/behind'

The examples in (6.101) show typical usages of *fong*, 'after/behind'. This preposition locates the action in the clause as occurring spatially or temporally after the NP that it precedes. This can be ambiguous, for example in (6.101a) where it is not clear from the utterance whether the intended meaning is spatial or temporal.

(6.101) a. *Me hma -hma   fong qey*
            2SG 2SG.go IRR/REDUP after 3SG.M
            'You go after him.'

        b. *Hlang wunga una   nyeong huwurqefing hnyjeqi apina*
            day   time   ANAPH cat   small   red   DEM.ANAPH
            anyie   tingofla u   fong cey
            3SG.M.follow butterfly INDEF.SG after 3SG.F
            'One day that little red cat followed after a butterfly.'

hur 'above'

Example (6.102) shows an illustration of *hur* 'above, over'.

(6.102) *Me hma -hma   hur   qey*
        2SG 2SG.go IRR/REDUP above 3SG.M
        'You go above/over him.'

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[11]The gradual nature of such grammaticalization is discussed in Lichtenberk (1991).

This form is found in the name of the western half of Wutung village, *Pamuahur*, which may be translated as 'Top village'.[12]

hwangli 'goal'

The preposition *hwangli* is used to indicate the direction or goal of the action in the clause, or the entity towards which the action is oriented in some way. This form is identical to the 3SG.F form of the verb *haleng* 'go.to'. While informants were aware that the preposition is homophonous with the verb, they see them as different words though at least one person stated that they seem similar. It appears that while, synchronically, speakers generally feel there are two words, one a verb and the other a preposition, diachronically the preposition almost certainly derives from the verb. Throughout this work the word will be given its gloss as a verb (3SG.F.go.to).

Of the examples shown in (6.103), the one in (6.103a) is the most typical example of this preposition, which is most commonly found indicating the entity towards which speech is directed.[13]

(6.103) a. *Cey hlung   'fa' hwangli   nie*
              3SG.F 3SG.F.say 'edge' 3SG.F.go.to 1SG
              'She said "edge" to me.'

        b. *Naqi urlur qey   -po   eqley   hwangli   hluqbur qey*
              dog ear   3SG.M -REFL 3SG.M.tie 3SG.F.go.to head   3SG.M
              'Dog tied his ears to his head.'

lo 'before'

The examples in (6.104) show the usage of *lo* 'before, in front of'. As with *fong*, *lo* can be interpreted spatially or temporally.

(6.104) a. *Me hma   -hma   lo   qey*
              2SG 2SG.go IRR/REDUP before 3SG.M
              'You go before him.'

        b. *Me samemua lo   me*
              2SG 2SG.eat   before Q
              'Have you already eaten?'

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[12]The division of Wutung village into two sections and the conception of west as 'up' are both discussed in §1.13.

[13]This particular example is from the phonetic data collection process, described in § 4.2.1; as mentioned in that section it is sometimes realised as [hwālu].

(tua)ma 'near'

This preposition has the meaning 'near'. While the full form is *tuama*, it is usually heard reduced to *ma*, and only appearing in its full form in careful speech.

(6.105) a. *Cey na ma qe*
           3SG.F COP near NEG
           'She's not here.'

        b. *Nie ha   ma fli*
           1SG 1SG.go near mountain
           'I'm going near the mountain.'

ocie 'at/with/from'

The preposition *ocie* is the most commonly used preposition and has a wide range of meanings, typically indicating that the action of the clause takes the prepositional NP as some kind of location or object towards which the action is oriented.

The preposition *ocie* is formally identical to the singular of the irregular verb *ocie* 'to have' (discussed in §8.2.3.6 in terms of its function as a verb). Unlike the situation with *hwangli*, most speakers commented that *ocie* sounds the same as the verb and felt the two were closely connected, although they are well aware of the contrast between its two functions . It is likely that this is correct and that the verb has become grammaticised as a preposition, probably resulting from its common use in complex predicates (the same also being true of *hwangli*). In time it is likely that the connection between *ocie* the verb and *ocie* the preposition will be lost and they will be considered by speakers to be distinct (but perhaps homophonous) forms.

This form is probably best described as a generic preposition due to the wide and somewhat disparate range of meanings that it can be used to express. However, it will be glossed consistently with as 'SG.have' (and its plural form *macie* will be glossed as 'PL.have'). Samples demonstrating this range are shown in (6.106) and (6.107).

(6.106) a. *Eddy ungwa ocie   eng*
           1SG laugh SG.have child
           'Eddy laughed at the child.'

        b. *Nie na nua la ocie   feng*
           1SG COP skin cold SG.have wind
           'I'm cold from the wind.'

  c. *Ne da   ocie qey*
    1PL 1PL.be.with SG.have 3SG.M
    'We went with him.'

(6.107) a. *Otong nie haleng ocie fu*
      yesterday 1SG 1SG.go.to SG.have garden
      'Yesterday I went to the garden.'

    b. *Eme nie cur   ocie lowa*
      mother 1SG 3SG.F.come.out SG.have cave
      'My mother came out from (a) cave.'

A result of the broad set of meanings that can be conveyed by this form is that there may be a fair amount of ambiguity, as shown in (6.108).

(6.108) *Emua me na ocie   ca*
    daughter 2SG COP SG.have water
    'Your daughter is at/in/on (the) water.'

6.6 Adverbs

6.6.1 Introduction

Adverbs take no morphology and have free positional variation, but always external to NPs or the verb phrase. The most common locations for them to occur are clause-initially or clause-finally (apart from the particles, which are always final). These two possibilities are illustrated with the temporal adverb *fey* 'tomorrow' in the examples in (6.109).

(6.109) a. *Fey   nie ha -lie   maqe =ley*
      tomorrow 1SG 1SG.go -1SG.IMPERF Vanimo =1SG.IRR
      'Tomorrow I'm going to Vanimo.'

    b. *Qey pa qa   -qa   fey*
      3SG.M person 3SG.M.go -IRR/REDUP tomorrow
      'The man will go tomorrow.'

The adverbs may be subgrouped according to whether they express temporal, spatial or manner meanings, and are treated below under these categories.

6.6.2 Temporal adverbs

The following temporal adverbs have been documented:

Table 6.5: Temporal adverbs

Temporal adverb	gloss
fey	tomorrow
lo	before/already
ongfur	just now
otong	yesterday

The examples in (6.110) illustrate how *otong*, *lo* and *ongfur* are used: *fey* is already shown in the examples in (6.109). These examples demonstrate that the temporal adverbs may be place clause-initially, clause-internally or clause-finally. The only clause-internal position that they have been recorded as occupying is immediately preceding the verb. Wutung speakers produced clauses with adverbs in all these positions with the clause-initial being the most common. Regardless of positioning, the effect is the same, with the adverb having scope over the entire clause. It should be noted that *lo* 'before/already' also functions as a preposition, but is only interpreted as operating in this role when it precedes a post-verbal NP. When functioning as an adverb it does not precede a NP when post-verbal, and when not post-verbal it can only be interpreted as an adverb.

(6.110)   a.   *Otong   nie ca saqengpua*
            yesterday 1SG pig 1SG.eat
            'Yesterday I ate pig.'

       b.   *Me   samemua lo*
            2SG food   1SG.eat before
            'You already ate.'

       c.   *Stanis ongfur   qa*
            1SG   just.now 1SG.go
            'Stanis is just now going.'

6.6.3 Spatial adverbs

The recorded spatial adverbs are listed in Table 6.6.

Table 6.6: Spatial adverbs

Spatial adverb	gloss
qang	away
qoapina	there (anaphoric)
qoina	there
qowena	here
tuqung	under

Very few examples of any of the spatial adverbs were collected as they were found to be used only infrequently. following examples in (6.111) present most of those that were collected.

(6.111) a. *Qey   naqmla qang*
      3SG.M 3SG.fly away
      'He flew away.'

     b. *Ina   pafa iflaqley -qlie   qoina*
      DEM.DIST who sleep   -3SG.M.IMPERF there
      'Who's that sleeping there?'

     c. *Qowena pe*
      there   NEG
      'Not here.'

The three forms *qoapina*, *qoina* and *qowena* are obviously derived from the nominal demonstratives discussed in §7.7.4, by the addition of the prefix *qo-*, and have meanings parallel to them. Two of these derived adverbs also have abbreviated forms, shown in parentheses; the abbreviated form of *qowena* is *wena*, which is identical to the full form of the plain demonstrative. The prefix *qo-* has not been found to occur elsewhere in the language, and constitutes one of the very few prefixes in Wutung apart from the verbal agreement prefixes.

6.6.4 Manner adverbs

The manner adverbs are listed in Table 6.7. As with the spatial adverbs, only a very few examples of these forms were recorded, it appearing to be the case that they are not very common usages. Three of these forms are derived from the nominal demonstratives

(§7.7.4) by compounding with the complementiser *hama*. As with the equivalent spatial adverbs, these three retain the deictic meanings of the nominal demonstratives. According to Dixon (2003:77), it is cross-linguistically typical for manner adverbs such as these to have forms that are derived from demonstratives.

Table 6.7: Manner adverbs

Manner adverb	gloss
epoesa	not at all
hamaina	like that
hamapina	like that (anaphoric)
hamawena	like this/thus
hesafa	quickly
nuamli	slowly

In (6.112) is shown one of the few recorded examples of *epoesa* (taken from the story *Tine pa timaqalong*, 'Crow and cockatoo'). In all the (several) recorded natural examples this form co-occurs with the verb *moi* 'like/want', though constructed examples of combinations with other verbs were said to be acceptable. It is possible that the adverb *epoesa* is a complex form and is derived from the negative particle *e* and an otherwise unattested form *poesa*.

(6.112)   *Cey   hmusua   pa   cey   moi   epoesa*
          3SG.F 3SG.F.see CONJ 3SG.F want not.at.all
          'She looked and she didn't like it at all.'

(6.113) shows examples of the three manner adverbs derived from the nominal demonstratives. The below are typical of how the very few recorded examples of these forms are used ((6.113b) is repeated here from (ex:noArg3)).

(6.113)   a. *Hamaina pe,   hamawena*
             like.that   NEG thus
             'Not like that, like this.'

          b. *Nie hlung   hamawena*
             1SG 3SG.F.speak like.that
             'Someone spoke to me like that.'

The remaining two adverbs, *hesafa* 'quickly' and *nuamli* 'slowly, carefully' are used as shown in (6.114).

(6.114) *Cey   caqwie   hesafa cey   casie   -sie   nuamli*
         3SG.M 3SG.M.wash.self quickly, 3SG.F 3SG.F.wash.self -IRR/REDUP slowly
         'He washed quickly, she'll wash slowly.'

While all adverbs may occur in a number of different positions there does seem to be a preference for manner adverbs to be clause-final as most non-elicited examples (i.e. narratives and conversation) conform to this structure.

6.7 Illocutionary particles

6.7.1 Introduction

The illocutionary particles are a small, closed class consisting of words which, like the adverbs and prepositions, take no morphology. This is a heterogeneous class that brings together words having a variety of behaviours. For example, unlike the members of the other word classes, each illocutionary particle has its own slot, or set of slots, where it may occur within the clause. Also unlike the adverbs and prepositions, the particles are not limited in their scope to particular kinds of elements of the clause, but are able to be applied to any clausal constituent. The members of this group will all be treated herein as words, although an analysis of them as clitics may be an alternative.

The members of this class dealt with here are: *hla* 'also/as well', the interrogative particle *me*, the negative particles *upe* and *qe*, causative *qo*, and *su*, 'can'.

6.7.2 *hla* 'also'

The illocutionary particle *hla* is glossed as 'also', and functions as an additive, indicating that the constituent that it follows is an addition to the previously stated/understood situation.

The usage of this particle is exemplified in (6.115a). It is typically found in apposition with pronouns, as in (6.115a), and occasionally with nouns, as in (6.115b).

(6.115) a. *me hla*
            2SG also
            'You too/also.'

b. *Mahur hla mua   pa   'car' hwang.*
   frog   also left.behind CONJ car   3SG.F.go.to
   'Frog also was left behind, and the car went.'

6.7.3 Interrogative particle *me*

The interrogative particle *me* is used to form polar questions, which differ minimally from normal clauses in that they take the interrogative particle *me* clause-finally. This type of interrogative, the polar, only requires a 'yes' or 'no' answer (as opposed to content questions, which require an informational response). When it occurs, the interrogative particle is always the final element in the clause.

The interrogative particle is used with both non-verbal predications and verbal clauses. Non-verbal interrogatives are shown in (6.116a) (with a copula) and (6.116b) (without a copula). In all cases, the interrogative particle follows the clause/predicate.

(6.116)   a. *Ca na iqlu   me?*
          pig COP overcooked Q
          'Is the pig overcooked?'

      b. *Hafo   qai me?*
          clothes dry Q
          'Are the clothes dry?'

The interrogative particle is used with most types of verbal clause, apart from the imperatives. Shown in (6.117) are intransitive interrogatives.

(6.117)   a. *Te   qwurhnya me?*
          3PL 3PL.fall   Q
          'Did they fall down?'

      b. *Ne hna   -die   me?*
          1PL 1PL.go -1PL.IMPERF Q
          'Are we going?'

      c. *Me mu   -mu   me?*
          2SG 2SG.drink -IRR/REDUP Q
          'Do you want to drink?'

(6.118) contains some examples of interrogative transitive clauses, as well as a ditransitive clause in (6.118c).

(6.118) a. *Jenny te nya   me?*
                Jenny 3PL 3SG.F>3PL.hit Q
                'Did Jenny hit them?'

         b. *Ne cey   nawa   -wa   me?*
                1PL 3SG.F 1SG>3SG.F.kill -IRR/REDUP Q
                'Shall we kill her?'

         c. *Nie heng   piling   -ling   wunga nie me?*
                1SG coconut 1SG>3SG.F.give -IRR/REDUP wife   1SG Q
                'Shall I give (the) coconut to my wife?'

As well as clauses, the interrogative particle may also be used with other syntactic units, including interjections, (6.119a), and NPs, (6.119b). Again, it is at the right edge of the unit.

(6.119) a. *Ea me?*
                yes Q
                'Yes?'

         b. *Tur   paca me?*
                money much Q
                'Lots of money?'

6.7.4 The negative particles

Negation of a clause or clausal constituent is done by postposing one of the negative particles *upe* or *qe* to the unit. Both of these may be used to negate a NP or a verb but there is a tendency for *upe* to be used to negate NPs while *qe* is more commonly found negating clauses. There are restrictions limiting the kinds of clauses that may take negation. The negative particle *upe* is, in use, almost always abbreviated to *pe*.

A sample of the range of uses of the negative particles is shown in (6.120).

(6.120) a. *Wena   naqi pe*
                DEM.NEAR dog NEG
                'This is not a dog.'

         b. *Naqi nie huwur pe*
                dog 1SG big   NEG
                'my dog isn't big.'

c. *Nie hungpua qe*
   1SG 1SG.see NEG
   'I didn't see.'

Negation of verbs involves postposing a negating particle to the verb phrase, as shown in (6.120c) and (6.121a). The fact that either of the negative particles is acceptable is illustrated in (6.121b).

(6.121) a. *Aqo, me hmubur   pe*
            no   2SG 2SG.stand NEG
            'No, you are not standing.'

         b. *Nie hungpua   pe~qe*
            1SG 1SG.stand NEG~NEG
            'I didn't sit down.'

Negation is more complex in the case of irrealis clauses that contain a modal clitic. As seen in (6.122a) the irrealis form of the verb can be negated by the addition of an interrogative particle. Usually the irrealis clitic is not included in a negated verbal clause, however it may be, as shown in (6.122b). In this case the negative particle is not clause-final as the irrealis clitic follows it. Informants said that while this inclusion of the irrealis clitic in a negated verb clause is very unusual, it is acceptable.

(6.122) a. *Nie ha   -ha   pe~qe*
            1SG 1SG.go -IRR/REDUP NEG~ NEG
            'I won't go.'

         b. *Nie ha   -ha   pe =ley*
            1SG 1SG.go -IRR/REDUP NEG =1SG.IRR
            'I won't go.'

Although it is not clear why this should be the case, the imperfective form of the verb cannot be negated. Thus, while (6.123) is an acceptable clause to speakers, (6.7.4) is not.

(6.123) *Nie ha   pe*
         1SG 1SG.go NEG
         'I didn't go' ~ 'I don't go.'

(6.124) * *Nie ha   -lie   pe*
           1SG 1SG.go -1SG.IMPERF NEG
           'I'm not going.'

Negation may have scope over any particular part of the clause, this being indicated by the relative locations—the negative particle must immediately follow the item which it is negating.

In the following examples we see negation of various clausal constituents:

in (6.125), of an adverb;

(6.125) *Me hma   hesafa pe*
        2SG 2SG.go quickly NEG
        'You didn't go quickly.'

in (6.126), of an adjective;

(6.126) *Naqi nie huwurti pe*
        dog 1SG big   NEG
        'My dog isn't big.'

in (6.127), of a particle;

(6.127) *nie su   pe*
        1SG able NEG
        'I'm unable. ∼ I can't'

in (6.128), of a demonstrative;

(6.128) *wena   pe*
        DEM.NEAR NEG
        'Not this (one).'

in (6.129), of a non-verbal predicate;

(6.129) *Nie na   naqi pe*
        1SG COP dog NEG
        'I'm not a dog.'

and in (6.130), negation of a possessive.

(6.130) *Wena   nie pe*
        DEM.NEAR 1SG NEG
        'This is not mine.'

It should be noted that in all of the above examples either negative particle is acceptable, *qe* or *pe*, although different speakers may have different patterns of preferences.

6.7.5 Causative *qo*

There are three strategies in Wutung for indicating causation. One is lexical, employing a verb which includes causation in its semantics; another employs the anaphoric demonstrative *apina* to indicate that the preceding NP is the cause of the events in the subsequent clause—this is discussed briefly in §7.7.4.4. The third strategy for indicating causation other is periphrastic, and employs the causative particle *qo* to link two clauses. In this latter case, the initial clause expresses the cause while the other, the final, expresses the result. The examples in (6.131), which contrast a causative clause with a related non-causative, illustrate how this particle functions.

(6.131)   a.   *Ca qwa*
              pig 3SG.M.die
              'The pig died.'

          b.   *Naqi ca qa   qo   qwa*
              dog pig 3SG.M.fight CAUS 3SG.M.die
              'The dog is killing the pig.'

This analytic causative (Payne 1997:181–182) places the causative particle prior to the result clause, which can be seen in (6.131b) to consist solely of the verb meaning 'die', marked for third person singular masculine. The subject of the initial clause is the cause of the result, via its carrying out of the action of the initial clause. In (6.131b) the causee is included in the initial, transitive, clause as object and therefore is elided from the result clause, being understood.

In (6.132) the initial clause has the causer as subject but, being intransitive, does not include the causee entity. Instead, the causee is presented as the overt subject of the result clause; as the result clause verb does not index the arguments, the causee argument must be overtly included to avoid ambiguity. Also worth noting in this example is the use of *lie* 'do' as a light verb; a more literal gloss would be something like 'The boy did something that made me laugh'.

(6.132)   *Eng qley   qo   nie ungwa*
          child 3SG.M.do CAUS 1SG laugh
          'The (male) child made me laugh.'

Similar to the previous are the two in (6.133). Both have intransitive cause and result verbs, and both have inanimate causers.

(6.133) a. *Hlang qley   qo   nie nuaqlur -qlie*
             sun   3SG.M.do CAUS 1SG skin.hot -1SG.M
             'The sun is making me hot.'

         b. *Feng qley   (qo)   nie saci*
             wind 3SG.M.do (CAUS) 1SG sick
             'The wind made me sick.'

It is not uncommon to have a result clause with a non-verbal predicate, as in (6.134).

(6.134) *Hleng cang   qley   qo   lurto nie tangqi*
         fire   smoke 3SG.M.do CAUS eye   1SG sore/burning
         'The smoke is making my eyes sore.'

A similar example, this time with an animate causer.

(6.135) *Me bey   qo   nie saci   -ci   =ley*
         2SG 2SG.do CAUS sick -IRR/REDUP =1SG.IRR
         'You'll make me sick.'

6.7.6 *su* 'can'

This particle expresses the notion of ability and is given the gloss 'able', but is often better given the free translation of 'can'. Some examples are presented in (6.136).

(6.136) a. *Te su ti   -ti   =ti   me?*
             3PL can 3PL.do -IRR/REDUP =3PL.IRR Q
             'Will they be able to do it?'

         b. *Qey   su qe*
             3SG.M can NEG
             'He can't.' ~ 'He's unable.'

         c. *Suane qlung   'urlur nie hwurti -po, su me urlur nie hla*
             cuscus 3SG.M.say 'ear   1SG big   -INT, can 2SG ear   1SG also
             hurma -ma?'
             2SG.cut -IRR/REDUP
             ' "I have big ears", said the cuscus, "can you cut off my ears too?" '.

         d. *Nie su hungpua -lie*
             1SG can 1SG.see -1SG.IMPERF
             'I can see (it).'

As only a few instances of this particle have been recorded it is difficult to be certain of its normal location in the clause.

Chapter 7

The noun phrase

7.1 Introduction

This chapter deals with the noun phrase (hereafter NP). The first section describes the constituent structure of the NP and conjunction of NPs. The second section, which deals with the core of the noun phrase, the noun, defines this part of speech and describes its morphology, in particular the various affixes that bind to it. The succeeding sections describe the other major components of the noun phrase, the pronouns, articles, demonstratives, numerals, and adjectives, detailing in each case their usage and morphology. The final sections deal with nominal possession, compounding and negation.

NPs may occur in preverbal or postverbal position. In preverbal position these NPs commonly function as core arguments of the clause and are cross-referenced by morphological marking on the verb; as such they provide reference to the entitites about whom something is predicated by the verb. Where this cross-referencing encodes gender this will be the gender of the head noun in the NP. If they occur in postverbal position these NPs fill the role of an oblique argument, providing extra information about the setting or manner of the predication.

7.2 Structure of the noun phrase

7.2.1 Introduction

A noun phrase is a phrase which has a noun as its head. NPs may include other words which provide additional information in some way. Typically the noun is the core referent while the additional words modify the noun in some fashion, for example, more precisely specifying the entity, picking it out by reference to the speaker (demonstratives), or perhaps indicating quantity (quantifiers) or some physical attribute (adjectives).

NPs fall into three kinds, depending on the type of head (which is defined in terms of morphosyntactic patterns as well as semantics) and modifiers:

1. NPs headed by a common noun (abbreviated NP_c). Discussed in §7.2.2

2. NPs headed by a pronoun or proper noun (NP_p). Discussed in §7.2.3

3. NPs headed by the anaphoric pronoun *una* (NP_a). Discussed in §7.5.6

While all modifiers are optional in the NP_c and no modifiers are allowed in the NP_p, the NP_a differs in that modifiers are obligatory (see §7.5.6 on the anaphoric pronoun).

Most NPs are left-headed, the nominal head being phrase-initial with other components following (the exception to this is the possessive phrase, dealt with in §7.8). A noun is usually obligatory as head of the noun phrase, which may also include other components. There are headless NPs, in particular those containing only a demonstrative, but in all cases the head noun is understood from context, deixis, previous discourse or events. Such headless NPs are quite unusual; very few examples have been recorded so they will not be analysed.

Wutung noun phrases can act as an argument of a verb, which may be indexed on that verb (if the verb is one which cross-references its argument).

7.2.2 Structure of the NP with common noun head

The NP_c contains a head common noun with various other constituents optionally following it. The order of possible constituents in the NP_c is as shown in Figure 7.1; the abbreviations used are as follows:

N_c common noun (discussed in §7.3)

POSS possessor pronoun (§7.8)

ADJP adjective phrase (§7.6)

REL relative clause[1]

ART article (§7.6)

QUANT quantifier (§7.7.3)

NUM numeral (§7.7.5)

DEM demonstrative (§7.7.4)

The four components enclosed in braces (ART, QUANT, NUM and DEM) taken together constitute the category DET (determiner, see §7.7). Parentheses indicate optional elements while an asterisk indicates the constituent may be repeated.

$$NP_c \rightarrow N_c \text{ (POSS) (ADJP)}^* \left(\left\{ \begin{array}{l} \text{ART} \\ \text{QUANT} \\ \text{NUM} \\ \text{DEM} \end{array} \right\} \right) \text{(REL)}$$

Figure 7.1: Order of constituents in the noun phrase headed by a common noun

Payne (1997:102) claims that the category of determiner is valid for only a few languages and so is not very viable as a universal.[2] My analysis indicates that it is also a valid category in the description of Wutung as its members all occupy the same slot in the NP structure and there are no known examples of them co-occurring. Payne (p. 102) includes possessors in his definition of the determiner category; these will not be included as such in this work as they show a substantially different syntax from the determiners, so will be dealt with separately (this is discussed in §7.8.2).

A typical complex noun phrase with a common noun head is (7.1).

(7.1)   ...*nyeong hwurqeyqe -fa heno*
      cat   little   -PL three
    '...three little cats...'

---

[1]Relative clauses are outside the scope of this thesis but are mentioned here for completeness.

[2]Payne's definition of 'determiner' groups together the same categories as in the analysis presented here.

Following are examples of (mostly) minimal NPs with various modifiers.[3] Examples (7.2) and (7.3) show nouns followed by the adjectives *hleyqi* 'heavy' and *huhu* 'light'. Although there does not seem to be a principled limit to the number of adjectives which may co-occur within a single NP, no examples have been recorded containing more than two adjectives, and even this is unusual.

(7.2)   *eng   hleyqi*
       N   ADJ
       child heavy
       'heavy child.'

(7.3)   *fur   huhu*
       N   ADJ
       rain light
       'light rain.'

(7.4)   *nyeong huweyqefing hnjeqi*
       N   ADJ   ADJ
       cat   small.SG   red
       'Little red cat.'

(7.5)   *tingmaqalong tang   cey   toqmley*
       N   N   POSS ADJ
       crow   feather 3SG.F white
       'crow's white feathers'

Example (7.6) shows a noun followed by the plural form of the indefinite article, *a* 'some', while (7.7) shows the singular form, *u*.

(7.6)   *nyi   a*
       N   INDEF.PL
       banana some
       'some bananas'

(7.7)   *tingofla u*
       N   INDEF.SG
       butterfly a
       'a butterfly.'

---

[3]These examples will include an interlinear line indicating the part of speech membership of each item, using the terms from the above list.

NPs containing numerals and quantifiers (see §7.7.3) are very common. Example (7.8) has a numeral while (7.9) and (7.10) have quantifiers.

(7.8)　*nyeong heno*
　　　　N　　　QUANT
　　　　cat　　　three
　　　　'three cats'

(7.9)　*ca paca*
　　　　N　QUANT
　　　　pig many/much
　　　　'many pigs.'

(7.10)　*fe*　　　*mai*
　　　　N　　　　QUANT
　　　　betelnut none
　　　　'no betelnut.'

The following examples illustrate the use of the demonstratives (proximal, distal and anaphoric) within the NP. It should be noted that while the demonstratives are often found acting as modifiers within the NP, they are also found acting as head of a NP. The following examples illustrate these two functions. In (7.11) they are seen acting as NP head, while in (7.12) they are acting as modifiers.

(7.11)　a.　*Wena*　　　*felai*
　　　　　　DEM　　　　N
　　　　　　DEM.NEAR good
　　　　　　'This (is) good.'

　　　　b.　*Ina*　　　*qley*
　　　　　　DEM　　　　VERB
　　　　　　DEM.DIST 3SG.M.do
　　　　　　'That one did (it).'

　　　　c.　*Apina*　　　*qlie*　　　*-qlie*
　　　　　　DEM　　　　VERB　　　-VERB
　　　　　　DEM.ANAPH 3SG.M.be -IRR/REDUP
　　　　　　'That one (previously mentioned) is staying.'

(7.12)   a. *fu   wena*
            N   DEM
            garden DEM.NEAR
            'this garden.'

       b. *ca ina*
            N   DEM
            pig DEM.FAR
            'that pig.'

       c. *nyeong apina*
            N   DEM
            cat   DEM.ANAPH
            'That (previously mentioned) cat.'

The next group of examples show NPs containing multiple modifiers.

(7.13)   *hlingto tua huwurhuwur -fa -po*
        N   ADJ ADJ   -PL -INT
        fly   fat big   -PL -INT
        'really big, fat flies.'

(7.14)   *hleli huweyqefieng u*
        N   ADJ   ART
        tree small.SG   INDEF.SG
        'a small tree.'

(7.15)   *onoqai huwurwur -fa samuli ofa*
        N   ADJ   -PL NUM   NUM
        crayfish big   -PL ten   one
        'ten big crayfish.'

7.2.3 Structure of the NP with proper noun or pronoun head

Proper nouns and pronouns take no modifiers when acting as heads, so the NP headed by a pronoun or proper noun normally consists solely of the head noun, as shown in Figure 7.2 (where N_p = a pronoun or proper noun (§7.3)).

$$NP_p \rightarrow N_p$$

Figure 7.2: Order of constituents in the noun phrase headed by a pronoun or proper noun

7.3 Nouns

7.3.1 Introduction and definition

Nouns in Wutung may be defined on morphological and syntactic criteria. Prototypical examples of nouns include concrete real-world objects, living creatures, individual humans, and so on. As pointed out by Schachter (1985:3–5) this kind of description does not form a definition of the class but rather identifies words that cross-linguistically form a major part of such a class. Identification of the grammatical behaviour associated with these core nouns enables identification of other members of the class via the morphological and syntactic behaviours which are shared with words which do not necessarily capture the precise same semantics. The category 'noun' thus identified also includes words used to label mental entities (thoughts, dreams and so on), legendary/mythological beings and objects, and a range of other kinds of entities.

Syntactically, nouns are those words which function as phrasal heads; in the words of Nichols (1986:57), they determine '...the category of its phrase', these phrases being able to stand as arguments within the clause. A distinctive feature of Wutung nouns is that when heading a NP acting as an argument they are often cross-referenced on the verb, this cross-referencing reflecting the person, number and gender of the head noun (see Chapter 8). Two typical cases are shown in (7.16).

(7.16)   a. *Nie ha*
         1SG 1SG.go
         'I went.'

        b. *Stan   naqi qla*
          PROPER.NOUN dog 3SG.M>3SG.F.hit
          'Stan hit the [female] dog.'

Nouns may occur within phrases along with such modifying elements as adjectives (§7.6.2), the articles (§7.7.2), demonstratives (§7.7.4) and the quantitative modifiers

(§7.7.3). As well they may occur as the head of a possessive phrase as in (7.17) wherein *naqi* 'dog' is the head and the first singular pronoun *nie* follows it, so operating to indicate possession.

(7.17) *naqi nie*
       dog 1SG
       'my dog.'

Morphologically, nouns show little variation. Nouns have few forms of marking for grammatical role, which is in most cases indicated by the position of the noun phrase within the clause and by obligatory cross-referencing of person, number and gender on the verb phrase (see Chapter 8). The exceptions to this include marking of instrument NPs by a suffix, and the cliticisation of the irrealis marker to oblique NPs in irrealis mood, though this is more properly a matter of clause structure than NP structure.

The noun category contains a number of subclasses, most of which are open, and to which new words may be added; there is at least the one closed subclass, the pronouns. While a fair number of words appear to have been added to the nouns by borrowing from English, Tok Pisin and Bahasa Indonesia,[4] as well as a few from the neighbouring Skou, this appears not to be the preferred means of lexical expansion for Wutung speakers. Instead, they prefer to expand the semantic range of existing words to cover new meanings, or else to simply code-switch to Tok Pisin or English. An example of the former is the word *tino* 'canoe', which is now also used to mean 'bus, car' or, if necessary, any type of transport vehicle.[5]

All nouns have gender (§7.3.5) although this is largely covert, only being apparent when a third person singular pronoun (necessarily masculine or feminine) is substituted for the noun, or in the agreement which occurs on most verbs.

Although argument NPs are indexed on most verbs it is very rare for the NP to be totally elided, so entire NPs are almost always present. Clauses without overt NPs, but with them indexed on the verb, were said by speakers to be comprehensible but not the way they normally speak. This results in some redundancy as arguments are typically present, structurally, at least twice, once as independent NPs and once again indexed on the verb (although of course indexing only represents the person, number and gender of the argument, not its full meaning).

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[4]Possibly the words which appear to be from Bahasa Indonesia were actually borrowed from the Malay used by the (early) bird of paradise hunters discussed in Swadling (1996).

[5]Borrowings are discussed in §1.8.

Oblique noun phrases typically follow the verb, although instrument NPs may precede it. Such NPs are never cross-referenced on the verb.

While nouns may be used as predicates this requires the particular syntactic environment of apposition with an argument or the insertion of the copula (see §6.2).

7.3.2 Types of noun

There are several types of nouns. Three subgroups which will be discussed in the following secctions are listed below.

- common nouns: these refer to categories of entities;

- proper nouns: these pick out individuals and as such do not take modifiers, except in unusual circumstances;

- pronouns: these stand in place of a common or proper noun, referencing it deictically, with respect to the speaker. While classed here as a member of the category 'noun', these have many distinctive properties and so are dealt with separately in §7.5.

