

SYNTAX AND PHONOLOGY OF MOTU (PAPUA):
A Transformational Approach

by

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Except where otherwise acknowledged in the text,
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PREFACE

This study aims to extend our knowledge of the Motu language of Papua by giving an account of aspects of the language that have so far been neglected, viz., syntax and phonology. Within the field of syntax, attention is focussed on three important ways of forming complex sentences - relativization, complementation, and coordination. The theoretical framework for the study as a whole is that of transformational grammar. The syntax follows broadly the 'abstract syntax' version of transformational grammar as developed by G. Lakoff and J.R. Ross in particular, while The Sound Pattern of English by Chomsky and Halle has been the main guide in the construction of the phonology.

The work was carried out between May 1967 and June 1970. I am indebted to the Australian National University for the grant of a research scholarship for this period.

I would like to thank my supervisors, Dr D.T. Tryon and Professor S.A. Wurm, for their encouragement and advice during the course of this research. I would also like to thank my fellow students R. Lang and K. McElhanon with whom I discussed problems, Miss M. Rose who supervised the production by computer of a morpheme concordance of some Motu texts, and particularly

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Two periods of fieldwork were undertaken, the first from August 1967 to June 1968 and the second for two months in 1969. These were spent mostly in the village of Tupuseleia. I am particularly indebted to Rage Tau for providing accommodation for several months and being one of my main informants. My other two main informants, to whom I am grateful, were Mahuta Kariko and Renagi Lohia. All the other Motu villages were visited and thanks are due to the following people for providing accommodation and acting as principal informants (except where stated the first person named provided accommodation): at Kapa Kapa, Taunamo Tau, Bou Tauna and Doana Asigau; at Gaile, Win Heri and Tau Vagi; at Barakau, Maraga Momo and Agarua Kopi; at Pari, Puka Oala, Matagu Kevau, and Willie Kwalahu; at Vabukori, Sevese Morea and Philip Airi; at Hanuabada, the United Church provided accommodation, while Rarua Tau was my informant; at Elevala, Morea Igo was my informant; at Tatana, Avivido Guikau, Resena Gaigo and Dick Avi; at Porebada, Dairi Taumaku and Vaburi Dairi; at Boera, Homoka Gudia and Rei Homoka; at Lea Lea, Lohia Gabe and Igo Robert; at Manumanu, Ao Vagi and Akia Vagi. There

are, of course, many others in these villages who helped in some way. To them as a group, I say thank you.

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PRESENTATION AND ABBREVIATIONS

All Motu examples except in the chapter on phonology are given in the usual Motu orthography. < $\bar{g}$ > represents a voiced velar fricative. Morpheme boundaries are indicated by - in the syntax and by + in the phonology.

Glosses are given in capital letters under morphemes. FUT is used for the occurrence of one or both of the future morphemes (see 6.5.1). The person and number of subject and object affixes to the verb are given only where necessary. E.g., 1SSP indicates the first person singular subject prefix, but if a first person pronoun precedes the verb then only SP is written.

Examples are numbered within each chapter.

The following is a list of the more commonly used abbreviations:

Adj	Adjective
Adv	Adverb
AN	Austronesian
Asp	Aspect suffix
<u>Aspect</u>	<u>Aspect of the Theory of Syntax</u> (Chomsky 1965)
BR	Base rule
C	Conjunction; consonant
Cop	Copula
EM	Eastern Motu
excl	exclusive
Fa	Future morpheme a
Fb	Future morpheme b
Fut	Future
G	Glide

IC	Infinitive complementizer
incl	inclusive
Instr	Instrument (suffix)
IOS	Indirect object suffix
Loc	Locative
MD	Motu Dictionary (Lister-Turner and Clark n.d.b.)
MG	Motu Grammar (Lister-Turner and Clark n.d.a.)
MSC	Morpheme structure condition
MTC	Motu text concordance
N	Noun
NAN	Non-Austronesian
Neg	Negative
NP	Noun phrase
O	Object
OM	Object marker
OS	Object suffix
PC	Positive condition
Poss	Possessive
Poss P	Possessive phrase
PP	Postpositional phrase
Ppn	Postposition
PR	Phonological rule
PRD	Partial reduplication
Rel	Relativizer
S	Sentence; subject (in SVO, SOV)
SgSC	Segment structure condition
SP	Subject prefix
SPE	<u>The Sound Pattern of English</u> (Chomsky and Halle 1968)
SqSC	Sequence structure condition
Subj	Subjunctive

T	Transformation
TR	Transformational rule
TRD	Total reduplication
TSM	Transitive verb subject marker
V	Verb; vowel
VP	Verb phrase
WM	Western Motu

1. Introduction

1.1 Setting¹

Motu, an Austronesian language, is spoken in 14 villages on the Central District coast of Papua, from Manumanu to Kapa Kapa, a distance of about 70 miles. There are two main dialects. The Western dialect includes the villages of Manumanu, Lea Lea, Boera, Porebada, Elevala, Tanobada, Hanuabada, and Pari, while the Eastern dialect consists of Tupuseleia, Barakau, Gaile, and Kapa Kapa. This leaves Tatana and Vabukori which may form one dialect or two closely related dialects.² There are today something over 13,000 native speakers of Motu.³

The Motu are surrounded by speakers of both Austronesian and non-Austronesian languages (henceforth AN and NAN respectively).⁴ To the northwest on the coast is the Roro village of Hisiu, while inland around Galley Reach are two AN languages, Gabadi and Doura. Inland behind the Western Motu are the Mountain Koiari, speakers of a NAN language. Related to them are the Koita, who live in nine villages on or close to the coast in the Western Motu area. In addition, Koita people have become attached to all Western Motu villages except Manumanu. Early writers spoke of them as nevertheless remaining distinct (Turner 1877-8: 472; Lawes 1879: 371). However, in these mixed villages the younger Koita today all speak Motu and know very little of the Koita language (Groves, Price, Walsh and Kooptzoff, 1957-8:222; Dutton 1969a:26). Indeed, in Koita villages themselves most people are bilingual, speaking Motu as well as Koita.

Inland from the Eastern Motu are the Koiari and further east the Humene and Kwale, speakers of three more NAN languages. Some Koiari, Humene and Kwale have moved into Motu villages, their descendants becoming native speakers of Motu. Inland from Kapa Kapa and to the south-east are the AN languages Sinaugoro and Hula.⁵

It was soon realized that Motu was related to the speech of neighbouring coastal villages (Turner 1877-8:496). Lawes (1885:Preface) at one time thought that there was one very large language on the south-east coast, saying that the grammar is practically the same from Maiva to East Cape, only the vocabulary varying. In the second edition of his grammar (1888) Lawes included a comparative vocabulary from the area.

More detailed studies of AN languages of the Central District have been made by Ray (1907) and Capell (1943). More recently Pawley and others at the University of Papua and New Guinea have applied the comparative method to the study of these languages (Pawley 1969; Pawley et al, Forthcoming).

It is generally agreed these languages form a group, each being more closely related to the others than to any other AN language and that there are two subgroups. One, in the west, comprises Mekeo, Roro, Kuni, Nara, Gabadi and Doura, while the other, in the east, comprises Sinaugoro and Hula. However, the place of Motu in this scheme is uncertain. Ray (1907:414) put it in the western subgroup, while Capell (1943:11) put it in the eastern subgroup, adding that it could go in the other quite easily. Pawley et al (Forthcoming) suggest that it be put in the west or left separate.⁶

There is no certainty as to the relationship of the AN languages of the Central District to AN languages outside this area. Grace (1955) tentatively divided Eastern Malayo-Polynesian, i.e. the Polynesian languages, almost all Micronesian languages, and the languages east of West Irian, into nineteen subgroups, one of which consists of the Central District languages. However, he suggests no closer relationships between subgroups. Dyen (1965), on the basis of a purely lexicostatistical study, lists Motu, the only Central District language in his study, as ungrouped, i.e. not belonging to an areally limited subgroup. On the wider scene it is grouped in what Dyen calls the 'Heonesian linkage' along with Efate, Fijian, Rotuman, Kerebuto, the Lauic sub-family, Mota and the Polynesian subfamily.⁷ It is not grouped first with Dobu, which of the languages in Dyen's study is the one geographically closest to Motu. Pawley and others (Forthcoming), however, feel that their recent study indicates that the languages most closely related to those of the Central District are some of those in the Milne Bay area, where Dobu is.⁸ This remains to be further investigated.

A major problem is that while there is considerable AN influence in the lexicon and morphology, the syntax is NAN. Ray (1926:597) suggested that the AN element was present in a pidgin form and Capell (1943) posited underlying regional NAN languages for south-east Papua. However, neither idea has won wide acceptance.⁹

In pre-European times the Western Motu went on trading expeditions (gaura) to Gabadi and Doura, and, in a much larger undertaking (hiri) to the Gulf of Papua as

far west as the Purari delta.¹⁰ People from the Gulf also made return visits. In the course of these contacts a trade language grew up which was later used by the police and so gained the name 'Police Motu'.¹¹

The Motu were also regularly visited by people from Hula and still further east. Early writers found Hanuabada to be quite a centre of trade.¹²

In 1872 the London Missionary Society landed a group of Polynesian teachers at Manumanu, but the mission was moved to Port Moresby where in 1874 Dr.W.G. Lawes became the first European to live permanently in Papua. He lived for a number of years at Metoreia, a hill just behind Elevala. Lawes set about learning the language and began to produce printed sheets on an amateur press for use in the schools.

Teachers were placed in most western villages by the end of 1875 and in the east the following year or so (King 1909:73, 93).

In 1877 the first Motu book was printed in Sydney. Called Bukana kunana. Levaleva tuahia adipaia, it included reading lessons, the Ten Commandments, the Lord's Prayer, an epitome of Old and New Testament history, and thirteen hymns. In 1882 appeared a translation of the Gospel of Mark, the work of Lawes and a colleague, Chalmers.

Since then there have been numerous publications in Motu for educational and religious purposes. Probably the majority of Motu are literate to the extent that they can write letters and stories. In the course of a survey made in 1968 to determine the extent of multi-

lingualism in Tupuseleia I found that 86 of the 104 people interviewed were literate.¹³

The London Missionary Society has used Motu for work with other groups. For example, it was used early in the piece among the Roro and Hula and is still used to some extent for work among the Sinaugoro and Koiari, as well as being used until very recently in the training of pastors and teachers from all along the Papuan coast.

The vernacular primary school system set up last century continued among the Motu until the early nineteen-sixties when, following a change in the policy of the Administration, the mission adopted English as the medium of instruction, with Motu used only in the lowest classes. Indeed, in 1968 there were only two mission schools left, at Porebada and Manumanu. Since World War II the Administration has taken an increasingly active part in education. In 1968 the only Motu village without a government school or without one close by is Manumanu. High school education has been available since the mid fifties, and more recently tertiary education. Most men and some women from the villages in and near Port Moresby work in the town, and it is only the extreme western and eastern villages, Manumanu and Kapa Kapa, from which no one travels daily to town for work.

It is not surprising that English is having a considerable influence on Motu, especially in the lexicon. Some older adults fear that their children will soon speak only English but this seems a little too pessimistic, to say the least.

1.2 Past Studies

The first published information beyond word lists¹⁴ is at the end of a description of Motu culture by Turner (1877-8: 496-8).¹⁵ There are miscellaneous notes on the sounds and grammar and some translation from English into Motu. Some errors, particularly in the account of the verb, are due to the fact that for some years the missionaries learnt a mixture of Motu and Police Motu.

A better sketch of the grammar was presented by Lawes who arrived in Port Moresby in 1874, after he had prepared a grammar of the Polynesian language of Niue and translated some parts of the Bible.¹⁶ The first edition of his Motu grammar and vocabulary was published in 1885 based on 7 years' study. Lawes expressed the hope that the book would help in language learning, an aim that has continued in later published grammars, which have all been by missionaries.

In this first grammar very little attention is given to the sound system or the syntax of Motu. The morphology is treated using traditional parts of speech and their characteristics, such as number and gender, as a descriptive framework.¹⁷ However, Lawes used the framework quite well and did not generally allow it to lead him into making erroneous or irrelevant statements. So, e.g., his treatment of the verb suffers more from incorrect forms and omissions than from distortions. The morphology also suffers from a confusion of Police Motu forms with Motu. This confusion is also evident in the Bible translations done at that time.¹⁸ The second edition (1888) differs little from the first as regards the sound system and grammar.¹⁹

In the Preface to the third edition (1896) Lawes says that the grammar has been almost entirely rewritten. One finds no change to the section on sounds but in the section on words there is in particular a good deal more on verbs with an increased understanding of the verb system. However, Lawes is aware that many problems remain and he gives a listing of verb forms about which he says

'The complex arrangement and terminology of grammarians seem quite inapplicable here - I leave my readers to name tense, mood, etc., as they please.' (15f)

He notes (30) for the first time in his published grammars the existence of pidgin Motu (i.e. Police Motu) forms and gives a number of examples showing his realization that omission of the verb prefixes (or particles) involving tense, person and number, and negation was a feature of pidgin Motu, not of Motu itself.

There is more on syntax (four pages instead of two!) but the additions deal mainly with the verb phrase and there is still almost nothing about clause and sentence construction.

In 1930 Lister-Turner and Clark, who both had a long acquaintance with Motu,²⁰ produced a 'Revised Motu Grammar and Vocabulary'. Though the title indicates a revision, the authors state in the Preface what is soon evident to the reader, that the book is almost a new work. There is a comparative study, grammar and vocabulary. The morphology and syntax are more detailed while in general retaining Lawes' descriptive framework. For the first time there is a description

of various types of clauses. This is arranged according to traditional English clause types - adjectival, time, place, cause etc., What Lawes said about the sound system, however, remains basically unchanged and unexpanded.

Chatterton edited a two-volume revision (Lister-Turner and Clark, n.d.a. and n.d.b. - henceforth MG and MD respectively). The changes are generally minor, mostly of format, mainly to benefit language learners. Chatterton disagrees on some points, e.g. he claims that Lister-Turner and Clark's simple past tense can also refer to the present and, second, that there is more of a passive construction than they thought.²¹

Dietz (n.d.) gives an account of the phonemes and allophones of Motu and some information about intonation patterns.

Thus while there has been a series of publications on Motu they have dealt mostly with morphology, the syntax of phrases, and the lexicon. The phonology has received little attention except for Dietz, while only a brief catalogue of clause types has been made - a catalogue which obscures some relationships, as will be seen.

1.3 Aim and Theoretical Orientation

Since, therefore, studies of Motu have so far for the most part said little about syntax and phonology, the aim of this study is to give a fairly detailed account of these areas of the language.²² The particular

syntactic processes to be treated are relativization, complementation, and coordination.

However, to give an account of any part of the structure of a language one must choose a particular theory, be it explicitly or implicitly. That chosen here is transformational grammar (TG). Despite a growing realization of the complexity of natural language grammar and of the limitations of TG as currently conceived, it can fairly be claimed that this theory has provided considerable insight into the structure of languages and is therefore well worth using.²³ This is more so here as TG has so far been applied in the study of only a few languages in Papua-New Guinea²⁴ and not at all, to my knowledge, in the study of AN languages of Papua. But there is one general problem first in that in recent years a few different versions of TG have been developed.

A milestone in the development of TG is Chomsky's Aspects of the Theory of Syntax (1965 - hereafter Aspects), which is a major revision of his earlier theory presented in Syntactic Structures (1957).²⁵ The Aspects model has three main components - syntactic, semantic, and phonological.²⁶ The syntactic component is basic, and contains the creative part of the grammar, i.e., it generates all and only the well-formed strings of formatives (morphemes) of a language. The other components are purely interpretive.

The syntactic component is itself made up of two parts - the base, which contains the phrase structure or base rules (BR) and the lexicon, and the transformational

component which consists of transformational rules (TR). The point in a derivation at which the end of the base component is reached is called the level of deep structure and it is on this level that the semantic component operates to give the semantic interpretation of sentences. After the transformational component has been run through the level of surface structure is reached. Here the phonological component operates to determine the phonetic form of sentences. Chomsky (Aspects: 198, fn.10) assumed that the semantic component is essentially as described by Katz and Postal (1964), while the phonological component is as outlined by Halle and himself in various places, the most recent being The Sound Pattern of English. (1968).

One version that has since developed is Fillmore's case grammar. This will not be outlined here²⁷ but it is interesting that in the conclusion to Fillmore (1968) mention is made that case grammar had been criticised for being based too much on semantic considerations, for it is the place of semantics in grammar that is one of the central points of argument (if not the central point) between the two main streams of thought in TG today. In Aspects, Chomsky took up the problem of the relationship between syntax and semantics in a few places (especially pp 75-9, 148-63), stating that the border between them cannot be strictly defined and that 'A priori there is no way to decide whether the burden of presentation should fall on the syntactic or semantic components' (Aspects: 78). He discusses at some length three alternative ways of sharing the load (153ff).

Chomsky did, however, feel confident that the surface structure'..... is in general almost totally irrelevant to semantic interpretation.....'(162), but since then he has had to modify his view on this point. This new approach, outlined in Chomsky (1969), claims that surface structure is relevant to semantic interpretation. Strictly speaking it is not the last structure formed by the transformational component but rather the structure determined by the phonological interpretation of that structure, with the intonation centre assigned, that is relevant (ibid:35). Jackendoff (1968b) puts forward a slightly different model in which he allows for various places within the transformational cycle to be relevant. He says that it would be nice if it turned out that only the level of the last transformation was involved, but that he has no evidence one way or the other. The evidence on which Chomsky and Jackendoff base their models comes from such things as focus and presupposition, reference, and the scope of negation and quantifiers.

Another development in Chomsky's model is given in his 'Remarks on Nominalization' (1968). He rejects the use of TR's to derive derived nominals (e.g., 'John's refusal of the offer') on the grounds that with them productivity is much more restricted than with gerundive nominals (e.g., 'John's refusing the offer'), the semantic relations between the associated proposition and the derived nominal are quite varied and idiosyncratic, and the nominal has the internal structure of a noun phrase.²⁸ If TR's are used then the transformational component of the grammar will be considerably complicated. Instead Chomsky wishes to extend the base rules (in complexity rather than in number) to handle the derived nominals and keep the

transformational component from being made more complex. This approach Chomsky calls the 'lexicalist hypothesis'. In the latter half of the paper he considers what the new base rules might be.²⁹

In the lexicalist hypothesis TR's cannot be used for derivational morphology so, e.g., both the verb and its nominalization have to be listed in the lexicon. Yet there are regularities that one wants to express, so that the entry for a nominalization costs less than that of a completely unrelated form. Jackendoff (1969a; 1969b) has suggested how this might be done by the use of morphological and semantic rules in the lexicon.

Also working within the lexicalist hypothesis Emonds (1969) has endeavoured to place some quite considerable constraints on TR's. For these constraints to hold, modifications have to be made to both BR's and TR's as presently generally formulated for English. The modifications to the BR's are again in the direction of complicating them.

Others worked in another direction and proposed deep structures more abstract than those in Aspects, the first main work being G. Lakoff's thesis On the Nature of Syntactic Irregularity (1965). He found evidence for what have been called 'abstract verbs', or 'abstract predicates', more of which have since been postulated by, e.g., R. Lakoff (1968) and Ross (1969a). The latter presents a strong case for an abstract verb 'do'. Surface manifestations such as the following provide Ross with evidence for the abstract verb:

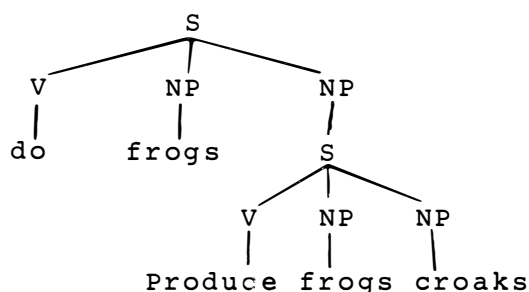
My brother fell over and I did so too.

Here 'so' refers to 'I fell over', and so the object of 'did' is an S:

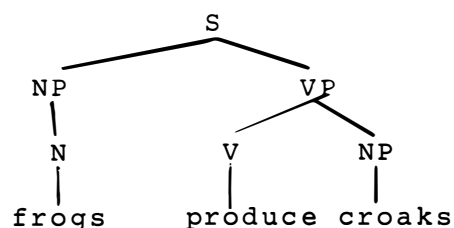
I did S[I fell over]

This suggests that 'do' is always in the deep structure above verbs of action, but that it does not appear on the surface unless the verb of action is deleted for some reason. The following example of its occurrence in the deep structure is Ross'. It also claims that the basic English word order is VSO. An Aspects -type deep structure is given for comparison.³⁰

Ross:



Aspects:



'Frogs produce croaks'.

G. Lakoff (1965) also opened the way to reducing the number of ways of deriving complex sentences to three - relativization, complementation, and coordination - by deriving English adverbs of manner, time, place, etc., by complementation, and this accounted for adverbial clauses too. So the number of base rules required is less than in Aspects (R Lakoff, 1968:169; Langendoen 1969:97). This results in TR's doing more work. Such

a position is called 'abstract syntax'.

Those working on these lines found no natural stopping-point for the deep structures, and the existence of a level of deep structure, such as Chomsky had assumed but which had never really been proved to exist, came into question (e.g. Lakoff and Ross (1967), G. Lakoff (Forthcoming)). The main characteristics of the level of deep structure were said to be (i) it followed the insertion of all lexical items, (ii) it preceded the transformational component, and (iii) it provided the structure for the semantic interpretation. However, it was found that some lexical items could not be inserted until after a number of TR's had applied, e.g., in English 'latter' and 'former' cannot be inserted until all TR's affecting the order of constituents have applied. So there is no point at which all lexical insertion ends and the transformational component begins.

It was also found that if deep structures are made increasingly more abstract one approaches semantic structures. The pushing of this to its extreme by McCawley and G. Lakoff especially, has led to the development of what is called 'generative semantics', though there is no sharp division between it and abstract syntax,³¹ and much of what is said below about generative semantics applies also to 'abstract syntax'. The main characteristics of generative semantics are, first, that there is no separation of syntax and semantics, and that the deep structure is a semantic representation. Thus while interpretive semantics retains syntax as central, though allowing semantic interpretation to take place at various points nearer the surface as well as at the deep structure level, generative semantics makes semantics central. The semantic structures seem

to be extremely close in formal nature to syntactic representations.³² Thus, it seems that both can be given in terms of phrase-markers (G.Lakoff, Forthcoming:55; McCawley, 1967a:21ff). Further, the units and categories of symbolic logic seem basic to both, at least for English. (Lakoff and Ross, 1967; McCawley, 1967a:11ff).³³ It has been found that only a few syntactic categories are relevant at the more abstract levels of representation, viz., S, NP and V.³⁴

This fact, together with the small number of base rules, has led to increased interest in the possibility that there is a universal base (e.g. Bach 1968a:113ff; R. Lakoff 1968:215). However, Peters (1970) has shown that unless much heavier constraints are placed on TR's, it is impossible to have a unique universal base.³⁵ Indeed, at present there is an infinite number of universal bases!

TR's take over most of the work of linguistic description as they make up the single system of rules which convert semantic representations to surface structures (McCawley, 1968a:167). They are, however, essentially the same type as in Aspects. The increase in complexity of the transformational component is not as great as one might at first think, at least for English. The depth of the abstract structures is due largely to the recursive process of complementation and the TR's needed to handle complementation in an Aspects-type grammar can do most of the work. One part of the generative semantics scheme which does require extra TR's is the use of performative verbs or

hypersentences in the semantic representation (Ross Forthcoming; Sadok, 1969). TR's are required to delete these.

TR's are also used in the insertion of lexical items. The lexicon is a set of transformational mappings of parts of phrase-markers into phonological representations. The question arises as to where the insertion of lexical items takes place. This is connected to the problem of whether there is any intermediate level between the initial phrase-marker and the surface, once one has shown that there is no level of deep structure. G. Lakoff (Forthcoming:82) thinks that there may be a level of 'shallow structure', perhaps after the application of the transformational cycle. McCawley (1968c:78) concludes that it may be at this level that lexical insertion takes place. This would at least be better than having the position of lexical insertion unrestricted.

This account of Motu relativization, complementation, and coordination is set broadly within the abstract syntax model. Thus it is assumed that the base will contain only a small number of rules, and they are simple, with TR's doing the rest of the work. But the description is at an intermediate level of analysis (cf. R. Lakoff, 1968:71 fn.16). As little has been done on this part of Motu and as the detail of the abstract syntax-generative semantics approach remains to be worked out, then as a first step it seemed justifiable to present more data at perhaps a superficial level of analysis than to reduce the amount of data handled so as to spend time searching for

quite abstract structures of a smaller range of phenomena. However, the analysis, it is hoped, does reveal some insight into the structural principles of Motu.

On the point of not seeking quite abstract structures, while some think that relativization, complementation and coordination are the only three recursive processes in language, and have suggested that all complex sentences are derived from these three processes only (R. Lakoff 1968:74f) this point has not been pursued to see if it is true of Motu, though the three processes do account for the majority of surface structures. The underlying structure of what are traditionally called adverbial clauses has been left at an intermediate level. For clauses of time, place, etc. (see 3.6), instead, e.g. of positing a series of abstract verbs allowing the clauses to be handled by complementation, as G. Lakoff (1965) did for English, the structure has been left at S NP ai, a sentence embedded in a postpositional phrase, which is a case of relativization. The question of performatives has not been taken up either. However, a certain amount of abstractness has been introduced by the use of some abstract verbs where the evidence in Motu seems to favour them, e.g. to explain the copula (3.5) and the expression ela bona 'until' (5.7).

The model used here mostly fits the Aspects model too. Thus, the base rules used here would be in an Aspects description. However, no attempt is made to go beyond these. For example, while the structure of some adverbial clauses, as mentioned above, is left

at S NP ai, this has not been taken as evidence for a base rule which introduces a postpositional phrase. The question is left open.

The TR's presented here would be the same in an Aspects model except for those TR's needed to handle abstract predicates, viz, plugging-in TR's, since Aspects does not include abstract predicates.

The form of the phonology does not vary from version to version at present.

The recursive processes of Motu syntax under consideration here are processes in English that have received a good deal of attention. This is intentional, as many of the main points of linguistic theory that TG has established have come from the study of English. To describe Motu by itself without consideration of the facts of general linguistic theory would be of no great value. Thus Bach and Harms (1968:vi) quote Ross as pointing out that it makes no sense to talk about 'describing a language in terms of its own structure alone'.

Details of TR's may vary a lot from language to language but one finds the same general processes repeatedly, i.e., adjunction, subtraction, and deletion (Jacobs and Rosenbaum, 1968:28).

This approach does not mean that one squeezes Motu into an English mould. ³⁶ Rather the study of English has revealed certain general facts which seem to occur in a number of languages (at least) and so one

needs to consider Motu in the light of these findings. E.g. study of English and some other languages indicates that there are two basic types of coordination, sentential and phrasal. This is true of Motu, but the evidence is different to some extent, and also while the BR's are the same the TR's differ. On the other hand, studies of complementation in English suggest that the base rule is $NP \rightarrow N S$ with the N being abstract, e.g. 'it', but there appears to be no good evidence for such a structure in Motu, but for $NP \rightarrow S$ instead.

In this study the TR's are not given a precise formulation. Instead, a simple statement is given of what each rule is intended to do. This seems the most useful course for the present. Indeed, recent studies of English, the most studied language, do not generally attempt to write formal rules for it is still felt that such attempts are premature, and would very likely involve ad hoc formulations. (Reibel and Schane 1969:ix; R Lakoff 1968:99,102). Similarly the constituent structures presented are approximate or illustrative rather than precise.

Reservations expressed as to what one might achieve in language description refer to efforts by native speakers. Non-native speakers have an added problem in that they can at best only approach the intuition of a native speaker. In particular Postal (1966:92f) is quite pessimistic about the possibility of a non-native speaker of a language producing much worthwhile in the way of a TG. He lists three ways of obtaining information: (i) learn the language, (ii) infer intuitional facts from observable performance and direct queries, and (iii) train the informant as a

linguist. He says that past linguistic work has used mostly (i) and (ii), and that the knowledge gained this way is very superficial. However, Postal does not quite abandon the idea of working on TG's of foreign languages and he suggests that linguists should learn languages better, pay more attention to training informants as linguists, and use the theory that has developed from the findings of linguists working on their own languages.³⁷ Hale (1965) gives an account of the method of training informants which he adopted.³⁸

Some have been more optimistic than Postal. One of Matthews' two main purposes in writing his Hidatsa Syntax (1965) was to 'find out how much could be discovered of the generative grammar of a language which is not the investigator's native language' (ibid:5). He appears fairly satisfied with the result and says that as his knowledge of Hidatsa increased he only had to elaborate parts of the grammar, not to change it radically (ibid:6).³⁹

R. Lakoff (1968:2f,73) discusses this problem with regard to Latin, especially Latin complementation. Her view is that it is possible at least to outline the principal facts, and she notes that for that matter a good deal, but not all, of the evidence required for the analysis she presents of English complementation could have been found by a non-native speaker who knew English well.

Thus it is probable that a non-native speaker using all available aids can hope to find at least some of the main principles of relativization,

complementation, and coordination in Motu. Among these aids first, as already mentioned, there is available a body of theory of language built up on the basis of the study of languages by native speakers; second, MG and MD have provided a valuable introduction to the language; third, an effort has been made to learn the language; and fourth, and most important, my main informants were very able. They were Mahuta Kariko and Renagi Lohia, both university students aged about 20, who had had some part of their education in Australia, and Rage Tau, a man in his thirties, who had been a primary school teacher and council clerk, and who has spent most of his life in Tupuseleia. Both Manhuta and Renagi had lived in Tupuseleia until the end of their primary schooling and after that had kept visiting the village often. Mahuta told of being ridiculed by Motu from Hanuabada because of his Tupuseleia accent. I feel they are reliable sources of information on Tupuseleia speech. Both show evidence of linguistic insight, and Renagi has studied linguistics at the University of Papua and New Guinea.

Material was collected from both direct elicitation and free texts.⁴⁰ Most of the direct elicitation was done with Mahuta and Renagi, using Wurm (1959) as a guide for a good deal of the time. Twenty-four texts by a variety of people, male and female, aged from 16 to approaching 60, were recorded. They contain about 12,000 words and a concordance was made of them (MTC) by computer at the Australian National University. The main contributors were Rage, who supplied over a third of the text material, and Mahuta. Some texts deal with the Motu way of life, old and new, others recount past history, others tell of events in the storyteller's

life.

The second field trip was spent at Tupuseleia checking points that had arisen in the course of formulating theories on the basis of the first data collected; and in Canberra my wife has been an alert informant.

NOTES.

1. For a general sketch of Motu culture see Groves (Forthcoming a). His bibliography gives other important references. Some ideas about the movements of the Motu in Papua are given by Murray (1912), Holmes (1954), and Oram (1968). Capell (1943), Groves, Price, Walsh and Kooptzoff (1958), and Pawley et al (Forthcoming) consider movements beyond this area. The picture is still unclear.
2. Appendix 1 gives an account of dialect variations. The village names are spelled as in the Village Directory, Department of District Administration, T.P.N.G., 1968. The spellings correspond to the Motu pronunciation except that Lea Lea should be Rearea, Tupuseleia should be Tubusereia, Gaile should be Gaire, and Kapa Kapa, Gabagaba.
3. The population figures for 1968 (except where noted) according to the Administration were:

Manumanu	354	Vabukori	534 (1965)
Lea Lea	845	Pari	911
Boera	477	Tupuseleia	1644
Porebada	1600	Barakau	574
Tatana	821	Gaile	1087
Elevala)		Kapa Kapa	1042 (1965)
Tanobada)	3618 (1965)		
Hanuabada)			

The villages of Elevala, Tanobada, and Hanuabada are known collectively by Europeans as Hanuabada. The census figure is for the group as a whole. Hanuabada is used hereafter in this thesis for the whole group.
4. Dutton (1969a, 1969b, and Forthcoming) gives the most comprehensive account of the NAN languages in this area.
5. The names Sinaugoro and Hula refer to large dialect chains. See Dutton 1969a and Forthcoming.

6. This uncertain position is reflected in the lexicostatistical calculations made on lists I collected from all these languages. Motu's highest percentage is with Doura in the west. Its next highest percentages are with Hula and Sinaugoro in the east and Nara in the west. Doura's next highest percentage is with Nara also, but its percentages with the eastern languages, Hula and Sinaugoro are much lower.

	Nara	Doura	Hula	Sinaugoro
Motu	53	63	55	54
Doura	61	-	46	41

The list used for elicitation was that of Wurm (n.d.), but for the calculations only those items on the list that are also on the Swadesh 200-word list were used - about 140 items, of which about 90 are in the Swadesh 100-word list.

However, not too much weight is attached to the results. Using different lists Dutton (Forthcoming) gets percentages for Motu-Hula and Motu-Sinaugoro that are 8% and 5% higher respectively, while Pawley (1969) gets 6% lower, and even more for Motu-Doura.

7. Dyen's purely lexicostatistical classification has come in for considerable criticism. See e.g. Grace 1966 and Hymes 1966.
8. Other views are given, e.g., by Ray (1894, and 1907:526, where he quotes Schmidt) and Capell (1962, 1969). For early views see Latham (1852:347), Murray (1876:458), Gill (1876:260) and Turner (1877-8:496).
9. See e.g. Grace 1962:409.
- 10 For an account of the hiri see Groves [Forthcoming b

11. For some general information on Police Motu see Brett, Brown, Brown and Foreman (1962a) who also wrote a dictionary (1962b). Pedagogical grammars have been written by Chatterton (1946) and Wurm and Harris (1963). Wurm (1964) compares the structure of Motu and Police Motu.

12. See e.g. Turner (1877-8:471,) Stone (1880:192), Seligman (1910:93), and Oram (1967-8:249).

13. The 104 people were a random sample. See Taylor (1968) for a preliminary study.

14. Macgillivray (1852:317-330) published a list of about 120 items collected in 1849 from the Redscar Bay area. Gill and Murray, who were among those who landed the first missionaries in Papua at Manumanu in 1872 also published word lists (Gill, 1876:260f; Murray 1876: table at end of book). Gill refers to his list of 45 words as 'South-East New Guinea', and Murray to his 72 words as "Redscar Bay and onwards towards the eastern end of New Guinea". Ray (1929:65) says all three lists are Doura or Motu. They all appear to be basically Motu with perhaps a few words from other languages. The almost total absence of /h/ in the lists of Gill and Murray indicates that they were obtained from Manumanu. Macgillivray's list seldom omits / h/ from which it may be inferred that his informants were from some other village, perhaps Lea Lea, the next village east.

15. Turner had lived in Papua only six months when he wrote the paper and so he probably drew heavily on Lawes for his material. At any rate it is of interest as giving the missionaries' first stage in their understanding of the structure of the language. Turner says

'The language is a full one, but bald,, the nouns being indeclinable, and having neither gender nor case, the verbs no moods or tenses, time past, present, and future being gathered from the context ... There are neither articles nor conjunctions; but

particles as to, e, ai be, and the suffixes na, mu, ku which have no meaning, but are used for the sake of euphony and idiom; sometimes the latter denotes the possessive.'

16. See King, 1909:26ff and Tregear and Smith 1903:Preface.
17. Lawes used the same approach in his grammar of Niue, which was added to by F.E. Lawes and published along with a vocabulary by Tregear and Smith (1903).
18. E.g. in the translation of Matthew published in 1883 the prefixes to the verb expressing the modal future affirmative and negative, are used, but others only rarely. (See chapter 6 for the term 'modal future'). The Four Gospels of 1885 shows a few prefixes in past and present tense forms.
19. The main differences between the first and second editions are that the latter has a few pages of phrases likely to be of use to language learners, a comparative vocabulary of 400 words in seven 'dialects' (some would now be called languages) of the south-east coast, and an enlarged vocabulary section.
20. In 1913 Lister-Turner had published 'A Primer of the Motu Language' which aimed "to provide the natives with a suitable medium for learning the English language" (4). It contains little in the way of notes on Motu grammar.
21. Since then Chatterton (personal communication) has had second thoughts on this point and is now undecided.
22. One difference between this study and the earlier ones is that the latter were based primarily on the speech of the Western Motu village of Hanuabada while this study is based on the speech of the Eastern Motu village of Tupuseleia. The main differences in phonology and morphology are known (see Appendix 1). There appears to be little

dialect variation in syntax, so it is expected that most, but not necessarily all, points raised here are true of all dialects.

23. One of the most pessimistic outlooks is that of Postal (1966:lf). More moderate views are expressed by e.g. Langacker (1968:106) and Jacobs and Rosenbaum (1968:vf).
24. See e.g. Dutton (1969b) and Pence (1965).
25. This is in spite of Chomsky saying in the Preface to Aspects that the model he proposed was highly tentative.
26. See especially Aspects: 141ff for an outline of these.
27. See Fillmore 1966, 1968 .
28. He also rejects the use of TR's to derive a 'mixed' form like 'John's refusing of the offer', though he says little about this type.
29. Jackendoff too considers new base rules; see e.g. 1968a.
30. See McCawley (1968b) for evidence that English is a VSO language. Note that the Aspects type structure is hardly removed from the surface structure.
31. See G. Lakoff (Forthcoming) for arguments against syntax being autonomous.
32. G. Lakoff (Forthcoming:83ff) thus rejects what he terms "Arbitrary syntax", i.e. the use of deep structures which do not contain the phrase structure configuration of the meaning of a sentence directly. A common example is the use of IMP in the phrase structure to indicate a command. Lakoff would have something like "I order you that you ..." in the deep structure, to be deleted later. He admits the possibility of a mixed position, but feels it is best from the point of view of methodology to accept an extreme position at this stage.

33. McCawley (Forthcoming) says that Lakoff and he differ slightly in the kind of symbolic logic that is required for semantic representation.
34. It might be thought that N and VP would be basic but Ross and Lakoff (1967) found no syntactic rule referring to N which could not just as easily refer to NP, while rules can equally well refer to S with the subject NP deleted as to VP. Categories like N are needed only nearer the surface, being created by TR's. Fillmore (1968:17) notes that case grammar eliminates VP. There have been a number of papers showing that the underlying forms of various categories belong to one of the basic categories. See, e.g., Ross 1969b, G. Lakoff 1966 and Bach 1968a.
35. See also Peters and Ritchie 1969.
36. There is of course no reason to be different just for the sake of being different. So R. Lakoff (1968:99) notes that the rules for Latin complementation may be practically the same as for English, though they need not be, so why make them different.
37. Postal seems to have got increasingly pessimistic about the writing of grammars, and it may well be that he now has next to no hope for work by non-native speakers.
38. It was not until near the end of my second field trip that I had the opportunity to read this article, but I found that I had used some similar techniques even if less systematically - e.g., getting informants to give underlying sentences. Indeed, Samarin (1967:203f) notes that Hale's informant would be a good one for any field worker and says that "at the moment it is difficult to say exactly how a transformationalist's field techniques differ from anyone else's". One can agree with the first statement but in regard to the second it does seem that the transformationalist is going to be more concerned than other linguists with techniques, such as Hale's, designed to reveal the native speaker's intuition.
39. Cf. Hale's (1967:332f) favourable review comment.
40. Many helpful suggestions on field methods were found in Samarin 1967 and A. Healey 1964.

2. Base Rules

2.1 Base Rules

Here are given the base rules that are used in this study. There is also mention of a few points involving TR's that are needed for the understanding of the various surface structure examples presented.¹

(BR I) S → NP (NP) V

A sentence (S) comprises either a noun phrase (NP) and a verb (V) or two noun phrases and a verb. The first NP is the subject of the V, the second is the object. The order of the constituents is arguable. That chosen, SOV, is the one most commonly found on the surface.

(1) NP [Loa] NP [aniani] V [e - nadu]
 LOA FOOD (SP) COOK
 'Loa cooked the food.'²

(2) NP [Loa ese] NP [Raka] V [e - kwadi -a]
 LOA (TSM) RAKA (SP) HIT (OS)
 'Loa hit Raka.'

A brief explanation of these surface structures is necessary for the understanding of these and later examples. The verb has a prefix, SP, which agrees in person and number with the subject and a suffix, OS, if the verb is transitive, to agree with the object in person and number.³

The object suffix occurs generally only if the object is a count noun and with plural objects only if the noun is animate. These affixes arise through the application of TR's. The details have not been worked out but presumably there are two operations, the first attaching certain features to the verb, viz., the person and number of the subject and object, and the second inserting the appropriate affix for these features. When the reference is clear it is possible to delete the subject or object NP or both and rely on these affixes alone to indicate the subject and object. E.g.

- (3) Na - ita - mu
(1S SP) SEE (2SOS)

'I saw you'.

1S indicates first person singular and 2S second person singular.

The tense in (1) and (2) is past, for which there is no overt marker.

Ese in (2) is the transitive verb subject marker (TSM) and is inserted by a TR. It need not appear when there is no possibility of the object NP being taken as the subject and so is absent from (1).

An example where there is no object NP is:

- (4) NP [Lai] V [e - toa]
WIND (SP) BLOW
'The wind blew.'⁴

To return to the question of the basic word order, there are instances where the order SVO appears or where at least the order of constituents is not what one expects from an underlying SOV order. Where a sentence appears as the object complement of a verb then it generally occurs after the verb.

- (5) NP[Ia] V[e- ura - mu] NP [S[ita bai - ta - la]]
 HE (SP) WANT (ASP)⁵ WE (incl) (FUT) (SP) GO
 'He wants us to go.'

If SOV is basic then a TR is needed to move these object S's to the right of the verb. This can be explained for, as the object S has no special marker, if there was no movement TR there would be the confusing surface structure of one S embedded in another S but with no sign that the first NP was not the subject of the first V. With further embeddings the possibility of confusion is increased.

- (6) NP[Ia] V[e - ura - mu] NP[S[lau ese] [oi]
 HE (SP) WANT (ASP) I (TSM) YOU
 [bai - na - hamaoro - mu] [ba- o - ma]
 (FUT) (SP) TELL (IOS) (FUT) (SP) COME
 'He wants me to tell you to come.'

would be, without the movement TR,

- (7) *NP[Ia] NP[S[NP[lau ese] NP[oi]
 NP[S[ba-o-ma]] V[bai-na-hamaoro-mu]]] V[e-ura-mu]

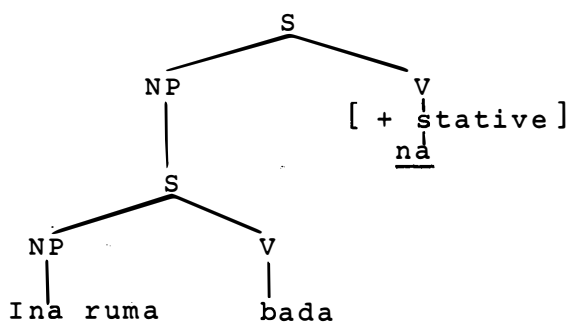
Another instance which does not reflect SOV order is equational sentences. The particles na and be are the copula.

- (8) Ina ruma na bada
 (DEM) HOUSE (COP) BIG
 'The house is big'.

If the copula is to be treated as the surface form of an abstract verb [+ stative], (as I think it should - see chapter 3.5) then one would expect it to appear at the end of the sentence and not in the middle.

- (9) *Ina ruma bada na.

The deep structure is:



The same problem arises from the surface structure of the verb in an abstract syntax analysis, though here the position is not clearcut. The surface structure is

Future marker a - Negative - Future marker b - SP -
 Subjunctive-Direction - Causative - Reflexive - V root -
 Transitivity-Instrumental - OS - Adverb 1 - Adverb 2 -
 Aspect⁷.

Abstract syntax would derive the tense and aspect markers, negative, subjunctive, direction, causative, instrument, and adverb from abstract verbs or predicates. If the

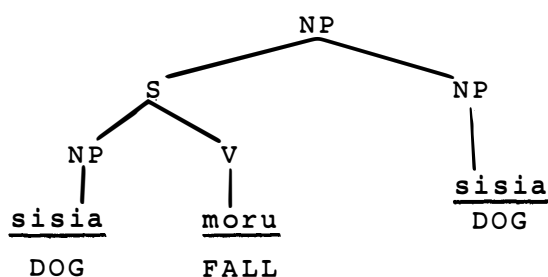
basic order is SOV one would expect the surface form of these predicates to be suffixes, just as one expects the copula to follow the main V. But only three are, the rest being prefixes.

So, while the facts do not all point in one direction, SOV is chosen. The SVO evidence can be explained away easily in the case of the S as object complement, while the force of the last two cases depends on the weight you give to such analyses.

(BR 2) $NP \rightarrow S \ NP$

A NP may consist of an S and another NP. This is the deep structure for relativization, i.e. the source of restrictive relative clauses.⁸

For relativization to take place, however, there must be a NP in the embedded S that is identical with the NP immediately to the right of the embedded S. Though as Chomsky notes (Aspects:177ff,234) it is not strict identity that is required but rather nondistinctness or a sharing of inherent features only. The term 'coreferential' is used for this nondistinctness.



This⁹ on the surface becomes, using the past tense form,

- (10) S[sisia e - moru] sisia - na
 DOG (SP) FALL DOG (REL)
 'the dog which fell'

though usually the occurrence of the identical NP's that is in the embedded S is deleted, forming

- (11) S[e - moru] sisia - na

Such a structure as (12) has been overlooked in past studies and it might be thought that it is something other than relativization, say apposition. But a sentence like the following can only be an example of relativization.

- (12) S[oi ese gaigai o- ita - ia] gaigai - na lau
 YOU (TSM) SNAKE (SP) SEE (OS) SNAKE (REL) I
 ese na - pidi - a ¹⁰
 (TSM) (SP) SHOOT (OS)
 'I shot the snake that you saw.'

The first occurrence of gaigai is in the embedded S, as it is between the subject and verb of that S. For apposition the first occurrence of gaigai would have to be outside the relative clause, as in (13)

- (13) hari gaigai, S[oi ese o-pidi-a] gaigai-na
 lau ese na-ita-ia
 'I saw that snake, the snake which you shot.'

The main question is whether the base rule should not be

$NP \rightarrow S N$

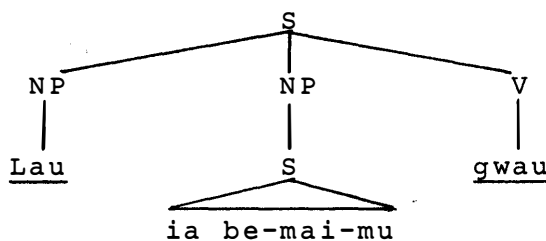
The rejection of this form is on general grounds, and not on specifically Motu evidence. As already mentioned, the abstract syntax and generative semantics approaches have ruled out N as a basic category, so unless N is necessary here it is preferable to have NP. Even Jacobs and Rosenbaum (1968:49), using an Aspects-type approach, prefer NP to N, in particular because relativization seems to involve the identity of a NP in the embedded S with a NP outside that S, and not just with a N, though they admit specific evidence for NP as against N is hard to find.

(BR 3) $NP \rightarrow S$

The expansion of NP as S provides the deep structure for complementation. E.g. the deep structure of

- (14) Lau na - gwau - mu S [ia b - e - mai - mu]
 I (SP) THINK (ASP) HE(FUT)(SP)COME (ASP)
 'I think that he will come'.

is

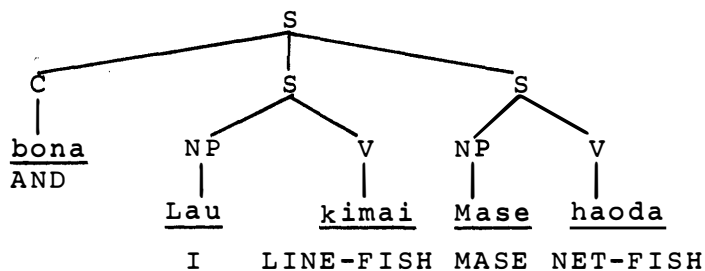


The position of the complement S in the surface structure is, as mentioned earlier, the result of a TR which moves it from before the V to after it.

No evidence has been found for any abstract pronoun or the like which might lead to a rule $NP \rightarrow NP\ S$ or $NP \rightarrow N\ S$ such as have generally been proposed for English.

