R U K A I   S T R U C T U R E

by

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Preface

I wish to express my gratitude to Fang Kuei Li for encouraging and assisting me to work on Formosan languages, to Chi Li and Yih-yuan Li for sponsoring the Formosan Project, and to Pang-hsin Ting for making all the necessary arrangements to expedite the investigation, under the auspices of China Council on Sino-American Cooperation in Humanities and Social Sciences. A generous grant in aid from the Council enabled me to devote the years 1970-1972 to the study of the Rukai language as a member of the Institute of History and Philology, Academia Sinica.

Stanley Starosta contributed many ideas, put in a lot of work on the drafts, and frequently encouraged me and offered all sorts of help at various stages of my writing. I was also helped by advice and comments from Lawrence Reid, Byron W. Bender, and George W. Grace, and profited from suggestions by Elwood Mott, Chin-wu Kim, Anatole Lyovin and Irwin Howard.

My main informant for the Rukai language was Te-tz'u Lin, a very enthusiastic, intelligent,and competent man, and several others, especially Fu-shou Wang, also served as my informants at different times and helped me in various ways. Above all, Te-tz'u Lin and Fu-shou Wang took great pains to make me comfortable and facilitate my work in the Tanan village.

This is a generative description of the structure of the Rukai language, adopting essentially Chomsky and Halle's system in the treatment of phonology and Starosta/Taylor's "lexicase" approach to syntax. This study is focused on syntax.

Rukai is an Austronesian language spoken in Formosa. The dialect under study is Taromak, with the analysis based mainly on the data collected in the village in 19 weeks' field work by the author.

Chapter 1 gives the general background for research, the geographical distribution of Formosan languages and Rukai dialects, problems of language classification, and variations between different age groups.

Chapter 2 gives a short account of Rukai phonology, including the distinctive features, phonetic descriptions, segment distributions, vowel length, stress, syllable structure, and morpheme structure rules.

Chapter 3 deals with the morphophonemic alternations between the semiconsonants /y, w/ and fricatives /ð, v/ or high vowels /i, u/ respectively, final n truncation, identical vowel deletion, and echo vowel addition. The orthography can be greatly simplified if underlying phonological representations are posited for the alternations, in which case it takes only 8 rules to derive most, if not all, of the correct phonetic forms. Alternative solutions to each

problem are discussed and compared. These problems have important implications for the theory of phonology. In particular, part of the distinctive feature system as presented in Chomsky and Halle is shown to be inadequate.

Chapter 4, Syntax, is the core of the present study. The first four sections cover the word order, the phrase structure rules, and the subcategorization rules and redundancy rules for determiners, nouns and verbs, all illustrated with sentence examples. Seven case relations (TIME, LOCATION, INSTRUMENT, AGENT, OBJECT, DATIVE, and BENEFACTIVE) and four case forms (nominative, accusative, locative, and instrumental) are posited for Rukai, with detailed exemplification and justification, and formalized with rules of various types: case-related and case-frame subcategorization rules and redundancy rules. A special section is devoted to evaluating various criteria for distinguishing nouns and verbs, and a conclusion is reached that syntactic evidence is the most reliable for settling the problem of noun-verb dichotomy. The last two sections deal with basic sentence types and embedded structures. The basic sentence types are: (1) meteorological, (2) existential, (3) possessive, (4) locative, (5) active, (6) passive, (7) equational, (8) nominalized, (9) stative, nonstative and inchoative, and (10) imperative. Negatives are treated as main verbs occurring only in embedding structures. Relationships between sentences

are shown by correspondences in syntactic representations and/or via lexical derivation rules.

Chapter 5 discusses lexical relations, the generalizations of which can best be captured by derivation rules rather than transformations. Derivation and inflection are clearly distinguished by the proposed criteria. Derivation is treated as a process which is different in kind from other syntactic rules of grammar. Derivation rules are unordered. Case frames of various verb types are also listed in this chapter.

Chapter 6 is a formalization of the morphophonemic rules of reduplication and affixation within the lexicase framework. These rules must be ordered to give the correct phonological output. Reduplication is a property of the stem rather than the affix, and this implies that reduplication rules should precede all affixation rules. Affixation rules are further arranged according to the syntactic categories "verb" and "noun". Under each category, the rules are listed according to the order in which they apply. The relative order of each rule with respect to the other rules is noted where relevant.

The last chapter is a conclusion of this study.

This study has gone beyond Taylor's in various points. Five major contributions to and refinements of the lexicase theory of grammar are proposed.

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Chapter 1

Introduction

1.1. General Background and Problems of Classification

This is a generative description of the structure of
the Rukai language, adopting essentially Chomsky and
Halle's (1968) system in the treatment of phonology and
Starosta/Taylor's "lexicase" approach to syntax.

Like the other Formosan languages, Rukai is an Austro-
nesian (Malayo-Polynesian) language. It has been classi-
fied as Paiwanic (cf. Dyen 1963, 1965b, Ferrell 1969),
but its exact position within the Formosan languages (or
Austronesian as a whole) has never been clear.

Based on lexicostatistical evidence, Dyen (1965b:287)
concludes that there are three subgroups of Formosan
languages: (1) the Atayalic (including Atayal and Seediq)
in the north, (2) the Tsouic (including Tsou, Kanabu, and
Saaroa) in the center, and (3) the Paiwanic (including
the remaining languages) in the east, which in turn can
be further divided into four subgroups: (a) Thao, Bunun,
Ami, Puyuma and Paiwan, (b) Pazeh and Saisiyat, (c)
Kavalan, and (d) Rukai. He further points out that Kanabu
and Saaroa "seem to be immediately related with each other
as against Tsou". With Dyen's lexicostatistical studies,
my preliminary comparison of the Tsouic group (Li 1972a),
and my personal inspection of the language data of various

Rukai dialects, we can tentatively draw the following dendrogram:
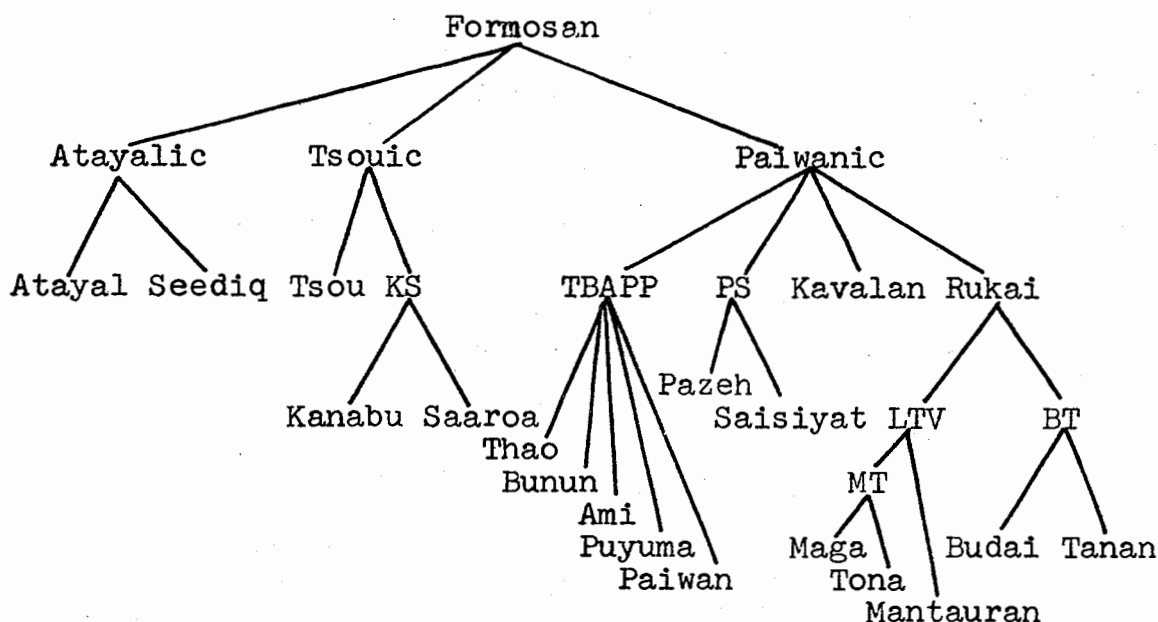
Fig. 1. Subgrouping of Formosan Languages

The dendrogram has several problems. It reflects Dyen's (1963:265-67) belief that the Formosan languages form a single family. However, he (Dyen 1965b:287) has also suggested the possibility that "East Formosan [Paiwanic] is perhaps more closely related with the languages of the South, in the Philippines and Indonesia, than to Atayal." Ferrell (1969:63) also questions the validity of the notion of Formosan as a single family and rejects Dyen's argument of "Formosan-only" vocabulary items. In other words, the Formosan languages may not constitute a single family or a subgroup of Austronesian as a whole. Second, many other Formosan languages now extinct as well as the living language Yami on the island

of Botel Tobago have not been included. Thirc. Oyen's classification is based solely on lexicostatistical evidence. One may thus question the validity of his classification.

Based on the evidence of a sound change, Ferrell (1969:64-74) has a different classification of the Paiwanic subgroup from Dyen. The languages that retain the distinction of *t and *C postulated by Dyen (1965b) are "Paiwanic I", those that do not are "Paiwanic II". But one may argue: Why is it based only on the arbitrary criterion of the retention (or merger) of *t and *C? Why not, for instance, *n and *N?

As it now stands, Paiwanic serves merely as a classificatory term, viz. any language that does not fit in the Atayalic or Tsouic groups is thrown into this "waste-basket". Subgrouping within Paiwanic is uncertain because of the general lack of information about most of the languages of this big subgroup.

It is still uncertain whether Rukai can properly be called "Paiwanic". It has been noted (Ferrell 1970) that despite the superficial similarity between Rukai and Paiwan on lexical examination, Rukai lacks most of the common types of verb inflections found in all the other Paiwanic languages such as Ami, Paiwan, and Bunun. On the other hand, as Ferrell (1970) has pointed out, Rukai shares certain phonological features with the Tsouic

languages in having developed the final weak vowels that do not occur in any other Formosan language. Moreover, syntactically Rukai and Tsou have several features in common, for instance, in both languages (1) the main verb is not inflected if focus is on the AGENT (for Tsou, see Tung 1964 and Starosta 1967; for Rukai, see 4.6.6) and (2) there are two sets of determiners, one of which denotes the focused nominal of the sentence (see 4.2.2).

Judging from what we know (very little, indeed) about Tsouic and Paiwanic, Rukai seems to be typologically a transitional language between the two groups. The exact status of Rukai can be determined only after we have gained better knowledge of Kanabu and Saaroa, the two other "Tsouic" languages, on the one hand, and most of the Paiwanic languages on the other.

In doing language classification and determining the status of a particular language in a family, we should not be satisfied with only one simple criterion, such as lexicostatistics. It seems all the following criteria should be used: (1) exclusively shared innovations in sound change, (2) percentage of cognates (lexicostatistics), (3) common morphological structure, and (4) syntactic similarities. If all these criteria agree in grouping Rukai more closely together with the Paiwanic languages as against the Tsouic or vice versa, then we will be on solid ground in the determination of its status.