7.3.3 Proper nouns

Proper nouns may be distinguished from common nouns in that, as with the personal pronouns (see §7.5.2), they do not normally take modifiers. This is due to their semantics: proper nouns, by definition, name a unique entity, whereas common nouns name a class of entities and modifiers help to identify a particular member (or subset) of that class in terms of its (relative) location, quantity or physical attributes. A NP headed by a proper noun is normally comprised solely of that item (see §7.2.3). As well, and unlike both common nouns and pronouns, proper nouns do not show any morphology.

Unlike both common nouns and pronouns, proper nouns do not take any morphology, however proper nouns differ from pronouns in that they are an open class; new proper nouns may be added and commonly are, both by borrowing from other languages (in particular, English, almost everyone at Wutung village having an English-derived personal name) or by use of a common noun as a proper noun. An example of the latter is *Otua* 'Sand', the name given to a local beachside 'resort'. Common nouns may also be used as personal names, for example one woman is called *Qilie* 'Bamboo'.

Proper nouns have gender based on the sex of their referent. I have no examples which clarify the status of entities which do not have natural gender (for example, place names) so am unable to be certain how these are treated. However, as feminine is the default gender for common nouns this is likely to also be true of proper nouns.

7.3.4 Common nouns

Common nouns constitute the great bulk of attested nouns. New common nouns are fairly readily added, most noticeably through borrowing from English and/or Tok Pisin, as well as from Malay/Bahasa Indonesia, as mentioned in §1.8. New common nouns may also be formed through compounding; an example of this is *ninapa* 'white man', a compound of *nina* 'axe' and *pa* 'man/person', due presumably to early experiences of white people as having metal tools.

Common nouns show more morphology than the proper nouns or pronouns, including: the exclusive suffix *-fa* (EXCL); and the agentive suffix *-pacey* (AGENT). These are discussed in §7.4. This morphology distinguishes the common nouns from the other subclasses of nouns. Syntactically they are distinguished by the lexical categories that modify them within a phrase, such as the articles and adjectives.

7.3.5 Gender

All common nouns have grammatical gender, either masculine or feminine. As mentioned previously, this is largely covert, being realised only on the third person pronouns and through argument cross-referencing on the verb where the argument is in the third person, in which case it is marked as either masculine or feminine. Masculine gender is applied to those animate entities that have natural masculine gender (e.g. male creatures), as well as to inanimate items connected with men, such as canoe paddles and axes. Feminine gender is the default and is applied to all other entities.[6]

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[6]My Wutung informants were not consciously aware that their language has grammatical gender and were fascinated to reflect on it once it was pointed out to them. One result of this was that they began translating Wutung phrases into English using 'he/she' rather than 'it', taking delight in such items as *ca sa* 'tea'—lit. 'water hot'—which they described by saying 'she's boiling' where previously they would have said in English 'it's hot'. Some additional risqué humour also arose from the fact that tea served without food is known as *ca sa tangfa* 'naked tea' (feminine gender).

7.4 Noun morphology

7.4.1 Instrument case marking on NPs

Instrument (INSTR) NPs are those NPs that represent an instrument or means used by the subject to accomplish an action. Wutung instrument NPs have a head noun that is morphologically case marked by the suffix *-cey*. Unlike indirect object or adjunct NPs, bothy of which occur after the verb, instrument NPs may either precede the verb as in (7.18), or they may follow it as in (7.19). Where the instrument NP follows the verb and the irrealis clitic is present it will, as expected, follow the instrument NP. If we define the core grammatical functions as being those that, like subject and object, have NPs that occur before the verb, we can include the instrument case in this category. The oblique grammatical functions then are those whose NP follows the verb; these are discussed in §6.5. Instrument is the only grammatical role which is morphologically marked on the noun.

(7.18) *Nie qey   wolong -cey   qa   -lie*
      1SG 3SG.M stone   -INSTR 1SG.M.S/3SG.M.O.hit -1SG.R
      'I'm hitting him with a stone.'

(7.19) *Nie me pung   -pung wolong   -cey =ley*
      1SG 2SG 1SG.S/2SG hit   -IRR/REDUP stone -INSTR =1SG.IRR
      'I'll hit you(sg.) with a stone.'

There appears to be no difference in meaning between the two structures of preverbal and postverbal instrument NP. Occasionally the instrument affix has the form *-ci*, as in (7.20); this appears not to make any difference to meaning and may simply be a case of dissimilative allomorphy as all known examples of it with this form occur when it is attached to a word with a final close-mid front vowel (/ey/). However, not enough examples of the *-ci* form of the instrument affix have been collected to enable a definitive analysis.

(7.20) *Cey   qey   hlelihley -ci   qwa*
      3SG.F 3SG.M stick   -INSTR 3SG.F.S/3SG.M.O hit
      'she hit him with a stick.'

A body part or behaviour may function as instrument as in (7.21), wherein a possessive construction functions as instrument.

(7.21) *Nella unghena cey -ci qo eng fuiqe*
   Nella laughter 3SG.F -INSTR CAUS baby 3SG.scare
   'Nella's laughter scared the baby.'

The above contrasts with 7.22, which was proposed by my informant as an alternative way of saying the same thing.

(7.22) *Nella unghena cey qo eng fuiqe*
   Nella laughter 3SG.F CAUS baby 3SG.scare
   'Nella's laughter scared the baby.'

Interestingly, (7.21) and (7.22) are identical except that the latter lacks the instrument affix. This suggests either that the treatment of 'laughter' as an instrument is a fringe case and somewhat uncertain for speakers, or perhaps that the presence of the causative particle renders the instrument unnecessary.

In (7.23) we see the instrumental suffix used to mark a cause, rather than an instrument. This suggests that the instrument suffix may also, at least in some circumstances, be used to mark other roles which are not instruments. Unfortunately the data bearing on this point is limited.

(7.23) *Manu -cey qo nie fuiqe -lie*
   crocodile -INSTR CAUS 1SG be.afraid -1SG.IMPERF
   'the crocodile is making me scared.'

As there are no examples of an instrument NP that contains post-nominal modifiers, apart from that in (7.21), the description given herein assumes it to be a suffix. Given its location at the right edge of the possessive phrase in example (7.21) it may be that it would be better described as a postpositional clitic. A definitive analysis of this issue will require further investigation.

7.4.2 Exclusive suffix *-fa*

The nominal suffix *-fa* has the meaning 'nothing but', or 'exclusively' and is used to indicate that the noun to which it is attached is all that is present, or predominates.

(7.24) *Hlihe -fa*
   leaf -EXCL
   'nothing but leaves'

Nouns carrying the exclusive suffix typically occur as exclamations, constituting entire utterances. An example of this is (7.25), which the informant said could be used by someone who wanted meat to eat but was presented with nothing but bananas.

(7.25) *Nyi   -fa*
        banana -EXCL
        'nothing but bananas!'

At least one example of a noun bearing the EXCL suffix is also used as an adjective, as in (7.26).

(7.26) *si   ca   -fa*
        sago water -EXCL
        'Watery sago.'

An example of the use of *-fa* within a larger, clausal context is (7.27).[7]

(7.27) *Nie la   -la   cey -fa*
        1SG 1SG.go.with -IRR/REDUP 3SG.F -EXCL
        'I'll go with only her.'

The exclusive suffix is found used on common NPs in all positions within the clause, for example (7.28), which shows it on an adjunct NP.

(7.28) *Monday wunga maina nie ha   -lie   Musu -fa*
        Monday time   every 1SG 1SG.go -1SG.PROG Musu -EXCL
        'Every Monday I'm going only to Musu.'

It is noteworthy that the same form, *-fa*, occurs as a suffix on both nouns and adjectives but with quite distinct meanings; on adjectives it marks plurality, which is perhaps related to exclusivity (in the sense of 'nothing but', i.e. 'all'; see §7.6.3.2). The same form also occurs as a verbal suffix but with a very similar meaning to that of the nominal suffix (see §8.4.4.3).

Some more examples of the use of this suffix are given in (7.29).

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[7]This verb takes an obligatory post-verbal NP of location.

(7.29) a. *hlihe -fa*
         leaf -EXCL
         '(it's all) just leaves'

     b. *ma -fa*
         skin -EXCL
         'nothing but skin'

     c. *e -fa*
         bone -EXCL
         'nothing but bone'

     d. *wolong -fa*
         stone   -EXCL
         'only stone'

     e. *fe -fa*
         betelnut -EXCL
         'nothing but betelnut'

     f. *pa -fa*
         person -EXCL
         'just people'

7.4.3 Agentive derivative *-pacey*

The suffix *-pacey* derives an agentive noun from a common noun. Example (7.30) shows *fupacey* 'gardener', which is derived from *fu* 'garden' by addition of *-pacey*.

(7.30) *fu -pacey*
       garden -AGENT
       'gardener.'

The formula is:

(7.31) *X -pacey* = 'one who does X' or 'a doer of X'

-pacey is amenable to two distinct etymological analyses: one possibility is that it is composed of *pa* 'person' plus *-cey* INSTR. Alternatively, it can be analysed as being a possessive structure: N *-pa -3sg.f*, having the meaning something like 'N person', e.g. 'garden person', 'fight person'. Whatever the origin, it now functions as a single morpheme.

Some more examples are shown below.

(7.32) *si -pacey*
       battle -AGENT
       'fighter/warrior.'

(7.33) *Ne na ca -pacey*
       1PL COP water -AGENT
       'we are drinkers.'

Example (7.33) is fairly typical of the most common use of the agentive suffix, wherein it is used with a non-verbal predication. In this construction it has an habitual meaning; in effect it is a claim that a behaviour is typical of some entity.

7.4.4 Plurals

Typically number is not marked on the noun, but on the adjective (if present): this is discussed further in §7.6.3.2. However at least one noun has been recorded to have a special plural form, *e* 'child':

(7.34)   *eng* 'child' — *englema* 'children'

7.5 Pronouns

7.5.1 Definition

Pronouns are a closed subclass of nouns. Broadly speaking, they fall into two groups: personal pronouns, and the anaphoric pronoun. Personal pronouns function as NP heads and are always the sole member, taking no modifiers. They pick out other entities by person (first, second and third), number (singular, dual and plural), gender (male and female, in the third person singular) and also employ an exclusive/inclusive contrast in the dual number. The anaphoric pronoun differs, always occurring with modifiers. Phonologically the pronouns all share the property of having the same tone melody, HL.[8] The personal pronouns are dealt with in §7.5.2, with variants (inclusive/exclusive, reflexive and emphatic pronouns) discussed in the succeeding sections, while the anaphoric pronoun is dealt with in §7.5.6.

There are other NP constituents that can function as pro-forms, in particular the demonstratives. As these have quite different combinatorial possibilities from the pronouns they are grouped with the determiners.

7.5.2 Personal pronouns

There is a single set of free pronouns which may be used in place of any NP. The singular, dual and plural forms of the pronouns are shown in Table 7.1. The dual forms of the

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[8]As mentioned in 5.5.6.3 the disyllabic pronouns have accent on the first syllable.

first person pronoun, are discussed separately and in more detail in §7.5.3. The personal pronouns are not marked for case, their role as subject or object being indicated by word order in the clause and by cross-referencing of subject and object on the verb. While personal pronouns are quite distinct from the other types of noun they share the function of acting as arguments or heads of arguments, described by (Schachter 1985:7) as being '...the most common function for nouns'.

As shown in Table 7.1, the plural pronouns have abbreviated forms as well as their full forms. The two forms are interchanbeable and both are commonly used. In addition, the abbreviated forms are used as the base for the contrastive pronouns (see §7.5.5), whereas the full forms are not used in this way. The short forms of the plural pronouns are much more frequently used than the long forms but there appears to be no difference in meaning between the two sets. The full forms all end with *-tu* (perhaps an old plural suffix?) and this is the component which is deleted on the abbreviated forms of the pronouns.

Table 7.1: The personal pronouns

| | | number | | |
		singular	dual	plural
	1 excl.	nie		
	1 excl.masc.		heqey	netu/ne
	1 excl.fem.		hecey	netu/ne
	1 incl.		hemey	netu/ne
person	2	me	pehing	etu/e
	3 masc.	qey	tehing	tetu/te
	3 fem.	cey	tehing	tetu/te

Examples (7.35)–(7.40) illustrate the typical uses of the personal pronouns.

(7.35)   *Nie   ha*
         1SG   1SG.go
         'I'm going.'

(7.36)   *Me   nie   mlua   me*
         2SG   1SG   2SG.hear   Q
         'Did you hear me?'

(7.37)   *Qey   he   -he   =qley*
        3SG.M 3SG.M.ask -IRR/REDUP =3SG.M.IRR
        'He will ask a question.'

(7.38)   *Cey   hmuma -cie*
        3SG.F 3SG.F.sit -3SG.F.IMPERF
        'She's sitting.'

(7.39)   *Me hma   -hma   fong qey*
        2SG 2SG.go -IRR/REDUP behind 3SG.M
        'You go behind him.'

(7.40)   *Ne fuiqe*
        1PL be.scared
        'We are afraid.'

(7.41)   *Nie e ji   -ji   =ley*
        1SG 2PL 1SG>2PL.hit -IRR/REDUP =1SG.IRR
        'I'll hit you.PL.'

(7.42)   *te   su   ti   -ti   =ti   me?*
        3PL can 3PL.do -IRR/REDUP =3PL.IRR Q
        'will they be able to do it?'

7.5.3 Inclusive/exclusive dual pronouns

Table 7.2 shows the three first person dual pronouns, which display contrast between exclusive masculine, exclusive feminine and inclusive.[9] The three pronouns are formed by combining the formative *he-* with one of the third person singular pronouns (for the exclusive forms) or with the second person singular (for the inclusive form). The formative *he-* is not otherwise attested. The set appears to have been regularised by modification of the final vowel of *hemey* from the expected [ɛ] to [e] so that it matches the final vowel of the other two forms.

While these three pronouns were well-known to my informants, only one of them occurs in my text collection, and that in only a single example. Having found the one

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[9]The free translations given include some that are somewhat colloquial; this is necessitated by the lack of simple equivalents in English.

Table 7.2: First person dual pronouns

1DU.EXCL.M	heqey	'he and I' ∼ 'me and him'
1DU.EXCL.F	hecey	'she and I' ∼ 'me and her'
1DU.INCL	hemey	'you.SG and I' ∼ 'you.SG and me'

(*hemey*) the others were elicited. The textual example is shown in (7.43).[10] Verbal number agreement does not distinguish between dual and plural, the options being limited to singular or plural, hence the verb in (7.43) is plural.

(7.43) *...pa hemey   hna   -hna*
        CONJ 1DU.INCL 1PL.go -1PL.go
        '...and you and I can go.'

(7.44) *Heqey   sa   -ne   -die*
        1DU.EXCL.M food -1PL.eat -1PL.IMPERF
        'We two are eating.' ∼ 'He and I are eating.'

(7.45) *Hecey   hnunuwa -die*
        1DU.EXCL.F 1PL.sit   -1PL.IMPERF
        'We two are sitting' ∼ 'She and I are sitting.'

It should be noted that the distinction between inclusive and exclusive is restricted to the 1DU pronouns; the 1PL pronoun does not have separate forms and so, at times, can be ambiguous as to whether or not the addressee is included.

7.5.4 Reflexive pronouns

Reflexive pronouns are formed by addition of the suffix -*po* REFL to personal pronouns. This suffix is also used to give emphasis, paralleling the use of the same form with adjectives, where it conveys emphatic meaning (discussed in §7.6.3.3 and §7.5.5). A reflexive construction requires two arguments, a subject and an object, with the latter being the reflexive pronoun. An example is shown in (7.46).

(7.46) *Nie nie -po   pung   -lie*
        1SG 1SG -REFL 1SG>1SG.hit -1SG.IMPERF
        'I'm hitting myself.'

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[10]The text in example (7.43) is from the traditional story 'Womia the Mermaid', a portion of which is included at Appendix D.2.

In the literature on reflexives there is a debate as to whether reflexives are underlyingly intransitive and unaccusative (or perhaps unergative, see Reinhart & Siloni (2004)), or transitive. Alencar & Kelling (2005) argues that they are best analysed as transitive. In Wutung the reflexive construction clearly has a transitive clause structure, having two (coreferential) arguments, one for the subject and one for the object. The most important evidence that reflexive clauses are truly transitive in Wutung is that the verb is clearly transitive as it indexes both arguments and has the exact same form as an equivalent clause with non-coreferential arguments. This may be seen with third person subjects where the only contrast between a clause marked with the reflexive pronoun and one not so marked (the latter necessarily having a non-reflexive meaning) is the presence or absence of the reflexive suffix *-po*. Examples (7.47) and (7.48) demonstrate this, being identical apart from the presence (first example) or absence (second example) of the reflexive morpheme. This necessarily involves a certain amount of redundancy as reflexivity is obvious with first and second pronoun subjects,

(7.47) *Qey   qey   qa   -qlie*
        3SG.M 3SG.M 3SG.M>3SG.M.hit -3SG.M.IMPERF
        'He's hitting him [i.e. someone else].'

(7.48) *Qey   qey   -po   qa   -qlie*
        3SG.M 3SG.M -REFL 3SG.M>3SG.M.hit -3SG.M.IMPERF
        'he's hitting himself.'

In both these examples the verb encodes two participants, both third singular and masculine. It is only the reflexive morpheme in (7.48) which indicates that the object is coreferential with the subject.

Example (7.49) shows how the reflexive may be used also with possessions or body parts.

(7.49) *Cey   moi tang   cey   -po   toqmley*
        3SG.F like feather 3SG.F -REFL white
        'she liked her own white feathers.'

(7.50) *Naqi jeyjie   pa   lurqung   qey   -po   o   ca*
        dog 3SG.M.awake CONJ 3SG.M.see 3SG.M -REFL GEN.PREP water
        'The dog awoke and looked at himself in the water.'

Stern (2004) describes the traditional analysis of reflexives as having two functions: reflexive and emphatic, these differing in structural terms, the former being by the use of pronouns in argument position, the latter through apposition. The reflexive function is seen in the preceding examples and discussion. As mentioned previously, this same form is found on adjectives where it makes the meaning emphatic. The reflexive morpheme may also be used on pronouns in a way which, as well as being reflexive is somewhat emphatic, as in (7.51); this function may be limited to use with intransitive verbs (as in this example) as no cases of it occurring with transitive verbs have been recorded.

(7.51) *Nie nie -po   jielung   pa   ha   -ha   =ley*
        1SG 1SG -REFL 1SG.jump CONJ 1SG.go -IRR/REDUP =1SG.IRR
        'I'll just have to hop off and go.'

A more literal rendering would be 'I myself will jump and go'. This is from a children's story about the character 'Frog', who tries to get someone to carry him to Vanimo, but failing to get a lift has to hop there himself. The verb involved is intransitive so true reflexivity is not possible. However, there is emphasis (as evident from the rest of the story) on the fact of Frog doing the action himself (that is, getting him to town), as opposed to someone else doing it. Interestingly, it is also the case that as the verb is intransitive in this example, *nie niepo* here must form a single NP; this is perhaps part of the distinction between the emphatic *-po* construction on pronouns and the reflexive. Cross-linguistically, as mentioned by Stern (2004), marking of emphasis is a common usage of the reflexive.

There is one verb recorded which is inherently reflexive in its semantics, the verb *lehama* 'pretend oneself to be...'. This verb, discussed further in §6.3.6, obligatorily takes a reflexive object referencing the subject.

7.5.5 Contrastive pronouns

The contrastive pronouns indicate indicate contrastive emphasis and are used as in example (7.52) which would be a typical usage in response to someone saying 'it wasn't me'.

(7.52) *me -a!*
        2SG -EMPH
        'You!' ~ 'It *was* you.'

These forms typically constitute an entire utterance. As such they contrast with the emphatic use of the reflexive pronominal morpheme described in §7.5.4, which draws on the semantics of reflexivity and is not attested as occurring alone.

The full set of emphatic pronouns is shown in Table 7.3. It can be seen that the common element is the addition of -*a* which is combined, in the case of the 1SG, with loss of the preceding vowel giving the attested form *nia* rather than the otherwise expected **niea*.

Table 7.3: Emphatic pronouns

		number	
		singular	plural
person	1	nia	nea
	2	mea	eya
	3	qeya (m.)/ceya (f.)	teya

All documented occurrences of the contrastive pronouns have them functioning as exclamations, single words that constitute an entire utterance. It is therefore not possible to know whether they occur in argument position as well as predicate position.

It should be noted that the long form plural pronouns *netu*, *eytu* and *tetu* do not have emphatic equivalents, so there are no emphatic forms such as **netua*, **eytua* or **tetua*.

7.5.6 Anaphoric pronoun *una*

The anaphoric ANAPH pronoun, *una* is always glossed in English by Wutung speakers as 'one', being similar to the usage of this word as an indefinite pronoun in English. It is a third person singular pronoun but has no gender, the same form being used to reference any antecedent. It functions as head, taking modifiers as with nouns, although apparently this is obligatory as there are no examples of it as the sole member of an NP. In this way it is unlike the other pronouns, which do not take modifiers.[11] It has three functions so far recorded:

1. As NP head, always occurring with modifiers. In this case it picks out one individual from a group. Examples (7.53)–(7.55).

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[11] Alternative analyses may be preferable with more data bearing on this issue but for the moment the present approach conforms best to the observed data.

2. Apposed to an NP head, picking out a particular but indefinite individual. Example (7.56)

3. Apposed to a time phrase, wherein it picks out a specific but indefinite point in time. Example (7.57) and (7.58).

Function (1) is anaphoric; a group is understood (either from context or from having been mentioned previously), and one member is selected by the modifier. The examples of this show *una* as head with various modifiers, an adjective in (7.53) and (7.54) and a demonstrative in (7.55).

(7.53) *Nyeong huwey -qefing una   hnyjeqi pa   una   toqmley pa   una*
        cat   small -PL   ANAPH red   CONJ ANAPH white   CONJ ANAPH
        hlihlangqe
        black
        'Little cats, (a) red one, and (a) white one, and (a) black one.'

(7.54) *una   toqmley*
        ANAPH white
        '(a) white one.'

(7.55) *una   wena*
        ANAPH this
        'this one.'

Function (2) involves apposition of *una* to a noun to pick out one particular individual from a group represented by that noun, as exemplified in (7.56). This is similar to its use in the temporal phrases presented below, being used to introduce a specific but indefinite individual; it is typically used in this way in narratives.

(7.56) *suane una*
        cuscus ANAPH
        'one cuscus.' ∼ 'a [particular] cuscus.'

Examples (7.57) and (7.58) show function (3), with the anaphoric pronoun standing in apposition to a temporal noun. These kinds of structures are used formulaically and, as with the preceding appositional usage, are most commonly found in narratives, typically at the start as part of the scene-setting to pick out a specific but indefinite location in time. This function does not appear to be productive, appearing only in a few fixed expressions.

(7.57) *Hlang wunga una*
      sun   day   ANAPh
      'One day (someday).'

(7.58) *Wunga una*
      day   ANAPH
      'Once upon a time...'

I have no examples of *una* occurring as the sole member of a NP, another way in which it differs from the other pronouns.

7.5.7 Other pronouns

There is one other documented word best regarded as a pronoun, *blafa* 'everybody', an indefinite pronoun specific to humans.

(7.59) *Blafa   sung   (hama) cey   na   saheyhli*
      everybody 3PL.know (COMP) 3SG.F COP greedy
      'Everybody knows (that) she is greedy.'

There is no distinct set of possessive pronouns, either independent possessive pronouns (corresponding to English 'mine' or 'hers'), or modifiers. Instead the personal pronoun forms described above are used to indicate possession and occasionally as independent possessives. Possession is discussed in detail in §7.8.3.

As well as the indefinite forms discussed in this Chapter (at §7.7.2 and 7.5.6), the question words used to form content interrogatives are also used as indefinite pronouns. These words are discussed and their indefinite pronoun use briefly exemplified in §6.4.2.

7.6 The adjective phrase

7.6.1 Overview

An adjectival phrase consists of an adjective alone, or an adjective plus a degree modifier (§7.6.5). Much modification of adjectives happens via morphology (discussed in §7.6.3) but the small set of degree modifiers undergoes no morphological variation.

7.6.2 Adjectives

Adjectives have as their core function the modification of nouns, taking a position in the NP immediately adjacent to and following the nominal head (see §7.2.2), except where that noun is in a possessive construction, in which case the obligatory possessor pronoun precedes the adjective (§7.8). Semantically, adjectives are 'attributives', words which provide information about the qualities or attributes of the noun that they modify (Schachter 1985:13). The following examples, Some examples of this basic function are shown below with the adjectives *fe* 'ripe/cooked', *langqley* 'cold', *huwurti* 'big' and *to* 'empty'.

(7.60) *Acey   fey   me*
mango ripe Q
'Are the mangoes ripe?'

(7.61) *ca   langqley*
water cold
'cold water.'

(7.62) *naqi huwurti*
dog big
'big dog.'

(7.63) *pamua to*
village clean
'empty village.'

These properties alone do not always serve to distinguish adjectives from nouns, which may also modify other nouns (discussed in §7.9); the primary distinction between these two parts of speech lies in the fact that adjectives cannot act as NP head, but can only participate in an NP as a modifier (Wetzer 1992:232), as exemplified in examples (7.60)–(7.63), above.

Another difference between nouns and adjectives is that adjectives, but not nouns, take modifiers which indicate the degree to which the adjectival quality is present (discussed in §7.6.5). Example (7.64) illustrates this type of modifier.

(7.64) *ca   qai tafa*
water dry completely
'completely dry river.'

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In terms of morphology adjectives take several suffixes which apply only to them and thereby further distinguish them from other parts of speech (and in particular, verbs). The suffixes of this kind which are known at present are: *-po* 'INTensifier' (§7.6.3.3)[12], and *-fa*, 'plural' (Section 7.6.3.2).[13] Adjectives also undergo reduplication to indicate DIMinutive (§7.6.3.4)[14]. Each of these is illustrated in (7.65a)–(7.65c).

(7.65)　a.　*tosur -po*
　　　　　　true　-INT
　　　　　　'truly.'

　　　　　b.　*naqi felai -fa*
　　　　　　　dog　good -PLADJ
　　　　　　　'good dogs.'

　　　　　c.　*qur　　-qur -fa*
　　　　　　　ripe.green -DIM -ADJPL
　　　　　　　'almost ripe [vegetables]'

Table 7.4 lists all known non-derived adjectives. Most are monomorphemic but several are transparently made up of two morphemes, for example *hwurfinge* (*huwur* 'stomach' + *finge* 'bad') and *hengsufinge* (*hengsu* 'heart' plus *finge*), both of which mean 'angry', and *nuala* (*nua* 'skin' + *la* 'cold (abbrev. form)'). These compound forms are included as they are highly conventionalised. Adjectives derived from verbs are not included in the table; there is one form, *wangci* 'cracked/broken', which may well be derived from a verb, but as this is uncertain it is included.

The adjectives are shown grouped roughly into the categories used in Dixon (1977).

As well as the basic colour terms listed in Table 7.4 there are several other words that may be used to refer to colours that have other primary senses and secondary use as colour terms: *hlelihe* 'green' (from *hlelihe*, 'leaf'); *linua* 'blue' (lit. 'sea colour', from *li*, 'sea' + *nua* 'colour'); *tangqli* 'yellow' (from *tang*, a yellow plant).

Adjectives may be strung together in sequence. The longest such sequence recorded consists of two adjectives athough there seems no principled reason why more cannot be put together. An example of an NP containing two adjectives is (7.66) below (repeated here from (7.13)).

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[12]This suffix is formally identical to the reflexive suffix on pronouns (see §7.5.4).

[13]This suffix is formally identical to the exclusive suffix on nouns (see §7.4.2).

[14]Reduplication also occurs on verbs, where it indicates irrealis mode (see §8.4.3)

Table 7.4: List of known adjectives grouped in semantic domains

Semantic domain	Wutung	English gloss	Wutung	English gloss
Human Propensity	fuiqe	scared	nobley	tired
	hengsufinge	angry	saheyhli	greedy
	hnjequrpi	lazy	sangci	sick
	huwurfinge	angry	urblu	deaf
	ifaqlurci	sleepy		
Dimension	hluaqwi	long	huwur	big
	huweqefinge	small	hlefinge	short
	pafu	deep	tengfie	narrow
Value	felai	good	ipo	wrong
	fije	ruined	muti	good
	finge	bad	tosur	true
Physical Property	bli	full	nuala	cold
	ceyca	wobbly	o	young
	fey	ready/ripe/cooked	pangfang	naked
	hleqefinge	light (weight)	plapla	slack, loose
	hleqi	heavy	qai	dry
	hleyfieng	old	qeyney	weak
	hleylaqi	dirty	qi	cooked
	hleyqi	blunt	qur	ripe
	hlumong	straight/correct	qurqapi	dark
	ho	watery/soggy/wet	qweqley	wet
	huhu	light/gentle	taqi	salty
	hwua	old	to	empty/clean
	iqlu	overcooked	tua	fat
	jo	malformed	wangci	cracked/broken
	laiqe	sharp	wenaqi	strong
	laqley	cold	wesu	bald
	lo	sharp	wi	empty
	lurqlie	hot	wingefa	thin
	namhli	bitter	wurti	thick
Colour	hlilaqey	black	toqmley	white
	hnjeqey	red		
Other	epi	far/distant	uwa	dead
	plaie	difficult	wati	fine
	qmifia	difficult	wineqey	difficult
	tuama	close		

(7.66)   *hlingto tua huwurhuwur -fa -po*
       fly   fat big   -PL -INT
       'really big, fat flies.'

It should be noted that these are strings of unmodified adjectives. There are no recorded instances of two adjective phrases, each comprising an adjective and degree modifier, occurring within a single NP.

Although it has been stated earlier (§7.6.2) that adjectives always occur in a NP with an overt nominal head, there are occasional cases where an adjective constitutes a one-word utterance. Some common examples of of this are utterances such as: *qai* 'dry' (exclaimed on coming across a dry riverbed) or *fe?* 'ripe?' (asking about betelnut). These are probably best analysed as non-verbal predications with the argument and copula both elided: *ca na qai* 'The river is dry', and *fe ina fey me?* 'Is that betelnut ripe?'. Predicate adjectives (and other non-verbal predicate types) are treated in §6.2.

While there appear to be no borrowed adjectives, new adjectives may be formed through derivation from a verb by the addition of the suffix *-nyie* (glossed as VADJ).[15]

7.6.3 Adjective morphology

7.6.3.1 Full and abbreviated forms of adjectives

With many adjectives the final syllable is optional, meaning that (rather like the personal pronouns) they may occur in either of two forms, each of which may take the various suffixes; an example is (7.67).

(7.67)   a.   *toqmley -fa*
            white   -PL
            'whites'

       b.   *to*   *-fa*
            white[abbr.] -PL
            'whites'

The two forms, full and abbreviated, appear to be entirely interchangeable.

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[15]It is logically possible therefore for there to be 'borrowed' adjectives created by derivation from borrowed verbs; these however remain unattested.

7.6.3.2 Plural suffix *-fa*

Adjectives take plural marking in the form of the morpheme *-fa* to agree with the number of the head noun. Nouns themselves (apart from the sole example of *e* 'child', which does have a plural form—see §7.4.4) do not take any number marking.[16] An example is:

(7.68)   *naqi felai -fa*
         dog good -PLADJ
         'good dogs.'

Following are further examples of the plural morpheme.

(7.69)   a. *naqi huwurwurfa hnyumo* 'two big dogs'

         b. *naqi huweqefa hnyumo* 'two small dogs'

         c. *naqi hnjequrpipifa hnyumo* 'two lazy dogs'

         d. *naqi hnjeqeyqeyfa hnyumo* 'two red dogs'

7.6.3.3 Intensifier *-po*

Wutung has a process of adjective intensification using the suffix *-po* INT. This suffix is attested in combination with most known adjectives. For example, *huwur* 'big' takes *-po* to make *huwurpo* 'very big'.

(7.70)   *muti -po*
         good -INT
         'very good.'

(7.71)   *tosur -po*
         true -INT
         'truly.'

As described in §7.6.3.1, the abbreviated form of the adjective may be used as the base to which the INT suffix is added.

(7.72)   *hnjequrpihley* → *hnjequrpi -po*
         lazy   → lazy   -INT
         'lazy' → 'very lazy'

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[16]An identical morpheme is also found as a formative element in the question words used to form content interrogatives; see §6.4.

When the intensifier morpheme is used on a plural form the order is -PL-INT, as shown in (7.73).

(7.73)   *suane qurlur qey (na) huwur -wur   -fa -po*
       Cuscus ear   3SG.M (COP) big   -IRR/REDUP -PL -INT
       'Cuscus ears are very big.'

7.6.3.4 Diminutive reduplication

Reduplication of the final syllable in an adjective indicates diminution, or a partial or incomplete state, as shown in the examples in (7.74).

(7.74)   a. *nyi   qi   -qi*
           banana cooked -DIM
           'nearly cooked banana'

         b. *nyi   qi   -qi -fa*
           banana cooked -DIM -ADJPL
           'nearly cooked bananas'

         c. *bli -bli -fa*
           full -DIM -ADJPL
           'almost full'

         d. *qur   -qur -fa*
           ripe.green -DIM -ADJPL
           'almost ripe [vegetables]'

7.6.4 Irregular plural forms of adjectives

At least two adjectives are known to have irregular singular forms, 'small' (7.75) and 'big' (7.76).