(BR 4) $S \rightarrow C\ S^*$

In this study there are two base rules that introduce coordination, this rule and BR5. The asterisk denotes a rule schema, viz., an abbreviation of an infinite series of rules. BR 4 is the deep structure for sentence coordination, C being a conjunction. It provides the deep structure



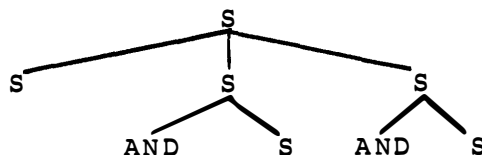
for the surface sentence

- (15) Lau na - kimai bona Mase e - haoda
 'I fished with a line and Mase fished with a net'.

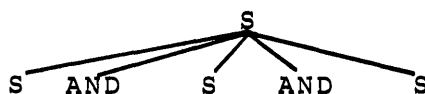
The form of BR 4 is basically that of Ross (1967:89ff) which Ross intended as a universal definition, viz.,

$$S \rightarrow \begin{Bmatrix} \text{AND} \\ \text{OR} \end{Bmatrix} S^n \quad \text{where } n \geq 2$$

He argues that the position of AND in the deep structure is as in



and not



That is, AND forms a constituent with the following S and is not a constituent by itself (at this level). He gives three syntactic arguments and some phonological evidence. Where Motu evidence is available it points in the same direction. Thus Ross' first syntactic reason is that when a conjoined S is broken into two S's the conjunction always goes with the second S.

- (16) Lau ranu na - utu - mu bona tadi - gu ruma
 I WATER (SP)DRAW (ASP) AND SISTER-MY HOUSE
e - daro - a - mu
 (SP)SWEEP (OS) (ASP)

'I draw the water and my sister sweeps the house'.

(16) may be divided into (17)

(17) Lau ranu na-utu-mu. Bona tadi-gu ruma e-daro-a-mu.

but not into (18)

(18) * Lau ranu na-utu-mu bona. Tadi-gu ruma e-daro-a-mu.

This applies to ma 'and' as well as bona¹¹.

Ross' phonological evidence is that pauses come before coordinating conjunctions, not after them or equally before and after. This is so also in Motu.¹²

Ross needs two TR's to operate on his base rule - T-Conjunction Copying, which comes after T-Conjunction Reduction, and a TR that deletes the initial AND in certain situations (See chapter 5).

Schane (1966:5) has a slightly different rule form:

$$S \rightarrow \#S\# \left(\left\{ \begin{array}{c} \text{AND} \\ \text{OR} \end{array} \right\} \#S\# \right)^n \quad \text{where } n \geq 1$$

Ross derives 'both...and...' and 'either...or...' from 'and...and...' and 'or...or...' respectively, but Motu does not have such a surface construction. So Schane's rule means that you can have one less TR in Motu than Ross' rule requires. But Schane puts all the occurrences of AND or OR in before T-Conjunction Reduction which would complicate that rule. That is, in more general terms, Ross only puts one AND in by BR's but Schane them all.

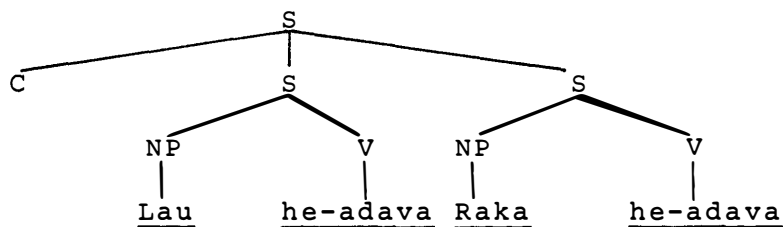
(BR 5)

NP $\rightarrow$ C NP*

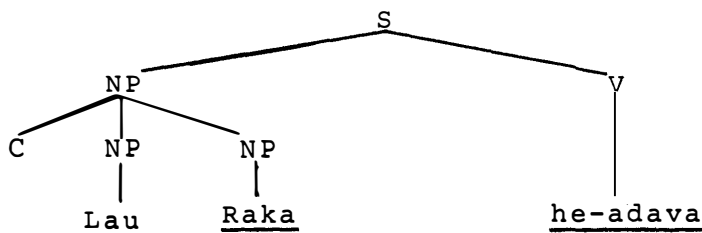
This rule provides for phrasal conjunction, of NP's, in the deep structure. Such a rule is needed because not all instances of coordination can be derived from BR4. Take, e.g., the following sentence:

- (19) Lau bona Raka a - he-adava ¹³
 I AND RAKA (SP) MARRY
 'Raka and I married.'

This is ambiguous, as it may mean either (i) that Raka and I married each other, or (ii) that Raka married someone and I married someone else. (ii) is derived from sentence conjunction.



As (i) does not mean the same as (ii) then it must have another deep structure. This is phrasal conjunction:



Another example is

- (20) Loa bona Hekoi e - la
 LOA AND HEKOI (SP) GO
 'Loa and Hekoi went.'

This may mean (i) Loa and Hekoi went separately, if the deep structure contains sentence conjunction, or (ii) Loa and Hekoi went together, if the deep structure contains phrasal conjunction.

Gleitman (1965), however, tried to account for such data in English by suggesting the following type of derivation from sentence conjunction:

Tom married Mary and Mary married Tom.
 Tom and Mary married each other.
 Tom and Mary married.

Lakoff and Peters (1966) argue against such an approach in English. Such a derivation can be argued against for Motu also. There are some cases where on Gleitman's theory one would need to have 'with' in the English deep structure, and ida in Motu.

One would derive

- (21) Raka bona Hekoi ese Loa e - ala - ia
 RAKA AND HEKOI (TSM) LOA (SP) KILL (OS)
 'Raka and Hekoi killed Loa.'

from

- (22) Raka Hekoi ida Loa e-ala-ia bona Hekoi Raka ida
Loa e-ala-ia

But there are good grounds for not having ida in the deep structure.

Pairs of sentences like the following

- (23) Raka bona Hekoi ese Loa e - kwadi - a
 RAKA AND HEKOI (TSM)LOA (SP)HIT (OS)
 'Raka and Hekoi hit Loa'.

and

- (24) Raka Hekoi ida ese Loa e - kwadi - a
 RAKA HEKOI WITH (TSM)LOA (SP) HIT (OS)
 'Raka together with Hekoi hit Loa'.

are paraphrases. It would be unsatisfactory if one had to place one NP as subject or object in the deep structure and the other as in a postpositional phrase. There are indeed two points in the grammar of the construction that indicate that NP bona NP is the deep structure.

First, the TSM ese follows the postpositional phrase.¹⁴

- (25) Hekoi Raka ida ese lau e - ita - gu
 WITH (TSM)ME (SP) SEE (OS)
 'Hekoi (together) with Raka saw me'.

For this to happen means that NP ida is treated as part of the subject of the verb, not as a separate postpositional phrase.

The second point is agreement. When the ida phrase occurs before the verb then it is almost always included with the other NP for purposes of agreement between subject or object and the verb.

(26) Lau bona Raka a - he-davari

(SP) MEET

"Raka and I met."

(27) Lau Raka ida a - he - davari

(SP) MEET

'Raka met me.'

(28) Lau na - he - davari Raka ida

(SP)

'I met Raka.'

a- is the 1st pl. exclusive subject verbal suffix. na- is the 1st sg. prefix and appears when the NP ida phrase is moved out beyond the verb, i.e. out of the subject position.¹⁵

An example with object agreement is

(29) Hekoi ese lau bona Raka e - ita- mai

(TSM) ME AND (SP) SEE (OS)

(30) Hekoi ese lau Raka ida e-ita-mai

(31) Hekoi ese lau e-ita-gu Raka ida

All mean 'Hekoi saw Raka and me.'

-mai is the 1st pl. exclusive object verbal suffix, while -gu is the 1st sg. form.

One may note in passing that this means the agreement TR's may not apply until after the operations on the conjoined constituents have concluded.

Sentences do occur where the verbal prefix is singular even though there is a string NP NP ida.

- (32) Lau ia ida na - la
 I HE WITH(1SSP)GO
 'I went with him.'

Here na-la occurs instead of a-la.

Lister-Turner and Clark (1930:49) suggested that this meant that one was thinking of oneself only, instead of both people. This explains some examples elicited but not all. Thus in the following examples it seems that the point is whether one goes with one person or more. The verb agrees with the NP before ida in number but with the other NP in person (the 'obvious' subject, as it were).

- (33) Oi daika ida o - la? Lau ia ida na - la (or, a-la)
 YOU WHO WITH (SP) GO I HE WITH (1SSP)GO
 'Who did you go with?' 'I went with him.'

- (34) Oi dai-dia ida o - la? Lau idia ida a-la (not na-la)
 WHO (pl) I THEM
 'Who (pl.) did you go with? I went with them.'

More work needs to be done on this point.

Then too there does not seem to be any intermediate step as there is in English 'each other', just as 'Raka and Hekoi hit Loa with each other' is unacceptable in English.

'Raka and Loa saw each other' is

(35) Raka bona Loa e-he-ita heheni

but

'Raka and Loa married (each other)' is

(36) Raka bona Loa e-he-adava.

he- and heheni occur with reciprocal actions. Why does heheni not appear with he-adava 'marry'? At first one might think that it is because the verb is of necessity a reciprocal, i.e. Raka ese Loa e-adava-ia 'Raka married Loa' entails Loa ese Raka e-adava-ia 'Loa married Raka'. But Raka bona Loa e-he-adava is not necessarily reciprocal. he- in this instance means that more than one person is needed for the action to take place. The other person(s) may or may not be named, though with some verbs they must be named, e.g. he-davari MEET. Some verbs with he having this meaning are:

<u>he-adava</u>	'marry'
<u>he-bou</u>	'hold a meeting'
<u>he-rosi</u>	'embrace'
<u>he-tura</u>	'make friends'
<u>he-varavara</u>	'enter a kin relationship'
<u>he-ai</u>	'quarrel'
<u>he-atu</u>	'fight'
<u>he-paisi</u>	'fight'

Apart from the two meanings of he- given above, it is also used for the reflexive. na-he-iva means 'I cut myself'.

Finally there is the problem of whether other categories are conjoined in the base. Fidelholtz (1964), for example, proposed using rule schemata for all major categories, but very little work has been done outside S and NP. In abstract syntax the only other basic category is V, and it may be that a rule like $V \rightarrow C V^*$ is needed to handle sentences such as

The car is blue and red.

Dik (1968:112) says that one reason for the tendency to deal only with S and NP is that the device of a rule schema is very powerful and there has been reluctance to use it more than is really necessary. So, it may be that at least a rule for V will prove to be needed in Motu grammar, but this is left for the present.

2.2 Some Surface Structure Notes.

There are certain surface structures - NP's, possessive phrases, and postpositional phrases- for which deep structures are not worked out here, or, in the case of NP's, are only partly worked out. However, it is necessary to know at least the surface structure constituents of these phrases to facilitate understanding of the Motu sentences given later.

2.21 Noun Phrases

The surface form is

(Demonstrative) Noun (Adjective) (Numeral)

E.g.,

- (37) unu sisia bada-dia rua
 THOSE DOGS BIG (REL) TWO
 'those two big dogs '

Almost all nouns are invariable for number, so e.g. sisia means 'dog' or 'dogs'. Adjectives are derived from relative clauses, as described in chapter 3. However, the deep structures of the demonstratives and of numerals have not been investigated nor has the question of determiners. The demonstratives vary for number and as to whether an object is near the speaker, near the hearer, or away from both. A noun phrase may consist simply of a pronoun.

	Singular	Plural
1st	<u>lau</u>	<u>ita</u> (inclusive) <u>ai</u> (exclusive)
2nd	<u>oi</u>	<u>umui</u>
3rd	<u>ia</u>	<u>idia</u>

2.22 Possessive Phrases.

There are two ways of expressing possession. One, which indicates inalienable possession, is to add a suffix to the possessed noun, e.g. sina -gu

'mother-my'. The appropriate pronoun may appear before the noun, e.g. lau sina-gu unless a noun is present, e.g. una tau sina-na 'that man's mother'.

The suffixes are

	Singular	Plural
1st	<u>-gu</u>	<u>-da</u> (inclusive) <u>-mai</u> (exclusive)
2nd	<u>-mu</u>	<u>-mui</u>
3rd	<u>-na</u>	<u>-dia</u>

The other way is for what MG calls a 'possessive adjective' to occur between the possessor and possessed NP's. The same suffixes occur as for inalienable possession, but this time they are attached to the possessive adjective. E.G., e-gu ipidi 'my gun' ina tau e-na reke 'this man's net'. Again a pronoun may precede, e.g. lau e-gu ipidi.

Some morphemes may be possessed in either way, but with a difference in meaning.e.g.

sivarai-gu 'story-my'.i.e. the story about me.
e-gu sivarai 'my story'.i.e. the story I tell.

2.23

Postpositional Phrases.

These have the form NP + postposition and indicate, in particular, location, time, reason, instrument, and accompaniment.

<u>hanua</u> <u>ai</u>	<u>kaia</u> <u>amo</u>
VILLAGE IN	KNIFE WITH
'in the village'	'with a knife'

There are also 'compound postpositions', whose surface form is that of noun + possessive suffix + postposition, E.g.,

ruma lalo- na ai
 HOUSE INSIDE ITS IN
 Lit. 'in the inside of the house', i.e., 'in(side)
 the house'

sea lata - na ai
 CHAIR TOP ITS AT
 Lit. 'at the top of the chair', i.e. 'on (top of) the
 chair'.

These compounds have been written in publications on one word, e.g. lalonai. They have generally been broken up in this study as it is important to recognise the morphemes they consist of.

NOTES

1. MG contains some information on the language that is not given in this study.
2. The translations are intended to be a smooth English equivalent. Glosses for individual morphemes are given in capital letters. Those for grammatical morphemes are bracketed. Some much repeated morphemes are not always glossed, nor are some for which a label is difficult and which are not central to this study.
3. Earlier studies have written SP as a particle, along with certain tense markers, while OS has been treated as a suffix. This seems quite arbitrary. Both preceding 'particles' and the suffixes are all part of the verb word which has only one primary stress. None of these morphemes are separated by a brief pause from preceding or following morphemes in the way that the markers of NP's as subjects, ese and na (see note 4) are. na as copula (see example 8) appears to be stressed differently again, for here it is not a clitic after the subject but rather independent or even sometimes grouped phonologically with the following complement.
4. The particle na may occur after a NP which is the subject of an intransitive verb, but this is more common in the Western Motu than the Eastern dialect. It has not been used in this study.
5. ASP indicates an aspect as suffix. There are two: -mu for present and future continuous or habitual and -va for the past.
6. IOS is the indirect object suffix. When an indirect object occurs then a suffix that agrees with it in person and number is added to the verb. In this case no direct object suffix occurs.
7. See 6.5.1 for the forms of these affixes.
8. Non-restrictive relative clauses are derived from underlying coordinate structures. See chapter 5.
9. Generally only relevant items are included in trees. So. e.g. the subject prefix of the verb moru appears in the surface structure example but not in the tree.

10. In this example the object precedes the subject. This arises from the operation of an object-preposing transformation which may apply when the object NP is considerably longer than the subject NP. The particle na may then be placed after the object.

11. ma has other meanings such as 'also, more, again', but only ma 'and' is referred to here.

12. Pauses do occur after bona 'and' but are due to memory limits, i.e. wondering what next to say, and are not the normal pattern. There are often pauses after bena 'and then' - *bona bena does not occur - which also seems due to memory limits, though it may be partly explained if bena is derived from an embedded S as Lakoff and Peters (1966:123) suggest for English 'then', i.e. 'then' is from 'and after it S'.

13. See below for explanation of -he-.

14. See 2.23 for a note on postpositional phrases. T-Postposition Adjunction is dealt with in 5.9

15. This is by T-Conjunct Movement. See 5.9

3. Relativization

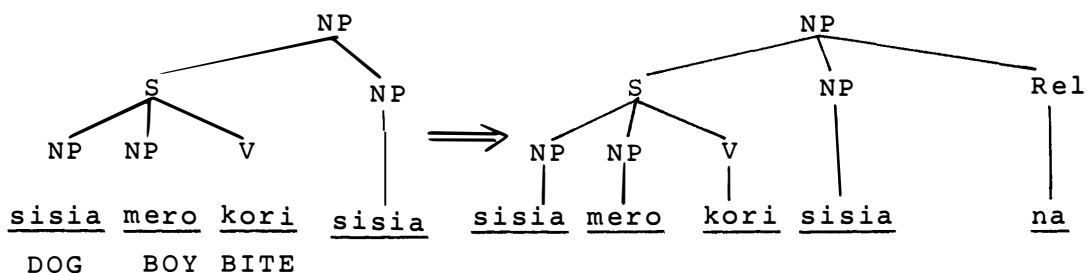
3.1. The Transformational Rules.

BR 2 $NP \rightarrow S \ NP$ provides the deep structure for relativization. There are three TR's specifically concerned with the derivation of relativization:

(1) Relativizer Placement, (2) Relative Clause NP Deletion, and (3) gau Substitution

3.11 Relativizer Placement.

This obligatory TR inserts the relativizer which is suffixed to the N of the NP immediately to the right of the embedded S, or to a following adjective if there is one. The operation may be shown as:



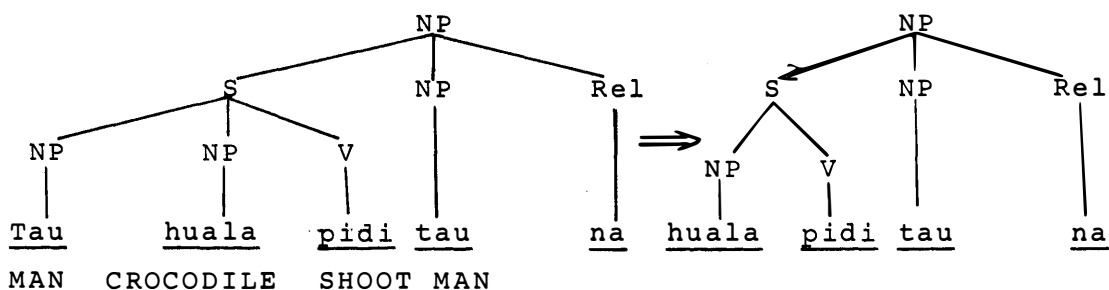
For the present the relativizer has been attached to the dominating NP, and not to the dominated NP, but there is no specific reason for this. A possible surface structure is:

- (4) Lau ese [gaigai e-ita-ia] mero-na ta na-herevaheni-a
 I (TSM) SNAKE (SP) SEE(OS) BOY(REL) A (SP) SPEAK TO(OS)
 'I spoke to a boy that saw the snake'.

The relative clause here is formed by the application of the next TR to be dealt with, as with ta'one'one cannot just apply Relativizer Placement. The general question of the article, however, is not taken up in this study.

3.12 Relative Clause NP Deletion.

This TR deletes the NP in the embedded S that is identical to the NP immediately to the right of the embedded S.



A possible surface structure is:

- (5) S[huala e - pidi - a] tau - na
 CROCODILE (SP) SHOOT (OS) MAN (REL)
 'the man who shot the crocodile'

This TR is optional, though there are some cases mentioned later where it is obligatory. Even when it is optional it is very often applied.

- (6) Lau ese S[huala e-pidi-a] tau-na na-ita-ia
 I (TSM) (SP) SEE (OS)
 'I saw the man who shot the crocodile'.

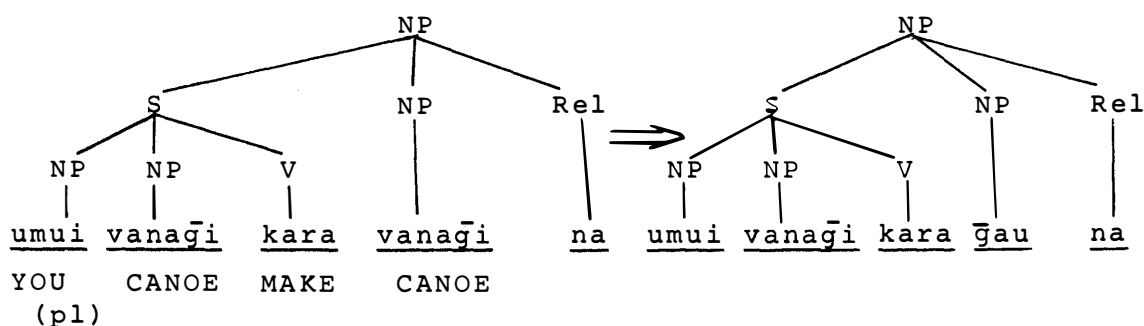
- (7) S[Raka ese e - kwadi - a] mero - na e - tai
 RAKA (TSM) (SP) HIT (OS) BOY (REL) (SP) CRY
 'The boy whom Raka hit cried'.

In (7) the NP that is deleted is the object in the embedded S.

The verb in the embedded S in its surface representation has affixes which are determined by the NP's that are its subject and object, so the agreement transformation must apply before Relative Clause NP Deletion.

3.13 gau Substitution.

This optional transformation may apply if the noun in the coreferential NP's is non-human. It follows Relativizer Placement and Relative Clause NP Deletion and may apply only if the latter has not been applied. That is, the structural description for this TR includes both occurrences of the coreferential NP's. In this transformation the NP immediately to the right of the embedded S is replaced by gau 'thing'.



A surface structure example is

- (8) S [umui vanagi o - kara -ia] gau-na tama-gu ese
 YOU (pl)CANOE(SP) MAKE (OS) (REL) FATHER-MY(TSM)
e - hoi - a
 (SP) BUY (OS)
 'My father bought the canoe that you made'.

In (9) the coreferential NP is subject of the verb in the embedded S:

- (9) Raka ese s[boroma kaema e - ani] gau-na e-lulu-a
 RAKA (TSM) PIG SWEET POTATO (SP) EAT (REL)(SP)CHASE(OS)
 'Raka chased the pig that ate the sweet potato'.

There would appear to be an ambiguity in sentences like

- (10) S [sisia ese pusi e - kori -a] gau - na na lau - egu
 DOG (TSM) CAT(SP) BITE (OS) (REL)COP MINE

One would expect (10) could mean both 'the dog which bit the cat is mine' or ' the cat which the dog bit is mine'. However, it can only mean the former, and for the latter T - Object Preposing must be applied.

- (11) S [pusi³ sisia ese e-kori-a] gau-na
 'the cat which the dog bit'.

Of course, if Relative Clause NP Deletion is applied instead then there is no ambiguity as the original noun remains with the relativizer suffixed to it.

The above ordering of the transformations seems preferable to the alternative of reversing the order of Relative Clause Deletion and gau Substitution. If the latter is ordered second then two different operations are required of the last TR. Take mero'boy' and boroma'pig' as examples. With Relativizer placement as 1, gau substitution as 2, and Relative Clause NP deletion as 3, the derivation would be:

- | | | |
|----|---|---|
| 1. | (a) <u>mero</u> ... <u>mero</u> + <u>na</u> | (b) <u>boroma</u> ... <u>boroma</u> + <u>na</u> |
| 2. | | <u>boroma</u> ... <u>gau</u> + <u>na</u> |
| 3. | <u>mero</u> + <u>na</u> | <u>boroma</u> + <u>na</u> |

The third TR has to delete an occurrence of mero, while it has to move boroma out of the embedded S and replace gau with it.

If the ordering is done as suggested, with Relative Clause NP deletion as 2 and gau substitution as 3, but trying to make the derivation go through all 3 TR's you get:

- | | | |
|----|---|---|
| 1. | (a) <u>mero</u> ... <u>mero</u> + <u>na</u> | (b) <u>boroma</u> ... <u>boroma</u> + <u>na</u> |
| 2. | <u>mero</u> + <u>na</u> | <u>boroma</u> + <u>na</u> |
| 3. | | <u>boroma</u> ... <u>gau</u> + <u>na</u> |

Here gau Substitution involves in addition placing a copy of boroma in the embedded S again.

Thus it seems better to use the order chosen here, with gau Substitution only applying if Relative Clause NP Deletion has not applied.

3.2 MG on Relative Clauses.

MG (30,43) gives six examples, in all of which Relative Clause NP Deletion has applied. In five the coreferential NP in the embedded S is the subject, in one it is the object and the dominating NP is the subject all times except one where it is the object. Thus the range of examples is limited.

Tau-na (tau'man'), hahine-na (hahine 'woman') and gau-na are set up as relative pronouns. But MG adds that a large range of nouns can be used in this way. In fact, any noun can! Thus, clearly MG was not claiming any real pronoun function for these words, but just saying that whereas English has relative pronouns Motu has a noun with a suffix. Even the gau examples given by MG are restricted to where it means "the things which, what" and do not include its use in place of a specific noun which T - gau substitution brings about. MG nowhere gives examples of structure such as this TR forms.

MG says na is very commonly used as "a connective particle between the principal and subordinate clauses". This is not true of my Tupuseleian data in that it occurs, but not commonly. It seems this use of na is characteristic of the Western dialect (Chatterton, personal communication). E.g.,

- (12) S [Medu bai-ne-diho] nega-na-ai na idia bai-e -heau
 RAIN (FUT) (SP) FALL TIME (REL) THEY (FUT) (SP) SET OUT
 'When it rains they will set out'.

This is an example of a time clause which is formed by relativization (see 3.62). The examples in MG are not really cases of na joining clauses but of na marking the subject of an intransitive verb, e.g.

- (12a) S[boroma e - ala - ia] tau - na na vada e - ma
 PIG (SP) KILL (OS) MAN (REL) COME
 'The man who killed the pig has come'.

3.3 Further Examples of Relativization

At least in intermediate structures NP's are found as subjects, objects, direct and indirect, in postpositional phrases, in possessive phrases, and in a number of constructions involving the copula. The examples given above have involved NP's in embedded S's as subjects and direct objects. The copula and postpositional phrases concerned with adverbial clauses will be dealt with below. Here we shall look at the remaining cases.

3.31 $\bar{g}au$ as Coreferential NP

When $\bar{g}au$ is the coreferential NP the relativization TR's apply as usual. However, $\bar{g}au$ Substitution applies vacuously as $\bar{g}au$ is already the NP present immediately to the right of the embedded S. In (13) Relativizer Placement and Relative Clause NP Deletion have applied.

- (13) Lau S[Raka ese e - haheitalai - gu] $\bar{g}au$ - na na-hoi - a
 I RAKA (TSM) (SP) SHOW (OS) THING (REL) (SP) BUY (OS)
 'I bought {the thing that} Raka showed me.'
 {what}

An interesting paraphrase has been noted with certain verbs such as ita 'see' and diba 'know'.

(14) S[oi ese o - kara -ia] gau - na na - ita -ia
 YOU (TSM) (SP) DO (OS) THING (REL) (1SSP) SEE (OS)

(15) S[dahaka o-kara-ia] na-ita-ia
 WHAT

Both mean "I saw what you did", though (14) contains a relative clause and (15) an embedded indirect question. (dahaka means 'what' in direct and indirect questions). This situation is very similar to what Baker (1968, 1969) found for English where there are synonymous pairs of sentences like

'John knows the kind of movie that Alice prefers'
 and

'John knows what kind of movie Alice prefers'.

In his earlier work he considered the indirect question to be basic and the other to be an optional variant while in the later paper he suggests that rather the two constructions are derived from different base rules and that their synonymy is accounted for by interpretive semantic rules. In the absence of any thorough study of Motu questions, the relationship of the two Motu constructions is not taken up here.

There is even a third form which appears to be a 'combination' of the other two:

(16) S[oi dahaka o - kara] gau - na na-ita-ia
 YOU WHAT (SP) DO THING (REL)

3.32 NP as Indirect Object in the Embedded S.

The relativization process is the same as for subject or object.

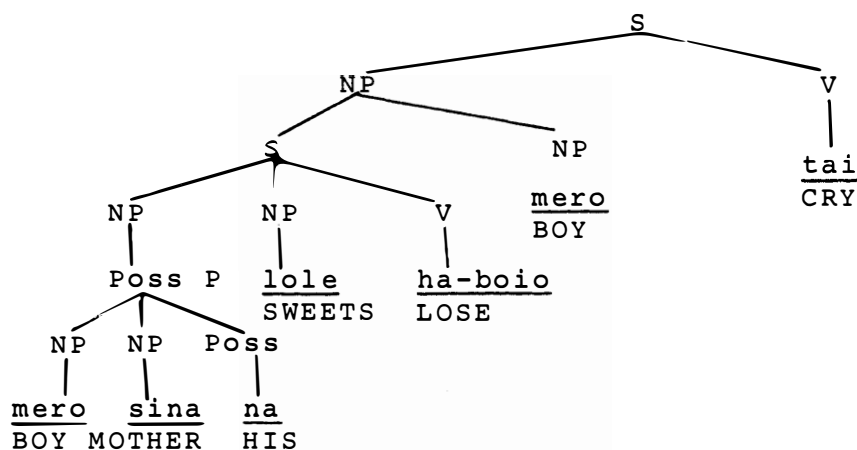
- (17) Raka S[Hekoi ese gwarume e - heni - a] mero - na
 RAKA HEKOI (TSM) FISH (SP) GIVE (IOS) BOY (REL)
e - ita - ia
 (SP) SEE (OS)
 'Raka saw the boy to whom Hekoi gave the fish'.

Or, perhaps better T-Object Preposing might be applied to produce

- (18) S[Hekoi ese gwarume e - heni - a] mero-na na Raka
e - ita - ia

3.33 Possessor NP's

These undergo the usual relativization process. When the possessor NP is in the embedded S the underlying structure is, e.g.



The application of Relativizer Placement and optional Relative Clause NP Deletion produces

- (19) S[sina - na ese lole e - ha - boio] mero - na
 MOTHER-HIS (TSM) SWEETS (SP) (CAUS) BE LOST BOY (REL)
e - tai
 (SP) CRY
 'The boy whose mother lost the sweets cried.'

This is an example of inalienable possession.
 Alienable possession is also straightforward:

- (20) S[ena reke sisia ese e - ha - dika - ia]
 HIS NET DOG (TSM) (SP) (CAUS) BE BAD (OS)
tau - na e - badu
 MAN (REL) (SP) BE ANGRY
 'The man whose net the dog spoilt got angry.'

gau Substitution is possible in both cases

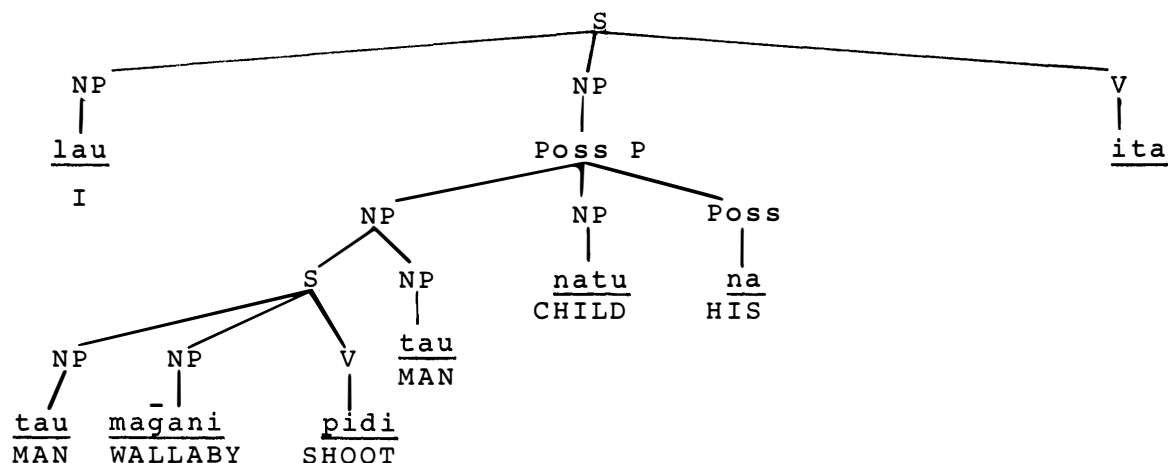
(i) Inalienable possession

- (21) [oi ese sisia ae - na o - ha - kwaidu - a]
 YOU (TSM) DOG LEG-ITS (SP) (CAUS) BREAK (OS)
gau - na e - tai - mu
 (REL) (SP) CRY (ASP)
 'The dog the leg of which you broke is crying.'

(ii) Alienable possession

- (22) S[ita ese sisia ana aniani ta - nege]
 WE(incl)(TSM) DOG ITS FOOD (SP)THROW AWAY
g̃au - na e - kwaru - mu
 (REL) (SP)BARK (ASP)
 'The dog whose food we threw away is barking.'

The possessor NP may be immediately to the right of the embedded S



The application of Relativizer Placement and Relative Clause NP Deletion produces:

- (23) S[magani e - pidi - a] tau - na natu - na lau ese
na - ita -ia
 'I saw the son of the man who shot the wallaby.'

This example is of inalienable possession but once again alienable possession is also straightforward as in (24).

- (24) S[e - boio] mero - na ena ipidi ai ese
 (SP)BELOST BOY (REL)HIS GUN WE (excl)(TSM)
a - davari - a
 (SP) FIND (OS)
 'We found the gun of the boy who has got lost.'

Possessed NP's cannot enter the relativization process where the embedded S would separate the possessed NP from the possessor, as such a separation is not permitted. E.g.,

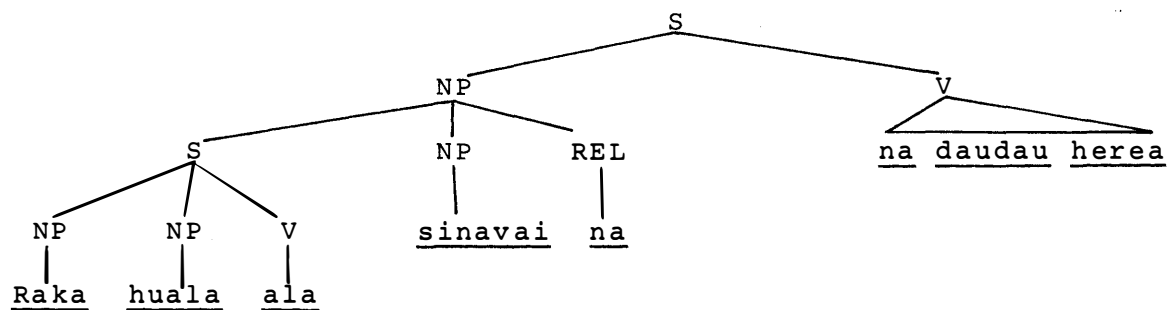
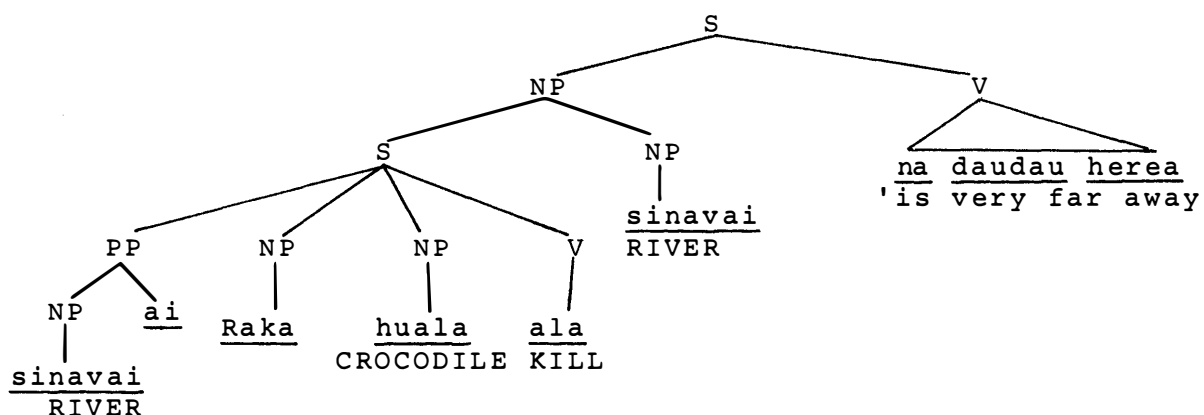
- (25) * mero ena S [tama - na ese e - heni - a]
 BOY HIS FATHER HIS (TSM)(SP)GIVE (IOS)
reke - na e - boio
 NET (REL) (SP) BE LOST.
 intended to mean
 'The boy's net which his father gave him is lost.'

However, where the relative clause is finally moved to postnominal position, as in the case of most adjectives, (see 3.5) then a grammatical sentence is formed:

- (26) mero ena reke S[bada]-na e - boio
 BIG REL
 'The boy's {net which is big}
 big net } is lost.'

3.34 NP in a Postpositional Phrase in the Embedded S.

In relativization, when Relative Clause NP Deletion, which is optional, is applied to a NP in a postpositional phrase in which the postposition is the simple ai and not a compound postposition (see below), then the whole phrase is deleted. E.g.

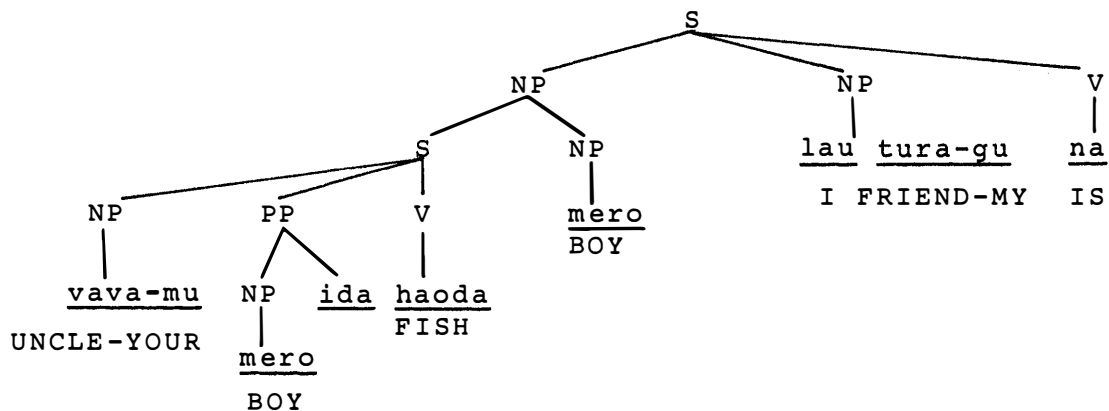


(27) S[Raka ese huala e - ala -ia] sinavai-na na daudau herea

'The river where Raka killed the crocodile is very far away.'

However, this cannot be done with all other postpositions. It seems that with ai the meaning 'at, in, to' can still be understood from the NP's and V that remain. Thus in the above example gabu cannot be the subject or object of ala-ia 'kill' and it clearly refers to the place of the action. However, the deletion of a whole postpositional phrase with ida 'with' as the postposition is not possible, nor is it possible to delete the NP and leave the postposition behind. In

other words Relative Clause NP Deletion cannot apply.
From a structure like this



would be derived

- (28) *S [vava - mu ida e - ha - haoda] mero - na
 UNCLE YOUR WITH (SP)GO FISH BOY (REL)
na lau tura - gu
 IS I FRIEND-MY

if only the NP, and not the postposition, were deleted.
But this would be understood as
"The boy who went fishing with your uncle is my friend".

i.e. as if vava-mu ida were a postpositional phrase.
This is not a possible derivation from the underlying
structure given.⁵

If the whole postpositional phrase is deleted one
derives the ungrammatical

- (29) *S [vava - mu e-ha-haoda] mero-na na lau tura-gu

vava-mu is taken to be the subject of e-ha-haoda and then mero-na cannot be related to the relative clause.

The situation with compound postpositions is a little different. It is, as with ida, not possible to delete the whole postpositional phrase.

- (30) S [Raka pata henunai e - helai - mu] pata - na na
 TAKA TABLE UNDER (SP) SIT (ASP) TABLE (REL) (OM)
tama - gu ese e - kara - ia
 FATHER MY (TSM) (SP) MAKE (OS)
 'My father made the table under which Raka is sitting'.

(30) would become, if Relative Clause NP Deletion were applied,

- (31) *S [Raka e - helai - mu] pata-na na tama-gu ese
e-kara-ia

and this does not tell you whether Raka was sitting on, near or under, etc., the table, if it is in any way under-standable.

In many cases it is not possible to delete just the noun phrase in a postpositional phrase with a compound postposition.

- (32) S [Raka ese bita pata henunai e - ala - ia]
 RAKA (TSM) RAT TABLE UNDER (SP) KILL (OS)
pata - na na tama - gu ese e - kara - ia
 TABLE (REL) (OM) FATHER-MY (TSM) (SP) MAKE (OS)
 'My father made the table under which Raka killed the rat'.

(32) would become (33) if Relative Clause NP Deletion did not delete the postposition

(33) *S[Raka ese bita henunai e-ala-ia] pata-na na tama-
gu ese e-kara-ia

which means something like 'My father made the table which Raka killed under the rat'!

However, this operation, i.e. leaving the compound postposition behind, is allowable if there is no possibility of the postposition being taken with another noun as was the case in the previous example. This is so, e.g., when the compound postposition is at the front of the S. Thus (34)

(34) S[pata henunai o - helai - mu] pata - na na
TABLE UNDER (SP) SIT (ASP) TABLE (REL) (OM)
tama - gu ese e - kara - ia
FATHER-MY (TSM) (SP) MAKE (OS)

'My father made the table that you are sitting under'.

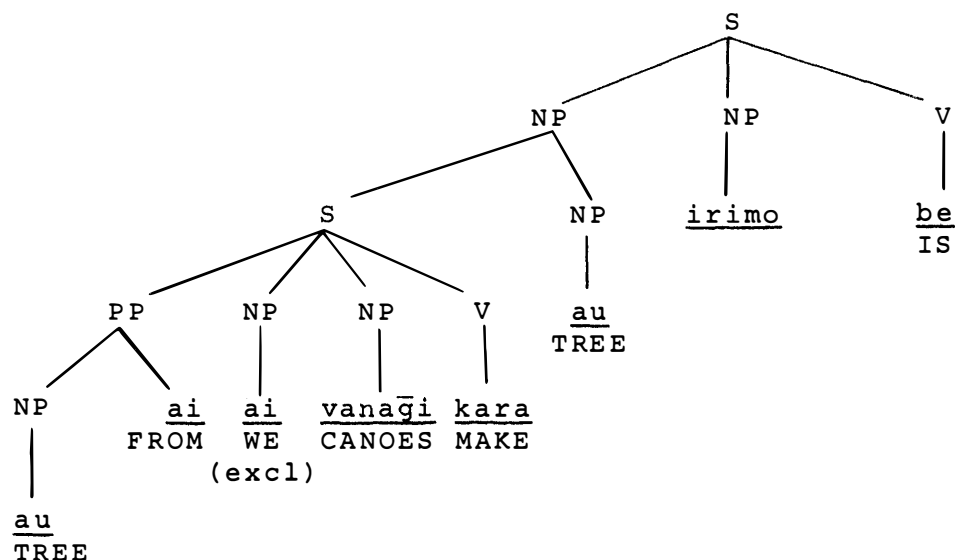
becomes

(35) S[henunai o-helai-mu] pata-na na tama-gu ese e-kara-ia.⁶

3.35 Instrument

The usual relativization process applies to an instrument phrase in an embedded S, with Relative Clause NP Deletion optional. If it is applied the postposition -ai, amo, or a - is deleted along with the NP in the phrase. There is, however, restriction that will be given below on the application of Relative Clause NP Deletion.

An example of an instrument phrase that is embedded by relativization in a subject NP is:



Relativizer Placement and Relative Clause NP Deletion
(and Copula movement) produce

- (36) S[ai ese vanaqi a-kara-mu] au-na be irimo
'The tree from which we make canoes is the irimo'.

An example with the relative clause embedded in
an instrument phrase is:

- (37) S[tama - mu ese ena vanaqi e - kara - ia]
FATHER-YOU(TSM) HIS CANOE (SP) MAKE (OS)
ira - na - ai egu vanaqi na - kara - ia
AXE (REL) WITH MY CANOE (SM) MAKE (OM)
'I made my canoe with the axe that your father made
his canoe with'.

There are in Motu two ways, in the surface structure, of expressing the instrument: (i) by a postpositional phrase as above, and (ii) by the use of the verbal suffix -lai. lai also occurs in transitive forms of verbs from intransitive e.g. hevaseha 'to make fun' hevaseha-lai-a 'to make fun of some one. Any verb can take lai as instrument suffix unless it already contains -lai to form a transitive verb.

There is one situation where Relative Clause NP deletion cannot apply because the deletion of the postpositional phrase produces an unacceptable sequence. Consider (38) and (39).

(38) maua ai kiapa na - karuhi - a
 BOX WITH STRINGBAG (1SSM)COVER (OS)

(39) maua kiapa na - karuhi - lai - a
 BOX STRINGBAG (1SSM) COVER (INSTR) (OS)

Both mean 'I covered the stringbag with a box'. In (39) the NP immediately preceding the verb is the direct object as is usual in Motu.

If Relative Clause NP Deletion is applied to each of the four possibilities for relativization, the following is the result:

(40) S[maua ai na - karuhi - a] kiapa - na
 'the stringbag that I covered with the box.'

(41) *S [kiapa na - karuhi - a] maua - na
intended to mean 'the box with which I covered
the stringbag.'

(42) *S [maua na - karuhi - lai - a] kiapa - na
intended to mean 'the stringbag that I covered
with the box.'

(43) S [kiapa na - karuhi - lai - a] maua - na
'the box with which I covered the stringbag.'

(41) is ungrammatical because Relative Clause NP Deletion has removed the postpositional phrase and it is no longer clear what is the function of maua in the sentence. The fault with (42) is that the NP immediately before the verb is usually taken as the object, but maua is not the object. So it is necessary to block the application of Relative Clause NP Deletion to postpositional phrases and to object NP's if the instrument is indicated by lai in the verb, not by a postpositional phrase. This blocking in these conditions is necessary if ambiguity will arise. Thus, e.g. in (44) the postpositional phrase may be deleted.

(44) S ia ese au e - kwadi - lai - a sisia - na
HE (TSM) STICK(SP) HIT (INST) (OS) DOG (REL)
na - davari - a
(1SSM)FIND (OS)

'I found the dog that he hit with the stick.'
because one cannot (or is extremely unlikely to) say
'I found the dog that he hit the stick with'!

3.4 ese

The embedding process may bring two surface subjects of transitive verbs together, and normally these would each be followed by the transitive verb subject marker ese:

- (45) Hekoi ese mero gwarume e - heni - a
 (TSM) BOY FISH (SP) GIVE (IOS)
 'Hekoi gave the boy a fish.'

- (46) Raka ese gwarume e - ita -ia
 SEE
 'Raka saw the fish.'

If (45) is embedded in (46) one might expect

- (47) *Raka ese S[Hekoi ese mero gwarume e - heni - a]
 gwarume - na e - ita -ia
 'Raka saw the fish that Hekoi gave to the boy.'

However, the occurrence of ese twice like this is not allowed. Which one does not appear is governed at least by which TR's concerned with relativization have applied. That is, the absence of ese in some conditions may lead to ambiguity or to misunderstanding. (47) is a case such that either ese may not appear

- (48) Raka ese S[Hekoi mero gwarume e-heni-a] gwarume-na
 e-ita-ia

- (49) Raka S[Hekoi ese mero gwarume e-heni-a]gwarume-na
 e-ita-ia

But if T-Relative Clause NP Deletion has applied and gwarume is deleted from the embedded S then only (49) is allowed. The sequence that would occur in (48) is unacceptable, viz.,

(50) * Raka ese Hekoi mero e-heni-a gwarume-na e-ita-ia

The first five words by themselves mean 'Raka made Hekoi pregnant' (lit. Raka gave Hekoi a baby). Gwarume must be kept in the embedded S. Thus gau-Substitution may apply to form (51).

(51) Raka ese S[Hekoi mero gwarume e-heni-a] gau-na
e-ita-ia

Compare:

(52) * Raka ese S[Hekoi e-kwadi-a] mero-na e-ita-ia
(TSM) HIT (OS) BOY(REL) (SP) SEE(OS)

(53) Raka S[Hekoi ese e-kwadi-a] mero-na e-ita-ia

(52) is understood as a sentence meaning 'Raka saw the boy who hit Hekoi', as a noun occurring immediately before a V is interpreted as being the object. It should mean, like (53), 'Raka saw the boy Hekoi hit'.

ese, then, must appear if its absence will result in the subject being mistaken for the object, direct or indirect. This decision can only be made after the relativization TR's have been applied as it will depend on whether Relative Clause NP deletion is applied as to just what sequences of words are involved.