Taipei

Hsinchu

Ilan

Miaoli

Taichung

Puli

Hualien

Nantou

Chiayi

▨	Saisiyat
▦	Atayal
▨	Seediq
▨	Thao
▤	Bunun
▥	Tsou
▦	Kanabu
▨	Saaroa
▤	Rukai
▥	Paiwan
▨	Puyuma
▥	Ami
▨	Yami

Tainan

Kaohsiung

Taitung

Pingtung

Botel Tobago
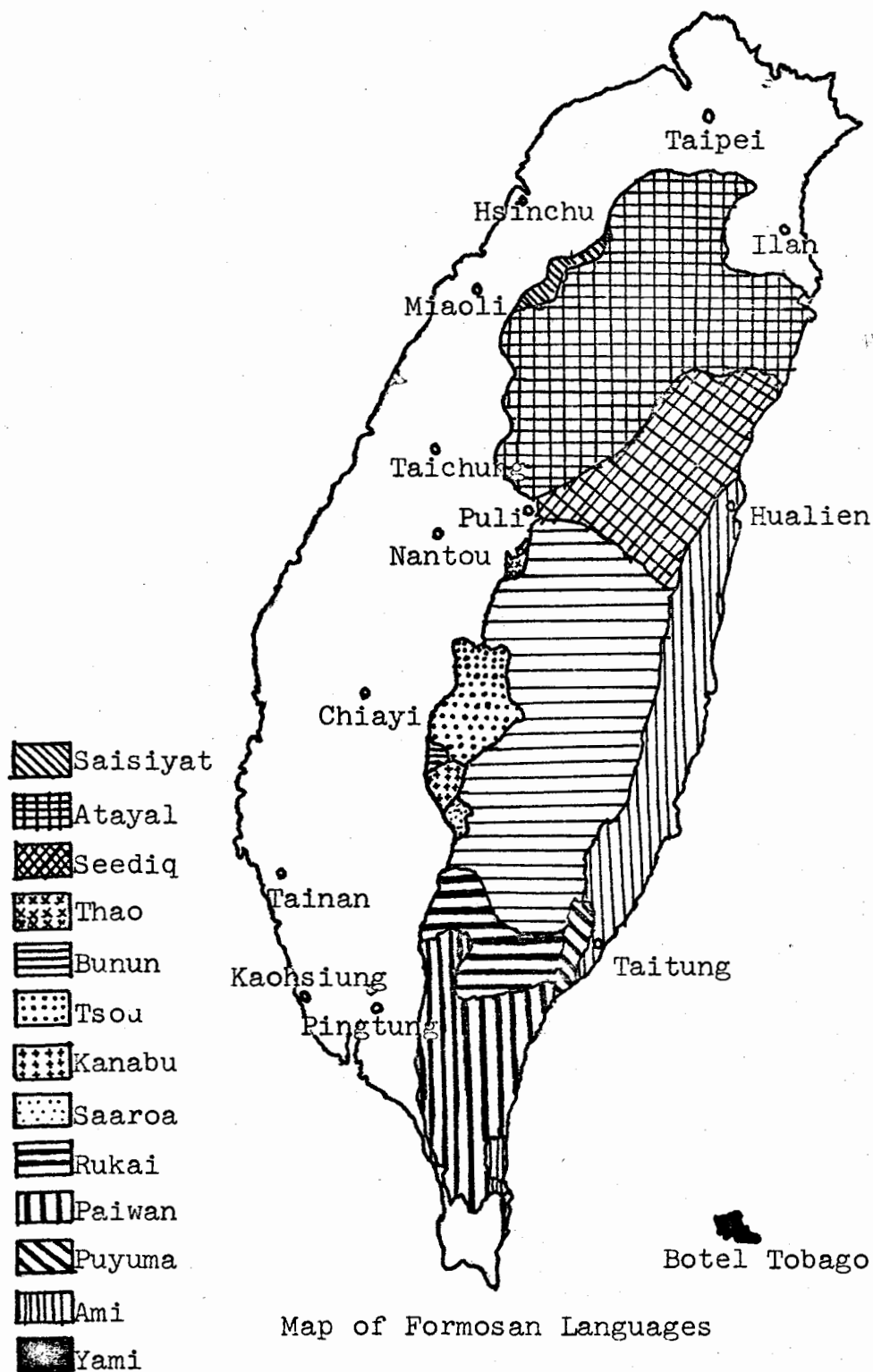
Map of Formosan Languages

(adopted from Dept. of Arch. and
Anthr., National Taiwan University)

1.2. Rukai Dialects

The Rukai language includes five dialects geograph-
ically distributed in three different areas: (1) to the
east, the Tanan dialect situated in Pinan, Taitung Pre-
fecture, (2) to the south, the Budai dialect in Budai,
Pingtung Prefecture, and (3) to the north, the three
dialects--Maga, Tona and Mantauran--of the so-called
"Lower Three Villages" located in Maolin, Kaohsiung Pre-
fecture, with a total population of 6,000 for all three
groups. Budai is referred to by Chen (1955:104) as Rukai
proper, including the villages of kocaponan, adel, Labuan,
kanamodisan, kinuran and budai. The three subgroups
differ not only geographically but also, to a certain
extent, culturally and linguistically.

Each of the Rukai tribes has its own tribal name
that is also used to refer to the village: Tanan is called
tarumak, Maga tulDika, Tona konadavan, and Mantauran
oponoho. The name Maga was used by both the Chinese and
Japanese before and during the Japanese occupation of
Taiwan, but it is now called Maolin in Chinese. Mantauran
is now called Wanshan in Chinese. Tanan was re-named
Tung Hsing Hsin Ts'un after the village was destroyed by
a big fire in 1969 and rebuilt in 1971.

According to Ogawa and Asai (1935:331; hereafter
OA), the Tanan village used to be called caLisian, but
the same term is also commonly used to designate the

northern Paiwan, so confusion may arise (cf. Abe 1930:69)
Thus the term Rukai has been adopted by OA to designate
not only that village, but Rukai proper and the Lower
Three Villages.

The Tanan tribe migrated to the present site on both
sides of the Tanan stream at the foot of the mountain in the
1920's, Maga to Maolin around 1945 and Mantauran to Wanshan
in 1957.

According to Chen, each group has different external
influences from the other Formosan tribes: The Lower
Three Villages from Bunun, Rukai proper from Paiwan, and
Tarumak from Puyuma, as each of them is geographically
close to the respective tribes.

1.3.   Language Data and Variations

From the language data available in print (OA 1935:
329-93 and Appendix: Vocabulary Table), we can state that
the Tanan and Budai dialects of Rukai are fairly close to
each other, whereas the dialects of the Lower Three
Villages are more distantly related to the other two groups
of Rukai.[1]

The Rukai dialect under present analysis is Tanan,
based mostly on data collected in the village in 19 weeks'
field work by the author. A few language materials on the
dialect are available in print, such as the sketches and
texts given in OA (1935:331-58) and the traditional

grammatical analysis with Rukai examples in Japanese katakana by Abe (1930:69-88); however, there are many errors in their transcriptions and analyses.

The Rukai language is still the main means of communication in the Tanan village. Japanese and Mandarin Chinese are also used by middle-aged and young people respectively.

Some of the Rukais also know other tribal languages such as Puyuma, Paiwan, and Ami, all of these being their neighboring tribes in the same county. As they are being sinicized, they are losing their own cultural and linguistic distinctiveness rapidly.

In addition to the external linguistic influences from the various languages, there has been close contact between Tarumak and Budaian in the Tarumak village. Budaians are moving to Tarumak. Mutual influence on speech is inevitable.

Even among the Tarumak speakers, there are divergences of speech between different age groups. Particularly noticeable are the following:

(1) While older speakers clearly have /s/ and /ə/ as separate segments in their speech, younger speakers (approximately under 30) make no such distinction and pronounce both of them as /s/.

(2) Younger speakers say [z] instead of [ð] as it would be in the speech of older speakers. Cf. (1) above.

Concerning these first two divergences, one can say that younger speakers are replacing the non-strident /θ/ and /ð/ with their strident counterparts. In the case of (1), this results in a phonemic merger in the pronunciation of the younger speakers, while in (2) the result is only a phonetic difference between the two age groups.

(3) Younger speakers tend to add a final glottal stop to a handful of vowel-final items, e.g. ŋutu > ŋutuʔ 'cut', mabuti > mabutiʔ 'blind'.

(4) Younger speakers tend to metathesize diphthongs, e.g. [kwariva] for kawriva 'speak'. This variation wa~aw between age groups is similar to the variant forms of the past tense marker wa- and aw- (see 5.1.6).

(5) Younger speakers tend to drop vowels, particularly in a vowel sequence, e.g. maŋial > [maŋal] 'ten', ku-aDa (the use of a hyphen within a word indicates a morpheme boundary; at the beginning of a form it indicates a bound morpheme) > [kuDa] 'that', mya iDa-a > [meDa] 'like that', ku-laub > [kulub] 'burn'. They also tend to drop the final semiconsonant y, e.g. bɨkɨlay > [bɨkɨla] 'few', ɨDɨkay > [ɨDɨka] 'short'.[2]

(6) Younger speakers may use different vowels from older ones, e.g. takaynɨn > [tukaynɨn] 'sit', ʔakaLiŋaw > [ʔakiLiŋaw] 'excessive'.

(7) Younger speakers do not have the same morphophonemic alternations y~ð and w~v as older speakers (see 3.1).

Divergent as the speech is between the different age groups, my analysis is mainly based on the speech of the mature speaker Te-tz'u Lin (aged 33 in 1970), who has served as my main Tarumak informant throughout my field investigation. However, differences of speech are noted here and there, particularly when they are revealing to the understanding of the language structure. A more thorough study of these variations might illuminate the position of Rukai, relative to the larger language group; however, such a study is beyond the scope of this work.

1.4. Descriptive and Theoretical Contributions

This study is an analysis and description of a little known language (Rukai) that has only been treated before in brief sketches by Ogawa and Abe.

This study is an application and exemplification of a new theoretical model (lexicase) only used before for one grammar (Taylor's "Case in Japanese"). Moreover, five major refinements of the model are proposed in this study with resulting improvements in the theory and simplification of the description. (See 4.0.2.)

Footnotes to Chapter 1

1

     We know with some certainty that Budai and Tarumak are relatively close dialects, and syntactically there is not much difference between them. They differ mostly in minor aspects of language such as some vocabulary items and a few phonological divergences, e.g. Budai p̱ corresponding to Tarumak ʔ (see 2.3, Note 2), and Budai n in the final position after the low vowel is lost in Tarumak (see 3.4). By historical comparison or internal reconstruction, we know that Budai has kept the old forms, whereas Tarumak has the innovations *p > ʔ and *n > ∅/a__#. Some Budai items have been lost in Tarumak, e.g. valak 'child' (Tarumak has kept the plural form la-valak), and libɨ 'below' (Tarumak has kept the adjective form ma-libɨ). The same forms may have different meanings in the two dialects, e.g. sakubkub means 'eyelash' in Budai but 'eyelid' in Tarumak, sakiLɨʔ 'eyebrow' in Budai but 'eyelash' in Tarumak, ki-laŋay 'buy' in Budai but 'sell' in Tarumak. An example for syntactic difference is mua inu su in Budai but amua-su inu in Tarumak, meaning 'where did you go?'. However, there is no problem of mutual intelligibility between the two dialects.

     On the other hand, according to my Tarumak informants, they do not understand the speech of the Lower Three Villages (LTV). After having spent 5 weeks in the field collecting wordlists and texts of the LTV and the subsequent comparative work of all the five Rukai dialects. I can state with certainty that the LTV form a distinct group. Within the group, Maga and Tona are closer to each other as against Mantauran; see Li 1972b.

2

     The words bɨkɨla(y) and ɨDɨka(y) are given as bikilai and idɨkai respectively in OA (1935:337). I assume that they are either misprints or inaccurate transcriptions by Ogawa.

Chapter 2

Phonology

2.1. Distinctive Features

The distinctive feature system in this study generally follows the one presented in "The Sound Pattern of English" (hereafter SPE) by Chomsky and Halle. However, I have departed from their system with regard to the interpretation of the feature "consonantal".

I treat ʔ and h as [+cons] because they behave like the other true consonants in Rukai. They are not glides [-cons] like y and w. There is no instance of parallel behavior of ʔ, h and y, w. In short, ʔ, h and y, w do not form a natural class. If ʔ and h were treated as [-cons] as in SPE, it would greatly complicate many phonological rules and morpheme structure rules. Compare Ladefoged's (1971:108) different treatment of ʔ and h from Chomsky and Halle.

Elwood Mott, a fellow graduate student of mine at the University of Hawaii, points out in personal communication that his uneasiness with the specification of ʔ and h is that ʔ is totally negative (h is also totally negative except one [+cont]) and therefore not produceable within the scope of the feature system used. The elimination of the articulators of this system still leaves two possible points of articulation: tongue root and

glottis.

Still another problem with the SPE system is that it shows that w and v differ in quite a few features: "consonantal", "high", "back", "anterior", "round", etc. and share only a few: "vocalic", "low", and "coronal" (negative value for all these three). But alternation between the two consonants is fairly common in languages, and Rukai and Tsou are but two out of many languages that have such an alternation. Furthermore, w and v are free variants in a number of languages, such as some Mandarin dialects. The SPE analysis is poorly designed to account for this widespread phenomenon in natural languages, and requires modification. A partial revision could be that the feature "round" be extended as a labialization feature shared by all labial consonants. This would make w and v share a common feature [+round] and save the change of one feature value in some phonological rules. But this modification would complicate a morpheme structure rule; see 2.8.2, Rule (9). This deficiency of the SPE system requires a drastic revision.