(7.75)   a. *nyeong huweqefing*
           cat   small.sg
           'small cat.'

         b. *nyeong huweqefa*
           cat   small.pl
           'small cats.'

(7.76) a. *nyeong huwurti*
           cat   big.sg
           'big cat.'

       b. *nyeong huwurwurfa*
           cat   big.pl
           'big cats.'

The word *huweqefing* 'small' when spoken carefully appears to be *huwurqeyqefinge*, which could be analysed as: *huwur* 'big' + *-qe* NEG + *-qefinge* singular; that is, it appears to be a morphologically complex form meaning 'not big'. The plural form (again, as recorded in citation form with slow, careful pronunciation) is *huwurqeyqefa*, taking the *-fa* PL suffix. The word *huwur* 'big', however, does not take *-qe* but has the forms *huwurfinge* (singular) and *huwurwurfa* (PL). At present this analysis is speculative; the word meaning 'small' will therefore be continue to be represented as previously, *huweqefing*.

7.6.5 Degree modifiers

Degree modifiers indicate the extent to which a particular adjectival quality is present. At present only two degree modifiers are known, but it is possible that there are others that have not yet been recorded. The examples in (7.77) show the use of *tafa*, 'completely' and *popey* 'partly'.

(7.77) a. *ca   qai tafa*
           water dry completely
           'completely dry river.'

       b. *fey popey*
           ripe partly
           'Partly ripe.'

7.7 Determiners

7.7.1 Introduction

As discussed briefly in §7.2.2, it is useful to recognise for Wutung a category *determiner*, which is both a functional and a formal class. Functionally, members of this category indicate the number and/or specificity of the head noun in the phrase. Formally it consists

of mutually exclusive members—apart from a couple of exceptions which seem to be idiomatic, there are no cases of multiple determiners co-occurring.[17] Although it would appear that (semantically at least) there is no reason why, say, a number and a demonstrative could not be combined (as in English 'those three pink pigs'), this kind of combination is not productive.

Determiners are systematically different from adjectives, which indicate, for any noun, what kind of noun it is. Determiners follow the noun and also follow any adjectives, if present.

The sub-categories of determiner which are discussed below are the articles, the quantifiers, the demonstratives, and the numerals.

7.7.2 The articles

Wutung has two indefinite articles, the singular *u*, which may be glossed roughly as 'a', and plural *a* 'some'. These two articles are optionally used to specify an entity (or entities) without being able to uniquely identify it (them), and to indicate number.

Their use is exemplified in (7.78) to (7.81) below, with a variety of kinds of entity being modified. Example (7.14) above shows a NP containing an adjective as well as an article.

(7.78) *Qey   nyi   a   feqley*
        3SG.M banana INDEF.PL 3SG.M.plant
        'He planted some bananas.'

(7.79) *Filurqi a   tie   li*
        mermaid INDEF.PL 3PL.be sea
        'There are mermaids in the sea.'

(7.80) *E   hliaqwu   u   olu*
        2PL block.of.wood INDEF.SG 2PL.3SG.M.bring
        'You lot bring a block of wood.'

(7.81) *Ca u   qlie   pey   hwingqwi*
        pig INDEF.SG 3SG.M.be house under
        'A pig is under the house.'

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[17]The major exception to this appears to be the anaphoric demonstrative; see §7.7.4.4.

Danon (1996:4) states that 'In most languages that mark definiteness, this marking in achieved by a definite article.'; it appears from this that Wutung is somewhat unusual in having no definite article, but only indefinites. However, the indefinite articles contrast with the demonstratives, which are definite, and in particular with the anaphoric demonstrative *apina*, which can be used much like a definite article. This indicates that the articles and demonstratives form a loosely connected system of reference and deixis which perhaps can be said to also include the anaphoric pronoun *una*. While the demonstratives occur very commonly in all kinds of text and speech, the articles are quite rare and only a few examples of each has been documented. Along with the adjectives (see §7.6.3.2) the articles are the only elements in the NP where the contrast singular/plural is marked.

Finally, it should be noted that although the indefinite articles mark number as well as indefiniteness, they are not regarded as quantifiers as they do not serve primarily to mark number or quantity (see § 7.7.3).

7.7.3 Quantifiers

The quantifiers are those non-numeral words which are have as their primary function the indication of number or quantity. Below is a list of the quantifiers which have been recorded followed by examples of their usage. This is probably not an exhaustive listing as it is very likely that more quantifiers will be recorded with continued work.

Table 7.5: Quantifiers

quantifier	meaning
abo	some
angci	half
jur	all
mai	none
maing	every
paca	many, much
teyqa	(a) few

Following are examples of these quantifiers. They typically occur as the only modifier in the NP, but there are a few examples where they are combined with an adjective.

maing 'every' is quite limited in its use, most commonly being found with a time measure (as in the examples below). It cannot however be used with *pa* 'person', so **pa maing* is not acceptable.

(7.82) *wunga maing / ho   maing*
      day   every / year every
      'every day / every year.'

The following example shows *mai* 'none'. As with *paca* 'many' this can be used with all nouns, whether mass or count.[18]

(7.83) *fe   mai*
      betelnut none
      'no betelnut.'

(7.84) *ca   mai*
      water none
      'no water.'

paca is used with all nouns, whether count or mass.

(7.85) *pa   paca*
      people many
      'many people.'

(7.86) *ca   paca*
      water many
      'much water.'

This final quantifier, *teyqa* 'a few', indicates a small number of items. As such, it seems likely to only be applicable to count nouns however, as there is only a single example known, this remains uncertain.

(7.87) *pamua teyqa*
      village few
      'a few villages.'

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[18]The similarity between *maing* 'every' and *mai* 'none' is most likely accidental—there is no known morphological process which involves nasalisation.

7.7.4 Demonstratives

7.7.4.1 Introduction

There are three basic demonstratives. Two are spatial: the proximal *wena/hena* 'this, this (one), these (ones)', the distal *ina* 'that, that (one), those (ones)'. The third is anaphoric: *apina* 'that (one), the one previously mentioned', which is typically used to refer back to an item with which the hearer is presumed to be familiar. For the two spatial demonstratives the same forms are used for both singular and plural; for the anaphoric demonstrative I have no examples of clearly plural usage so it is not certain that it is used in this way. These forms fill both the functions traditionally referred to as 'demonstrative pronoun' and 'demonstrative adjective', being able to be used as NP head or as modifier of the head. As pointed out in Dixon (2003:63) it is common for languages to combine these two functions in the one form.

The demonstratives are very commonly abbreviated but as the abbreviations all have the same form (*na*) they cannot be distinguished except by context. Table 7.6 shows the three demonstratives with their meanings and abbreviations.

Table 7.6: Demonstratives

Full form	abbreviated form	meaning
apina	ina/na	anaphoric
ina	na	far 'that
wena	na	near (fem.) 'this.F'/'these'
hena	na	near (masc.) 'this.M'

The class shows an interesting lack of symmetry in that the distal and anaphoric demonstratives each have the one form regardless of number or gender whereas the proximal has two forms, the feminine *wena* 'this.F' and the masculine *hena* 'this.M'; these are listed in (7.88). *hena* is rarely heard as the default gender is feminine, therefore it only occurs when reference is unambiguously to a single entity of masculine gender.

(7.88)   a. *wena* 'this.F'

          b. *hena* 'this.M'

          c. *wena* 'these' (i.e. any genders)

          d. *ina* 'that/those'

These forms are modifiers of head nouns, picking out a particular entity by reference to its location as either near to, or far away from, the speaker, or as having been mentioned previously. When used as a modifier the demonstratives occur, as with other modifiers, after the head noun, in the position described in §7.2.2.

Examples (7.89), (7.90) and (7.91) illustrate the use of demonstratives as modifiers of a NP head.

(7.89) *hlang wena*
     sun   DEM.NEAR
     'today.'

(7.90) *Ninapa   apina   qey   fuiqe*
     whiteman DEM.ANAPH 3SG.M be.scared
     'That white man (previously mentioned) scared him.'

(7.91) *Nie fu   wena   ley   -lie*
     1SG garden DEM.NEAR 1SG.do -1SG.IMPERF
     'I'm working this garden.'

The demonstratives also may function as NP head, as exemplified by (7.92), (7.93), (7.94), (7.95) and (7.96).

(7.92) *wena   felai*
     DEM.NEAR good
     'this (is) good.'

(7.93) *Wena   qlie   -qlie*
     DEM.NEAR 3SG.M.stay -3SG.IMPERF
     'This one (is) staying.'

(7.94) *ina   qley*
     DEM.DIST 3SG.M.do
     'that one did (it).'

(7.95) *Otong   qey   lu   wena*
     yesterday 3SG.M 3SG.M.come DEM.NEAR
     'Yesterday he came here.'

(7.96) *Apina   qlie   -qlie*
     DEM.ANAPH 3SG.M.be -3SG.M.be
     'That one (previously mentioned) is staying.'

This use as sole member of an NP is the more common one; less commonly (but still with many occurrences) the demonstratives are found as modifiers to a noun within an NP. While there is little evidence either way as to whether, in headless NPs, demonstratives are acting as heads or as modifiers it is reasonable to assume the former as this seems the more common use. Demonstratives are deictics and are commonly accompanied by gesture. As such their function as NP heads is unsurprising.

The contrast between the two spatial demonstratives can be seen in (7.97) where they distinguish relative locations.

(7.97) *Wena   nie, ina   nie pe*
        DEM.NEAR 1SG DEM.DIST 1SG NEG
        'This is mine, that isn't mine.'

There is an interesting and suggestive correspondence between the forms and meanings of the demonstratives and the anaphoric pronoun *una*. All four forms end in *-na* and all are referring expressions, the difference being that *una* is used to pick out one individual from a group. Furthermore, there is some parallel between *una* and the singular indefinite article *u* 'a', which also picks out an individual from a group. It is possible that these forms ending in *-na* all have their origins in a formerly productive morphological process involving a form that, while still occurring, is no longer productive, *-na*. It may be possible to shed light on this by careful comparison of the systems of deixis of Wutung and its close relatives Sko, Dusur (also known as Vanimo) and Leitre.

Finally, there are two sets of adverbial demonstratives that are derived from the basic demonstratives described here (which could be aptly named 'nominal demonstratives', as proposed by Dixon (2003)); these are the locative adverbs and the manner adverbs, dealt with in §6.6.3 and §6.6.4 respectively.

The forms used for the demonstratives put Wutung into Dixon's (2003:75) category V, languages which use the same for demonstratives which are sole member of the NP or used together with a noun, but a different form for the locative adverb (his 'local adverbial demonstrative').

7.7.4.2 Proximal *wena*

The proximal demonstrative *wena* picks out an entity that is close to the speaker. It can be glossed by 'this' or 'this one' depending on whether it is head or modifier within the

NP. In examples (7.98), (7.99) and (7.100) it is shown acting as NP head while (7.101) shows it used overtly as a modifier.

(7.98)   *Wena   felai*
           DEM.NEAR good
           'This (is) good.'

(7.99)   *Qey qlie   wena*
           3SG.M 3SG.M.be DEM.NEAR
           'He's here.'

(7.100) *Aqo, wena   naqi pe*
           no, DEM.NEAR dog NEG
           'No, this is not a dog.'

(7.101) *Te lu   hnya calong   wena*
           3PL 3PL.come 3PL.go rivermouth DEM.NEAR
           'They came along to this rivermouth.'

7.7.4.3 Distal *ina*

The distal demonstrative *ina* contrasts with the proximal, picking out a particular entity that is far from the speaker. As with the proximal, the distal may be a head or modifier, most commonly occurring as head.

(7.102) *Ina   safa? ina   pey*
           DEM.FAR what? DEM.NEAR house
           'What's that? That's (a) house.'

(7.103) *mu ina   hlelefa?*
           fish DEM.DIST how.much
           'How much is that fish?'

(7.104) *eya, ina   naqi nie*
           yes, DEM.DIST dog 1SG
           'yes, that's my dog.'

(7.105) *Mahur qlie   maqe ina   qlung   hamawe...*
           frog   3SG.M.be vanimo DEM.DIST 3SG.M.say like.this
           'that Vanimo frog spoke like this...'

In the following example the demonstrative is an oblique noun phrase.

(7.106) *Suane lurqung   ina,   Naqi qurlur qey   hluaqwi ma*
cuscus 3SG.M.see DEM..DIST, dog   ear   3SG.M long   still
'Cuscus saw them, Dog's ears were still long.'

7.7.4.4 Anaphoric *apina*

The anaphoric demonstrative *apina* references an entity which has already been established in some way, either through previous presentation in the discourse or by being contextually obvious. *apina* carries a high functional load and is a very important element in structuring discourse of all kinds. Like the spatial demonstratives the anaphoric may be a modifier or a NP head; its most common use is the latter but there are also numerous examples of it as modifier, perhaps more than for the spatial demonstratives.

(7.107) *hleli apina*
tree DEM.ANAPH
'that (previously mentioned) tree.'

The following example (7.108) shows *apina* used when two clauses with the same subject are combined. In this situation the subject of the second clause is commonly deleted but in this example it is not, instead being represented by *apina*. It is not known if the presence or absence of *apina* in this case makes any difference to the meaning.

(7.108) *Otong   te   hnya pa   apina   sang hlati*
yesterday 3PL 3PL.go CONJ DEM.ANAPH song 3PL.sing
'yesterday they went and they sang.'

Examples (7.109) and (7.110) show *apina* used in relatively complex NPs; in the first it is combined with an adjective and a numeral, while in the second it is combined with two adjectives. In both these cases *apina* is redundant as the entities are already uniquely specified by the other components of the NPs. In both these cases it serves a function similar to that of the definite article in English and so contrasts with the Wutung articles, although unlike them it has one form for both singular and plural.

(7.109) *onoqai huwurwur -fa samuli ofa apina*
crayfish big   -PL ten   one DEM.ANAPH
'those ten big crayfish.'

It is also noteworthy that *apina* appears from the above example to contradict the claim in §7.7.1 that determiners cannot co-occur within the NP. While this does appear to hold true for all other determiners, it seems that it is not necessarily the case for the anaphoric demonstrative, possibly arising from the fact that this item returns to discourse something previously mentioned, or evident from the context, and as such can co-occur with any set of elements.

(7.110)   *Hlang wunga una nyeong huwurqefieng hnyjeqi apina...*
          day   time   one cat   little.PL   red   DEM.NEAR
          'One day that little red cat....'

Another function of the anaphoric demonstrative *apina* is to mark a NP as a cause, with the outcome expressed in the following clause. The structure of these expressions is: causal NP—*apina*—result clause. Examples of this structure are presented in (7.111).[19]

(7.111)   a. *Ninapa   apina   qey   fuiqe*
             whiteman DEM.ANAPH 3SG.M afraid
             'He's scared because of the whiteman.'

          b. *Feyfa apina   -ci   ey   qa*
             letter DEM.ANAPH -INSTR 3SG.M 3SG.M.go
             'Because of that letter he went.'

The causal NP may be headless, with *apina* as the sole referent, as in (7.112).

(7.112)   *Apina   ey   qa*
          DEM.ANAPH 3SG.M 3SG.M.go
          'Because of that he went.'

7.7.5 Numerals

Wutung has a set of numerals capable of expressing numbers from 'one' up to 'ninety-nine'. These numerals are postposed to a head noun. The numerals for one to ten are shown in Table 7.7.

Wutung numerals follow the decimal system; numbers larger than ten are constructed in the following fashion: *samuli* 'ten' is followed by a number that indicates the number of tens; following this may be *pley* (which was glossed by speakers as 'extra') and then

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[19]Tha causative particle *qo* is discussed in §6.7.5.

Table 7.7: The numerals one to ten

1	ofa
2	hnyumo
3	heno
4	no
5	wi
6	nocio
7	nocihnyu
8	nociheno
9	noceno
10	samuli

another number which indicates the units, if any. This system is laid out schematically in Figure 7.3 (where N = the tens multiplier and n = the units).

samuli N *pley* n

Figure 7.3: Structure of numbers greater than ten (N = tens multiplier, n = units)

Although the highest Wutung numbers recorded in use were in the twenties (higher numbers were always expressed in Tok Pisin) speakers stated that they could construct higher numbers if necessary. The system described above can construct numbers up to 'ninety-nine'; it was not clear if there was in the past a mechanism for dealing with hundreds or higher, but no informants were aware of such a system.

The following (7.113) and (7.114) give some examples of numbers above ten.

(7.113) *samuli ofa pley hnyumo*
       ten   one plus two
       'twelve'

(7.114) *samuli hnyumo pley no*
       ten   two   plus four
       'twenty-four'

Some examples of numerals modifying common nouns are shown below (some other examples may be seen at (7.1) and (7.109)):

(7.115) *nyi hnyumo*
two banana
'two bananas.'

(7.116) *wungawunga heno*
woman   three
'three women.'

There is no evidence that numerals may serve as head of the NP. All examples contain-
ing numerals either show them modifying a noun or standing alone as an entire utterance,
in answer to a question; an example of this latter function is (7.117).

(7.117) *Mu ina hlelefa?   Samuli ofa.*
fish COP how.much? ten

'How much is the fish?' 'Ten [toea].'[20]

Although Wutung numerals are decimal the names of some of the basic numerals seem
to be relics of a different system. The numerals from six to nine appear to be comprised
of *no* '4' plus another number (or part thereof) together with an intervening element *-ci-*,
as shown in Table 7.8. We see from this table that, under this analysis, '6' appears to
be comprised of 4 + 1, '7' of 4 + 2, and so on. This somewhat surprising system has
been suggested by Nicolas Ossart (pers. comm.) to be a relic of an old base-4 system.[21]
Another analysis could begin with the similarity between *no* 'four' and *no/noqe* 'hand'.
The use of the word for 'hand' to also indicate 'five' is common cross-linguistically
(Payne 1997:66); if *no* actually meant 'five' then we would have evidence of an old
quinary system (base 5) embedded in what has become a decimal system. Although a
shift that caused *no* to be reinterpreted as meaning 'four' instead of 'five' would be an
explanation, such a change seems unlikely. Another difficulty with this analysis is that
'nine' *noceno* would either be expected to mean 'ten' or have a final morpheme based on
the now-lost word for 'four' rather than being *-no*.

Determining how this system-within-a-system actually came about will require com-
parison of numeral systems across Sko languages and a search for a possible source from
which *wi* 'five' could have been borrowed, not to mention postulation of a mechanism
via which such a structural shift could have occurred.

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[20]The toea is the smallest unit of currency in PNG, equivalent to the Australian cent.

[21]Nicolas Ossart is a mathematician carrying out a large-scale cross-linguistic study of numeral systems

Table 7.8: Morphologically complex number expressions: one possible analysis

4	no		
5	wi		
6	nocio	no + ci + o(fa)	4 + 1
7	nocihnyu	no + ci + hnyu(mo)	4 + 2
8	nociheno	no + ci + heno	4 + 3
9	noceno	no + ci + no(u)	4 + 4

Some older speakers have stated that in the past there was a different counting system in use and that while the words used were the same, they had different meanings. So far the only information I have been able to glean on this topic is that in what one informant referred to as 'kastom counting', *samuli ofa* referred to 'twenty-four' rather than 'ten' as it does now. This hints at the earlier presence of a non-decimal, possibly body-part based, counting system as has been described for numerous non-Austronesian languages in other parts of PNG. These typically count across body parts to a number in the twenties, then use this as a base for larger numbers. It is possible that this change is responsible in some way for the odd system presently in use and described above.

The numeral *ofa* 'one' is occasionally used in constructions where it appears to have adverbial force, modifying the clause. In one of these constructions, shown in (7.118) and (7.119) the numeral *ofa* 'one' indicates that a group carryied out the action of 'going' together (or as in the translation, 'as one'). In the second example it emphasises that a man was acting alone (taking the child and leaving his wife behind).[22].

(7.118) *Te   ofa hnyali qilie   feti*
         3.PL one 3PL.go bamboo sharpen
         'As one they went to sharpen bamboo knives.'

(7.119) *Pa   qey   ofa eng qeyi*
         CONJ 3SG.M one child 3SG.M.get
         'And he alone took the child.'

The example in (7.120), is an idiomatic combination of two determiners in the one NP: the numeral *hnyumo* 'two' together with the indefinite singular article *u*, with the meaning 'a pair'.

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[22]No-one was able to give any other examples of the usage of *feti*, a word that apparently is only found in old stories and always in the same form.

(7.120) *Aley! Panyua hnyumo u   holu*
    oh! man two   INDEF.SG -3.PL.come.in
    'Oh! A pair of men (are) coming in.' (i.e. from the sea)

7.8 Nominal possession

7.8.1 Introduction

The possessive construction expresses a semantic relationship holding between a noun phrase and a noun, each representing an entity or set of entities: the possessing entity is represented by an NP while the possessed is represented by the noun. Prototypically the relationship involved is one of ownership and/or control of one entity over the other. However, the possessive construction is (as is cross-linguistically common) extended to cover a number of other relationships, including part-whole relationships, kinship relationships, benefactive, intended possession, along with various others.

In the following discussion the term 'possessor' refers to the NP in the slot used to index the 'owning' entity, while 'possessum' will be used to refer to the noun occupying the slot which is used to index the 'owned' entity. These terms will be employed even when the semantic relation being expressed is not one of ownership.

7.8.2 Possessive construction

Wutung nominal possession employs a possessor pronoun[23] to reference the possessor which is postposed to the possessum. This, the minimal possessive construction, is shown in the diagram in Figure 7.4 (the possessor NP is marked NP_{psr} and the possessum is marked NP_{psm}). A possessive construction may also include a non-pronominal NP (headed by either a common or a proper noun) which references the possessor. This NP precedes the head; this pre-head (and therefore pre-possessum) NP is indexed by the possessor pronoun that follows the possessum.

The post-nominal possessor pronouns used in a possessive construction are identical to the personal pronouns, differing only in that they follow the NP which represents

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[23]These forms will be referred to here as 'possessor pronouns' to distinguish them from 'possessive pronouns', dealt with in §7.8.3. It should be noted that this is not meant to suggest that these are a special lexical catgeory, but simply to indicate the use of personal pronouns to express possessors.

$$\text{PossP} \to (\text{NP}_{psr}) \, \text{N}_{psm} \, \text{Pro}_{psr}$$

Figure 7.4: Structure of nominal possessive construction

the possessum in what Croft (2003:32–33) describes as '...the simplest [morphosyntactic] strategy...' of 'juxtaposition'. As evidenced in the above formulae possessive constructions may occur with the pronoun alone denoting possession and indexing for the person/number/gender of the possessor, or additionally may include a possessor NP (with which the possessor pronoun agrees in person, number and gender) which precedes the possessum NP. It is important to note that this pre-head NP is optional. As pointed out by Van Valin & LaPolla (1997:61), where there are two elements referencing the possessor, one optional and one obligatory, the latter must be considered the true 'possessor'. In Wutung the preposed nominal possessor is optional while the possessor pronoun is obligatory, so this latter element must be considered as the true possessor, or genitive.

Some examples of the minimal possessive construction, which employs only the possessor pronoun:

(7.121)   *pey   nie*
          house 1SG
          'my house'

(7.122)   *naqi me*
          dog 2SG
          'your dog'

(7.123)   *Patey me ho   -fa?*
          name 2SG what -INT
          'What's your name?'

The same possessive structure is used with body parts and kin terms.

(7.124)   *Huwur nie huwur -po*
          stomach 1SG big   -INT
          'My stomach is really big.'

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(7.125) *Hnjie nie na 'red'*
blood 1SG COP 'red'
'My blood is red.'

(7.126) *Wena   qurlur nie*
DEM.NEAR ear   1SG
'This is my ear'

(7.127) *Wena   eme   me*
DEM.NEAR mother 2SG
'This is your mother'

(7.128) *Qey   na   ci   nie*
3SG.M COP husband 1SG
'He is my husband.'

Some examples of possession employing the preposed possessor noun (both common
and proper) as well as the post-nominal possessor pronoun:

(7.129) *umaitur flo   cey*
spider   nest 3SG.F
'spider's web'

(7.130) *Eddie pey   qey*
Eddie house 3SG.M
'Eddie's house'

The fact that the possessum is head of the construction can be determined by agreement
marking on the verb. This can be seen, for example, in (7.131) where the verb indexes *eng*
'child' (which, being a girl, is indicated by the third person feminine form of the verb)
rather than with the 'possessor', which is second person. (7.132) also shows agreement
with the possessum (or the part, when structured as an apposed part-whole relationship).

(7.131) *Nie eng   me piolu*
1SG child 2SG 1SG>3F.bring
'I brought your daughter.'

There seems to be some variation in body part possession (and perhaps only in this
particular type of possession), as shown in (7.132) where both possessor/possessed and

possessed/possessor orders are found. It should be noted that 'hand' is presumably the head of the initial noun phrase. This is suggestive of an inalienable construction involving apposition of the possessor and possessed. As this structure is merely an alternative to the more usual possessive construction and not obligatory, it possibly indicates that an inalienable apposed possessive construction is either under development or is a vestigial form.

(7.132) *Nie noqe qley   nocio ~ Noqe nie qley   nocio*
         1SG hand 3SG.M.have six   ~ hand 1SG 3SG.M.have six
         'My hand has six fingers' ~ 'My hand has six fingers'

Typically though, body parts are possessed using the same structure as for possession of any other item. Example (7.133) gives some more examples of body part possession:

(7.133) a. *tang cey* 'her hair'

         b. *tang nie* 'my feathers'

         c. *ma ne* 'our skin'

         d. *leto nie* 'my eyes'

Example (7.134) shows body part possession with the optional nominal possessor.

(7.134) *Suane qurlur te   na   huwur -po*
         cuscus ear   3PL COP big   -INT
         'Cuscus ears are very big.' [talking about all cuscuses]

The possessive pronoun always follows the head noun and is immediately adjacent to it; any further modifiers such as adjectives or determiners follow the possessive, as in (7.135).

(7.135) *tingmaqalong tang   cey   toqmley*
         crow   feather 3SG.F white
         'crow's white feathers'

Example (7.135) provides further examples of this structure. As mentioned previously in respect of NPs generally (§7.2.2), it is unusual for any NP to have more than one modifier (although this is allowed) and this applies to possession as well; while there are examples, such as those presented here, of a possessive NP which contains modifiers in addition to the possessor pronoun, these are very rare. As briefly discussed in §7.2.2,

possessors do not fit into the category of determiners as they precede adjectives in the NP rather than following them, as the determiners do. This is illustrated in the examples, which show the possessive pronouns immediately following the head nouns, with the adjectives following the possessive pronouns.

(7.136) *tang   qey   hlilaqey apina*
feather 3SG.M black   DEM.ANAPH
'those black feathers of his'

(7.137) *Qey   qurlur qey   -po   huwur -po qungqua.*
3SG.M ear   3SG.M -REFL big   -INT 3SG.M.see
'He saw his own very big ears.'

7.8.3 Predicate possesion

No distinctive independent possessive pronouns (that is, pronouns which stand in for the possessive phrase altogether, having meanings equivalent to English 'mine', 'yours', 'theirs', etc.) have been recorded. Instead the personal pronouns are sometimes used in a non-verbal equative predication to indicate possession, as shown in (7.138) and (7.139). Whenever a pronoun is used in such a predication it indicates possession (as opposed to having a meaning such as 'That is me'.)

(7.138) *Eya, ina   nie*
yes, DEM.DIST 1SG
'Yes, that's mine.'

(7.139) *Wena   nie, ina   nie pe*
DEM.NEAR 1SG, DEM.DIST 1SG NEG
'this is mine, that isn't.'

7.9 Compounds

7.9.1 Introduction

This section deals with a variety of noun-noun compounds. These structures are used to indicate a number of kinds of semantic relationship between the elements, ranging

from part-whole constructions which are similar in meaning to some examples of body-part possession discussed in §7.8, to hyponymy (or 'kind of') relationships, as well as numerous others. Rather than try to analyse this subject comprehensively this section will present a small selection of data to illustrate some of the more commonly used compounds, part-whole compounds (§7.9.2) and generic-specific compounds (§7.9.3). Both types of compound are endocentric.

7.9.2 Part-whole relationships

Some kinds of part-whole relationships are marked simply by juxtaposition as noun-noun compounds. These are similar to body-part relationships, which are expressed by the standard possessive structure. However these latter are of course describing animate entities, whereas part-whole compounds refer to inanimate entities. In these constructions the order of elements is (semantically) whole-part, which equates to dependent-head or possessor-possessum, the reverse of the situation for body-part possession. Some examples follow.

(7.140) *napa wie*
  knife handle
  'knife handle.'

(7.141) *ca   hlungwa*
  water opening
  'rivermouth.'

Example (7.142) combines both kinds of possession, the post-nominal possessor pronoun with part-whole apposition.

(7.142) *endey   mla nie*
  neck/spine joint 1SG
  'my neck joint.'

7.9.3 Generic-specific constructions

Several categories of entity are given names by combining a generic and a specific noun. The categories are:

Table 7.9: Generic terms used in compounds

generic term	category
pu	greens (edible plants)
mu	sea creature
ting	flying creature
sung	ant
o	crab
pa	person
sa	generic thing, including foodstuffs

The generic-specific constructions are phonologically single words, having a single tone contour (that of the 'generic', which is extended rightwards to include the 'specific' term). In many cases the specific portion does not appear to occur as a separate word.

The examples below in Tables 7.10–7.13 give some indication of the range of uses of each compound.[24]; English and sciencific names are given where known.

Table 7.10: Compound nouns based on *pu* 'greens'

Wutung	English	Tok Pisin
puli	*Gnetum gnemon*, a tree with edible paired leaves	tulip
pusi	*Erythrina indica*, the Indian Coral tree	palpal
puhmi	*Abelmoschus manihot*, a plant with edible leaves	aibika

Table 7.11: Compound nouns based on *mu* 'aquatic life'

mumosi	jellyfish
mupi	whale
mumo	shark
muhmbey	freshwater eel
muhmi	sea eel

The generic form *mu* groups together aquatic creatures. Crabs are not included in this aquatic category, but have their own generic *o* 'crab'.

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[24]Definitions and Tok Pisin equivalents are from Mihalic (1971)

Table 7.12: Compound nouns based on *ting* 'bird'

Wutung	English	Tok Pisin
tingsi	cassowary	muruk
tingmu	victoria crowned pigeon	guria
tingne	white cockatoo	koki
tingofla	butterfly	bataplai
tingqwang	seagull	pisin bilong solwara

Table 7.13: Compound nouns based on *sung* 'ant'

sunghley	red ant
sungqesua	black ant
sunghleng	tree ant

These generic terms seem to be used to denote groups of entities that are highly perceptually salient as groups of like entities, with numerous members which are conveniently referred to by the generic term, and for which this is usually sufficient.

A particularly commonly used generic term is *sa* 'thing'. This is a 'catchall' generic and is used in many cases including for foodstuffs but also for any item or items where identification is not necessary.

(7.143) *sa   finge*
         thing bad
         'rubbish.'

Finally, a similar kind of compounding occasionally found is the following, which involves hyponymy:

(7.144) *si.na*
         gun.noise
         'gunshot.'

In this example the subset term (which equates to the 'specific' term in generic-specific constructions) is first, with the superset following; this is the reverse of the order found with generic-specifics and with part-whole constructions so it is clearly a distinct kind of compounding process.

7.10 Conjunctions

7.10.1 Introduction

There are three strategies employed for linking two or more NPs: the conjunction *pa* (§7.10.2), pronominal conjunction with *tehing* (§7.10.3) and simple listing, or parataxis (§7.10.4). Each of these is a coordinating conjunction (in the sense of Schachter (1985:46)) and has the effect of combining multiple NPs into a single NP for purposes of clause structure and reference.

7.10.2 NP conjunction *pa*

The most common conjunction is *pa*. This is used primarily to join clauses but may also join two or more NPs. When conjoining NPs *pa* is usually used when listing more than two items, occurring after each item, as shown in (7.145). However it is also occasionally found joining two NPs, as in example (7.146), which represents the title of a story.

(7.145)   *...una   hnyjeqi pa   una   toqmley pa   una   hleylaqey*
              ANAPH red   CONJ ANAPH white   CONJ ANAPH black
              '...a red (one), and a white (one) and a black (one)'

(7.146)   *Tine pa   Timaqalong*
              crow CONJ white cockatoo
              'Crow and Cockatoo.'

Finally, *pa* may be found in both uses within a single utterance as in (7.147).

(7.147)   *Otong   nie haleng ocie fu.   Haleng na pa nyi   pa puhli*
              yesterday 1SG 1SG.go ADP garden. 1SG.go taro and banana and tulip
              ajua   pa punglu   ocie pamua
              1SG.collect and 1SG.return ADP village
              'Yesterday I went to the garden. I went and collected taro, banana and tulip [*Gnetum gnemon*] and returned to the village.'