3.5 Relativization and the Copula

3.51 Why the copula calls for special attention

The relativization process outlined above has applied to the situation where there is a verb (i.e. a lowest level verb - or at least a surface verb) in the embedded S. In languages like English the copula also has the surface form of a verb and you get relative clauses such as 'the man who is tall', which may be reduced to 'the tall man'. In Motu one might expect something equivalent to '*the is tall man', leading to 'the tall man'. However, the copula in Motu does not have the surface form of a verb. It is simply na or be. This leads to certain differences from English. E.g. one only finds the equivalent of 'the tall man', not of 'the man who is tall' as well. That is, only the fully reduced form occurs.

3.52 How the copula has been treated in TGs.

Some have inserted the copula by a TR, i.e. excluded it from the base component. This is done by, e.g. Lakoff (1965), Bach (1967), Jacobs and Rosenbaum (1968:101), Langacker (1966:114), and also Lyons (1968:322f). The copula is seen as a 'purely grammatical 'dummy' ' (Lyons p.323).

Others have put the copula in the base. Ross (1966, 1969b) claims 'be' is a true verb taking an abstract NP as its object, and that it is structurally similar to e.g. English 'know' and 'want'. He rejects the transformational approach and also that of setting up some special basic category 'copula'.

Darden (1969) claims Ross' arguments are inadequate and proposes another approach. He says that if McCawley (1967) is correct that deep structure is semantic, and if the copula has no semantic function, then the copula cannot exist in the deep structure. However, assuming that 'be' is a verb, to insert it by TR would mean creating a verb node and this is contrary to TG theory which holds that all relevant structure must be present in the deep structure. So Darden looks for a meaning for 'be' that will enable him to put it in the deep structure. He makes any pro-verb, i.e. abstract verb, surface as 'be' when the next lower predicate is [-verbal] and he assumes there is a [+stative] pro-verb which is the opposite of the [-stative] 'do'. Thus 'be' in practice substitutes for either + or -stative, and has no set meaning.

Lyons (1968:397-9) notes that certain English verbs are simply the [-stative] or 'dynamic' counterparts of [+stative] verbs. These are given below with Motu equivalents:

<u>+stative</u>		<u>-stative</u>	
<u>Eng.</u>	<u>Motu</u>	<u>Eng.</u>	<u>Motu</u>
be + NP	<u>na</u> , <u>be</u> + NP	become + NP	NP <u>ai</u> <u>lao</u>
be + Adj	<u>na</u> , <u>be</u> + Adj	become + Adj ⁸	Adj (as verb)
be + Loc	<u>na</u> , <u>be</u> + Loc	come/go + Loc	<u>mai/lao</u> + Loc
have	<u>na</u> <u>mai</u> + Poss	get	<u>abi-a</u>

The two main points to be made are (i) this accounts for at least the main uses of the copula in Motu, and (ii) the copula appears as [+stative] on each occasion.

[-statives], on the other hand, take ordinary surface verb forms and undergo the relativization TR's already described.⁹

Lyons follows on from having the copula inserted by TR to inserting the [-stative] counterparts also by TR. We have already said that this is not allowable in the abstract syntax approach, and so we say that both the [+stative] and [-stative] verbs are present in the deep structure.

The situation in Motu is rather neater than Darden sets out for English and rather than having to say the copula represents 'a surface neutralization of an underlying distinction in stativity' (Darden, 1969:35), it seems correct to postulate an abstract verb, [+stative], which appears as na or be in certain situations.

One of these situations involves adjectives, most of which may be treated here as verbs (and possibly all). There is no need to argue this for Motu. The fact is quite obvious. Some examples are given:

- | | | | | |
|-------|---------------|--------------------------------|-----|-----------------------|
| (54a) | <u>bada</u> | <u>mero e-bada</u> | (b) | <u>mero bada-na</u> |
| | 'big' | 'the boy got big' | | 'big boy' |
| | | | | |
| (55a) | <u>maeda</u> | <u>biku e-maeda</u> | (b) | <u>biku maeda-dia</u> |
| | 'cooked' | 'the bananas have been cooked' | | 'cooked bananas' |
| | | | | |
| (56a) | <u>tadika</u> | <u>ranu e-tadika</u> | (b) | <u>ranu tadika-na</u> |
| | 'salty' | 'the water became salty' | | 'salty water' |

Other such adjectives include namo 'good', maragi 'small', dika 'bad', kasiri 'raw , uncooked', kavakava 'stupid'.

There are some cases of morphological oddities. E.g., while there are the two adjectives that occur in postnominal position kahira 'nearby' and kahirakahira 'quite close by', related by the reduplication process (see appendix 2), only the latter can occur as a surface verb.

There are also some more striking lexical gaps. Thus, roboa occurs as an adjective in postnominal position meaning 'first-born', but it does not occur as a surface verb. The verbal expression is vara guna (vara 'to be born', guna 'first, before').

Returning to the question of the copula, we find that the [+stative] abstract verb may appear in front of adjectives. If the [-stative] abstract verb dominates an adjective, then the tense, aspect, and subject-marker affixes appear on the surface. But when the [+stative] dominates, then these affixes do not appear. E.g.,

- | | |
|--|--|
| <p>(57a) <u>mero</u> <u>e - bada - mu</u>
 BOY (SP) BIG (ASP)
 'The boy is getting big.'</p> | <p>(b) <u>mero</u> <u>na</u> <u>bada</u>
 BOY COP BIG
 'The boy is big.'</p> |
|--|--|

In the above case the lower verb appears on the surface. But in the other cases, viz., na/be + NP, na/be + Loc, and na mai + Poss, only the [+stative] abstract verb appears on the surface. E.g.,

- (58) Una tau na lau tama - gu
 THAT MAN COP I FATHER MY
 'That man is my father'

(59) egu buka na pata latanai
 MY BOOK COP TABLE ON
 'My book is on the table.'

(60) lau na mai egu reke
 I COP WITH MY NET
 'I have a net'

This raises the problem as to what verb is deleted, if one is deleted at all. Darden (1969:34) speaks of [-verbal] predicates and Bach (1968a) suggests that the categories N,V, and A are represented by only one category in the base. This approach is attractive for, even if the suggestion of Becker and Arms (1969) that prepositions (including postpositions, of course) are derived from verbs can be developed - and I think it can - there is still the Cop + NP construction and there does not appear to be any other solution. A T-rule would be required to delete a lower verb if there were one and at present I do not know of any other motivation for such a rule.

Two other comments on the stative abstract verb may be in order. First, although the [-stative] verb appears in the surface as a verb, e.g., lao 'go' there is still the problem of deciding what lower verb has been deleted. The most promising candidate is the Locative (cf. Lakoff 1965, Becker and Arms 1969). Second, there is the interesting case of the verb diba 'know'. Lyons (1968:316) points out that in English 'know' is not always stative. E.g., 'As soon as I saw him, I knew that there was something wrong!' In Motu, however, there are two constructions with diba. When it is dominated by the [-stative] verb it appears with the tense, aspect, etc.

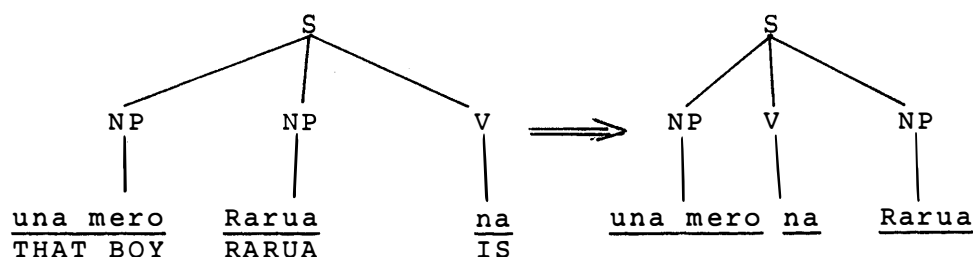
affixes, but when it is dominated by the [+stative] verb it appears in the construction mai diba + poss. suffix. E.g.

- (61) Lau na mai diba - gu
 I COP KNOW MY
 'I know.'

One may note in passing that this may well explain the construction found with some intransitive verbs such as gini 'stand' and helai 'sit'. E.g. Ia gini 'he is standing up' as against Ia e-gini-mu, which informants say means the same. The verb without affixes, except for a prefix for plural agreement formed by partial reduplication, which is the same process as occurs with adjectives dominated by the [+stative] verb (see Appendix 2), may well be dominated by the [+stative] verb. The copula does not appear but maybe this is a further example of the copula deletion transformation (see below).

3.53 T-Copula Movement

Such a TR is required if the copula is treated as a verb, as its surface position is SVO not SOV. This TR reverses the order of the surface V, if it is the copula, and the NP preceding it.



'That boy is Rarua'.

3.54 The Relativization Process

At the beginning of this section it was pointed out that the copula's not having a surface verb form in Motu means that there is less variety in the number of relative constructions possible than in English. While it seems that the copula in Motu is best treated as a verb this decision does not alter the nature of the problem as regards relativization.

3.54.1 Copula + Adjective

First Relative Placement applies:

S[<u>mero bada na</u>]	<u>mero</u>	S[<u>mero bada na</u>]	<u>mero - na</u>
BOY BIG IS BOY			(REL)

With the copula Relative Clause NP Deletion is obligatory (and so gau Substitution can never apply). This forms

S[bada na] mero-na

Then a transformation to delete the copula must apply:

[bada na] mero-na bada mero-na 'big boy'

This T is needed in other situations too. It is optional in 'subordinate' clauses, where indeed it is very often applied, and in questions (where in some situations it appears to be obligatory). E.g.,

(62) ia (na) bada dainai lau ese asi-na - heatuheni-a
 HE (COP) BIG BECAUSE I (TSM) (NEG) (SP) FIGHT (OS)
 'Because he is big I did not fight him'.

(63) Oi - emu hanua (be) maragi?
 YOUR VILLAGE (COP) SMALL?
 'Is your village small?'

The difference here between Motu and English is that T-Copula Deletion is obligatory in Motu but in English it only applies as part of the derivation of adjectives.

Finally the T-Adj Movement applies. This T is obligatory for many Adj's, but is apparently only optional for a few. All the Adj's mentioned in the previous section must undergo this TR except roboa 'first born'. It moves the Adj from prenominal position to postnominal position:

bada mero - na

mero bada - na

Note that the Adj remains inside the relativizer.

Adj's for which this TR is optional include gabani 'barren, sterile' and manada 'tame' as well as roboa. The exact status of such words and how many there are has not yet been determined. Some words appear to occur in both pre and post-nominal positions, but in at least some of these the meaning differs in a way that indicates they are not derived by the same process, i.e., it is not just a matter of one less TR being applied. A few examples are given for consideration.

(i) idau

idau tau-na a foreigner, stranger, someone not
a relative.

tau idau-na another man, a different man.

One expects the latter to fit the proposed Adj derivation, and we do find the sentence una tau na idau meaning 'That man is different', i.e. he is not the one we are concerned with. If the [-stative] verb dominates idau then S's like (64) are formed.

(64) una tau toa - na e - idau - mu

THAT MAN APPEARANCE HIS(SP)DIFFERENT(ASP)

'that man's appearance is changing/becoming different'.

idau tau-na is presumably derived by nominalization from something like idau bese amo 'from another family/tribe' or idau gabu amo 'from another place'.

(ii) siahu

ranu siahu-na

WATER HOT 'hot water'

siahu ranu-na 'holy water', i.e. water with
power siahu means 'heat, power,
authority'.

ranu siahu-na is derived as expected from the S una ranu na siahu 'that water is hot'. siahu ranu-na cannot be derived in this way. Its source is perhaps una ranu na mai siahu-na which can mean literally 'that water has power or heat'. The construction with mai cannot be moved into post-nominal position (see below).

(iii)

au bada-na means 'a big tree' and is derived from una au na bada 'that tree is big'. bada au-na, however, means 'a tree that will make one big if one eats the fruit' and may be derived from a sentence like (65).

(65) una au ese taunimanina e - ha - bada - dia - mu
 THAT TREE (TSM) PEOPLE (SP) (CAUS) BE BIG (OS) (ASP)
 'That tree makes people big'.

3.54.2 Copula + Locative

The relativization process applies to the Copula + Locative construction as it does to adjectives, with two exceptions:

T-Adj movement does not apply, i.e., the embedded S stays in pre-nominal position, and a TR is required to delete the relativizer.

The derivation is as follows:

S[<u>maua</u>	<u>pata</u>	<u>henunai</u>	<u>na</u>]	<u>maua</u>
BOX	TABLE	UNDER	COP	BOX

Relative

Placement S[maua pata henunai na] maua-na

Relative Clause

NP Deletion [pata henunai na] maua-na

Copula Deletion [pata henunai] maua-na

Relativizer

Deletion [pata henunai] maua

A surface structure would be:

(66) S[pata henunai] maua na lauegu

TABLE UNDER BOX IS MINE

'The box (which is) under the table is mine.'

As noted earlier the fact that the copula must be deleted means that there is only one form for this relativization to take, not two as in English.

There are verbs, mia for [-human] nouns and noho for [+human] nouns, that mean 'to be in a place'. However, they involve the idea of duration and so if they occur instead of the copula the meaning is different. Compare (66) with (67) which is formed simply by Relativizer Placement and Relative Clause NP Deletion.

(67) pata henunai e-mia-mu maua-na na lau-egu

'The box which {is kept
 {is customarily} under the table is mine'

T-Relativizer Deletion needs some comment.

One might ask how it is possible, if the relativizer is deleted to tell that a locative expression modifies an NP rather than a V, for locatives modifying the V can occur between the subject and object. If ambiguity is likely to arise the locative which modifies the V is placed between the object and the verb. Compare (68) and (69):

(68) Lau S[idua badinai] sisia na - kwadi - a

I DOOR BESIDE DOG (SP) HIT (OS)

'I hit the dog which is beside the door'.

- (69) Lau sisia iduara badinai na-kwadi-a
 "I hit the dog beside the door. "

When a locative modifies the whole sentence it occurs first and is followed by a pause as in (70):

- (70) Australia ai taunimanima ese ruma bada-dia ai
 IN PEOPLE (TSM) HOUSES BIG(REL) IN
e - nohu - mu
 (SP) LIVE (ASP)
 'In Australia people live in big houses.'

But a more basic question is whether, in view of the fact that we find no relativizer on the surface, this is a case of relativization at all. The interpretive semanticists would probably put it directly in Complement in their base rules (Jackendoff, 1969c). As Jackendoff and Chomsky have parallel N,V, and Adjective Complements then they do not have to complicate their system further to handle this point. The abstract syntax approach can really only derive the locative from some S. Moreover, the meaning of the construction seems to be the same as the certain cases of relativization and only one extra TR is needed.

There is a possible ambiguity in English sentences like "Do you like the paint under the table?" The paint may be on the underside of the table or, say, in a tin under the table. In Motu there is no ambiguity:

- (71) Oi pata henuna peni - na o - ura - mu?
 YOU TABLE UNDER PAINT (POSS) (SP) LIKE (ASP)
 'Do you like the paint on the underside of the table?'

This involves a kind of possessive construction that will not be treated here. (Note also henuna, not henunai).

- (72) Oi S [pata henunai peni] o - ura - mu?
 YOU TABLE UNDER PAINT (SP) LIKE (ASP)
 'Do you like the paint under (i.e. on the floor or in a container) the table?'

There is one further point. Reference has been made to a form of intransitive verb which may well be explained by the positing of a higher [+stative] abstract verb. Thus ia gini means 'he is standing'. It seems that this construction undergoes the relativization process in the way that the copula + Adj cases do, and that it even optionally enters the T-Adj movement.

- (73) mero S [niu badinai gini] -na na lau
 BOY COCONUT BESIDE STANDING (REL) COP I
tadi - gu
 YOUNGER BROTHER MY
 'The boy who is standing beside the coconut palm is my younger brother'.

Also:

- (74) una S [niu badinai gini - na] mero - na na lau tadigu

though the -na here suffixed to gini is not yet explained.

by Relativizer Placement, Relative Clause NP Deletion, Copula Deletion and finally Relativizer Deletion is derived:

- (76) Lau S[emu gaukara dava - na] suga na-mailai-a
 "I have brought the sugar which is the pay for your work".

But if one uses this derivation to obtain a sentence meaning "I saw the man who is the owner of the house", the resulting sentence is ungrammatical, whether or not the relativizer is deleted.

- (77) * Lau ese S[ruma biagu-na] tau (-na) na -ita -ia
 I (TSM) HOUSE OWNER(POSS)MAN(REL) (SP) SEE (OS)

The intended meaning is only expressible by

- (78) Lau ese S[ruma e - biagu - a-mu] tau-na na-ita-ia
 (SP) OWN (OS) (ASP)
 'I saw the man who owns the house'.

One can say

- (79) Lau ese ruma biagu-na na-ita-ia

but this means

'I saw the owner of the house'., without specifying more than that the owner is human.

The question then arises of agentive nominals which are all compounds, e.g., haroro tau-na 'pastor', haroro meaning 'to preach' and tau 'man'. A similar problem

arises, the normal derivation producing the ungrammatical

- (80) *Lau ese [haroro tau-na] tau(-na) na-ita-ia
PREACH

The same two types of grammatical sentence occur as for ruma biagu-na.

- (81) Lau ese S[e-haroro-mu] tau-na na-ita-ia
(ASP)¹⁰

'I saw the man who preaches.'

- (82) Lau ese haroro tau-na na-ita-ia

'I saw the pastor.'

(Here the sex of the pastor is specified).

One might try deriving (82) from (80) by deletion of an occurrence of tau-na, but this is harsh, and there is the problem of choosing which to delete. Also there is the ruma biagu-na example to consider. This leads to the suggestion that when possessives like ruma biagu-na (whatever their deep structure) and agentive nominals like haroro tau-na occur as the NP immediately before the copula (i.e. as the complement) in an embedded S relativization must be blocked.

Even with at least some single words, e.g. tisa 'teacher' this derivation must be blocked.

- (83) *Ia na S[emai tisa] tau(-na)

but (84) is grammatical as (81) is,

- (84) Ia na S[e-hadiba-mai - mu] tau-na
 TEACH(1POS) (ASP)
 'He is the man who teaches us.'

The extent of this restriction is not yet clear.

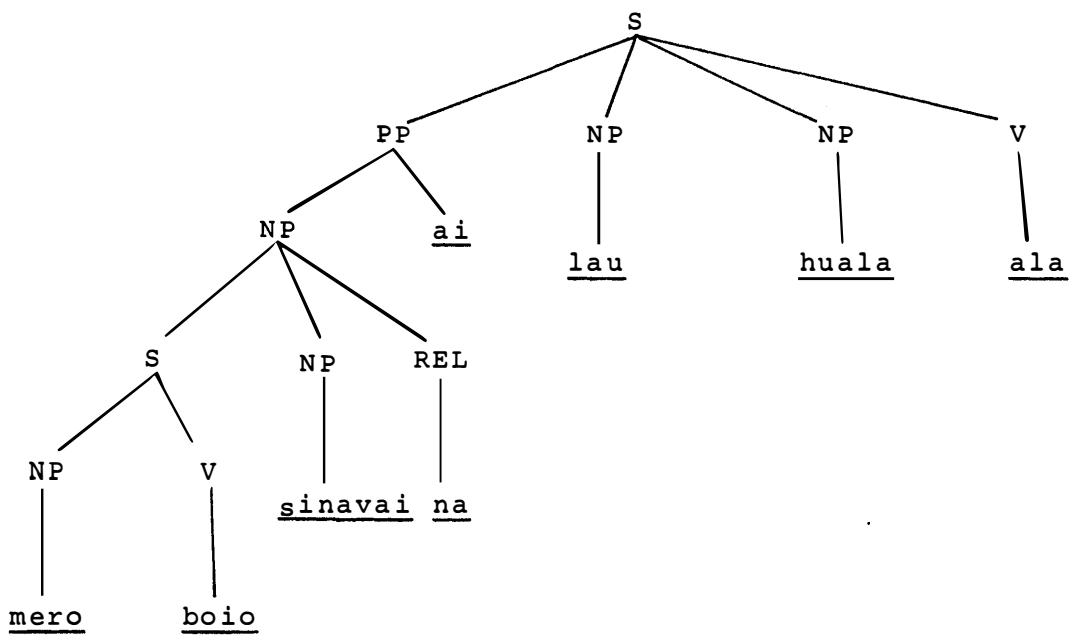
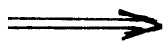
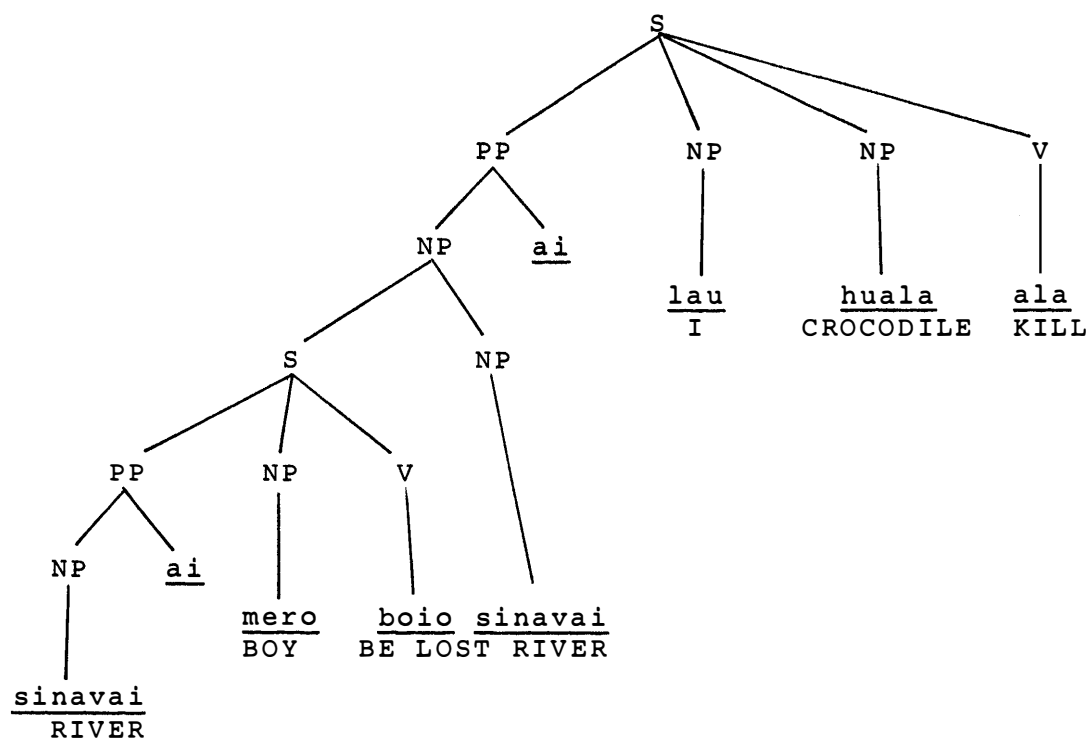
3.6 Adverbial Clauses.

It has been seen that relativization can take place provided coreferential NP's are present, with few restrictions on the position that the NP's are in in either the embedded or matrix sentences. This brings us to cases where relativization in Motu in postpositional phrases, in some instances, produces clauses which are equivalent in meaning to what are traditionally described as adverbial clauses.

3.61 Place.

Of the adverbial clauses, those involving place are the most straightforward in Motu and will be described first. One of the NP's involved is in a postpositional phrase indicating place in the embedded S, while the other may be in any position in the matrix S.

The first two examples have nouns which mean a particular kind of place. T-Relative Clause NP Deletion is obligatory with phrases in which the postposition is the simple ai. As already mentioned this ai must be deleted along with the NP.



The postpositional phrase is put on the left hand side here only as this is the most common surface position.

- (85) S [mero e-boio] sinavai-na-ai lau ese huala bada-na
na-ala-ia
 'I killed the big crocodile in the river (in which)
 (where)
 the boy disappeared.'

(86) is the same, except that the NP in the matrix sentence is not in a postpositional phrase:

- (86) S [Lau na - vara] hanua - na na bada herea
 I (SP) BE BORN VILLAGE(REL)COP BIG VERY
 'The village {in which}
 {where } I was born was very big.'

We now turn to examples where the word gab
 'place' occurs:

- (87) S [boroma e - ala -ia] gab - na - ai lau
 PIG (SP) KILL (OS) PLACE REL IN I
na - keto
 (SP) FALL
 'I fell in the place {at which}
 {where } they killed the pig.'

The same process produces (88), which differs only in that the relevant NP in the matrix S is not in a postpositional phrase.

- (88) S [logohu na - ita -ia] gabu - na na daudau
 BIRD OF (SP) SEE (OS) PLACE (REL) COP FAR
 PARADISE
 herea
 VERY
 'The place (in which) I saw the bird of paradise is
 (where)
 very far away'.

The main example for us here is (87). The meaning was given as 'I fell in the place at which/where they killed the pig', but it is also equivalent to the English 'I fell where they killed the pig'. There is no other construction in Motu. Thus there is no need to argue like Cressey (1968) had to for Spanish that clauses of the type 'I arrived when you were leaving' and 'I arrived at the moment when you were leaving' should not be treated as distinct. There is only one construction.

For Spanish Cressey has four steps. (English would need something similar presumably.)

1. I left at some time. He arrived at the time.
2. He arrived at the time at which I left.
3. He arrived at the time when I left.
4. He arrived when I left.

Motu has only stages one and two, the latter being the stage reached after applying Relative Clause NP Deletion as in the examples already given.

gabu can be singular or plural. If it is plural the relativizer takes the usual form -dia and the meaning can be equivalent to 'wherever'.

- (89) e - ha - haoda - mu gabu - dia ai gwarume e - davari
 (SP) GO FISH (ASP) PLACE(REL) IN FISH (SP) CATCH
-mu

(ASP)

'in the places in which he goes fishing he catches fish', or ' wherever he goes fishing he catches fish'.

iboudiai 'all' may be added to modify gabu, meaning 'all the places, everywhere, wherever'.

The postpositional phrase containing the embedded S usually occurs before the V in the matrix S. This is the usual position for postpositional phrases. However, they may occur after the V, and this includes phrases containing embedded S's. MG (44) says that this does not happen but this is not so for Tupuseleian speech at least (and probably the other villages too).

- (90) S[hanua tau - dia ese rei e - dou] gabu - na ai
 VILLAGE MEN (TSM) GRASS (SP) BURN PLACE (REL) IN
magani toi na - ita
 WALLABIES THREE (SP) SEE
 'Where the villagers burned the grass I saw three wallabies'.

or

- (91) magani toi na-ita S[hanua tau-dia ese rei e-dou]
gabu-na ai
 'I saw three wallabies where the villagers burned the grass'.

If gabu is indefinite then ta is placed after the relativizer:

- (92) S [Huala e - ita - mu] gabu - na ta ai lau na - moru
 CROCODILE(SP) SEE(ASP) PLACE(REL) A IN I (SP) FALL
 'I fell in a place where crocodiles are seen'.

But this is not common as Motu often uses a definite form where English would use an indefinite (cf MG31).

gabu - na - ai can be used with the same 'general' force as gabu - dia - ai.

- (93) S [e - $\bar{g}$ aukara - mu] gabu - dia - ai moni e -
 (SP) WORK (ASP) PLACE (REL) IN MONEY (SP)
henao - mu
 STEAL (ASP)

and

- (94) [e - $\bar{g}$ aukara - mu] gabu - na - ai moni e - henao - mu

both mean

'Wherever he works he steals money'.

Though the latter can also mean

'Where he is working he is stealing money'.

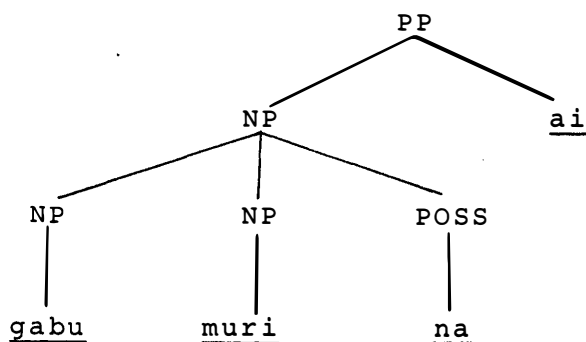
This is because the verbal suffix -mu can mean 'present continuous' or 'habitual, customary'. The same happens with nega 'time' (see 3.62)

All the examples so far have been with the simple postposition ai. Compound Postpositions may also occur with any place noun:

- (95) ai a - noho - mu gabū - na muri - na - ai heatu
 WE (SP) LIVE (ASP) PLACE (REL) BEHIND FIGHT
bada herea - na e - vara
 BIG VERY (REL) (SM) TAKE PLACE

'The very big fight took place behind where we live'.

gabū - na muri - na - ai is literally 'in the "behind-area" of the place in which'. Nouns which make up compound postpositions, e.g., muri 'back, lalo 'inside', and henu 'underside', all take the suffixes that indicate inalienable possession. Thus you get a surface structure something like this:

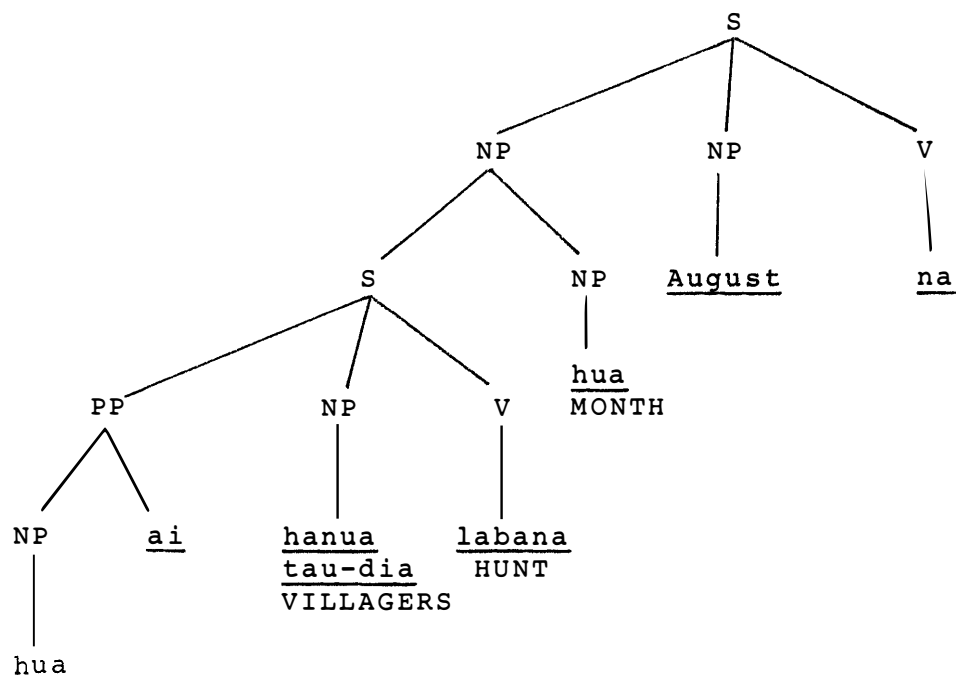


gabū cannot be deleted from such compound postposition constructions. As will be seen in the next section, compound postpositions by themselves refer to time. Thus muri-na-ai means 'after, i.e. nega 'time' is understood as deleted.

3.62 Time

As with place words there are words denoting times which enter the normal range of relativization constructions. E.g., NP as subject of the matrix S.

From a structure like this



is derived.

- (96) S [hanua tau - dia e - labana- mu] hua - na
 VILLAGE MEN (SP) HUNT (ASP) MONTH
na August
 COP

'The month in which the villagers hunt is August'.

The most common words are dina 'day, hua 'month' and laḡani 'year'.

Then, as there is a general word gabu 'place', so there is a general word nega 'time'. Reference has already been made in the section on Place to how Motu time clauses compare with Spanish ones. Thus the only time clauses are formed by relativization inside post-positional phrases with Relative Clause NP Deletion obligatory:

- (97) S [Tupuseleia ai na - noho -va] nega - na ai
 IN (SP) LIVE (ASP) TIME REL IN
lau asi-na - ha - g̃aukara taoni ai
 I NEG (SP) GO WORK TOWN IN
 '{At the time at which} I was living at Tupuseleia
 {when }
 I did not go to work in town'.

Again as gabu, nega can be singular or plural, the plural marker being -dia, and the meaning being 'whenever'.

- (98) ia e - ha - haoda - mu nega - dia - ai gwarume
HE (SP)GO FISH (ASP)TIME (REL) FISH
e - davari - mu
(SP)CATCH (ASP)
'At all the times that he goes fishing he catches
fish' or 'Whenever he goes fishing he catches fish'.

iboudiai 'all' may follow nega-dia-ai, meaning 'at all the times that' or 'whenever'. Also nega-na-ai can be used with the same 'general' force as nega-dia-ai¹¹

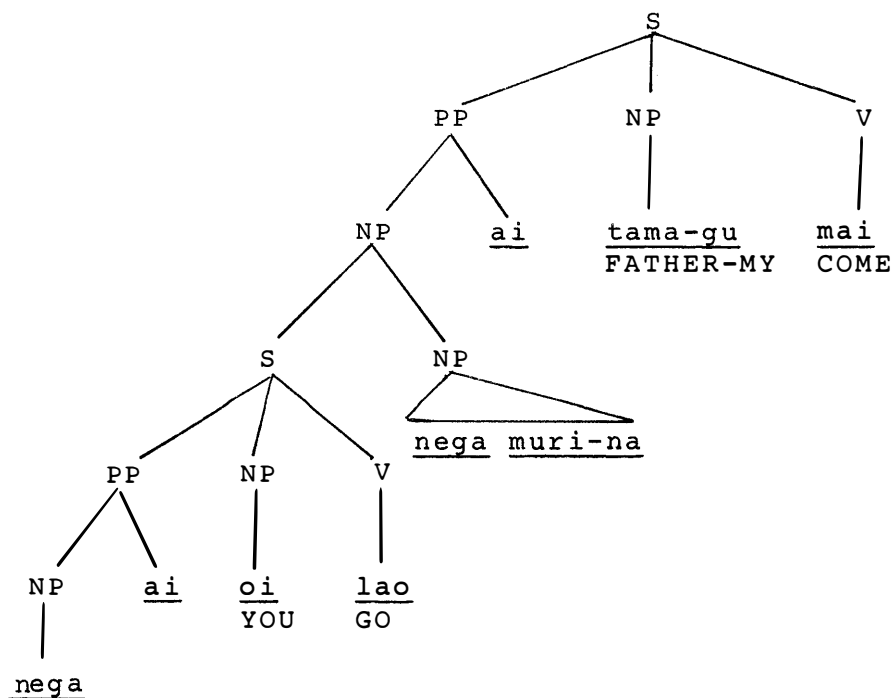
(99) Ia e - ha - haoda - mu nega - na - ai gwarume
e - davari - mu

'Whenever he goes fishing he catches fish'.

If nega is indefinite ta accors after the relativizer.

The use of compound postpositions with gabu has been described, and it was noted that gabu could not be deleted from such constructions for compound postpositions occurring by themselves are taken as referring to time. Indeed the word nega does not appear on the surface. Its presence is posited on the basis of its similarity of behaviour in many situations to gabu, that muri 'back' lalo 'inside', etc., are not in any other case restricted to the meaning of time, and, most important, relativization could not take place otherwise.

Thus from this structure:



is derived:

- (100) [oi o - la] muri - na ai tama - gu e - ma
 YOU GO AFTER FATHER-MY(SP)COME
 'After you went my father came'.

If nega was not posited one would have muri instead of nega in the embedded S and this would mean, if anything, 'after something you went' i.e. muri-na-ai oi o-la, but that is not what is wanted. It is not 'you went' that is after anything, but only 'my father came'.

So we assume nega is in the deep structure but is always deleted (T-nega deletion). The relativization operation is the same as for gabu.

Some of the common compound postpositions that occur in this construction and their meaning are: muri-na ai 'after', vaira-na ai 'before' (vaira 'front, face'), lalo-na ai 'while' (lalo 'inside, inner part'). There are also even more complex compound postpositions formed with kaha 'part', such as muri-na kaha-na-ai 'after' and vaira-na kaha-na ai 'before'. Their structure involves an extra instance of what is, at least on the surface, inalienable possession.

MTC has a number of examples of muri-na ai muri-na kaha-na ai and lalo-na ai beginning sentences. The -na- in muri-na and lalo-na must refer to a nega that has been deleted. The question arises whether anything else has been deleted. E.g.,

(101) Tupuseleia ena dareretuari-na be una. Muri-na-ai

ITS DEFEAT WAR COP THAT AFTER

tuari ta ma s - e - vara

WAR A AGAIN(NEG)(SP)OCCUR.

'That was the war in which Tupuseleia was defeated.
After that, war did not occur again.'

It seems that at the most superficial level una 'that' or the like must be present under the surface structure, viz., una nega muri-na ai. I suggest that na in una nega-na-ai is the relativizer, and that una stands for an embedded S, the form of the S being determinable from the preceding surface sentence. In one story recorded, indeed, the story-teller has put all of these S's in, to the point of monotony. The deleted S may not always appear as an S on the surface. Thus in (101) the S appears as Tupuseleia ena darere tuari na, a construction which is presumably formed by the process of nominalization. There may be cases where it seems that una refers to a whole series of S's, e.g. a paragraph. This type of problem has not yet been tackled seriously by transformational grammarians - and they have been criticised for this, or rather it has been said that TG cannot handle this.

MG (43-4) gives five different forms for time clauses. The classification is misleading for Tupuseleia, but no detailed examination will be made here. The forms fall into two main types: S + nega-na-ai and S + ai. (In one of the latter the S is nominalized). However, S + nega-na-ai can be used to express all five combinations of tense and aspect that MG lists.

The question then is how to handle S + ai. ai has only those meanings here that will denote times, even

though its range of meanings as a postposition is wide. Thus one has to restrict the meaning of ai in S + ai. Then too we have seen how nega is deleted in every case where compound postpositions occur, so it is easy to assume it is deleted in the same way here. This also requires no extra mechanism, and keeps the ways of deriving time clauses to a minimum. And perhaps most importantly, S + ai and S + nega-na-ai are paraphrases. One might expect them to have the same origin.

Both (102) and (103) mean 'While I was wandering through the bush I saw a snake'. -va, an aspect marker, gives the idea of duration in the past which requires the translation 'while'.

(102) uda ai na - loaloe - va nega - na - ai gaigai ta
 BUSH IN(SP) WANDER (ASP) SNAKE A
na - ita -ia
 (SP) SEE (OS)

(103) uda ai na - loaloe - va ai gaigai ta na - ita -ia

3.63 Reason

Clauses that express reason are derived by relativization. There are two different forms, however. One is treated here, the other in 3.7. The following question and answer illustrate the relativization process:

(104) S [Idia ese ia dibura ai e - ato - a] badi - na
 THEY (TSM) HE PRISON IN (SP) PUT (OS) REASON (REL)
mai diba - mu?
 KNOW YOU?
 'Do you know {the reason} why they put him in prison?'

- (105) Oibe. S [Ia dibura e - ato - a] badi - na be moni
 YES HE PRISON (SM) PUT (OM) REASON IS MONEY
e - henao.
 (SM) STEAL.

'Yes. The reason for which they put him in prison was that he stole money'. or 'Yes. He was put in prison because he stole money'.

The Motu answer can be shortened to

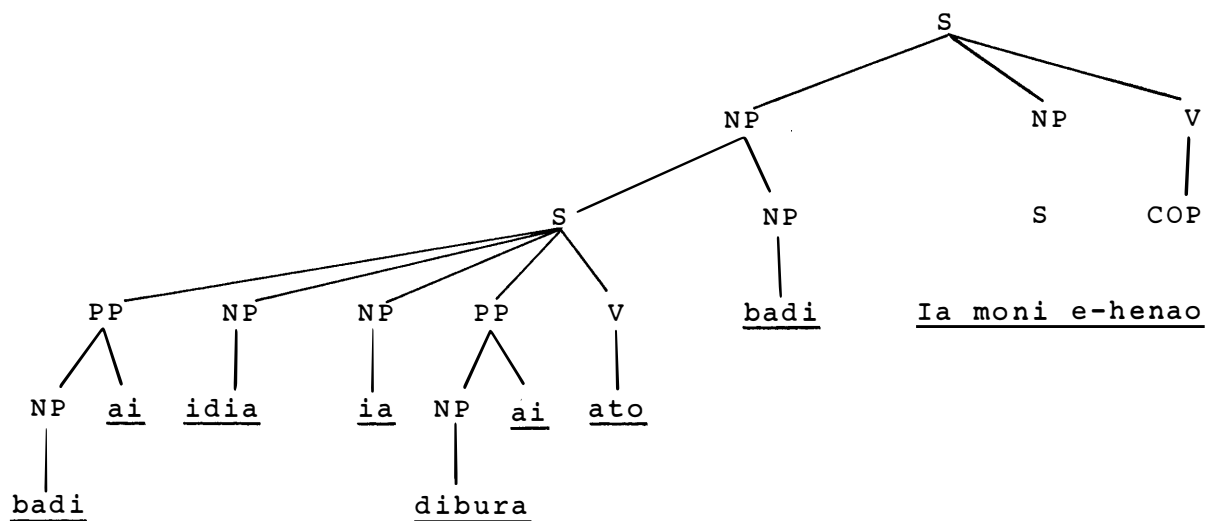
- (106) Oibe. Badi-na moni e-henao.
 'Yes. The reason for it is he stole money'.
 or 'Yes. Because he stole money'.

Such a shortenening, I imagine, contributed to MG's treatment (41) of badi-na be (and the other variations given below) as a subordinate conjunction meaning 'because'. That is, badi-na be often occurs after a pause, even at the start of a sentence. And the badina be clause may precede the main clause:

- (107) badi-na be dala na dia namo taunimanimā vanagi amo
 REASON COP ROAD COP NOT GOOD PEOPLE CANOE BY
e-la Gaire
 (SP) GO GAIRE
 'Because the road was no good people went to Gaire by canoe'.

Also, there is no other candidate for an equivalent to English 'because', except dai-na ai, which occurs at the end of the clause, and so is less likely.

However, there is no other subordinate conjunction in Motu in my analysis (though there are in MG), so this would make one suspicious. But, as already pointed out, the process is clearly relativization. The answer in the first example is derived by Relativizer Placement and the obligatory application of Relative Clause NP Deletion on this structure:



Note too that this explains why you can get badi-na korikori be where korikori is a postnominal modifier meaning 'real'. It would be unusual to have it modifying a conjunction!

Also this explains why MG (44) list the following forms for 'because': badi-na, badi-na na and badi-na be. be and na are the forms of the copula, which is what is needed to get sentences of the form 'The reason for which is that.....', while we have seen that in some situations the copula may be deleted.

Of the forms listed in MG I have found badi-na and badi-na be to be common, while badi-na na is not common (or even rare), there being no instances of it in MTC. MG (41) also note a form madi be, adding that some Motuans reject it as a corruption. In the first edition (p.52) it is said that many Motuans say it should be badi be. This may be only a convenient explanation on the Motuans' part, though it would suit the analysis given here, and especially in 3.73 and 3.74 where such a use of dai, which is synonymous with badi, is proposed for the underlying structure.

Ani is also used in the same way as badi, though MG does not mention it. E.g.,

S [ia dibura ai e-ato-a] ani-na be moni e-henao
which means the same as (105)

Where badina be begins a sentence it is presumed that the relative clause (which looks like the main clause to an English speaker) has been moved by a TR from its position in front of badi to after the main clause, e.g.

(108) S [oi o - ma badi-na] be tama - gu ese
YOU (SP)COME REASON(REL)COP FATHER-MY(TSM)
e - boiri - mu
(SP) CALL (OS)
'You came because my father called you

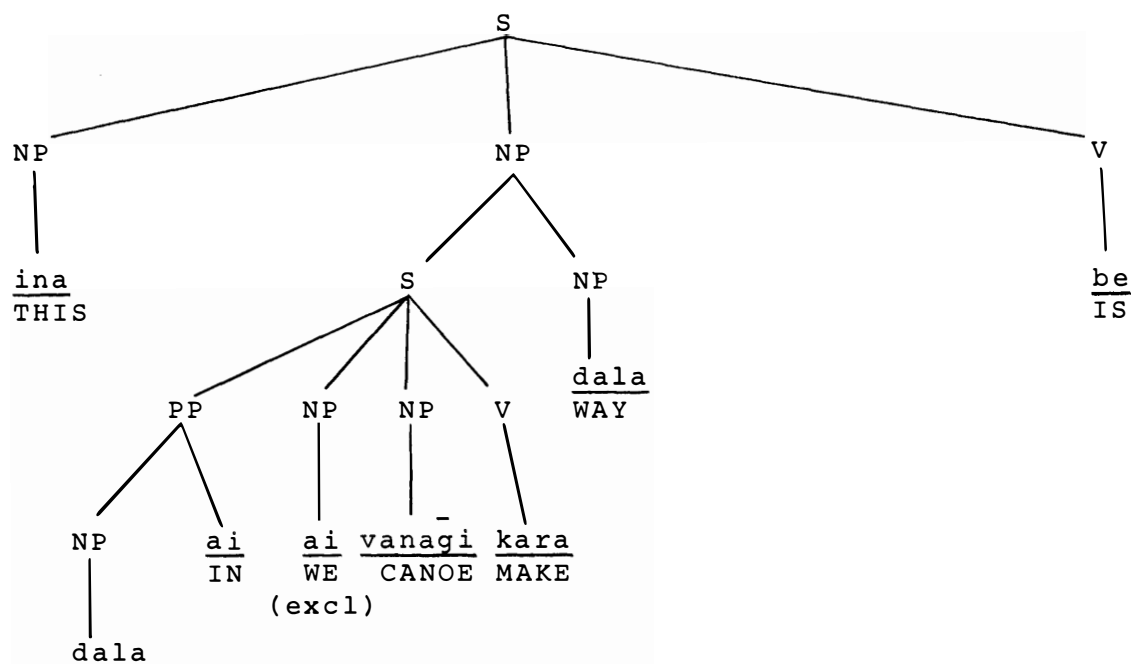
Movement TR derives

- (109) Badi - na be tama - gu ese e boiri - mu [oi o-ma]
 'Because my father called you you came'.

It has already been mentioned that a pause may occur before badina. Thus in example (108) given above one could pause after oi o-ma. The reason for this is not certain, but it may be supposed to be connected with the nature of the embedding.

3.64 Manner

Clauses with dala 'way' follow the pattern for gabu 'place' and nega 'time'. Relativizer Placement and Relative Clause NP Deletion are both obligatory. They apply to a structure like



from which is derived the surface structure:

- (110) ina be S[ai ese vanagi a-kara-mu] dala -na
 'This is {the way in which} we make canoes
 how

In (111) dala is in a postpositional phrase in both the embedded and matrix sentences.

- (111) ibara ta na - kara -ia S[tama - gu ese
 HEADDRESS A (SSM) MAKE (OM) FATHER - MY (TSM)
e - kara - mu] dala - na - ai
 (SM) MAKE (ASP) WAY (REL) IN
 'I made a head-dress (in the way in which) my father
 (as)
 (like)
 makes them'.

Some surface structures do not contain dala. One of these is shown in:

- (112) kokoroku edia raka a e - lao - mu
 ROOSTERS THEIR WALK IN (SP) GO (ASP)
 'He walks like roosters do'.

- (113) sina - mu ena ruma - daro a ba - o - la
 MOTHER YOUR HER HOUSE - SWEEP IN (FUT) (SP) GO
 'Sweep the house like your mother does'.

It is proposed that the underlying structure for these sentences is the same as for these longer paraphrases:

(114) S [kokoroku e - raka - mu] dala - na - ai ia
 (SP) WALK (ASP)

e - raka - mu

(SP) WALK (ASP)

'He walks in the way in which roosters walk'.

(115) S [sina-mu ese ruma e - daro - a - mu] dala - na- ai
 (SP) SWEEP (OS) (ASP)

oi ese ruma ba - daro- a

'Sweep the house in the way in which your mother sweeps the house'.

and that the surface is reached by four main steps (the order may turn out to need changing).