Table 1. Distinctive Feature Composition of Rukai Segments

	i	u	ɨ	a	y	w	r	l	L	p	b	v	m	t	d	T	D	ɘ	ð	n	s	c	k	g	ŋ	h	ʔ
voc	+	+	+	+	−	−	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
cons	−	−	−	−	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
high	+	+	+	−	+	+										−*	−*						+	+	+		
back	−	+	+	+	−	+																	+	+	+		
round	−	+	−	−	−	+																					
lat							−	+	+																		
ant							+	+	−	+	+	+	+	+	+	−	−	+	+	+	+	+					
cor							+	+	+	−	−	−	−	+	+	+	+	+	+	+	+	+	−	−	−		
voice										−	+			−	+	−	+	−	+		−	−	−	+		−	
cont										−	−	+		−	−	−	−	+	+		+	−	−	−		+	−
nas													+							+					+		
strid																					+	+					

*In order to preserve the distinctiveness condition, these specifications were left in the table even though they are redundant; see Rule (7) on p.29.

Table 2. Distinctive as well as Non-distinctive Features of Rukai Segments

	i	u	ɨ	a	y	w	r	l	L	p	b	v	m	t	d	T	D	ə	ɜ	n	s	c	k	g	ŋ	h	ʔ
voc	+	+	+	+	−	−	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
cons	−	−	−	−	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
high	+	+	+	−	(+)	(+)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	+	+	+	+	−	+
back	−	+	(+)	−	+	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	+	+	+	+	−	+
ant	(−)	(−)	(−)	(−)	(−)	−	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	−	(−)	(−)	(−)	(−)	(−)
cor	(−)	(−)	(−)	(−)	(−)	(−)	(+)	(+)	(+)	−	+	−	−	+	+	+	+	+	+	+	+	+	(−)	(−)	(−)	(−)	(−)
round	(−)	+	(−)	(+)	(−)	+	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)
lateral	(−)	(−)	(−)	(−)	−	(+)	−	(+)	+	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)
voice	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	−	+	+	(+)	−	+	−	+	(+)	(+)	(+)	−	−	−	+	(+)	(−)	(−)
cont	(+)	(+)	(+)	(+)	+	+	+	+	+	−	−	+	−	−	−	−	−	(+)	(+)	−	+	−	−	−	−	+	−
nasal	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	+	(−)	(−)	(−)	(−)	(−)	(−)	+	(−)	(−)	(−)	(−)	+	(−)	(−)
strid	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	+	(−)	(−)	(−)	(−)	(−)	(−)	(−)	(−)	+	+	(−)	(−)	(−)	(−)	(−)

Redundant features (or non-distinctive features) are put in parentheses.

2.2. Phonetic Descriptions

The voiceless stops /p, t, T, k/ and the affricate /c/ are unaspirated. /c/ [ts] is treated as a single unit rather than a consonant cluster because there is no consonant cluster other than those formed by the semi-consonants /y, w/ following syllable-initial consonants in the same syllable in the language. The voiced stops /b, d, D, g/ have rather strong voicing throughout. /t, d/ are dentals pronounced with the tongue tip touching the back of the upper teeth, /θ, ð/ interdentals pronounced with the tongue tip protruding between the upper and lower teeth, and /c, s, n, l/ alveolars pronounced with the tongue tip further back. /c, s/ are palatalized before /i/. The younger generation tends to lose the distinction between /θ/ and /s/; cf. 1.3. /r/ is a weak trill and sometimes sounds like a retroflexed voiced fricative [ʒ], particularly in the pronunciation of young people. /T, D, L/ are retroflexed and phonemi-cally distinct from /t, d, l/ respectively. /h/ is a voiceless glottal fricative. /y, w/ are palatal and labiovelar semiconsonants respectively.

/i/ has the variants [ɪ] or [e] usually, but not necessarily, when a neighboring syllable contains the low vowel /a/. /u/ is most frequently rendered as an [o]; its other variants being [u] and [ʊ]. /ɨ/ is an unrounded back vowel in the position between high and mid.

In rapid speech, an unstressed vowel sequence may become a monophthong, e.g. a̱ + i̱ > [ɛ], la̱ i̱kai > [lɛkai] 'then there was'. In addition, i̱ is often dropped in the unstressed position, e.g. ani-taluD > an-taluD 'cross a bridge', i̱ni-a > i̱na > na̱ 'that'.

The semiconsonants [y, w] are automatically inserted between certain pairs of vowels: [y] between i̱ and a̱, e.g. ʔi̱a [ʔiya] 'do', bi̱a [biya] 'leaf', and [w] between u̱ and a̱, e.g. mukabaLubaLua [mukabaLubaLuwa] 'lady'. Since these inserted semiconsonants are predictable phonetically, they may be left out in the phonemic transcription.

Table 3.   Consonants and Vowels

Consonant Phonemes:

		Labial	Dent/Alveo	Retrof.	Velar	Glottal
Stop	vl.	p	t	T	k	?
	vd.	b	d	D	g	
Affr.	vl.		c			
Nasal	vd.	m	n		ŋ	
Fric.	vl. strid.		s			
	non-st.		θ			h
	vd.	v	ð			
Semic.	vd.	w	y			
Lat.	vd.		l	L		
Trill	vd.		r			

Vowel Phonemes:

	Labial	Dent/Alveo	Retrof.	Velar	Glottal
		i		ɨ u	
				a	

In the table above, /w/ is in the column "labial" because it has a labial articulation, and alternates morphophonemically with the labial /v/. The actual position of /y/ does not fit neatly in any of the columns. It is somewhat arbitrarily placed in the column "dental/ alveolar" because it alternates with /ð/. Since /c/ and /s/ are palatalized before /i/, they share some features. /θ/ and /s/ are phonemically distinct, so they should be kept separate in different lines: "non-strid" and "strid".

2.3. Distribution

All the 23 consonants occur word-initially and medially. Except for /v/, they all occur in the final position. /ð/ is distributionally defective in that it usually occurs only before or after /a/.[1] /p/ is very rare and occurs in a few suspicious words, probably loan words, e.g. puLuk 'ten',[2] obsolete words used by old people in narrating traditional folklore and thus unintelligible to young people, e.g. pinu, rare plant names, e.g. apia 'opium poppy', and a few common words.[3]

We have to give the glottal stop phonemic status because there are minimal pairs in which it contrasts with its absence , e.g. ʔila 'head band' vs. ila 'let's go', siʔ 'forelegs' vs. si 'and'. The occurrence of the glottal stop is not predictable.

All the four vowels /a, i, u, ɨ/ occur word-initially, medially and finally. These are the possible vowel sequences: /ia, ɨa, ua, au, ai, aɨ, iu, ui, iɨ, ɨi/, each consisting of two separate syllables.

The systematic phonemes /y, w/ pattern more like consonants in the syllable- or word-final position (see 2.6). However, phonetic [y] and [w] before full vowels may also come from underlying vowels /i, u/, e.g. ku-ani [kwani] 'that', tu-a-daan [twada:n] 'built a house', ki-aŋatu [kyaŋatu] 'gather wood', nai-a [naya] 'us'.

2.4. Distributional Gaps and Vowel Length

There seem to be some distributional gaps of vowels.
Particularly noticeable is the fact that there are no
identical vowel sequences [aa, ii, uu, ɨɨ] involving two
distinct peaks or onsets. These occur only with the
glottal stop in between, e.g. [aʔas] 'crab', [siʔi]
'dream'. However, there are some phonetically long vowels
in such items as [ba:] 'horse' (vs. [ba] 'lung'), [lu:]
'owl' (vs. [lu] 'if'), [Lɨ:] 'neck', [ba:y] 'give'. I
shall treat these long vowels as geminates, viz. baa,
luu, Lɨɨ, baay, because they fill up the distributional
gaps and fit in so neatly in the table:[4]

Table 4. Vowel Distribution

2nd 1st	a	i	u	ɨ
a	x	x	x	x
i	x	x	x	x
u	x	x	x	
ɨ	x	x		x

There is little justification to claim phonemic length
for Rukai vowels partly due to the fact that there are no
sequences of long and short vowels, like [i:a, a:i, u:i].

In addition to the regularization of the vowel dis-
tribution, a great advantage for the geminate solution is
that phonological rules and morpheme structure rules can
be greatly simplified (see Chapter 3 and 2.8).

2.5. Stress

Every content word in Rukai is stressed on the last syllable, e.g. [bavá] 'wine', [tuLú] 'three', [taLagí] 'friend'. This can be accounted for by a phonological rule that assigns stress to the final syllable of a word (see 3.9).

There are two general types of exceptions to the stress rule. All interrogative words receive a stress on the penultimate syllable, e.g. [ʔíya] 'how much' (vs. [ʔiyá] 'do', [mikakúwa] 'how', [maníma] 'what', [anía] 'who', [lwíga] 'when (future)', [kwíga] 'when (past)', [ínu] 'where'. These have to be treated as lexical exceptions. If the final vowels a and u in these words were treated as post-clitic particles, then the stress would still be on the final syllable of the stems that must always take the post-clitic particles a and u. This alternative has been rejected mainly because it is too ad hoc, in particular, the post-clitic particle u would occur only in the form [ínu]. A further disadvantage of the alternative analysis is that it would create a new syntactic category (enclitic particles) and complicate the syntactic descriptions.

The monosyllabic articles [ka], [sa], [ku] and [ki] (cf. 4.2.2.2) are also exceptions in that they do not bear stress.

One further exception: [kuíya] 'there (far)'.

2.6. Length, Stress or Semiconsonants?

There are some pairs that are puzzling as to the appropriate phonological interpretation:

			I	II	III
data:	[taí] 'taro'	possible solution:	tai:	tai	tai
	[táį] 'family'		tai	tái	tay

Solution I would require an exception to the stress rule that said final ai was stressed on the a when the i was short [ái], and would require abandoning the previous claim that length is not phonemic. Solution II would treat them as exceptions to the general stress rule, and complicate our syllabicity statement. Solution III would not require marking them as exceptional with respect to stress or length. This seems to be the neatest solution. so it will be adopted in this study.

My decision to give /y, w/ phonemic status is also motivated by the morphophonemic alternations (see 3.1). I can then account for the fact that while the semiconsonants [y, w] interpreted as underlying /y, w/ alternate with the fricatives [ð, v] respectively, the [y, w] corresponding to underlying vowels /i, u/, which may get stressed, never do.

Positing final /y, w/ in contrast with final /i, u/ also makes possible a simple statement of reduplication, where final C (including /y, w/) are dropped from stems

in the reduplicated portion, as the following examples show (cf. 6.1):

(1) kani 'eat'   > kani-kani 'be eating'

    umas 'person'   > uma-umas 'many people'

    udal 'rain'   > uda-udal 'be raining'

    davac 'walk'   > dava-davac 'be walking'

    dikwac 'stride'   > dikwa-kwac 'a kind of worm'

    laub 'burn'   > lau-laub 'be burning'

Now let us examine the underlined segments in the following examples; Should they be /y/ and /w/, or /i/ and /u/?

(2) [θigay]'roll'   > [θiga-θigay]'be rolling'

    [ma-Daw]'big'   > [ma-Da-Daw]'very big'

Should the underlined segments in (2) be treated as vowels, this would complicate the rule for reduplication significantly. Furthermore, a vowel sequence does get reduplicated, as in lau-laub 'be burning'. Thus it is preferable to treat the underlined segments as semiconsonants rather than vowels.

2.7.   Syllable Structure and Morpheme Structure

The syllable structure of the language is $(C(Y))V(C)$, where Y is a medial y or w.   The morpheme structure is n occurrences of the syllable except that the optional final C cannot occur if the next syllable begins with a V. When such a sequence arises as the result of word formation processes, there is a resyllabification which puts the syllable-final C into the following syllable.

The following are the most frequent free morpheme shapes with examples (A free morpheme is a single morpheme that can constitute a word by itself. A word is anything at the end of a branch of a tree diagram,cf. Chapter 4.):

CV   ku 'article', la 'then', sa 'article'

CYV   There is no such free morpheme.