7.10.3 Pronominal conjunction

The third person dual pronoun *tehing* is commonly used to join two NPs (and, unlike *pa*, only NPs) as illustrated in (7.148) and (7.149). Typically, the entities involved

are human for example as in (7.148) and (7.150), or at least animate (and preferably anthropomorphised) as in (7.149). In this construction the pronoun appears between the two items being conjoined, making it easy to distinguish between *tehing* used as a pronoun or as a conjunction.

(7.148)   *Fihlunga tehing Hehlua...*
            Fihlunga 3DU   Hehlua...
            'Fihlunga and Hehlua...'

(7.149)   *Tine tehing Timaqalong*
            crow 3DU   white   cockatoo
            'Crow and White Cockatoo.'

(7.150)   *Apa   tehing Eme*
            father 3DU   mother
            'Father and Mother'

This construction is of the type described by Haspelmath (2007:21) as a 'natural conjunction', typically being used with entities that make a natural pairing and can be seen as together forming a single entity, not just for grammatical purposes (as with the *pa* conjunction), but semantically. It follows then that these pairings are typically ones which in other languages commonly have a single word, for example 'brothers' in (7.148) and 'parents' in the case of (7.150). While (7.149) might not seem to fit with this analysis, this pair of birds occur together in an important traditional story and so might be seen, in Wutung culture, as being strongly connected.

7.10.4 List conjunction

A series of items may be simply concatenated, being given in sequence with brief pauses and (what sounds like) a typical list intonation, but no overt conjunction (that is, relatively raised intonation on non-final items and falling intonation on the last). In example (7.151) three villages are listed, these being the places where what is commonly described by Wutung speakers as the same language is spoken (in linguistic terms, mutually intelligible varieties—see §1.11).

(7.151)   *Wutung, Musu, Nyau Wur*
            Wutung Musu Nyau Wur
            'Wutung, Musu and Nyau Wur.'

The Wutung data includes similar cases where lists of fish, birds or edible plants are given. All examples of this structure were produced in response to a question such as 'what birds do you eat?', none occurring in other elicitation or in recorded narratives.

Chapter 8

Verbal morphology

8.1 Introduction

8.1.1 Overview

The Wutung verb is by far the most morphologically elaborate word class in Wutung, having complex morphophonemics in the interaction between the prefixes that mark PNG (person/number/gender) and the verb root (described in §8.2).[1] Other areas of verb morphology such as aspect and mood (discussed in §8.4) are much more straightforward.

Wutung has a limited number of simple verb roots, these probably forming a closed class of words. Many of these simple verb roots combine with each other, and/or with other lexical elements, to form a much greater number of morphologically and semantically complex lexemes.

This chapter primarily focuses on describing the major features of the Wutung 'simple' verb, by which is meant the small set of monomorphemic verbs which can, with appropriate inflectional morphology, constitute an entire verbal predicate. The compound verb, which consists of at least one (and possibly more than one) verb root (either a simple verb or a bound verb root) combined with up to four other elements (including other verb roots, bound and/or independent, and roots from other parts of speech) is dealt with in less detail in §8.3, although their structure is explored and numerous examples are given.

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[1] Although not particularly complicated in comparison to verbs in many other parts of the world, for example the Dene-Yeniseic languages, the Bantu languages, or some of the languages of the Caucasus; see Vajda (2008) for an overview of the verb structures found in some of these languages

The first section following outlines a proposed underlying structure of the verb, using an analysis involving four levels, from the highly abstract root form to the surface verbal lexeme form. The second section below lists the known simple verbs and broadly surveys their semantics. The following sections deal with the major aspects of verbal morphology, PNG (§8.2) and TAM (§8.4), as applied to these simple verbs. The succeeding sections detail various other aspects of verbal morphology. The final section deals briefly with the compound verbs.

As previously, verbs under discussion which only take marking to agree with the subject NP will be referenced in text by their 1SG forms; this form is identical to the underlying verb root so provides a convenient form for reference. When double-marking transitive verbs are discussed in text they will be represented by the form they take for indexing 1SG>3SG.M as this is, for all verbs involved, a form that actually occurs and which may be elicited (some forms, such as 1SG>1SG, are not found to occur naturally for all verbs).[2] In both cases, for clarity of presentation, they will have no overt TAM morphology present, which means that they will be in the form typically used to indicate past tense. This will facilitate comparison, and also employ a form that is actually used by Wutung speakers.

8.1.2 Definition of the verb

Verbs are one of the two major open word classes that make up the content words in Wutung. Their identification is largely unproblematic as it is supported by clear morphosyntactic evidence.[3]

Verbs are the main predicate type in Wutung (although non-verbal predication, dealt with in §6.2, is also fairly common). In the language of Hengeveld (1992:58), verbs are predicates which, without any further measures being taken ('measures' including use as part of a relative clause), have a predicative use only. Verbs may be identified as such by their morphology, in particular their inflections which indicate the categories of aspect and mood and may also, to some extent indicate tense (which otherwise is only signalled by temporal adverbs, see §6.6.2). In particular, Wutung verbs take a suffix to indicate imperfective aspect and combine reduplication with an enclitic to indicate irrealis mood.

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[2]As explained on page xxx, formulae such as 1SG>3SG.M are used to represent the subject and object agreement of a verb stem thus: subject>object.

[3]Discussion of the definitions of the other major open word class, the nouns, is found in §7.3.1, while definitions of many of the minor word classes are included in their respective sections of Chapter 6.

This reduplication can be considered as a property of the verbal predicate as the final onset and all following vowels is always the component to which it applies, even if this component is not a verb root.

As well, all but a small number of verbs inflect to agree with the person, number and gender (PNG) of the subject, and in some cases also of the object. The small number of verbs which do not do this most probably have this process blocked by their phonological structure (discussed in §8.2.4). Regardless of direct agreement, all verbs also index subject person/number/gender on their imperfective and irrealis bound morphemes. In contrast, non-verbal predicates do not index their arguments—see discussion in §6.2.

In terms of syntax, verbs function as the head of the clause, constituting (when they occur, some clauses being non-verbal) the predicate head. Verbs are normally preceded by the phrases that represent the subject (and also the one representing the object, in transitive clauses), and are followed by indirect objects and optional material such as clause-level particles, adjuncts, etc. Verbs constitute the essential core of the clause in Wutung containing both the verbal element/s along with morphology which indexes the core arguments of the clause.

Verbs subcategorise for argument structure, each verb having a restricted, lexically specified, set of arguments, and in some cases oblique noun phrases, with which they must co-occur. Core arguments are virtually always overt, as Wutung is not a pro-drop language.

8.1.3 Underlying structure of the verb

The following description of verbal morphology will be based in the lexical-incremental approach (as defined by Stump (2001:2)) as this facilitates a clear exposition of the inflectional composition of verbs, and the semantics with which these morphological elements are associated.

Wutung verbs are made up minimally of a single morpheme, a verb root but they may consist of one or more morphemes. If they do consist of two or more morphemes, at least one will be a verb root, which may be combined with one or more roots from other parts of speech. Those verbs consisting of a single verb root will be referred to as 'simple' verbs, while those combining a verb root with other elements will be referred to as 'compound' verbs.

Each verb morpheme may be analysed as having four levels of realisation with different types of morphology applying, incrementally and sequentially, at each level. These four levels are: root, stem, base and word. The root is an abstract form which contains the semantic and morphosyntactic specifications (i.e. the non-phonological information) necessary for the particular verb, along with the underlying phonological information, where this can be specified. The surface form, and the most morphologically complex, is the word. There are two structures intermediate between these two, both in level of abstractness and complexity, the first and second stems, labelled 'stem' and 'base', each of which is the output from the interaction of a particular piece of morphology with the more abstract level. This structure is laid out in Figure 8.1. That the order of application of the agreement morphology is as shown in this table will be demonstrated in §8.2, and §8.4.

root
|
|
stem (= root + object PNG)
|
|
base (= stem + subject PNG)
|
|
verbal word (= base + TAM)
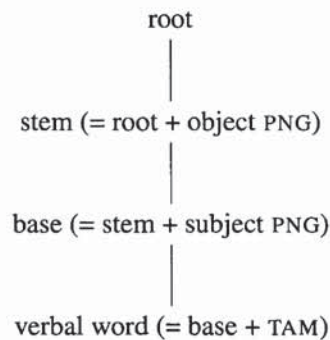
Figure 8.1: Underlying structure of the simple verb lexeme

Verb morphemes vary according to whether they take agreement marking and the levels of the morphological structure at which this marking occurs; this is shown in Table 8.1, which lists all known simple verbs.

Table 8.1: Simple verb categories and correspondences between underlying forms

agreement type	correspondence	transitivity	number
non-agreeing	root = stem = base	intransitive	10
subject-agreeing	root = stem $\neq$ base	intransitive & transitive	20
double-agreeing	root $\neq$ stem $\neq$ base	transitive	2

In all cases TAM morphology applies in a uniform way to the base to produce the final surface word form. Aspect is marked by an enclitic morpheme, while mood is marked by reduplication; both are highly regular in their application (see §8.4).

8.1.4 The simple verb

While over 200 distinct verbal lexemes have been collected over the course of my fieldwork on Wutung, most of these are morphologically complex compound forms, each containing more than one root element.[4] Across this group of compound verbs many of the same verb roots recur—in combination with each other and/or with other lexical elements—to produce the various verbal predicates. There are thirty-two such monomorphemic verb roots in the database which are able to occur on their own (with the appropriate inflectional morphology) as complete verbal predicates; these will be referred to as the 'simple verbs'. Those verbal words which consist of two or more root morphemes (at least one of which will always be a verb root) will be referred to as 'compound verbs'.[5]

Not all of the simple verbs also recur as elements in compound verbs; some only occur as free forms. Of the thirty-two monomorphemic verbs, ten appear to be derived from other word classes while twenty-two are underived, only being found to occur as verbs. The latter show variation by person, number and gender (PNG) while the derived forms do not, having one form through all combinations of PNG.

The thirty-two documented simple verbs are listed, with brief glosses, in Table 8.2 along with an indication of their agreement marking pattern.[6] Intransitive verbs are shown in the 1SG: transitive verbs, which take both subject and object marking, are shown in the 1SG>3SG.M form (i.e. the form used with 1SG subject and 3SG.M object).

Following are some examples of the typical usage of each type (i.e. non-agreeing, subject agreeing and double-agreeing) of these simple verbs. Also shown, in (8.1d) is a sample compound verb. This compound verb is broken up into its constituents only

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[4]While it is likely that there are more than 200 verbal lexemes in Wutung, this is still a relatively small number; a very large range of meanings is achieved through combining these verbal words, along with other free elements, into complex predicates (these are not dealt with in this thesis).

[5]The term 'complex predicate' will be reserved for verbal predicates consisting of more than one word.

[6]The variation in *ungf(l)ing* 'forget', is discussed in §1.11

Table 8.2: Simple verbs

simple verb	gloss	agreement pattern	simple verb	gloss	agreement pattern
huwur	become old	non-agreeing	lu	come	subject
moi	like/want	non-agreeing	qo	rub	subject
namie	think	non-agreeing	qangqie	wait	subject
nuabley	tire	non-agreeing	qeng	live at	subject
o	grow	non-agreeing	qang	be under	subject
saci	be sick	non-agreeing	qwua	be at	subject
ungf(l)ing	forget	non-agreeing	qaing	hide	subject
ungwa	laugh	non-agreeing	qa	scratch	subject
wo	work	non-agreeing	ha	go	subject
wua	shout	non-agreeing	jur	come out	subject
ley	do	subject	jua	rub off	subject
lie	be	subject	punga	be here	subject
lu	collect	subject	pu	die	subject
lung	say/tell	subject	o	have	subject (SG/PL subj)
lunga	hear	subject	qai	get	double
la	be with	subject	qa	hit	double

for expository purposes: it is in many cases, including this one, not possible to assign meanings to each component of the verb so they are glossed as a whole.

(8.1) a. *Cey o -lie*
    3SG.F grow -1SG.IMPERF
    'She's growing.'

  b. *Eddy ha -ha Maqe =ley*
    Eddy 1SG.go -IRR/REDUP Vanimo =1SG.M.IRR
    'Eddy will go to Vanimo.'

  c. *Qey pafa qa?*
    3SG.M who 3SG.M>3SG.M.hit
    'He hit whom?'

  d. *Qey huwur -qley -qlie*
    3SG.M cry -3SG.M.IMPERF
    'He's crying'

The simple verb maximally comprises three components: a lexical component and two grammatical components. These latter are the PNG marking and an overt TAM marker. The TAM marking may involve reduplication, an aspectual suffix, a modal clitic or one of several other TAM inflections, including zero marking. The PNG inflection is fused with the verb root such that, it some cases, it is not possible to segment them. While there is much irregularity in the PNG marking, there is none in the TAM marking, which is entirely segmentable. This structure is summarised in §8.1.3.

Rule 8.1

verbal word = ((PNG$_{subj}$ + (PNG$_{obj}$ + VERB ROOT)$_{verb\ stem}$)$_{verb\ base}$ + TAM)$_{verb\ word}$

As well as the documented simple verbs, those monomorphemic verb roots which occur independently as words in their own right, there are numerous bound verb roots which occur only as an element within compound verbs and not independently, but still show the PNG inflection. It may be that the absences of these items from the Wutung database as independent morphemes are accidental gaps, or that they are formerly independent lexemes that no longer occur. The fact that they still bear their own PNG inflections is possible evidence that, even if they do not presently occur independently, they did at some time in the past.

Table 8.3 presents examples of each kind of simple verb: non-agreeing (§8.2.4), subject-inflecting (§8.2.3) and double-inflecting (§8.2.5). For the double-inflecting verb it is necessary to present four paradigms, one for each particular object category. In each case the root form is used to refer to the whole lexeme.

Table 8.3: Example simple verbs

Subj. PNG	invariant: *ungwa* 'laugh'	subj.-inflecting *ley* 'do'	double-inflecting: *qa* 'hit' (by object)			
			1/2SG	3SG.M	3SG.F	PL
1SG	ungwa	ley	pung	qa	lang	ji
2SG	ungwa	bey	mu	qba	ma	ji
3SG.M	ungwa	qley	qu	qa	qla	si
3SG.F	ungwa	cey	nyu	qwa	nya	ci
1PL	ungwa	dey	nu	qda	na	di
2PL	ungwa	ley	pung	qa	lang	ji
3PL	ungwa	tey	nyu	sa	nya	ti

The following sections deal with the person/number/gender agreement marking (§8.2) and tense/aspect/mood (§8.4) morphology found on both the simple and compound verbs.

In the subsequent section compound verbs are briefly surveyed and some remarks made about their structure and semantics (§8.3).

8.2 Marking of Person, Number and Gender on simple verbs

8.2.1 Introduction

Andrews (1985:75) says that for most languages cross-referencing does not function primarily to code the grammatical function of NPs; he goes on to say that their primary function is as substitutes for pronouns, thereby enabling the free NPs so cross-referenced to be elided. This is not the case in Wutung; even where an argument is cross-referenced on the verb, in single clause utterances it will almost always still appear in its independent form as well.[7] Informants uniformly stated that although they could understand single clauses presented to them without independent subject NPs (but on which the verbs retain their normal subject marking) they felt them to be unacceptable; reflecting this is the fact that such 'unacceptable' utterances were indeed very rarely recorded. This argument cross-referencing is not then the main means for coding the grammatical functions of the NPs; rather this role is carried out by the NP's position within the clause.

In Wutung most simple verbs take marking to reflect the person, number and gender (PNG) of the subject, and also, in some cases, of the object, although this is restricted to a subset of the transitive verbs. As the exclusive/inclusive and dual/plural distinctions are not preserved on the verb, there are up to seven different PNG combinations represented on each intransitive verb. The actual number of different forms is always less than this as there is always some syncretism across the forms. A number of verbs show even less variation than this, one such only varying according to the singular/plural contrast. A small set of intransitive verbs show no variation at all, but retain the same form regardless of PNG of the subject.

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[7]Of course, once NP arguments have been introduced into discourse it is not uncommon for them to be elided in subsequent clauses: this is sometimes called topic-drop and should be contrasted with pro-drop.

PNG marking (where present) always involves modification of the initial consonant(s). This modification involves interaction between sets of subject prefixes and the initial consonants of the verb root (vowel-initial roots show no modification). These subject prefixes are somewhat abstract as the surface forms resulting from this interaction vary substantially, with many verbs showing irregularity.[8] Ross (1980:94) describes the PNG inflections in the neighbouring (and closely-related) Dumo as resulting from the fusion of verb stems with subject prefixes which are phonologically related to the personal pronouns. A similar situation obtains for Wutung with the distinction that Wutung shows greater variation in the PNG inflections.[9]

The simple verbs may be divided into three groups on the basis of their behaviour with respect to PNG inflections, as shown in Table 8.1: non-agreeing, subject-agreeing and double-agreeing. In terms of the underlying levels of morphology described in §8.1.3, the 'non-agreeing' verbs are invariant in PNG marking, having the same form for root, stem and base. While the identity of root and stem is expected as all non-inflecting simple verbs are intransitive (so no object argument is present), the base also has the same form as they show no inflection for subject argument. This group of simple verbs is discussed in (§8.2.4). The subject-agreeing simple verbs have a single stem underlying all surface forms. There is substantial irregularity in this group with the number of base forms occurring varying between two and six, depending on the particular verb (1SG and 2PL are usually identical forms, and typically also identical to the stem). These verbs are discussed in §8.2.3. There are two (known) simple verbs which inflect to agree with both their subject and object arguments. These double-agreeing simple verbs have suppletive stems which fit the description of (Melcuk 1994:358): 'their semantic correlation should be maximally regular, while their formal correlation is maximally irregular'. For these verbs the root, stem and base levels are formally distinct; in particular, the root cannot be phonologically specified. The (suppletive) object-agreeing stems take subject-inflection to produce the various bases, to which TAM inflection is then added. These are dealt with in more detail in §8.2.5.

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[8](Donohue 2003a) describes the prefixal agreement found in Skou; this feature does not occur in Wutung nor, according to Donohue (pers.comm.) is it found in any other of the related languages between Skou and Leitre (see Figure 1.8 for the locations of these languages).

[9]These PNG prefixes are one of several aspects of Wutung that appear to conspire to make it quite difficult for adult non-speakers to learn. Amongst the other features that seem to contribute to this are the tonal system and the complex syllable onsets.

8.2.2 Summary of verb prefix agreement patterns

Wutung has complex morphophonemic alternations by which a set of inflectional prefixes fuse with the inital consonant of most verb roots to produce forms that agree with the person, number and gender of the subject, and in some cases of the object as well. There is also a group of simple verbs which show no such agreement. As has been shown, while numerous verbs only partly conform to this pattern, showing inconsistencies in agreement marking including apparent suppletion, underlying patterns may be discerned; these are laid out below, in Table 8.4 (which also presents the personal pronouns). This table makes clear that there the PNG prefixes are transparently derived from the initial consonants of the free pronouns. It should be noted that in some cases the proposed underlying prefix is a segment, whereas in others it is a subsegmental feature (place of articulation). While Donohue (2008b:145) is likely to be correct in saying (of the corresponding facts in Skou) that the better analysis would be in terms of subsegmental features, it is not straightforward to identify precisely what these features would be. Where this is not evident, whole segments have been posited.

Table 8.4: Summary of proposed underlying inflectional prefixes

PNG	pronoun	proposed underlying prefix
1SG	nie	$\emptyset$
2SG	me	bilabial (b before V_O, m before V_N)
3SG.M	qey	/q/
3SG.F	cey	/c/, /w/
1PL	ne(tu)	alveolar: /d/ before V_O, /n/ before V_N
2PL	e(tu)	$\emptyset$
3PL	te(tu)	/t/

While it is not surprising that the 2PL should be the zero-marked form, this being the only vowel-initial pronoun, it is curious that the 1SG should also be zero-marked. Donohue (2008b:143) says that, historically, the 1SG prefix consonant was /ŋ/, a segment which is no longer present in Wutung and therefore no longer plays a part in the agreement prefix system.[10]

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[10]Donohue (2008b:144) goes on to say that in other, closely related languages, the /ŋ/ prefix survives as a velar stop.

These prefixes coalesce with the initial consonant of the verb root to produce the surface forms, which may also be affected by the following vowel. Table 8.5 shows the most common forms which result from the fusing of the underlying prefixes with simple verbs from each of the phonological classes; in several cases there are more than one, possibly conditioned by the quality of the following vowel. The 'glottal' column uses 'G' to indicate that each verb consistently takes either /q/ or /h/, whichever is the underlying segment.[11] The column for palatial initial verbs followed by a nasal vowel is blank as there are no simple verbs of this type. Those forms enclosed in a box are irregular (probably resulting from suppletion) and so are not built by fusion of the underlying prefix with the initial consonant; all examples are dealt with in greater detail in the sections that follow.

Table 8.6 shows the number of verbs which contain verb roots from the various phonological classes. We can see from this that the alveolar and glottal classes are by far the most common, with the bilabial class being reasonably common. The palatal is the rarest, with only eight verbs containing roots from this class.

8.2.3 Subject-inflecting simple verbs

8.2.3.1 Overview

Most simple verbs show agreement with the PNG of the subject argument NP. The surface forms that result from the coalescence described in §8.2.2 depend on the initial consonant of the verb root but may also be influenced by the immediately following vowel, which may also undergo some changes (though the conditioning factors determining this are unclear). All but one of the simple verbs which take PNG marking begin with one of five initial consonants: /p, l, j, q, h/. The sole exception is the vowel-initial suppletive verb *o* 'have', treated in §8.2.3.6. As the two glottals may be grouped together as having essentially the same behaviour when combined with the prefixes, the interaction between the initial consonants and the PNG prefixes falls into the four classes /p/ bilabial, /l/ alveolar, /j/ palatal and /q, h/ glottal. Sections 8.2.3.2–8.2.3.6 deal with the conjugation classes in the following order: alveolar, glottal, bilabial, palatal. The alveolar and glottal classes are dealt with first as they are the largest and best illustrate the prefix patterns. The

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[11]In this table the following abbreviations are used: C_{alv} = alveolar consonant; C_{bi} = bilabial consonant; C_{pal} = palatal consonant; C_{gl} = glottal consonant; V_n = nasal vowel; V_o = oral vowel.

Table 8.5: Interaction of pronominal underlying prefixes, initial consonants and first vowel

PNG	underlying form	alveolar initial		bilabial initial		palatal initial		glottal initial	
		$C_{alv}V_o$	$C_{alv}V_n$	$C_{bi}V_o$	$C_{bi}V_n$	$C_{pal}V_o$	$C_{pal}V_n$	$C_{gl}V_o$	$C_{gl}V_n$
1SG	∅	l	l	p	p	j		G	G
2SG	bilabial	b	m	p	m	j		Gm	Gm
3SG.M	glottal stop	ql	ql	qw	m	s		q	q
3SG.F	c~w	c~hl	hl	w	m	c		c~Gw	qw
1PL	alveolar	d	n	[c]	n	d		d~Gn	n~hn
2PL	∅	l	l	[c]	p	j		G	q
3PL	t	t~s	s	[c]	m	q~t		t~hny	q

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Table 8.6: Number of verbs containing roots from each phonological class

alveolar initial	bilabial initial	palatal initial	glottal initial
55	26	8	56

two smaller classes (bilabial and palatal), follow, with the final section briefly examining the suppletive *o* 'have'.

This situation is similar to that described by Ross (1980) for Vanimo, and by Donohue (2001a, 2003a) for Skou. Ross (1980:93–97) describes Vanimo as having four conjugation classes determined by the category of the initial consonant, which is always one of: bilabial, alveolar, palatal and glottal. The surface forms of the verbs result from the fusion of the subject prefixes with these verb-initial consonants. The situation in Skou is somewhat more complex with a total of thirteen allowed verb consonant onsets, out of which only five are inflecting, those being /w, l, r, k, h/ (Donohue 2008a). Both of these authors use place of articulation terms to refer to the conjugation classes: this practice will be followed herein with the inflecting simple verbs assigned to classes based on the initial consonant of their root, thus: /l-/ alveolar, /q-, h-/ glottal, /p-/ bilabial and /j-/ palatal (listed here in the order that will be used for their presentation in the following sections). These classes are exemplified in Table 8.7.

Table 8.7: The inflectional classes

	bilabial 'be here'	alveolar 'be'	palatal 'rub off'	glottal 'go'
1SG	punga	lie	jua	ha
2SG	mua	bie	jua	hma
3SG.M	mua	qlie	sua	qa
3SG.F	ma	cie	cua	hwang
1PL	nua	die	dua	hna
2PL	punga	lie	jua	ha
3PL	mua	tie	tua	hnya
root	punga	lie	jua	ha

In the majority of verbs, the 1SG and 2PL forms are identical. As the 2PL pronoun is vowel-initial there is no subject prefix to be derived from it so it may be assumed that the 2PL form of the verb is identical to the verb stem, and therefore also to the underlying root form as there is no object marking (this equivalence is illustrated in Table 8.1). The other base forms result from the interaction of this stem (and root) form with the various inflectional prefixes. This does not, however, explain the 1SG verb form which is, in virtually all cases, identical to the 2SG and therefore also to the stem and root.[12] The explanation may be found in the analysis of the history of agreement in Skou languages found in Donohue (2003a:492), and discussed previously.

Table 8.8 gives the number of attested subject-agreeing simple verbs of each phonological class (one verb, *o* 'have', is too irregular to be assigned to a class). This table shows that, although each of the classes contains quite small numbers, the glottals and alveolars are by far the largest groups.

Table 8.8: Number of subject-agreeing simple verbs in each phonological class

phonological class	number occurring	verbs
alveolar	7	*lie* 'be'; *ley* 'do'; *lu* 'collect'; *lung* 'say'; *lunga* 'hear'; *la* 'be with'; *lu* 'come'
glottal	8	*qo* 'rub'; *qangqie* 'wait'; *qeng* 'live at'; *qang* 'be under'; *qwua* 'be at'; *qaing* 'hide'; *qa* 'scratch'; *ha* 'go'
bilabial	2	*punga* 'be here'; *pu* 'die'
palatal	3	*jur* 'come out'; *jua* 'rub off'; *jua* 'harvest tips'
irregular	1	*o* 'have'
total	21	

All simple verbs that take agreement for subject PNG consist of either one or two syllables; this structure is laid out in Figure 8.2. If the verb is disyllabic, only the initial syllable has an onset. The only exceptions to this structure are amongst the non-agreeing verbs, which are anomalous in a number of other ways as well (see §8.2.4 for discussion

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[12]There are two known exceptions to this generalisation, the suppletive verbs *pu* 'die' (§8.2.3.4) and *o* 'have' (§8.2.3.6).

of these verbs). Some examples of both one and two syllable verbs are shown in the tables in §8.2.3.2–8.2.3.5.
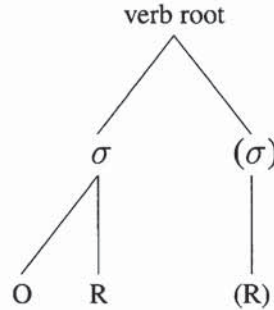
Figure 8.2: Syllable structure of the simple verb root

Finally, it should be noted that there are several subject-agreeing simple verbs which are transitive, obligatorily taking two core arguments (both of which must precede the verb), but which inflect to index only the subject argument NP. The other two transitive simple verbs are double-agreeing, inflecting to index both the subject and object arguments—these are dealt with in §8.2.5.

8.2.3.2 The alveolar class

Table 8.9 presents the subject-inflecting simple verbs which begin with the initial alveolar segment, /l/. The patterns of consonant prefixation appearing in these paradigms are summarised in the column 'pronominal prefixes' and discussed below. While there are obvious patterns in the forms of the verbs, there are certain forms that are irregular (or, at least, inexplicable): in the table these forms are enclosed in boxes.

Almost all of the pairs of 1SG and 2PL forms are identical to each other and (as explained previously) reflect the underlying root form. The one exception to this is *la* 'be with' where the 2PL idiosyncratically takes an inital glottal.

The 2SG and 1PL show parallel behaviour, with the former having /b/ and the latter /d/, before oral vowels. This can be analysed as arising from the fusing of the root-initial /l/ with agreement morphemes (deriving from the free pronouns) which have the forms /m/ and /n/, respectively. In this process the place of articulation of the agreement morpheme is preserved. When the first vowel is nasal the initial consonant is realised as nasal with the vowel being denasalised; where it is oral, the initial consonant is realised as oral. The

Table 8.9: Alveolar-initial simple verbs (irregular forms enclosed in boxes)

	be	*do*	*collect*	*say*	*hear*	*be with*	*come*	agreement morphemes
1SG	lie	ley	lu	lung	lunga	la	lu	∅
2SG	bie	bey	bu	mu	[mlua]	ba	bu	m, b
3SG.M	qlie	qley	qlu	qlung	qlunga	qla	[lua]	q, ∅
3SG.F	cie	cey	hlu	hlung	hlunga	wa	hlu	c, h, w
1PL	die	dey	du	nu	nua	da	du	n, d
2PL	lie	ley	lu	lung	lunga	[qla]	lu	∅
3PL	tie	tey	su	sung	sunga	[qla]	[lu]	t, s, ∅

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verb *lunga* 'hear' is an exception to this process as the underlying /l/ is preserved in the 2SG form to give the cluster /ml/.

In all but one case the 3SG.M takes the glottal stop /q/, producing the cluster /ql/. The exception is *lu* 'come', which has a vowel added, giving *lua*, but no glottal consonant; this may be a suppletive form.

The 3PL forms show greater irregularity, taking /s/ before /u/ and /t/ elsewhere. There are two exceptions, the verbs (*la* 'be with' and *lu* 'come') which in both cases take forms which are also found in other parts of their paradigms. The 3SG.F shows a similar pattern of variation to the 3PL, having /h/ (to give the cluster /hl-/) before /u/, /w/ before /a/ and /c/ elsewhere.

8.2.3.3 The glottal class

Presented in Table 8.10 are all the simple verbs from the glottal category, with their inflections. These are verbs which have the glottal stop /q/, or in one case the glottal fricative /h/, as their underlying initial consonant. In the simple verbs, the glottals are the largest of the four phonological classes, with eight known members.

While Table 8.10 shows substantial differences from Table 8.9, the patterns described for the alveolar class are clear. It is noteworthy that of the four glottal-initial simple verbs that contain oral vowels, two of them, *qa* 'scratch' and *ha* 'go', take surface forms which, in the other verb classes, only occur when preceding a nasal vowel. The other two verbs verbs with oral vowels, *qo* 'rub', and *qwua* 'be at', do not do this. The former is transitive and the latter has an initial consonant cluster; possibly it is these features which block them from taking the nasal prefix forms. Nevertheless, the fact that at least two glottal-initial forms which do not contain nasal vowels both take the nasal vowel prefixes hints at the presence of rhinoglottophilia, the '...affinity between the feature of nasality and the articulatory involvement of the glottis...' (Matisoff 1975:265). This aside, the pattern of formal identity between the 1SG and 2PL is maintained in all cases. The 2SG and 1PL in almost all instances also take the bilabial and alveolar segments and, as already mentioned, in most cases the forms are those that normally occur before a nasal vowel, whether or not the vowel is actually nasal. The majority of the irregular forms occur in the third person categories. The third person plurals mostly take the uninflected form of their verb, being identical to 1SG 2PL, with only the forms for *qo* 'rub, *qang*

Table 8.10: Glottal-initial simple verbs (irregular forms enclosed in boxes)

	rub	wait	live at	be under	be at	hide	scratch	go	agreement morphemes
1SG	qo	qangqie	qeng	qang	qwua	qaing	qa	ha	∅
2SG	bo	[qmie]	me	[me]	qwua	qmi	qma	hma	m
3SG.M	qo	qangqie	[nie]	[nyi]	qwua	qaing	qa	qa	q
3SG.F	co	[qwie]	[eng]	[ing]	[qo]	qwing	qwa	hwang	c, w
1PL	do	[qmie]	ne	ne	qwua	qni	qna	hna	n
2PL	qo	qangqie	qeng	qang	qwua	qaing	qa	ha	∅
3PL	[to]	qangqie	qeng	[qing]	qwua	qaing	qa	[hnya]	∅, t, ɲ

'be under' and *ha* 'go' differing. Out of the three 3PL forms that do show inflection, the transitive *qo* 'rub' takes /t/, as is the case with a number of members in the other classes.

8.2.3.4 The bilabial class

This, the set of simple verbs with an initial bilabial segment, has only the two (attested) simple verbs, as shown in Table 8.11.

Table 8.11: Bilabial-initial simple verbs

	'be here'	'die'
1SG	punga	pu
2SG	mua	pu
3SG.M	mua	qwa
3SG.F	ma	wang
1PL	nua	ci
2PL	punga	cici
3PL	mua	cici

With only two verbs it is difficult to identify regular processes with any certainty. Nevertheless, some observations may be made, most confidently for *punga* 'be here', which follows most of the patterns seen with the other verb classes, but also for the suppletive *pu* 'die', which has three distinct forms in its paradigm (as indicated by the separating lines in the table).

In *punga* the 1SG and 2PL forms are identical, reflecting the underlying forms (that is, the root and stem). The 2SG and 1PL also show the same processes seen elsewhere, with the expected nasals (bilabial and alveolar, respectively) surfacing due to the nasal vowel, which is itself denasalised, as it is also in the other forms which take an initial nasal consonant.