(i) any NP in the matrix sentence that is the same as an NP in the embedded S is deleted. So e.g. ruma in (115) is deleted and does not appear in (113).

(ii) The verb in the matrix S, which is the same V as in the embedded S, does not appear on the surface. Instead the [-stative] abstract verb appears as lao.

(115) is a better example of lao as a manifestation of an abstract verb than is (114). In the latter the appearance of lao which is the same form as the word lao 'go' does not seem unusual but in the former it appears in place of daro-a 'sweep'. Another such example is

(116) Tama - gu ena hereva a e - lao - mu
 FATHER - MY HIS SPEAKING IN (SP) GO (ASP)
 'He speaks like my father'.

(iii) the embedded S is nominalized to form kokoroku edia raka¹²

(iv) dala and the relativizer are deleted, leaving behind the postposition which takes the form a in this construction. This is an operation comparable to the deletion of nega 'time' and the relativizer (3.62).

There is another construction to consider, involving hegeregere.

(117) S [Sina - mu ruma e - daro - a - mu] hegeregere-na
 MOTHER YOUR HOUSE (SP) SWEEP (OS) (ASP)
ruma ba - daro - a
 HOUSE (2FUT) SWEEP (OS)
 'Sweep the house like your mother sweeps the house'.

(118) Ia ese heina vanagi S [ai ese vanagi a - kara - mu]
 HE (TSM) THIS CANOE WE(excl) CANOES (SP) MAKE (ASP)
hegeregere-na e - kara -ia
 (SP) MAKE (OS)
 'He made this canoe like we make canoes'.

The first example is a paraphrase of (115), or perhaps more accurately very slightly different in that dala indicates 'the same way' while hegeregere means 'much the same way'. This is close enough, in view of the occurrence of an embedded S before both dala and hegeregere, to warrant consideration of a relationship between the two constructions.¹³ First examples of another use of hegeregere must be given. This is a clause of comparison.

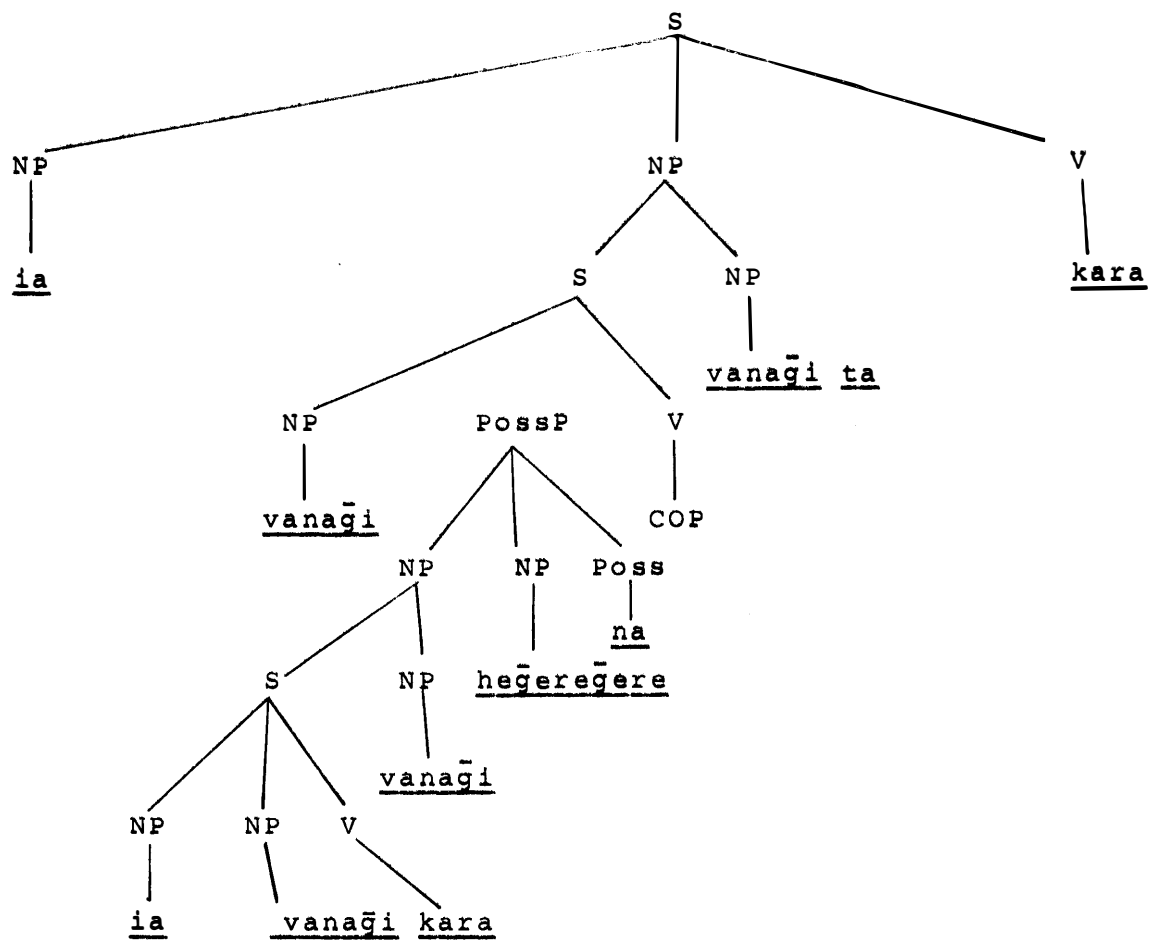
- (119) sea ta ba - kara -ia S[matama - na - ai
 CHAIR A (2FUT)MAKE (OS) FIRST AT
o - kara -ia] sea - na hegeregere - na
 (2SP)MAKE (OS) CHAIR (REL)

'Make a chair like the chair which you made first'.

- (120) vanaḡi ta e - kara -ia S[ai ese a - kara -ia
 CANOE A (3SP)MAKE (OS) WE(excl) (SP)MAKE (OS)
vanaḡi - na hegeregere - na
 CANOE (REL)

'He made a canoe like the canoe we made',¹⁴

The most promising way of explaining this structure is reflected by these rather literal translations, 'Make a chair which is a likeness of the chair which you made first' and 'He made a canoe which is a likeness of the canoe which we made', respectively. That is, it seems that everything after the first verb is in a relative clause which has another relative clause embedded within it, something like this:



The lowest S provides the inner relative clause

(121) S[ai ese a - kara - ia] vanaḡi - na

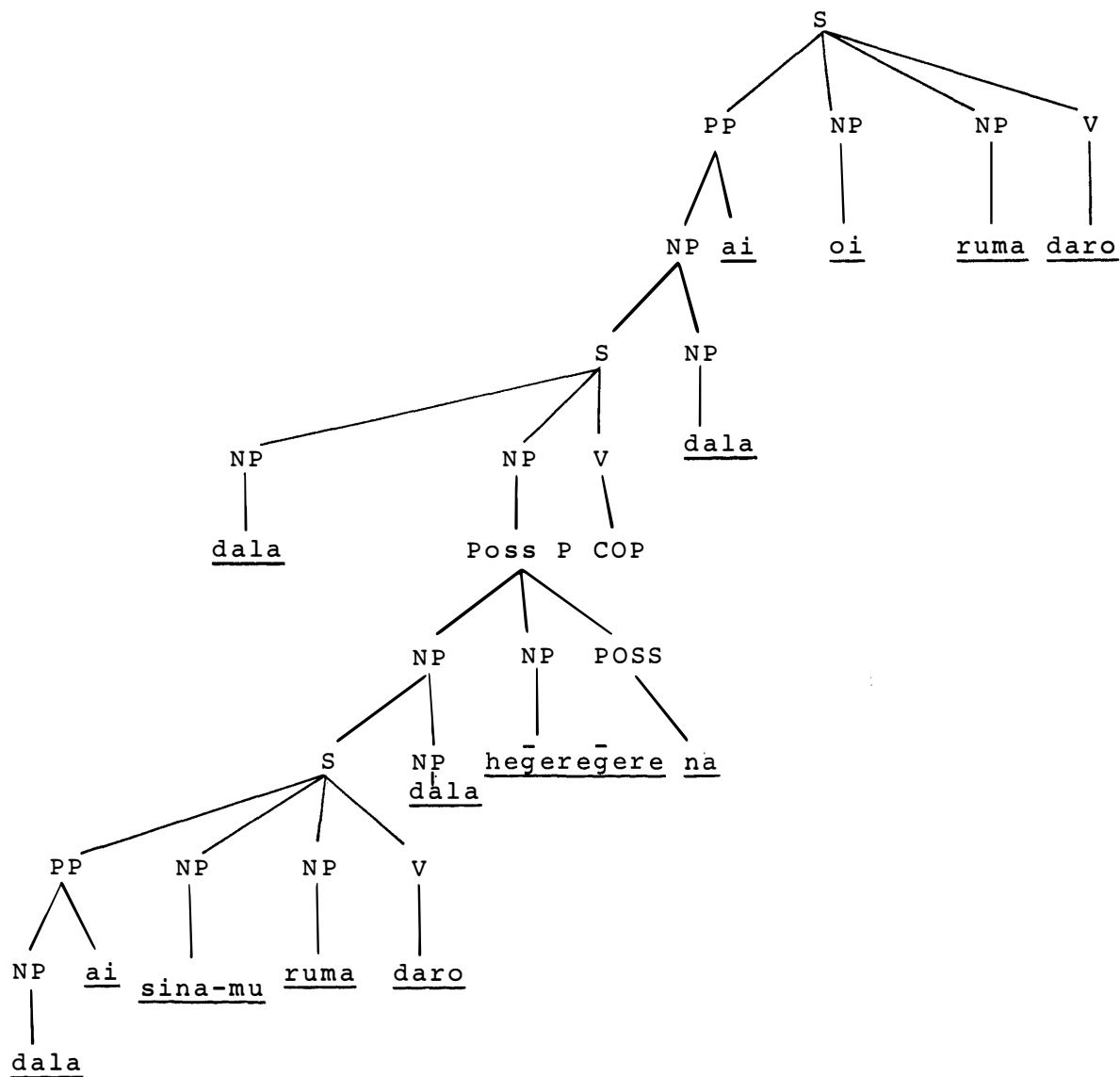
quite straightforwardly. This is in a possessive phrase in another relative clause. It has been noted earlier (3.54.4) that there are some restrictions on relative clauses which contain the copula preceded by an NP complement. These are not yet clearly defined, but at least it was seen that certain sequences of the form N - na N - na were unacceptable. In the present case a sequence of the nouns with - na suffixed would arise

(122) * ia ese S[S[ai ese a-kara-ia] vanaḡi-na heḡereḡere-na] vanaḡi-na ta e-kara-ia

To avoid this a TR moves the outer relative clause to the end of the sentence:

(123) ia ese vanaḡi ta e-kara-ia S[S[ai ese a-kara-ia] vanaḡi-na heḡereḡere-na]

Now the construction in (117) will be considered. The meaning involves the manner of doing something and this appears on the surface in (110) and (111) as dala. Using this fact and the evidence for an underlying structure for heḡereḡere as in (120) above, the following deep structure is posited for (117).



This is translatable as

'sweep the house in a way which is a likeness of the way in which your mother sweeps the house'.

The lowest embedded S quite normally becomes the relative clause

(124) S[sina - mu ruma e-daro-a-mu] dala-na

This then brings us to the following point:

(125) *S[S[sina-mu ruma e-daroa-mu] dala-na hegeregere-na]
dala-na-ai oi ese ruma ba-daro-a

Once again the problem of the series of nouns with suffixed -na (i.e. a series of embeddings) arises, but this time there is one difference: the noun that occurs twice in the earlier case could be any noun, in our example vanaḡi, and it was the object of the verb. Here the noun occurring twice is dala, which is, at the level I am working on at least, introduced in a postpositional phrase. It is suggested that as nega is deletable just leaving ai or a compound postposition, like muri-na-ai with the meaning 'time' the only possible one, so here dala and dala-na-ai are deletable leaving hegeregere with the only possible relationship between the clauses being one of manner. This also explains why ai need not occur after hegeregere-na.

One cannot just have hegeregere in the underlying structure if that involves relativization, for that would involve an embedded S

(126) *hegeregere ta ai ai ese vanagi a-kara-ia

'In a certain likeness we made a canoe'.

But that is not the correct meaning. Rather it is in the likeness of the way we made our canoe that the other canoe is made. On similar ground muri by itself was ruled out as an underlying structure, and it was found necessary to include nega (3.62).

bamo, which means a closer approximation than hegeregere, even an exact copy, appears in the same constructions:

- (127) sisia ta na - ita -ia S[oi - emu sisia bamo - na]
 DOG A (1SSP)SEE (OS) YOUR DOG EXACT COPY (POSS)
 'I saw a dog just like your dog'.

- (128) ina motuka ba - tari - a S[tama - mu ena motuka
 THIS CAR (2FUT)DRIVE(OS) FATHER-YOUR HIS CAR
o - tari - a - mu] bamo - na
 (SP)DRIVE(OM) (ASP)
 'Drive this car just like you drive your father's car.'

There is another expression, na heto, which indicates a similarity but one less close than hegeregere.

- (129) Lau vava-gu raruosi edia hetura na taina dika
 I UNCLES MY TWO THEIR FRIENDSHIP IS A LITTLE BAD
na heto
 'The friendship between my two uncles is as if it has got a bit bad'.

There are a series of related words e.g. iniheto 'like this' and edeheto 'how', but no way has been found of relating them all and explaining na heto in particular.

3.65 Conditional Clauses

In MG (41, 45) two constructions are given. The one that is treated as basic has the subjunctive form of the verb, which includes the affix - ma-, in both protasis and apodosis. E.g. (p.45)

- (13) boma - noi - a bema - heni - mu
 (2 SUBJ) ASK (3SOS) (3SUBJ) GIVE (2SOS)

which is translated as 'If you beg him, he will give it to you'. In the second type, bema, which has the same form as the 3rd sg. subjunctive prefix, is used to introduce the protasis and is followed by a verb in the indicative mood. No example is given. In both types the protasis must come first.

The data from Tupuseleia, in both elicited sentences and free texts, does not match the above account in two major points. First, nega-na-ai may occur at the end of the protasis and, second, the subjunctive only occurs in irrealis conditions. In fact MG makes no distinction between irrealis and realis conditions. (Their translation of the above example is wrong. It should be....."If you were to ask him he would give it to you'.)

The various conditional constructions possible in Tupuseleia Motu, then, are:

Realis conditions:

- (i) bema and nega-na-ai

- (131) bema oi ese bo - ita - ia - mu nega - na -
 IF YOU (TSM) (2FUT) SEE (3SOS) (ASP) TIME (REL)
 ai ira ta ba - heni - a
 AT AXE A (2FUT) GIVE (IOS)
 'If you see him give him an axe'.

The next two examples (132) and (133) have the same meaning as (131).

(ii) bema

(132) bema oi ese bo-itai-a mu ira ta ba-heni-a

(iii) nega - na - ai

(133) oi ese bo-itai-a-mu nega-na-ai ira ta ba-heni-a

This is the same form as a sentence in which there is a time clause and a main clause: However, it does occur with a conditional function.¹⁵

In MTC (i) is the most common form, then (ii), and last (iii).

Irrealis conditions:

(i) Subjunctive and nega-na-ai

(134) oi ese ia boma - duru - a nega - na - ai
 YOU(TSM) HE (2SUBJ) HELP (OS) TIME (REL) AT
bema - moale
 (3SUBJ) BE HAPPY

'If you {were to help} him he would {be }happy'.
 {had helped } {have been}

(ii) Subjunctive

(135) bema - mai aniani nama - heni - a
 (3SUBJ)COME FOOD (1SSUBJ)GIVE (IOS)

'If he had come I would have given him food'.

(ii) is the only form in MTC but the other is well attested by informants.

It is probable that these forms of conditions are found in all dialects.¹⁶

The relativization process for nega-na-ai in time clauses, already described, also applies in these sentence. But what of conditional sentences where nega - na - ai does not occur? Has nega-na-ai been deleted or is there some other structure (at least at an intermediate level, for no suggestion is made here as to the deep structure representation of conditional sentences). To delete nega-na-ai is otherwise unmotivated. On the other hand Chatterton (personal communication) has drawn my attention to the fact that at least some conditional sentences may occur with bona at the front of the apodosis:

(136) ia ese bema - nanadai - gu bona na-ma - hamaoro -a
 HE (TSM) (3SUBJ)ASK (1SOS)AND THEN(1SSUBJ)TELL(1OS)
 'If he had asked me, I would have told him'.

In chapter 5 it is suggested bona, 'and then', may be derived from bona S nega-na muri-na-ai 'and after S' (or bona S nega-na-ai 'and at the time of S' (i.e. approximately, which nega may be). If the conditional structure were S_1 bona S_1 nega-na-ai S_2 then if the first occurrence of S_1 and bona were deleted one could derive

S_1 nega - na - ai S_2

Such a deletion is reasonable in view of the repetition of S_1 , and is not very different from some deletions discussed in chapter 5 on coordination. But this does not help in deciding whether nega-na-ai has been deleted from conditional sentences in which it does not occur, except that to delete nega-na-ai along with a repetition of S_1 appears at least more likely, in view of some deletions connected with coordination, than to delete nega-na-ai by itself. Compare the deletion of eiava + S (5.3). bona may then be deleted, as conjunctions do not need always to appear between conjoined S's though admittedly a sequence usually has one conjunction.

3.7 More Complex Cases of Relativization

3.71 Cognate Accusatives.

There are certain verbs, mostly verbs of emotion, that take a cognate accusative construction. Some of the verbs are:

<u>badu</u>	'be angry'	<u>kiri</u>	'laugh'
<u>gari</u>	'fear, be afraid'	<u>magigi</u>	'be in awe of'
<u>hekwarahi</u>	'work with effort'	<u>moale</u>	'be happy'
<u>hevaseha</u>	'make fun of'	<u>nari</u>	'wait for'

Some of these verbs have a transitive form which may take a human object but the cognate accusative may be used for this and is always used in other cases.

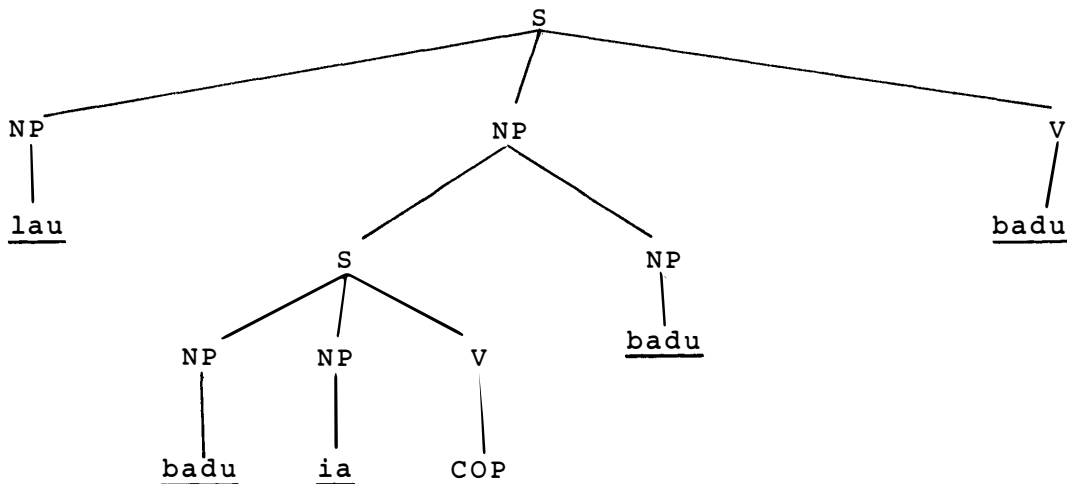
Examples are

- (137) ia badu - na na - badu - mu
 HE (1SSP)BE ANGRY (ASP)
 'I am angry with him'.

- (138) ai ena keto kiri-na a - kiri
 WE(excl)HIS FALLING OVER (SM) LAUGH
 'We laughed at his falling over'.

- (139) Hekoi S [lau ese na - kwadi - a] badu - na
 HEKOI I (TSM)(SP) HIT (OS)
e - badu - mu
 (SP)ANGRY (ASP)
 'Hekoi is angry that I hit him'.

Not much has been said in TG literature about cognate accusatives¹⁷ and the treatment here is at a fairly superficial level. The most satisfactory way at present of handling all three examples above is relativization. The underlying structure is taken to be along these lines, using the first example:



To this structure then apply Relativizer Placement, which adds -na to the higher occurrence of badu, Relative Clause NP Deletion, which deletes the lower occurrence of badu, and Copula Deletion. This leaves ia of the embedded S.

Similarly (139) involves an embedded S which is

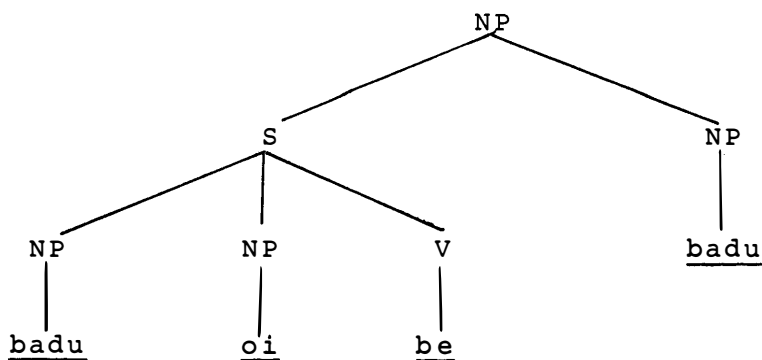
(140) badu be lau ese na-kwadi-a

To derive this structure by relativization explains -na suffixed to badu, and no TR's other than very common ones are required.

There is one situation shown in (141) which might seem not to fit the above analysis,

(141) Ia oi badu-mu e - badu - mu
 HE YOU ANGER (REL) (SP) ANGRY (ASP)
 'He is angry with you.'

Here -mu, a suffix characteristic of the 2nd person singular, occurs where -na is what might be expected as the structure of the NP containing the embedded S would be



However, there are equational sentences like

- (142) Oi na hahine S[dika]-mu
 YOU COP WOMAN BAD (REL)

as well as

- (143) oi na hahine S[dika]-na

which mean 'you are a bad woman'.

In these the person and number of the pronoun may or may not be assigned also to the other NP. This in turn affects the form of the relativizer. (The adjective dika is derived by relativiation. See 3.5)

The only difference between this construction and the cognate accusative is that in the latter the person and number of a pronoun must be assigned to the other NP.

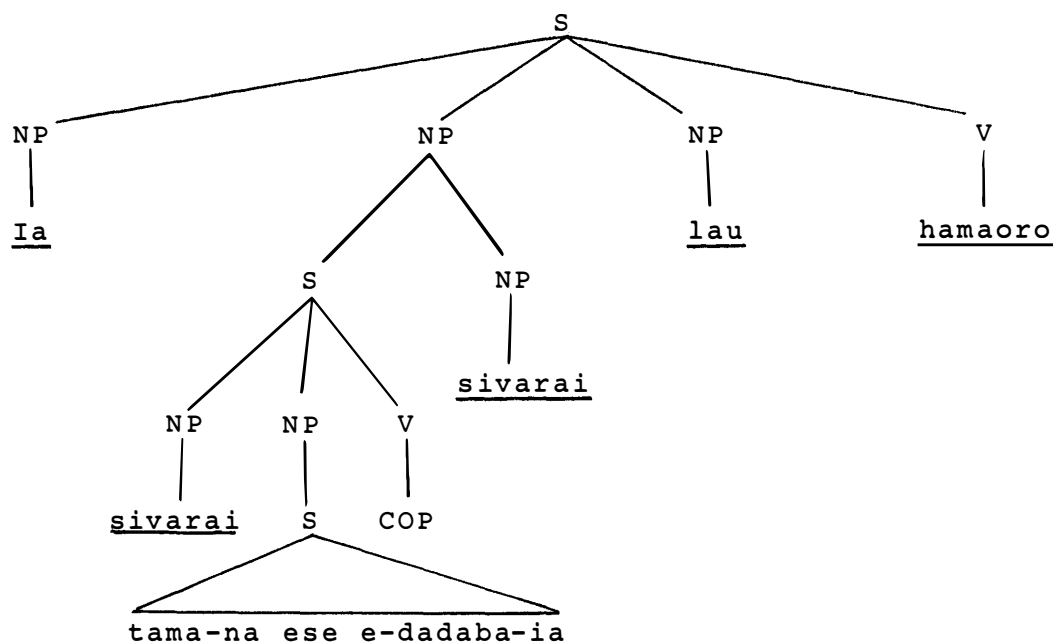
3.72 hereva and similar words.

There are a few words, in particular hereva 'word, speech, a communication by words' and sivarai 'story' which enter in particular a relativization process that involves an embedded S of the form NP NP COP in which another S is embedded. Thus one finds sentences like

- (144) S[tama - na ese e - dadaba -ia] sivarai - na
 FATHER-HIS (TSM) (SP) BEAT (3SOS) STORY (REL)
 e - hamaoro - gu
 (3SP) TELL (1SIOS)

'He told me the story of his father beating him'.

for which the following underlying structure is suggested

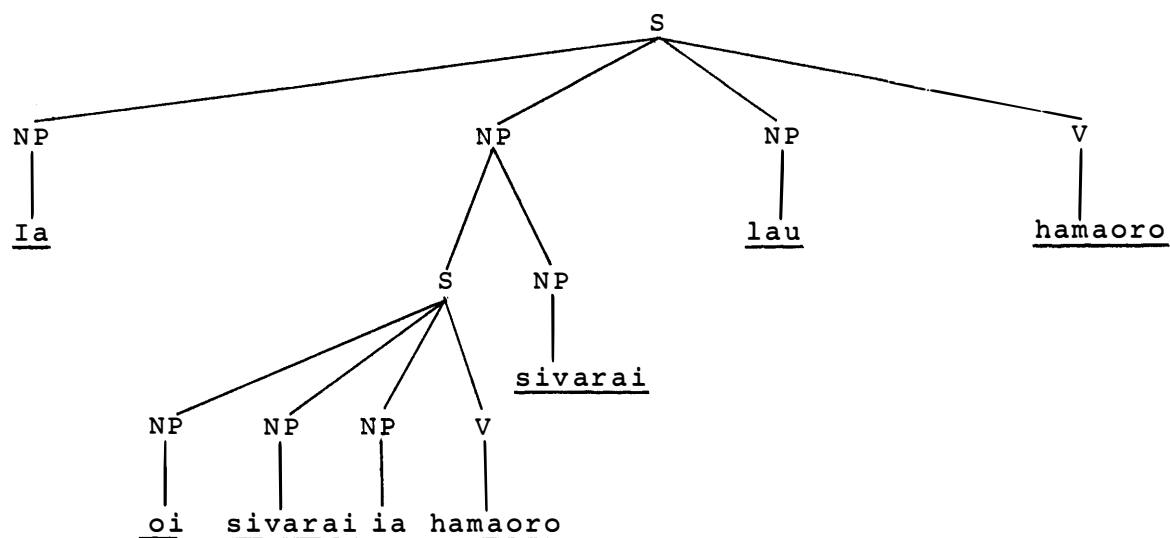


As for the cognate accusative construction (3.71), such an explanation explains -na as a relativizer and requires no extra TR's, for Relativizer Placement, Relative Clause NP Deletion and Copula Deletion only are required.

Sentences like

- (145) S oi ese o - hamaoro - a sivarai - na
 YOU (TSM) (SP) TELL (3SOS) STORY (REL)
 ia ese e - hamaoro - gu
 HE (TSM) (3SP) TELL (1SIOS)
 'He told me the story that you told him'.

arise through only one instance of embedding, not two as above:

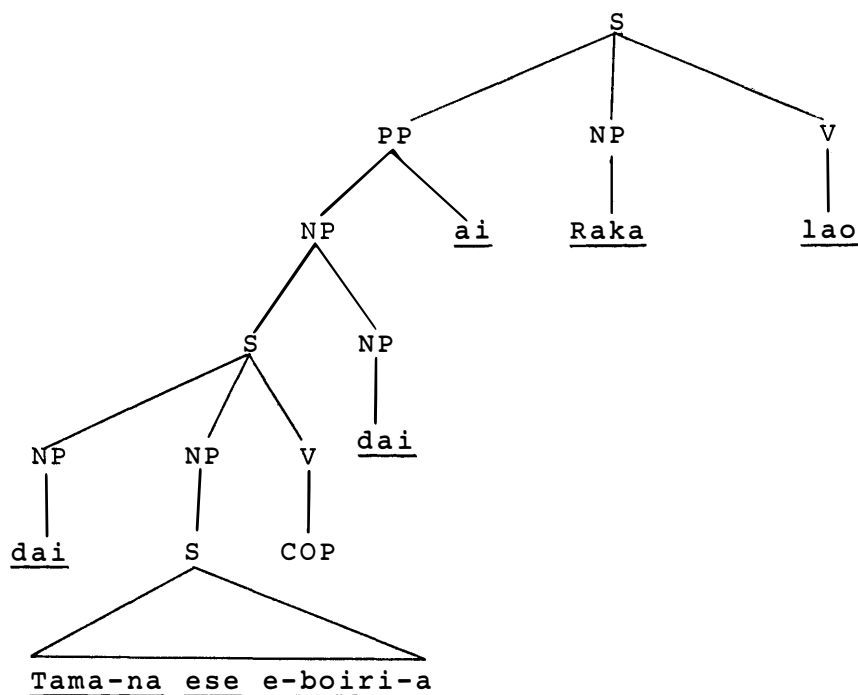


3.73 More Reason Clauses

Reason clauses with badi or ani were dealt with in 3.63. There are also reason clauses of the form S + dai-na ai. For example,

- (146) S tama - na ese e - boiri - a dai - na ai
 FATHER-HIS (TSM) (SP) CALL (3SOS) (REL) (PPN)
Raka e - la
 RAKA (SP) GO
 'Because his father called him, Raka has gone'.

dai is taken to mean 'reason' and the underlying structure to be



This is the same type of structure as for cognate accusatives and hereva, and has the same advantages. -na is suffixed to the higher occurrence of dai-, the lower occurrence of dai is deleted and so is the copula.

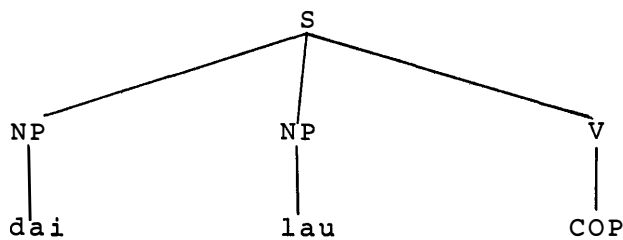
The reason clause may be moved after the main verb:

(147) Raka e - la S[tama-na ese e-boiri-a] dai-na ai

At the intermediate level at which this study is operating, relativization may explain sentences like

(148) Lau dai-gu e - ma
 I (REL) (3SP) COME
 'He came because of me'.

In this instance the lowest S would be



i.e., 'The reason is I.'

This would then produce

(149) lau dai-REL ai

REL here is -gu, to agree with lau, for reasons given in 3.71.

Finally, both badi and dai may occur together in a 'mixed' construction:

(150) lau ese ia bai - na - gwauheni - a badi - na
 I (TSM) HE(FUT) (SP) SCOLD (3SOS) REASON (REL)
s - e - gaukara - mu dai - na ai
 (NEG) (3SP) WORK (ASP) REASON(REL) (PPN)
 'I will scold him because he is not working

3.74 Purpose Clauses

Some of these fit the pattern of relativization that has been seen in the preceding three sections, but others appear not to. The underlying structure proposed here goes a considerable way to handling all these constructions.

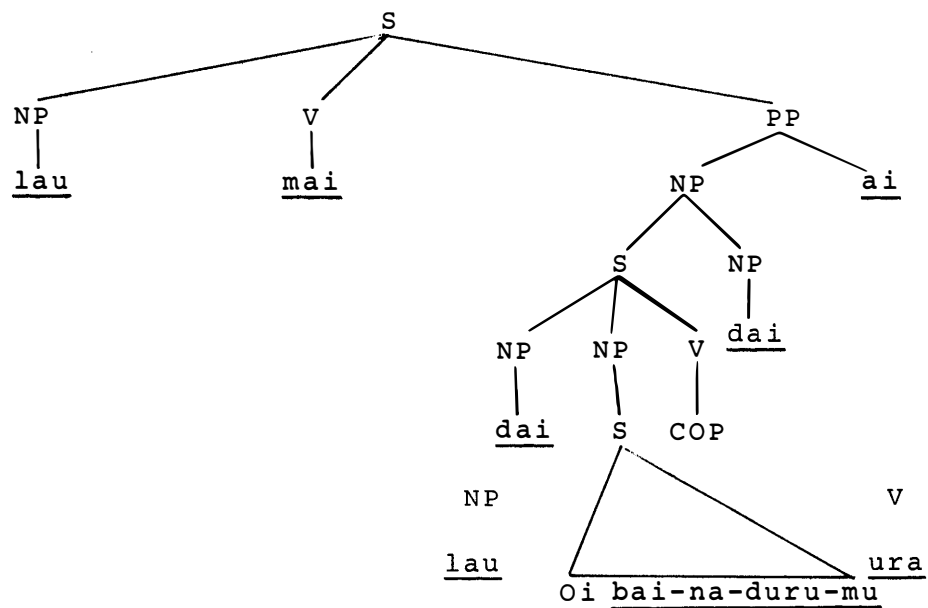
but there are still one or two unchecked presumptions.

Consider these two sentences which are paraphrases:

- (151) Lau na - ma lau na - ura - mu oi bai - na - duru - mu
 I (1SP) COME I (SP) WANT (ASP) YOU (FUT) (SP) HELP (OS)
dai - na - ai
 REASON (REL) FOR
 'I came because I want to help you'

- (152) Lau na - ma oi bai-na-duru-mu toto-na
 PURPOSE
 'I came in order to help you'

R. Lakoff (1968:195ff) noted the fact that such pairs of sentences, one with 'because + want' and the other with a purpose clause, have the same meaning. Moreover they satisfy the parallel structure test and both answer the question 'why?' In general lines following her suggestions this underlying structure is proposed for the above sentences.



This would produce, using the usual relativization rules, the ungrammatical

(153) *Lau na-ma S[S oi bai-na-duru-mu toto-na] dai-na-ai.

This is similar to the ungrammaticality of

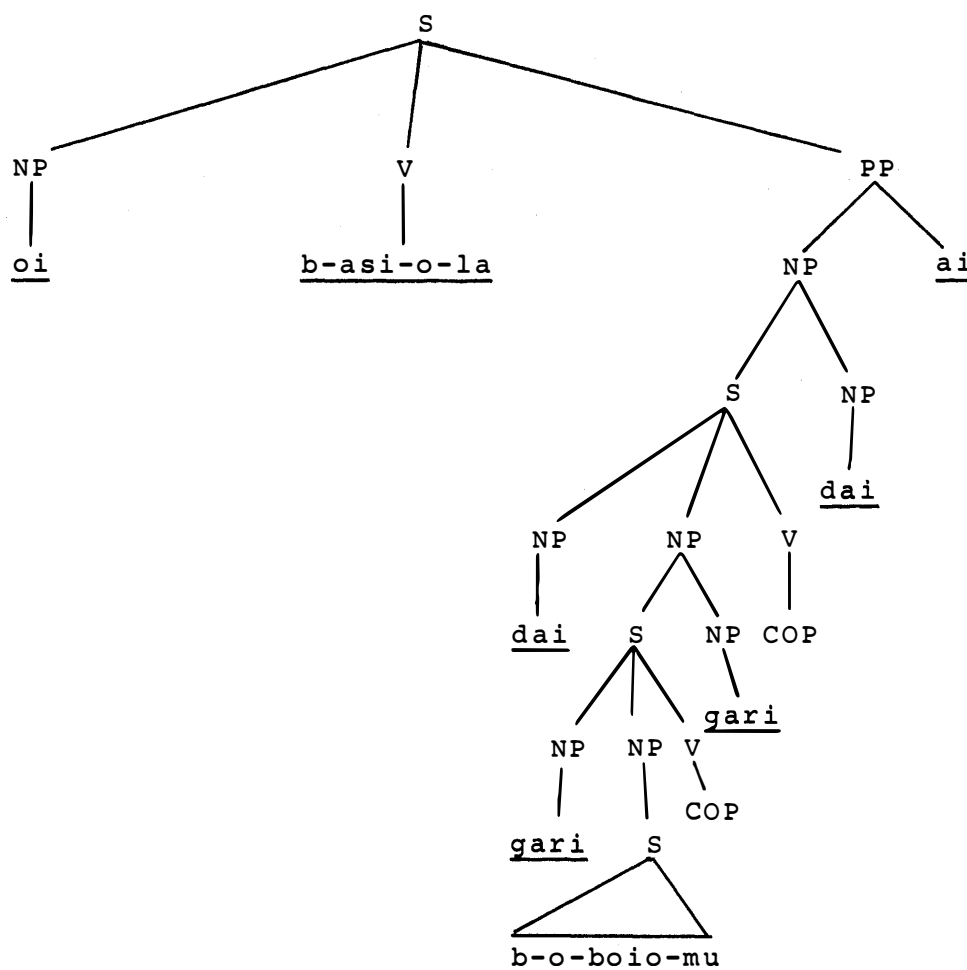
(154) *dala-na hegeregere-na] dala-na-ai

which arose in the derivation of manner clauses (3.64). There the final NP-REL + ai was deleted and it seems justifiable to do so here too. This construction is understood only in this way, i.e. as if dai-na ai was present. (Lakoff also has to delete [because] which she sets up as an abstract verb.)

A parallel case is that of gari 'fear'.

(155) oi b- asi -o - la b - o - boio - mu gari - na
 YOU(FUT) (NEG) (SP) GO(FUT) (SP) BE LOST(ASP)
 'Don't go lest you get lost'.

While not proposing a deep structure one can suggest the following intermediate level structure:



This produces the ungrammatical

(156) *Oi b-asi-o-la S[S[bo-boio-mu]gari-na] dai-na-ai

Again dai-na-ai is then deleted.

There are four other constructions. In the first the S embedded immediately to the left of toto undergoes the infinitive complementizer transformation (see 4.2) This applies only if the subject NP's of the main V and the

V of the complement S are coreferential. Moreover, ura is one of the few verbs that take the infinitive complement as its object. This is further evidence for the hypothesis that ura is in the underlying structure. The infinitive complementizer transformation would apply before ura is nominalized to toto.

Examples of the construction are:

(157) Lau na-ma oi i - duru - mu toto-na

(IC) HELP (2SOS)

which is synonymous with (151) and (152).

(158) ia ese hanua e - rakatani - a haoda toto - na

HE (TSM)VILLAGE(SP) LEAVE (3OS)FISH WANTING (REL)

'He left the village (in order) to go fishing.'

Constructions with toto appear before or after the verb if the infinitive complement is involved, with the latter perhaps more common, while the simple S + toto-na appears only after the verb.

The second and third remaining constructions are like those above except toto-na does not occur. (159) means the same as (151), (152), (157).

(159) Lau oi i - duru - mu na-ma

(160) Raka e - ha - haoda gwarume haida bai - ne - abi

RAKA (SP) GO FISH FISH SOME (FUT) (3SP)CATCH

'Raka went fishing to catch some fish'.

In these instances it is suggested that the step of changing the verb ura to a corresponding noun, toto, does not occur. But there is still the deletion of ura and its subject and of dai-na ai along with them. The signs of the deleted ura, apart from the meaning, are the sameness of the subject of the main verb and the verb in the embedded S and the form of the verb in the embedded S. ura is one of the verbs which requires a modal future form (see 4.11).

The last construction involves the verbs toma (which appears in some forms as to and is very likely related to toto) and gwau. These commonly mean 'say' but here they mean 'intend'.

- (161) Idia e - ma ane haida ba-e - abi e - to
 THEY (SP) COME SONGS SOME(FUT)(SP) SING(SP)INTEND
 'They came to sing some songs'.

- (162) Lau na - hekure bai-na -mahuta na - gwa
 I (SP) LIE DOWN(FUT)(SP) SLEEP(SP) INTEND
 'I lay down to sleep'.

In this construction toma is always in the past tense and the verb in the object S is, again, always in the modal future. It is suggested that this is derived from the same underlying structure as the others. The differences are the underlying verb that has so far been termed ura here appears as toma or gwau (which is not a major complication) and that the object S remains before the V and is not moved after it. dai-na ai is deleted as before.

It might be queried whether these sentences are rather examples of coordination rather than subordination. It is true two conjoined sentences may occur without a conjunction. However, the relationship between the two parts of the above examples is understood by Motu speakers as one of subordination with one clause giving the reason or purpose for the other, e.g. one informant responded with

(163) Idia e-ma badi-na ane haida bae-abi e-to
 REASON(REL)

as a paraphrase.

3.75 For Relativization

The interpretation of the data in the preceding four sections as relativization rather than complementation requires comment. If one tries to handle it as complementation then first a base rule is needed of the form $NP \rightarrow SN$ or $NP \rightarrow S NP$ to handle such things as S sivarai-na and S dai-na ai. This is either an extra rule, or one has to presume that there is some abstract NP present in the other cases of complementation - but there is no evidence for such an abstract NP. -na would have to be a complementizer as well as a relativizer.

Then there are problems with taking S toto-na as complementation. If one treats S dai - na ai as complementation then one has a problem with S[S toto-na] S dai-na ai in the analysis suggested above. This is very awkward, as the S of S NP cannot be rewritten as S NP again. That is, there is no other need for a rule $S \rightarrow S NP$.

If one retreats to just S toto-na then one sacrifices a fairly attractive way of relating all the varieties of purpose clause. One has then also to explain the absence of ai after toto, and the existence of purpose clauses without toto.

A final point is that complementation does not handle expressions like lau dai-gu ai 'because of me'. This cannot be *'the reason that I', but it can be 'a reason that is I'. Of course, 'reason' may be something else at a more abstract level, such as an abstract verb as R. Lakoff suggests (1968: 202), but at this intermediate level at least, relativization seems the correct way to interpret the structure.

NOTES

1. This is another example of the result of T-Object Preposing.
2. The S is kept even though it only dominates the object NP and the V, since even that can be a Motu sentence as is shown in the surface structure given below.
3. The particle na would generally be put after pusi in the Western dialect (Chatterton, personal communication).
4. For instances where the S is embedded in a postpositional phrase see 3.6.
5. That the sentence does, however, mean the same as the structure it is incorrectly derived from is due to the fact that NP NP ida is a form of phrasal conjunction. See chapter 5.
6. * pata henunai Raka ese bita e-alai-a pata-na na tama-gu ese e-karai-a is ungrammatical. In this position, in front of the subject, pata henunai is understood as a locative phrase, not as a relative clause.
7. The deep structure of the instrument is not sought here. Some have suggested there is an abstract predicate 'use', for English (see, e.g. Langendoen 1969).
8. Lyons only gives 'become + Adj.' at this point. For completeness 'become + NP' has been added.
9. It is of interest to note the occurrence of lao in two places as the surface form of the [-stative] abstract verb. See also 3.64.
10. The aspect suffixes, -mu and -va, indicate both continuous and habitual actions, as mentioned in chapter 2.
11. This point and the next are the same as for gabū, as described in 3.61.

12. The range of nominalizations and their sources have not yet been investigated.

13. MG(36) lists hegeregere-na and na heto as manner adverbs meaning 'as', then on p. 45 they are described as marking 'clauses of comparison'. An example is given similar to (117):

<u>Ba - duru - gu,</u>	<u>kaka - gu</u>	<u>o - duru - a</u>
(2SM,FUT)HELP(OM)	OLDEST	(SM) HELP (OM)
	BROTHER-MY	

hegeregere-na

'Help me as you helped my eldest brother'.

These clauses I have called manner clauses, and the term 'clause of comparison' is kept for clauses like those that began with 'than', 'asas' etc., in English (See, e.g. Ross 1969c). Actually Motu does not appear to have such clauses, and it is not intended to go into the structure it does have to express comparison in this thesis.

14. In both of these, incidentally, sea-na and vanaḡi-na may be replaced by gau. This is a different situation from that in which T-gau Substitution was earlier stated to apply. Here Relative Clause NP Deletion has already occurred. The substitution of gau for the NP immediately to the right of the embedded S apparently can take place as the same nouns sea and vanaḡi (but not with the same reference) occur before them in the sentence.
15. Cf. English 'When I see him I'll mention it' and 'Whenever there was a car, we would try to beg a ride'. These sentences can be conditional.
16. Chatterton (personal communication) has noted most of them in the Western dialect.
17. See Fillmore 1968 for comments on their treatment in case grammar.

4. Complementation

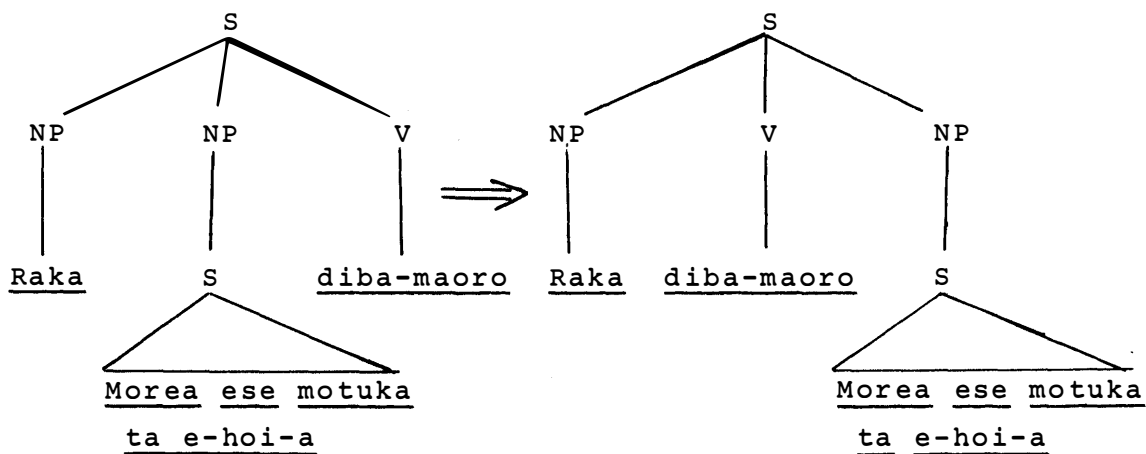
There are two main forms of complement in Motu - simple S and the infinitive¹.

4.1 Simple S Complement

The S is generated by BR 3 $NP \rightarrow S$. There is no complementizer. This complement type is therefore taken as the basic one.

4.11 Simple S Complement as Object

This is extremely common. The only TR required is one that moves the object S from in front of the verb to after it.



- (1) Raka e - diba - maoro S[Morea ese motuka ta
 RAKA (SP) REALIZE MOREA (TSM) CAR A
e - hoi - a]
 (SP) BUY(OS)

'Raka realized that Morea had bought a car.'

This applies in nearly all cases. One case where it does not is with toma and gwau meaning 'intend' (see 3.74). It is optional with diba 'know'².

The verbs which take the simple S complement fall into two groups - those that allow any tense in the complement S, and those that allow only the modal future.³ That is, in one group the event in the complement S may occur at any time in relation to the event in the matrix S, while in the other the event in the complement S may only occur after that of the matrix S.

Group 1 verbs include:

<u>diba</u>	'know'	<u>lalo</u>	'think'
<u>gwau</u>	'say, think'	<u>lalahadai</u>	'think, plan'
<u>hamaoro-a</u>	'tell, inform'	<u>nihi</u>	'dream'
<u>helaloboio</u>	'forget'	<u>sisiba-heni-a</u>	'warn'
<u>helalodavari</u>	'remember'		

These verbs, like those of group 2 also, do not have an object suffix, except for the indirect object if one is present. This is consistent with the fact that the object suffix generally only occurs with count nouns. However, for an instance where the object suffix does occur see 4.2.

An example of a group 1 verb having a simple S complement with a verb in the past tense is (2):

- (2) Lau na - helaloboio S[ia varani e - ma]
 I (SP) FORGET HE YESTERDAY (SP) COME
 'I forgot that he came yesterday.'