VC   i? 'blow', in 'yes', ud 'carry', ub 'sprinkle'

CVC   tay 'family', nay 'if'
        There are no free monosyllabic morphemes with full
        consonants in the final position in this shape.

CYVC   bwat 'meat'

CYVY   nyaw 'cat', byaw 'deer'

CVVC   cail 'year', duil 'only'

CVCV   tuLu 'three', rivu 'scold', maDu 'fruit'

CVCVC   banat 'nine', Danaw 'type of plant'

CVCCVC Linθil 'shell ornament', barθar 'worm'

VV	ɨa 'one'
VCV	igi 'miscanthus', ini 'no', aLu 'pond'
VCVC	iluk 'bring', iLic 'mud', ɨvɨk 'tie'
VVC	ɨaʔ 'seed', auŋ 'late', aub 'thatch'
CVV	tai 'taro', daɨ 'ground', vai 'sun'
VCVCV	amama 'anxious', aLubu 'type of plant'
VCVCVC	aLibul 'save', aLidiŋ 'ox cart', inamay 'needle'

Each vowel constitutes the nucleus of a separate syllable, and a C or CY immediately preceding the V is tautosyllabic.

It is clear from the syllable structure and morpheme structure that there can be consonant clustering between syllables in the same morpheme, although there are no tautosyllabic consonant clusters other than semiconsonants following syllable-initial full consonants.

2.8.   Morpheme Structure Rules (MSR's)

According to Richard Stanley (1967:393), morpheme
structure rules (MSR's) include not only the "sequence
structure rules," but also "segment structure rules."
Both types are exclusively redundancy rules. Since they
"apply only within individual morphemes," they "form part
of the dictionary rather than part of the phonological
component." (Stanley 1967:397).

All MSR's apply before phonological rules.

2.8.1.   Sequence Structure Rules

These rules are not like phonological rules in the
sense that they do not operate on actual phonological
matrices in the lexicon. They indicate only the cons-
traints on possible morpheme shapes.

(1)   MP $\longrightarrow$ $((C(Y))V(C))_1^n$

A morpheme (MP) can have $\underline{n}$ number of syllables. There
is, of course, a limit on the maximum number of syllables
in a morpheme, but the precise number has not been estab-
lished. On the other hand, the minimal number is one. The
syllable structure is a vowel (V), which constitutes the
nucleus of each syllable, with an optional preceding and
optional following consonant. The initial consonant of a
syllable may be followed by a medial (Y): $\underline{y}$ or $\underline{w}$. Other-
wise, there are no consonant clusters in the same syllable,

although that does not exclude consonant clustering between syllables. The symbol C stands for any consonant, including the semiconsonants y and w, except that initial sequences of two semiconsonants are not permitted; see Rule (4) below.

(2)   C   ---> $\begin{bmatrix} -voc \\ -cons \end{bmatrix}$ / #CV___#

The final consonant of a monosyllabic free morpheme can only be a semiconsonant y or w if there is an initial consonant, e.g. tay 'family', nay 'if', kaw 'that'. However, if the morpheme is vowel-initial, there is no such restriction, e.g. in 'yes', ud 'carry'. In a dissyllabic free morpheme, including forms with geminate vowels, the final consonant is not restricted to the semiconsonants either, e.g. baas 'meat soup', daan 'house'.

(3)   Y   ---> $\begin{bmatrix} -voc \\ -cons \end{bmatrix}$

Rule (3) says that Y is realized as a semiconsonant y or w.

(4)   C   --->   [+cons] /#___ $\begin{bmatrix} -voc \\ -cons \end{bmatrix}$

The initial C must be a full consonant if followed by a semiconsonant. In other words, two semiconsonants in sequence are not permitted.

(5)   C   ---> $\left\{ \begin{matrix} [+cons] \\ \begin{bmatrix} -voc \\ -cons \end{bmatrix} \end{matrix} \right\}$

Rule (5) says that a C is realized as either a full

consonant or either of the two semiconsonants y and w,
unless there is a distributional restriction as stated
above.

(6) V --→ $\begin{bmatrix} +\text{voc} \\ -\text{cons} \end{bmatrix}$

Rule (6) says that a V is realized as a syllabic
vowel, which is obligatory for every syllable as stated in
(1).

2.8.2. Segment Structure Rules

As stated in Stanley (1967:394), "A full set of segment
structure rules for a language will suffice to predict all
the nondistinctive feature values from the feature values
which are distinctive." The following rules are exhaustive:

(1) [-cons] --→ $\begin{bmatrix} +\text{voice} \\ +\text{cont} \\ -\text{strid} \\ -\text{cor} \\ -\text{ant} \end{bmatrix}$

All vowels and semiconsonants are voiced, continuant,
non-strident, non-coronal, and non-anterior.

(2) $\begin{bmatrix} +\text{voc} \\ +\text{cons} \end{bmatrix}$ --→ $\begin{bmatrix} -\text{high} \\ +\text{cor} \\ +\text{voice} \\ +\text{cont} \\ -\text{strid} \end{bmatrix}$

All liquids have the features as indicated on the
right of the arrow in (2). Their feature [-nas] is
further predicted by the more general rule (10) that all
continuants are non-nasal; see below.

(3) $[+\text{nas}] \longrightarrow \begin{bmatrix} +\text{voice} \\ -\text{strid} \end{bmatrix}$

All nasals are voiced and non-strident in Rukai. That nasals are non-strident is also a universal rule.

(4) $\begin{bmatrix} +\text{strid} \\ +\text{cor} \end{bmatrix} \longrightarrow [-\text{voice}]$

The stridents s̲ and c̲, not v̲, are voiceless.

(5) $\begin{Bmatrix} [-\text{voc}] \\ [-\text{cons}] \end{Bmatrix} \longrightarrow [-\text{lat}]$

Only the segments with both [+voc] and [+cons] can be laterals.

(6) $\begin{bmatrix} +\text{cons} \\ \alpha\text{high} \end{bmatrix} \longrightarrow [\alpha\text{back}]$

The feature values of the consonants must agree in highness and backness.

(7) $\begin{Bmatrix} [+\text{ant}] \\ [+\text{cor}] \end{Bmatrix} \longrightarrow \begin{bmatrix} -\text{high} \\ -\text{back} \end{bmatrix}$

All consonants except velars have the features [-high] and [-back]. Rule (7) fails to include h̲ and ʔ, but they are taken care of by (6). (6) and (7) are closely related and supplementary to each other.

(8) $\begin{Bmatrix} [-\text{ant}] \\ \begin{bmatrix} -\text{cont} \\ +\text{ant} \\ -\text{cor} \end{bmatrix} \end{Bmatrix} \longrightarrow [-\text{strid}]$

All non-anteriors (i.e. the retroflexed stops, velars and h̲ and ʔ) are non-strident, and so are the labial stops.

(9) [+cons] --→ [-round]

All true consonants are non-round. This rule would
have to be revised to exclude labials if labials were
treated as [+round]; see 2.1.

(10) [+cont] --→ [-nas]

Continuant segments must be non-nasal.

(11) $\begin{bmatrix} +\text{cons} \\ -\text{high} \\ -\text{ant} \\ -\text{cor} \end{bmatrix}$ --→ $\begin{bmatrix} -\text{voice} \\ -\text{nas} \end{bmatrix}$

The consonants h and ? have the features [-voice]
and [-nas]. As for the other features, [-back] is pre-
dicted by (6), [-strid] by (8), [-round] by (9), and [-lat]
by (5).

(12) $\begin{bmatrix} -\text{voc} \\ -\text{cons} \\ \alpha\text{back} \end{bmatrix}$ --→ $\begin{bmatrix} +\text{high} \\ \alpha\text{round} \end{bmatrix}$

The semiconsonants y and w have the feature [+high]
and the feature values agree in backness and roundness.

(13) $\begin{bmatrix} +\text{cons} \\ +\text{back} \end{bmatrix}$ --→ $\begin{bmatrix} -\text{cont} \\ -\text{cor} \end{bmatrix}$

All the velars are non-continuant and non-coronal.
The other features are predicted by the other rules:
[+back] by (6), [-round] by (9), [-strid] by (8), and
[-lat] by (5).

(14) $\begin{bmatrix} -\text{voc} \\ -\text{ant} \\ +\text{cor} \end{bmatrix}$ --→ $\begin{bmatrix} -\text{cont} \\ -\text{nas} \end{bmatrix}$

The retroflexed stops T and D are non-continuant and
non-nasal.

(15) $\begin{bmatrix} +\text{ant} \\ -\text{cor} \\ +\text{cont} \end{bmatrix}$ $\longrightarrow$ $\begin{bmatrix} +\text{voice} \\ +\text{strid} \end{bmatrix}$

The labial fricative $\underline{v}$ is voiced and strident.

(16) $\begin{bmatrix} +\text{voc} \\ \left\{ \begin{matrix} [-\text{high}] \\ [-\text{back}] \end{matrix} \right\} \end{bmatrix}$ $\longrightarrow$ $[-\text{round}]$

Both the front and low vowels are non-round. Rule (16) is more general in that it includes liquids that are also non-round. It is simpler by leaving out [-cons] in the rule.

(17) $\begin{bmatrix} +\text{voc} \\ -\text{cons} \\ -\text{high} \end{bmatrix}$ $\longrightarrow$ $[+\text{back}]$

The low vowel is back.

(18) $\begin{bmatrix} +\text{voc} \\ +\text{ant} \end{bmatrix}$ $\longrightarrow$ $[+\text{lat}]$

This rule states that the anterior vocalic, i.e. $\underline{l}$, is lateral.

Many of the rules listed above are language-universal; a few are language-specific for Rukai.

Notes to Chapter 2

1
Rukai ð is diachronically derived from Dyen's PAN
*y (cf. Dempwolff's *j), e.g. PAN *Daya > Daða 'above',
PAN *beRay > baað-aku 'I give'. Apparently the Rukai ð
has developed from *y of the proto-language in the
environment before *a, and that is supported by the evi-
dence that ð occurs mostly before the low vowel a and
that there is the morphophonemic alternation y~ð. Except
for a loan word from Japanese θayða 'soft drinks', and
personal names sayðay and mayðayðaLil, ð does not follow
y. Only one example has been found where ð occurs after
the high front vowel, savið 'pure', the only exception to
the general rule that ð does not occur word-finally.

2
Cf. the word for 'ten' that is poLoʔ in Puyuma and
Ami, and ta-poloʔ in Paiwan. The Rukai form puLuk is
used only for number 10, whereas for the numbers 11 through
19, maŋial is used, e.g. maŋial si ɨa 'eleven (10 + 1)',
maŋial si Dusa 'twelve (10 + 2)', etc. Furthermore, it
is also maŋial that is used in counting, e.g. ta-maŋial
'ten people or animals'. But the borrowing may have taken
place in proto-Rukai because the same is true of all Rukai
dialects (see Li 1972b).

3
The rarity of p can be historically explained: *p >
ʔ in Tanan Rukai, e.g. PAN *apuy > aʔuy 'fire', PAN *pajay
> ʔagay 'rice plant'. In other words, the p's in the
proto-Austronesian forms have changed into the glottal
stop in modern Tanan Rukai. Such a change is further
confirmed by comparing the dialect with the other Rukai
dialects which still keep the p. That is to say, Tanan
Rukai ʔ regularly corresponds with p of the other Rukai
dialects such as Budai.

4
Furthermore, the geminate vowels are historically
derived from dissyllables by means of the loss of conso-
nants, e.g. PAN *beRay > baay 'give'.

Chapter 3

Morphophonemic Alternations

3.1. Alternations of y~ð and w~v

3.1.1. The Alternation y~ð

Before discussing forms with the morphophonemic
alternation y~ð, let us observe some forms that contain
y and/or ð, but with no alternation:

(1) Forms that contain ð:

> aðaðam 'bird'
>
> Daða 'above'
>
> savið 'pure'
>
> ðaur 'type of plant'

(2) Forms that contain y:

> asiluyata 'because'
>
> kamaya 'mango'
>
> ya 'so'

(3) Forms that contain both y and ð:

> θayða 'soft drinks' (loan word from Japanese)
>
> sayðay 'personal name'
>
> mayðayðaLil 'personal name'

The segments y and ð clearly contrast in the same
position, e.g. kamaya and aðaðam, ya and ðaur, so both
have to be used as underlying representations for these
items. In other words, the underlying representations
and surface forms are identical for the items given above,

at least those listed in (1) and (2). As for those listed
in (3), different underlying representations may be used,
depending on the kind of analysis that is adopted.