On the other hand, *pu* 'die' is highly anomalous, showing little similarity to the expected surface forms apart from the glottal stop in 3SG.M and the approximant in the 3SG.F. This verb is clearly suppletive, having three distinct forms in its paradigm: the plurals, the third-person singulars, and the other singulars. Despite this, it will be treated as a member of the bilabial class of verbs.

Given that there are only two verbs in this category, and that one is highly suppletive, it is not possible to derive the agreement morphemes, so this column is not included in the

table. The regularity of the bilabial agreement paradigm is clearer in the more numerous bilabial verb roots found in the compound verbs discussed in §8.3.3.2.

8.2.3.5 The palatal class

Table 8.12 shows the agreement pattern found on the simple verbs with an initial palatal segment.

Table 8.12: Palatal-initial simple verbs

	'come out'	'rub off'	'harvest tips'	agreement morphemes
1SG	jur	jua	jua	j
2SG	jur	jua	jua	j
3SG.M	sur	sua	sua	s
3SG.F	cur	cua	cua	c
1PL	dur	dua	dua	d
2PL	jur	jua	jua	j
3PL	qur	tua	tua	q, t

Unlike the bilabial class this group is highly regular, the verbs only differing in their consonant prefixes in one form, the 3PL. Interestingly, this class provides the only example of a simple verb with /ur/ as the initial vowel. As with the previous sets of simple verbs (apart from the bilabial), clear patterns are evident in this class although they manifest quite differently from the other classes in some respects.

As with almost all of the other simple verbs, the 1SG and 2PL in this class have identical forms. As with the alveolar-initial verbs, the 3SG.F forms take initial /c/, although not conforming with the pattern of dependancy on the following vowel previously described for that class (§8.2.3.2). The 1PL takes the voiced alveolar stop while in *rub off* the 3PL is, as before, the voiceless alveolar stop. The 2SG in both cases is exceptional in that it is /j/, whereas in all simple verbs in other classes a bilabial pronominal prefix occurs (although in one case it is /w/) in this form. While much of the variation from the previously-described patterns is likely to result from the interaction of the underlying prefixes with the initial segment /j/, the fact that 'come out' has glottal-initial *qur* for 3PL is most likely a genuine irregularity (possibly suppletion) as no other underlyingly palatal-initial verb root takes an initial glottal for this cell in its paradigm.

8.2.3.6 Suppletive *o* 'have'

The verb *o* 'have' does not fit into any of the previously described classes of simple verb, being suppletive and so highly irregular. This verb inflects for subject number alone, taking one form for all singular inflections and another for all plurals. The full set of inflections for this verb is shown in Table 8.13.[13]

Table 8.13: *o* 'have'

SG	o
PL	ma

8.2.4 Non-agreeing simple verbs

While most verbs vary according to person, number and gender, there is a set which show no such variation, instead having the same form throughout the paradigm. While like all verbs these do inflect for other verbal categories, they do not do so for PNG. Most of these verbs appear to be related to formally identical words in other word classes (nouns and adjectives) and it is likely that they result from zero-derivation.[14] Supporting this analysis are several facts. Firstly, they do not inflect for the PNG of their subject. Secondly, apart from *huwur* 'become old', these verbs differ phonologically from most others—no inflecting verbs begin with /n/, /s/ or /w/ and there is only one that is vowel-initial, the highly aberrant *o* 'have'. Finally, they do not conform to the prototypical phonotactic structure of simple verb roots, as shown at Figure 8.2. Of course, these do not prove the case beyond all doubt and the reverse is still a possibility.

Although lacking agreement morphology members of this group conform to the typical behaviour of verbs in all other respects, reduplicating for irrealis mood and taking the imperfective suffix and irrealis clitic when appropriate. The ten verbs that fall into this group are listed in Table 8.14.

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[13]This verb is noteworthy in two other ways: it takes unusual marking for imperfective aspect (see §8.4.4.1), and it has become grammaticised as a preposition (§6.5)

[14]That is, they are able to be used as verbs without any overt morphological change, and are able to take the full range of TAM morphology where appropriate.

Table 8.14: Invariant verbs

verb root	meaning	derivational source
huwur	become old	noun 'big, old'
moi	like/want	—
namie	think	noun 'a thought'
nuabley	tire	adjective 'tired'
o	grow	noun 'young (one)'
saci	be sick	adjective 'sick'
ungfi	forget	?
ungwa	laugh	noun 'a laugh'
wo	work	from TP 'wok'
wua	shout	noun, 'a shout'

Under the assumption that these are derived forms, a variety of sources are evident, including: nouns, adjectives, a borrowing from Tok Pisin, and one verb which is of unknown derivation and may well be underived.

8.2.5 Double-inflecting simple verbs

While there are a number of simple verbs which are transitive and which only agree with the subject argument, there are also two transitive simple verbs known which are double-inflecting; that is, they vary to agree with the PNG of both the subject and the object arguments. While this differs from the description of Vanimo in Ross (1980) and stands in contrast to claims about Sko languages in general by Laycock (1975:851), more recent work by Donohue (2002:207–209) indicates that all of the western Skou languages (that is, Sko, Sangke/Nyao, Wutung and Vanimo) have some object marking on at least some verbs. The two double-inflecting verbs of Wutung are *qa* 'hit' and *qai* 'get'; their full PNG paradigms are shown in Tables 8.15 and 8.16.

These are actually suppletive verbs, with distinct forms for object categories which then take subject inflection.[15] In terms of the structure laid out in Figure 8.1, these verbs have multiple suppletive stem forms, either three or four. This specific structure can be

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[15]They will still be referred to as 'double-inflecting' as this groups them with the non-suppletive double-agreeing verbs, and in opposition to the subject-agreeing verbs, which also include both suppletive and non-suppletive paradigms.

diagrammed as in the modified underlying structure tree shown in Figure 8.3. Speakers of Wutung conceive of these suppletive stems as being different forms of the one word, with identical lexical semantics. Once familiar with presenting a verb paradigm Wutung speakers do not hesitate to assign these suppletive forms to the one verb. For this reason the suppletive stems are treated as though they share a common root and are part of the same word, even though they may, in some cases, have no part of their form in common. Being suppletive, the underlying root form is highly abstract and the phonological form cannot be specified; where it is necessary to represent the root form of a double-inflecting verb the 1SG>3SG.M form is used.
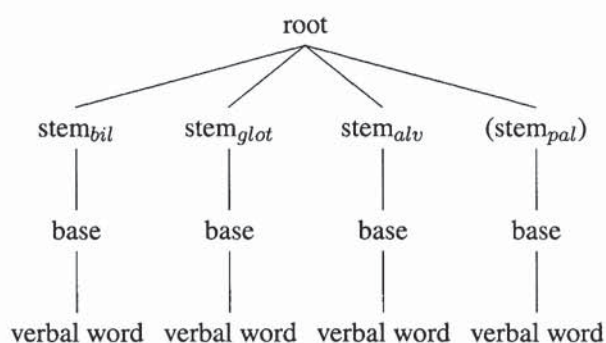
Figure 8.3: Underlying structure of the simple double-inflecting verb lexeme

The stems each fall into one of the four phonological categories described previously for the subject-inflecting verbs (§8.2.3) and summarised in §8.2.2. Each of these stems then manifests the set of subject (or base) forms, in the same way as do the subject-inflecting verbs, arising from fusion of the subject pronominal prefixes to the initial consonant(s) of the stem. In Figure 8.3 the stems are labelled according to the subject-inflecting phonological categories. The palatal-initial stem is marked as optional as it only occurs in those double-inflecting verb roots that have four stems.

In Table 8.15 it can be seen that within each of the object PNG categories in *qa* 'hit' are patterns much like those found on the subject-inflecting simple verbs with, for example, 1SG and 2PL being identical. If 1SG/2PL subject are treated as the unmarked (or, underlying stem) forms, then looking across these rows we see that each of the four stems belongs to one of the four onset types, and follows the following pattern of syncretism:

palatal for the plural forms, alveolar for 3SG.F, glottal for 3SG.M and biabial for the other singular forms.[16]

Table 8.15: Agreement conjugation of *qa* 'hit'

	1SG/2SG.OBJ	3SG.M.OBJ	3SG.F.OBJ	PL.OBJ
1SG SBJ	pung	qa	lang	ji
2SG SBJ	mu	qba	ma	ji
3SG.M SBJ	qu	qa	qla	si
3SG.F SBJ	nyu	qwa	nya	ci
1PL SBJ	nu	qda	na	di
2PL SBJ	pung	qa	lang	ji
3PL SBJ	nyu	sa	nya	ti

The paradigm of *qai* 'take' in Table 8.16 shows patterning which is similar, but not identical, to that found in Table 8.15. There are three different underlying onset types occurring, as evidenced by examining the 1SG subject row: glottal, bilabial and alveolar. Whereas in Table 8.15 the object categories fall into the groups: plural, 3SG.F, 3SG.M and singular non-third person, in Table 8.16 categories are plural, 3SG.F and singular non-feminine. Again, the object forms (stems) are clearly suppletive and act as the underlying forms to which the pronominal subject prefixes apply.

Table 8.16: Agreement conjugation of *qai* 'take'

	1/2/3M.SG.OBJ	3SG.F.OBJ	PL.OBJ
1SG SBJ	qai	pi	lu
2SG SBJ	qbi	fi	blu
3SG.M SBJ	qai	qwi	qlu
3SG.F SBJ	qwi	si	hlu
1PL SBJ	qdi	qwi	du
2PL SBJ	qai	pi	lu
3PL SBJ	si	qwi	su

Table 8.17 compares the verb *qaing* 'hide oneself' and the singular object paradigm from the double-inflecting verb *qai* 'take'. These two verbs are very nearly identical

[16]In some cases gaps in the paradigms are obscured by the collapsing of different object paradigms together, for example in Table 8.15 no form was recorded for 'I hit us.PL'.

in their underlying forms (the root form in the case of *qaing* 'hide oneself', but one of the stems in the case of *qai* 'take') but show differences (some predictable) in the realisation of the forms in other parts of the subject paradigm. The former is transitive and varies to agree with both subject and object, while the latter is intransitive and reflexive. Furthermore, apart from the 3PL form *si*, the two paradigms differ only in the effect of the nasal vowel in 'hide oneself'. Of course 'take' is a transitive verb and so has forms reflecting various object PNG, but the above paradigm holds for 1SG, 2SG and 3SG.M objects. It is typical for transitive verbs to have a 3PL subject form beginning with /s/.

Table 8.17: Agreement conjugations of *qai* 'take' vs. *qaing* 'hide oneself'

	'take'	'hide oneself'
1SG	qai	qaing
2SG	qbi	qmi
3SG.M	qai	qaing
3SG.F	qwi	qwing
1PL	qdi	qni
2PL	qai	qaing
3PL	si	qaing

Taking these two simple, double-inflecting verbs together it can be seen that the various sets of object paradigms are suppletive, showing very little similarity across any given subject. Within any given object though, they largely follow the standard patterns determined by the initial segment. What similarity exists from one subject paradigms to another may be explained as resulting from the fact that there is a very strong tendency for the initial consonants in any given subject PNG to be drawn from a limited set.

The suppletive roots show syncretism with *qai* 'get' having only three forms (as opposed to the possible six or seven), one for each of the categories 3SG.F, PL and SG. The same is true of *qa* 'hit', which has the four forms (3SG.M, 2SG.F, PL and 1/2SG. While the patterns of syncretism of the two verbs differ slightly, the distinctions involved may be modelled with the semantic feature inheritance tree shown in Figure 8.4.

This tree also correctly models the features expressed in the agreement marking of the suppletive *o* 'have', which manifests only the one contrast of singular vs. plural.
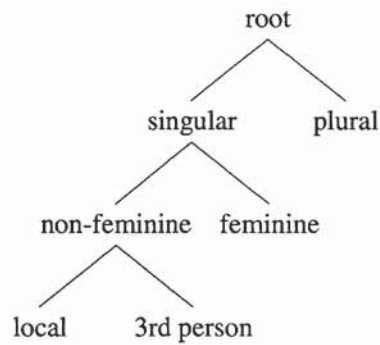
Figure 8.4: Structure of PNG agreement features on double-inflecting verbs

8.3 Marking of Person, Number and Gender on compound verbs

8.3.1 Definition and structure

The term 'compound verb' is used to refer to verbal words that consist of two or more root morphemes, at least one of which is a verb root. An example of this is *hlungha* 'walk', which consists of the noun *hlung* 'road/path' plus the verb *ha* 'go' (the status of such verbs as single words is discussed in the following section). The verb root/s may be combined with up to four other elements (in the largest known example), not all of which appear as independent morphemes.

It is an important (and typologically unusual) feature of compound verbs in Wutung that the constituent verb roots, where they are able to take agreement marking for PNG, do so before compounding applies. Thus each verb root may bear its own PNG marking, despite being within a compound lexeme. As well, there are a number of such morphemes that occur as elements within compound verbs and take PNG inflections, but which have not been documented as occurring independently. This suggests that these were formerly independent verbs which now only remain as components of compound verbs. The compound verbs are extremely diverse and only poorly understood; as such this section attempts to give only an overview of the range of constitutents, morphology and semantics encountered in these words.

Compound verbs have been recorded which contain as many as three distinct verb root morphemes, each bearing its own PNG inflection (an example of such a verb is *qaiolu*

'bring', discussed in §8.3.4.3). This is a case of rather extreme redundancy, especially given that overt argument NPs are normally present as well (not to mention the fact that parts of the TAM morphology also reflect the PNG of the subject NP). It is not likely that this is simply phonological spell-out of agreement as non-verbal elements forming a component of compound verbs do not take such marking, even though they may otherwise be phonologically indistinguishable from verbs. This indicates that the word-class membership of these bound morphemes is preserved, at least for verbs.

The compound verbs fall into a number of types. In terms of the constitutent root morphemes, these include at least the following:

- verb + noun

- verb + verb

- verb + illocutionary particle

- adjective + verb

Donohue (2008a) discusses the bipartite verbal stems found in several languages of the Skou family; very similar structures are found in Wutung, with some being possibly tripartite.

Table 8.18 provides an example of a compound verb, *hlungha* 'walk', which contains two lexical roots: *hlung* 'road/path' and *ha* 'go' (separated by a dash for presentation). As mentioned previously, examples are presented in the past tense to minimise inflectional morphology. We see in this example that the verb root varies to agree with the PNG of the subject NP, while the nominal root is invariant.

An example compound verb is shown in Table 8.19, the double-inflecting *calingqwie* 'wash' (as previously, the root morphemes are separated by dashes).[17] This verb has three distinct roots: one is the noun *ca* 'water' while the other two are the bound (that is, as far as is known, they do not occur independently as verbal words, as do the simple verbs) verb roots *ling* and *qwie*. While the nominal root is invariant, both of the verb roots inflect to reflect the PNG of both the subject and object arguments. There are a number of points occurrences of syncretism in this verb; for the *-ling* root this occurs within particular subject sets, while for the *-qwie* root it is mainly across the object sets. It is not clear what part of the semantics of the verbal word derive from which root.

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[17]Em-dashes indicate gaps where the forms either do not exist or were not known to informants.

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Table 8.18: Compound verb *hlungha* 'walk'

hlungha 'walk'	constituents	gloss
nie hlungha	hlung -ha	I'm walking
me hlunghma	hlung -hma	you.SG are walking
ey hlungqa	hlung -qa	he's walking
cey hlunghwang	hlung -hwang	she's walking
ne hlunghna	hlung -hna	we're walking
ey hlungha	hlung -ha	you.PL are walking
tey hlunghnya	hlung -hnya	they're walking

8.3.2 Compound verbs: single words or multiple words?

Compound verbs are defined previously (§8.1.3) as being single verbal words that are comprised of two or more root morphemes, at least one of which is a verb root. Given the possibility of an alterative analysis of these as consisting of multiple words (i.e. that the verb roots are actually distinct words, as is the case with the equivalent verbal structures in Skou (Donohue nd:252)), this section presents the justification for the single word analysis.[18]

The 'word' in Wutung may be identified on the basis of a number of criteria which are presented below. All of these criteria apply to all words in Wutung, including the compound verbs; the final criterion, 'irrealis reduplication', involves morphology that applies specifically to verbal words.

The domain of tone

The most important criterion for the definition of the word is the prosodic feature of tone. In Wutung, the word is the domain across which tonal processes operate, with the same number of tonal distinctions found regardless of the number of syllables, with four melodies applying to words of two or more syllables, and three to monosyllabic words (see §5.5. Each tone melody manifests in particular ways, depending on the number of syllables in the word and the presence and location of an accent.

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[18]It is possible that further work will show that an alternative analysis is preferable, e.g. that these are serial verb constructions rather than morphologically complex words. While at present the evidence is not overwhelming, it does support the compound verb analysis.

Table 8.19: Example compound verb *calingqwie* 'wash' (tr.)

Subj. PNG	Object PNG						
	1SG	2SG	3SG.M	3SG.F	1PL	2PL	3PL
1SG	—	ca -ling -fie	ca -ling -qwie	ca -ling -sie	ca -ling -qwie	ca -ling -pie	ca -ling -qwie
2SG	ca -ling -fie	—	ca -mi -qwie	ca -mi -sie	ca -ling -qwie	ca -mi -qwie	ca -mi -qwie
3SG.M	ca -ling -pie	ca -ling -fie	ca -qling -qwie	ca-qling -sie	ca -ling -qwie	ca -ling -pie	ca -qlinq -qwie
3SG.F	ca -nyi -pie	ca -nyi -fie	ca -ni -qwie	ca -ni -sie	ca -nyi -qwie	ca -nyi -pie	ca -nyi -qwie
1PL	ca -ni -pie	ca -ni -fie	ca -ni -qwie	ca -ni -sie	—	ca -ni -pie	ca -ni -qwie
2PL	ca -ling -pie	ca -nyi -fie	ca -ling -qwie	ca -ling -sie	ca -ling -qwie	—	ca -ling -qwie
3PL	ca -nyi -pie	ca -nyi -fie	ca -ni -qwie	ca -nyi -sie	ca -nyi -qwie	ca -nyi -pie	—

In the case of the verb *húngpúà* '1SG.see', shown in Table 8.20, the tone melody is H, which is realised as [h.h] on words of two syllables and [h.h.l] on words of three syllables, as expected from the analysis of tone presented in §5.5. Treating this verb as being comprised of the two words *hung* and *pua* requires accounting for the tones that appear on each of the words. The first, being one syllable in all cells in the paradigm, is invariantly [h], an acceptable reaisation which reflects the H tone melody. However, the second word is [h] when monosyllabic and [h.l] when disyllabic, which are incompatible as realisations of a single melody. The first tone reflects the H melody and the second the HL. The surface tones we actually see in *hungpua* are precisely what we would expect to see if it is analysed as bearing the single tone melody H, which takes a single word, the whole verbal word *hungpua*, as its domain.

Table 8.20: Tone of *hungpua* 'see'

	hungpua 'see' H
1SG	húngpúà
1SG	hmúfúr
3SG.M	qúqwúà
3SG.F	hmúsúr
1PL	hnúqwúà
2PL	húngpúà
3PL	hnyúqwúà

Hiatus avoidance

Hiatus is avoided by insertion of an epenthetic glide or glottal stop to break up vowel sequences at word or morpheme boundaries (§3.5).

Stress

While stress is not phonemic in Wutung (§3.6), words may be identified on the basis that they may only bear a single occurrence of primary stress, even though the location of this stress is not fixed. Compound verbs bear a single instance of primary stress, identifying them as single words.

Pause

Supporting evidence that compound verbs are single words comes from the fact that it is not possible to pause between the constituents. On the other hand, phonological words allow pause to occur at both boundaries. Thus in example (8.2) it is not possible to pause between any of the constituents *hung-*, *-pua* and the suffix *-lie*. It is however possible to pause before and after the whole item, *hungpualie*.

(8.2)   *hungpua -lie*
         1sg.sit   -1SG.IMPERF
         'I'm sitting.'

Native speaker intuition

Along with the other criteria, native speakers discuss (and write) the compound verbs as being single words. The informants I worked with were quite clear and uniform in their assessment of whether or not items are words. Finally, many of the morphemes constituting compound verbs do not occur as independent words, and were not recognised as such by my informants.

Irrealis reduplication

Irrealis reduplication (discussed in detail in §8.4.3.1) applies to the rightmost syllable onset, and all following vowels, of the verbal word. This is illustrated in the monomorphemic example in (8.3a). The same process applies to words of more than one morpheme, such as *haho* 'go in' in (8.3b). In this word the reduplicated part is the morpheme *ho*, which does occur as an independent word meaning 'in'. The final example, (8.3c) shows reduplication of part of the morpheme *hama*, which also occurs independently as the complementiser particle. In the case of compound verbs, this process operates in the same way, with the rightmost consonant and all following vowels being reduplicated.

(8.3) a. *Nie ha.   Nie ha   -ha*
           1SG 1SG.go. 1SG 1SG.go -IRR/REDUP

           'I go. I will go'

    b. *Nie haho.   Nie haho   -ho*
           1SG 1SG.go.in. 1SG 1SG.go.in -IRR/REDUP

           'I go in. I will go in.'

    c. *Nie leyhama...   Nie leyhama   -ma...*
           1SG 1SG.pretend... 1SG 1SG.pretend -IRR/REDUP...

           'I pretend (that...). I will pretend (that...).'

8.3.3 Subject-inflecting compound verbs

8.3.3.1 Overview

Compound verbs are those containing two or more root morphemes as well as appropriate inflectional morphology. All known compound verbs have at least one root that inflects to agree with the PNG of at least their subject argument NPs. The following discussion provides an overview of those compound verbs that have PNG inflectional marking for subject only. Double-marking compound verbs are dealt with in the following §8.3.4. An overview of the structure of compound verbs is presented in detail in §8.3, along with some examples.

In the following sections the examples of subject-inflecting compound verbs are grouped firstly by the number of inflecting verb roots (either one or two), then secondarily by the initial consonants of the verb roots (using the same order as previously: alveolar-initial, glottal-initial, bilabial-initial and finally palatal-initial).

The analysis used to assign morpheme constituents of verbal words to word class categories follows the sequence laid out in the tree in Figure 8.5. Those morpheme constituents that inflect are verb roots, either free (i.e. forms that also occur independently, as simple verbs) or bound (i.e. only occurring in combination with another root to form a verbal word). Those morpheme constituents that do not inflect are either known to occur independently as non-inflecting simple verbs, or as some other part of speech; if not known to occur independently their status remains uncertain as they cannot be analysed and so could be either bound non-inflecting verb roots, or be from some other part of speech; this is indicated by the question mark in Figure 8.5.
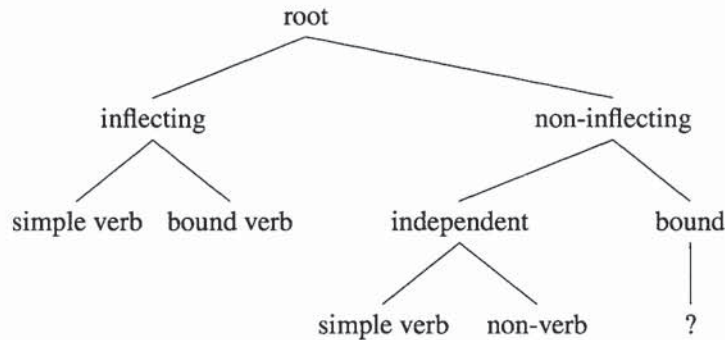
Figure 8.5: Analysis procedure for assigning word class category to verbal constituents

Some examples of each kind of morpheme follow. In these examples root morphemes that do not have a known meaning are glossed in uppercase. Example (8.4) shows the verbal word *muhnyatie* '3PL.leave', which contains two morphemes, both of which inflect (see Table 8.25 for the full paradigm). The first morpheme is of uncertain meaning and is not attested occurring independently, while the second morpheme is the free verb 'go'.

(8.4)   *te   mu   -hnya   -tie*
        3PL MU -go.3PL -3PL.IMPERF
        'They're leaving.'

Example (8.5) shows the verbal word *qwurhmacie* '3SG.F.fall', which contains two root morphemes. One of these, *qwur-*, is invariant while the other, *-hma*, is the 3SG.F form of a bound verb root which inflects (as seen in Table 8.22). These two morphemes do not have clear independent meanings (and are not attested as occurring independently) but when combined they have the meaning 'fall'.

(8.5)   *cey   qwur   -hma   -cie*
        3SG.F QWUR -HMA.3SG.F -3SG.F.IMPERF
        'She's falling.'

In example (8.6) we see another verbal word containing two root morphemes: *niqeyqlie* '3SG.M.paddle'. In this case the first, invariant, morpheme is the noun *ni*, 'paddle'. The second inflects but has no known independent meaning. Taken together the two morphemes constitute the verb 'paddle'.

(8.6)   *popo nie ni   -qey -qlie*
        uncle 1SG paddle -QEY -3SG.M.IMPERF
        'My uncle is paddling.'

8.3.3.2 Compound verbs containing a single inflecting root

Compound verbs, by definition, contain at least a single inflecting verb root along with one or more other roots. This section surveys a sample of compound verbs that contain just one inflecting root, presenting them in the order, and the categories, used previously for simple verbs: alveolar-initial, glottal-inital, bilabial-initial and palatal-initial.

Compound verbs with a single subject-inflecting verb root contain between one and three non-verb roots. Following are numerous examples of those containing one or two non-verb roots, but there is only one known such verb containing three non-verb roots, *saqeyamualey* 'arrange', where the verb root is the simple verb *-ley* 'do'. The kinds of constituent morphemes found combined as elements in these compound verbs includes the following: nouns, compound nouns, simple verbs, bound verb roots. Across the documented set of compound verbs, these elements occur in the following combinations:

> noun + bound verb root
> noun + simple verb
> compound noun + bound verb root
> bound verb root + bound verb root
> bound verb root + simple verb

Alveolar-initial verb root: A number of example compound verbs containing a single alveolar-initial verb root are shown in Table 8.21.

Table 8.21: Some compound alveolar-initial verbs

PNG	'cut'	'finish'	'cry'	'dance'	'show'	'write/draw'
1SG	hur -lang	ley -fung	huwur -ley	lie -ley	sa -to -ley	sani -lu
2SG	hur -ma	bey -fung	huwur -bey	lie -bey	sa -to -bey	sani -blu
3SG.M	hur -qlang	qley -fung	huwur -qley	lie -qley	sa -to -qley	sani -qlu
3SG.F	hur -nya	cey -fung	huwur -ci	lie -cey	sa -to -ci	sani -hlu
1PL	hur -na	dey -fung	huwur -dey	lie -dey	sa -to -dey	sani -du
2PL	hur -lang	ley -fung	huwur -ley	lie -ley	sa -to -ley	sani -lu
3PL	hur -nya	tey -fung	huwur -ti	lie -tey	sa -to -ti	sani -qlu

The PNG agreement follows the same patterns shown in Table 8.5, with the exceptions of *hurlang* and *sanilu*. *hurlang* differs in the 3SG.F and 3PL, having *hurnya* in each case instead of the expected forms. Although only containing oral vowels, *sanilu* has the 3SG.F *sanihlu*, which would be expected only in the case of the final vowel being nasal. As well, *sanilu* is irregular in using the 3SG.M for 3PL.

While all of these verbs contain invariant morphemes, one (the transitive *satoley* 'show') contains two, the generic noun *sa* 'thing' and the noun *to* 'talk'.

The verb *sanilu* is transparently composed of the noun *sani* 'a design, pattern' and the verb root *-lu*, which does not occur independently.

In the verb *huwurley* 'cry' the first morpheme appears to be related to *huwurna* (translated into English by speakers as 'cry talk'), the name of a special speech style used for mourning (see §1.7)[19]. The verb root is similar to *ley* 'do', varying only in that is has /i/ rather than /ey/ in two forms, and is possibly a phonologically conditioned variant of it.[20] The same verb root occurs (with the same inflected forms) in numerous other compound verbs.

The next verb, *lieley* 'dance', has an invariant morpheme *lie* which has not been found to occur independently,[21] which is combined with what appears to be the simple verb *ley* 'do', and which inflects precisely as that verb does (see §8.2.3.2).

The verb *hurlang* 'cut' again has two components, neither of which is otherwise attested, the second morpheme being a verb root which varies from the standard alveolar paradigm (with nasal vowel), taking /ny/ as the prefix for both 3SG.F and 3PL.

Finally, *leyfung* 'finish' contains the simple verb *ley* 'do', and the morpheme *fung*, which is otherwise unattested. This verb shows a different ordering of elements from the other examples, with the verb root being initial and the unvarying morpheme final. This ordering is seen with only a very few compound verbs containing a single inflecting verb root.

Glottal-initial verb root: Table 8.22 presents a small set of compound verbs, each containing one glottal-initial inflecting verb root. Despite the numerous irregularities, the

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[19]While *huwurna* appears to consist of two morphemes, the presumed *huwur* has not been found to occur independently.

[20]The irrealis clitic, which is identical to *ley* 'do' also shows this variation, usually having the vowel /ey/, but occasionally taking /i/ in 3SG.F and 3PL; see §8.4.3 for further discussion.

[21]Possibly cognate with Skou *lí* 'dance' (Mark Donohue, pers. comm.).

patterns of inflection seen previously in the simple verbs are also largely evident in this sample of verb roots.

Table 8.22: Some compound glottal-inital verbs

PNG	'lie down'	'fall'	'arrive'	'boil'	'paddle'
1SG	qang -qwur	qwur -ha	hlua -qa	cata -hur	ni -hey
2SG	me -qwur	qwur -hma	hlua -qba	cata -huqu	ni -mbey
3SG.M	nyi -qwur	qwur -qa	hlua -qa	cata -qur	ni -qey
3SG.F	ing -qwur	qwur -hma	hlua -qwa	cata -hwur	ni -hwey
1PL	ne -qwur	qwur -hna	hlua -qda	cata -hdur	ni -ndey
2PL	qang -qwur	qwur -ha	hlua -qa	cata -hur	ni -hey
3PL	ing -qwur	qwur -hnya	hlua -qa	cata -hjur	ni -hnje

As usual, the pairs 1SG and 2PL are identical within each verb, being the unmarked forms. As expected, the 2SG and 1PL of 'fall' take the bilabial and alveolar forms which, with the other phonological classes, are normally associated with the presence of a following nasal vowel, but which are commonly found on glottal-initial verb roots even in the absence of a nasal vowel (this is also true of 'lie down' with the addition that the vowels are also modified). By contrast the verbs 'arrive' and 'boil' take the non-nasal 2SG and 1PL forms. In the case of *catahur* 'boil' this may be due to this vorb root having the vowel /ur/, which does not allow nasalisation (see §3.3.3). Finally, *nihey* 'paddle' shows the unusual feature that, instead of having either the nasal or the plosive segments in the 2SG and 1PL, it has both. Along with the inserted homorganic stop in the 3PL, this means it has three syllable-initial homorganic nasal-stop clusters (re which see §3.4.1.8).

The root *ha*, occurring here in *qwurha* 'fall', also occurs independently as the simple verb meaning 'go' and is found in a number of compound verbs combined with various invariant morphemes, for example *hlungha* 'walk' and *haho* 'enter' (and further discussion of this point in §8.3.3.3).

The first two verbs contain the invariant morpheme *qwur* which is not attested as a free form, but appears to have he meaning of 'down'. It should also be noted that these two verbs show different orders of the elements; in *qangqwur* the verb root is first, and in *qwurha* the verb root is in its more common position of last. The verb *catahur* 'boil' contains the compound noun *cata* 'hot water', which itself contains *ca* 'water' and the bound form *ta*, meaning unclear.

Bilabial-initial verb root: Samples of some compound verbs containing a subject-inflecting verb root from the bilabial class are shown in Table 8.23. Of the six verbs shown five are transparently composed of an initial noun (*heng* 'breath', *ung* 'a cough', *hung* 'a fart', *ca* 'water', and *tesa* 'a thought' respectively) followed by a verb root. These verb roots share very similar patterns. None of these verb roots occurs independently, but nearly identical verb roots occur as constituents in several other verbs. It is noteworthy that three, *hengpi*, *ungpieng* and *hungpie* share similar forms and common semantics, hinting at a derivational relationship.

Table 8.23: Some compound bilabial-inital verbs

PNG	'let go'	'breathe'	'cough'	'fart'	'wash self'	'plan'
1SG	tu -pa	heng -pi	ung -pieng	hung -pie	ca -pie	tesa -pinge
2SG	tu -fa	heng -fi	ung -fieng	hung -fie	ca -fie	tesa -finge
3SG.M	tu -qwa	heng -qwi	ung -qwieng	hung -qwie	ca -qwie	tesa -qwinge
3SG.F	tu -sa	heng -si	ung -sieng	hung -sie	ca -sie	tesa -singe
1PL	tu -qwa	heng -wi	ung -wieng	—	ca -qwie	tesa -qwinge
2PL	tu -pa	heng -pi	ung -pieng	hung -tie	ca -pie	tesa -pinge
3PL	tu- qwa	heng -wi	ung -wieng	hung -mie	ca -qwie	tesa -qwinge

Palatal-initial verb root: Amongst the compound verbs that combine a subject-inflecting verb root with other non-verb morphemes, those where the root is palatal-initial are the smallest such group. Table 8.24 shows the two known verbs of this type. In both verbs the forms for 1SG and 2PL are identical as expected, but in addition the 2SG has the same form, showing the underlying palatal consonant instead of the bilabial pronominal prefix found with the other classes of verb root. This conforms with the behaviour of the palatal-initial simple verbs. Neither of the morphemes in *huweyju* is attested as occurring independently.