An example with the verb in the future:

- (3) Sina - mu ese lau e - hamaoro - gu S[tama- mu
 MOTHER-YOUR(TSM) I (SP) TELL (OS) FATHER-YOUR
 b - e - mai - mu kerukeru]
 (FUT)(SP) COME (ASP) TOMORROW
 'Your mother told me that your father will come
 tomorrow.'

Group 2 verbs include:

<u>gwauhamata(heni-a)</u>	'promise (to someone)'
<u>gwau-a-tao</u>	'forbid'
<u>hadibai-a</u>	'teach'
<u>hamaoro-a</u>	'tell, order'
<u>noi-a</u>	'request'
<u>ura</u>	'want, like'

Examples are:

- (4) Ia e - gwauhamata S[bai-ne - g̃aukara - auka]
 HE (SP) PROMISE (FUT)(SP) WORK HARD
 "He promised that he {would } work hard.'
 {will } "

- (5) Una tau ese lau e - hamaoro - gu S[ena sisia
 THAT MAN (TSM) I (SP) TELL (IOS) HIS DOG
bai - na - nari - a]
 (FUT) (SP) LOOK AFTER (OS)
 'That man told me to look after his dog.'

Notice that hamaoro-a occurs in both groups. This is because it has two different meanings, 'inform' and 'order'. It might in fact be more correct to say there are two different verbs. This is how R. Lakoff (1968:20) handles 'say' in English which appears with two different complementizers and has a different meaning in each case.

The base rules allow for a complement S to be embedded within a complement S, and so on, as in (6):

- (6) Tama - gu e - gwau - mu S[oi mai diba - mu
 FATHER MY (SP) SAY (ASP) YOU KNOW
 S[lau na - koikoi]]
 I (SP) LIE
 'My father says that you know I lied.'

The simple S complement also occurs after the copula. This fact was seen in 3.63 with reason constructions involving badi and ani, and was used extensively in underlying structures of 3.71 et seq. Other examples are:

- (7) ena hereva be umui ibou-mui-ai ba - o - ma
 HIS MESSAGE COP YOU ALL (FUT) (SP) COME
 'His message was that you should all come.'

- (8) Egu ura be motuka ta bai-ta-hoi - a
 MY WISH (COP) CAR A (FUT) (1PSP) BUY (OS)
 'My wish is that we should buy a car'.

4.1.1.1 Coferential NP Deletion

It was mentioned in 2.1 that NP's may be deleted when those verbal affixes which agree with the subject and object (direct or indirect) in person and number can indicate who the subject and object are without ambiguity. Such situations often arise when a simple S complement occurs. Two examples are (4) and (5) given above with group 2 verbs. In the first there is no need to repeat ia in the complement S as there is no chance of ambiguity, - ne- indicating that the subject is 3rd person singular. In the second lau is not repeated as -na- in the verb in the complement S indicates the subject is 1st person singular. Indeed, not to delete the NP is ungrammatical.

However, many verbs which take a simple S complement as object also have indirect objects and in these cases the possibilities for having coreferential NP's are increased.

- (9) *Raka ese Henao e - hamaoro - a S $\left\{ \begin{array}{l} \text{Raka} \\ \text{Henao} \end{array} \right\}$ ese
 RAKA (TSM) HENAO (SP) TELL (IOS) (TSM)
motuka e - hadika -ia]
 CAR (SP) DAMAGE (OS)

(9) is ungrammatical if the two occurrences of Raka are coreferential or the two occurrences of Henao. It is grammatical if the NP's are not coreferential, i.e., that there are two Raka's or Henao's involved:

'Raka told Henao that $\left\{ \begin{array}{l} \text{Raka} \\ \text{Henao} \end{array} \right\}$ had damaged the car.'

If the pronoun, ia, is put in the place of the coreferential NP in the complement, or if the NP is deleted, the sentence is then grammatical. However, either of these involves ambiguity as to which NP does the pronoun ia or the subject prefix in the verb refer to:

- (10) Raka ese Henao e-hamaoro-a S[(ia ese) motuka e-hadikai-a]

The ambiguity (if it is not overcome by the context) may be removed by having both ia and the original NP together or where the relevant NP in the complement S is coreferential with the subject NP of the verb in the matrix S, by having ia and sibo-na 'himself'⁴.

- (11) Raka ese Henao e - hamaoro - a S[ia {Raka
sibo-na} ese
motuka e-hadika-ia]
'Raka told Henao that he {Raka
 himself} had damaged the
car.'

- (12) Raka ese Henao e-hamaoro-a S[ia Henao ese motuka
e-hadika-ia]
'Raka told Henao that he, Henao, had damaged the
car.'

4.12 Particular Cases of Simple S Complement as Object

The next three sections deal with instances of the simple S complement as the object of a verb which occur in constructions that traditional grammar has picked out for special attention - indirect speech, questions and commands. Also, they, along with direct speech, questions and commands, are receiving increasing attention from

transformational grammarians. However, there are many general problems regarding their deep structures. Here attention is confined simply to the occurrence in Motu of the simple S complement.⁵

4.12.1 Indirect Speech

(6), (11) and (12) already given are examples of indirect speech. Another is

- (13) Tau ta e-gwa S[bai - ne - noho]
 MAN ONE(SP) SAY (FUT) (SP) STAY
 'One man said that he would stay.'

All the verbs which take this construction belong to Group 1, i.e. the verb in the simple S object may be in any tense.

4.12.2 Indirect Questions

The main verb which takes an indirect question as object is nanadai-a 'to ask someone a question', which has a related form henanadai which is used when the person asked is not specified.⁶ All verbs which take indirect questions as objects belong to group 1.

There are two types of direct questions - yes-no questions and those that involve question words. Similarly there are two types of indirect questions. Examples of yes-no indirect questions are:

- (14) Lau ese Loa na - nanadai - a S[ia b - e -
I (TSM)LOA(SP) ASK (IOS) HE (FUT)(SP)
gaukara - mu eiava]
WORK (ASP) OR
'I asked Loa whether he was going to work (or
not).'
- (15) Tama - gu e - daradara-mu S[oi o - koikoi -mu
FATHER-MY (SP) WONDER (ASP) YOU(SP) LIE (ASP)
eiava]
OR
'My father is wondering whether you are lying
(or not).'
- (16) Ia asi diba - na S[idia e - ha - labana
HE (NEG) KNOW THEY (SP) GO HUNT
eiava lasi]
OR NOT
'He does not know whether they went hunting
or not.'
- These indirect questions are derived from two
conjoined S's, the second being the negative of the first.
(5.3, eiava). bema, which may occur at the beginning
of the protasis of realis conditions, may be used at the
start of an indirect question. If it is present then
eiava may be deleted.
- (17) Lau ese na - nanadai - a S[bema ia b - e-lao - mu
I (TSM)(SP) ASK (IOS) IF HE(FUT)(SP)GO (ASP)
Pari (eiava)]
PARI OR
'I asked him if he was going to go to Pari.'

However, either bema or eiava must be present, to signify that an object S is an indirect question, not a statement.⁷ Thus, e.g. if eiava is deleted from (16) the result is understood as a statement:

- (18) ia asi diba-na S[idia e -ha-labana]
 'He does not know that they went hunting.'

Examples with question words are:

- (19) Sina - gu e - henanadai S[daika ese e - kara- ia]
 MOTHER -MY (SP) ASK WHO (TSM) (SP) DO (3SOS)
 'My mother asked who had done it.'

- (20) Umui mai diba-mui S[dahaka dai-na-ai o - ma]
 YOU KNOW WHAT BECAUSE OF (2SP) COME
 'You know why you have come.'

4.12.3 Indirect Commands

Verbs which take indirect commands as objects, such as hamaoro-a 'tell', hadua - ia and hagani-a 'to order', all belong to Group 2.

- (21) Lau ese na - hamaoro - mu - mu S[ba- - o - la]
 I (TSM) (SP) TELL (2SIOS) (ASP) (FUT) (2SP) GO
 'I am telling you to go.'

- (22) Vava - na ese e - hadua - ia S[bai - ne - heatu]
 UNCLE HIS (TSM) (SP) ORDER (3SIOS) (FUT) (SP) FIGHT
 'His uncle ordered him to fight.'

The tense/mood of the verb in the indirect command is always the modal future.⁹

4.13 Simple S Complement as Subject

This is found only with the copula. No special TR's are required:

- (23) S[kwalahu ruma lalo-na-ai e - vareai - mu] na
 SMOKE HOUSE IN (SP) ENTER (ASP) (COP)
dia namo
 NO GOOD

'That smoke is entering the house is no good.'

This is not to be confused with (24) which is an instance of relativization.

- (24) S[ruma lalo - na - ai e - vareai - mu] kwalahu - na
na dia namo

'The smoke that is entering the house is no good.'

Another example is:

- (25) Varavara e - heai - mu na dika
 RELATIVES (SP) QUARREL (ASP) (COP) BAD
 'It is bad for relatives to quarrel.'

4.2 Infinitive Complement

4.2.1 Infinitive Complement as Object

With a few verbs, in particular ura 'want', another complement form, the infinitive, may appear as object. The following pairs of sentences (26) and (27),

(28) and (29) are paraphrases.

(26) Lau na - ura - mu S[emu motuka bai - na - hoi - a]
I (SP) WANT (ASP) YOUR CAR (FUT) (SP) BUY (OS)

(27) Lau S[emu motuka i-hoi-na] na-ura-mu
(IC)

Both mean 'I want to buy your car.'

(28) Ia e - ura - mu S[ruma bai - ne - kara - ia - haraḡa]
HE(SP) WANT(ASP) HOUSE (FUT)(SP) MAKE (OS) QUICKLY

(29) Ia S[ruma i - kara - haraḡa - na] e - ura - mu
(IC)

Both mean 'He wants to build the house quickly.'

The infinitive complement is formed by blocking the appearance of the tense marker¹⁰ and subject prefix and by prefixing, in the case of transitive verbs, the infinitive complementizer (IC) i-. The object suffix is attached after the adverb, if one occurs, instead of before it. The form of the suffix is as for the finite verb except for the 3rd person singular where it is -na instead of -(i)a.

The tense of the verb in the complement S is the modal future, the subject of the verb in the complement S must be coreferential with the subject of the main verb. Notice that the S-movement transformation is optional with the infinitive complement which in fact usually remains before the verb.

A similar construction occurs with intransitive verbs, though here the infinitive is the verb root with no affixes so that, were it not for the parallelism of the examples given above, one might argue that one is dealing with a noun not an infinitive complement. Examples are:

- (30) Lau S[digu] na-ura-mu
 I BATHE
 'I want to bathe.'
- (31) Idia S[taoni lao] e - ura - mu
 THEY TOWN GO
 'They want to go to town.'

Other verbs taking the infinitive complement as object are hadua-ia 'order', lalo-a-boio 'forget' and lalo-a-davari 'remember'. The last two are exceptional in that they take the object suffix. Then, if T-S movement is applied helaloboio or helalodavari occurs with the object suffix absent as usual.

- (32) Tama - gu S[egu kaia i - mailai - na] e - lalo -
 FATHER-MY MY KNIFE (IC)BRING (OS)(SP) FORGET
a - boio
 'My father forgot to bring my knife.'

The paraphrase with helaloboio is:

- (33) Tama - gu e-helaloboio S[egu kaia bai - ne -
mailai-a] (FUT) (SP)

That is, the infinitive complementizer can only occur where the tense of the equivalent simple S complement is future. Thus, (32) is not a paraphrase of (34).

- (34) Tama - gu e - helaloboio S[egu kaia e-mailai-a]
'My father forgot that he had brought my knife.'

The infinitive complement seems to be used only when the surface form of the complement is short and simple, as in the above examples. There may be some simple restriction, e.g., on the extent of embedding allowed, but investigations so far have not shown one. One is more likely to find the simple S complement as in

- (35) Lau na - ura- mu S[S[varani taoni ai o-hoi-a]
I (SP) WANT (ASP) YESTERDAY TOWN IN BUY
dabua - na bai - na - ita -ia
CLOTH (REL) (FUT) (SP) SEE (OS)
'I want to see the cloth that you bought in town yesterday.'

than the infinitive complement as in

- (36) Lau S[S[varani taoni ai o-hoi-a] dabua-na i-ita-na]
I TOWN BUY CLOTH SEE
na-ura-mu
WANT

However, informant reaction to the latter is that it is 'very long' rather than 'wrong'.

The infinitive complement may occur with suffixed adverbs of manner as in (29), but it does not occur with the verbal prefix ha- indicating motion towards a place. Thus you find

- (37) Ia e - ura - mu S [bai - ne - ha - haoda]
 HE (SP) WANT (ASP) (FUT) (SP) GO FISH
 'He wants to go fishing.'

but not

- (38) *Ia [ha - haoda] e - ura - mu

4.2.2 Infinitive Complement as Subject

Like the simple S complement the infinitive complement may be the subject of the copula.

- (39) S [Unuseni haoda] na auka herea PP [lau egu ai]
 THERE FISH (COP) HARD VERY ME FOR
 {'To fish} there is very hard for me.
 { Fishing }

- (40) S [Emu motuka rua i - huri - dia] na mai hekwarahi-na
 YOUR TRUCK TWO (IC) WASH (OS) (COP) HARD WORK
 PP [ai emai ai]
 US (excl) FOR
 {'Washing} your two trucks is hard work for us.
 { To wash }

To derive the infinitive complement here in (39) and (40) the same rules apply as were given in 4.2.1. Coreferential NP deletion has operated to delete the subject of the V in the complement as it is coreferential with the NP in the postpositional phrase.¹¹

The next two sentences are paraphrases:

- (41) S[Dina ai au i - dibu - dia] na asi moale - na
 SUN IN WOOD(IC) CARRY (OS) (NEG) ENJOYMENT
 PP[ta ena ai]
 ONE FOR
 'Carrying wood in the sun is without enjoyment
 for anyone.'

- (42) S[Dina ai au i-dibu-dia] na asi moale-na
 'Carrying wood in the sun is without enjoyment.'

(42) is the more common form. Its most likely source is from (41) by the deletion of the postpositional phrase containing the indefinite PRO form ta 'one, anyone'.

NOTES

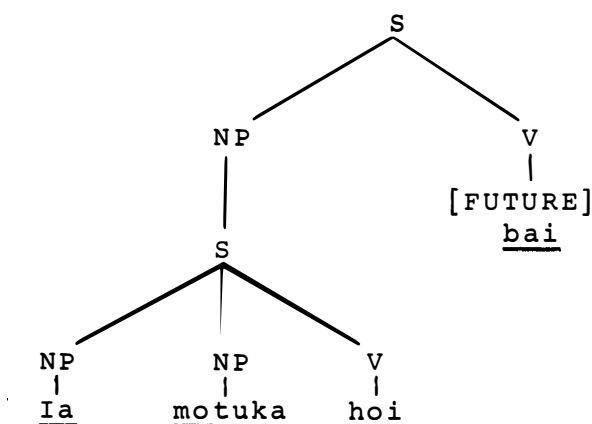
1. Recently some sentences have been found that suggest there may be a need to widen the account of complementation given here to include a third type that might be called a gerundive. However, my data is too restricted and conflicting for a decision.
2. The position of the simple S complement as object has been referred to earlier in the discussion on BR1.
3. See 6.5.1. for an explanation of the term 'modal future'. MG(16) calls it 'the simple future'.
4. These methods of avoiding ambiguity were drawn to my attention by Chatterton (personal communication). The way in which these surface structures, ia Raka and ia sibo-na are derived is not investigated here, as this involves the whole problem of pronominalization which is beyond the scope of this study. Another point that would arise is the relationship between T-Relative Clause NP Deletion and the NP deletion operation in simple S object complements. This latter operation also occurs in conjoined sentences. In the following sentence lau has been deleted before na - heau.

Lau na - tore - isi bena na - heau
 I (SP) STAND UP AND THEN(SP) RUN
 'I stood up and (then) ran'.

The only difference appears to be that in Relative Clause NP Deletion it is the first occurrence of the NP that is deleted while in the others it is the second.
5. So, e.g., the problem of the relation between direct and indirect speech is not taken up. Traditional grammar derives indirect speech from direct. Recently Lee (1969) and Gallagher (1969) have argued that this is not an adequate account. Lee proposes that indirect speech arises from two sources - from direct speech and directly from the deep structure. Gallagher suggests that indirect speech is, in English, simply a type of 'that' complementation, and that there is no transformational relationship between direct and indirect speech.

6. he indicates that there must be a person asked, however. See chapter 2.
7. In direct questions this is not so. The question is indicated by the tags a or ani, or by the intonation pattern alone.
8. Compare 3.31 where examples are given of relative clauses and indirect questions being paraphrases. See Baker (1968, 1969).
9. This is in contrast to direct commands where the immediate future also occurs as well as a form with no surface marking for tense.
10. Tense is assumed here to be an abstract predicate (cf. e.g. Langendoen 1969:117,121f) which appears in most verb forms as a prefix, but which in some cases does not have a surface manifestation. E.g. it does not appear when the [+stative] abstract predicate occurs in a sentence like ia mahuta 'he is asleep'.

Thus in (26) and (27) the underlying structure of the embedded S is



In the simple S complement the verb then appears as bai-na-hoi-a, after an operation that places [FUTURE] before the lower V. In the case of the infinitive complement, however, a plugging-in TR applies that moves the lower V up under FUTURE. The abstract predicate FUTURE then does not appear on the surface but only the verb stem, hoi, in the form i-hoi-na.

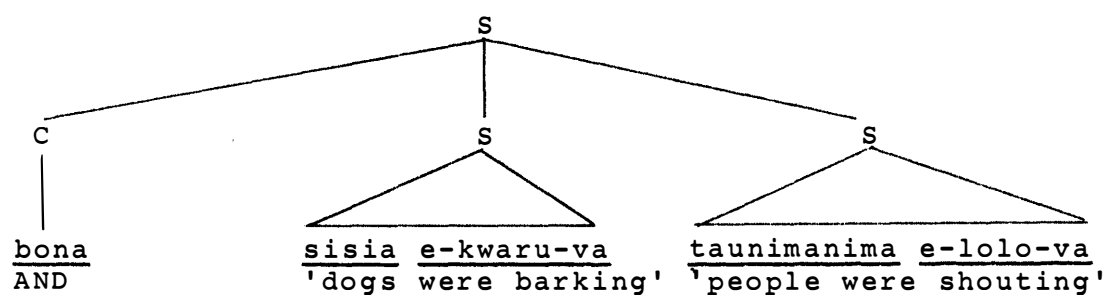
11. Cf. Rosenbaum (1967:115f) concerning English on this point and the next.

5. Coordination

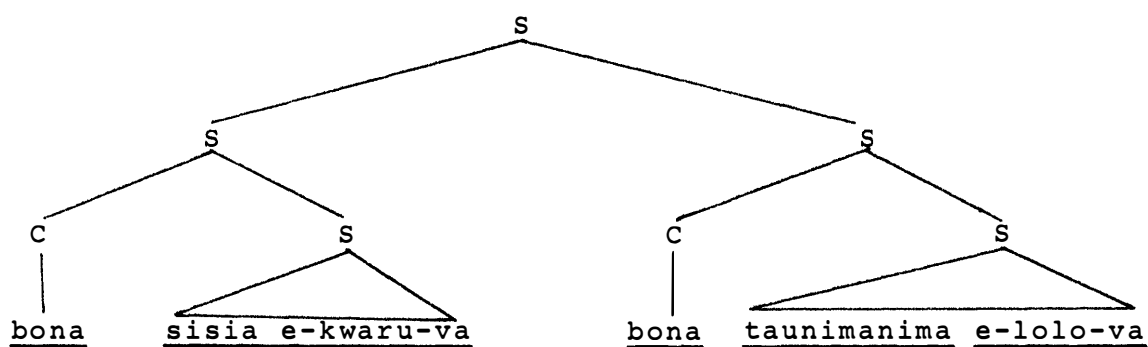
5.1 Sentence Conjunction

The deep structure for sentence conjunction is generated by BR 4 (2.1). An example of the processes required to reach the surface is as follows.

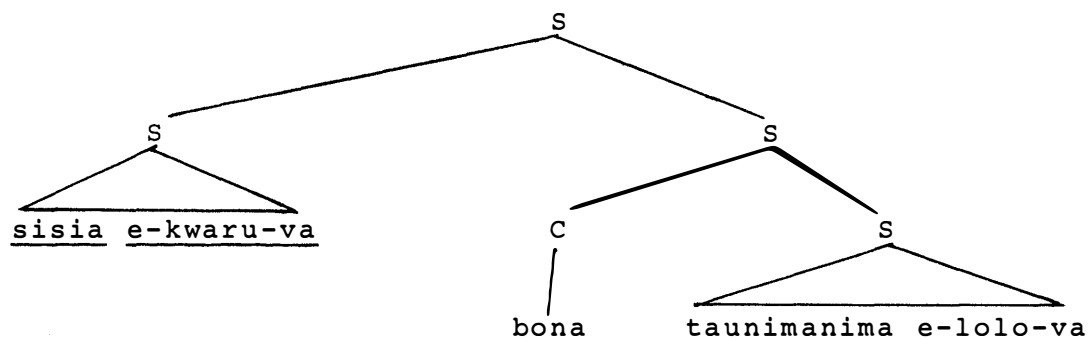
BR 4 forms



Then T-Conjunction Copying applies to form



There are two different operations involved. The first C is moved under the lower S while the other C's are added. Next is T-Initial bona Deletion:



This is the sentence

- (1) Sisia e - kwaru - va bona taunimanima e - lolo - va
 DOGS (SP) BARK (ASP) AND PEOPLE (SP) SHOUT(ASP)
 'Dogs were barking and people were shouting.'

If more than two S's are conjoined, all the occurrences of bona remaining after T-Initial bona Deletion, though generally not the last, may be deleted. E.g.

- (2) Tatau e-lolo-va bona hahine e-tai-va bona sisia
 MEN SHOUT AND WOMEN CRY AND DOGS
e-kwaru-va
 BARK
 'Men were shouting and women were crying and dogs
 were barking.'

becomes

- (3) Tatau e-lolo-va, hahine e-tai-va bona sisia e-kwaru-va
 'Men were shouting, women were crying and dogs were
 barking.'

All occurrences of bona may be deleted:

- (4) Tatau e-lolo-va, hahine e-tai-va, sisia e-kwaru-va¹

bona is the most common coordinating conjunction. ma 'and' is also used sometimes. (It has other meanings too, e.g. 'again').²

For an acceptable conjoined structure it seems that the sufficient semantic restriction is that the ideas in each S be in some way related. The nature of this relationship is not pursued here.

5.2.0 Sentence Conjunction Involving Reduction

If a constituent in one conjoined S is identical to a constituent in another conjoined S then the surface structure of the whole sentence generally is not a full form such as was seen in 5.1. Thus instead of

- (5) Raka b - e - haroro - mu bona Doana b - e -
 RAKA (FUT) (SP) PREACH (ASP) AND DOANA (FUT) (SP)
haroro - mu
 PREACH (ASP)

'Raka is going to preach and Doana is going to preach.'

one is more likely to find

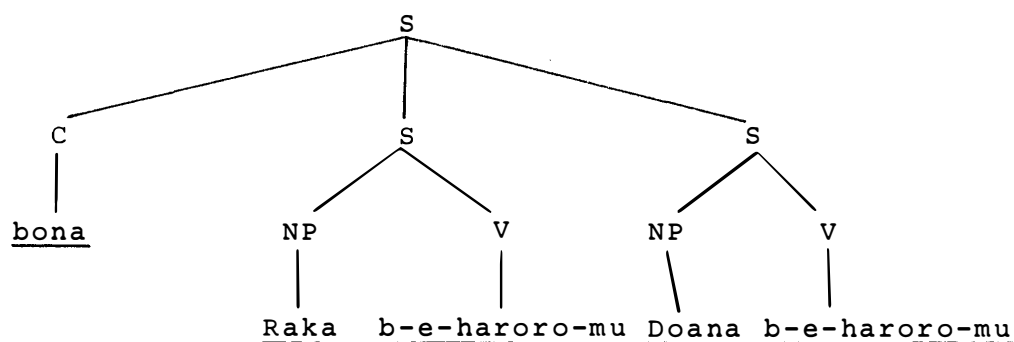
- (6) Raka bona Doana b - e - haroro-mu
 Raka and Doana are going to preach.'

The question arises as to how the conjoined NP's in (6) are derived. The two sentences are paraphrases and the simplest way to handle the relationship between them is to derive (6) from (5) by a process of reduction. There

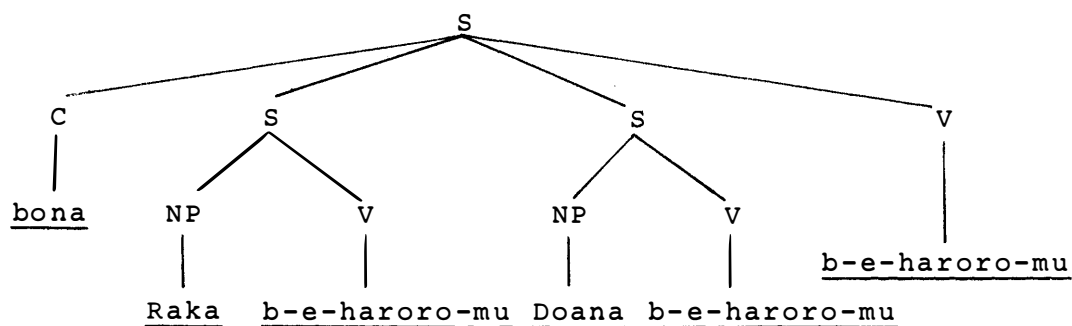
is a need for having conjoined S's in the deep structure to explain (5) while conjoined NP's in the deep structure (BR5, 5.9) express a different meaning - indeed it would indicate, in the example discussed here, that Raka and Doana are to perform a preaching duet.

The reduction process is broadly like this:

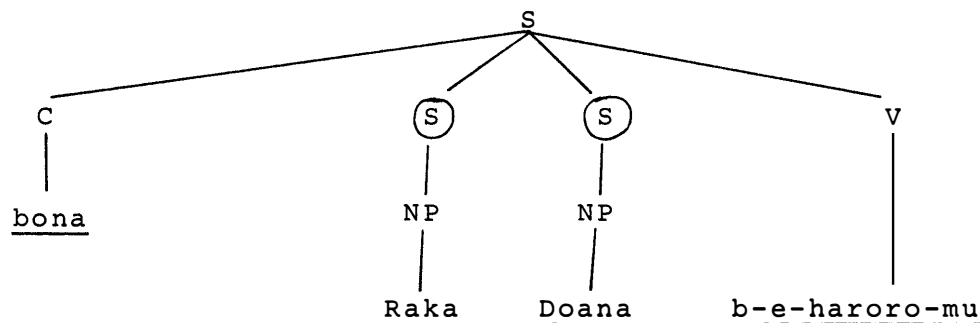
(i) BR4 generates



(ii) Then the shared constituent is copied on the right and Chomsky-adjoined

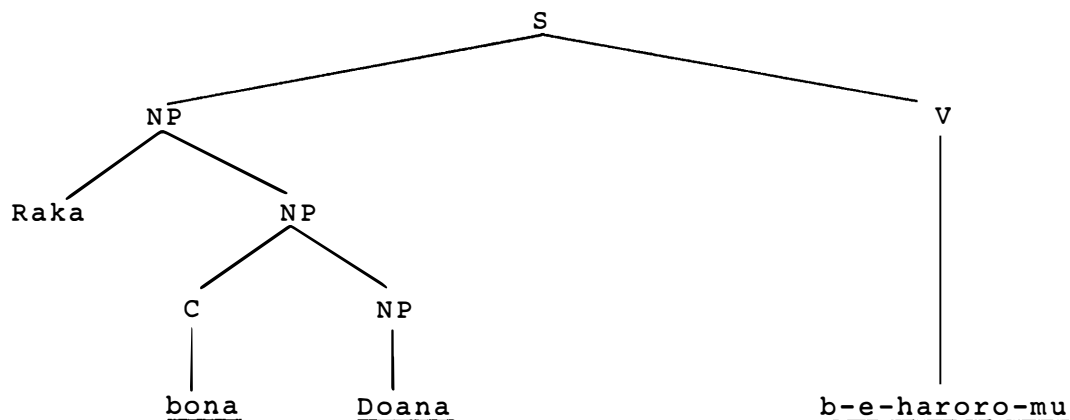


(iii) Then the shared constituent is deleted from its original position

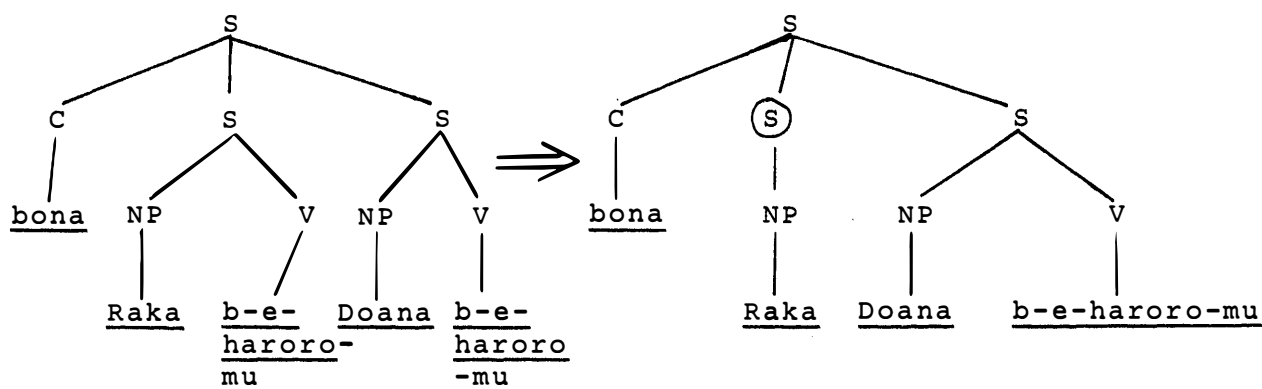


The circled S's are deleted in accordance with Ross'(1966b) rule for tree-pruning.

(iv) Then a new NP node is created and the conjunction placed



Conjunction reduction is ordered before conjunction copying to avoid having to put conjunctions in and then delete them again (cf. Lakoff and Ross 1966). Steps (i) to (iv) largely follow Langendoen (1969:88) who points out that simply deleting the shared constituent would give the wrong structure. To take our Motu example:



This does not show the two NP's as coordinate and further alterations to the structure would be necessary. On the other hand, Langendoen has to admit that the last step in his derivation is also completely ad hoc. For the present, however, conjoining two NP's that are dominated only by the higher S is preferred to moving out a NP from under the lower S and then joining it to the newly created node above the other NP.

The agreement transformations follow conjunction reduction as the verb agrees in number with the conjoined NP subject, i.e. in (6) it is plural.³ The verb agrees in person with any NP that is first person if there is one or if not then with any NP that is second person. If the NP's are only third person then the verb is third person. If the subject NP's are first and second person then the inclusive form of the first person plural is used, but if they are first and third person then the exclusive form is used.

- (7) Lau bona oi ta - kwalimu
 I AND YOU(SP) WIN
 'You and I won'.

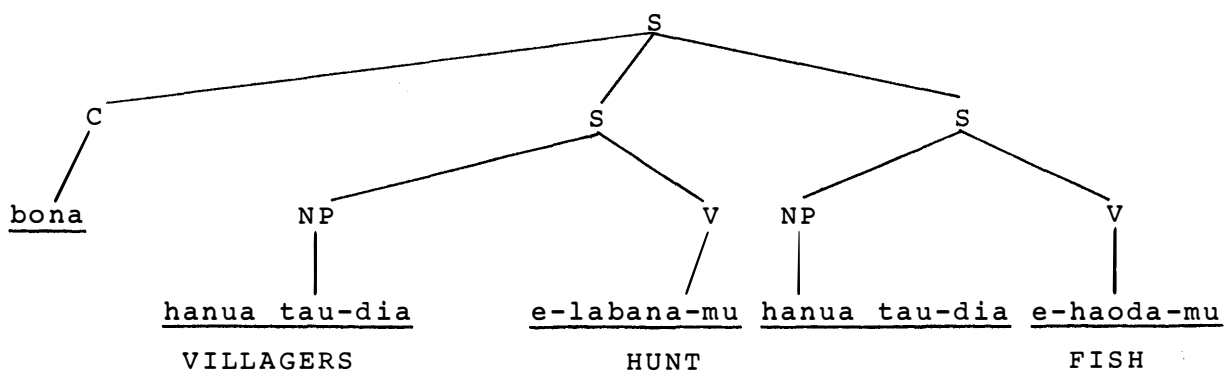
ta- is the first person plural inclusive subject prefix.

- (8) Lau bona ia a-kwalimu
 HE (SP)
 'He and I won'.

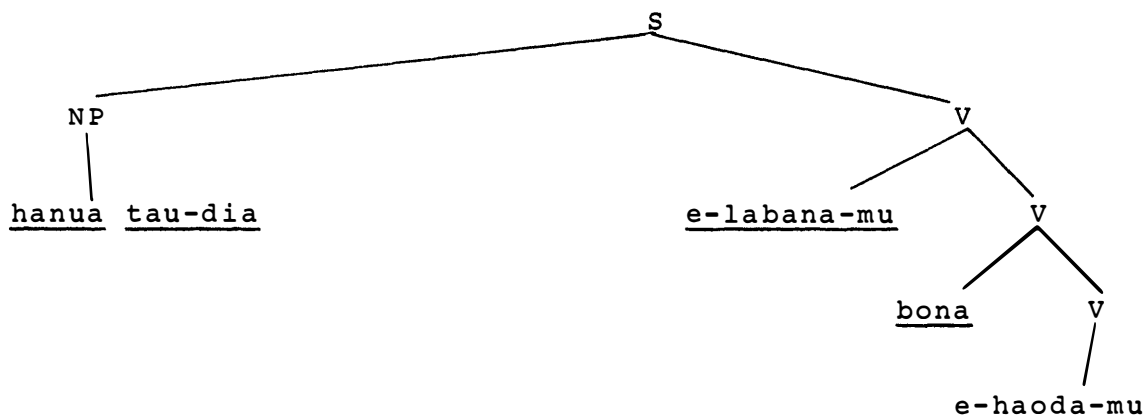
a- is the first person plural exclusive subject prefix.

Various constituents in two (or more) conjoined S's may be identical and examples of the main cases are given here. The first example was of identical V constituents or, one might alternatively put it, of a shared V constituent, in that the two subject NP's, which in the deep structure were each subject of one of the two occurrences of the identical V, now share the one surface occurrence of the V.

The next example is of a shared NP that is the subject of a V.



The shared constituent is copied between C and the first dominated S, i.e. on the left, and then the original occurrences of the shared constituent are deleted. With the creation of the new V node and the placement of the conjunction is derived

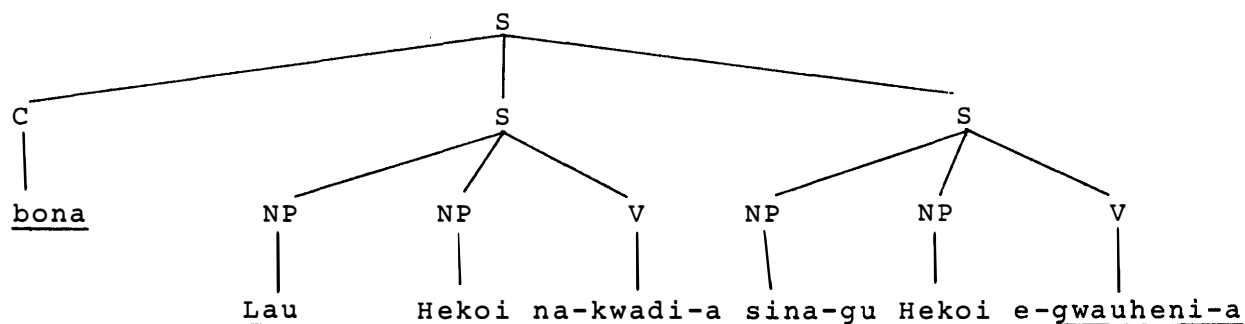


- (9) Hanua tau-dia e-labana-mu bona e-haoda-mu
 'The villagers hunt and fish.'

In the next example there are shared object NP's.

- (10) Lau ese Hekoi na - kwadi - a bona sina - gu ese
 I (TSM) (SP) HIT (OS) AND MOTHER-MY (TSM)
e-gwauheni-a
 (SP) SCOLD (OS)
 'I hit Hekoi and my mother scolded him.'

The underlying structure is



Here the shared constituent is in the middle of each conjunct. (10) is derived by deletion of the second occurrence of that constituent. Copying does not occur as there is no regrouping of any constituents as there is in (6) and (9). This means that what is called conjunction reduction here includes two different operations, one involving copying and the other deletion. Deletion occurs in gapping too (5.2.2).⁴

In (10) the verb in the second conjunct has an object suffix that agrees with the deleted NP Hekoi. If the deleted NP is a mass noun or a plural inanimate noun there will be no object suffix, as with moni 'money' in (11).

- (11) Ta ese moni e - gogo bona ta ese puse lalonai e-uda
 ONE MONEY GATHER AND ONE BAG IN PUT
 'One gathered the money and one put it in the bag'.

5.2.1. Conjunction Reduction Involving Two Shared Constituents

The pairs of shared constituents dealt with are subject and object, subject and transitive verb, and object and verb. Copying applies in all three cases. In the first the subject and object are copied to the left, in the second the subject is copied to the left and the verb to the right, and in the third the object and verb are copied to the right. Examples of the underlying and derived sentences are:

(i) shared subject and object

From

- (12) *C[bona] S[lau ese Raka na - kwadi - a] S[lau ese Raka
 I (TSM) RAKA (SP) HIT (OS) I (TSM) RAKA
 na-gwauheni-a]
 (SP) SCOLD (OS)

is derived, with conjoined V's.,

- (13) Lau ese Raka na-kwadi-a bona na-gwauheni-a
 'I hit Raka and scolded him' or 'I hit and scolded Raka'.

(ii) shared subject and transitive verb

From

- (14) *C[bona] S[lau ese raisi na-hoi] S[lau ese gwarume na-hoi]
 I (TSM) RICE (SP) BUY I (TSM) FISH (SP) BUY

is derived, with conjoined NP's as the object,

- (15) Lau ese raisi bona gwarume na-hoi
'I bought rice and fish.'

(iii) shared object and verb

From

- (16) *C[bona] S[Loa gwarume haida e - abi] S[Edea
LOA FISH SOME (SP)CATCH EDEA
gwarume haida e - abi]
FISH SOME (SP)CATCH

is derived, with conjoined NP's as subject,

- (17) Loa bona Edea gwarume haida e-abi
'Loa and Edea caught some fish.'

5.2.2 Gapping

The term 'gapping' was used by Ross (1967a, 1968) to denote a particular kind of reduction. Gapping may take place where there is a shared verb, provided that the subjects of the conjuncts are non-identical. An example of gapping in English would be the deriving of (b) from (a):

(a) I bought flour and my mother bought sugar.

(b) I bought flour and my mother sugar.

Everything in the sentence except the constituent that is gapped must be in contrast.

The two simplest cases of gapping in Motu are (i) shared transitive verb, (ii) shared intransitive verb with some postpositional phrase, such as time or place.

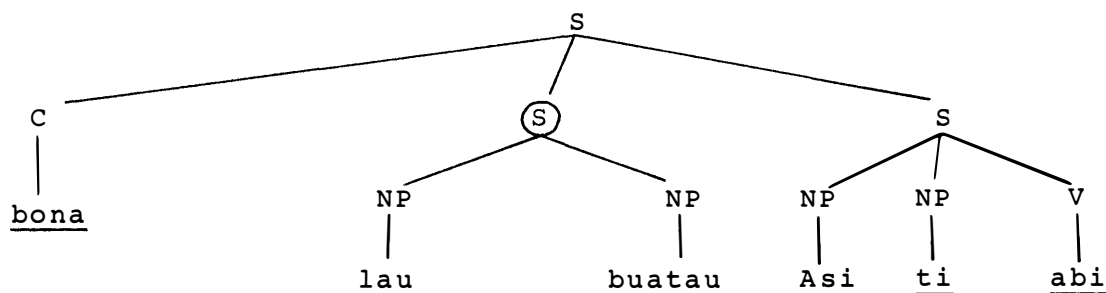
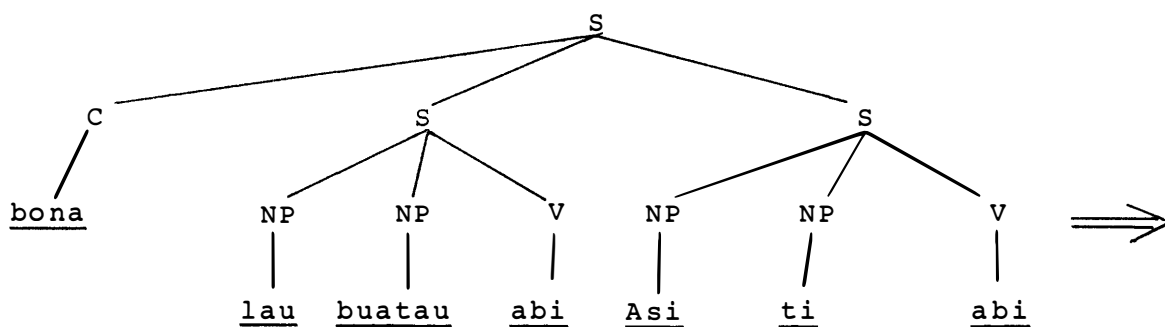
(i) shared transitive verb

From

(18) *C[bona] S[lau buatau na -abi] S[Asi ti e - abi]
 I BETELNUT GET ASI TEA(SP)GET

is derived

(19) Lau buatau (bona) Asi ti a-abi
 'I got betelnut and Asi tea.'



Note that bona 'and' may be optionally deleted. In gapping deletion occurs, not copying. There is an unexpected point with regard to the above tree. The circled S is not deleted as perhaps one might expect, but is left to preserve the coordinate structure.⁵ In conjunction reduction copying was used to retain the coordinate structure but it cannot do that here.

One can also say

- (20) Lau buatau na-abi bona Asi ti
'I got betelnut and Asi tea'.

In this case the second occurrence of the shared verb is deleted and not the first as was in the first example.

- (ii) shared intransitive verb

The process is the same as for (i), either the first or second occurrence of the verb being deleted.

From

- (21) *C[bona] S[lau uma - ai na - ġaukara - mu]
AND I GARDEN IN (SP) WORK (ASP)
S[tadi - gu taoni - ai e-ġaukara - mu]
BROTHER TOWN IN (SP) WORK (ASP)

are derived (21) and (22)

(22) Lau uma - ai na-gaukara-mu bona tadi-gu taoni-ai

(23) Lau uma-ai tadi-gu taoni-ai a-gaukara-mu

Both mean 'I work in the garden and my younger brother in town'.

Thus gapping may be both forwards and backwards. This is interesting in view of claims by Ross about the direction of gapping. Dingwall (1969) shows (reluctantly) that Ross' claim of a universal that SVO languages have forward gapping and SOV languages have backward gapping and related claims cannot be sustained in the face of evidence from a variety of languages. Motu provides a further example.

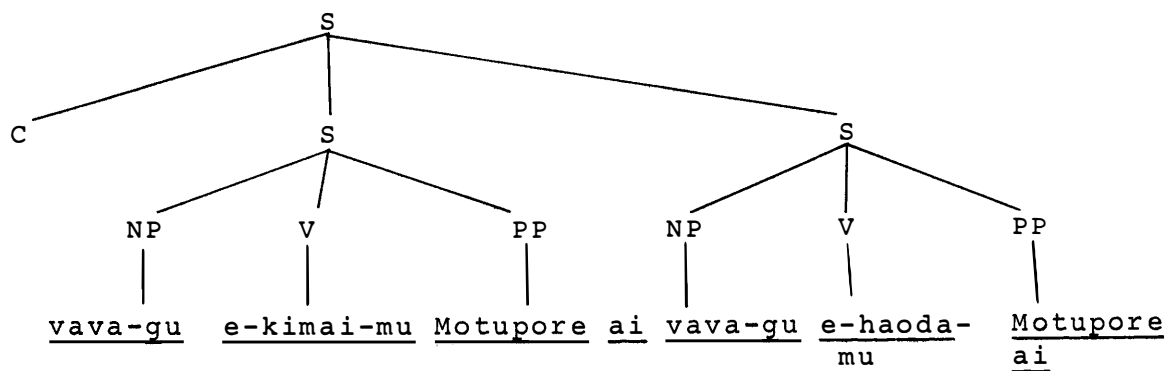
5.2.3 An ambiguity, and danu 'also'

Sentences with constituents conjoined by bona may be ambiguous, as (24) shows.⁶

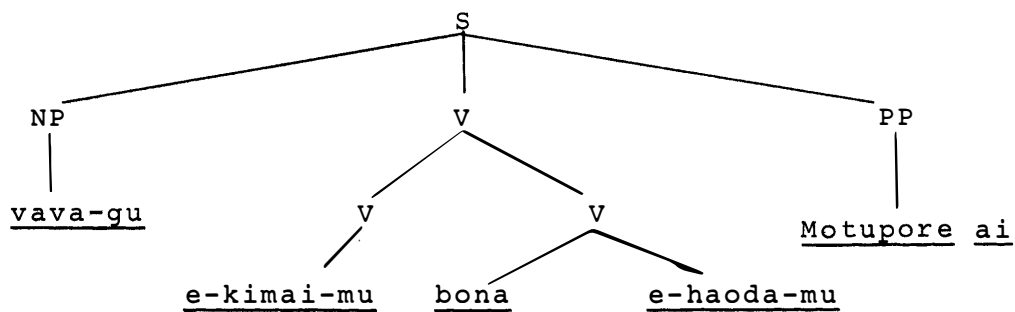
(24) Vava - gu e - kimai - mu bona e - haoda - mu
 UNCLE-MY (SP) LINE - FISH (ASP) (SP) NET FISH (ASP)
Motupore ai
 MOTUPORE AT

This can mean (a) 'My uncle line-fishes and net-fishes at Motupore' or (b) 'My uncle line-fishes, and net-fishes at Motupore'. The underlying and derived structures would be as follows:

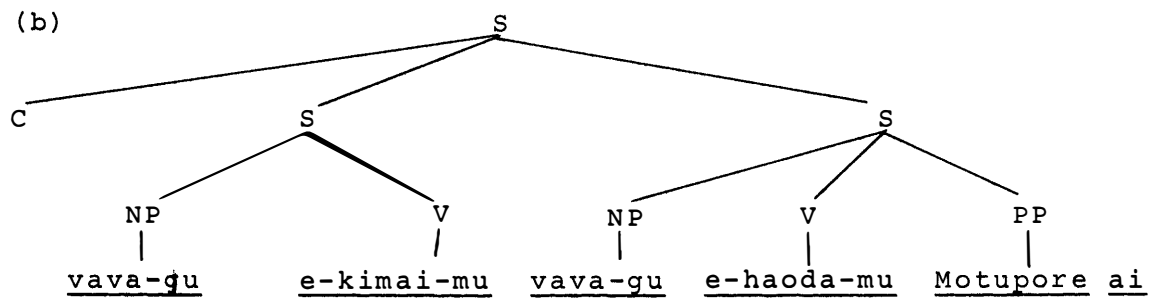
(a)



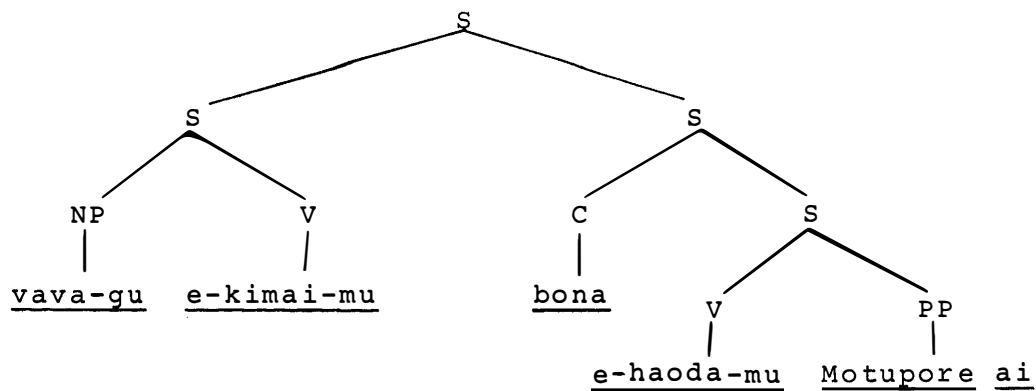
⇒



(b)



⇒



In (a) copying applies to regroup the two V's whereas in (b) there is only deletion of the second occurrence of the coreferential subject NP's. In speech there is no pause between the V's in (a), though there may be a pause before the postpositional phrase, while in (b) there is a pause between the conjoined S's. In the above example the underlying structures in (a) and (b) differ in that the first conjunct S in (a) includes a postpositional phrase while the first conjunct S in (b) does not. It is possible for two sentences to differ only by (b) having danu 'also' in the second conjunct S.