But let us go on to examine the morphophonemic alter-
nation y∼ð in the following examples:

	I		II	
(4)	aʔuy	'fire'	sa-tu-aʔuð-a	'material for fire'
	ay-ʔacay	'will die'	ay-ʔacað-aku	'I will die'
	ɨkay	'maggot'	wa-ɨkað-aku	'I was infested with maggots'
	Lulay	'child'	sa Lulað-aku	'when I was a child'
	baay	'give'	sa-baað-a	'wedding gift'
(5)	baay	'give'	baay-numi	'you (pl.) give'
	mawlay	'long'	mawlay-ŋa	'has been long'
(6)	aʔuy	'fire'	aʔuy-ini	'his fire'
	mawlay	'story'	mawlay-ini	'his story'
	ɨkay	'maggot'	ɨkay-iDa	'someone's maggot'

The data in (4)--(6) above show that y occurs both
finally and before suffixes beginning with a consonant
or a high vowel (There are only two high-vowel-initial
suffixes in Rukai, i.e. -ini and -iDa), whereas ð occurs
only before suffixes beginning with a. If the forms with
y are treated as the base and those with ð as derived,
then a phonological rule is needed to give the phonetic
output:

(7) y ⟶ ð / ___ + a

The morpheme shapes of the language allow the semiconsonant y in the stem-final position to occur only after a vowel, so the environment on the left of ___ need not be specified in the rule. On the other hand, the morpheme boundary marker "+" on the right of ___ has to be specified because y is realized as [ð] only when the stem is followed by a suffix that begins with a. The segment y is not realized as [ð] if there is no morpheme boundary, e.g. asiluyata 'because', not *asiluðata, kamaya 'mango', not *kamaða, though the segment is immediately followed by a and preceded by another vowel.

(7) can be stated in features:

$$
(8) \quad
\begin{bmatrix} -\text{voc} \\ -\text{cons} \\ -\text{back} \end{bmatrix}
\;\dashrightarrow\;
\begin{bmatrix} +\text{cons} \\ +\text{ant} \\ +\text{cor} \\ -\text{high} \end{bmatrix}
\;/\underline{\hspace{1em}} +
\begin{bmatrix} +\text{voc} \\ -\text{cons} \\ -\text{high} \end{bmatrix}
$$

In the pronunciation of children and younger speakers, there may be no such alternation and only y is used for all of the examples given in (4) Column II (cf. 1.3). This can be interpreted to mean that they simply leave out the rule. In other words, younger speakers have never learned the rule, or have learned the rule as one to be used only passively in their perception of the utterances of older speakers.

3.1.2. The Alternation w ~ v

Before discussing forms with the morphophonemic
alternation w ~ v, let us examine some forms that contain
w and v, but with no alternation:

(9) Forms that contain v:

     vaga 'language'

     vikwa 'ribs'

     vɨtay 'sieve'

     vuuθa 'kill'

     saviδ 'pure'

(10) Forms that contain w:

     waga 'cook'

     sawalay 'man' (Note that younger speakers say
                 savalay.)
     kaway 'over there'

     twalay 'come from'

The segments w and v clearly contrast in the same
position, e.g. waga and vaga, so both need to be used as
underlying representations for the forms listed above.

As noted in 2.3, v is distributionally defective in
that it never occurs in word- or syllable-final position,
in which w may occur. So they do not contrast in the
final position.

There are many forms with w ~ v morphophonemic alter-
nation. For example,

              I   II

(11) waDaw 'wait'   waDav-ana 'wait a moment'

	I		II	
	kaDaw	'get big'	kaDav-a	'Get big!'
	ʔɨraw	'amuse'	ʔɨraʔɨrav-a	'place for amusement'
	mabanaw	'bathe'	mabanav-aku	'I bathe'
	iabaLiw	'was home'	iabaLiv-aku	'I was home'
(12)	maDaw	'big'	maDaw-ŋa	'big already'
	waDaw	'wait'	waDaw-su	'Did you wait?'
(13)	Likulaw	'leopard'	Likulaw-ini	'his leopard'
	baLiw	'home'	baLiw-iDa	'someone's home'

As with the y~ð alternation, in the w~v alternation w can be treated as the underlying phonological representation and v as derived:

(14) w --→ v /___ + a

In features (14) can be stated as:

$$(15) \quad \begin{bmatrix} \text{-voc} \\ \text{-cons} \\ \text{+back} \end{bmatrix} \longrightarrow \begin{bmatrix} \text{+cons} \\ \text{-back} \\ \text{+ant} \\ \text{-high} \\ \text{+strid} \\ \text{-round} \end{bmatrix} \Big/ \underline{\quad} + \begin{bmatrix} \text{+voc} \\ \text{-cons} \\ \text{-high} \end{bmatrix}$$

Again, younger speakers may not have the alternation, and have only w for the forms in (11) Column II.

For older speakers, the rule also does not apply to forms that do not contain a morpheme boundary, e.g. sawalay 'man', not *savalay in the speech of older speakers.

To bring up an interesting observation in the field, I have heard some children and younger speakers saying

<u>savalay</u> and actually recorded it in my field notes. When
I checked with older informants, I was told that <u>savalay</u>
is "child language". Why younger speakers have internal-
ized this one lexical item as <u>savalay</u> while their elders
say <u>sawalay</u> is difficult to explain.

3.1.3. Discussion of <u>y</u>~<u>ð</u> and <u>w</u>~<u>v</u>

The two alternations discussed in this section have
several things in common. First, both have semiconsonants
alternating with fricatives. Second, they share essen-
tially the same environment, viz. before a morpheme bound-
ary followed by <u>a</u>. The generality can be captured by
collapsing the two rules, (8) and (15), as:

$$(16) \quad \begin{bmatrix} -\text{voc} \\ -\text{cons} \\ \alpha\text{back} \end{bmatrix} \quad \dashrightarrow \quad \begin{bmatrix} +\text{cons} \\ +\text{ant} \\ -\text{back} \\ -\text{high} \\ -\alpha\text{cor} \\ \alpha\text{strid} \\ -\text{round} \end{bmatrix} \quad / \underline{\quad} + \begin{bmatrix} +\text{voc} \\ -\text{cons} \\ -\text{high} \end{bmatrix}$$

The same or nearly the same morphophonemic alterna-
tions are common in other languages. Tsou, another
Formosan language, has the morphophonemic alternations in
similar environments (see Tung 1964:179-82; the
unstressed word-final <u>i</u> and <u>u</u> in Tung's transcription can
be reinterpreted as <u>y</u> and <u>w</u> respectively):

$$(17)(a) \quad y \dashrightarrow z$$
$$(b) \quad w \dashrightarrow v \Big/ \underline{\quad} + \begin{Bmatrix} a \\ i \end{Bmatrix}$$

It is of interest that Rukai, among the Paiwanic

languages, shares this rule with Tsouic. The implications of this remain to be worked out.

3.1.4. Alternative Solution

An alternative solution to both alternations is to take the forms with ð and v as basic and all the other forms as derived. This is to reverse the directions of the statements (H stands for high vowels in the rule below):

(18)(a) ð $\longrightarrow$ y $\left/ \underline{\quad} \left\{ \begin{array}{l} \# \\ C \\ H \end{array} \right\} \right.$
(b) v $\longrightarrow$ w

Since the two fricatives ð and v do not occur in word-final (the only exception being savi̵ð 'pure') or preconsonantal position in non-alternating forms, Rule (18) will not involve any undesired conversion of such fricatives to the semiconsonants; the only exception, savi̵ð, would have to be marked [-R 18] in the lexicon.

In features (18) can be stated as:

(19) $\begin{bmatrix} -\text{voc} \\ +\text{cons} \\ +\text{voice} \\ +\text{cont} \\ \alpha\text{cor} \end{bmatrix} \longrightarrow \begin{bmatrix} -\text{cons} \\ -\text{ant} \\ +\text{high} \\ -\text{cor} \\ -\alpha\text{back} \\ -\alpha\text{round} \end{bmatrix} \left/ \underline{\quad} \left\{ \begin{array}{l} \# \\ [+\text{cons}] \\ \begin{bmatrix} +\text{voc} \\ +\text{high} \end{bmatrix} \end{array} \right\} \right.$

Reasons in favor of this solution are:

(20)(a) It seems somewhat more natural to state the changes from fricatives to semiconsonants, viz. from more complex features to less complex.

(b) In this analysis it would be possible to reduce
the number of underlying phonemic representa-
tions by two, i.e. y and w would be replaced
by ȡ and v respectively in the underlying
representations for all forms that contain
these segments, with a few exceptions such as
kamaya and sawalay.

However, this alternative solution has been rejected,
and the first alternative chosen in this treatment, for
the following reasons:

(21)(a) In the alternations, y and w are more general
and have wider distributions (word-final and
before suffixes beginning with a consonant or
high vowel) than ȡ and v (only before suffixes
beginning with a).

(b) Since the general tendency in speakers below
age 30 is to wipe out the morphophonemic
alternations and replace ȡ by y and v by w,
it would seem preferable to use y and w as the
phonemic representations to draw attention to
this tendency.

(c) The solution adopted, with four possible under-
lying representations(y, ȡ, w and v) would have
no exceptional lexical items, whereas the
alternative solution, with only ȡ and v under-
lying, would need to label all items like those

in (2) and (10) as exceptions.

(d)   The alternative solution would be overly
abstract in using ð and v in nonalternating
forms such as those in (2) and (10) where they
never appear on the surface for older speakers.
These nonalternating forms would include nouns
(including proper names) ending in [y] and [w],
some of which may be derived as verbs (often
with verbal prefixes; see 5.1), with morpho-
phonemic alternations occurring if they are
followed by a suffix beginning with a. e.g.
[abay] 'cake' > [twabay] 'make cake' >
[twabaðaku] 'I make cake'. It does not seem
to be the case, however, that all such nouns
can be derived as verbs, and it is not very
clear exactly which nouns can be so derived.
Those not derivable would increase greatly the
stock of overly abstract items.

For these reasons, I have chosen the analysis pre-
sented first above, which uses all four phonemes in
underlying representations, and y and w in those that
alternate.

3.2. Alternations of i~ y and u~ w

The high vowels /i, u/ become glides before another morpheme that begins with a vowel:

	I	II
(1)(a)	ki-tai 'dig taroes'	ky-aŋatu 'gather wood'
	ki-burasi 'dig potatoes'	ky-uvay 'gather rattan'
	ki-sanu 'intend'	ky-a-sanu 'have intended'
	ki-tuma 'befall'	ky-a-tuma 'have befallen'
	ku-nai 'we(subject)'	nay-a 'we(object)'
(b)	ku 'subject marker'	kw-aDa 'that(subject)'
	ku-ðaa 'yesterday'	kw-iga 'when(past)'
	lu-ðaa 'tomorrow'	lw-iga 'when(future)'

The data show that the high vowels /i, u/ become glides before another vowel:

(2)(a) i --→ y /___+[+voc]

(b) u --→ w /___+[+voc]

The two rules in (2) can be generalized if stated by features:

(3) [+high] --→ [-voc] /___+[+voc]

Let it be noted that Rule (3) applies to glides as well as velars vacuously. The rule is more general and less complex when fewer features are specified. But the morpheme boundary marker "+" cannot be left out because the rule does not apply to forms without the boundary, e.g. mabui 'pregnant', not *mabwi, ʔia 'do', not *ʔya.

Rule (3) would also apply to a sequence of ᵻ + V. There are no actual Rukai forms that contain such a sequence. Thus the rule would seem to apply vacuously here. However, we shall see in 3.5 that it is possible to get such a sequence at an intermediate stage. For example,

(4)   daan + ini > daanᵻ + ini > [da:nɨ̭ini] 'his house'

Therefore, Rule (3) actually applies to the sequence ᵻ + V in Rukai, and it does realize ᵻ as non-vocalic [ɨ̭] phonetically (The symbol [ɨ̭] is a high back unrounded glide corresponding to [ᵻ]).