8.3.3.3 Compound verbs containing two subject-inflecting verb roots

Table 8.25 shows the full agreement paradigms for all known compound verbs that contain two subject-inflecting verb roots. The sections that follow discuss these roots, grouping them by the initial consonant of their underlying form (for convenient reference the verbs are ordered by their English gloss).

Table 8.24: Compound palatal-inital verbs

PNG	'look for'	'harvest tips'
1SG	huwey -ju	jua
2SG	huwey -ju	jua
3SG.M	huwey -su	sua
3SG.F	huwey -cu	cua
1PL	huwey -du	dua
2PL	huwey -ju	jua
3PL	huwey -tu	tua

Where example texts include a verb which contains two inflecting verb roots, their agreement marking will only be indicated a single time, as shown in the example (8.7), even though each verb root has its own agreement inflection. As is also shown in this example, the verb roots will not be segmented as it is not posible to assign them separate glosses.

(8.7)   *Cey   qey   hmusua*
        3SG.F 3SG.M 3SG.F>3SG.M.see
        'She saw him.'

While there are two known verbs that contain three verb roots, both of these inflect for both subject and object and as such are dealt with in §8.3.4. There are no known verbs that contain more than three verb roots.[22]

Most of the morphemes in these verbs are verb roots but there are three non-verb morphemes: *sa* 'thing', a generic noun (see §7.9.3) and used to refer to foodstuffs; *sua* and *hena*, meanings uncertain—neither is known to occur independently although they both do occur in other compound verbs. Amongst these verb roots some are simple verbs, but most of them are bound roots some of which are also found in other compound verbs.

While most verbs show a fair amount of regularity there are a few cases where this is not so. An example of this is the highly irregular *haqa* 'climb', whose paradigm is shown in Table 8.26. Some forms of this verb appear to have two roots, and other forms three; an example of this is the 1SG and 2PL, respectively. Normally these two are identical to each other and to the underlying form, but here they are distinct. Nevertheless, most

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[22]The status of these as 'words' is discussed in §8.3.2.

Table 8.25: Verbs containing two inflecting verb roots

PNG	'be on top'	'come down'	'eat'	'follow'	'leave'
1SG	qa -le	hang -sua -lu	sa -qe -pua	ha -qe	pung -ha
2SG	ba -me	hma -sua -bu	sa -me -mua	hma -me	mu -hma
3SG.M	jie -lie	ang -sua -lua	sa -qe -mua	qa -nyie	mu -qa
3SG.F	qi -li	hwang -sua -lu	sa -cey -ma	hwa -eng	mu -hwang
1PL	da -ne	hna -sua -du	sa -ne -nua	hna -ne	nu -hna
2PL	qa -si	hang -sua -lu	sa -qe -pua	ha -qe	pung -ha
3PL	qi -li	hnya -sua -lu	sa -teng -mua	hnya -eng	mu -hnya

PNG	'return'	'run away'	'see'	'shake (it)'
1SG	pung -lu	pung -hena -ha	hung -pua	jey -ja
2SG	mu -blu	mu -hena -hma	hmu -fur	jey -ja
3SG.M	mu -lua	mu -hena -qa	qu -qwua	sey -sa
3SG.F	mu -lu	mu -hena -hwang	hmu -sua	cey -ca
1PL	nu -du	nu -hena -hna	hnu -qwua	dey -da
2PL	pung -lu	pung -hena -ha	hung -pua	jey -ja
3PL	mu -lu	mu -hena -hnya	hnyu -qwua	tey -ta

PNG	'sit'	'sit beside'	'stand'	'stay with'
1SG	hung -pua	la -pua	hung -lur	qo -punga
2SG	hmu -mua	ba -mua	hmu -bur	bo -mua
3SG.M	qung -mua	qla -mua	qung -hlua	qo -mua
3SG.F	hu -ma	wa -mua	hmu -hlur	po -ma
1PL	hnu -nua	da -nua	hnu -dur	do -nua
2PL	hung -pua	la -pua	hung -lur	qo -punga
3PL	hnyu -mua	qla -mua	hnyu -hlua	to -mua

forms do contain the segments typical to that PNG combination, e.g. bilabials in the 2SG, alveolars in the 1PL and /ny/ in the 3PL. Clearly discernible as an element of this verb is the simple verb *ha* 'go', which is also an element in numerous other verbs of motion. The other morphemes are not clearly related to any other verb roots.

Table 8.26: Agreement paradigm of *haqa* 'climb'

PNG	'climb'
1SG	haqa
2SG	hmambahme
3SG.M	angjie
3SG.F	hmaqeyli
1PL	hnadane
2PL	haqasi
3PL	hnyaqili

The attested combinations of the verb root classes in these compound verbs are shown in Table 8.27 (where B=bilabial, L=alveolar, J=palatal, G=glottal: these are presented in articulatory order, front to back). Palatal verb roots do not occur at all as constituents of these two-root compound verbs, whereas each of the other root types are able to occur in either position. The only verb root type that occurs twice within a single compound verb is the glottal, in the verb *haqe* 'follow'.

Table 8.27: Attested combinations of verb roots

1st\2nd	B	L	J	G
B		X		X
L	X			
J				
G	X	X		X

Alevolar-initial verb roots The compound verbs containing an alveolar-initial inflecting verb root are shown in Table 8.28, with the alveolar roots indicated in **bold**.

Three of the verbs contain simple verbs as one of the roots. The two verbs *punglu* 'return' and *hangsualu* 'come down' both contain the simple verb *lu* 'come', although in

Table 8.28: Alveolar-initial verb roots

verb	gloss
la -pua	'sit beside'
qa -**le**	'be on top'
pung -**lu**	'return'
hang -sua -**lu**	'come down'
hung -**lur**	'stand'

the former verb it differs from the canonical form by being *-blu* in the 2SG instead of *bu*, a well-known variation (see §1.11). In *lapua* 'sit beside' the initial verb root is *la* 'be with'.

The root *-lur* in the verb *halur* 'come along' shows the alternative onset *-hl* in the 3SG.F, but is irregular in having the form *-hlua* in both the 3SG.M and 3PL.

Finally, the alveolar-initial root in *qale* 'be on top' is irregular and is not known to occur in any other verb.

Glottal-initial verb roots All compound verbs containing two subject-inflecting verb roots, at least one of which is glottal-initial, are shown in the Table 8.29 (the full paradigms being given in Table 8.25). The glottal-initials are the most common verb roots found in compound verbs containing two verb roots.

Table 8.29: Glottal-initial verb roots

verb	gloss
pung -**ha**	'leave'
hang -sua -lu	'come down'
pung -hena -**ha**	'run away'
hung -pua	'sit'
hung -pua	'see'
hung -lur	'stand'
ha -qe	'follow'
qa -le	'be on top'
sa -**qe** -pua	'eat'
qo -punga	'stay with'

All of the /h/-initial roots are highly regular in their agreement marking, most taking onsets that folow the patterns summmarised in §8.2.2, with some slight variation. Three of these verbs(*haqe*, *pungha* and *punghenaha*) contain the simple verb *ha* 'go', which contributes to their semantics. The /h/-initial root in *hunglur* 'stand'is also attested as a component of the compound verb *hungpua* 'sit',

Of the /q/-initial verbs, all show some variation from the regular patterns. The /q/-initial root in *saqepua* varies only in the 2SG, which does not have the glottal stop, leaving it with a form identical to the 2SG free pronoun. In this it matches the equivalent root in *haqe*, which has the same 2SG form, but is more variant in having irregular forms for the 3SG.M, 3SG.F and 3PL as well. The first element in *qopunga* also shows variation from the usual pattern in the 2SG, as well as in the 3SG.F. Finally, the /q/-initial root *qa-*, in *qale*, is irregular in most of its forms in both the onset and the vowel.

Bilabial-initial verb roots   Table 8.30 shows a sample of verbs containing bilabial-initial verb roots.

Table 8.30: Bilabial-initial verb roots

verb	gloss
hung -**pua**	'sit'
hung -**pua**	'see'
la -**pua**	'sit beside'
sa -qe -**pua**	'eat'
qo -**punga**	'stay with'
pung -hena -ha	'run away'
pung -ha	'leave'
pung -lu	'return'

The bilabial-initial verb roots in these verbs fall into two groups, one which follows the initial-consonant pattern described in §8.2.2, and one which is irregular. The irregular verb root, the second element of *hungpua* 'see', adheres to the usual pattern only in three forms, the 1*sg*, the 2PL (the unmarked forms) and the 3SG.M. The variation amongst the regular bilabial roots involves the reduction of the VV rhyme (found in five of the verb roots) to V in the 3SG.F so that, for example, '3SG.F.eat' is *saceyma* instead of the expected *saceymua*. This occurs only with the three vebs *saqepua* 'eat', *hungpua* 'sit'

and *qopunga* 'stay with', and not with *lapua* 'sit beside', which retains the full rhyme in the 3SG.F.

8.3.4 Double-inflecting compound verbs

8.3.4.1 Overview

While *qa* 'hit' and *qai* 'get' are the only known simple verbs that are double-inflecting (i.e. they take PNG marking to agree with both subject and object NP), there are seven known compound verbs that show this type of inflection. These seven are listed below, along with their transitivity, the number of constituent verb roots and the pattern of syncretism.

Table 8.31: Compound verbs taking both subject and object agreement marking

verb	gloss	transitivity	# of verb roots	syncretism
qaili	'give'	ditransitive	2	1SG/2SG/3SG.M—3SG.F—PL
qeyhulia	'throw away'	transitive	3	all OBJ forms differ
qaiqai	'hide'	transitive	2	1SG/2SG/3SG.M—3SG.F—PL
qeyjie	'put'	ditransitive	2	1SG/2SG/3SG.M—3SG.F—PL
calingqwie	'wash'	transitive	3	all OBJ forms differ
qaqwa	'kill'	transitive	2	1SG/2SG—3SG.M–3SG.F—PL
qaiolu	'bring'	transitive	3	1SG/2SG/3SG.M—3SG.F—PL

As shown in Table 8.31, two of the verbs containing three verb roots show no syncretism, while the others all show patterns of syncretism which accord with the pattern laid out in the tree in Figure 8.3.[23]

The following sections discuss features of particular verbs in detail. The full set of agreement inflections for *calingqwie* is given in Table 8.19.

8.3.4.2 *qaili* 'give'

Table 8.32 shows the verb (*qaili* 'give').[24]

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[23] As discussed in §8.1.1, for convenience, double-inflecting verbs will be referred to by the form they take for marking 1SG>3SG.M.

[24] Although 'give' is ditransitive and takes an obligatory indirect object NP referencing the beneficiary, there is no indexing of this NP on the verb.

Table 8.32: Agreement conjugation of *qaili* 'give'

	1SG/2SG/3SG.M.OBJ	3SG.F.OBJ	PL.OBJ
1SG SBJ	qai -li	pi -ling	lu -ling
2SG SBJ	bi -mi	fi -mi	bu -mi
3SG.M SBJ	qai -li	wi -li	lu -li
3SG.F SBJ	wi -ni	si -ni	hlu -ni
1PL SBJ	di -ni	wi -ni	du -ni
2PL SBJ	qai -li	pi -li	lu -li
3PL SBJ	si -ni	wi -ni	su -ni

Taking the verb as a whole, the object paradigms show substantial syncretism, falling into the following groups: 3SG.F, singular non-feminine and plural. Amongst the double-inflecting compound verbs, this 3-way syncretism is the most common pattern. Both morphemes in this verb are verb roots, one inflecting according to the PNG of both the subject and the object. Taking the roots individually we see that it is only the first root that shows true double-inflection, having distinct forms for each underlying stem (as represented by the 1SG forms): glottal-initial for the 1SG/2SG/3SG.M object forms, bilabial-initial for the 3SG.F forms and alveolar-initial for the plurals. The second root shows the same forms within each subject (with the exception of the 1SG>3SG.M form— possibly due to the preceding glottal, or possibly an error in transcription).

8.3.4.3 *qaiolu* 'bring'

Table 8.33 shows the verb (*qaiolu*, 'bring'), which contains three inflecting verb roots.

Beginning as before, by taking the verb as a whole, we see the same pattern of syncretism as with the preceding example, but this time in a verb with three verb roots. Examining the verb roots shows that the double-inflection is actually restricted to the initial root, this taking underlying stem forms that are: glottal-initial (1SG/2SG/3SG.M OBJ), bilabial-initial (3SG.F) and alveolar-initial (the plurals). The other two roots are subject-inflecting, taking the same sets of forms for each object. The second root is problematic as it does not seem to fit into any of the four phonological categories. It is most likely to be a glottal-initial verb root as it is very similar to the simple verb *qo* 'rub' (shown in Table 8.10), only differing in having lost its initial glottal segments.

Table 8.33: Agreement conjugation of *qaiolu* 'bring'

	1SG/2SG/3SG.M.OBJ	3SG.F.OBJ	PL.OBJ
1SG SBJ	qai -o -lu	pi -o -lu	—
2SG SBJ	bi -bo -bu	fi -bo -lu	bu -bo -lu
3SG.M SBJ	qai -o -lua	wi -qo -lua	lu -o -lua
3SG.F SBJ	wi -po -lu	si -po -lu	hlu -po -lu
1PL SBJ	di -do -lu	wi -do -lu	du -do -lu
2PL SBJ	qai -o -lu	pi -o -lu	lu -o -lu
3PL SBJ	si -to-lu	wi -to -lu	su -to -lu

8.3.4.4 *qaqwa* 'kill'

The two-root verb *qaqwa* 'kill' is shown in Table 8.34.

Table 8.34: Agreement conjugation of *qaqwa* 'kill'

	1SG/2SG.OBJ	3SG.M.OBJ	3SG.F.OBJ	PL
1SG SBJ	pung -pung	qa -qwa	lang -wa	ji -ci
2SG SBJ	mu -pung	qba -qwa	mla -wa	ji -ci
3SG.M SBJ	qung -pung	qa -qwa	qlang -wa	si -ci
3SG.F SBJ	nyu -pung	qwa -qwa	nya -wa	ci -ci
1PL SBJ	nu -pung	qda -qwa	na -wa	di -ci
2PL SBJ	pung -pung	qa -qwa	lang -wa	ji -ci
3PL SBJ	nyu -pung	sa -qwa	nya -wa	ti -ci

This verb is unusual in that shows a pattern of syncretism of its forms into the categories, plural, 3SG.M, 3SG.F and singular non-third person. The pattern of variation of the verb roots however is quite different to that found in the previous examples, with one root varying both by subject and by object while the other varies only by subject. Across the four syncretic object categories the first root has four stems, one of each phonological agreement category: bilabial *pung*, glottal *qa*, alveolar *lang* and palatal *ji*. The second verb root varies only by object, but again having a different one for each syncretic object category.

8.3.4.5 *qeyhulia* 'throw away'

The final example is the compound double-inflecting verb *qeyhulia* 'throw away', in Table 8.35.

The verbal word shows no regular syncretism, with most object categories having their own unique form, although there is a small amount of duplication.

There are three verb root morphemes, each of which inflects for PNG, but each shows its own pattern of syncretism. Across the object categories, the initial morpheme follows the 3SG.F/SG non-fem./plural pattern, with a few exceptions that may be transcription errors. The second verb root follows a pattern of a singular/plural syncretism of the object categories, with a single, perhaps accidental, variant in the 2SG>1PL. The final morpheme shows no object syncretism but has the same form for each subject within each object category.

8.3.5 Prefixes in a suffixing language?

Wutung is in almost all respects a suffixing language, with bound morpehemes attaching to nouns, adjectives and other parts of speech being suffixes. The verbs also take suffixes or enclitics, except for the agreement prefixes, these being the only 'prefixing' morphemes known in the language. Donohue (2008b) discusses Wutung's close relative Skou, which has a similar profile and presents an analysis of the 'prefixes' as being underlying suffixes which have shifted leftwards and come to fuse with the initial consonant of the verb root. In Skou however, verb roots are either monosyllabic (C)V or disyllabic (C)VCV. In the case of the latter, agreement marking applies in a limited number of ways: either to neither syllable, to both, or only to the second one, but never the first one alone. The absence of patterns af agreement marking of this kind are crucial to Donohue's analysis, wherein the 'prefixes' are determined to be suffixes which are realised initially on monosyllabic roots, and word-medially on the disyllabic verb roots, as a result of the interaction of various constraints.

The analysis presented previously of Wutung verbs refers each inflecting syllable as a verb root (as many such inflecting syllables appear in a number of verbs, or even as free verbal words). There are many examples in Wutung of verbs consisting of two syllables where the following patterns are found: both inflect, only the second inflects, only the

Table 8.35: Agreement conjugation of *qeyhulia* 'throw away'

	1SG OBJ	2SG.OBJ	3SG.M.OBJ	3SG.F.OBJ	1PL.OBJ	2PL.OBJ	3PL.OBJ
1SG SBJ	—	qey -hu hma	qey -hu -lia	pu -hu -li	—	lu -nya -ha	lu -nya -hnya
2SG SBJ	bi -hbu -ha	—	bi -hbu -lia	fi -hbu -li	dey -du -hna	—	blu -nya -hnya
3SG.M SBJ	qey -qu -ha	qey -qu -hma	qey -qu -lia	wi -qu -li	lu -sa -hna	lu -sa -ha	lu -sa -hnya
3SG.F SBJ	wi -hwu -ha	wi -hwu -hma	qwi -hwu -lia	si -hwu -lia	hlu -ca -hna	hlu -ca -ha	hlu -ca -hnya
1PL SBJ	—	dey -hdu -hma	di -hdu -lia	wi -hdu -li	—	du -nya -ha	du -nya -hnya
2PL SBJ	qey -hu -ha	—	qey -hu -lia	pi -hu -li	lu -nya -hna	—	lu -nya -hnya
3PL SBJ	si -hnju -ha	si -hnju -hma	si -hnju -lia	wi -hnju -li	su -ta -hna	su -ta -ha	su -ta -hnya

first inflects.[25] This means that Donohue's analysis does not apply to Wutung as the inflection may be realised at the left edge of the word, even when a suitable host is found further rightward.

A further complication is that there are a number of verb roots that are double-inflecting, agreeing with both subject and object NPs. It is possible that the way in which agreement marking is realised in Wutung could be adequately specified by a set of constraints, possibly quite similar to those proposed for Skou in Donohue (2008b), that supports the analysis of the 'prefixes' as suffixes, but this will not be attempted here.

8.4 Marking of tense, aspect and mood (TAM)

8.4.1 Overview

Verbal morphology is used to indicate the two parameters of mood (§8.4.2 and 8.4.3), the indication of the speaker's view as to the actuality of the event depicted, and aspect (§8.4.4), the representation of the internal temporal structure of the event. TAMense (that is, verbal morphology indicating the actual location in time of the event, by reference to the time of the utterance), while not overtly marked as such, is implied by particular forms of the verb.

The base form of the Wutung verb, which has no overt affixation apart from agreement marking (§8.1.3), functions as the realis mood form. All other TAM forms are built upon this base form, some by reduplication (which produces the irrealis form), others by addition of a suffix or, in some cases, an optional clitic (aspect). The most commonly used forms are the realis, the imperfective, the plain imperative and the irrealis. As well, the following forms are also attested: progressive, habitual and imperative continuous. All known TAM forms are exemplified in Table 8.36, using the (simple, subject-inflecting) verb *ha* 'go'.

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[25]There are no examples with two syllablse where neither inflects. Non-inflecting elements are in some cases known to be nouns, or other parts of speech. Where their part of speech membership is unknown, it may well be that they are uninflecting verb roots, but this is uncertain.

Table 8.36: *ha* 'go'

TAM form	'Go'	gloss
realis	ha	(I) go/went
irrealis	ha -ha (-ley)	(I) will go/intend to go
imperfective	ha -lie	(I'm) going
continuous	ha -qo	(I) keep going
habitual	ha -fa	(I) only/always go
imperative	ha!	go!
continuous imperative	ha -qwo	keep going!

8.4.2 Realis

The base form of the verb, carrying only PNG inflections (where applicable) and no other morphology, is used typically to refer to non-future events, those that have already happened or are currently happening. It may also be used to refer to events that have not yet happened, but which are considered inevitable (for example, the rising of the sun). In summary, this form of the verb is used to refer to events that are evaluated by the speaker as falling into the category of events that are actual, and as such will be referred to as the 'realis' form.[26] It should be noted that this uninflected, 'bare' form of the verb is also used as the base for other morphological processes, but should be considered to be distinct from the realis form although formally identical.[27]

The bare realis form is interpreted as being perfective aspect, referring to the event as a whole. In the absence of any temporal adverbs, or a context that provides a location in time, the realis mood has a default interpretation as being present when it is combined with the imperfective suffix (§8.4.4.1), and past when this suffix is absent (i.e. it is formally identical to the verb base). Examples (8.8a) and (8.8b) exemplify the past usage and the perfective aspect.

(8.8)   a. *Nie ha   Dali*
            1SG 1SG.go Vanimo
            'I went to Vanimo.'

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[26]According to Chung & Timberlake (1985:241) this is a cross-linguistically common distinction in verbal morphology.

[27]In this thesis the realis form will not be marked as such. Thus all verb forms in examples which do not have any specification for TAM in the gloss should be interpreted as realis.

    b. *Nie qey   qa*
       1SG 3SG.M 1SG>3SG.M.hit
       'I hit him.'

    c. *Suane muhenaqa*
       cuscus 3SG.M.run.away
       '(The) cuscus ran away.'

That the realis may be used to express both past and present events is shown in (8.9). In both situations it retains the perfective aspectual interpretation, with the event seen as a completed whole.

(8.9) *Nie lie   Wutung*
       1SG 1SG.be Wutung
       'I stay at Wutung' ~ 'I stayed at Wutung'

This usage in the present has some similarity to the habitual form of the verb (§8.4.4.3) but differs in that the habitual form strongly suggests exclusivity whereas the realis does not.

In (8.10) the realis form is again used to refer to a present event, with an adverb making clear the intended interpretation as referring to a present (possibly even future) event.

(8.10) *Hlang -wena   nie ha*
       sun   -DEM.NEAR 1SG 1SG.go
       'Today I go'

As an indicator that this form is best characterised as realis mood rather than as a non-future tense, (8.11), shows the realis mood used to refer to a future event. This statement was made in reply to a claim that the action will not take place, and is used in this example to claim that the future action definitely will take place; this is the usual intention of such usage of the realis form.

(8.11) a. *Fey   nie hlung -ha*
         tomorrow 1SG path -1SG.go
         'Tomorrow I *will* walk.'

      b. *Fey   nie hlung -ha   -ha   =ley*
         tomorrow 1SG road -1SG.go -IRR/REDUP =1SG.IRR
         'Tomorrow I'll walk.'

8.4.3 Irrealis mood

8.4.3.1 Structure of the irrealis form

The irrealis form of the verb is based on the unmarked form of the verb (which is formally identical to the realis), as indeed are all TAM forms of the verb. The irrealis form of the verb is produced by reduplication, as described and exemplified further below. Where all other forms derived from the unmarked form involve straightforward suffixing, construction of irrealis clauses shows what appears to be extended exponence (as defined in Matthews (1991:180–182)), as it involves both reduplication acting upon the verb stem and the addition of an irrealis clitic clause-finally. This clitic is optional unless there is an adjunct, in which case it is obligatorily encliticised to the last element in the adjunct.

The verb paradigm in Table 8.37 shows two verbs, each in both realis and irrealis forms and in all PNG combinations. The verbs are *o* 'grow', an invariant verb consisting of a single vowel and *qaing* 'hide', an intransitive verb of the glottal class. The optional clitics are included (though within paretheses, to indicate their optionality) as this facilitates distinguishing between the forms, which are, for 'grow', identical. It should be noted that when the verb root being reduplicated consists of a single vowel, as with 'grow', glottal stop is inserted (presumably due to the rule of hiatus avoidance; see §3.5) producing, in this case, the surface forms *oqoley* (the 1SG form). As this is a purely phonetic change the glottal stop is not written. The reduplication in these examples is of the entire verb stem.

Table 8.37 also shows that it is not the final syllable that is reduplicated, but the rightmost onset and the following vowels, which may include a syllable which has no onset of its own, as with reduplication of the verb *qaing*.

Table 8.38 shows both the realis and irrealis forms of three more verbs, each consisting of more than one morphological element (the optional irrealis clitic is not shown in this table). *luling* 'give' consists of two verb root morphemes, *nola* 'hold' consists of the noun *no* 'hand' plus a verb root, while *leyfung* 'finish' consists of a verb root combined with the invariant *-fung*, a morpheme of uncertain meaning.[28] This last is particularly instructive as it illustrates that the rightmost morpheme is the one to which reduplication applies, regardless of the lexical category from which it derives.

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[28] It is fairly clear however that it is not a verb: it neither inflects and it begins with a consonant not found word-initially on any verb.

Table 8.37: Conjugations of *o* 'grow' and *qaing* 'hide' (intr.) in realis and irrealis

	'grow' realis	'grow' irrealis	hide realis	hide irrealis
1SG	o	o -o (-ley)	qaing	qaing -qaing (-ley)
2SG	o	o -o (-bey)	qmi	qmi -qmi (-bey)
3SG.M	o	o -o (-qley)	qaing	qaing -qaing (-qley)
3SG.F	o	o -o (-ci)	qwing	qwing -qwing (-ci)
1PL	o	o -o (-dey)	qni	qni -qni (-dey)
2PL	o	o -o (-ley)	qaing	qaing -qaing (-ley)
3PL	o	o -o (-ti)	qaing	qaing -qaing (-ti)

Table 8.38: Realis and irrealis forms of *qaili* '1PL.OBJ.give', *nola* 'hold' and *leyfung* 'finish'.

	'1PL.OBJ.give' realis	'give' irrealis	'hold' realis	'hold' irrealis	'finish' realis	'finish' irrealis
1SG	luling	luling -ling	nola	nola -la	leyfung	leyfung -fung
2SG	bumi	bumi -mi	nobla	nobla -bla	beyfung	beyfung -fung
3SG.M	luli	luli -li	noqla	noqla -qla	qleyfung	qleyfung -fung
3SG.F	hluni	hluni -ni	noqwa	noqwa -qwa	ceyfung	ceyfung -fung
1PL	duni	duni -ni	noda	noda -da	deyfung	deyfung -fung
2PL	luli	luli -li	nola	nola -la	leyfung	leyfung -fung
3PL	suni	suni -ni	noqla	noqla -qla	teyfung	teyfung -fung

This reduplication is a purely phonological process. While many verb bases (in the sense of §8.1.3) consist of a single syllable, there are a number consisting of two or more syllables. In the former the entire form is reduplicated, but those consisting of two or more syllables show a different pattern with only the rightmost consonant (or consonant cluster), and any following vowels, being reduplicated. This is illustrated by the verb *pu* 'die', which has some disyllabic forms (the 2PL and 3PL) and some monosyllabic (the remainder). In this verb it is only the final syllable that is reduplicated, as shown in the last two rows in Table 8.39.

Another verb that demonstrates this, but with quite different internal structure, is the verb *leyhama* 'pretend'. This verb is transparently composed of a verb root and an

Table 8.39

	die realis	*die* irrealis
1SG	pu	pu -pu
2SG	pu	pu -pu
3SG.M	qwa	qwa -qwa
3SG.F	wang	wang -wang
1PL	ci	ci -ci
2PL	cici	cici -ci
3PL	cici	cici -ci

invariant morpheme: *ley* 'do' + *hama*, 'COMP'. This latter is the complementiser particle and a monomorphemic form (synchronically, at least). The irrealis form is produced by reduplication of the final syllable, *-ma* even though this is a portion of morpheme, and is illustrated in (8.12).

(8.12)   *Nie nie -po   leyhama   -ma   tifi*
        1SG 1SG -REFL 1SG.pretend -IRR/REDUP surfboard
        'I'll pretend I'm a surfboard.' ~ 'I'm going to pretend that I'm a surfboard.'

Example (8.13) shows a verb that consists of a verb root (*ha* 'go') and a preposition (*ho* 'in, into'). As the final syllable consists of the preposition morpheme, it is this that is reduplicated.[29]

(8.13)   *Nie ha   -ho -ho*
        1SG 1SG.go in   IRR/REDUP
        'I'll go inside.'

The example in (8.14a) demonstrates the situation where the final syllable of the verb has no onset. In this case the last two syllables are reduplicated; that is, the rightmost onset and all following vowels. Finally, (8.14b) shows reduplication involving a consonant cluster.

(8.14)   a. *Nie hungpua. Nie hungpua -pua*
            1SG 1SG.sit.   1SG 1SG.set   -IRR/REDUP
            'I sit. I will sit.'

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[29]The status of forms such as this as single verbal words is discussed in §8.3.2.

b. *Qey   saniqlu   -qlu*
3SG.M 3SG.M.write -IRR/REDUP
'He will write.'

The evidence above demonstrates that reduplication is based in the phonology, with the rightmost syllable onset, along with all subsequent vowels, being reduplicated; morpheme breaks are ignored in this process, as demonstrated (8.12). Following on from this the question arises as to whether reduplication is suffixing or prefixing; that is, whether the reduplicated element is prefixed to the original or suffixed to it. There is little evidence either way on this question, however it seems most parsimonious to assume that this reduplication works by simply copying the target portion and appending it to the word. This view would accord with the overwhelming majority of affixing processes in Wutung (apart from agreement prefixing, which may well be better seen as actually being suffixing, as discussed in §8.3.5), which are suffixing. Suffixing also allows for a simpler application of tone: the tone contour is simply extended to include the suffixed element, rather than an inserted element taking the pitch of the original element, which itself then adopts the appropriate element for its new position in the word.

The other marker of irrealis mood is the irrealis clitic, which varies to agree with the person/number/gender of the subject argument; the paradigm of this clitic is shown in Table 8.37 as the parenthetical suffix to the irrealis form of each verb. This set of clitics takes forms very similar similar to the verb *ley* 'do': for comparison the paradigms of the verb and the clitic are shown in Table 8.40.

Table 8.40: Comparison of the verb *lie* 'do' and the irrealis clitic

	'do'	irrealis clitic
1SG	ley	ley
2SG	bey	bey
3SG.M	qley	qley
3SG.F	cey	ci
1PL	dey	dey
2PL	ley	ley
3PL	tey	ti

There is clearly a strong similarity between these two. (Donohue nd:262) describes the use in Skou of the verb 'do' as an auxiliary to indicate various categories of aspect

and mood. In Wutung the morpheme has clearly been grammaticised and in the process has taken on a form slightly different from that of the verb.[30]

The irrealis clitic is always the final element in the verb phrase, occurring at the rightmost edge and being encliticised either to the verb (if there is no adjunct), or to the last element of any adjunct that follows the verb. If an adjunct is present the irrealis clitic is obligatory. If there is no verbal adjunct it is optional. The irrealis clitic will be glossed as IRR and will not include indication of its agreement marking, although this is always identical to that of the verb.

The irrealis clitic takes on the tone of the preceding item to which it attaches. Thus in (8.15) where the irrealis is encliticised to *pahli* 'chief', which has the F tone (manifesting as h-hl on the two syllables), the clitic *=qley* takes a low tone, the word *pahliqley* remaining F tone, but now showing the three syllable pitches (h-hl-l).

(8.15) *Qey   qlie   -qlie   pahli   =qley*
        3SG.M 3SG.M.stay -IRR/REDUP clan.chief =3SG.M.IRR
        'He'll stay with the Chief.'

The examples in (8.16) show a sample of irrealis verbs with a variety of locational adjuncts. In each case the irrealis morpheme is encliticised to the final element of the adjunct. These examples include both proper nouns and common nouns.

(8.16) a. *Nie lie   -lie   maqe   =ley*
           1SG 1SG.stay -IRR/REDUP vanimo =1SG.IRR
           'I'll stay at Vanimo.'

        b. *Nie mo   -mo   li   =ley*
           1SG 1SG.drown -IRR/REDUP sea =1SG.IRR
           'I'll drown in the sea.'

        c. *Cey   qing   -qing   ca   =ci*
           3SG.F 3SG.F.be.under -IRR/REDUP water =3SG.F.IRR
           'She'll be under water.'

        d. *Nie qai   -qai   -fa, qai   -qai   -fa, lu*
           1SG 1SG.hide -IRR/REDUP -HAB 1SG.hide -IRR/REDUP -HAB 1SG.come
           -lu   fu   =ley
           -IRR/REDUP garden =1SG.IRR
           'I'll just hide and hide, and come to the garden.'

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[30]It is possible that the opposite is true: that the irrealis clitic better reflects an earlier form of the verb 'do' and that the verb form has been levelled so that all forms have the same vowel.

The examples in (8.17) show that a noun phrase (8.17a) and a demonstrative (8.17b) can serve as a verbal adjunct, taking the irrealis clitic as expected.