- (25) Hanua tau-dia e - labana - mu bona e - haoda -mu
 VILLAGE PEOPLE HUNT
danu
 'The villagers hunt, and also fish,'

danu may be deleted⁷ and an ambiguous surface structure is derived:

- (26) Hanua tau-dia e-labana-mu bona e-haoda-mu

If the derivation has involved copying the two V's are conjoined and (26) means 'The villagers hunt and fish', i.e. both activities are given equal emphasis. If the derivation has involved deletion of danu and the second occurrence of the subject NP hanua tau-dia, then the meaning is as for (25) i.e. either hunting is being considered the villagers' primary activity while fishing is secondary, or fishing is an afterthought. With coreferential object NP's the deletion is the same as that already described for conjunction reduction.

- (27) Lau ese Raka na-gwauheni - a bona sina - gu
 I (TSM) RAKA (SP) SCOLD (OS) AND MOTHER-MY
ese e-kwadi-a danu
 (TSM) (SP) HIT (OS) ALSO
 'I scolded Raka, and also my mother hit him.'

With the same V in each conjunct one finds the second occurrence of the V may be deleted.

- (28) Raka e - haroro bona Doana danu (e-haroro)
 (SP) PREACH
 'Raka preached and Doana (preached) too.'

Next are the cases where there are two identical constituents. The non-identical constituent must appear in the second conjunct S.

(i) shared subject and object NP's

- (29) Lau ese Raka na-kwadi-a, bona (lau ese) na-gwauheni-
 (TSM) (SP) HIT (OS) SCOLD
a (danu)
 'I hit Raka and (I) scolded him(too).'

One does not derive

- (30) *Lau ese Raka na-kwadi-a, bona lau ese ia
na-gwauheni-a danu.
 for if ia 'he' is included then it receives some emphasis, that it was Raka in particular that I scolded.

(ii) shared object NP and V

- (31) Loa gwarume e - abi bona Edea ese danu (e-abi)
 LOA FISH (SP) CATCH (TSM) (SP) CATCH
 'Loa caught some fish and Edea (did) too
 (caught some)

not

- (32) *Loa gwarume e-abi bona Edea danu gwarume
 though the full form is grammatical:

- (33) Loa gwarume e-abi bona Edea danu gwarume e-abi
 'Loa caught some fish and Edea caught some fish too

(iii) shared subject NP and transitive V

- (34) Lau ese raisi na-hoi bona gwarume danu (na-hoi)
 I (TSM) RICE (SP) BUY FISH (SP) BUY
 'I bought rice, and (I bought) fish too

5.3 Eiava 'or'

OR is included with AND in the base rules of Schane and Ross, though more attention is paid to the latter. eiava joins the same range of constituents as bona.

Conjunction reduction applies as it does for S's joined by bona described in 5.2.0

(i) shared subject NP

From

- (35) *C[eiava] S[tama-gu e - haoda - mu] S[tama-gu
 FATHER-MY (SP) FISH (ASP) FATHER-MY
e - labana - mu
 (SP) HUNT (ASP)

is derived

- (36) Tama-gu e-haoda-mu eiava e-labana-mu
 'My father fishes or hunts.'

(ii) shared object NP

From

- (37) *C[eiava] S[sina-gu ese Raka b - e - gwauheni -
 MOTHER-MY (TSM) RAKA (FUT) (SP) SCOLD
a - mu] S[lau ese Raka be - na - kwadi - a - mu]
 (OS) (ASP) I (TSM) (FUT) (SP) HIT (OS) (ASP)

is derived

- (38) Sina-gu ese Raka b - e - gwauheni - a - mu eiava
lau ese be-na-kwadi-a-mu
 'My mother will scold Raka or I will hit him.'

(iii) shared intransitive V

From

- (39) *C[eiava] S[Raka e-hereva] S[Doana e-hereva]
 (SP) SPEAK (SP) SPEAK

(vi) shared object NP and V

From

- (45) *C[eiava] S[kaka-na buatau e - abi]
 BROTHER-HIS BETELNUT (SP) GET
 S[tama-na buatau e-abi]
 FATHER-HIS

is derived

- (46) Kaka-na eiava tama-na buatau e-abi
 '(Either) his brother or his father got betelnut.'

Then there are the two cases of gapping.

(i) shared transitive V

From

- (47) *C[eiava] S[lau gwarume bai - na - nadu] S[sina-gu
 OR I FISH COOK MOTHER-MY
 kokoroku bai-ne-nadu
 CHICKEN COOK

are derived

- (48) Lau gwarume bai-na-nadu eiava sina-gu kokoroku.

- (49) Lau gwarume eiava sina-gu kokoroku bai-a-nadu

Both mean 'I will cook fish or my mother chicken.'

- (ii) shared intransitive V with a postpositional phrase

From

- (50) *C[eiava] S[lau uma ai be-na-ḡaukara-mu
 I GARDEN IN WORK
 S[tama-gu taoni ai b - e - ḡaukara-mu
 FATHER-MY TOWN IN WORK

are derived

- (51) Lau uma ai be-na-ḡaukara-mu eiava tama-gu taoni ai

- (52) Lau uma ai eiava tama-gu taoni ai be-a-ḡaukara-mu⁸

Both mean 'I will work in the garden or my father in town.'

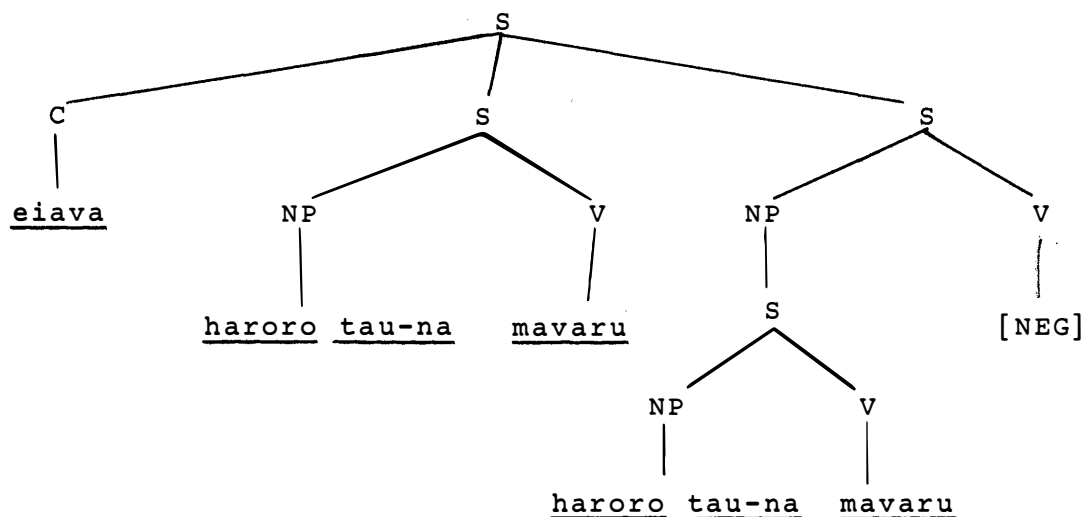
eiava also appears in yes-no questions (see 4.12.2).
 Consider the following sentences:

- (53) Haroro tau-na e - mavaru eiava s - e - mavaru?
 PASTOR (SP) DANCE OR (NEG) (SP) DANCE
 'Did the pastor dance or didn't he dance?'

- (54) Haroro tau-na e-mavaru eiava lasi?
 NOT
 'Did the pastor dance or not?'

- (55) Haroro tau-na e-mavaru eiava?
 'Did the pastor dance or not?'

The first consists of two S's joined by eiava with the second the same as the first except that there is no subject NP for the second verb and there is a negative present. The underlying structure is (assuming the negative is derived from an abstract predicate):



Conjunction reduction applies to form (53). (54) and (55) are formed by further application of conjunction reduction to delete the second occurrence of the verb and in the case of (55) the negative is also deleted.

There is also the sentence, with the optional question marker,

- (56) Haroro tau-na e-mavaru (a)?
'Did the pastor dance?'

This is a paraphrase of the others and in view of the fact that all the identical constituents may be deleted in the second conjunct and the negative too, it is claimed that this last sentence is formed by the deletion of eiava.

The notion of an alternative answer is expressed by a or by the intonation pattern alone.

If there is an object NP in each conjunct the same process applies. Neither the subject or object NP's in the second conjunct are likely to appear on the surface, and mostly the verb, too, is deleted. E.g.

- (57) Mase raisi e-hoi eiava lasi?
'Did Mase buy rice or not?'

Dingwall (1969) has used the fact of the great variety of possible deletions that one finds between languages as his final blow to Ross' universal claims regarding gapping, underlying word order, etc. Motu provides further evidence as it is different again from the languages Dingwall treats. Some idea of this is given in the following table (based on Dingwall's remarks);

	May reduce left conjunct	May reduce right conjunct	May delete NP of right VP	May reduce right con- junct to Neg.
English	Yes	Yes	No	Yes
German	No	Yes	No	Yes
Japanese	No	Yes	Yes	No
Russian	Yes	Yes	Yes	Yes
Motu	No	Yes	Yes	Yes

Motu has the additional difference that the negative may be deleted so that just the conjunction eiava is left.⁹ Ross claims SVO order for English, German and Russian and SOV for Japanese.

5.4 Adversative Conjunctions

There are two of these (i) a and (ii) to. They overlap in function though they tend to be used in different situations. In the case of adversative conjunctions the first occurrence that the proposed base rule generates is always deleted. Also the maximum number of S's that can be conjoined is two.

5.4.1. a

This occurs in sharply antithetic situations. In these there must be at least two contrasts. A few examples are given.

Contrasted subject and object NP's

- (58) Loa gwarume e - hoi a lau be maḡani
 I FISH (SP) BUY BUT I WALLABY
 'Loa bought fish but I (bought) wallaby.'

This is derived from

- (59) *C[a] S[Loa gwarume e-hoi] S[lau maḡani na-hoi]

by two steps; (i) there is deletion of the shared V in the second conjunct, i.e. gapping, and (ii) be is inserted after the second subject NP.

Contrasted object NP's and V's

From

- (60) *C[a] S[Hitolo gwarume e - nadu - a] S[Hitolo boroma
 BUT FISH (SP) BOIL (OS) PIG
e - gabu - a
 (SP) ROAST (OS)

is derived

- (61) Hitolo ese gwarume e-nadu-a a boroma be e-gabu-a
 'Hitolo boiled the fish but roasted the pork.'

Here there are two steps in the derivation. (i) conjunction reduction applies to the identical subject NP's; (ii) the insertion of be after the second contrasted object NP.

In (62) there are contrasts between subject NP's and between the presence and absence of the negative.

- (62) Lau ese oi na - ita - mu a tama- gu ese be s -
 I (TSM) YOU (SP) SEE (OS) BUT FATHER-MY (TSM) (NEG)
e - ita - mu
 (SP) SEE (OS)
 'I saw you but my father didn't see you.'

The second occurrence of the identical object NP's is removed by conjunction reduction. be is inserted after ese after the second subject NP.

The second occurrence of the identical V's may also be deleted:

(63) Lau ese oi na-ita-mu a tama-gu be lasi

NOT

'I saw you but my father didn't.'

ese is not needed after tama-gu as the following be indicates tama-gu is in contrast with Lau. That is, the sentence cannot be understood as 'I saw you but not my father'. This would be

(64) Oi mo na - ita - mu a tama-gu be lasi

YOU ONLY

In (65) there are contrasts between time expressions and between verbs. Conjunction reduction operates on the identical subject NP's and object NP's to form

(65) Gunaguna hanua tau-dia reke e - kara - va a

BEFORE VILLAGE MAN NET (SP)MAKE (ASP) BUT

harihari be e-hoi-mu

NOW (SP)BUY(ASP)

'Before, the villagers used to make nets but now they buy them.'

There are other possible contrasts involving locatives, instruments, etc.

The main points, then, are: the presence of two contrasts, the operation of conjunction reduction of identical constituents, and the insertion of be to mark contrasted NP's or other expressions such as time, but not verbs.

There is often a pause before a which may be represented by a comma or full stop. Indeed, the antithesis may involve a whole preceding paragraph or sequence of sentences, but this is beyond the scope of TG at present.

5.4.2 to

The point at which only to may be used has not been identified with certainty, but it seems that for a to occur there must be some antithesis along with certain shared constituents. When there is only a general adversative sense and no shared constituents then a is unacceptable.

- (66) *Sunday adorahi emai campfire bai - a- abi - a
 EVENING OUR (FUT) (SP)HOLD
a - to¹⁰ a medu e - diho
 (SP) SAY RAIN (SP) FALL

If to appeared instead of a then the sentence would be acceptable and would mean 'We were to have our campfire on Sunday evening but it rained.'

to is less likely to be used in cases of sharp antithesis than is a.

- (67) Lau asi - na - la tuari gabu - na korikori to
 I (NEG) (SP) GO WAR PLACE REAL BUT
na - la Sogeri
 (SP) GO SOGERI
 'I did not go to the real war-zone but I went
 to Sogeri.'

Here the two contrasts are negative/affirmative and the locative. Perhaps to is acceptable here as the negative/affirmative contrast is in the verb, not a separate phrase such as a NP or postpositional phrase. In cases where there are two 'phrasal' contrasts a is more likely, and informants vary as to whether the to is allowed or not.

to generally occurs where the antithesis is not sharp, or better, where a general adversative conjunction is needed.

- (68) Ia e - ma to lau ese asi - na - ita -ia
 I (SP) COME I (TSM)(NEG) (SP) SEE (OS)
 'He came but I did not see him.'

- (69) Hahine e - roharoha to ena hanua na vada e - ara-
 WOMAN (SP) LOOK AROUND BUT HER VILLAGE (SP) BURN
ia- oho
 (OS) COMPLETELY
 'The woman looked around but her village had been burnt down.'

In (69) there are no shared constituents and so no conjunction reduction.

Like a, to is often preceded by a pause that is represented by a comma or full stop and its adversative function may involve a whole preceding paragraph, but as already mentioned this is beyond TG at present.

5.5 ena be...to

There is one other important construction in which to

occurs. Consider these two sentences:

- (70) Doana b - e - noho - mu to Hekoi b - e - lao - mu
 (FUT) (SP) STAY (ASP) (FUT) (SP) GO (ASP)
 'Doana is going to stay but Hekoi is going to go.'

- (71) Ena be Doana b - e - noho-mu to Hekoi b - e - lao - mu
 'Although Doana is going to stay Hekoi is going to go.'

The difference between these is that in (71) there is the expectation that if Doana stays Hekoi will not go, but (70) does not have such an expectation. to is taken to be a coordinating conjunction as this is its function in all its other occurrences, and there seems to be no reason to explain it in any other way here.

The question arises as to how to explain ena be. The two main uses of be are (i) copula and (ii) emphasis marker. ena appears to have only two functions apart from the present construction, viz. (i) 3rd sg. possessive marker 'his, her, its' (ii) singular form of the demonstrative used when the object referred to is near the person addressed. If ena in ena be is related to either of these it must be the latter. A possessive is very unlikely here.

If be is taken as an emphasis marker then it is hard to see what emphasizing ena in ena be means. If be is the copula one might take ena be as 'it is (that...)' and posit a deep structure of the type 'it S Cop' with the S being extrapolated leaving ena as the surface subject, though there is no other use of ena that is anything like this. Also this still says nothing about the difference in expectation between the sentences (70) and (71).

Perhaps ena be has become a set form that cannot be explained by looking at its parts. If so we are left with simple S to S, with ena be in the first S.

The first example had both conjuncts referring to the future. Other tenses and moods are given now.

Past

- (72) Ena be ia e - ma to lau ese asi - na - herevaheni - a
 HE (SP) COME I (TSM) (NEG) (SP) SPEAK TO (OS)
 'Although he came I did not speak to him.'

Present

- (73) Ena be tama-gu e - badu - mu to sina - gu e - kiri - mu
 FATHER-MY(SP)UPSET (ASP) MOTHER-MY(SP) LAUGH (ASP)
 'Although my father is upset my mother is laughing.'

Subjunctive

- (74) Ena be Raka bema - mai to Loa b - e - aniani - mu
RAKA (3S SUBJ)COME (FUT) (SP) EAT (ASP)
'Even though Raka might come Loa {is going} to eat.'
will

In (74) the subjunctive appears in the first verb as it is considered very unlikely that Raka would come. In (75) both verbs are in the subjunctive as the whole situation is hypothetical:¹¹

- (75) Ena be Raka bema-mai to Loa bema-aniani
'Even if Raka were to come Loa would eat.'

The ena be clause is most usually placed first. In fact, MG(45) says that it always is. However, it does very occasionally come second. This appears to be a stylistic variant, and is most simply derived by a TR which reverses the order of the conjunct S's and then deletes to from its new position at the beginning of the sentence:

- (76) Lau b - asi - na - badu - mu ena be e - gwauheni -
 I (FUT)(NEG)(SP) ANGRY (ASP) (SP) SCOLD
 gu - mu
 (OS)(ASP)
 'I am not going to get angry even though he is scolding me.'

The copula may occur in either conjunct. An example of it in the first conjunct is:

- (77) Ena be ena motuka (na) bada to b - asi - ne - uda -
 HIS TRUCK IS BIG (FUT)(NEG) (SP) PICK UP
 mui
 (OS)

'Although his truck is big he will not pick you up.'

The copula is bracketed as its surface occurrence here is optional. This brings us to sentences like:

- (78) Ena be medu to lau be - na - gadara - mu
 RAIN I (FUT)(SP) PLAY (ASP)
 {'Although there is rain} I am going to play.'
 { In spite of the rain }

One might take ena be medu as a phrase 'in spite of the rain' except that everywhere else to joins sentences.

It would be unique to say here is a case of to coming between a phrase and the rest of the sentence. A second possibility is to posit a deep structure including the verb diho e.g., ena be medu e-diho. diho is the extremely common word for rain falling so it might be possible to specify that this is the verb that has been deleted. But there would be some nouns which might take a number of verbs and the problem arises of how to decide which verb is deleted. There is a third possibility, that the copula, which is in a number of cases deletable, including in a clause begun with ena be as in (77), has been deleted. This must be so in (79):

(79) Ena be keru to lau be-na-ḡaukara-mu

COLD

WORK

'Although it is cold I am going to work.'

There is no verb to go with keru 'cold'. Thus it would be simplest to treat the medu case in the same way.

5.6 Non-restrictive (Appositive) Relative Clauses.

The relative clauses in chapter 3 are all restrictive. However, there is another construction which in some cases, e.g. (79) superficially the same in form though without being restrictive in meaning.

(79) Ai hanua a - nari - a - mu tau - mai

WE (excl) VILLAGE (SP) LOOK AFTER(OS) (ASP) MEN

be - a - noho - mu

(FUT) (SP) STAY (ASP)

'We who are looking after the village are going to stay.'

Other examples of the construction are

- (80) E - keto mero-na, Raka, ororo ai e - noho - mu
 (SP) FALL BOY (REL) RAKA HILL ON (SP) LIVE (ASP)
 'The boy who fell, Raka, lives on the hill.'

- (81) Tura-gu Raka vada e - ma
 FRIEND MY (SP) COME
 'My friend Raka has come.'

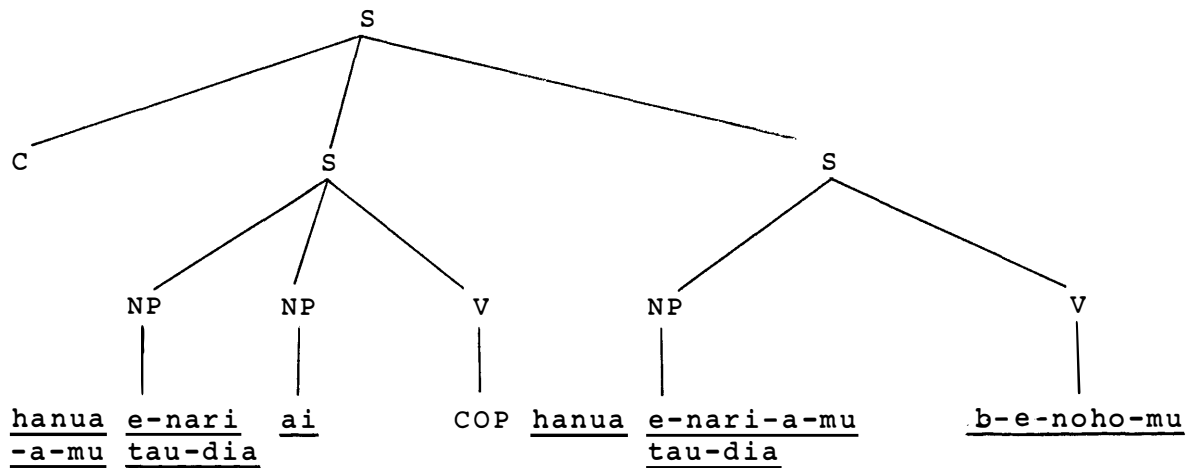
In (79) there are two statements about ai 'we (excl.)':

- (82) Ai be hanua a - nari - a-mu tau-mai
 'We are the people who are looking after the village.'

- (83) Ai be-a-noho-mu
 'We are going to stay.'

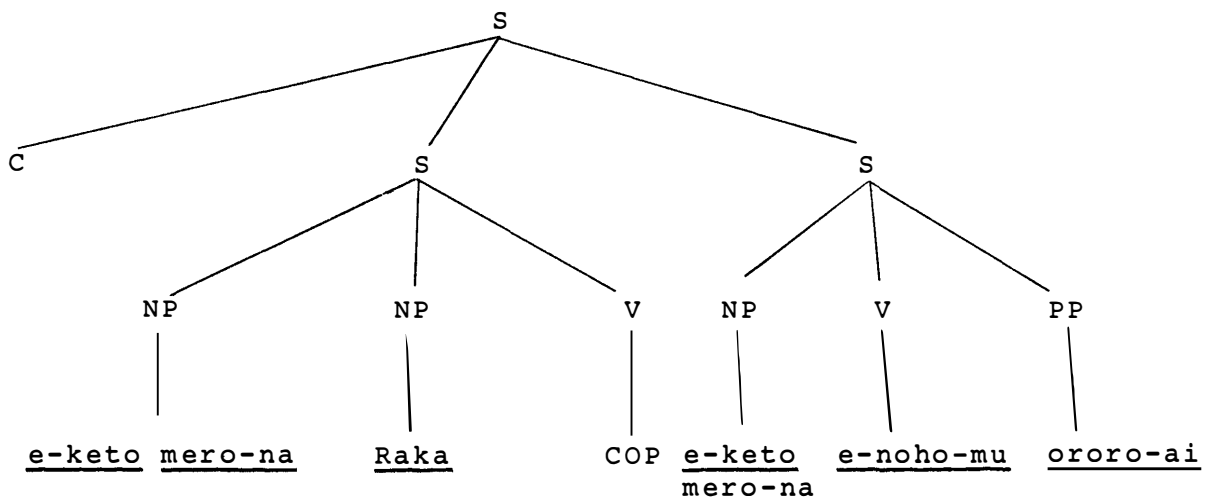
Neither of these is subordinate to the other so that for the underlying structure one must look beyond relativization. The underlying structure appears to be coordination. One can paraphrase (79) by a sentence which consists of (82) and (83) joined by bona 'and'. Similar paraphrases can be found for (80) and (81). However, in view of the surface structure of (79) it is not surprising that some of the TR's required for its derivation are those which apply in the derivation of restrictive relative clauses, though the structure on which they have to operate is different in that the S's are coordinate, not one embedded in the other.¹²

The underlying structure of (79) proposed is



Relative Clause NP Deletion and Copula Deletion apply so that only ai remains in the first S. The conjunction is then deleted. The suffix shown as dia in the underlying structure is changed to -mai to agree with ai and the verb agreement is also affected.

For (80) the underlying structure is



The same TR's apply as in the derivation of (79) except that here there is an additional operation which moves Raka in after e-keto mero-na. If this were not done the sentence would be

(84) *Raka e-keto mero-na ororo ai e-noho-mu

which is unacceptable, as Raka would be taken as subject of keto leaving mero-na hard to explain. This movement is not required with the pronoun ai as it and tau-mai must refer to the same people, but this is not so with Raka and mero. There is a pause before and after Raka in (80).

(81) is derived as (80) is. There is, however, not necessarily a pause before and after Raka, presumably as it is preceded by only one word tura-gu and not by a NP with an embedded S like e-keto mero-na.

There are some observations to be made about the structure of the S from which the TR's delete constituents. Where a proper noun like Raka occurs the structure must be S NP COP NP. First, one always finds a NP with an embedded S, i.e. one must say 'Raka is the boy who.....' or 'Raka is the man who.....', or the like. This means that there will always be a copula in this conjunct. The other question is whether the order is as given or is NP COP S NP. The order given allows one to explain the occurrence of the pauses before and after Raka on the basis that Raka is an inserted S (though a much reduced one).

5.7 lao bona

There is an expression that consists of the verbs lao 'go' or mai 'come' followed by bona, meaning 'until', 'as far as', i.e., it is used of both time and place. It may be followed by a S or NP.

- (85) Ai a - labana a - la bona maḡani toi a - pidi
 WE (excl) (SP) HUNT (SP) GO WALLABY THREE (SP) SHOOT
 'We hunted until we had shot three wallabies.'

- (86) Idia e - heau e - la bona Sebore
 THEY (SP) RUN (SP) GO
 'They ran as far as Sebore.'

- (87) Hanua tau-dia e - haoda - mu e - lao - mu bona
 VILLAGERS (SP) FISH (ASP) (SP) GO (ASP)
Taurama
 'The villagers go fishing as far as Taurama.'

The explanation proposed here is as follows: bona is a coordinate conjunction and so in the deep structure at least in this construction it must be followed by a S, as a S always precedes it. If the second S appears in full as in (85) there is no problem. If only a locative or time word or phrase appears after bona then a deletion has occurred. The question is what. It is suggested that the second S in this case is the same as the first except that (i) it includes a word or phrase that is not deleted, and (ii) an opposite value in a particular abstract predicate. This predicate indicates the completion or non-completion of a motion through space or time.

If no deletions take place then in the second S 'go' appears on the surface as -ha¹³ and [+terminal] as kau. If ha-kau does not occur with time expressions and only abi does then we have no separate surface appearance of 'go' and [+terminal] predicates, but they are incorporated in abi. In the first S [-terminal] similarly does not appear separately but its meaning is present in the surface occurrence of lao.¹⁴

Langendoen (1969:117) refers to the various 'aspect' elements of English as being abstract predicates, so that to set up something like [+terminal] has some justification in a wider theoretical context as well as in Motu itself.

When it is not a particular place or time that is reached, but simply the action is completed then one gets sentences like these, with vaitani as the manifestation of the [+terminal] abstract predicate.

- (91) Ai a - nanadu - mu a - lao - mu bona
 WE(excl) (SP) COOK (ASP) (SP) (ASP)
 a - nanadu - vaitani - mu
 (SP) COOK [+TERMINAL] (ASP)
 'We cook until we complete cooking.'

- (92) Idia aniani e - habou - mu e -lao-mu bona
 THEY FOOD (SP) GATHER (ASP)
 e - habou - vaitani - mu
 (SP) GATHER [+TERMINAL] (ASP)
 'They gather food until they complete gathering it.'

If the motion is terminated by a different action then there is no deletion(beyond that of a shared NP if there is one).

- (93) Ai a - ̄gaukara a-la bona adava-mai aniani
 WE(excl.) (SP)WORK WIFE-OUR FOOD
e - mailai
 (SP)BRING
 'We worked until our wives brought the food.'

As the verb preceding lao indicates motion through space or time, lao need not appear. However, bona remains also indicating motion through space or time, as in (94) and (95).

- (94) Ai a-heau bona Hohola
 'We ran as far as Hohola.'

- (95) Idia e-̄gaukara bona hanuaboi
 'They worked until night-time.'

bona indicating motion through space or time needs to be examined. Lakoff and Peters (1966:123) point out that when the claim is made that conjunctions are symmetrical the use of English 'and' meaning 'and then' has to be explained. They suggest that the deep structure is really 'and after it S'. Clearly bona in ela bona is not symmetrical. There does not appear to be any syntactic evidence in Motu for bona, however, to be derived from a deep structure like

- (96) Ai a - heau a-la bona (a-heau) a-la muri-na-ai
 WE(excl) (SP) AFTER
Hohola ai a-ha-kau
 'We ran and after we had run we reached Hohola.'

But, as will be seen below, there is a better case for such a structure to underlie bona 'and then'. And so it may well underlie bona here too. bona is used of two events one after the other, rather than of one event being continued up to its conclusion - which may simply be its end or may be some other event. e.g.,

(97) Ai a-gaukara $\left\{ \begin{smallmatrix} \text{bona} \\ \text{bona} \end{smallmatrix} \right\}$ medu e-diho

RAIN

'We worked $\left\{ \begin{smallmatrix} \text{until} \\ \text{and then} \end{smallmatrix} \right\}$ it rained.'

Perhaps the doko-na-ai 'at the end' rather than muri-na-ai 'after' should be posited in the deep structure for bona here, i.e. S_1 bona S_1 doko-na-ai S_2

mai occurs instead of lao if the time or place reached is where the speaker is.

(98) Idia e - mavaru e - ma bona hari daba
THEY(SP) DANCE COME THIS MORNING
'They danced until this morning.'

(99) Idia e-gaukara e-ma bona ina harihari (e-me-doko).
THEY WORK COME THIS NOW FINISH
'They worked until right now' (or, 'until they finished right now').

There is a tendency for the form ela bona to occur where one would expect other forms of lao. That is, it has partly become a set expression.

(100) Ai a-heau $\left\{ \begin{smallmatrix} \text{a-la} \\ \text{e-la} \end{smallmatrix} \right\}$ bona Bautama

'We ran as far as Bautama.'

(101) Idia be-heau-mu $\left\{ \begin{smallmatrix} \text{be-lao-mu} \\ \text{e-la} \end{smallmatrix} \right\}$ bona Barakau.

'They are going to run (as far) Barakau.'

If one wishes to emphasize the length of time or the distance travelled then the verb may be repeated and/or the 'o' in bona lengthened.

(102) Ai a-heau heau heau bona Sebore

'We ran and ran and ran all the way to Sebore.'

(103) Ai a-heau a-la bona Sebore

(103) is the same as (102). bona is [bo:na]

5.8 benā

This word appears in sequences of events.

(104) Hetahu ta na - abi - a na - kwalimu benā na - la
EXAMINATION A(1SSP)TOOK(OS)(1SSP) PASS (1SSP) GO
Sogeri

'I took an examination, passed, (and) (then) went to Sogeri.'

benā may be translated 'and then', 'then' or 'and'. It may occur at the start of a sentence, connecting it to the preceding sentence.

The derivation of sentences in English where 'and' is not symmetrical but means 'and then' suggested by Lakoff and Peters (1966:123) has been referred to in the preceding section. Whether such a structure underlies bona remains to be proven. However, there are certain points that make such an approach at least promising. First, the two words bona and bona are quite similar in form, enough to suspect they are related. Second, bona by itself does both connect and indicate there is a sequence of events, i.e. it means 'and then'. One does not get the combination *bona bona for 'and then'. Indeed, apart from the ela bona construction bona does not occur where there is a sequence of events. Third, bona and expressions involving muri-na 'after' may occur together.

- (105) Hua ima Pari ai e - noho. Bona unu hua ima
 MONTH FIVE AT (3SSP)LIVE THOSE MONTH FIVE
muri-dia - ai e - la Vabukori
 AFTER (3SSP)GO
 'He lived at Pari for five months. Then after
 those five months he went to Vabukori.'

In the place of the second sentence one could say

- (106) Bona una muri-na-ai e-la Vabukori
 'Then after that he went to Vabukori.'

una 'that' refers to the whole preceding sentence.

While sentences like (106) do occur, more commonly only one of the two connecting expressions will occur on the surface, though the meaning is the same.

- (107) Bena e-la Vabukori
'And then he went to Vabukori.'

- (108) Una muri-na-ai e-la Vabukori
'After that he went to Vabukori.'

I.e., when only bena appears on the surface then it may be assumed that S muri-na-ai has been deleted.

bena is also used when the second S in a time sequence is a consequence of the first. In this case it is preceded by una dai-na-ai 'because of that'.

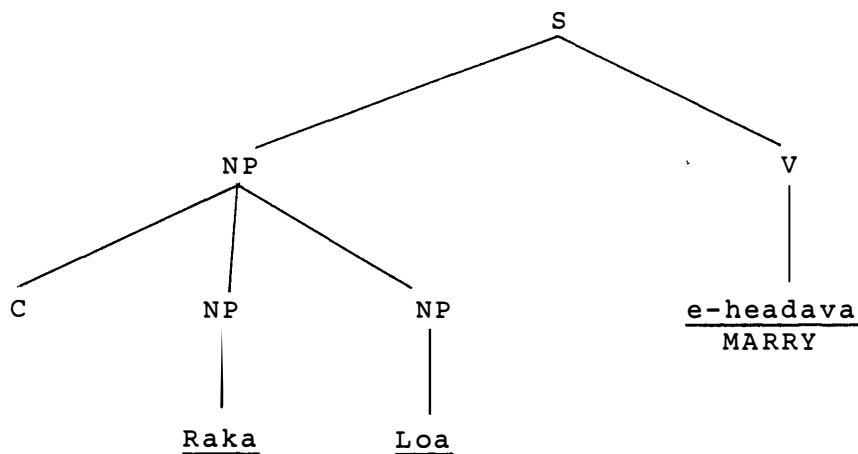
- (109) Haroro tau-na na - ha - badu - a. Una dai - na - ai
PASTOR (1SSP) (CAUS) ANGRY
bena e - lulu - gu.
(SP) CHASE AWAY (OS)
'I made the pastor angry. So then he chased me
away.'

The order of items is different from that above where bena comes first, but there is a more important point to notice. bena by itself conveys the idea of connection of two S's in time sequence, so that the S muri-na-ai may be deleted. But S dai-na-ai may not be deleted for if it were the idea of consequence would no longer be present. The most that can be done is to replace S by una.

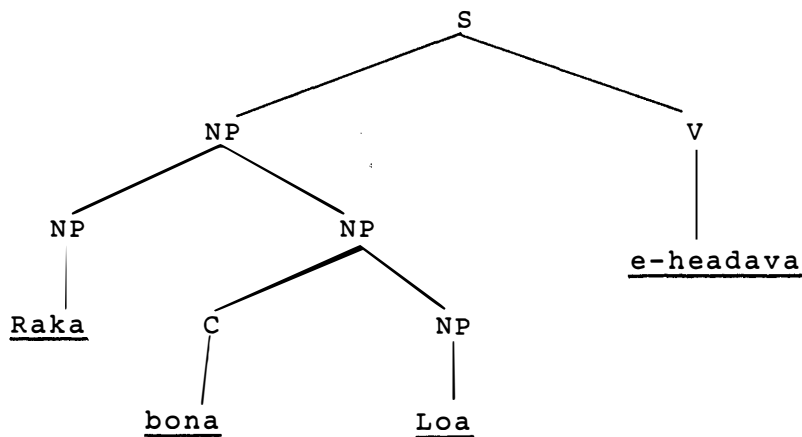
5.9 Phrasal Conjunction

This is derived from BR5 NP → C NP*.

An example is

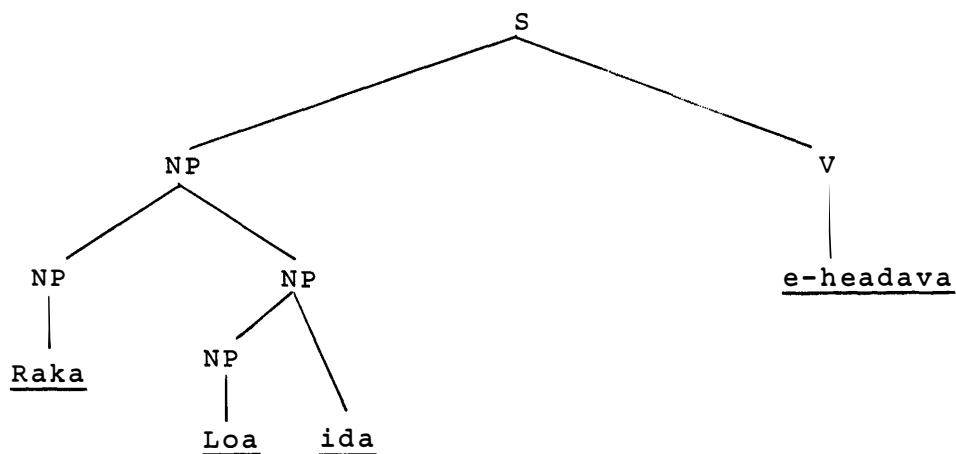


After bona insertion and obligatory initial bona deletion one derives



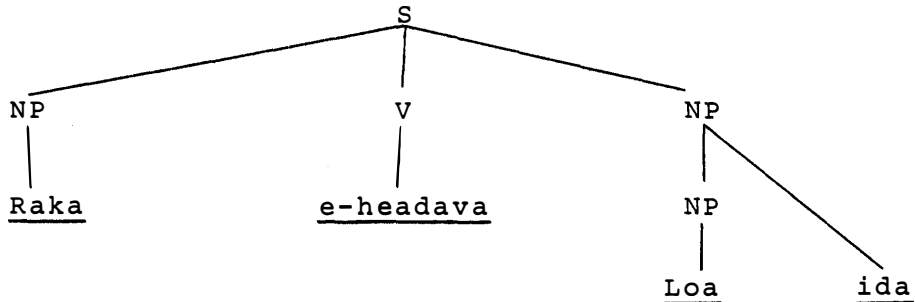
(110) Raka bona Loa e-headava
 'Raka and Loa got married.'

But there is another possibility. Instead of bona insertion an optional TR, Postposition Adjunction, may apply, giving after initial bona deletion



(111) Raka Loa ida e-headava

To this last structure another optional TR, Conjunct Movement, may apply producing



(112) Raka e-headava Loa ida

Lakoff and Peters (1966:119f) propose two quite similar TR's for English, though T-Conjunct Movement is obligatory in English whereas it is optional in Motu. Also Lakoff and Peters set out three conditions that must be met before these TR's may apply. Two also apply in Motu, viz., there must be binary branching in the topmost NP and these TR's apply to NP* structures only and not to S* structures.

However, the third, that the TR's apply only in sentence-initial position (i.e. to subject NP's) does not apply to Motu. So, e.g., on the structure underlying

- (113) Hekoi ese lau bona Raka e - ita - mai
 (TSM) I AND (SP) SEE (OS)
 'Hekoi saw Raka and me.'

T-Postposition Adjunction can operate to produce

- (114) Hekoi ese lau Raka ida e-ita-mai

And on this T-Conjunct Movement may operate giving

- (115) Hekoi ese lau e-ita-gu Raka ida

In fact, the restriction here is that T-Conjunct Movement cannot operate on the subject NP if the conjunct in its new position may be understood as having been moved from the object NP. E.g., from the structure underlying.

- (116) Hekoi bona Raka ese lau e-ita-gu
 'Hekoi and Raka saw me'.

one cannot derive

- (117) *Hekoi ese lau e-ita-gu Raka ida

This sentence may only arise from Conjunct Movement being applied to the object NP.¹⁵

It should be noted that (117) shows that the agreement operation must follow T-Conjunct Movement, as it is only

after the latter has applied that the correct affixes can be assigned to the verb.

If the second NP is possessed by the first then if ida is inserted after the NP mai occurs before the NP.

- (118) Raka bona tama - na e - ma
 RAKA AND FATHER-HIS(SP)COME
 'Raka and his father came.'

- (119) Raka mai tama-na ida e-ma
 WITH
 'Raka came with his father.'

If the possessor in the second NP is not the first NP then mai does not occur. (120) is grammatical while (121) is not:

- (120) Raka tama-gu ida e-ma
 MY
 'Raka came with my father.'

- (121) *Raka mai tama-gu ida e-ma

There are some Motu adjectives that occur as predicates with NP* subjects, E.G., hegeregere 'similar' and idau 'different'.

- (122) Ugava bona galo na idau
 'Eagles and crows are different.'

idau is pronounced [i:dau] as it is a plural formed by reduplicating the initial vowel (See appendix 2).

NOTES

1. Defining sentences is not easy but a guide taken here is falling intonation. This is one surface sentence, not two, as it contains only one sentence final falling intonation.
2. See 5.3 for eiava 'or', and 5.4 for a and to 'but'.
3. In (6) the form of the plural subject prefix is the same as for the singular, but (7) and (8) are clearly plural.
4. Koutsoudas (1970) has examined this situation and argues that there is only one rule needed, which deletes constituents, and that there is no need for regrouping, which is the function of the series of rules involving copying. Such a simplification would be attractive, but the paper was not received in time to be studied carefully.
5. See Ross (1967a) for English.
6. Dingwall (1969:210) quotes an example of a similar ambiguity in English, viz., 'They assembled and marched at ten o'clock.'
7. The problem of the exact place of danu in the deep structure is not considered here.
8. (51) is probably the more common form. Note in (52) that the verb is 1st person plural exclusive, agreeing with the subject which includes lau 'I' and tama-gu 'my father', even though they are joined by eiava 'or'. be-a is an Eastern dialect form. The Western form is bai-a.
9. It is not entirely clear whether Dingwall says Russian may reduce the left conjunct. Even if it cannot, Motu still has the additional difference of deleting the negative.
10. This construction with the verb toma is described in 3.74.

11. Fraser (1969) deals with concessive conditionals, i.e., 'even if' clauses, in English and points out that they are not conditionals at all. He claims that they should be handled in the course of accounting for the interpretation of 'even'. The Motu construction is, however, rather different, and Fraser's approach does not help in finding an explanation for it.
12. Cf. Jacobs and Rosenbaum (1968:259ff) on non-restrictive relative clauses in English.
13. Thus -ha- is another surface form of the [-stative]abstract verb, but a form which only occurs with locatives (see 3.52, 3.64).
14. lao is moved up under the V node dominating [+terminal] by the plugging-in rule. The[-terminal] abstract verb may appear on the surface as the aspect suffixes -mu and -va as in (86).
15. This difference in restrictions between Motu and English appears to be due to the constituent order difference, SOV as against SVO.

6. Phonology

6.1 Introduction

This chapter gives an account of Motu phonology in generative terms, i.e. as the phonological component of a TG. The motivation for this is that the study as a whole uses a transformational approach, rather than that there is a great deal in Motu phonology that is of particular interest to generative phonologists.

Indeed the Motu sound system is not complex. Work so far has led to the positing of underlying representations of morphemes that are little removed from surface (phonetic) representations. Also the phonological rules (PR's) are few and somewhat unrelated. In particular, the nine rules that deal with the verb conjugation (see 6.5.1) make McCawley's (1967b) suggestion that simple learning of dictionary items rather than the construction of rules may, in many cases, take place seem very attractive. The conjugation does not involve many forms and yet nine rules are required. There seems to be little prospect of reducing the number of rules as all are clearly needed. The only good point is that all but one, n-deletion (PR 1), have a common function, viz., reducing vowel sequences.

This account covers all dialects except for the low-level PR's (21-23) and the phonetic detail (see 6.6). At these points what is said is certain only of Tupuseleia. Also, as the study is of present-day Motu, loanwords, especially from English, have been considered (see 6.7).

6.2 The Form of a Generative Phonology¹

The phonological component of a transformational grammar operates on the surface structure of sentences,² i.e. on strings of grammatical and lexical morphemes and the syntactic features relevant to the way the sentence is pronounced (i.e. the labelled bracketing), to convert an abstract representation of an utterance into a representation of the phonetic form of the utterance.

First, the form of entries of morphemes in the lexicon must be considered. These consist of syntactic, semantic, and phonological features. The last-mentioned are given in the form of a matrix consisting of columns representing segments which are systematic phonemes³ and rows representing distinctive features, and includes as well syntactic and diacritic features. (See 6.4.2 for an example of a matrix.)

The representations in the lexicon, called 'underlying representations', contain only idiosyncratic properties of morphemes. Each cell in the phonological matrix for which the specification cannot be predicted by rule is marked + or - . That is, at the level of underlying representations each feature has only two values.

Syntactic features are used to mark e.g. the syntactic category a morpheme belongs to, should certain rules apply only to that category. Diacritic features are used to denote morphemes which are exceptions to particular rules.

Before PR's apply to matrices of lexical items inserted in sentences the matrices must be fully specified. This is done by what are called lexical redundancy rules or morpheme structure conditions (MSC's). These by definition apply only within morpheme boundaries i.e. within single lexical entries. They are unordered and include conditions on individual segments and on sequences of segments.

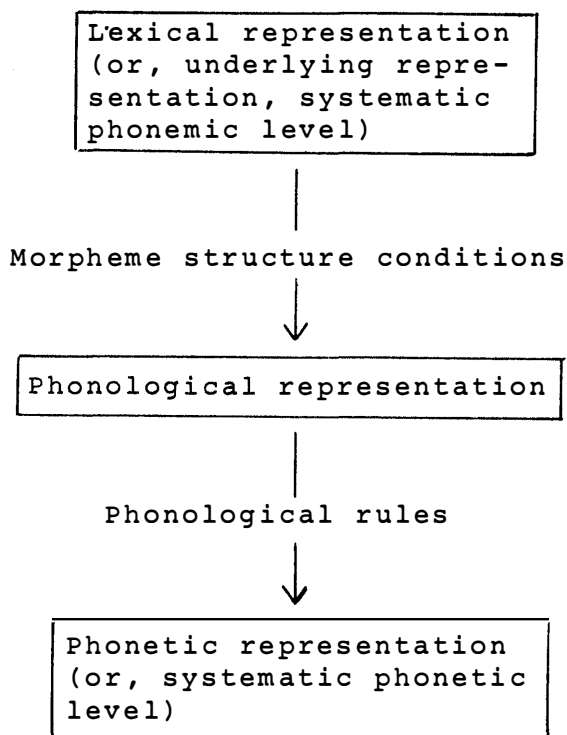
Morpheme structure conditions treat many of the phenomena handled traditionally by phonotactic statements. But, as Harms (1968:85) points out, while phonotactic statements are generally presented as some kind of appendix to the phonemics, morpheme structure conditions are an essential part of the grammar and are clearly motivated i.e. by the simplifications that result in the lexicon. Also, morpheme structure conditions are dealing with 'underlying phonotactics', not with surface phenomena.⁴

After the morpheme structure conditions are applied then the level of phonological representation is reached.⁵ At this level the PR's apply. These are linearly ordered, and carry out a variety of operations. These include changing feature values, adding or deleting whole segments, permuting segments, and the introduction of new features, i.e. the addition of new rows into the matrices.

There are also lower level PR's which may substitute integers (representing relative scalar values) for a + or - in a feature specification. McCawley (1968d:83-4) labels such distinctions as 'sub-featural', and the rules which introduce them 'feature specification rules'. The detail at this low level remains to be worked out.

After all PR's have applied any remaining boundary elements are removed. At this point the level of phonetic representation is reached. Of it Chomsky and Halle say (SPE:294) that the phonetic transcription is not a direct record of what is overtly present in the signal, but rather a representation of what the speaker of a language knows about the phonetic properties of an utterance, i.e. by virtue of his knowledge of the surface structure of the sentence and of the rules of the phonological component. So there is no problem that a transcription is composed of discrete symbols whereas an utterance is continuous.