3.3. Alternation of T~c

Of all the Rukai dialects, only Tanan has the voiceless alveolar retroflexed stop /T/ (cf. Li 1972b). It occurs only rarely in a few vocabulary items not having cognates in the other dialects of Rukai. It has probably been borrowed from Puyuma, which has /T/, as Tanan is geographically surrounded by the Puyuma speakers, and the external influence is inevitable. Furthermore, Puyuma /T/ regularly corresponds to Rukai /c/, and that goes back to PAN *C as postulated by Dyen (1965b). For example,[1]

Rukai /c/	Puyuma /T/	
ʔacay	m/in/aTai	'die'
ʔa-ʔacay	p/in/aTai	'kill'
uŋucuy	oŋTui	'pipe'

In the Tanan dialect of Rukai, so far I have found only one example of the morphophonemic alternation T~c, viz. LiTuŋ 'encircle', ta-Licuŋ-a 'pig-sty'. This is very likely a Rukai loan word from Puyuma, and the form LiTuŋ can best be treated as a borrowing. But I do not have enough data for Puyuma.

Like the T~c alternation in Tanan, there is meager material for D~c correspondence between Tanan and Budai.[2] For example, the word 'to see' in Budai is Diil as compared with Tanan ciil. Since this is a historical problem, it will not concern us further here.

3.4. Alternation of n ~ Ø

Let us examine the following data:

	I		II	
(1)	manɨma	'thing'	manɨman-li	'my thing'
	rɨtɨsa	'relative'	rɨtɨsan-li	'my relative'
	kinawmasa	'body'	kinawmasan-su	'your(sg.) body'
	kaθa	'finish'	kaθan-ŋa	'finished already'
	tuma	'do'	tuman-su	'you(sg.) do'
	maɨla	'different'	maɨlan-ŋa	'different already; thanks'
	anukaɨLɨa	'on the road'	anukaɨLɨan-ŋa	'on the road already'
	atawa	'place to go'	atawan-nai	'our place to go'
	atɨŋa	'real'	atɨŋan-ŋa	'real already'
	bulava	'brass'	bulavan-li	'my brass'
	airuʔa	'food'	airuʔan-numi	'your(pl.) food'

There are many other examples. Apparently n is lost in the final position after a, but kept when followed by a suffix.[3] The occurrence of n is unpredictable and needs to be represented in the underlying forms for words in both columns above. Rule (2) will then give the correct surface forms:

(2) n --→ Ø /a___#

A restatement of (2) in features is (3).

$$(3) \quad \begin{bmatrix} +nas \\ +cor \end{bmatrix} \longrightarrow \emptyset \ / \ \begin{bmatrix} +voc \\ -high \end{bmatrix}\_\_\#$$

This is a very productive rule. The environment after the

low vowel has to be specified because n̲ is not dropped
after high vowels:

(4)(a) banin 'board'   (b) aLun 'pillow'

      kunin 'rabbit'   haribun 'plant name'

      kuvin 'skin disease'   sukun 'apron'

      aLunain 'belt'   utun 'nipple'

      kakunin 'locust'   taLuʔun 'hat'

      purihin 'plant name'   tinun 'weave'

      Labin 'cheeks'   bunun 'sticky earth'

      sakinkin 'water buffalo'

(c) takaynɨn 'sit'

      kiasɨasɨn 'apologize'

      rɨDɨn 'back'

      vaLaLisɨn 'teenagers'

Such a phenomenon, viz. that the final elements are
lost without the protection of a suffix, is quite common
in Micronesian languages (Bender 1969, Sohn 1969): the
"erosion from the right" causes the final vowel of stem
vowels CVCV or the "thematic" consonant on transitive
verbs to be dropped if they are not followed by suffixes.
The Tanan n̲~∅ phenomenon is similar to that in Microne-
sian, Fijian, and non-Austronesian languages such as
French. It can be posited that all Rukai forms that
involve the n̲~∅ alternation end in n̲ in the underly-

ing phonological representation, and the correct forms in the surface can be derived by applying Rule (3).

(3) is not only a synchronic rule; it reflects a historical process: *n > Ø in the specified environment as well. I have evidence for the existence of the n in the Tanan base forms in Column I in (1), as n is still preserved in the other Rukai dialects Budai and Tona (see examples in (8) below, also cf. Li 1972b).

The posited n does not turn up with a suffix where there was no *n historically. Cf. (5) with (1):

<div align="center">I   II</div>

(5) tula 'eel'   tula-li 'my eel', not *tulan-li

baða 'enemy'   baða-su 'your enemy', not *baðan-su

However, there are a few exceptions to Rule (3); that is to say, there are words ending in an without a suffix. To my knowledge, the following is a complete list of underived items in which n is not lost after a:

(6) daan 'house, pus'   nagan 'name'

caan 'paddy'   daLan 'footprint'

twan 'skirt'   danʔan 'personal name'

agan 'grandchild'   baLnan 'rain water'

sunan 'give'

These exceptions vary in form and length. A simple solution to this problem is to mark them as [-R 3] in the lexicon because there is no simple way of revising R 3 to exclude them from undergoing the rule. At best an ad hoc rule might be able to do the job. But then, why is n preserved in twan, but not in atawa, as both forms have the same segments wa? In the forms where n is dropped, all sorts of segments can precede the low vowel: /ɨ, w, v, m, ŋ, ʔ, l, s, θ, ð/. Similarly, the forms where n is preserved, the segments preceding a are /a, w, n, ʔ, L, g/.

The exceptions in (6) retain the same forms when they are suffixed, e.g. daan-li, twan-su, etc., completely parallel to (1)(II); they do not alternate in any way. Some of these forms are similar to and cognate with the other dialects of Rukai:

(7)		'house'	'paddy'	'grandchild'	'name'
	Tanan	daan	caan	agan	nagan
	Budai	daan	caan	agan	nagan
	Maga	dan	tpu-can	---	---
	Tona	daʔan	can	---	---
	Mantauran	daʔan	---	---	---

It is not very clear why n is kept after the low vowel in only these few forms in Tanan. They may have been borrowed from the other dialects, most likely Budai. Or there may be a better explanation.[4]

A puzzling question can be raised: Of all the final
segments (consonants and vowels), why is only the -n lost?
Why not the other nasals m and ŋ? This requires an expla-
nation in terms of phonological universals in language
(cf. Jakobson 1968). Kim (personal communication) offers
the following possible explanation:

> It is phonetically natural and plausible that there
> is a progressive nasalization in vowels in such a
> way that low vowels are more easily nasalized, high
> vowels, much less; cf. vowel lowering in French
> nasal vowels, e.g. vin > vɛ̃. Thus if a in Rukai is
> nasalized, or was historically, then it would
> prompt the deletion of the following nasal, as the
> nasal vowel now carries the information. But with
> insufficient nasalization in high vowels, the
> deletion of the following nasal will not occur.
> Why n only? Probably to prevent too much homonym-
> ity by deleting all nasals. Since n is the least
> marked, psychological recovery of the lost nasal
> would be easiest in the case of n, but not automatic
> in the case of m or ŋ. In short, I suspect that
> Rukai was in the initial stage of nasalization, but
> the process was for some reason checked and the
> nasal spreading did not take place globally as it
> did in French.

Kim has given a reasonable explanation of why it is easier
to lose n than m and ŋ, and why after the low vowel rather
than high vowels. Unfortunately, there is no evidence for
the suspected nasal quality in the vowels preceding the
nasal consonants. I did not detect any nasalization in
the vowels in the speech of my informants. (I am sensitive
to nasality in vowels because nasal vowels are phonemically
distinct from their oral counterparts in my native language,
Taiwanese.) It is not known whether a was nasalized his-

torically or not. But Tanan Rukai is not alone in losing
n after a; the same loss is shared by two other Rukai
dialects, Maga and Mantauran:

(8) 'aborigine'   'behind'   'deer'   'door'

Tanan kacaLisia   likuDaŋa   salauŋa   sai-li-libaa

Budai kacaLisiani likuDaŋani   salauŋani sai-li-libani

Maga kcarsia   kuDŋaa   sloŋa   silbaa

Tona kacaisiani   kuDaŋani   salauŋani sailibani

Mant (kataLisii) (ʔa-likuᴣai)   ʔaluŋai   ʔiilibai

PR   *kacaLisiani *likuDaŋani   *salauŋani *sailibani

3.5. Echo Vowels

Many Rukai words end in a released consonant followed by an optional short vowel similar to the preceding vowel.[5] For example,

(1)　[bukúl(u)] 'spine; kernel of fruit'

　　　[Laíl(i)] 'arrow'

　　　[aʔíc(ɨ)] 'sleep'

The parentheses in (1) indicate the optional weak vowels. In normal or rapid speech, the vowels are much weakened, devoiced, or dropped out, and the preceding consonants are always released. When the words are emphasized as in a question, the optional short vowels appear and are stressed, assuming full vowel qualities. The present problem is whether those vowels should be spelled out in the underlying phonemic representation. There are reasons for adopting either solution. Reasons for including them will be:

(2)(a) The vowels are potentially there in most contexts;

　　(b) The last consonants are always strongly released
　　　　somewhat like French. It has been shown by
　　　　Schane (1968:6) that it is theoretically sound
　　　　to posit a schwa following the released consonant
　　　　in French;

　　(c) The vowels are clearly enunciated and get stressed
　　　　when the words in which they occur are emphasized;

(d) The vowels may appear when followed by suffixes
beginning with a consonant or a high vowel, e.g.
[uŋúl(u)] 'drink' > [uŋulu-sú] 'you drink',
[uŋulw-iní] 'his drinking'.

Choosing the solution argued in (2), Rule (3) would be
needed to get the correct surface phonetic realizations of
the optional short weak vowels in the final position:

(3) V $\longrightarrow$ $\left\{\begin{matrix} \breve{V} \\ \emptyset \end{matrix}\right\}$ / V́C___#

However, a great disadvantage of this solution is that
stress would have to be marked on the penultimate for all
these items--the very great number of words ending in
consonants followed by weak vowels.

On the other hand, there are strong arguments for
leaving out the final optional short vowels in the under-
lying phonological representations:

(4)(a) It makes stress more predictable: stress mostly
falls on the final syllable;

(b) Since the vowels are predictable when they
appear: identical to the preceding vowels unless
it is /a/, in which case the following optional
vowel is [ɨ], e.g. [událɨ] 'rain', hence they
are not phonemic;

(c) Since the vowels are optional, they are not
phonemic;

(d) The vowels may not occur when followed by a

suffix that begins with the low vowel, e.g.
[davác(ɨ)] 'walk' > [davac-akú] 'I walk',
[uŋúl(u)] 'drink' > [uŋul-akú] 'I drink'. In
this language, other vowel-final stems do not
lose the vowels before suffixes, e.g. [kanɨ́] 'eat'
> [kwanɨ-á] 'Eat!'. Consequently, in this
analysis we could save the rule of deleting the
final weak vowels that would be required should
the alternative solution be adopted;

(e) It makes possible a simple statement of redupli-
cation such that final consonants, rather than
final consonants plus the following echo vowels,
are dropped from stems in the reduplicated
portion (see 6.1);

(f) It is also simpler and more natural to have a
word-final morphophonemic alternation $\emptyset \sim \underline{n}$
rather than $\emptyset \sim \underline{n}$ followed by a vowel.

Following the alternative solution argued in (4), only a
rule (5) is needed to give the surface phonetic realiza-
tion of the echo vowels when they do appear:

$$(5) \quad \emptyset \longrightarrow \begin{bmatrix} +\text{voc} \\ +\text{high} \\ \alpha\text{back} \\ \beta\text{round} \\ -\text{stress} \end{bmatrix} \Big/ \begin{bmatrix} +\text{voc} \\ \alpha\text{back} \\ \beta\text{round} \\ +\text{stress} \end{bmatrix} [+\text{cons}]\_\_\#$$

Rule (5) says that the final weak vowels must agree
with the preceding vowels in backness and rounding; the
raising of $\underline{a}$ to $\underline{ɨ}$ is taken care of by the feature [+high]
on the right side of arrow.