(8.17)   a.   *Nie haqa   -qa   ting   u   =ley*
              1SG 1SG.go.up -IRR/REDUP vehicle INDEF.SG =1SG.IRR
              'I'll go on a bus.'

       b.   *Nie haleng   -leng   ina   =ley*
              1SG 1SG.go.to -IRR/REDUP DEM.FAR =1SG.IRR
              'I'm going to go there.'

The next set of examples, in (8.18), show the verb *lung* 'say'. When this verb is used ·with the meaning 'say' it takes an oblique argument which is either a quote, as in (8.18a), or a report of what was said, as in (8.18b). In either case if the verb is in the irrealis mood the clitic will be attached to the oblique. It should be noted that in example (8.18b) the main verb is realis and it is the oblique argument that is irrealis and itself has an adjunct, to which the clitic is attached. For comparison the same verb, but without an oblique, is included as (8.18c).

(8.18)   a.   *Nie lung   -lung   aqo =ley*
              1SG 1SG.say -IRR/REDUP no   =1SG.IRR
              'I'll say "no".'

       b.   *Cey   hlung   cey   hwang   -hwang jaqo =ci*
              3SG.F 3SG.F.say 3SG.F 3SG.F.go -REDUP Yako =3SG.F.IRR
              'She said she will go to Yako.'

       c.   *te   nu   -nu*
              2PL 2PL.say -IRR/REDUP
              'You(.PL) will speak'

While the irrealis clitic is often clause-final, it is not necessary that it occupy this position. Particles such as the negative (§6.7.4) and the interrogative (§6.4) always occur clause-finally so when present they always follow any irrealis clitic, as shown in (8.19).

(8.19)   *Me hma   -hma   wutung =bey   me*
         2SG 2SG.go -IRR/REDUP wutung =2SG.IRR Q
         'Are you going to Wutung?'

Finally, the irrealis reduplication appears to not be crucial to the meaning so long as the clitic is present, as seen in (8.20). This kind of construction was very rarely encountered, so it may be only marginally acceptable.

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(8.20) *Nie ha   fu   =ley*
       1SG 1SG.go garden =1SG.IRR
       'I will go to the garden.'

8.4.3.2 Semantic range of the irrealis

The 'irrealis' form of the verb is used to refer to an event/action which has not (yet) happened, or is a potential, uncertain, desired or imagined event. In contrast with the realis mood, irrealis is used to refer to events that are not considered by the speaker to be *actual*. As Chung & Timberlake (1985:241) say, there are numerous ways in which an event can be non-actual. These include, amongst other possibilities, the following: for it to be anticipated to occur in the future; for it to be a desired event; being a hypothetical possibility; being a conditional or potential outcome; being the purpose for which something else is done. The following sets of examples give an indication of the range of uses of this form.

Future   This is the most common usage. As seen in (8.21a), the irrealis clitic may be left out where the verb has no adjunct.

(8.21)   a. *Qey   qungmua -mua*
              3SG.M -3SG.M.sit -IRR/REDUP
              'He will sit'

        b. *Te   namie -mie   -fa   Wutung =ti*
              1SG think   -IRR/REDUP -EXCL Wutung =3PL.IRR
              'They'll only think about Wutung.'

        c. *Nie otua jua   -jua   =ley*
              1SG sand 1SG.rub.off -IRR/REDUP =1SG.IRR
              'I'll rub off the sand.'

Desire/intention   The irrealis may be used to indicate desire or intent, as in (8.22), which is also interrogative.

(8.22)   *Ca   mu   -mu   me?*
       water 2SG.drink -IRR/REDUP Q
       'Do you want to drink?'

However this should be contrasted with (8.23a) in which *moi* 'want' is added to indicate desire, and (8.23b) where there is ambiguity between the desire and intention interpretations. Finally, (8.23c) illustrates how a request may be made.

(8.23)   a. *Me moi same -me   me?*
            2SG want 2SG.eat -IRR/REDUP Q
            'Would you like to eat?'

         b. *Me hmu   -mua   me?*
            2SG 2SG.sit -IRR/REDUP Q
            'Would you like to sit/stay?' ~ 'Are you going to sit/stay?'

         c. *Urlur nie hwurti -po,   su me urlur nie hla hurma -ma?*
            ear   1SG big   -EMPH, can 2SG ear   1SG also 2SG.cut -IRR/REDUP
            'My ears are very big, could you cut them off as well?'.

Purposive, and other uses   The examples in (8.24) demonstrate several other ways in which the irrealis is used. (8.24a) shows it used as a purposive; (8.24b) shows it used as a non-finite complement, not having a particular location in time; in (8.24c) it is used as a verbal adjunct.

(8.24)   a. *Nie haleng   Wutung ang   nie toley   -ley*
            1SG 1SG.go.to Wutung so:that 1SG 1SG.talk IRR/REDUP
            'I came to Wutung to talk.'

         b. *Nie lieley   -ley   ungfi*
            1SG 1SG.dance -IRR/REDUP 1SG.forget
            'I forgot to dance.' ~ 'I forgot how to dance.'

         c. *Nie cey   lung hwali   -li*
            1SG 3SG.F told 3SG.F.go.to -IRR/REDUP
            'I told her to go'

8.4.4 Marking of aspect

8.4.4.1 Imperfective aspect

Imperfective aspect is formed by the addition of the verb *lie* 'be' as a suffix to the realis form of the verb. The form of the imperfective suffix varies to agree with the person, number and gender of the subject argument of the verb, exactly as does the verb from which it derives; the forms are listed in Table 8.41.

Table 8.41: Forms of the imperfective suffix

PNG	imperfective suffix
SG	-lie
2SG	-bie
3SG.M	-qlie
3SG.F	-cie
1PL	-die
2PL	-lie
3PL	-tie

This suffix primarily denotes imperfective aspect, the ongoing performance of some activity or state. In the absence of temporal specification it is usually interpreted as indicating present tense, while the bare realis verb, with no suffix, is normally interpreted as being past tense (along with perfective aspect). This is however no more than a strong tendency, as examples of the reverse are found. For example, the lack of specification of temporal location in (8.25) enables three possible interpretations, only one of which makes sense (the basic gloss used for the imperfective suffix is IMPERF, and will include indication of the person, number and gender of he suffix, for example: -3SG.F.IMPERF).

(8.25) *Nie ninaley -lie   pa   ongfur ninaley qe*
        1SG 1SG.fish -1SG.IMPERF CONJ now   1SG.fish NEG
        'I used to fish but now I don't.'

        *'I am fishing but now I'm not.'

        **'I will be fishing but now I'm not.'

While all three translations of the example are (theoretically) possible, only the first 'I used to fish but now I don't' makes sense. Under normal conditions this is how the utterance would be understood.

As pointed out by Chung & Timberlake (1985:206), there is a natural correlation between present tense and progressive aspect. Events that are occurring in the present will typically be underway and not complete. It is therefore natural that the realis form of the verb, when bearing the imperfective suffix, will most commonly be interpreted as occurring in the present. By contrast, when the (bare) realis form of the verb does not bear the imperfective suffix it is interpreted as being an event located in the past.

The imperfective suffix can interact with verbal semantics, for example *moi*. This verb is used for both 'like'and 'want', but the default interpretation varies depending on the aspect and mood. In (8.26) the meaning is imperfective and therefore has the meaning 'want', whereas in (8.27) the default perfective interpretation of the verb denotes a general statement about a preference. The informant explained that (8.27) means 'I want buai'[31], as opposed to wanting something else.

(8.26) *Nie moi -lie   fey*
        1SG like -1SG.IMPERF betelnut
        'I want betelnut.'

(8.27) *Nie moi fey*
        1SG like betelnut
        'I like betelnut.'

The only example of irregularity in the imperfective morphology occurs with the suppletive verb *o* 'have' (§8.2.3.6. This verb takes the imperfective *-cie* for all combinations of person/number/gender, giving the two forms: *ocie* 'SG.have -S.IMPERF' and *macie* 'PL.have -PL.IMPERF'.

8.4.4.2 Progressive aspect

The morpheme *-qo*, PROG, may be suffixed to the realis form of the verb to indicate progressive aspect. The meaning of the suffixed verb is that the action indicated is carried out repeatedly. It may be glossed, roughly, as 'keep on doing [verb]'. It contrasts with the imperfective in that the latter treats the action as a single event.

(8.28) *Nie ha   -qo*
        1SG 1SG.go -PROG
        'I'm keeping on going.'

Having progressive meaning this suffix is incompatible with verbs which have an inherently punctiliar meaning, as in (8.4.4.2).

(8.29) ** jeya   -qo*
        1SG.get.up -PROG
        'I'm keeping getting up.'

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[31] *buai* is the Tok Pisin name for betelnut.

Verbs with this suffix are sometimes strung together in indication of a sustained period of repeatition of the action. Typically this kind of structure is used with verbs of motion, a common example being (8.30).

(8.30)　*...ha　-qo　ha　-qo　ha　-qo　haleng　wafa*
　　　　1SG.go -PROG 1SG.go -PROG 1SG.go -PROG 1SG.go.to Wafa
　　　　'I kept going and going and going (until) I got to Wafa.'

8.4.4.3 Habitual -*fa*

The morpheme -*fa* 'HAB' suffixed to the base, realis form of the verb gives the 'habitual' verb form.[32] The habitual verb form indicates that the action of the verb is the normal or usual behaviour of the subject NP. Clauses with this form are typically translated into English by Wutung speakers with the indication that it is 'only' and 'always' what is done or happens. A commonly-heard example is (8.31), a statement that the speaker *only* went, and did nothing else. Thus the morpheme indicates that the event is in some way exclusive of other possibilities.

(8.31)　*Nie ha　　-fa*
　　　　1SG 1SG.go -HAB
　　　　'I always/only went.'

This morpheme can be used with either the bare realis form of the verb, or combined with the imperfective. When used with the bare realis form of the verb, as in (8.31), the default interpretation is that the event is located in the past. When used with the imperfective it precedes that suffix and has a temporal interpretation that is non-specific, while the habitual meaning is primary. This is illustrated in (8.32).

(8.32)　*Nie ha　　-fa　-lie*
　　　　1SG 1SG.go -HAB -1SG.IMPERF
　　　　'I'm always going.' ~ 'I always go.'

As mentioned previously, there is a nominal suffix of the same form and similar semantics, discussed in §7.4.2, and glossed as the 'exclusive' suffix. The examples in (8.33) and (8.34) show near-identical clauses, varying only in that the former uses the

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[32]This morpheme is formally identical to the exclusive suffix found on nouns and discussed in §7.4.2. While the meanings are clearly related, they are distinct morphemes.

exclusive nominal suffix, and the latter has the habitual verbal suffix. These examples demonstrate the contrast in meaning between the two forms.

(8.33)   *Nie   ha   jaqo   -fa*
1SG 1SG.go Yako -EXCL
'I go only to Yako.'

(8.34)   *Nie   ha   -fa   jaqo*
1SG 1SG.go -HAB Yako
'I always go to Yako.'

When used with an irrealis verb taking an adjunct, the habitual suffix is appended to the reduplicated form, with the adjunct and irrealis clitic following.

(8.35)   *Nie   namie   -mie   -fa   Wutung =ley*
1SG 1SG.think.about -IRR/REDUP -EXCL Wutung =1SG.IRR
'I'll always think about Wutung.'

Verbs bearing the exclusive suffix may be strung together to indicate a series of actions which were undertaken to the exclusion of other possibilities.

(8.36)   *Hnya   -fa,   hnya   -fa,   hnyaqi   -fa,   hnyaqi   -fa,   hnyali*
3PL.go -HAB 3PL.go -HAB 3PL.climbed -HAB 3PL.climbed -HAB 3PL.go.to
Otua
sand

'They just went and went and climbed and climbed and went to Otua[33]'

8.4.5 Imperative

8.4.5.1 Punctual imperative

There is no distinct form for imperatives. Rather, both realis and irrealis forms of the verb may be used as imperatives, depending on the degree of compulsion desired. In both cases there is no additional marking but there is the typically imperative quality of the voice, which may include increased volume, modified voice quality, heightened pitch, etc. The more commanding imperative consists of the bare second person verb (singular or plural, as appropriate), without the verbal clitics and without a pronoun, as per the examples in (8.37).

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[33]*Otua*, 'sand', is the name of a popular holiday location on the coast about ten kilometres east of Wutung village.

(8.37)   a. *Hmumua!*
         2SG.sit
         'Sit down!'

       b. *Iflabey!*
         2SG.sleep
         'Sleep!'

As mentioned previously, the realis form of the verb is usually understand to refer to past time however when used as an imperative, with no pronoun and with imperative pronunciation, this is not the case.

Example (8.38) shows an imperative using the reduplicated verb stem. The imperative use of the irrealis is less commanding, and more of a request or exhortation.

(8.38)   *Me ba   -ba   (nie)!*
      2SG 2SG.be.with -IRR/REDUP (1SG)
      'Stay/stop/be with me!'

Finally, (8.39) exemplifies the imperative usage of the ditransitive verb *qaili* 'give'. As before, the subject NP may be excluded, although the verbal agreement marking is still present. The other two arguments, the object and indirect object NPs, are required to be present.

(8.39)   *Mu bimi   nie!*
      fish 2SG>3SG.M.give 1SG
      'Give me fish!'

8.4.5.2 Continuous imperative

There is an imperative continuous form, illustrated in (8.40). Only a very few examples have been recorded of this form. This may well result from the reliance of the present analysis on a dataset biased towards narratives.

(8.40)   *Hma   -qwo!*
      2SG.go IMP.CONT
      'Keep going!'

8.4.5.3 Negative imperative

Negative imperatives use the reduplicated irrealis form and add the negative particle *qe* NEG. As with the continuous imperative, only a small number of examples were recorded. As before, this may well be an artefact of the type of texts that predominate in my dataset.

(8.41)   *Hmumua -mua*   *qe!*
        2SG.sit   -IRR/REDUP NEG
        'Don't sit!'

(8.42)   *Iflabey*   *-bey*   *qe!*
        2SG.sleep IRR/REDUP NEG
        'Don't sleep!'

(8.43)   *Hma*   *-ma*   *qe!*
        2SG.go IRR/REDUP NEG
        'Don't go!'

Appendix A

Wutung and the World Atlas of Language Structures (WALS)

A.1 Introduction

This chapter draws upon the World Atlas of Language Structures online (Haspelmath et al. (2008), hereinafter WALS) to provide a list of features which may be used for typological comparison. Each relevant feature is treated below, grouped into one of the sections. The WALS feature is briefly explained, with the situation in Wutung outlined and compared to the typology presented in WALS. Where a feature discussed in WALS is not relevant to Wutung, or its value is not known, it is not included. The WALS features are referred to by their number thus, 'WALS-2' to facilitate reference to WALS. Cross-references are made to the section of this thesis dealing with the feature in detail. The section titles used in the following are those of the relevant category of features as found in WALS, with the feature numbers appended to assist with finding it in WALS. The sections of WALS on features of sign languages and writing systems are not included.

A.2 Phonology: WALS 3–19

WALS-1 'Consonant inventories' groups languages according to the overall size of their consonant inventory. Wutung having fifteen consonants, including glottal stop, falls into

the WALS category of 'moderately-small', the second-largest group. This aspect of Wutung is discussed in detail in §3.2.1.

The number of vowels in a language which differ along the standard dimensions of height, front-back, and rounding (excluding secondary qualities such as length or nasalisation) gives WALS-2 'vowel quality inventories'. Wutung has a total inventory of seven vowels, which in the WALS categorisation puts Wutung in the 'large' category, although at the smaller end of this group, which includes languages having from 7–14 vowels.

The consonant-vowel ratio, WALS-3, is computed by dividing the consonant inventory by the number of vowel qualities (as defined in WALS-2). These segment numbers give a consonant-vowel ratio of 2.1, putting Wutung in the 'moderately-low' category.

The feature WALS-4 counts the numbers of languages which have: a voicing contrast in plosives only, a voicing contrast in fricatives only, a voicing contrast in both or in neither. It is found that only a very small number of languages have a voicing contrast in fricatives only, with each of the other three categories including substantial numbers of languages. Wutung falls into the largest group, those that show a voicing contrast in the plosives only, having the contrast in its two stops and the single affricate,[1] but not on any of the three fricatives.

WALS-5, 'voicing and gaps in plosive systems', examines patterning to the gaps in sets of stop consonants within languages. The two largest categories in this feature are those languages which have all six of the stops /p t k b d g/, and those languages (titled 'other') which do not fall into one of the other given categories: missing /p/; missing /g/; or, missing both. As Wutung is missing both of the velar stops /k, g/ it falls into the large 'other' category.

According to WALS-6, uvular consonants are quite rare in the world's languages. Wutung here falls into the largest category, those languages which entirely lack uvular consonants.

WALS-7 'glottalized consonants': this feature is based on the presence of consonants such as ejectives and implosives. While Wutung has a phonemic glottal stop, this consonant is excluded by the WALS definition of 'glottalized consonant'; as such, Wutung falls into the very large category of languages which have no glottalized consonants.

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[1]The WALS discussion of this feature does not mention affricates however as these are conventionally included in the category 'plosive' this is assumed to be the author's intent.

With respect to WALS-8, 'lateral consonants', Wutung again falls into the largest category of languages: those which have a single lateral consonant, /l/, the voiced lateral approximant, and no lateral obstruents.

WALS-9 examines the range of languages which have the phonemic velar, and for those that do have it, whether it can occur word-initially. Wutung does not have a phonemic velar nasal consonant, although this segment frequently appears phonetically as the realisation of nasality on a word-final vowel, for example in the name of the village *Wutung*, which is rendered phonemically as /wutũ/, acquiring the final nasal segment in rapid speech, as well as in the Tok Pisin and English pronunciations

Wutung has contrastive vowel nasalisation, having nasalised vowels equivalents to six of the seven oral vowels. This puts it in the smaller (but still sizeable) category of 'contrast present' in WALS-10 'vowel nasalization'.

Wutung has no front rounded vowels, but there is a single non-back rounded vowel, written /ur/, which is analysed herein as being a close-mid central rounded vowel (IPA [ɵ]). As this vowel has occasional front allophones a possible alternative analysis is to treat this as a front rounded vowel. For the WALS-11 feature 'front rounded vowels' this would put Wutung into the category 'mid only', the smallest category for this feature. As this is not the approach taken here, Wutung is best treated as falling into the largest category, 'none'.

WALS-12 'syllable structure' defines complex syllable structure as one that allows three or more consonants in onset position and/or two or more in coda position. While Wutung has very few syllables with coda, there are a number of syllables which allow three or even four consonants in the onset. Wutung therefore falls into the category of having complex syllable structure. This is not a small group, being substantially larger (in the WALS sample) than those which have only simple syllable structure, but is half the size of the other category, the moderately complex. It is suggestive of a need to rethink the measures of syllable structure complexity that although Wutung has such large onset types, they are highly constrained, all of them amounting to combinations of CC onsets, i.e. $C\text{-}1C_2 + C\text{-}3C_4$, where C_2 and C_3 happen to be be compatible.

There is no lexically contrastive stress in Wutung, but there is word tone. This operates by one of four melodies extending across the word and being realised in various ways depending on the number of syllables and the location of a pitch-attracting 'accent'. This number of contrasts qualifies Wutung as included in the WALS category of having a complex tone system for WALS-13 'tone', which is defined as those exhibiting more

than a simple two-way basic contrast. Unfortunately, WALS does not appear to contemplate the existence of tonal systems of the type found in Wutung. The discussion in WALS goes on to present data hinting at a tendency for complexly tonal languages to have relatively larger numbers of consonants, but Wutung does not conform to this generalisation. Another correlation claimed is between complex tone systems and larger vowel inventories; Wutung supports this, having seven vowel qualities, the average for complex tone languages.

With respect to stress systems, discussed in WALS-14–WALS-16, Wutung by default here falls into the categories of having 'no fixed stress' (WALS-14 'fixed stress locations'), 'not predictable' stress locations (WALS-15 'weight sensitive stress'), and 'no weight' (WALS-16 'weight factors in weight-sensitive stress systems'). This is because stress is not contrastive in Wutung and while it is not uncommon for one syllable in a word to be more prominent than the others, this is not predictable, can vary freely, and enters into no contrasts. Finally, given the lack of contrastive stress and the highly mobile nature of word prominence, the feature 'rhythm types' (WALS-17) is also not relevant, with Wutung falling into the category 'no rhythmic stress'.

The feature WALS-18 'absence of common consonants' characterises languages in terms of whether or not they have bilabial, fricative, and/or nasal consonants. Wutung belongs to the largest category, those languages which have all three consonant types. Wutung does lack velar consonants, but these are not considered within this feature.

Wutung does not have any of the 'uncommon consonants' described in the feature WALS-19 'presence of uncommon consonants' (clicks, labial-velars, pharyngeals, and alveolar/dental fricatives).

A.3 Morphology: WALS 20–29

While there is a limited amount of morphological variation on nouns, it is the verbs which show the most morphology, and the most complex.

WALS-20, 'Fusion of Selected Inflectional Formatives' summarises the manner in which grammatical markers are connected to a host word or stem. Wutung falls into the largest category, 'exclusively concatenating'.Grammatical markers are generally suffixed to stems and undergo little modification, excepting verbs, wherein the marking of person, number and gender may involve fusion of a prefix with the initial consonant.

Wutung has only one case, instrumental, which is realised by a suffix on the NP head. In terms of WALS-21, 'Exponence of Selected Inflectional Formatives', this puts Wutung in one of the two largest categories, 'monoexponential case' (the other being 'no case').

WALS-22 'Inflectional Synthesis of the Verb' is a complex feature, attempting to measure the number of inflectional categories that may be simultaneously marked on verbs. Wutung verbs may mark a maximum of three inflectional categories: subject agreement, object agreement (both sets of agreement being for person, number and gender), and TAM (tense, aspect and mood). As such, Wutung falls into the '2-3 categories per word' group, and is at the low end of the range of possibilities, which vary from zero to thirteen.

Wutung falls into the category 'head marking' for WALS-23, 'Locus of Marking in the Clause', which is based on the locus of marking for direct object. The four main categories in this feature (head, dependent, double, or no marking) are of similar sizes. However the distribution of the types is highly uneven, with head marking being very common in the Americas and Australia-New Guinea, but rare elsewhere.

Wutung possessive noun phrases are formed by head marking with a separate word, always a personal pronoun, following the possessed NP. By the definition used in WALS then, Wutung falls into the 'head marking' category for WALS-24, 'Locus of marking in possessive noun phrases'. As with the preceding WALS-23, this is common in the Americas and parts of the Pacific, and rare elsewhere.

WALS-25, 'Locus of Marking: Whole-language Typology' is simply a summary of the patterns for WALS 23 and 24. Given the results described above, it is clear that Wutung is a 'head-marking' language, using head-marking in both the clause and in NPs.

WALS-26 'Prefixing vs. Suffixing in Inflectional Morphology' examines the degree to which a language is suffixing or prefixing, or some combination of these, and uses a calculation based on the presence of suffixing or prefixing as the standard strategy, across a range of affixes. This calculation produces an affixing index which is the majority of the total expressed as a percentage. Based on the procedure described in WALS, Wutung has a suffixing index of 56%, placing it in the category 'equal prefixing and suffixing'. This seems surprising as most affixing in Wutung is suffixal, but is the outcome of the fact that the scoring is based on a limited range of morphology, but with subject and object agreement on verbs (the only two parts of the morphology which are prefixing) each counting towards the total.

Wutung shows productive reduplication on verbs, putting it in the category 'productive full and partial reduplication' for WALS-27.

Wutung does not meet the conditions necessary to be considered for the feature 'case Syncretism (WALS-28), as it has only a single form of case-marking, the instrumental case. In this respect it falls into the majority grouping.

WALS-29 is 'syncretism in Verbal Person/Number Marking'. Wutung shows syncretism across two sets of verbal agreement marking, the 1SG and 2PL, said in WALS-29 to be the rarest form of syncretism, having a single form that combines differing person values with differing values for number. As described in §8.2.2, this results from a lack of marking on on both 1SG and 2PL forms of the verb, meaning the the underlying form surfaces in both cases.

A.4 Nominal categories: WALS 30–57

The number of genders (WALS-30) found in Wutung is two, the second-largest category in WALS after 'none' (there is of course no single-gender category). Gender in Wutung is manifested in agreement marking on verbs, where every NP argument takes either masculine or feminine agreement. All recorded male terms of reference fall into the 'masculine' gender, and all female terms of reference fall into the 'feminine', so for WALS-31 ('Sex-based and non-sex-based Gender Systems') this is clearly a sex-based gender system. Other entities which are viewed as masculine or feminine, or particularly associated with one of these, also take the appropriate agreement marking. Those many entities for which the contrast masculine vs. feminine is irrelevant fall into the feminine category by default. The 'system of gender assignment' (WALS-32) in Wutung then is predominantly semantic.

Wutung does not have 'coding of nominal plurality' (WALS-33), so best fits in the category 'no plural',[2] and in the category 'no nominal plural' in WALS-34 ('occurrence of nominal plurality').

For WALS-35, 'plurality in independent personal pronouns', Wutung is in the major grouping, 'person-number stem', which includes all languages that have personal pronouns that combine person and number in an unanalyzeable person-number stem.

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[2]While Wutung does not directly encode plurality on nouns, plurality may be marked on other constituents of the NP–see §7.4.4 and 7.7.2.

Wutung does not have an associative plural (WALS-36), but does have an indefinite article, so falling into the smallest grouping ('no definite, but indefinite article') within WALS-37, 'definite articles'. As such, for WALS-38 'indefinite articles', it also falls into the group 'indefinite word distinct from "one"'.

Wutung shows what appears from WALS to be an unusual pattern of 'inclusive/exclusive distinction in independent pronouns' (WALS-39). It has an exclusive/inclusive contrast in the dual pronouns, but not in the plural, a situation not mentioned in the discussion of WALS-39. As well, there are three first person dual pronouns: two exclusive and translating as 'he and I', 'she and I', and the inclusive 'you and I'. So while the system in Wutung has no exact counterpart in this part of the WALS discussion, it clearly falls into the 'inclusive/exclusive' grouping. By contrast, the system of verbal agreement marking does not include duals, so there is no 'inclusive/exclusive distinction in verbal inflection' (WALS-40). Where a dual NP argument occurs, the verbal agreement marking has the plural form (discussed further in §7.5.3).

In WALS-41, 'distance contrasts in demonstratives', Wutung shows a 'two-way contrast', the largest grouping, having one term to refer to entities near the speaker and another to refer to those far away. There is also an anaphoric demonstrative. However, this does not enter into the WALS-41 assessment. The Wutung 'pronominal and adnominal demonstratives' (WALS-42) have identical form. The 'third person pronouns and demonstratives' (WALS-43) are distinct and are unrelated. For WALS-44, 'gender distinctions in independent personal pronouns', Wutung is in the 'third person singular only' group, having distinct masculine and feminine third person singular pronouns, but no gender contrast in any other part of the pronominal system. There is however no politeness distinction in the pronouns (WALS-45).

The indefinite pronouns (WALS-46) meaning 'someone' and 'something' are both related to the interrogative forms meaning 'who' and 'what', putting Wutung into the largest category for this feature. The same form is used as an intensifier on adjectives, and to form reflexive pronouns (WALS-47); see the discussions at §7.6.3.3 and 7.5.4.

Wutung does not have 'person marking on adpositions' (WALS-48). According to the definition of case given in WALS-49 'number of cases', Wutung has two cases, the instrumental (§7.4.1) and the unmarked nominal form. In terms of the position of case affixes (WALS-51), the single case affix is a suffix.

Wutung does not have numeral classifiers (WALS-55). Conjunctions and universal quantifiers (WALS-56) are distinct forms (§7.7.3).

There are no pronominal possessive affixes (WALS-57); possession is denoted by a separate word, which is formally identical to the personal pronouns. While the analysis herein does not do so, these possessive forms may alternatively be treated as clitics; either way, they do not qualify as affixes for the purpose of WALS-57.

A.5 Nominal syntax: WALS 58–64

While a number of kinship terms are very commonly heard in possessive constructions (§1.14), there is no obligatory possessive inflection (WALS-58); nor is there possessive classification (WALS-59). Genitives, adjectives and relative clauses (WALS-60) are highly differentiated. Adjectives may occur without an overt noun (WALS-61), but only where they are preceded by the anaphoric pronoun, which stands in for the absent noun (§7.5.6). WALS-64, nominal and verbal conjunction, makes use of the same element, putting Wutung in the largest category of languages.

A.6 Verbal categories: WALS 65–80

With respect to WALS-65, 'perfective/imperfective aspect', the analysis herein treats verbs as having a contrast between perfective and imperfective forms, but this contrast is strongly bound up with past/nonpast as well. Nevertheless, Wutung can be assigned to the group that uses grammatical marking for this distinction. Given this analysis, there is no distinct past tense marking (WALS-66); rather, past tense is strongly implied by the perfective, but it may also be used with reference to the present. While Wutung is analysed as not having a future tense, but irrealis mood (which covers a number of categories in addition to future), WALS-67 'the future tense' includes such systems in the definition of 'future tense'. As such, Wutung qualifies as having an inflectional future tense. Wutung has no perfect aspect (WALS-68), and takes suffixes to mark tense-aspect (WALS-69).

It is difficult to assign Wutung to a value for WALS-70, 'the morphological imperative' (70). There is no distinct form for the plain imperative as both realis and irrealis forms may be used, with varying degrees of hortativity. There is however a continuous imperative with distinct morphology (a suffix), although very few examples have been recorded, and these were all singular (§8.4.5.2). With regard to the prohibitive, WALS-71, Wutung

employs the strategy of using a special imperative (the irrealis) and the normal sentential negative. For WALS-72, 'the optative', there is no dedicated inflectional optative.

Wutung has no grammatical evidentials (WALS-77 and 78). As well, there is no suppletion according to tense and/or aspect marking (WALS-79), and there is no suppletion of verbal number marking (WALS-80).

A.7 Word order: WALS 81–97

Word order in Wutung is fairly rigid. Within the clause, the order of subject, object and verb (WALS-81) is strictly SOV. The order of non-pronominal subject and verb is SV (WALS-82) and the order of non-pronominal object and verb is OV (WALS-83). The order of object, oblique and verb (WALS-84) however is OVX (where X=oblique NP).

Word order within the noun phrase is also rigid. The order of adposition and noun phrase (WALS-85) is prepositional, i.e. they precede the noun. The order of genitive and noun (WALS-86) is GenN, with the genitive preceding the (head) noun. In the ordering of the noun phrase, all constituents follow the head noun. Thus, for adjective and noun (WALS-87), Wutung follows the most common sequence, noun-adjective; for demonstrative and noun (WALS-88) it is noun-demonstrative and the order of numeral and noun (WALS-89) is noun-numeral. In ordering of relative clause and noun (WALS-90), Wutung falls into the majority grouping in which the relative clause follows the noun. While only two adjective-modifying degree words have been documented, both follow the adjective (WALS-91).

The sole polar question particle (WALS-92) *me* always occurs at the end of the sentence. Interrogative phrases in content questions (WALS-93) also typically occur clause-finally, but are sometimes moved to preverbal position, though the conditions for this are not known.

Wutung varies in the degree to which it conforms to the more common patterns in kinds of constituent ordering. With respect to the relationship between the order of object and verb and the order of adposition and noun phrase (WALS-95), Wutung is unusual in being OV for the former but having prepositions. This puts it in the smallest group of languages for this combination of features, which has ten members. The relationship between object/verb ordering and relative clause/noun ordering (WALS-96) is OV and NRel; this is not as unusual, but still puts it in the smaller category amongst OV languages. By contrast, with respect to the order of object and verb and the order of adjective and

noun (WALS-97), Wutung is OV and NAdj, putting it in the larger group amongst OV languages, and the second-largest grouping overall.

A.8 Simple clauses: WALS 98–121

For both WALS-98, which examines the alignment of case marking of full noun phrases, and for WALS-99, which deals in the same way with pronouns, Wutung is neutral, having neither case marking nor adpositions to mark core argument noun phrases or pronouns. The expression of pronominal subjects (WALS-101) obligatorily requires pronouns in subject position. While there are occasional examples of clauses without an overt subject argument, this is unusual. Verbal person marking (WALS-102) involves (in the maximal case) both the A and the P arguments being marked on the verb. WALS-103 is the question of whether the language shows zero-marking on verbs for third person subjects. Wutung does not have zero realisation of the verbal marking for third persons. WALS-104 represents the order of person markers on the verb. In verbs where both subject and object arguments are marked on the verb, the two sets of marking are fused and cannot be assigned an ordering. In Wutung, as with the largest grouping of languages in WALS, the ditransitive verb 'give' has an indirect-object construction, with the indirect object following the verb (WALS-105).

There is no passive construction in Wutung (WALS-107), nor is there an antipassive construction (WALS-108). The periphrastic causative construction (WALS-110) is sequential, but not purposive. There is no nonperiphrastic causative construction (WALS-111) (apart from lexically-determined causative), so Wutung belongs to that minority of languages that uses neither morphological nor compound means to indicate causation. Negation is indicated by a negative particle (WALS-112), and negation is symmetric, the clause having the same structure as the equivalent affirmative, apart from the presence of the negative, so Wutung is non-assignable for feature WALS-114, 'subtypes of asymmetric standard negation'.