The following diagram summarises the process that has been outlined.⁶



6.3 The Systematic Phonemes

The following eighteen systematic phonemes are used in the underlying representations of Motu morphemes:

/ p t k b d g v ɣ m n l r h i e a o u /⁷

Each symbol represents a bundle of distinctive features. It has already been noted that there is not a great deal of difference between underlying and phonetic representations in Motu phonology. All eighteen bundles of distinctive features, along with other bundles which are derived from them by PR's, occur at the level of phonetic representation.⁸ However, there does not appear to be any linguistically significant generalization that is revealed by reducing the number of systematic phonemes further nor by setting up any systematic phonemes that are not directly represented at the phonetic level.

6.3.1 The Features

The distinctive features referred to earlier form a set which is assumed to be universal and language independent (see e.g. SPE:28). The exact composition of this set is still uncertain and will no doubt continue to be for some time.⁹ The features used here are drawn from the list in SPE (293ff). Eleven are needed to differentiate the systematic phonemes in Motu.

Sonorant

[+sonorant] segments in Motu include vowels, liquid and nasal consonants, and the glide /h/.

Motu Systematic Phonemes: Fully Specified

	p	t	k	b	d	g	v	ɣ	m	n	l	r	h	i	e	a	o	u
Sonorant	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+
Syllabic	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+
Consonantal	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-
Anterior	+	+	-	+	+	-	+	-	+	+	+	+	-	-	-	-	-	-
Coronal	-	+	-	-	+	-	-	-	-	+	+	+	-	-	-	-	-	-
Low	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-
High	-	-	+	-	-	+	-	+	-	-	-	-	-	+	-	-	-	+
Back	-	-	+	-	-	+	-	+	-	-	-	-	-	-	-	+	+	+
Voiced	-	-	-	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+
Continuant	-	-	-	-	-	-	+	+	-	-	+	+	+	+	+	+	+	+
Lateral	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-

[-sonorant] segments (obstruents) include the stops and fricatives.

Syllabic

This feature was suggested by Milner and Bailey to replace the feature 'vocalic' and is accepted by Chomsky and Halle (SPE:353f) in an excursus though 'vocalic' is used in the chapter on features. 'Syllabic' characterizes all segments constituting a syllabic peak. [+syllabic] segments are vowels. All other segments in Motu are [-syllabic].

Consonantal

[+consonantal] segments include stops, fricatives, nasal consonants and liquids. [-consonantal] segments include the vowels and the glide /h/.

Anterior

[+anterior] segments include labial, labio-dental, and alveolar consonants. [-anterior] segments include velar consonants, the glide /h/, and the vowels.

Coronal

[+coronal] segments are the alveolar consonants. All other segments are [-coronal].

Low

[+low] segments are /h/ and the vowel /a/. All other segments are [-low].

High

[+high] segments are the velar consonants and the high vowels. All the other segments are [-high].

Back

[+back] segments are the velar consonants and back vowels. The other segments are [-back].

Voiced

[+voiced] segments are the vowels and voiced consonants. [-voiced] segments include /h/ and the voiceless consonants.

Continuant

[+continuant] segments include the vowels, /h/, and the liquid and fricative consonants. [-continuant] segments are the stops, both oral and nasal.

Lateral

/l/ is the only [+lateral] segment.

Each segment is specified for all the other features that make up the universal set - in practice, the approximation to the set as in SPE. But they are not all mentioned here as they are not required to contrast segments.

6.4 Morpheme Structure Conditions6.4.1 Segment Structure Conditions

These supply those features in each segment which are predictable from the presence of other features in the same segment.

The Sg SC's given here are not just a mathematical exercise. They have been worked out with natural classes of segments in mind, i.e. the content of the features has been considered. For this reason they are grouped according to the major class of segments that they apply to, viz. vowels, glide, liquids and nasals, and obstruents.¹⁰

All Sg SC's here are in the form of If-Then Conditions (Stanley, 1967). If the features on the left are present in a segment then the feature on the right is also present.

Vowels

There are 5 vowels: / i e a o u /

Sg. SC 1.

$$[+syllabic] \rightarrow \begin{bmatrix} +sonorant \\ -consonantal \\ -anterior \\ -coronal \\ +voiced \\ +continuant \\ -lateral \end{bmatrix}$$

This states that all vowels are sonorants, etc.

Sg. SC 2.

$$\begin{bmatrix} +syllabic \\ +low \end{bmatrix} \rightarrow \begin{bmatrix} -high \\ +back \end{bmatrix}$$

i.e., the low vowel /a/ is a back vowel. Also all [+low] vowels are by definition [-high].

Sg. SC 3.

$$\begin{bmatrix} +syllabic \\ \{ [+high] \} \\ \{ [-back] \} \end{bmatrix} \rightarrow [-low]$$

This condition really contains two separate conditions, but all related to the feature [-low]. First, by definition all [+high] vowels are [-low]; and second, in Motu all front vowels are mid or high (/i/, /e/); i.e. there is no low front vowel.

Glides

There is only one underlying glide /h/, and it functions in sequences as do the other [-syllabic] segments, though they are all [+consonantal].

SgSC 4.

$$\begin{bmatrix} \text{-syllabic} \\ \text{-consonantal} \end{bmatrix} \rightarrow \begin{bmatrix} \text{+sonorant} \\ \text{-anterior} \\ \text{-coronal} \\ \text{+low} \\ \text{-high} \\ \text{-back} \\ \text{-voiced} \\ \text{+continuant} \\ \text{-lateral} \end{bmatrix}$$

Liquids and Nasals

The liquids are /l/ and /r/, while the nasals are /m/ and /n/.

SgSC 5.

$$\begin{bmatrix} \text{+sonorant} \\ \text{+consonantal} \end{bmatrix} \rightarrow \begin{bmatrix} \text{-syllabic} \\ \text{+anterior} \\ \text{-low} \\ \text{-high} \\ \text{-back} \\ \text{+voiced} \end{bmatrix}$$

SgSC 6.

$$\begin{bmatrix} \text{+sonorant} \\ \text{+consonantal} \\ \text{+continuant} \end{bmatrix} \rightarrow \begin{bmatrix} \text{+coronal} \end{bmatrix}$$

I.e., both liquids /l/ and /r/ are alveolar (SgSC 5 specifies them as [+anterior]).

SgSC 7.

$$\begin{bmatrix} +\text{sonorant} \\ +\text{consonantal} \\ -\text{continuant} \end{bmatrix} \rightarrow [-\text{lateral}]$$

This states a redundancy for the nasals /m/ and /n/.

Obstruents

These are /p/, /t/, /k/, /b/, /d/, /g/, /v/ and /ʁ/.

SgSC 8.

$$[-\text{sonorant}] \rightarrow \begin{bmatrix} -\text{syllabic} \\ +\text{consonantal} \\ -\text{low} \\ -\text{lateral} \end{bmatrix}$$

SgSC 9.

$$\begin{bmatrix} -\text{sonorant} \\ \alpha \text{ anterior} \end{bmatrix} \rightarrow \begin{bmatrix} -\alpha \text{ high} \\ -\alpha \text{ back} \end{bmatrix}$$

This indicates there are no palato-alveolar or palatal obstruents (these are $\begin{bmatrix} -\text{anterior} \\ -\text{back} \end{bmatrix}$) and no uvular or pharyngeal obstruents (these are $\begin{bmatrix} -\text{anterior} \\ -\text{high} \end{bmatrix}$).

SgSC 10.

$$\begin{bmatrix} -\text{sonorant} \\ +\text{coronal} \end{bmatrix} \rightarrow [+ \text{anterior}]$$

SgSC 11

$$\begin{bmatrix} -\text{sonorant} \\ -\text{anterior} \end{bmatrix} \rightarrow [-\text{coronal}]$$

Conditions 10 and 11 also result from the absence of palato-alveolar consonants, which are

$$\begin{bmatrix} +\text{coronal} \\ -\text{anterior} \end{bmatrix}$$

SgSC 12.

$$\begin{bmatrix} -\text{sonorant} \\ +\text{continuant} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{voiced} \\ -\text{coronal} \end{bmatrix}$$

That is, there are no voiceless fricatives in underlying representations and there is no voiced alveolar fricative, only the labiodental /v/ and the velar /ɣ/.

SgSC 13.

$$\begin{bmatrix} -\text{sonorant} \\ \left\{ \begin{array}{l} [-\text{voice}] \\ [+voice] \end{array} \right\} \\ \left\{ \begin{array}{l} [+coronal] \end{array} \right\} \end{bmatrix} \rightarrow [-\text{continuant}]$$

There are really two separate conditions collapsed into one here. First, only stops are voiceless, not fricatives (cf. SgSC 12). Second, the only voiced alveolar obstruent is the stop /d/.

Motu Systematic Phonemes

(Segmental Redundancies Left Blank)

	p	t	k	b	d	g	v	ɣ	m	n	l	r	h	i	e	a	o	u
Syllabic													-	+	+	+	+	+
Consonantal									+	+	+	+	-					
Sonorant	-	-	-	-	-	-	-	-	+	+	+	+						
Anterior	+		-	+		-	+	-										
Coronal	-	+		-	+				-	+								
Low																+	-	
High														+	-		-	+
Back														-	-		+	+
Voiced	-	-	-	+	+	+												
Continuant				-		-	+	+	-	-	+	+						
Lateral											+	-						

6.4.2 Sequence Structure Conditions

These specify redundancies with regard to sequences of segments within morphemes. Some sequence conditions apply to all morphemes in the language but some apply only to particular groups such as grammatical morphemes, verbs, and nouns.

SqSC 1

[+segment] → [+syllabic]/____+

Only vowels may occur before morpheme boundaries. There are no morpheme-final consonants or glides.

SqSC 2

[+segment] → [+syllabic]/[-syllabic]

/[-syllabic] is an example of Bach's neighbourhood convention (Bach, 1968b) and is an abbreviation for the environments ____[-syllabic] and [-syllabic]____. Consonants and glides occur only in intervocalic or morpheme-initial position. There are no consonant clusters.

SqSC 3

Positive Condition:¹¹ + (C₀'V)₁⁵ +

Motu morphemes may contain from one to five vowels and from none to five consonants.¹² Examination of the lexicon indicates that while this condition covers all morphemes, each subgroup e.g., grammatical morphemes or nouns, is more restricted in range than the general condition allows (see below).

SqSC 4.

PC: V_1^4

The maximum number of vowels in a sequence is four. Four is in fact rare. E.g., /auai/ 'to fasten mesh of net over end of stone'.

Restrictions on particular segment sequences.

SqSC 5.

$$[+segment] \rightarrow [-syllabic] / + \left[\begin{array}{l} +syllabic \\ +high \\ +back \end{array} \right] \text{ ———}$$

When a morpheme begins with /u/ the next segment cannot be a vowel. The only morpheme in MD which violates this condition is /uamo/, and this appears to be a borrowing from Koiari.

SqSC 6.

$$[+syllabic] \rightarrow \left\{ \begin{array}{l} [-back] \\ [+back] \\ [-high] \end{array} \right\} / \left[\begin{array}{l} -syllabic \\ -sonorant \\ +continuant \\ -coronal \end{array} \right]$$

This condition states, using Bach's neighbourhood convention, that a vowel before or after /v/ must be /i/, /e/, /a/ or /o/. Or, more simply, the vowel /u/ does not occur before or after /v/.¹³

No morphemes have been found that are exceptions to this condition. In fact, there are only a handful of exceptions to the following condition that excludes /o/ as well as /u/.

$$[+syllabic] \rightarrow \left\{ \begin{array}{l} [-back] \\ [+low] \end{array} \right\} / \left[\begin{array}{l} -syllabic \\ -sonorant \\ +continuant \\ -coronal \end{array} \right]$$

The only morphemes in MD with a /vo/ sequence are /vonovono/ 'white ants' (a word which no informants have known), /revo/ a fish name restricted to the Western dialect, and /levo/ 'tinea imbricata (ringworm)'. /levo/, with the same meaning, occurs in Toaripi and while many Motu words have been borrowed by Toaripi, so that one cannot be sure that the morpheme was borrowed by the Motu rather than by the Toaripi, it is at least possible in the light of the structure of Motu. Morphemes found containing /ov/ sequences are /love/ 'to swing', /gogove/ 'frigate bird' (Eastern Motu only), /gove/ 'black wallaby', /rovae/ 'a bunch (of coconuts)', and /toviri/ 'kernel, as of pandanus nut'. These last three could well be borrowings as, e.g., some other terms for wallabies that are found in Motu are known borrowings from Koita and Koiari.

At this stage the condition which excludes /u/ will be preferred. However, the exclusion of /o/ also may be shown to be correct.

There do not appear to be any other significant restrictions on sequences of particular segments. That is, any sequences that are not prevented by the SqSC's given and which do not actually occur in any Motu morpheme would not, if they did occur, violate any significant generalization about Motu.¹⁴

Restrictions within Categories

Morphemes are divided into grammatical and lexical morphemes, and the latter subdivided into the categories

nouns, verbs, adjectives and adverbs. There are no significant restrictions on the segments that may form sequences. The only restrictions found are those of length, which are not particularly interesting and all but one are not formalized here. Briefly the main points are (i) there are no nouns of the shape V or CV; (ii) there are no verbs of the shape V; (iii) adjectives must contain at least two vowels and one consonant; and (iv) the only shapes permitted grammatical morphemes are V, VV, CV, CVV, VCV and CVCV. This is formalized as a positive condition.

$$PC: \quad + (C_0'V)_1^2 +^{15}$$

The following matrix is an example of the savings in lexical entries that SqSC's allow

	+	g	u	i	+
Segment	-	+	+	+	-
Syllabic			o	o	
Consonantal					
Sonorant		-			
Anterior		-			
Coronal					
Low					
High			+	+	
Back			+	-	
Voiced		+			
Continuant		-			
Lateral					

'o' here indicates a cell that is left blank due to the operation of a SqSC. SqSC 2 allows /u/ to be left blank

for the feature [syllabic] as it is preceded by a [-syllabic] segment. SqSC 1 allows /i/ to be left blank for [syllabic] as it is followed by the morpheme boundary marker +.

6.5 Phonological Rules

These are presented in groups, not in a strict linear order. Ordering restrictions are, however, noted within the groups.¹⁶

6.5.1 The Verb

The order of morphemes in the surface verb is:

Fa Neg Fb SP Subj Dir Caus Refl Vroot Trans Instr OS
Adv₁ Adv₂ Asp. Their underlying forms and functions are:

Fa - future morpheme (a), /be/. It is used in the formation of three tenses/moods. There are four tenses/moods that involve future morphemes. For convenience they are called (i) immediate future, (ii) subjunctive, (iii) modal future and (iv) non-modal future. The exact functions of (iii) and (iv) are not yet clear. Their names reflect the fact that (iii) is used in imperatives, and in places where it seems to signify necessity or certainty, as well as in indicative and interrogative sentences, while (iv) appears only in indicative and interrogative sentences.

Neg - the negative morpheme /ati/.

Fb - future morpheme (b) /ai/, which appears in all four tenses/moods.

SP - subject prefix. . There is a set of these:

/na/ 1st sing.	/ta/ 1st pl. inclusive
/o/ 2nd sing.	/a/ 1st pl. exclusive
/ne/ 3rd sing.	/o/ 2nd pl.
	/e/ 3rd pl.

Subj - subjunctive morpheme /ma/

Dir - direction markers /ha/ used of the subject going away, and /me/ meaning in some sense 'close to the subject'.¹⁷

Caus - causative /ha/.

Refl - reflexive /he/.

Trans - these are morphemes that form transitive verbs from intransitive -/lai/, /heni/, /tani/, TRD (total reduplication). TRD is handled by PR 11.

Instr - the instrument suffix /lai/, which does not occur if a transitive verb forming suffix does.

OS - object suffix. There is a set of these:

/gu/ 1st sing.	/da/ 1st pl. inclusive
/mu/ 2nd sing.	/mai/ 1st pl. exclusive
/ia/ 3rd sing.	/mui/ 2nd pl.
	/dia/ 3rd pl.

Adv₁) These are mostly direction, degree or manner adverbs.
 Adv₂) Adv₁ precede Adv₂

Asp - Aspect morpheme. /mu/ indicates non-past continuous or habitual, while /va/ indicates past continuous or habitual.

PR's are required to handle changes only in the future, negative and subject prefixes and 3rd sg. OS. The conjugation of the Fa-Neg-Fb-SM- part of the verb is given below. Then follow the PR's and finally each form to which they must be applied is derived.

Past/Present

Affirmative	Sing.	Pl.	Negative	Sing.	Pl.
1st	<u>na</u>	<u>ta</u> (incl) <u>a</u> (excl)		<u>atina</u>	<u>atita</u> <u>atia</u>
2nd	<u>o</u>	<u>o</u>		<u>to</u> (atio)	<u>atio</u>
3rd	<u>e</u>	<u>e</u>		<u>te</u> (atine)	atie

Modal Future

Affirmative	Sing.	Pl.
1st	<u>baina</u>	<u>baita</u> (incl) <u>baia</u> (excl)
2nd	<u>ba</u> , <u>bao</u>	<u>ba</u> , <u>bao</u>
3rd	<u>baine</u>	<u>baie</u> (EM), <u>bae</u> (WM)

/bao/ occurs only with the irregular verbs /lao/ 'go', /mai/ 'come', /gwau/ 'say', and /toma/ 'say'.

Negative	sing.		Pl.	
	Eastern Motu	Western Motu	Eastern Motu	W. Motu
1st	<u>bataina</u>	<u>batina</u>	<u>bataita</u> <u>bataia</u>	<u>batita</u> <u>batia</u>
2nd	<u>bataio</u>	<u>batio</u>	<u>bataio</u>	<u>batio</u>
3rd	<u>bataine</u>	<u>batine</u>	<u>bataie</u>	<u>batie</u>

Immediate Future forms are the same as for the modal future except that the initial /b-/ is deleted.

Non-Modal Future

Affirmative	Sg.	Pl.
1st	<u>bena</u> , <u>ba</u>	<u>beta</u> , <u>baita</u> (incl) <u>bea</u> , <u>baia</u> (excl)
2nd	<u>bo</u>	<u>bo</u>
3rd	<u>be</u>	<u>be</u>

bena, beta and bea are Eastern Motu; ba, baita and baia are Western Motu.

The forms of the prefixes Fa + Neg + Fb + SP in the negative are the same as the modal future. (The non-modal future differs from the modal future as it includes the non-past aspect suffix /mu/-).

Subjunctive

The distinguishing feature of the subjunctive is the occurrence of the prefix /ma/. Apart from this the negative forms are the same as the modal future, while the affirmative forms are the same as the non-modal future except that in the 1st person singular, one finds ba or na, and in the 1st person plural only baita and baia.

(PR1) n-deletion

The /n/ of the 1st and 3rd person singular SP's /na/ and /ne/ is deleted in certain environments. The rule is broken into two here to avoid having one large complicated bracketing. # is the symbol for a word boundary.

$$(a) \left[\begin{array}{l} -\text{syllabic} \\ +\text{sonorant} \\ +\text{coronal} \\ -\text{continuant} \\ +\text{SP} \\ +\text{3rd} \end{array} \right] \rightarrow \emptyset / \# '(\text{ati}+) \underline{\hspace{1cm}}$$

In the past and present tenses the 3rd sg. SP /ne/ becomes [e] e.g. [e-gini] 'he stood'. MG gives /atine/ (<asine>) as a possible form, but the only form I elicited of the Neg + 3rd sg. SP has the /n/ deleted, viz. [te].

(b) This rule applies only to the non-modal future and the subjunctive.

$$\left[\begin{array}{l} -\text{syllabic} \\ +\text{sonorant} \\ +\text{coronal} \\ -\text{continuant} \\ +\text{SP} \end{array} \right] \rightarrow \emptyset$$

There are exceptions to this rule with regard to the 1st sg. When all the rules are applied the tense-person prefixes form [ba], e.g. [ba-lao-mu] 'I will go'. However, in the Eastern dialect the non-modal future does not undergo this rule and so the form is /bena/.¹⁸

It seems best to order n-deletion first and so the preceding vowel is always /i/, which is the vowel before which /n/ is deleted in (a) above. Also, this allows the rest of the rules to have the function of reducing vowel sequences, a few of which have been created or lengthened by the early rule of n-deletion.

(PR2) i-deletion (negative)

$$\begin{bmatrix} +\text{syllabic} \\ +\text{high} \\ -\text{back} \\ +\text{Neg} \end{bmatrix} \rightarrow \emptyset / \text{---} + \left\{ \begin{bmatrix} +\text{syllabic} \\ +\text{low} \\ +\text{Fb} \end{bmatrix} \right\} \left\{ \begin{bmatrix} +\text{syllabic} \\ -\text{high} \\ -\text{low} \\ +\text{SP} \\ +\text{Sg} \end{bmatrix} \right\}$$

The /i/ of /ati/, the negative, is deleted before the /a/ of /ai/, Fb, and before /o/ and /e/ when they are, or end, singular subject prefixes, e.g. [b-at-ai-na-heau] 'I will not run'.

(PR3) a-deletion (negative)

$$\begin{bmatrix} +\text{syllabic} \\ +\text{low} \\ +\text{Neg} \end{bmatrix} \rightarrow \emptyset / \text{---} \text{t(i)} + \begin{bmatrix} +\text{syllabic} \\ -\text{high} \\ -\text{low} \\ +\text{SP} \\ +\text{Sg} \end{bmatrix}$$

The /a/ of /ati/ is deleted when the negative appears immediately before /o/ and /e/ when they are singular subject prefixes. This, then, occurs only in the past and present tense forms. Whether /t/ or /ti/ follows /a/ is irrelevant. Thus it does not matter whether i-deletion precedes or follows this rule. E.g. [t-o-digu] 'you did not bathe'.

(PR4) a-deletion (Fb)

Again for convenience the rule is presented in two parts.

$$(a) \begin{bmatrix} +\text{syllabic} \\ +\text{low} \\ +\text{Fb} \end{bmatrix} \rightarrow \emptyset / \begin{bmatrix} -\text{sonorant} \\ +\text{coronal} \\ -\text{voice} \\ +\text{Neg} \end{bmatrix} + \text{---} \begin{bmatrix} +\text{syllabic} \\ -\text{back} \\ +\text{high} \\ +\text{Fb} \end{bmatrix}$$

The /a/ of /ai/, the Fb morpheme, deletes after the negative after i-deletion (neg.) has applied. i-deletion (neg.) applies first as in Eastern Motu one finds e.g. /be+ati+ai+na/ becomes [b+at+ai+na]. Then to derive the Western form a-deletion (Fb) applies giving [b+at+i+na].

$$(b) \begin{bmatrix} +\text{syllabic} \\ +\text{low} \\ +\text{Fb} \end{bmatrix} \rightarrow \emptyset / \text{---} \begin{bmatrix} +\text{syllabic} \\ -\text{back} \\ +\text{high} \\ +\text{Fb} \end{bmatrix} + \left\{ \begin{bmatrix} +\text{syllabic} \\ -\text{sonorant} \\ +\text{coronal} \\ -\text{voice} \end{bmatrix} \right\}$$

This rule applies to the non-modal future and the subjunctive. The last part of the environment is /t/, /o/, /e/, or /a/. It does not apply to the 1st person plural SP's /ta/ and /a/ in Western Motu.

This rule produces the following forms, e.g., which require the next rule, i-deletion (Fb) before the surface representation is reached, and also e-deletion.

1st sg.	be + ai + a	→	be + i + a
2nd sg.	o	→	o
3rd sg.	e	→	e

(PR5) i-deletion (Fb)

$$\begin{bmatrix} +\text{syllabic} \\ -\text{back} \\ +\text{high} \\ +\text{Fb} \end{bmatrix} \rightarrow \emptyset / \text{---} + \begin{bmatrix} +\text{syllabic} \\ +\text{SP} \end{bmatrix}$$

/i/ deletes before subject markers that begin with a vowel. This does not apply to the 1st plural exclusive /a/ in Western Motu, where /be+ai+a/ becomes [b+ai+a]. Nor does it apply to the 3rd sg. SP in the modal future and immediate future in Eastern Motu, where /(be)+ai+e/ becomes [(b)+ai+e]. Nor does the rule apply if the negative is present, in which case the i-deletion (neg.) rule applies.

The question arises as to whether i-deletion (Fb) precedes or follows a-deletion (Fb). In the modal and immediate futures 2nd person and 3rd pl. (WM) only i-deletion occurs:

2nd person (b)a(o)
3rd pl. (WM) (b)ae

Then when Neg precedes, in all tenses/moods /a/ is deleted but /i/ is not. It is only in the non-modal future and the subjunctive that both delete. If /a/ is deleted first one derives

be+ai+na → be+ai+a → be+i+a → be+a → b+a
be+ai+o → be+i+o → be+o → b+o
be+ai+ne → be+ai+e → be+i+e → be+e → b+e

If /i/ is deleted first:

be+ai+na → be+ai+a → be+a+a → be+a → b+a
be+ai+o → be+a+o → be+o → b+o
be+ai+ne → be+ai+e → be+a+e → be+e → b+e

Two points come to notice. If /a/ is deleted first the environment is _____i + V, but if second, the environment is the simpler _____+V. /i/ is deleted before the same environment in either ordering, viz.

_____ + V. However, if /i/ is deleted first then here /be+a+o/ → [b+o], whereas in the modal and immediate futures it becomes [b+a]. There does not appear to be any principle behind such a difference. Thus either ordering has a drawback.

(PR6) o-deletion

$$\left[\begin{array}{l} +\text{syllabic} \\ +\text{back} \\ -\text{high} \\ -\text{low} \\ +\text{SP} \end{array} \right] \rightarrow \emptyset / [+Fb] + \underline{\hspace{1cm}}$$

/o/ is deleted after the Fb morpheme in the modal and immediate futures. This rule does not apply to the non-modal future or the subjunctive.

e.g. 'Run!' /ai + o + heau/ (Immediate Future)
 [a o heau] by i-deletion
 [a heau] by o-deletion

The order of the rules in the example may be reversed. The process may be viewed as one of reducing a vowel sequence as Fb is /ai/. The irregular verbs listed earlier do not undergo the o-deletion rule, e.g. 'Come!' is [a-o-ma].

(PR7) e-deletion

$$\left[\begin{array}{l} +\text{syllabic} \\ -\text{back} \\ -\text{high} \end{array} \right] \rightarrow \emptyset / \left[\begin{array}{l} -\text{sonorant} \\ +\text{anterior} \\ -\text{coronal} \\ +\text{voiced} \\ -\text{continuant} \\ +Fa \end{array} \right] \text{---} +[+\text{syllabic}]$$

The /e/ of /be/, the Fa prefix, is deleted if it is followed by a vowel.

The one exception to this rule is that the /e/ does not delete before the 1st pl. excl. /a/ in the non-modal future. This situation arises in the East only, so one finds EM surface [bea] WM [baita].

(PR8) i-deletion

$$\begin{bmatrix} +\text{syllabic} \\ -\text{back} \\ +\text{high} \end{bmatrix} \rightarrow \emptyset / \begin{bmatrix} +\text{syllabic} \\ -\text{low} \end{bmatrix} + \underline{\quad}$$

The 3rd sg. object suffix is taken to be /ia/. The /i/ is then deleted after all vowels except /a/, e.g. /loku+ia/ → [loku+a] 'to wrap something', but there is no change to /ala+ia/ 'to kill someone'.

(PR9) v-insertion

$$\emptyset \rightarrow \begin{bmatrix} -\text{sonorant} \\ +\text{anterior} \\ +\text{continuant} \end{bmatrix} / \begin{bmatrix} +\text{syllabic} \\ +\text{low} \\ +\text{Fb} \end{bmatrix} + \underline{\quad} \begin{bmatrix} +\text{syllabic} \\ +\text{low} \\ +\text{Vroot} \end{bmatrix}$$

If the verb root begins with /a/ and the preceding vowel is the /a/ of Fb /ai/ then /v/ is inserted between the two occurrences of /a/. E.g. 'kill it':

$$/ba + ala + ia/ \rightarrow [ba + vala + ia]$$

v-insertion applies after i-deletion has reduced Fb /ai/ to /a/ and o-deletion has made this /a/ the vowel immediately preceding the verb root.

$$/be+ai+o/ \rightarrow [be+a+o] \rightarrow [be+a]$$

Derivations

Past/Present

- Affirmative 3rd sg. [e] from /ne/ by n-deletion.
- Negative 2nd sg. [to] from /ati+o/ by a-deletion(neg)
and i-deletion(neg).
- 3rd sg. [te] from /ati+ne/ by n-deletion,
a-deletion (neg), and i-deletion
(neg).

Modal Future

Affirmative: e-deletion applies to all

 2nd [bao] from /be+ai+o/ by i-deletion (Fb)
 [ba] as [bao] then o-deletion.

 3rd pl. WM [bae] from /be+ai+e/ by i-deletion(Fb).

Negative: i-deletion (neg) and e-deletion are applied
to all.

E.g. 1st sg. /be+ati+ai+na/ becomes [b+at+ai+na] in EM.

For WM forms a-deletion (Fb) also applies:

 /b+at+ai+na/ becomes [b+at+i+na].

 Immediate future forms undergo the same rules
except for e-deletion (as /be/ is absent).

Non-Modal Future

Affirmative

 1st sg. WM [ba] from /be+ai+na/ by n-deletion,
a-deletion (Fb), i-deletion (Fb), and
e-deletion.

 1st pl. EM incl. and excl. [beta] and [bea] from
 /be+ai+^{ta}/_a / by a-deletion (Fb) and
i-deletion (Fb).

- 1st pl. WM incl. and excl. [baita] and [baia] from
 /be+ai+^{ta}_a/ by e-deletion.
- 2nd [bo] from /be+ai+o/ by a-deletion (Fb),
 i-deletion (Fb), and e-deletion.
- 3rd sg. [be] from /be+ai+ne/ by n-deletion,
 a-deletion (Fb), i-deletion (Fb), and
 e-deletion.
- 3rd pl. [be] from /be+ai+e/ by a-deletion (Fb),
 i-deletion (Fb), and e-deletion.

Subjunctive

The alternative form of the 1st sg., [na] is from
 /be+na/, with the /be/ deleted exceptionally.

6.5.2 General Obligatory PR's

(PR10) u → w

$$\left[\begin{array}{l} +\text{syllabic} \\ +\text{back} \\ +\text{high} \end{array} \right] \rightarrow [-\text{syllabic}] / \left[\begin{array}{l} -\text{sonorant} \\ -\text{anterior} \\ -\text{continuant} \end{array} \right] \underline{\quad} \left[\begin{array}{l} +\text{syllabic} \\ +\text{low} \end{array} \right]$$

/u/ becomes [w] between the velar stops /k,g/ and
 the vowel /a/. This rule does not apply across morpheme
 boundaries. So, e.g. /loku + ia/ 'to roll something up'
 does not become [lokwa] after i-deletion.

The only morphemes found so far which do not
 undergo this rule are /kuadi/, a shellfish, (ctra.
 /kuadi/ 'to hit' which becomes [kwadi]) and /guava/, a
 fruit. There is one morpheme /kuinai/ 'to carry along
 with a lagatoi' which undergoes the change /u/ → [w]
 although the following vowel is /i/, not /a/. /guava/ is
 certainly a borrowing and it may be that all exceptions
 can be classed as [-native] morphemes.

This rule is ordered before the stress rules (see below) as it allows a simpler statement of the latter. If the stress rule (PR18) came before this rule then it would have to handle cases where the stress fell on the third last vowel e.g. /^hagua/ 'mangrove', or else have a rule that shifted stress to the preceding vowel if a vowel became a glide. E.g., a rule would have to change /ha^hgua/ to [^hagwa]. It is also ordered on similar grounds before Partial Reduplication.

There are two alternatives to this interpretation. One is to have two operations, first labializing the preceding velar stop and then deleting the /u/. However, the complication in regard to the stress rule remains. The second is to have /k^w/ and /g^w/ as systematic phonemes. This avoids any complication with the stress rule but has a doubtful point in that these would be the only systematic phonemes in Motu with a very restricted distribution, viz., only before /a/. The only other systematic phoneme with a restricted distribution is /v/ (SqSC6), but the restrictions on it are not nearly so narrow. Yet the occurrence of /k^w/ and /g^w/ in particular morphemes is not predictable whereas the occurrence of [kw] and [gw] is, as they are derived by PR10. Thus either way some generalization is lost. More work, e.g. on the stress rules, is required before a more certain decision can be made.

(PR11) Total Reduplication (TRD)

$$\text{TRD} \rightarrow X_1 / \text{ ______ } + X_1 +$$

where $X_1 = X_1$ and X_1 is a morpheme.

The morpheme TRD will appear in the course of rules of word-derivation, wherever one decides to put such rules.¹⁹ There are also cases of lexical reduplication, i.e. where reduplication has no grammatical or semantic function. The unreduplicated forms of these morphemes are specified as obligatorily undergoing a rule which adds the morpheme TRD. Examples of both types are:

TRD+/mero/ 'boy' → [meromero] 'little boy'

TRD+/gai/ → [gaigai] 'snake'

/gai/ does not occur in any phonetic representation of Motu.

(PR12) Partial Reduplication (PRD)

Partial reduplication is used to form certain plurals and to mark plural agreement (See Appendix 2). The rule to give the phonological form of the morpheme PRD is:

$$\text{PRD} \rightarrow (C_1 (G_1))V_1 / \text{_____} + (C_1 (G_1))V_1$$

where $C_1 = C_1$, $G_1 = G_1$ and $V_1 = V_1$

e.g. $\text{PRD} \rightarrow \text{kwa} / \text{_____} + \text{kwa}$ to form /kwa+kwadoyi/
'short'.

The rule is ordered after PR10, otherwise it would have to handle two vowels if the first was /u/ and the second /a/. It is not impossible to do that, but if ordering is needed anyway then its use allows a simpler rule here.

(PR13) Diphthongization

A vowel following a lower vowel becomes a glide, and /e/ following /o/ becomes a glide. However, there seems to be no generally used abbreviation for the first generalization, apart from braces. This generalization may be expressed as follows (omitting braces):

- (a) $\begin{bmatrix} +\text{syllabic} \\ -\text{low} \end{bmatrix} \rightarrow [-\text{syllabic}] / \begin{bmatrix} +\text{syllabic} \\ +\text{low} \end{bmatrix} \text{ ______ }$
- (b) $\begin{bmatrix} +\text{syllabic} \\ +\text{high} \end{bmatrix} \rightarrow [-\text{syllabic}] / \begin{bmatrix} +\text{syllabic} \\ -\text{high} \end{bmatrix} \text{ ______ }$

(a) changes the vowels /i e o u/ after /a/ to [y ɘ ɔ w] respectively, while (b) changes /i u/ after /e o/ to [y w] respectively (and it also applies vacuously to after /a/, if (a) is ordered first).

The rule for /e/ becoming the glide [ɘ] after /o/ is

$$\begin{bmatrix} +\text{syllabic} \\ -\text{high} \\ -\text{low} \\ -\text{back} \end{bmatrix} \rightarrow [-\text{syllabic}] / \begin{bmatrix} +\text{syllabic} \\ -\text{high} \\ -\text{low} \\ +\text{back} \end{bmatrix} \text{ ______ }$$

It seems that even if all three parts of diphthongization are combined by the use of braces the point in common between (a) and (b), that it is a matter of any vowel that is higher than the one before it becoming a glide, is still not captured.

$$\begin{bmatrix} +\text{syllabic} \\ <[-\text{low}] > \\ <[+\text{high}] > \\ <[-\text{high}] > \\ <[-\text{back}] > \end{bmatrix} \rightarrow [-\text{syllabic}] / \begin{bmatrix} +\text{syllabic} \\ \left\{ \begin{array}{l} <[+\text{low}] > \\ <[-\text{high}] > \\ <[-\text{high}] > \\ <[+\text{back}] > \end{array} \right. \end{bmatrix} \text{ ______ }$$

This is quite complicated, even if the third part is omitted.

If we use an abbreviatory device and say the three heights are 1 [+low], 2 $\begin{bmatrix} -\text{high} \\ -\text{low} \end{bmatrix}$, and 3 [+high], then one could write the following rule, where $n=2$ or 3, for the first two parts of the above rule:

$$\begin{bmatrix} +\text{syllabic} \\ n \text{ high} \end{bmatrix} \rightarrow [-\text{syllabic}] / \begin{bmatrix} +\text{syllabic} \\ n-1 \text{ high} \end{bmatrix} \underline{\hspace{1cm}}$$

Diphthongization applies across morpheme boundaries and is optional across boundaries between certain words (though just which words has not been ascertained).

Examples are:

- (i) Within morphemes /tai/ → [tay] 'to cry'
/kudou/ → [kudow] 'heart';
- (ii) Across morpheme boundaries /e+ita+gu/ → eytagu]
'he saw me';
- (iii) Across word boundaries /ena ura/ → [enawra]
'his wish'.

(PR14)

$$\begin{bmatrix} -\text{sonorant} \\ +\text{coronal} \\ -\text{voice} \\ -\text{continuant} \end{bmatrix} \rightarrow [+continuant] / \underline{\hspace{1cm}} \begin{bmatrix} +\text{syllabic} \\ -\text{back} \end{bmatrix}$$

/t/ becomes [s] before /i/ and /e/. There are a few morphemes which have [s] before /a, o, u/ but these are classed as [-native], as most are or appear to be borrowings, e.g. /sara/ 'prawn' from Koiari. Also in the speech of many Motu the negative + 2nd sg. subject marker when the verb is past or present tense is [so], not [to].²⁰

(PR15) Aspiration

$$\begin{bmatrix} -\text{sonorant} \\ -\text{continuant} \\ -\text{voice} \end{bmatrix} \rightarrow [+ \text{heightened subglottal pressure}]$$

All voiceless stops have the value + for the feature [heightened subglottal pressure] which is used in SPE for aspiration. There seems to be no ordering constraint.

6.5.3 A Note on Motu Orthography

The orthography currently used in church and administration publications corresponds to the systematic phonemes given here, with two additions bringing the orthography nearer to the level of phonetic representation.²¹

- (i) <s> is used where [s] is produced by PR14.
e.g. /tina/ 'mother' becomes [sina] and is spelt <sina>;
- (ii) <w> is used where PR10 changes /u/ to [w].
e.g. /kuara/ 'head' becomes [kwara] and is spelt <kwara>.

In publications /ɣ/ is represented by <ḡ>. However, in handwriting the Motu almost always use the one symbol <g> for the two systematic phonemes /g/ and /ɣ/. E.g. both /rege/ 'limb' and /reɣe/ 'sound' are spelt <rege>.

6.5.4 Dialect Differences

The systematic phonemes listed are basic to all dialects. Two PR's, 16 and 17, account for the fact that

at Pari, Manumanu, and part of Hanuabada /h/ does not occur on the surface, while at Tatana and Vabukori /l/ has the phonetic representation [n].

(PR16) h-deletion²²

$h \rightarrow \emptyset$

(PR17) l $\rightarrow$ n

$$\begin{bmatrix} -\text{syllabic} \\ +\text{sonorant} \\ +\text{continuant} \\ +\text{lateral} \end{bmatrix} \rightarrow \begin{bmatrix} -\text{continuant} \\ -\text{lateral} \end{bmatrix}$$

6.5.5 Stress Rules

Only major rules are given. To these there are exceptions, some of which may be able to be handled by minor rules, others may have to be marked individually. Another problem is that on words formed by total reduplication (in particular) the position of the primary stress, which is not heavy, may vary.

(PR18) Primary Stress Rule

$$V \rightarrow [1 \text{ stress}] / \left\{ \begin{array}{l} \text{---} G (C' V) \text{---} G \# \\ \text{---} G \# \\ \text{---} (C) (G) V \# \\ + (C) \text{---} + \end{array} \right\} \begin{array}{l} (a) \\ (b) \\ (c) \\ (d) \end{array}$$

There is one primary stress in each word. # indicates a word boundary. The rule is disjunctively ordered, i.e., if one applies then none of those following may apply. G indicates the glides [y], [w], [ɤ] and [ɔ].

(a) If there are two diphthongs then the stress falls on the vowel in the first.

[¹gaygay] 'snake'

(b) If only one diphthong occurs then the vowel in it is stressed.

[ku¹dow] 'heart' [¹vagha] 'sea-urchin'

(c) If there is no diphthong the stress falls on the second last vowel.

[¹ia] 'he' [¹hua] 'moon' [¹ara] 'fence'
 [¹lahi] 'fire' [hu¹ala] 'crocodile'
 [hi¹siu] 'star'

(d) If there is only one vowel it takes the stress.

[¹to] 'but' [¹a] 'but'.

(PR19) Secondary Stress Rule

$$V \rightarrow [2 \text{ stress}] / \#(C) \text{ ______ } (CV)C V$$

[1 stress]

If two vowels precede the vowel with the primary stress then the first vowel receives the secondary stress. If only one vowel precedes it, then that vowel receives the secondary stress.

E.g., [₁a¹geva] 'string of beads' [₁du¹bara] 'a crab'
 [₁ku¹dou] 'heart' [₁kaka¹kaka] 'red'

Notes

(1) Words of four or more vowels either (a) undergo PR18, or (b) take primary stress on the first vowel. Most examples of this are formed by total reduplication. The first vowel of the second half then receives the secondary stress.

[¹mero₁mero] 'little boy' [¹hua₁hua] 'fruit'

Some words seem to allow both (a) and (b) patterns, e.g. [₁kaka¹kaka] or [¹kaka₁kaka] 'red'.

(2) A number of three vowel words with no diphthongs have the primary stress on the first vowel.

[¹herea] 'very' [¹hereva] 'to speak'

Nouns and Adjectives with Suffixes

With words of two vowels the stress moves to the last vowel if a suffix is added (if the stress is not already on the last vowel).

[¹dika] 'bad' > [di¹ka+na]
[¹lata] 'long' > [la¹ta+dia]

That is, $V \rightarrow [1 \text{ stress}] / V(C) ______ + \text{suffix}$

With words of four or more vowels stress stays on the second last vowel or moves forward to it if the word is in group (b) in Note (1) above.

If the vowel with the stress has a glide following then the stress stays on that vowel when suffixes are added, e.g. [¹vayra+na] 'his face'.

Verbs

The primary stress falls on a vowel in the verb root except when the verb root is followed by the suffixes *heni*/, */tani*/, and */lai*/, which are used in the formation of transitive verbs, or by an adverb of direction, manner or degree, such as */iti*/ 'up', */namonamo*/ 'properly' or */mate*/ 'to the point of exhaustion'.

The three main situations are:

(i) stress on verb root

na+¹pidi+dia 'I shot them'

SP Vroot OS

(ii) stress on a transitivizer

e+¹raka+¹tani-a 'he left it'

(iii) stress on an adverb

e+¹gwau+¹heni+a+ha¹naiha¹nai+mu 'he is always scolding her'

SP VR OS Adverb Asp

6.5.6 Optional low-level PR's

The conditions under which these apply are not fully known and the dialects may differ in their use of them. However, the phenomena are common and at least deserve mention.

(PR20) u-Deletion

$$\left[\begin{array}{l} +\text{syllabic} \\ +\text{back} \\ +\text{high} \end{array} \right] \rightarrow \emptyset / + \left[\begin{array}{l} -\text{syllabic} \\ +\text{sonorant} \\ -\text{coronal} \\ \hline \left\{ \begin{array}{l} [+ \text{Non-past Asp}] \\ [+ \text{Possessive}] \end{array} \right\} \end{array} \right]$$

/u/ is deleted from the non-past aspect suffix and the 2nd sg. possessive suffix, both of which have the form /mu/. They both always occur in word-final position. E.g., /e+lao+mu/ → [e+lao+m] 'he is going'

(PR21) i-Deletion

$$\left[\begin{array}{l} +\text{syllabic} \\ -\text{back} \\ +\text{high} \end{array} \right] \rightarrow \emptyset / \left[\begin{array}{l} -\text{sonorant} \\ +\text{coronal} \\ -\text{voice} \\ +\text{continuant} \end{array} \right] _____\#$$

/i/ may be deleted at the end of a word when it is preceded by [s]. This rule, which is more likely to be applied at the end of a phrase or sentence than within, seems to apply particularly to certain morphemes, e.g., [lasi] 'no', [lasi] 'to go outside', [vasi] 'to go toward the person spoken to', [osi] a suffix added to numerals, [isi] 'up' (an adverb). Sometimes the /i/ is not deleted but is devoiced.

(PR22) /a/ Deletion

$$\left[\begin{array}{l} +\text{syllabic} \\ +\text{low} \end{array} \right] \rightarrow \emptyset / _____\#[+\text{syllabic}]$$

/a/ may be deleted at the end of a word if there is no pause and the next segment is a vowel. The conditions under which this rule is applied are not yet clear. Already it has been said that diphthongization may apply across word boundaries, the same environment as for the present rule. For the present it seems that (i) there are certain morphemes which lose their final /a/ rather than the /a/ becoming part of a diphthong, and that (ii) verbal affixes beginning with vowels are the most common environment before which the /a/ is deleted.

Morphemes referred to in (i) include /dahaka/ 'what?', /daika/ 'who?', /eda/ 'where to?'.

Examples of (ii) are

/dina e+tara+mu/ → [ˈdineˈtaram]
 sun shine 'The sun is shining'

/haida a+heni+gu/ → [ˈhayd aˈhenigu]
 some give me 'Give me some'.

6.6 Segments at the Systematic Phonetic Level

The formalization of the specification of phonetic information has received little attention. So here the more important details of Tupuseleian Motu are merely stated in the terminology of articulatory phonetics.

Obstruents

- [p^h] Voiceless aspirated bilabial stop. The aspiration is strongest in word-initial position and in stressed syllables. With some speakers the aspiration is light, but they generally spoke all sounds 'softly'. A few speakers sometimes say the voiceless bilabial fricative [ɸ] or labiodental [f] instead of [p^h].
- [t^h] Voiceless aspirated alveolar stop. Aspiration varies as for [p^h]. Some speakers make the stop dental.
- [k^h] Voiceless aspirated velar stop. It is advanced or backed preceding front or back vowels respectively. Aspiration varies as for [p^h].

- [b] Voiced unaspirated bilabial stop. It is very occasionally devoiced by some speakers.
- [d] Voiced unaspirated alveolar stop. With some speakers it is dental. It is sometimes slightly devoiced.
- [g] Voiced unaspirated velar stop. It is often devoiced, especially in word-medial position. Like [k^h], it is fronted or backed preceding front or back vowels respectively.
- [s] Voiceless grooved alveolar fricative.
- [v] Voiced flat labiodental fricative. Some speakers say [w] on occasions, especially, it seems, in /vanegai/ 'day before yesterday, day after tomorrow', /varani/ 'yesterday' and /vadaeni/ 'that's enough'. Sometimes the voiced bilabial fricative [β] occurs instead of [v].
- [ɣ] Voiced grooved velar fricative. Like [k^h], it is fronted or backed preceding front or back vowels respectively.

Nasals

- [m] Voiced bilabial nasal.
- [n] Voiced alveolar or dental nasal.

Liquids

- [ɺ], [r] Both the voiced alveolar lingual frictionless continuant [ɺ] and the voiced dental or alveolar flap [r] occur. There is variation between

speakers. Some use [ɹ] consistently and some use mostly [r], but the general tendency seems to be for [ɹ] to occur word-initially and [r] word-medially, especially if it is preceded or followed by [a].

- (1) Voiced alveolar or dental lateral. It is a high tongue l (i.e. 'clear l'), not a low tongue l ('dark l').

Glides

- [h] Voiceless glottal glide. The amount of friction is small, sometimes barely noticeable, and in rapid speech [h] is sometimes omitted altogether, [dahak^ha] [da·k^ha] 'what'.
- [y] Voiced glide to high front position.
- [ɤ] Voiced glide to mid front position.
- [w] Voiced glide to high back position.
- [ɔ] Voiced glide to mid back position.

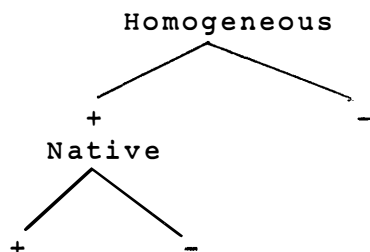
Vowels

- [i] High front unrounded. In unstressed position a lower sound, [i^v] or even the lower-high [ɪ] may occur, e.g. [si^v'sia] 'dog'.
- [e] Mid front unrounded. Occasionally a slightly higher sound is heard, e.g. [me[^]du] 'rain'.