The echo vowels do not appear after a semiconsonant y or w, as stated in Rule (5). Nevertheless, they appear not only after a full consonant in word-final, but also before another consonant in word-medial position. In other words, echo vowels appear between any two full consonants, excluding the semiconsonants. The following are some examples given in both phonetic and phonemic citations:

(6) [balɨbalɨ] balbal 'bamboo'

[baLɨnanɨ] baLnan 'rain water'

[danɨʔanɨ] danʔan 'personal name'

[liʔiliʔi] liʔliʔ 'peep, look sideways'

[bɨlɨbɨlɨ] bɨlbɨl 'banana'

The data in (6) indicate that echo vowels do not only appear after stress in word-final position. Consequently, Rule (5) must be revised to:

$$(7) \quad \emptyset \longrightarrow \begin{bmatrix} +voc \\ +high \\ \alpha back \\ \beta round \\ -stress \end{bmatrix} \bigg/ \begin{bmatrix} +voc \\ \alpha back \\ \beta round \end{bmatrix} [+cons] \underline{\quad} \left\{ \begin{matrix} \# \\ [+cons] \end{matrix} \right\}$$

It would seem that the possessive suffixes -ini 'his' and -iDa 'someone's' are exceptional somehow phonologically in that echo vowels appear before them even though they are vowel-initial. The echo vowel may appear phonetically as a glide (see the gliding rule in 3.2), serving together with the preceding consonant as the initial of the following syllable:

(8) [uŋulwini] uŋul-ini 'his drinking'

   [da:nî̠ini] daan-ini 'his house'

   [cî̠:lî̠ini] cî̠l-ini 'his seeing'

Note that [lwi], [nî̠i] and [lî̠i] are monosyllabic rather than dissyllabic phonetically.

That echo vowels do not occur before a suffix beginning with a, but do occur before consonants and a suffix beginning with i (Rukai vowel-initial suffixes begin either with a or i; no suffix begins with u or i̠) seems to indicate that the determining factor is again ___ + a; cf. the morphophonemic alternations y∼d̠ and w∼v in 3.1. To put it another way, here is another example of high vowels patterning like consonants and #. Consequently, Rule (7) must be further modified as below:

(9)
$$\emptyset \dashrightarrow \begin{bmatrix} +voc \\ +high \\ \alpha back \\ \beta round \\ -stress \end{bmatrix} \bigg/ \begin{bmatrix} +voc \\ \alpha back \\ \beta round \end{bmatrix} [+cons] \underline{\hphantom{xx}} \left\{ \begin{matrix} \# \\ [+cons] \\ +\begin{bmatrix} +voc \\ +high \end{bmatrix} \end{matrix} \right\}$$

This rule is a little complex, and may not look very natural. But there is no simple alternative.

A simple alternative way of stating the rule would be to treat the echo vowels as phonemic, then delete them in the environment of ___ + $\begin{bmatrix} +voc \\ -cons \\ -high \end{bmatrix}$. But this alternative has been rejected because it is too costly, among other things, in making stress phonemic.

3.6. Identical Vowels

3.6.1. Elision of a

Compare the following pairs of prefixes with or without a:

(1) [ta-] ~ [t-] 'personal (or animal) marker'

(a) Dusa 'two'   > ta-Dusa 'two people/animals'

ma-ruDaŋ 'old' > ta-ru-ruDaŋ-a 'old people'

(b) -ina 'mother'   > t-ina 'mother'

-ama 'father' > t-ama 'father'

(2) [na-] ~ [n-] 'vocative'

(a) Ligiay 'personal name' > na-Ligiay

taka-taka 'elder'   > na-taka-li 'my elder brother/sister'

la-la 'friend (male)'   > na-la 'my friend'

-ina 'mother'   > na-ina 'Mommy'

(b) ali 'friend (female)'   > n-ali 'my friend'

-ama 'father'   > n-ama 'Daddy'

(3) [la-] ~ [l-] 'plural marker'

(a) umas 'person'   > la-umas 'many people'

lalak 'son/daughter'   > la-lalak 'sons/daughters'

(b) ini-a 'him, her, it'   > l-ini-a 'them'

iDa-a 'him, her, it'   > l-iDa-a 'them'

The data above show that a is elided in some cases. Some of them are explainable by the truncation of identical vowels: ta-ama > [t-ama], na-ama > [n-ama], na-ali >

[n-ali]; that is a topic to be taken up and further illustrated in the following sub-section (3.6.2). However, it is not clear why a is elided in some other cases: ta-ina > [t-ina], la-ini-a > [l-ini-a], la-iDa-a > [l-iDa] One possible explanation is that when the following stem begins with a vowel, a is always lost, but there are counter examples such as na-ina and la-umas. Nor can it be explained in terms of stems beginning with i, since there is the form na-ina. Nevertheless, one point is clear; that is, a is never elided when the following stem begins with a consonant. The aberrant forms mentioned above may have been products of irregular historical developments.

3.6.2. Elision of u

There are also pairs of prefixes with or without u:

(4) [mu-] ~ [m-] 'self-motion'

   (a) baLiw 'home'   > mu-baLiw 'go home'
        caki 'excrement'   > mu-caki 'defecate'

   (b) urua 'mountain hut' > m-urua 'go to a
                                           mountain hut'
        umauma 'field'   > m-umauma 'go to field'

As revealed in the data in (4), both prefixes [mu-] and [m-] have the same function of verbalizing the following noun stem with the same meaning, 'self-motion, non-causative, to do of one's own accord'. The same alternation is also found in verb stems:

(5)(a) ciiLi 'throw'   >   mu-ciiLi 'fall down'

   (b) ua 'go'   >   m-ua 'go'

See 5.1.4 for the verb derivation rules discussed in this section.

All these alternants are phonologically conditioned by identical vowels:

(6)(a) m- /___ + u

   (b) mu- / elsewhere

Similarly, the [ma-] and [m-] alternation is conditioned by the following identical vowels:

(7)(a) -banaw   >   ma-banaw 'bathe'

   (b) aLa 'take'   >   m-aLa 'take'

The conditioning of (7) can be stated as:

(8)(a) m- /___ + a

   (b) ma- / elsewhere

There are no parallel alternations like [mi-] ~ [m-] and [mɨ-] ~ [m-], though there is a m-ɨlɨb (or mu-ɨlɨb) 'open'. Compare:

(9)(a) cabu 'wrap'   >   mu-cabu 'unwrap'

   (b) ɨlɨb 'close'   >   m-ɨlɨb 'open'

There are, however, geminate liquids in Rukai, e.g. lallal-li 'my cicada'. The conditioned truncation of identical vowels can be generalized and stated in features:

$$(10) \quad \begin{bmatrix} -\text{cons} \\ +\text{voc} \\ \alpha\text{back} \\ \beta\text{high} \end{bmatrix} \longrightarrow \emptyset \; / \underline{\quad} \; + \begin{bmatrix} -\text{cons} \\ +\text{voc} \\ \alpha\text{back} \\ \beta\text{high} \end{bmatrix}$$

With regards to Rule (10), several questions can be raised: (1) How do we decide that the deleted vowel is the first, rather than the second, of the two identical vowels, as stated in (10)? Or to put it in a different way, is it the vowel of the stem or affix that gets deleted? (2) Will it make a difference which of the two identical vowels gets deleted? Is there any theoretical implication? (3) Is the morpheme boundary marker in the environment statement relevant to the rule? More generality can be gained if the boundary can be left out.

In answer to the first question, it is not very clear from the data which of the two identical vowels is deleted. It can be the vowel of the prefix or the stem. As a matter of fact, it can also be the vowel of the suffix or the stem, as in the data below:

(11)(a)   kani 'eat'   >   k/u/ani-a 'Eat!'

        uŋul 'drink' >   uŋul-a 'Drink!'

   (b)   m-ua 'go'   >   m-ua 'Go!'

        m-aLa 'take' >   m-aLa 'Take it!'

However, in 3.6.1 one can see that in the case of elision before a non-identical vowel, it is the first rather than the second that is elided, so there would be some reason

to suppose this to be the case also when two identical
vowels are involved.

As far as the surface forms are concerned, it does
not make any difference which of the two identical vowels
is claimed to be deleted. In terms of phonological theory,
however, there is a difference of interpretation.

Now that I have found evidence for phonemic geminate
vowels (see 2.4), the morpheme boundary marker in Rule
(10) cannot be left out, or else lexical items with
geminate vowels would all undergo the rule and come out
with incorrect output, such as *dan 'house', *bas 'meat
soup',*guŋ 'cow'.[6]

An alternative solution to the phenomena discussed
in this section is to treat them as vowel insertion rather
than vowel deletion. But the problem is that there is no
way of predicting which vowel, a or u, to insert in each
case. If the appropriate vowel insertion rule could be
formulated, then the aberrant forms mentioned in the pre-
vious section could simply be treated as idiosyncratic non-
application (lexically marked) of the rule, and the inde-
terminancy of which vowel to delete as raised in this
section would automatically be resolved. Unfortunately
the vowel insertion alternative cannot be adopted without
complicating the problem considerably.

3.7. Miscellaneous Morphophonemic Alternations

There are a few morphophonemic alternations that are
found only in a few isolated examples, particularly
numerals:

(1) D ~ ʔ

Dusa 'two' > ani-ʔusa-l 'twice', ma-ʔusa-l 'twenty'

maka-ʔusa-l 'for two days'

(2) ɨ ~ v

ɨa 'one   > ani-va-l 'once',

maka-va-l 'for one day'

(3) Ø ~ ŋ

ɨa 'one'   > ta-ŋɨa 'one person', ma-ŋɨa-l 'ten'

Should the forms with affixes be treated as the base
and those without as derived, as has been done with n ~ Ø,
then there would be several problems: First of all, they
have nothing in common phonologically, although all the
three types of alternations involve only the numerals 'one'
and 'two'. Second, the initial of the "derived" form Dusa
is historically the older form (cf. PAN *DewSa) whereas
the "base" forms are innovations. Third, since both (2)
and (3) involve the numeral 'one', should both va and ŋɨa
be treated as the base forms, or only one of them? Which
one? The main problem with these alternations is that no
generalizations can be made about them. These forms mani-
fest partial suppletion.

3.8.   Ordering of Rules

Phonological rules are partially ordered, cf. Chomsky (1967).   Certain rules must apply before others to derive the correct phonetic output of all forms.   However, ordering may not be relevant for every rule in relation to all the others.   The following facts can be noted:

(1) The geminate length rule must precede the final syllable stress rule.   Since phonetically long vowels have been interpreted as geminate vowels, a rule is needed to convert the sequence of segments to a single long segment, which is seen as a conversion from two syllables to one phonetically, e.g. daan > [da:n], ciil > [ci:l], so that stress can be assigned to the correct position in the final syllable in these forms: [dá:n], [cí:l].

(2) Emphatic stress or question stress rules must apply after the echo vowel addition rule.

In short, the rules are ordered in the following manner:

(1) The geminate length rule

(2) The final stress assignment rule

(3) The spirantizing (y → ð and w → v before + a) or n truncation rules

(4) The echo vowel addition rule

(5) The gliding (i → y, u → w and ɨ → ɨ before + V) or identical vowel deletion rules

(6) The emphatic or question stress rules.