Polar questions (WALS-116) in Wutung are indicated by a clause-final interrogative particle. WALS-117, predicative possession, makes use of a specialised 'have' verb, which takes the possessor as subject and the possessed as object. Predicate adjectives (WALS-118) are expressed via non-verbal predication. Nominal and locational predication (WALS-119) use the same structure, non-verbal predication. However, locations can

also be predicated via verbs of location. While predicate nominals often make use of the copula particle, they may employ zero marking (WALS-120).

A.9 Complex sentences: WALS 122-128

As the investigation of the grammar of Wutung was strongly focused on phonology, phonetics, and morphology, there has been correspondingly less emphasis on the structure of complex sentences. As a result fewer answers to this part of WALS can be given with certainty.

Relativization on subjects (WALS-122) employs a relative pronoun. This pronoun is not case-marked to agree with the head. However, where the verb in the relative clause is one that indexes for person/number/gender, it agrees with the head noun.

In 'want' complement subjects (WALS-124) the subject of the complement is left implicit when coreferential with that of the 'wanter'. Reason clauses (WALS-127) in Wutung, while not well understood, are known to be balanced, being of the same form that occurs in an independent clause. As with reason clauses, utterance complement clauses (WALS-128) are also balanced.

A.10 Lexicon: WALS 129-138

There has been relatively little investigation of the lexicon of Wutung so far, most of the collected lexicon focusing on day-to-day life and words that arise out of investigating the grammatical structure of the language. Where answers for the features in WALS pertaining to the lexicon are known, they are given in the following; where they are not, they are excluded.

There are distinct and unrelated terms for hand and arm (WALS-130), and also for finger and hand (WALS-131).

Counting uses the decimal system (WALS-132) in counting.[3] Wutung does not have M-T pronouns (WALS 136). It does however have N-M pronouns which are paradigmatic (WALS-138), having 1SG *nie* and 2SG *me*. The relevant WALS map shows that the only

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[3]Decimal systems are quite unusual among the non-Austronesian languages of New Guinea (Pawley, p.c). See §7.7.5 for a discussion of the counting system, and the possibility that it undergone change in recent history.

other language outside of Africa and the Americas to have this feature is its close relative, and near neighbour, Dumo. The Wutung name for tea (WALS-139) is *ca sa*, literally 'hot water', and is clearly not derived from a Sinitic term.

Appendix B

Phonetics wordlist

Table B.1 shows the list of words used for the analysis described in Chapters 4 (voice onset time of plosives and vowel acoustics) and 5 (phonemic analysis and acoustic structure of tones). They are presented in the order in which they were elicited (by row). The intention with the wordlist was to collect monosyllabic words containing examples of all possible CV combinations.

Table B.1: Acoustic analysis wordlist

Word	Definition	Word	Definition	Word	Definition
li	sea	ley	1SG.do	hle	fire
la	go with	lu	2SG.come	lo	front
lo	sharp	mlohe	liver	lur	boundary
plur	bunch	hi	ouch!	hey	excreta
he	leaf	ha	k.o. shell	hu	watery
ho	star	ho	grease	maho	where
ho	morota	hur	ground	ni	a paddle
ney	armband	ne	we	ne	1PL.eat
na	taro	na	reef worm	na	sago basket
na	digging stick	na	noise	hnu	1PL.drink
nua	skin	no	breast	no	wake up
mi	tail	meya	you!	me	you
ma	skin	maho	where	mu	fish(noun)

Word	Definition	Word	Definition	Word	Definition
mo	drown	mo	spear shaft	nyi	banana
nya	gall bladder	nyu	3SG.F.fight	hnyo	squeezings
nyo	left-overs	pi	1SG/3SG.F.get	napey	bush knife
pe	house	pa	person	pa	and
pu	greens	popo	uncle	niepo	myself
bey	do	be	take	qbaqba	hit
hmbu	stone	bo	3SG.M.rub	wi	five
wey	swamp	we	2SG/3SG.F.take	wa	cave
wu	reef gully	wo	k.o. song	wo	work
fi	breadfruit	fey	tomorrow	fe	betelnut
fe	ripe	fa	bad potato	fa	edge
fu	garden	fo	drying rack	fofo	pawpaw
fur	bottom	ti	a handle	ti	do
tey	they	tu	bush border	to	seed
to	language	tur	money	di	fought
dey	did	de	chopped	da	harvested
du	come	du	got	do	rubbed
dur	threw away	si	sago	si	a fight
si	got	se	dog call	sey	good one!
sa	sea	sa	thing	sa	grass
su	lid	su	can	su	got
so	taro part	so	okay	so	come on!
sur	flood	sur	come out	sur	bananas
nyi sur	k.o. banana	ci	tapa cloth	ci	3SG.F.do
cey	she	ceyca	wobbly	ce	chopped
ce	collected	ca	pig	ca	water
ca	wash	ca	dug	cu	a scream
co	rub	cur	blowhole	cur	come out
ji	fought	jey	shake	jeyja	shaking
jo	malformed	juwa	harvest (greens)	juwa	rub off

Table B.1: *continued*

Word	Definition	Word	Definition	Word	Definition
jur	all of them	qi	cooked	qi	growing
qey	bone	qey	timber	qe	limbum leaf
qa	hit	qu	beetle	qu	firewood pile
qo	a smell	qo	laulau bunch	aqo	no
qur	ripe greens	qur	stain		

Wordlist

This Appendix lists most of the Wutung words that appear in the body of this thesis, presented in alphabetical order and divided into sections headed by initial letters. Digraphs (and trigraphs, and tetragraphs) are not given their own headings so, for example, words beginning with /ny/ are found under 'n'.

The word class to which each word belongs is indicated. Tone marks are included for all those words where tone is known with centainty. Where the tone of a word is uncertain, there is no tone marking. As explained previously in this thesis (§3.7.1), tone will be marked by the following three diacritics:

high tone hó

low tone hò

falling tone hô

The appropriate diacritic will be placed over the vowel of the syllable that bears that particular tone.

Finally, a brief English gloss is given for each word. Verbs will be presented with a very brief gloss and the agreement of the cited form indicated in brackets, following the gloss.

The word class abbreviations used in this wordlist are as follows:[1]

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[1] Although not all of the word classes presented in this wordlist are included in the word class definitions given in the body of this thesis, most are based on those definitions.

adj. = adjective

adv. = adverb

art. = article

deg. = degree modifier

dem. = demonstrative

inter. = interjection

ip. = illocutionary particle

n. = noun

pn. = proper noun

prep. = preposition

pro. = pronoun

quant. = quantifier

quest. = question words

v. = verb

a

â *n.* a round fruit.

à *n.* sky.

a *art.* some (indefinite plural article).

abo *quant.* some.

ácèy *n.* mango.

angci *quant.* half.

aling *n.* tree root.

ang *ip.* so that.

àpà *n.* father.

ápìnà *dem.* that (distal demonstrative).

aqo *inter.* no.

àqû *n.* fish poison root.

atey *n.* grandparent.

b

báqwûwè *prep.* beside.

be *v.* take.

bla *v.* be with.

blafa *quant.* everybody.

blî *adj.* full.

blúqî *adj.* thick.

bo *v.* rub (3SG.M)

c

câ *n.* water.

cà *v.* dig.

cà *n.* pig.

cálìngqwìè *v.* wash (1SG>3SG.M).

cafalang *n.* riverbank.

câng *n.* a blossom.

Ca Long *n.* name of the rivermouth at Wutung village.

cápècì *n.* blister.

capie *v.* wash self (1SG).

catahur *v.* boil (1SG).

Cawu *pn.* name of eastern sub-village of Wutung.

ce *v.* collect.

céng *n.* pus.

cêy *pro.* she.

ceyca *adj.* wobbly.

cí *n.* tapa cloth.

ci *n.* husband.

cu *n.* a scream.

cur *n.* blowhole.

d

da *v.* harvest.

Dali *pn.* Vanimo (in Dumo, the Sko family language spoken in Vanimo).

e

e *n.* rope.

êtù/ê *pro.* you (2PL).

efatua *n.* wall.

èmè *n.* mother.

emua *n.* daughter.

éndêy *n.* neck.

éng *n.* child, baby.

englua *n.* father's youngest sister.

engti *n.* father's eldest sister.

engu *n.* father's middle sister(s).

enyua *n.* son.

epi *adj.* far, distant.

epoesa *adv.* not at all.

eya *inter.* yes.

f

fà *n.* edge.

fà *n.* rotten potato.

fa *n.* morota needle.

falua *n.* mother's youngest sister.

fame *n.* mother's middle sister(s).

fati *n.* mother's eldest sister.

fê *n.* betelnut.

fê *adj.* ripe.

félàì *adj.* good, nice.

fèng *n.* wind.

fey *adv.* tomorrow.

fîng *n.* breadfruit.

fî *adv.* day after tomorrow.

fije *adj.* ruined.

fijie *v.* put down.

filurqi *adj.* mermaid (mythological creature).

fíngè *adj.* bad.

flî *n.* mountain.

flaqur *v.* swimming 1SG).

flô *n.* nest.

fo *n.* drying rack.

fofo *n.* pawpaw.

fông *prep.* after; behind.

fú *n.* garden.

fuhwang *n.* saliva.

fúìqè *adj.* afraid, scared.

fur *n.* bottom.

fûr *n.* rain.

h

hâ *n.* bag made from limbum leaf.

há *n.* a kind of shell.

hâ *v.* go (1SG).

hàfô *n.* clothes, cloting.

halaqlafa *adj.* alike.

haleng *v.* go to, towards (1SG). Also used in 3SG.F form (*hwangli*) as a preposition.

hamaina *adv.* like that.

hamawena *adv.* like this; thus.

hangsualu *v.* come down (1SG).

háplì *n.* stingray.

haplong *n.* net bag.

haqa *v.* climb (1SG).

haqe *v.* follow (1SG).

he *n.* leaf.

hêmè *pro.* we two, you and me (2INCL.DU).

hêcèy *pro.* she and I (2EXCL.DU.F).

hénó *n.* three.

héng *n.* coconut.

hèngpì *v.* breathe (1SG).

hengsu *n.* chest.

hengsufinge *adj.* angry.

hêqèy *pro.* he and I (2EXCL.DU.M).

hesafa *adv.* quickly.

hey *n.* excreta.

heyngbey *n.* a yawn.

hi *inter.* ouch!

hla *ip.* also.

hlàng *n.* day; the sun.

hlapang *n.* night.

hle *n.* fire.

hléfìngè *adj.* short.

hléfúnyà *adj.* smoked.

hléléfà *quest.* how much?

hlèlíhlèy *n.* a stick, piece of wood.

hleqefinge *adj.* light (weight).

hléqì *adj.* heavy.

hléyláqì *adj.* dirty.

hleyhwong *n.* ashes.

hléyqì *adj.* blunt.

hleyqwangqwang *n.* sandfly.

hliaqwu *adj.* block of wood.

hlihe *n.* leaves.

hlihlangqe *adj.* black.

hlíngtò *n.* fly (housefly).

hlo *n.* colour.

hlông *adj.* rotten.

Hlongtur *pn.* Name of a clan at Wutung.

hluaqa *v.* arrive (1SG).

hlúàqwì *adj.* tall; long.

hlúmông *adj.* straight.

hlungha *v.* walk (1SG).

hlúngpông *n.* road, path.

hlúqbùr *n.* head. hmbu *n.* stone.

hmblie *n.* left hand.

hmblúrhmblùr *v.* squeeze.

hmamba *n.* a question.

hnjie *n.* blood.

hnjéqéy *adj.* red.

hnjequrpihley *adj.* lazy.

hnyo *n.* squeezings.

hnyûmò *n.* two.

ho *n.* sago leaf.

hò *n.* star; year.

hô *n.* grease.

hó *n.* morota.

hófà *quest.* where?

hu *adj.* watery.

hû *v.* drink (1SG).

huhu *adj.* light (weight); gentle.

hunglur *v.* stand (1SG).

hungpie *v.* fart (1SG).

húngpúà *v.* see (1SG).

húngpùà *v.* sit (1SG).

hur *n.* ground.

hur *prep.* above.

húrlàng *v.* cut (1SG).

huweyju *v.* look for (1SG).

huweqefinge *adj.* small.

huwurna *n.* mourning speech register; 'cry talk'.

húwúr *n.* stomach.

húwúr *adj.* old.

huwurfinge *adj.* angry.

huwurley *v.* cry (1SG).

húwúrtì *adj.* big.

hweyju *v.* search.

hwingqwi *adj.* under.

i

i *v.* arise.

i *v.* grow.

ifaqlurci *adj.* sleepy.

ifla *v.* sleep.

ina *dem.* this, this one.

ipo *adj.* wrong.

iqlu *adj.* overcooked.

j

jáqò *n.* Yako village.

jey *v.* shake.

jeyja *v.* shake (1SG).

jelua *n.* father's youngest brother.

jeti *n.* father's eldest brother.

jeu *n.* father's middle brother(s).

ji *v.* fought.

jo malformed.

jua *v.* rub off (1SG).

jua *v.* harvest tips of plants (1SG).

jur all of them.

jur *v.* come out (1SG).

juwa *v.* rub off.

juwa *v.* harvest (greens).

k

kacengceng *n.* type of cicada.

l

la *v.* be with (1SG).

láíqè *adj.* sharp.

lala *n.* children of one's uncle (cousin).

lang *v.* fight (1SG>3SG.M).

lalur *n.* mouth.

lapua *v.* sit beside (1SG).

laqlie *adj.* cold.

léy *v.* do (1SG).

leyfung *v.* finish (1SG).

leyhama *v.* pretend.

lí *n.* sea.

lie *v.* be; stay (1SG).

lieley *v.* dance (1SG).

lô *adj.* sharp.

lô *prep.* before; front, in front.

lông *n.* hole, opening.

lólófà *adv.* long ago.

lù *v.* get (1SG).

lu *v.* come (1SG).

lujie *v.* put (1SG>3SG.M).

lung *v.* speak, say (1SG).

lunga *v.* hear (1SG).

lur *n.* boundary.

lurhnya *v.* fall down (1SG).

lurqung *v.* look.

lúrtô *n.* eye, eyes.

m

mà *n.* skin.

maho where.

máhùr *n.* frog.

mai *quant.* none.

maina *quant.* every.

manu *n.* crocodile.

Máqê *pn.* Vanimo.

mé *ip.* question particle.

mê *pro.* you (2SG).

menie *n.* sister.

meya you!

mí *n.* tail.

mlâ *n.* joint.

mlóhé *n.* liver.

mo *v.* drown.

mo *n.* spear shaft.

môì *v.* like; want.

mú *n.* fish (generic).

múhmbèy *n.* freshwater eel.

múhmí *n.* sea eel.

múmô *adj.* shark.

mumosi *n.* jellyfish.

mupi *n.* whale.

múqà *n.* sweet potato.

Musu *pn.* Musu, neigbouring village to the east.

muti *adj.* good.

n

ná *n.* digging stick.

nà *n.* sago basket.

na *n.* noise.

nâ *n.* taro.

na *n.* reef worm.

ńamhlì *adj.* bitter.

námìè *v.* think (about).

nápèy *n.* bush knife. **náqî** *n.* dog.

náqmlá *v.* fly.

nêtù/nê *pro.* w. (1PL).

ney *n.* armband.

ní *n.* a paddle.

nîè *pro.* 1SG 'I, me'.

niepo myself.

nihey *v.* paddle (1SG).

nina *n.* axe.

no *v.* wake up.

no *n.* breast.

nô *n.* four.

nobley *adj.* tired.

noceno *n.* nine.

nociheno *n.* eight.

nòcíhnyù *n.* seven.

nocio *n.* six.

noqe *n.* hand.

noqmla *n.* wrist.

nua *n.* skin.

nuala *adj.* cold.

nuabley *v.* tire (1SG).

núàmlì *av.* slowly.

ny

nya *n.* gall bladder.

nyeong *n.* cat.

nyî *n.* banana.

nyìflà *n.* bee.

Nyimi *pn.* name of a clan at Wutung.

nyi sur *n.* a kind of banana.

Nyiaqwey *pn.* name of a clan at Wutung.

nyo *n.* left-overs.

nyu *v.* 3SG.F.fight.

nyune *n.* brother.

o

ô *n.* crab.

o *v.* grow (1SG).

ocie *v.* have (SG). Also used as a locative preposition.

ófà *n.* one, 1.

ongfur *adv.* just now.

onoqai *n.* crayfish.

ótòng *adv.* yesterday.

òtúà *n.* sand.

p

pa and (conjunction).

pâ *n.* person.

Pácâ *pn.* Wutung name for the Skou village nearest to Wutung, *Te Bapúbi*, also known as Skou Sai.

paca *quant.* many, much.

pâfà *quest.* who?

pafu *adj.* deep.

páhlî *n.* clan chief.

palupu *n.* brother-in-law.

paduami *n.* children of one's aunt (cousin).

pâmùà *n.* village, town.

Pamuahur *pn.* name of western sub-village of Wutung.

pangfang *adj.* naked.

panyua *n.* man.

pasaqo *n.* clan.

patey *n.* name.

pe *ip.* negative particle (see also *upe*).

pêhìng *pro.* you two (2DU).

pêy *n.* house.

pi *v.* 1SG/3SG.F.get.

plaie *adj.* difficult.

pley *adj.* plus.

popo *n.* uncle.

popey *deg.* partly.

pu *n.* greens.

pu *v.* die (1SG).

puaninie *n.* sister-in-law.

pungha *v.* leave (1SG).

punghenaha *v.* run away (1SG).

punglu *v.* return (1SG).

pungwa *n.* steam.

punga *v.* be here (1SG).

plapla *adj.* slack, loose.

plongta *n.* bush.

plur *n.* bunch.

puhmi *n.* edible plant, *Abelmoschus manihot*.

puli *n.* edible plant, *Gnetum gnemon*.

pusi *n.* edible plant, *Erythrina inddica*.

q

qa *v.* hit (1SG>3SG.M).

qâ *v.* scratch (1SG).

qai *adj.* dry.

qai *v.* take (1SG>3SG.M).

qale *v.* be on top (1SG).

qang *adv.* away.

qbaqba *v.* hit.

qaili *v.* give (1SG>3SG.M).

qaing *v.* hide (1SG).

qaiolu *v.* bring (1SG>3SG.m).

qang *v.* be under (1SG).

qangqie *v.* wait (1SG).

qangqwur *v.* lie down (1SG).

qaqwa *v.* kill (1SG>3SG.M).

qe *n.* limbum leaf.

qe *ip.* negative particle.

qeng *v.* live at (1SG).

qêy *pro.* 3SG.M, he, him.

qêy *n.* bone.

qey *n.* timber.

qeyhulia *v.* throw away (1SG>3SG.M).

qeyney *adj.* weak.

qi growing.

qi cooked.

qílîê *n.* bamboo.

qli *n.* a boil.

qmâ *v.* scratch.

qmifia *adj.* difficult.

qo *n.* a smell.

qo *n.* laulau bunch.

qo *v.* rub (1SG).

qo *ip.* causative particle.

qoapina *adv.* there, in the place already mentioned.

qoina *adv.* there.

qopunga *v.* stay with (1SG).

qowena *adv.* here.

qu *n.* bellybutton.

qu *n.* firewood pile.

qu *n.* beetle.

qúng *n.* tooth.

qur *n.* ripe greens.

qur *n.* stain.

qúrlùr *n.* ear/s.

qurqapi *adj.* dark.

qwa *adj.* dead.

qwâng *n.* beach.

qweqley *adj.* wet.

qwua *v.* be at (1SG).

qwurha *v.* fall (1SG).

S

sà *n.* traditional musical performance ('singsing' in Tok Pisin).

sá *n.* grass.

sâ *n.* thing.

sa *n.* sea.

saci *adj.* sick.

saci *v.* sicken (1SG).

safa *quest.* what?

saheyhli *adj.* greedy.

samuli *n.* ten.

sàng *n.* song.

sani *n.* design.

sanilu *v.* write; draw (1SG).

sàqèngpùà *v.* eat (1SG).

satoley *v.* show (1SG).

se dog call.

sey good one!

sî *n.* a fight, battle.

sì *n.* sago.

si *v.* got.

so *n.* taro part.

so come on!

so okay.

su *v.* got.

su *ip.* can, able.

sú *n.* lid.

súànè *n.* cuscus.

sûng *n.* ant.

súnghlèng *n.* tree ant.

súnghlèy *n.* red ant.

súngqèsùà *n.* black ant.

sur *n.* flood.

sur *n.* bananas.

t

tafa *deg.* completely.

Taleng *pn.* name of a clan at Wutung.

tandey *n.* thigh.

tàng *n.* hair.

tangplua *n.* kunai grass.

taqi *adj.* salty.

têhìng *pro.* those two (3DU).

temhofa *quest.* when?

tengfie *adj.* narrow.

tesapinge *v.* plan (1SG).

têtù/tê *pro.* they, them (3PL).

teyqa *quant.* a few.

ti *n.* a handle.

tífî *n.* surfboard.

timblie *n.* eagle.

tínê *n.* white cockatoo.

tîng *n.* bird.

tingmaqalong *n.* crow.

tingmu *n.* victoria crowned pigeon.

tingofla *n.* butterfly.

tíngqwâng *n.* seagull.

tíngsì *n.* cassowary.

tîngtàng *n.* feather.

Tingqwua *pn.* name of a clan at Wutung.

tínò *n.* canoe. Also used to refer to cars and other means of transport.

to *n.* seed.

tô *n.* language.

to *adj.* clean; empty.

tò *n.* cassowary bone awl.

toha *v.* teach (1SG).

tòqmlèy *adj.* white.

tósùr *adj.* true.

tu *n.* bush border.

tua *adj.* fat.

tuama *prep.* near.

tuaqblur *n.* shin.

tumbey *n.* chicken.

tupa *v.* let go (1SG).

tuqung *adv.* under.

túr *n.* money.

U

û *art.* a, one (indefinite singular article).

úmáìt{ur *n.* spider.

una *pro.* anaphoric pronoun, the one previously mentioned.

ung *prep.* down.

ung *n.* backbone.

úng *n.* a cough.

úngf(l)ìng *v.* forget. **ungpieng** *v.* cough (1SG).

ungwa *n.* a laugh.

ungpieng *v.* laugh (1SG).

ungqble *n.* beads.

upe *ip.* negative particle (see also *pe*).

ur *n.* a thorn.

urblu *adj.* deaf.

ursiplang *n.* lightning.

uwa *adj.* dead.

W

wa *n.* cave.

Wafa *pn.* Place near Wutung.

wâng *n.* a sail.

wángcî *adj.* broken, cracked.

wati *adj.* fine.

we *v.* 2SG/3SG.F.take.

wénà *dem.* this.

wénáqì *adj.* strong.

wésú *adj.* bald.

wey *n.* swamp.

wi *n.* five.

wi *adj.* empty.

winaqi *adj.* strong.

wineqey *adj.* difficult.

wingefa *adj.* thin.

wô *v.* work.

wo *n.* k.o. song.

wólòng *n.* stone, rock.

wu *n.* reef gully.

wua *v.* shout (1SG).

wunga *n.* time.

wungawunga *n.* woman; female.

wur *n.* a fight.

wurqeyfilurj{a *n.* scorpion.

wurti *adj.* thick.

Wútûng *pn.* village of Wutung.

Appendix D

Texts

D.1 *Tine pa timaqalong*: 'Crow and white cockatoo'

(D.1) *Wuang una   tine   tehing timaqalong tie   hang ofa.*
     time   ANAPH white.cockatoo 3DU   crow   3PL.be place one
     'One day Crow and Cockatoo were together.'

(D.2) *Tehing tie   pa tine   hena   hengsu   qey   huwurti hama,*
     3DU   3PL.be and cockatoo THIS.M 3SG.M.think 3SG.M big   thus,
     timaqalong tang   cey, toqmley apina   qey   aqlur
     crow   feather -3PL white   DEM.ANAPH 3SG.M 3SG.M.wear
     -qlur.
     -IRR/REDUP

     'The two of them were there, and the Cockatoo thought to himself about the white feathers that Crow was wearing.'

(D.3) *So, wunga una   qey   ofa tesaqwinge pa tehing hnyali ocie ca.*
     ok, time   ANAPH 3SGM one 3SG.M.plan and 3DU   3PL.go ??   water.
     'Okay, so this one time he planned that the two of them would go to the river.'

(D.4) *Tehing hnyali ca   pa tang   tehing apina   qmuang   pa*
     3DU   3PL.go water and feather 3DU   DEM.ANAPH 3PL.remove and
     hmbuti ma cafalang pa tehing suali   ca   qwie   mua.
     3PL.put near riverbank and 3DU   3PL.go.down water 3PL.wash 3PL.be.here

     'They would go to the water, take off their feathers and leave them on the riverbank and have a wash.'

(D.5)   *Tine   hena   hengsu   o   apina   qey   ca   qwie*
        cockatoo THIS.M 3SG.M.think plan DEM.ANAPH 3SG.M water 3SG.M.wash
        hesafa   pa   qangjielie   timaqalong tang   cey   apina
        quickly and 3sgm.go.up crow   feather 3SGM DEM.ANAPH
        qwi   sanahaqley.
        3SG.M>3PL.take 3SG.M.try
        'That cockatoo had this plan, and while crow was washing in the water he
        quickly went up and got Crow's feathers and tried them on.'

(D.6)   *Cey   lehmu   hwali tang   cey   apina   qey   sanahaqley pa*
        3SG.F 3SG.F.look at?   feather 3SG.F DEM.ANAPH 3SG.M 3SG.M.try   and
        cey   hlung   hwali   qey   'me tang   nie   mesa   sanahabey
        3SG.F 3SG.F.say 3SG.F.go.to 3SG.M '2SG feather 1SG 1SG.think 2SG.try
        -bey   qe'
        -IRR/REDUP NEG'
        'She looked at her feathers that he had tried on and she said to him "I don't
        think you should be trying on my feathers".'

(D.7)   *Pa   qey   qlung   'nie sanahaley -fa   pa   piji*
        and 3SG.M 3SG.M.say "1SG 1SG.try   -EXCL and 1SG.put.back
        -jie.'
        -IRR/REDUP'
        'And he said "I'm just trying them, I'll put them back".'

(D.8)   *Pa cey   fong hwali   ca   siema   pa qey   fong tang*
        and 3SG.F again 3SG.F.go.to water 3SG.F.wash and 3SG.M again feather
        apina   aqlur   pa qwi   qangjie   hlehli
        DEM.ANAPH 3SG.M.wear and 3SG.M>3PL.take 3SG.M.climb tree
        huweyqefieng u   qlaqwua   cafanglang.
        small   INDEF.SG 3SG.M.be.near riverbank
        'And she again went to wash and he once again put on those feathers and went
        and climbed a small tree near the riverbank.'

(D.9)   *Cey   lurhwung   hwali hmusua   na   fong hlung   hwangli qey.*
        3SG.F 3SG.F.look ??   3SG.F.see and again 3SG.F.say to   3SG.M
        'She looked and saw him and told him again [not to wear her feathers].'

(D.10)   *Pa qey   qlung   "a, nie sanaha -fa   -ley   pa*
        and 3SG.M 3SG.M.say 'oh, 1SG 1SG.try -EXCL -1SG.IRR and
        sualu   -lu   -ley".
        1SG.come.down -IRR/REDUP -1SG.IRR'

'And he said "oh, I'm just trying them on, I'll come down".'

(D.11) *Pa cey fong ca siema pa qey fong qangjie.*
and 3SG.F again water 3SG.F.wash and 3SG.M again 3SG.M.climb
'And she kept on washing and he climbed up again.'

(D.12) *Cey lurhwung qey qangjie na cey fong hlung hwangli,*
3SG.F 3SG.F.look 3SG.M 3SG.M.climb and 3SG.F again 3SG.F to,
cey hlung hwangli na qey fong qlung hwangli cey 'a,
3SG.F 3SG.F.say to and 3SG.M again 3SG.M.say to 3SG.F 'oh,
nie sanaha -fa -ley pa piosualu -lu -ley'
1SG 1SG.try -EXCL -IRR and 1SG>3PL.return -IRR/REDUP -IRR'
'She looked at him climbing and she spoke to him again, and he said to her "Oh, I'm just trying them, I'll bring them back".'

(D.13) *Ey -po qlung hamainafa qwua pa qaqo*
3SG.M -EMPH thus 3SG.M.stay and 3SG.M.go.up 3SG.M.go.up
qangjielie qwua hlehli qurpo.
3SG.M.stay tree top
'That's what he said, and he kept on climbing and climbing up to the treetop.'

(D.14) *Cey lurhwung hwangli qey jielie mua qurpo pa*
3SG.F 3SG.F.look ?? 3SG.M 3SG.M.be.on.top 3SG.M.be.at top and
ofa wua hwangli qey wua apina wua
one 3SG.F.shout to 3SG.M 3SG.F.shout DEM.ANAPH 3SG.F.shout
ongcie qwaie pa qey namla angqiqi pa cey ofa lurhwung
in.vain and 3SG.M 3SG.M.fly all.the.way and 3SG.F one 3SG.F.look
hwangli tang qey hlilaqey apina, cey hmusua pa cey
to feather 3SG.M black DEM.ANAPH, 3SG.F 3SG.F.see and 3SG.F
moi epoesa.
3SG.F.like not.at.all
' She looked at him as he went and stayed up on top and she shouted to him again, and he flew off away and she looked but could only see the black feathers, which she didn't like at all.'

(D.15) *Cey moi tang cey -po toqmley qey wieqa.*
3SG.F like feather 3SG.F -EMPH white 3SG.M 3SG.M.take
'She liked her own white feathers that he had taken.'

(D.16)   *Cey   ofa namie   ongcie qwaie pa saceycey u   cahuwur*
         3SG.F one thought in.vain   and another INDEF.SG 3SG.F.wear
         -huwur   maie.
         -IRR/REDUP is.not
         'She thought in vain, but there wasn't anything else to wear.'

(D.17)   *Pa tang   qey   hlilaqey ma   apina   sipolu   cahuwur*
         and feather 3SG.M black   3SG.M.stay DEM.ANAPH 3SG.F.take 3SG.F.wear
         pa qey   ofa qlung   hwangli cey   'me   na   wungawunga
         and 3SG.M one 3SG.M.say to   3SG.F '3SG COP woman
         apina   bie   -bie   qwang pa lurhmu lihli   na
         DEM.ANAPH 2SG.be -IRR/REDUP beach and 2SG.look low.tide and
         wua   pa suame   mu fiengfieng hji   -ji,   pa me
         2SG.shout and 2SG.go.down fish small   2sg.kill -IRR/REDUP, and 2SG
         bie   -bie   poing'.
         2SG.be -IRR/REDUP there'
         'And she took his black feathers that were there and and she wore them and he
         said to her "You are a woman that lives on the beach and hunts around at low
         tide and shouts out, and goes down to catch small fish to kill and eat there".'

(D.18)   *'Pa nie na   panyua apina   haleng   lie   -lie   fli,*
         and 1SG COP man   DEM.ANAPH 1SG.go.to 1SG.be -IRR/REDUP mountain,
         haleng   fli   ang   teypa hnyalu   pa qlurhnyu hwangli nie
         1SG.go.to mountain so.that people 3PL.come and 3PL.look at   1SG
         naplang -lie   fli   apina   hnyuqwur -qwur.'
         1SG.fly -1SG.IMPERF mountain DEM.ANAPH 3PL.see   -IRR/REDUP
         ' "And I am a man who lives in the mountains, I go to the mountains and people
         will come there and see me flying".'

D.2 *Womia*: 'Womia the mermaid'

(D.19)   *Fihlunga tehing Hehlua tehing wena   te   paca*
         Fihlunga 2DU   Hehlua 3DU   DEM.FAR 3PL Paca

         Fihlunga and Hehlua are both from Paca.[1]

(D.20)   *Tetu wena   wur   ongcie tur*
         3PL DEM.FAR 3PL.fight SG.have money

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[1]*Fihlunga* and *Hehlua* are men's names. *Paca* is a Skou-speaking village to the west of Wutung.

'They fought over money.'

(D.21) *Tehing hnyama hwingqo hnya -qo   hnya -qo   liqla otua*
3DU   going   east   go   -SEQ go   -SEQ stop Otua

'The two of them went east, going and going, until they stopped at Otua.'[2]

(D.22) *Te   sung   hamapoing, pehing tur   lu   -lu   na,*
3PL 3PL.speak thus,   2DU   money 2PL.get -IRR/REDUP ,

asi   Turang tehing Tinga qili qeyngtie turfli pa tingfli,   ang
2PL.go.up Turang 3DU   Tinga qili qeyngtie turfli pa bird-mountain, then

tur   lu   -lu   pa osua lu   -lu
money 2PL.get -IRR/REDUP and osua 2PL.get -IRR/REDUP

'They spoke like this: "If you want money, then go up to Turang and Tinga, they live on top of Money Mountain and Bird Mountain, then you will get money and return".'[3]

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[2]*Otua* is a beachside location, several kilometres east of present-day Wutung.

[3]*Turang* and *Tinga* are the names of two women.

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