- [a] Low central unrounded. However, there is quite a bit of variation. In unstressed position a higher sound, [a[^]] or even [ʌ] may occur. This is found in longer morphemes of, say, four syllables or more, even in stressed position, as the stress is not as heavy as it is in shorter morphemes. E.g. [ˈkha[^]va[^] | kha[^]va[^]] 'foolish'. Also, in a few words the vowel may be fronted, e.g. [a[˘]bi-a] 'to take something'.
- [o] Mid back rounded. Occasionally a slightly lower sound occurs, e.g. [ˈdiho[˘]] 'to go down'.
- [u] High back rounded. In unstressed position a lower sound, [u[˘]] or even [ʊ] may occur, e.g., [u[˘]ˈmui] 'you (pl.)'.

6.7 Strata in the Lexicon

One or two references have been made to morphemes specified as [-native] because they are exceptions to some condition or rule and they are certainly, or almost certainly, borrowings from another language. The need to divide the lexicon into such strata as [+native] and [-native] has arisen in the study of many languages. Saciuk (1969) gives a survey of these and goes on to claim (p.481ff) that there are three main strata in the lexicon of any language, as follows:



[-native] morphemes differ from [+native] ones in regard to the conditions and rules that may apply, but are nevertheless included under [+homogeneous] as the inventory of systematic phonemes required to handle them is very similar to or even the same as that of the [+native] stratum.

[-homogeneous] morphemes differ radically from [+homogeneous] ones in both their systematic phonemic inventory and the conditions and rules that apply. It must be noted that the criteria for stratum membership are phonological, not entymological. If a borrowed item differs in no way from [+native] morphemes then it is placed in the [+native] stratum. All morphemes must be specified for whatever stratal features are set up in the description of a language.

This scheme may be profitably applied to Motu, [-native] morphemes being from surrounding AN and NAN languages, whose phonologies differ little from Motu, and from English. They, e.g., differ in having as systematic phonemes segments that are only in Motu at the systematic phonetic level or in not undergoing some unimportant rule. E.g., /sara/ 'prawn', a borrowing from Koiari, is [-native] as it has [s] occurring before [a], which is never found in [+native] morphemes. English 'use' becomes the [-native] /yusi/ with /y/ in a position in which it does not occur in [+native] morphemes. These morphemes have systematic phonemes /s/ and /y/, but Motu has only [s] and [y] at the phonetic level, and then not in these particular environments. Then there are [-homogeneous] morphemes from English. These have, e.g., consonant clusters and final consonants, violating basic conditions on the Motu morpheme.

However, the situation has one complication, in that morphemes may have some changes made to make them fit Motu patterns and yet some non-Motu features may remain. Consider the following:

(i) /skul/ (ii) /skuli/ (iii) /sikuli/ 'school':
 /skul/ and /skuli/ are both [-homogeneous] as both have a consonant cluster /sk-/. But /skuli/ is less 'non-homogeneous' as it does not have a final consonant whereas /skul/ does.

This fits in with the theory of Chomsky and Halle (SPE:416ff) that there is no sharp division between admissible and inadmissible systematic phoneme sequences in a language, but rather a gradual move from one to the other.

Accepting the definitions of [-homogeneous] and [-native] given above as giving the broad basis for dividing the lexicon into strata, the methods of changing borrowed English morphemes will now be examined.

a. [-homogeneous] morphemes

With the language situation in the Motu area as it is, with a heavy influence of English in education, radio, etc., and a considerable amount of bilingualism (See 1.1), it is not surprising that quite a few morphemes remain [-homogeneous] except perhaps in the speech of some older people.²³

Examples of [-homogeneous] morphemes with no change other than slight vowel changes are:

/wan/ 'one' /standad/ 'standard' (the common term for primary school classes)

The following are examples of [-homogeneous] morphemes in which one major change in the direction of [+homogeneous] morphemes has been made:

/distrik/ 'district'. Here the second consonant in the final consonant cluster has been dropped, but there is still a final consonant.

/skuli/ 'school'. Here a vowel has been added to avoid having a final consonant. It is interesting that this process is carried out in preference to the breaking up of consonant clusters. Thus while the form [sikuli] is also used, more by the older than the younger, [sikul] is never used.

b. [-native] morphemes

With these, final vowels have been added where the English morpheme ends in a consonant, consonant clusters are broken up and certain English sounds are changed.

All five Motu vowels are used to prevent morphemes from ending in a consonant. There are some general rules as to which vowel is added, though there are many exceptions.²⁴

The vowel most commonly added is [i], e.g. [galasi] 'glass', particularly after the alveolar [n], [s], [d], and [l].²⁵ [a] is added generally after the voiceless stops [p], [t] and [k], e.g. [poka] 'fork'. [u] is much less common, though when it occurs it usually

follows a labial consonant [p], [b] or [m] or after a consonant that is preceded by [u], e.g. [pabu] 'pub'.²⁶ [e] is added when the final consonant is preceded by [e], e.g. [pakese] 'bucket'. [o] is added when a final [l] is preceded by [o], e.g. [bolo] 'bell'. (This [-ol] sequence may arise from an English [-əl], as in 'pencil').

All consonant clusters in which one English consonant becomes [s] in Motu (see below) are broken by [i], e.g. [sikuli]. All consonant clusters in morpheme-initial position, except where [s] occurs, are broken by the same Motu vowel as that which follows the cluster.

[daramu] 'drum' [deresi] 'dress'

In morpheme-medial position (which includes clusters in final position, in English, but which have vowels placed after them in Motu) the rules of choice seem to parallel those for the choice of the added final vowel.

'bank' is first changed to [banka] then [i] is inserted before the alveolar [n] to produce [banika].

'belt' has [a] added after [t] and [e] inserted after a consonant which is preceded by [e] to form [beleta].

An alternative in morpheme-final clusters is for the second consonant to be dropped.

[paoni] 'pound' [solo] 'salt'²⁷

The following English consonant phonemes are not Motu phonemes and must be changed for morphemes to become [+homogeneous]:

affricatives /č/ and /j/, fricatives /θ/, /ð/, /z/, /š/, /ž/, and the nasal /ŋ/. They are changed as follows:

/č/ > [s] 'picture' [piksa] or [pikisia]
 'chair' [sea]

([-native] morphemes require the phoneme /s/.)

/j/ > [s] or [di] - I have found [s] only in morpheme-final position.

'sausage' [tosisi] 'bandage' [banidesi]

/di/ occurs in all positions.

'jam' [diamu] 'margarine' [madireni]

'college' [koledi] 'judge' [diadi]

/θ/ > [t] 'three' [tiri] 'thermos' [temosi]

'Elizabeth' [elisabeda] is taken to be a case where [t], here derived from /θ/, becomes [d]. (See below).

/ð/ I have no examples of English morphemes with this phoneme being borrowed into Motu.

/z/ > [s] 'newspaper' [nusipepa] 'cheese' [sisi]

An exception is 'benzine' [benidini], where /z/ has become [d].

/š/ > [s] 'sugar' [suga] 'brush' [barasi]

/ž/ > [s] 'measure' [meisa]

/ŋ/ > [n] 'ring' [rini] 'blanket' [paranikesi]

An exception is 'singlet' [siyilesi].

It seems a greater number of morphemes stop at the [-native] stage than at the [-homogeneous] stage. This is not surprising as there is very little incentive for further changes to be made.

Some examples of [-native] morphemes are:

[ti] 'tea'. The form [si], which is [+native], is used mostly by old people.

[suga] 'sugar' [meisa] 'measure'

c. [+native] morphemes

For English borrowings the following changes are necessary to make a morpheme [+native] (i.e. beyond those already given in the previous section).

(i) [s] becomes [t] before /a, o, u/ (/t/ of course becomes [s] before /i, e/ by a rule that applies to all [+native] morphemes).

(ii) [w] becomes [u] as in, e.g. [uapu] 'wharf'. This excludes environments where [w] is formed by diphthongization in Motu.

(iii) [y] becomes [i], e.g. [ielol] 'yellow'

As above, this excludes those places where diphthongization produces a glide, here [y].

(iv) [f] becomes [p], as e.g., in [uapu] 'wharf' and [pai] 'five'.

[f] is allowable in [-native] morphemes because it does occur in the speech of some Motu in free variation with [p].

One might expect the remaining segments to be unchanged by the borrowing process: /p t k b d g v m n l r h/, but this is not so. The exceptions are:

(i) English unreleased voiceless stops are often interpreted as voiced stops in Motu. Presumably this is because Motu voiceless stops are always aspirated and are never unreleased as they are always followed by vowels. In addition, Motu voiced stops are sometimes slightly devoiced. E.g.

(a) [g] for [k]

[regi] 'rake' [taniga] 'tank' [diage] 'jack'

(b) [d] for [t]

This seems to occur where [t] would become [s] otherwise.

[pinadi] 'peanut' [puḍibolo] 'football'

(c) [b] for [p]

The only example I have is [kobara] 'copra'.

(ii) Two morphemes have been noticed here where [b] has become [p].

[pakese] 'bucket' [paranikesi] 'blanket'

(iii) In a few morphemes /l/ and /r/ have been switched,
 e.g., [paranikesi] 'blanket' [revolo] 'level'
 [mereni] 'melon' [kasilesi] 'cartridge'.

Vowels

Vowels in borrowings from English present two problems. First, one cannot be sure exactly which dialect a borrowing is from and, while the pronunciation of consonants varies little between dialects, there is considerable variation among vowels. Presumably this is why there are numerous exceptions to the generalizations made below. The English vowels used are those of Cultured and General Australian English according to Mitchell and Delbridge (1965).

The second problem is that of dividing vowel changes into various strata. As already noted, in [-homogeneous] morphemes the English consonants are kept but even in this stratum the vowels often produce a 'foreign accent'. E.g. [lamp] is said instead of [læmp] 'lamp'. Thus many of the changes given below may occur (or some intermediate step may occur e.g. [æ̣] a slight movement towards [a] from [æ]) while the consonants used mark the morpheme as [-homogeneous]. But which changes and how many in a particular morpheme has not been investigated.²⁸

The most common changes are:

[i], [ɪ] The high front vowel [i], instead of which some say [ɪi] or [eɪ], and the lower-high front [ɪ]²⁹ both become [i] in Motu.

[bin] 'bean' > [bini]
 [khiŋ] 'king' > [khini]

[e] The mid front [e] remains unchanged as it occurs in Motu also.

[phen] 'pen' > [pheni]

[æ] The low front unrounded [æ] becomes [a].

[thæŋk] 'tank' > [thaniga]

Sometimes [æ] becomes [e].

[thæksi] 'taxi' > [thekhisi]

[a[◌]] The low front unrounded [a[◌]] occurs also in Motu, so there is no change.

[gla[◌]s]³⁰ 'glass' > [galasi]

[ʌ] The higher front unrounded [ʌ] becomes [a]

[bʌs] 'bus' > [basi]

[ɜ] The higher-mid, or even low-high central unrounded [ɜ] becomes [e]

[nɜs] 'nurse' > [nesi]

[ə] Mid central unrounded [ə] may become any of the five Motu vowels, mostly [a]. Sometimes it becomes the same vowel as the one preceding or following it, with a consonant intervening.

[melən] 'melon' [mereni]

[ɔ] Low back rounded [ɔ] becomes [o].

[hɔspɪtl] 'hospital' [hosp^hele]

[o] Mid back rounded [o] occurs also in Motu, so there is no change.

[fok] 'fork' > [phok^hha]

[ʊ] Lower-high back rounded becomes [u].

[buk] 'book' > [buk^hha]

[u] High back rounded [u], instead of which some say [ʊu] or [eʊ], becomes the Motu [u].

[skru] 'screw' > [sik^hhuru]

Diphthongs

[ɪə] becomes [ia] E.g., [biə] 'beer' > [bia]

[eə] becomes [ea] E.g., [čeə] 'chair' > [sea]

[oə] becomes [oa] E.g., [foə] 'four' > [poa]

[eɪ] (or [ʌɪ]) becomes [e] or [ey] (=eɪ)

[geɪt] 'gate' > [geɪt^hi]

[pheɪpə] 'paper' > [p^hep^hha]

[oʊ] or [ʌʊ] becomes [o], or occasionally [ow] (=oʊ).

[soʊp] 'soap' > [so^hp^hu]

[boʊt] 'boat' > [bo^hw^hi]

[aɪ] or [ɪɪ] becomes either [ay] (=aɪ) or [aɛ].

[aɪən] 'iron' > [aɛani]

[raɪs] 'rice' > [ray^hsi]

[ay] or [æʊ] become [aɔ] or [aw] (= [aʊ])

[thaʊn] 'town' > [taɔni]

[phaʊdə] 'powder' > [phawda]

[oɪ] becomes [oɛ] or remains [oɪ] (= [oy])

[boɪl] 'boil' > [boɪla]

[oɪl] 'oil' > [oɛla]

So far no instance of the Motu diphthong [ew] arising in the course of borrowing has been found.³¹

N O T E S

1. The form outlined here follows in particular Chomsky and Halle (1968) (hereafter SPE) and Schachter and Fromkin (1968).
2. Some recent studies have indicated that deep structure has some relevance for the phonological component. Zimmer (1969) gives instances involving suprasegmental phenomena, and suggests that it is probably only in this area that knowledge of deep structure is required. See also Zwicky (1969:412).
3. This model has only two levels - input and output. Most generative phonologists have held that there is no evidence for any other significant level such as a taxonomic or autonomous phonemic level. Hence underlying segments are termed 'systematic phonemes' to distinguish them from the phonemes of the autonomous phonemic approach.
4. In the case of Motu, however, underlying and surface phonotactics are practically the same, as the underlying representations of morphemes are little removed from surface representations.
5. There is a simplification here as there is no mention of readjustment rules, which term in SPE includes morpheme structure conditions. However, those readjustment rules given in SPE which are not morpheme structure conditions are few and rather minor. None have been posited for Motu.
6. A central issue in generative phonology is the question of evaluation procedures. The most recent major development has been the use in SPE of a theory of markedness (See also Postal 1968a). As there are only a few references to markedness in this chapter the theory is not outlined here.
7. The use of the notations / /, and [] varies in writings on generative phonology. Here / / is used for underlying representations while [] is used for phonetic representations, and representations which arise from the application of PR's.

8. Pairs of morphemes in whose underlying forms systematic phonemes contrast are generally abundant due to the very common CVCV morpheme pattern and the frequency of the vowel segment /a/. Examples are given of [-syllabic] segments in morpheme-initial position and of [+syllabic] segments in medial position.

/p/	:	/b/	/pau/	'to dive'	/bau/	'bamboo'
/p/	:	/t/	/pohu/	'to pour out'	/tohu/	'sugar cane'
/b/	:	/v/	/bara/	'oar'	/vara/	'birth'
/b/	:	/d/	/bara/	'oar'	/dara/	'mind'
/m/	:	/n/	/madi/	an expression of pity	/nadi/	'stone'
/t/	:	/d/	/taba/	'saliva'	/daba/	'morning'
/t/	:	/k/	/tohu/	'sugar cane'	/kohu/	'goods'
/l/	:	/r/	/lata/	'long'	/rata/	'breast'
/k/	:	/g/	/kara/	'act'	/gara/	'descendants'
/k/	:	/h/	/kari/	'to cut'	/hari/	'to divide'
/g/	:	/ʔ/	/gei/	'to carry on back	/ʔei/	'to dig'
/h/	:	/ʔ/	/hari/	'report'	/ʔari/	'to gnaw'
/i/	:	/e/	/miro/	'dirt'	/mero/	'boy'
/e/	:	/a/	/keru/	'cold'	/karu/	'young coconut'
/a/	:	/o/	/kahu/	'ashes'	/kohu/	'goods'
/o/	:	/u/	/hore/	'to show'	/hure/	'to float'

9. See Harms 1968:22ff for an indication of the variety of features so far proposed.

10. Chomsky and Halle (SPE:403ff) in their development of the markedness theory have proposed a tentative set of universal marking conventions based on the content of the distinctive features and hence referring to 'natural' classes of segments. They claim many redundancies, both segmental and sequential, are universals. Thus one can considerably reduce the number of MSC's used in the description of any particular language or, if the approach of Wang (1968) is followed, specify many of the MSC's needed for a particular language as not increasing the complexity of the grammar.

Their set of universal marking conventions is only a beginning and so no attempt has been made to apply the whole system to Motu. However the SgSC's have been

grouped into natural classes so that such an attempt may be easily made when a more certain and complete set of conventions has been developed. At the present, with only a slight change in one convention (V) to bring in the feature [syllabic] instead of [vocalic], and the addition of a convention [U coronal] → [-coronal] (only retroflex vowels are [+coronal]), the SPE conventions specify the Motu SgSC's for vowels as costless. This is expected as Chomsky and Halle consider /i e a o u/ as the most natural 5-vowel system.

11. Positive conditions, as well as If-Then and Negative conditions, are discussed by Stanley (1967).

12. C is used here for all [-syllabic] segments and V for [+syllabic] segments.

13. As this seems to be the main point one might better use a negative condition which simply states that /u/ does not occur before or after /v/:

$$\sim \left[\begin{array}{l} +\text{syllabic} \\ +\text{high} \\ +\text{back} \end{array} \right] \left[\begin{array}{l} -\text{syllabic} \\ -\text{sonorant} \\ +\text{continuant} \\ -\text{coronal} \end{array} \right]$$

However, as Stanley (1967), who proposed the use of negative conditions, noted, it is not certain that they are really necessary. After all, in the present case the If-Then condition has the same effect and uses only one more feature, while if /o/ is excluded along with /u/ then there is no difference in the number of features between the required If-Then or Negative Conditions.

14. The question arises as to how one decides this. Halle (1962) decides on the basis of whether a condition will allow a saving in the number of features specified in the lexicon which exceeds the number of features in the condition. However, this is a somewhat artificial measure. It is questionable whether conditions that make only very small savings say anything significant about the language structure. No conditions like this are included here. One could, e.g., have a condition that /a/ is the only vowel that may begin a series of three vowels in morpheme initial position

$$[+\text{syllabic}] \rightarrow [+low] + \underline{\quad} [+syllabic][+\text{syllabic}]$$

This requires four feature specifications and a morpheme boundary marker but only four morphemes have so far been found beginning with three vowels, though there are quite likely to be a few more. Even if so, the condition might only express an 'accident' for /a/ is the most common vowel by far and, second, in a sequence of three vowels the second vowel will often become a glide and there are far more instances of this happening after /a/ than after /e/ or /o/ (and it never happens after /i/ or /u/). Further there are a number of 3-vowel sequences within morphemes which do not start with /a/.

A related problem is that of admissible and inadmissible sequences. Halle (1962) allowed any sequence not violating a MSC. But in SPE (416f) a system is suggested that gives not a clearcut division but a gradient of distance from admissibility. This is a much truer statement of the situation and takes into account the fact mentioned above that MSC's differ in their significance (See, too, re lexical strata). Their method is to find the simplest rule in terms of numbers of features which does not change any member of the lexicon of the language but which does change the item being tested. They quantify the distance, making it the reciprocal of the degree of complexity of the rule. But this measure is still too mechanical. Take for example (i) [*hudla] and (ii) /*merd/. For (i) to be changed to an acceptable sequence SqSC2 must be applied.

[+segment] → [+syllabic] / [-syllabic]

This would allow e.g. /huala/ 'crocodile'. The measure of distance for /*hudla/ is $\frac{1}{3}$. For (ii) to be changed SqSC1 must be applied.

[+segment] → [+syllabic] / _____+

This would allow e.g. /mero/ 'boy'. The measure of distance for /*merd/ is again $\frac{1}{3}$. However, evidence from the treatment of loanwords (see 6.7) indicates that consonant clusters are tolerated more than final consonants. This indicates the measure is not correct.

15. This condition and SqSC3 involve a sequence C₀V, as would the other conditions restricting morpheme length within categories. This is the form that would be chosen for the syllable in underlying representations, if one were to employ the syllable concept. Much of the work on generative phonology has not done so, though few have been like Kohler (1966) and specifically rejected the syllable concept as being of no use at all. More recently others,

e.g. Anderson (1969) and Fudge (1969), have spoken in favour of using the syllable. The latter suggests that it is in the area of SqSC's and prosodic features, e.g. stress, that the use of the syllable is most likely to be valuable. It is in these areas of Motu phonology that the sequence C'V occurs but while this means it is possible to use the syllable concept investigations so far have not shown any considerable advantage in doing so.

16. The general question of the ordering of PR's is still under discussion. Kisseberth (Forthcoming) refers to S. Anderson's dissertation 'Ordering Relations in Phonology' (M.I.T.) as indicating that the notion of a linear transitive ordering of PR's is incorrect.

17. So MG24./me/ also appears to have some time reference, but this requires further study.

18. In the 1st sg. subjunctive there is a form /na/ as well as /ba/. It is presumably formed by not undergoing n-deletion and by /be/ being deleted entirely - the only place where it is.

19. Appendix 2 gives an account of the grammatical and semantic functions of reduplication in Motu. One suggestion for the placing of rules of derivational morphology is that of Jackendoff (1969a, 1969b) already referred to in 1.3.

20. The choice between setting up /t/ or /s/ from evidence in Motu itself today is rather arbitrary, as at the systematic phonetic level they are in complementary distribution. Chomsky and Halle's marking conventions give no assistance as they include both /t/ and /s/ among the five least marked consonants. (SPE:412f) (cf. Zimmer 1969 on this point). Jakobson (1962:320) and Postal (1968:189f), however, claim the stop should be less marked than the fricative.

21. This does not take into account extra symbols used in writing [-native] and [-homogeneous] morphemes. These symbols are drawn from the English alphabet. See 6.7.

22. This rule and the following one claim that the underlying representations for all dialects contain /h/ and /l/. To claim the opposite, that [h] is inserted by PR in some dialects or that on some occasions /n/

becomes [l], would effect some small economies in the lexicon such as that the feature [lateral] would no longer be required in underlying representations. However, this approach must be rejected as the environments for [h] insertion and for the change of /n/ to [l] would be entirely unprincipled, requiring many morphemes to be marked as exceptions to the rules.

It should also be noted that the effects of /h/ deletion in regard to diphthong formation have not been studied.

23. The quality of the vowels is not taken into consideration. A later section outlines which Motu vowels are used for which English vowels, but it has not been studied as to when changes are made. It is, however, sure that some changes are made by many speakers even in morphemes classified as [-homogeneous]. Thus even speaking English the vowels are somewhat changed giving a Motu 'accent'.

24. A number of these may be due to English morphemes entering Motu by way of early Polynesian missionaries.

25. Square brackets are used from this point on, though many representations are underlying as well as phonetic.

26. Instances of the vowel before the final consonant being added after it are found with all vowels, e.g. [kiliniki] 'clinic', [sipunu] 'spoon'. However they are found much less often in the case of [i] and [a] than the generalization just given.

27. Both these morphemes are [+native] but they illustrate the process.

28. It seems that for Motu it is the consonants, rather than the vowels, that are important in characterizing the lexical strata.

29. See Mitchell and Delbridge 1965:38ff for the exact position of these and the following English vowels.

30. Mitchell and Delbridge use [a] but [a<] has been used here to distinguish it from my use of the symbol [a] for the central vowel.

31. No examples of borrowings of English words containing [uə] have been found yet. One would expect it to become [ua] in Motu.

APPENDIX 1MOTU DIALECTS¹1. Introduction

Variation between villages was noted early (Turner, 1877-8:496; Lawes, 1885:2f). Subsequent publications occasionally point out differences between villages in pronunciation and lexicon and refer to the main dialect division between Eastern and Western Motu.

Dialect division are today rather blurred. There has always been some contact between villages but now the opportunities for contact are much greater since, for example, many Motu work in Port Moresby and a number of young people attend secondary and tertiary educational institutions in the area (cf. chapter 1.1). Further, these frequent contacts occur in a situation where one dialect - the Western dialect as spoken at Hanuabada - has great prestige and may be called the 'standard' dialect. It is used by the United Church, which is the dominant church in every village, in religious and educational activities (though its role in education has recently diminished). Many speakers of other dialects have adopted features of the Western dialect, while it is common for speakers to have two different styles of speech - their own dialect for talking with fellow-villagers and a style which approaches the Western dialect for talking with outsiders.

When intra-village speech only is considered the dialect situation is as follows.² There are two main dialects

Western and Eastern, which differ principally in the verb conjugation and in the lexicon. The Western dialect (WM) includes Manumanu, Lea Lea, Boera³, Porebada, Hanuabada and Pari, while the Eastern dialect (EM) villages are Tupuseleia, Barakau, Gaile, and Kapa Kapa. Within the Western dialect there are some differences in phonology, whereas the Eastern dialect has little variation. In both dialects there are differences between villages in the lexicon, due largely to the fact that while the villages are all influenced by other languages, the same languages do not influence all villages.

Outside the two main dialects are Tata~~aa~~ and Vabukori. They are probably to be grouped together in one dialect, though they might be said to be two closely related dialects. The situation is complicated as it seems Vabukori speech in particular has been influenced by the Western dialect.

2. Phonology

(a) Segments

(i) Western Motu

Some WM villages, viz., Pari, Manumanu and part of Hanuabada, have no [h] at the systematic phonetic level as PR 16 applies to them. At Lea Lea, and to a lesser extent Boera, [r] often occurs in place of [l], and sometimes [l] for [r].

(ii) Eastern Motu

At Gaile /p/ is often realized as [f] or [ɸ] This is found elsewhere too, but is particularly common at Gaile.

(iii) Tatana and Vabukori

PR 17 which changes /l/ to [n] is said to apply to these villages. However, while this is what other Motu speakers will still tell you it is not strictly true of these villages as a whole today. In Vabukori only a few old people have this rule and at Tatana many, especially the young, use this rule only sporadically.

(b) Intonation patterns, speed of speech

These features have not been investigated, though the Motu claim there are differences between villages at these points. Certainly Tatana has intonation patterns that are quite distinct from the others, while Manumanu speech is slower than the others.

(c) Verb conjugation

The differences involve the morphemes Fa, Neg, Fb and SP.

(i) Non-modal Future

1st sg.	WM <u>ba</u>	EM <u>benā</u>
1st pl.incl.	<u>baita</u>	<u>beta</u>
1st pl. excl.	<u>baia</u>	<u>bea</u>

In the 1st sg. the WM derivation includes n-deletion and e-deletion while the EM does not. In the 1st pl. forms the EM derivation includes a-deletion(Fb) and i-deletion(Fb) whereas the WM does not but instead involves e-deletion. (See 6.5.1 for details about these rules and the ones mentioned below).

(ii) Modal and Immediate Futures

3rd pl. WM (b)ae EM (b) aie

The WM form has undergone i-deletion(Fb) while the EM form has not. (b)aie is also used at Vabukori.

The negative here is asi for WM and at- for EM. Only the WM form undergoes a-deletion (Fb), and this then allows PR 14 /t/ →[s] to apply. The EM form undergoes i-deletion (neg). So, e.g., 1st sg. is WM basina-, EM bataina-. (See 6.5.1)

(iii) Past/Present

2nd sg. WM asio, so EM so
3rd sg. asine, se se

That is, with some WM speakers n-deletion, a-deletion (neg) and i-deletion (neg) are optional (though usual) here.

3. Lexicon

Percentages of shared basic vocabulary, using Wurm's list (Wurm n.d.) are all over 90%, mostly 93-95%. They show the Eastern dialect as a unit, but the others do not separate clearly for there is little distinction in the basic vocabulary. Percentages between neighbouring

villages are high, including those between Tatana and Vabukori and their respective neighbours.

There are a number of differences outside the basic vocabulary list. Some common ones are:

WM	<u>i</u>	WM	<u>o</u>	'yes'
	<u>ina</u>		<u>iaia</u>	'mummy' (in address only)

Here Tatana and Vabukori have neina. ina, iaia and neina are all borrowings from Koiari or Koita.

<u>uru</u>	<u>isi</u>	'to husk a coconut'
<u>pitopito</u>	<u>paroparo</u>	'cockroach'

Names for sea life tend to be uniform. Some exceptions are:

WM	<u>dune</u>	EM and Vabukori	<u>nuse</u>	'squid'
	<u>pai</u>		<u>sara</u>	'prawn' (<u>sara</u> is from Koiari)

EM	<u>pisiroroho</u>	Boera	<u>aipisi</u>	Lea Lea	<u>sirivauko</u>
					'blenny'

Bird names vary rather more. E.g.

W	<u>baimumu</u>	E	<u>mumukou</u>	'owl; frogmouth'	(Some Vabukori say <u>kwamugu</u>)
	<u>mukou</u>		<u>gogove</u>	'frigate bird'.	

Some at Kapa Kapa use bina for 'hornbill', not the usual word boboro.

Vegetation shows great variety, but this is mainly due to the fact that certain species only occur in particular areas. (This factor, of course, also affects fish, animals etc., to some extent). Some which are widely known but for which there are different words are:

W <u>vivi</u>	E <u>area</u>	The name of a fruit tree
<u>tai</u>	<u>valu</u>	The name of a tree
<u>kaema</u>	<u>mose</u>	'sweet potato'
<u>nita</u>	<u>loku</u>	'pawpaw'

4. Morpheme variants

Where dialects have the same lexical item the pronunciation may differ. Some more common types of difference are given here.

(i) Variations involving [h]

Among those villages that have [h] some have morphemes that include [h] where the other villages do not. The main dialect division is reflected by some morphemes e.g. WM urehegini and EM uregini 'chilli'. On other occasions the variation is limited to one or two villages. It is found especially at Porebada and Lea Lea but is not confined to them.

Lea Lea	<u>honogo</u>	for <u>onogo</u>	'nipa palm'
Lea Lea, Porebada	<u>hariha</u>	<u>ariha</u>	a kind of lizard
Porebada	<u>hadorahi</u>	<u>adorahi</u>	'evening, afternoon'
Kapa Kapa	<u>hura</u>	<u>ura</u>	'lobster'

Among speakers from Pari and Manumanu, villages where PR16 /h/ → [ø] applies, one finds [h] being inserted where it does not occur in the other villages in an attempt to speak in the 'standard' Western dialect.

(ii) [s] before [a] , [u]

[s] does not normally occur before [a] or [u], but some villages have it in a few words where the rest do not:

Tupuseleia, Barakau	<u>sesue</u>	Kapa Kapa	<u>setue</u>	'opossum'
Tatana	<u>sakwasakwa</u>	Boera	<u>takwatakwa</u>	a kind of shark

(iii) Vowels

Some differences in vowels divide East and West, other set off smaller groups:

WM	<u>ede</u>	EM	<u>eda</u>	'where'
The <u>ede/eda</u> variation applies to all the compounds too,				
e.g., WM	<u>edenegai</u>	EM	<u>edanegai</u>	'when'.
	<u>negari</u>		<u>negara</u>	'clear (of water)'
	<u>kema</u>		<u>kemo</u>	'bald coot'
	<u>vaboha</u>		<u>vabuha</u>	'gecko'
	<u>dudu</u>		<u>dudua</u>	'end'

WM	<u>maosini</u>	EM	<u>mosino</u>	Vabukori	<u>moseni</u>	'pumpkin'
Tatana		Boera	<u>kekeroma</u>	for	<u>kekerema</u>	a kind of shellfish

(iv) [ɣ]

Some villages have [ɣ] in morphemes where the rest do not. This is most common in initial position.

Vabukori	<u>ḡasemu</u>	for <u>asemu</u>	'wild cucumber'
	<u>ḡahia</u>	<u>ahia</u>	'centipede'

(There is also a form aiha involving metathesis).

Gaile	<u>ḡamenikoni</u>	<u>amnikoni</u>	a kind of banana (other East villages only)
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(v) Metathesis

This occurs with a number of consonants, especially [h].

Porebada	<u>duhai-a</u>	for <u>duahi-a</u>	'to read something'
Barakau	<u>vahoa</u>	<u>vaoha</u>	'sea urchin'
Boera	<u>takwatakwa</u>	<u>kwatakwata</u>	a kind of shark (other WM villages)

In EM the morpheme meaning 'frog' begins with rapa-, while WM has para- except for Porebada and Lea Lea which have different morphemes entirely.

(vi) Voiced/Voiceless stops

Tatana	<u>baduveni</u>	for <u>patu</u>	a kind of shellfish
Lea Lea	<u>rogosi</u>	<u>lokosi</u>	a kind of shellfish

Other variations involve [l] and [r], as in the preceding example; [d] and [s], as in WM kwasi and EM kwadi 'locust';

and reduplication as in WM kekeni EM kenekene
'girl'.

5. Syntax

No intensive study of syntax has been made for each village. However, it appears that there are no great differences. The only variations noted are in the use of na. Certain uses are much more common in WM, if not restricted to it. These are

(a) A postpositional phrase in which a sentence is embedded may be followed by na if it is at the head of the main sentence. This is especially so with nega-na-ai:

ia e - ma nega- na-ai na tama - gu ese e - boiri - a
HE (SP) COME TIME (REL) FATHER-MY (TSM) (SP) CALL (OS)
'When he came my father called him'.

(b) After the subject of a transitive verb:

Raka na e - keto
RAKA (SP) FALL
'Raka fell.'

(c) After the object when T-object preposing has applied
(See example (12) Chapter 2. na would be placed after gaigai-na.)

(d) After eiava 'or'

Ia e - ha - haoda eiava na uma gabu-na e - la
HE (SP) GO FISH OR GARDEN PLACE (SP) GO
'He went fishing or he went to the garden'.

NOTES

1. This account is based on data collected from every village in 1968. In each place the phonology and certain areas of the lexicon were studied, as well as texts being recorded.
2. As only a few days were spent in each village one could not always be sure whether an informant used intra-village speech or not. In fact the texts recorded show many features of the 'standard' Western dialect. As much checking as time allowed was done with a variety of informants.
3. While Boera appears to have had a recent history that differs from the other villages (Chatterton, 1968), at present its speech is not distinguishable from that of its WM neighbours.

APPENDIX 2REDUPLICATION IN MOTU*Introduction

The purpose of this study is to give an account of the forms and functions of reduplication which occur in Motu,¹ one of the Austronesian languages of south-east Papua. Reduplication is a common process in these languages and Ray (1907:445f,461) found in them instances of reduplication, applied to nouns and verbs, having the same functions as Codrington (1885:147, 191) had found in island Melanesian languages. These are, with nouns, the formation of plurals, magnification, and diminution (including depreciation); and with verbs, repetition, continuation, and emphasizing the meaning of the verb. A more detailed account has been presented by Capell (1937-9:769-75), who arranged his material primarily on the basis of the functions which reduplication performs.

Both Ray and Capell made comparative studies and it was not their intention to give detailed accounts of reduplication in particular languages. Although reduplication is quite often mentioned in the published dictionary and grammar of Motu (Lister-Turner and Clark n.d.a. and n.d.b. - hereafter MD and MG), the references to it are scattered and incomplete. So here a fuller account is attempted, as a supplement to the studies just referred to. No claim is made, however, as to whether Motu

is typical of Austronesian languages in south-east Papua in the range of forms and functions of reduplication that occur in it.

For this paper reduplication is defined as 'a morphological process that consists of the repetition of all of part of the stem of a word'.² The stem is usually a single morpheme (the root), but it consists of two morphemes in at least three instances. These are (i) the intensifying suffix -ka when added to an adjective takes part in the total reduplication described in section 3.11, (ii) a prefix formed by partial reduplication to indicate the plural may take part in total reduplication as described in sections 2.11 and 3.21, and (iii) the stem of the word tamona 'just one' which is made up of two morphemes ta 'one' and mo 'only' undergoes total reduplication (see section 7).

The presentation can be done in at least three ways, i.e., using either the forms, or the functions, or the word classes involved as the starting point. The last mentioned is used here,³ but it will be convenient to first define the two forms which are found. These are (1) total reduplication, where all of the stem is repeated, and (2) partial reduplication, where only a part of the stem is repeated. In all cases of the latter except one (see section 6) the part repeated is the first vowel, and the preceding consonant if there is one. For example, koikoi becomes kokoikoi. When there is only a vowel to be repeated it is realized either as a long vowel or as two clearly heard separate vowels.

1.0 Verbs

1.1 The following functions of total reduplication occur.

1.11 Formation of intransitive verbs from transitive verbs.

This is quite common. For example,

inu-a⁴ 'to drink something' >inuinu 'to drink
(intrans.)'

tore-a 'to write something' >toretore 'to write
(intrans.)'

However, in one instance partial reduplication has been observed to fulfil the same function. From nadu-a 'to cook something' is formed nanadu 'to cook (intrans.)'.

1.12 Formation of nouns from verbs.

In this way (a) concrete nouns and, more commonly,
(b) abstract nouns may be formed. Examples are:

(a) toi-a 'to push (trans.)' >toittoi 'a wheel
attached to a piece of wire or stick (a toy)'

(b) huni-a 'to hide (trans.)' >hunihuni 'hiding',
as in e.g., emai hunihuni dalana 'our
(excl.) way of hiding'.

1.13 Depreciation

This is fairly common. Examples are gadara 'to play' > gadaragadara 'to play around', as e.g. groups of small children do, and digu 'to bathe' > digudigu 'to splash around in the sea'.

1.14 Repetition

This is found with some verbs. For example, henao-a 'to steal' henaohenao 'to steal again and again' henaohenao can also be used in a depreciative sense as, semi-humorously, of a child taking something he would have been given if he had asked.

1.15 Continuation

This is found with some verbs. For example, badu 'to be angry' badubadu 'to keep on being angry'.

1.2 The following function of partial reduplication occurs.

1.21 Agreement of the verb with a plural subject

According to MG (p.14) this applies only to the 'immediate present' tenses of intransitive verbs. However, this is not correct as the verb form concerned, which is simply the verb root without the tense, subject and aspect markers found in other verb forms, can refer to the past. The full range of occurrence of this form has not yet been studied, but it has been found with the verbs mahuta 'to sleep' noho 'to stay', helai 'to sit',

gini 'to stand', and hekure 'to lie down,'⁵. Examples are

Idia mamahuta

They are sleeping/asleep (mahuta 'to sleep')

This means the same as idia e mahutam, where e indicates a third person subject and -mu is the present continuous aspect marker.

Ai ruma ai nonoho

We house in stayed 'We stayed in the house'
(noho 'to stay').

2.0 Nouns

Both total and partial reduplication occur.

2.1 The following functions of total reduplication are found.

2.11 Diminution

This function is common, and is even to be found with borrowings. Examples are

mero 'boy' meromero 'little boy'

mereki 'plate', dish' (a borrowing) merekimereki
'small plate, dish'.

If the root is pluralized by partial reduplication (see 2.21), then the plural of the diminutive is formed by total reduplication of the plural of the root. E.g.,

memero 'boys' (mero 'boy') memeromemero 'little boys'.

Sometimes these diminutives are used with a depreciative sense. Thus uhauuhau is used banteringly in speaking of or addressing a group of boys too young to be properly addressed as uhau 'young unmarried men'.

In some cases the reduplicated form also refers to a small object which resembles the original in some way. Capell (1937-39:771) pointed out the occurrence of this latter type as well as the strict diminutive. For example

huala 'crocodile' hualahuala 'small crocodile'; 'sea
nadi 'stone' nadinadi 'small stone'; 'kidney', 'horse'

2.12 Augmentation/magnification

This function is uncommon. The only sure case I have is utuutu 'very high tide' from utu 'high tide'.

2.13 Collective

This function is noted in MG (p.27) and by Capell (1937-39:773). Both give the example of huahua 'fruit in general' from hua 'a single banana'. There do not appear to be any other instances.

2.14 Formation of colour adjectives

Most colour adjectives occur in forms which appear to have been produced by total reduplication⁶. The base forms of some, usually nouns, are evident. Examples are pairapaira 'pink' from paira 'pink earth used for painting the face', and magemage 'orange' from mage 'ripe' (an adjective).

2.2 The following function of partial reduplication occurs.

2.21 Pluralization

This applies to a small group of nouns referring to humans. Thus memero 'boys' is formed from mero 'boy' and tatau 'men' from tau 'man'.

3. Adjectives

3.1 The following functions of total reduplication occur.

3.11 Intensification

This is quite common. For example:

<u>keruma</u>	'cold'	<u>kerumakeruma</u>	'very cold'
<u>maragi</u>	'small'	<u>maragimaragi</u>	'very small'
<u>miro</u>	'dirty'	<u>miroka</u>	'very dirty'
		<u>mirokamiroka</u>	'extremely dirty'.

The last example shows how the intensifying suffix -ka is included in the stem for this type of reduplication.

Some roots can function as both adjectives and adverbs, but their reduplicated forms do not always retain both functions. Two important cases are

namo 'well (adv.); good (adj.)' namonamo 'carefully , very well' (adv.) but not 'very good' which is usually namo herea (lit. good very).

dika 'badly (adv.); bad (adj.)' dikadika 'exceedingly' (adv.), but not 'very bad' which is commonly dika rohoroho (lit. bad very), nor even 'very badly' i.e. dikadika is an adverb of degree and not of manner.

3.12 Diminution of force

Examples of this are given in MG (p.31f), such as metaumetau 'not so heavy' from metau 'heavy'. Lister-Turner and Clark (MG p32) were not able to find any rule to guide as to whether reduplication of an adjective would lead to intensification or diminution of force. The present writer has met with varying responses from informants when checking the examples given in MG, and has included this function somewhat tentatively.

3.2 The following function of partial reduplication occurs.

3.21 Agreement of adjectives with nouns in equational sentences.

Manu na kukurokuro (<kurokuro)
The birds are white

Edia hereva na kokoikoi(koikoi)

Their words are false.

If an adjective formed by total reduplication as in 3.11 occurs, the partial reduplication to signify plural appears before each occurrence of the root. Thus the plural form of maragimaragi 'very small' from maragi 'small' is mamaragimamaragi.

4. Adverbs

4.1 The following functions of total reduplication are found.

4.11 Intensification

This process is common. Examples are

haraa 'quickly' haraaharaa 'very quickly'
guna 'before' gunaguna 'a long time ago, first,
 before'

lou 'again' loulou 'again and again'

mase - an adverb of degree used to modify verbs,
 meaning 'very much, very hard' masemase which
 expresses greater intensity.

There are a number of other adverbs of degree with a reduplicated form, including dikadika (see 3.11). rohoroho and mikamika, though whether the last two are derived from unreduplicated stems is uncertain.

4.12 Diminution of force

This function is referred to in MG (p.36), but no examples are given. Therefore it is included here tentatively as was the diminution of the force of adjectives (see 3.12).

4.2 The following function of partial reduplication occurs.

4.21 Plural agreement.

This is found with adverbs of degree (a) when modifying adjectives in equational sentences and (b) when modifying verbs with plural subjects.

(a) Magani na babada heherea (<herea).
The wallabies are big very

(b) Tatau ekiri mamase (<mase)
The men laughed a great deal

5. Postpositions

The basic postposition is ai, but there are a number of what are termed in MG (p.39) 'compound postpositions' which consist of a noun root, with a possessive suffix followed by ai. Total reduplication of the noun root in at least two of the compound postpositions has the function of intensification.

badi-na ai 'beside' badibadi-na ai 'close beside'
deke-na ai 'beside' (persons only) dekedeke-na ai
 'close beside'

6 Numerals

Partial reduplication occurs with certain numerals and hida 'how many' when referring to humans. The first consonant is repeated followed by the vowel a. The numerals concerned are the cardinals 2,3,4, and 7,⁷ and the corresponding ordinals, which are formed by prefixing iha- to the cardinals and suffixing -na. However, the reduplicated forms for 'fourth' and 'seventh' are not accepted by all.

rua 'two' rarua
iharua 'second' ihararuana

7. Some other instances of reduplication

One word with a limiting sense, tamona, and another which may have a limiting or emphatic sense, sibona, have totally reduplicated forms which intensify the idea of limiting or emphasis. So tamotamona 'definitely just one' is formed from tamona 'just one' and sibosibona 'all by oneself' from sibona 'by oneself'.⁸

There are some instances where one form is clearly derived from another by reduplication, but where classification is difficult beyond the general heading 'some semantic relationship' until further study is done. Sometimes the reduplicated forms are more specific in reference than the base forms, sometimes they are more

general. Examples are:

muri-na ai 'after, behind' murimuri-na ai 'outside'
e.g. of a building (both expressions are
compound postpositions).

senu 'heap of food at a feast' senusenu 'any
sort of heap'⁹

8 Conclusion

Both forms of reduplication, partial and total, occur with the four main word classes - verbs, nouns, adjectives and adverbs. Partial reduplication in all cases but one has the function of pluralization, while total reduplication has a variety of functions. Capell (1937-39:770) noted that total reduplication of words of over two syllables is not common in Austronesian languages in Melanesia but is frequent in non-Austronesian languages and in Motu. He thus took it as a feature of the pre-Indonesian language of the district which Motu had borrowed, in accordance with his theory of migrations in the settlement of south-east Papua.¹⁰

Of the nine functions of reduplication Capell (1937-39:770) listed for the area, seven are found in Motu. Three are important active processes, viz., intensification, diminution, and the formation of nouns from verbs. The others are the marking of plurality in nouns (under which heading he noted the collective function), the formation of adjectives, the formation of the continuous tense in verbs, and 'modification of meaning'. Capell included the type of continuative function given in section 1.15 under the heading

'continuous tense in verbs'. 'Modification of meaning' presumably includes cases like those given in the latter part of section 7. Two functions do not occur, viz., the formation of nouns of instrument which Capell described as rare (and could be considered a subtype of the broad category 'formation of nouns from verbs') and a special form of the verb for use with the negative which he noted only in Dobuan.

Other important active functions of reduplication in Motu are the formation of intransitive verbs and the marking of plural agreement under certain conditions in verbs, adjectives and adverbs.

NOTES

* This is to appear in S.A. Wurm and D.C. Laycock, Pacific Linguistic Studies (PL, Series C, No.13). Some references have been made to various forms and functions of reduplication, particularly in chapter 6, and here a fuller account is given. Written before the rest of the thesis, it is not in transformational terms and there are some slight differences in format.

1. Motu is spoken as a first language by about 12,000 people living in 12 villages (counting the Hanuabada complex as one village) situated on the south-east Papuan coast east and west of Port Moresby. The writer spent almost a year in 1967-8 on field work studying the language as a research scholar in the Department of Linguistics in the Research School of Pacific Studies of the Australian National University, Canberra. I am grateful to the Rev. P Chatterton, M.H.A., of Port Moresby, and to Dr. A. Chowning, Dr.C.L. Voorhoeve, and Dr. T.E.Dutton of the Australian National University for comments and suggestions regarding this paper.
2. Bloomfield's (1933:162) definition of a word as 'a minimum free form' is used here, as the present writer's grammatical analysis of Motu is not complete enough at this stage to warrant being more specific. On many occasions stems and roots are also words.
3. This follows Key (1965) who, drawing on data from 47 languages, mostly in the Americas, has catalogued a considerable number of functions of reduplication. I have used the same terminology - verbs, postpositions, etc. - and orthography as are in MG and MD.
4. inua is the usual citation form. -a is the 3rd pers. sg. object marker.
5. I have not yet found any examples of an intransitive verb formed by reduplication entering this construction.

- 6 See Seligmann (1901:136-40) for a discussion of this feature in Motu and surrounding languages.
- 7 ima 'five' becomes laima when referring to humans, and this has led to a suggestion in MG (p.33) that the original form for 'five' was *lima. Also listed in MG are reduplicated forms tatauratoi and tataurahani from tauratoi 'six' and taurahani 'eight', but these forms apparently are not used by present-day speakers.
- 8 The suffix -na in tamona and sibona is excluded from the reduplication process.
- 9 MD (p.116) gives senu 'heap' and senusenu 'a big heap', but this does not appear to be the correct distinction. If it is correct, it is an example of the augmentative function (2.12).
- 10 See e.g. A Capell, 'The Linguistic Position of South-Eastern Papua', Sydney, 1943.

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JL	Journal of Linguistics
JRAI	Journal of the Royal Anthropological Institute
Lg.	Language
PL	Pacific Linguistics (formerly Linguistic Circle of Canberra).

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