3.9. Summary of Phonological Rules

(1) GEMINATE LENGTH

$$
\begin{bmatrix} +voc \\ -cons \\ \alpha high \\ \beta back \\ \gamma round \end{bmatrix} \longrightarrow [:] \Big/ \begin{bmatrix} +voc \\ -cons \\ \alpha high \\ \beta back \\ \gamma round \end{bmatrix} \underline{\quad}
$$

(2) FINAL STRESS ASSIGNMENT

$$
\begin{bmatrix} +voc \\ -cons \end{bmatrix} \longrightarrow [+stress] \Big/ \underline{\quad} \left(\left\{ \begin{matrix} [+cons] \\ \begin{bmatrix} -voc \\ -cons \end{bmatrix} \end{matrix} \right\} \right) \#
$$

(3) SPIRANTIZING ($\underline{y} \rightarrow \underline{\eth}$ and $\underline{w} \rightarrow \underline{v}$ / $\underline{\quad}$ + $\underline{a}$)

$$
\begin{bmatrix} -voc \\ -cons \\ \alpha back \\ +high \end{bmatrix} \longrightarrow \begin{bmatrix} +cons \\ +ant \\ -back \\ -\alpha cor \\ \alpha strid \\ -high \end{bmatrix} \Big/ \underline{\quad} + \begin{bmatrix} +voc \\ -cons \\ -high \end{bmatrix}
$$

(4) $\underline{n}$ TRUNCATION ($\underline{n} \rightarrow \emptyset$ / $\underline{a}$ $\underline{\quad}$ #)

$$
\begin{bmatrix} +nas \\ +cor \end{bmatrix} \longrightarrow \emptyset \Big/ \begin{bmatrix} +voc \\ -high \end{bmatrix} \underline{\quad} \#
$$

(5) ECHO VOWEL ADDITION

$$
\emptyset \longrightarrow \begin{bmatrix} +voc \\ +high \\ \alpha back \\ \beta round \\ -stress \end{bmatrix} \Big/ \begin{bmatrix} +voc \\ \alpha back \\ \beta round \end{bmatrix} [+cons] \underline{\quad} \left\{ \begin{matrix} \# \\ [+cons] \\ \begin{bmatrix} +voc \\ +high \end{bmatrix} \end{matrix} \right\}
$$

(6) IDENTICAL VOWEL DELETION

$$
\begin{bmatrix} +voc \\ -cons \\ \alpha back \\ \beta high \end{bmatrix} \longrightarrow \emptyset \Big/ \underline{\quad} + \begin{bmatrix} +voc \\ -cons \\ \alpha back \\ \beta high \end{bmatrix}
$$

(7) GLIDING ($\underline{i} \rightarrow \underline{y}$, $\underline{u} \rightarrow \underline{w}$ and $\underline{ɨ} \rightarrow \underline{ɨ}$ before + V)

$$
[+high] \longrightarrow [-voc] \Big/ \underline{\quad} + [+voc]
$$

(8) EMPHATIC or QUESTION STRESS

$$
[-stress] \longrightarrow [+stress] \Big/ \underline{\quad} \#
$$

Notes to Chapter 3

1

The Puyuma material is based on OA (1935: Appendix: Vocabulary Table, pp.2-55). As noted by Ogawa (OA 1935: 332), "The [T] sound occurs frequently in Puyuma. Puyuma [T] generally becomes [ts] and occasionally remains as ['T] in Tanan, perhaps because of Puyuma influence." (my translation)

2

The Budai dialect information is based on materials from OA (1935), Tsuchida's (1970) field notes, and my three informant sessions in the Tanan village in June 1972.

3

Ogawa (OA 1935) would often transcribe the words ending in [ʔ] where I transcribe them as ending in zero. as in Column I. I have checked with my informants carefully and it seems certain that there is no mistake in my transcription with regard to the doubtful [ʔ]. For one thing, I do not hear it at all. For another, I have checked the informant's reaction between words with [ʔ] and those without in Ogawa's transcription, but they cannot tell any difference. Moreover, if there was a [ʔ] in the word-final position, why is it never released and followed by an echo vowel (see the following section, 3.5) ?

4

Byron Bender (personal communication) doubts if the n truncation is still a productive rule. If it was dead before it applied to these exceptional items, they were in a sense "fossilized". An experiment can be designed to test it out with an informant to see if it is still alive and productive.

5

Saaroa [ɬaʔalua], a member of the Tsouic group, also has the same phenomenon as Rukai in having optional final weak vowels (for example, see Ting 1967:920-27). Thus this is not a language-specific problem.

6

The existence of ba 'lungs' < *baRaq may indicate the presence of a similar rule at an earlier stage of Rukai.

Chapter 4

Syntax

4.0. Lexicase Model

4.0.1. The Model

The syntactic description in this study adopts the lexicase grammatical model as developed by Starosta (1971a, 1971b, 1973) and Taylor (1971). This linguistic model is a synthesis of Chomsky's (1965, 1970) theory of syntax and lexical derivation and Fillmore's (1968, 1969a,1969b, 1969c, 1970a, 1970b) case grammar, but different from both linguists in various important points to be noted below. This approach has narrowly restricted power. Many generalizations are accounted for by the use of redundancy rules in terms of features in the lexicon.

Characteristics of this model include the following:

(1) It sees no need to posit a distinct deep structure in order to relate sentences, so no claim is made for the distinction between deep structure and surface structure.

(2) Since there is no need to posit a distinct deep structure, the powerful means of transformations employed by transformational-generative grammarians can be totally dispensed with.

(3) Relationships between sentences are shown by correspondences in syntactic representations and/or via lexical derivations.

(4) It distinguishes case relations and case forms.

Both types are treated as significant categories of a grammar. Fillmore also recognizes two case forms: nominative ("grammatical subject") and accusative ("object"), but does not posit such categories for the other case realizations. The lexicase model recognizes at least five universal case forms to be as significant as case relations in language.

(5) It treats both case relations and case forms as features of lexical items rather than grammatical categories.

(6) Many of the phenomena such as pronominalization usually handled in the semantic component of a transformational-generative grammar are treated as a matter of performance rather than competence, and thus outside the boundary of this study and approach.

(7) No separate semantic component is required in the grammar. All linguistically relevant semantic information is specified directly in the syntactic representation, as features of lexical items.

(8) It treats all derivation as a process which is different in kind from other synchronic rules of grammar. Derivation has much more limited power than transformation, but enough to do the job. Derivation rules are unordered, and represent word-formation patterns of varying degrees of productivity.

As explained in Taylor (1971:10-11), the components
of the lexicase model are (1) a Base Component consist-
ing of phrase structure rules used to generate trees
indicating relationships between sentence constituents,
(2) a Lexicon containing Lexical Entries with their phono-
logical representations and feature matrices, and several
types of Lexical Redundancy Rules, including Derivation
Rules, and (3) a Phonological Component. As the outputs
of the Lexicon, i.e. lexical items, are inserted into the
trees, we get all the syntactic representations. Then the
Phonological Component utilizes all the syntactic as well
as lexical information to produce Phonological Representa-
tions. All these are in the realm of grammar. However,
the Semantic Interpretation Component, which interprets
each syntactic representation interpreted by the Phonolo-
gical Component in the context of situation, is necessar-
ily outside the lexicase grammar, and is considered a
matter of performance rather than competence.

4.0.2. Contributions and Refinements

This study has gone beyond Taylor's lexicase model
in various points. The following contributions to and
refinements of the lexicase theory of grammar are proposed:

(1) The subject-verb and noun-attribute agreement rela-
tions are for the first time explicitly formalized by rules
in this model. A set of rules is given for each type of

agreement, with illustrative Rukai sentences. (See 4.2.7.2.1 and 4.4.2.3.)

(2) Case grammars in publication have rarely touched on the problem of embedding. This study has treated embedded structures in some detail. Finite and non-finite verbs must be clearly distinguished in such structures. (See 4.7.)

(3) This study has made the first attempt at formalization of the morphophonemic rules of reduplication and agreement affixation within the lexicase framework. (See Chapter 6.)

(4) A refinement of Taylor's lexicase theory is made by clearly distinguishing subcategorization rules and redundancy rules. (See 4.2.7.1, 4.3.2, 4.4.1, and 4.4.3.)

(5) Taylor treats case relations and case forms as redundantly marked on both nouns and prepositions, requiring nouns and prepositions to agree in both case relation and case form. In this study, I have treated case relations as marked only on noun, with case forms marked on nouns, prepositions and determiners. (See 4.3.) Although this change is not crucial to the present study, it becomes important in a more exhaustive treatment of coverbs (cf. Clark, forthcoming) and is essential to the adequate description of case-inflecting languages such as German.

4.1.   Word Order

PSR 1.   S $\longrightarrow$ $\left\{ \begin{array}{l} (NP)(Adv)V(NP)(S)(NP)^n(PP)^n \\ NP\frown NP \end{array} \right\}$

One of the phrase structure rules (PSR's) is as
stated above.   This rule allows a sentence with no NP, as
in the meteorological sentences that are subject-less,
e.g. <u>uda-udal</u> 'it is raining' (cf.4.6.1), or as many as
four noun phrases (NP's) and three prepositional phrases
(PP's) in a simple sentence (cf. 4.6).   Sentences with
embedded structures can have even more (cf. 4.7).   An NP
may precede the main verb for emphasis (see 4.2.7 and
4.4.1).   A verb may be preceded by an adverb (Adv).

A sentence (S) may also rewrite as $NP\frown NP$ for equa-
tional sentences (cf. 4.6.7 and 4.6.8).

The reason for stating the rule as $(NP)^n(PP)^n$ instead
of (NP)(NP)(NP)(PP)(PP)(PP) is to avoid a technical diffi-
culty.   If there are two (or more) independently optional
NP's and PP's in the rewriting of S, "then we get the
same result by skipping the first and choosing the second
as we do by choosing the first and skipping the second.
This ... technical difficulty is, then, that different
choices in the base do not correspond to differences in
the structure of sentences." (Fillmore 1969a:363).   The
superscript ^{n} must be understood as representing   1, 2,
3 or 4, i.e. from one to the maximal number of probably
4 in Rukai.   This avoids the difficulty Fillmore describes

above. Unfortunately, the optional NP right after the
main verb in an embedding structure is still a problem:
if no embedded S is chosen, a sentence with one or more
NP's after the verb would technically still be syntacti-
cally ambiguous in the way Fillmore describes. This
could be avoided by stating the rule: $...V((NP)S)(NP)^n...$,
but that expedient has been rejected because it is unneces-
sarily ad hoc.

Like many other Austronesian languages such as the
Philippine and other Formosan languages, Rukai is predom-
inantly a verb-initial language.

As a matter of fact, sentence constituent order is
not very important in Rukai. Grammatical relations are
indicated by prepositions and determiners preceding the
nominal and also by verb formations. For example,
Sentences (1)--(3) below mean roughly the same thing;
the determiner kuani 'that' indicates the following noun
taraalu? 'hunter' as the AGENT, while the determiner sa 'a'
indicates the following noun babuy 'boar' as the OBJECT,
even though the word order is different in the three
sentences below:

(1)   ?a?acay kuani taraalu? sa babuy.
      kill   that hunter   a boar

      'That hunter killed a boar'

(2)   ?a?acay sa babuy kuani taraalu?.

      'That hunter killed a boar'

(3) <u>kuani</u> <u>taraalu?</u> <u>?a?acay</u> <u>sa</u> <u>babuy</u>.

'As for that hunter, he killed a boar'

Apparently the major sentence constituents (V, NP, PP) can be shifted around without much significance. There are, of course, restrictions on possible word order. For example, (4) would be ungrammatical:

(4) *<u>sa</u> <u>babuy</u> <u>?a?acay</u> <u>kuani</u> <u>taraalu?</u>.

This example shows that the object of the sentence may not precede the main verb (cf. Greenberg 1963:76-77). (5) is also ungrammatical:

(5) *<u>kiaani?alay</u> <u>sa</u> <u>sasivira</u> <u>?akila</u> <u>LigLig</u> <u>twalay</u>
    was-blown   wind   to   mountain from

    <u>tarumak</u> <u>kayvay</u> <u>tudan</u>.
    (place)   this tin-roof

    '*This tin-roof was-blown to the mountain from
     Tarumak by wind'

The example shows that the "goal" (to the mountain) may not occur before the "source" (from Tarumak); see 4.3.3.2.

Sentence constituent order is semantically significant. For instance, the subject occurring before the verb as in (3) indicates emphasis. (The term "emphasis" or "emphatic" used in this study refers to "topic" used by other linguists working on the Philippine languages. See the feature "emphatic" in 4.2.7.1.)

When both the direct object and dative (indirect object) are present in the sentence (cf. 4.3.3.6), it is the word order that distinguishes them if there is

possibility of ambiguity. On such an occasion, the

dative occurs before the object.[1] Compare (6) and (7):

(6) <u>wabaay</u> <u>nakua</u> <u>sa</u> <u>umas</u> <u>ʔasilalak</u>   <u>ku</u> <u>tinali</u>ɪ
    gave   me   person cause-raise-child mother-my

    'My-mother had me raise a person'

(7) <u>wabaay</u> <u>sa</u> <u>umas</u> <u>nakua</u> <u>ʔasilalak</u> <u>ku</u> <u>tinali</u>.

    'My-mother had a person raise me'

In a lexicase model, all order restrictions are

handled by selectional restrictions on predicates (or

V's) rather than by phrase structure or transformation

rules (cf. 4.4.1).

4.2. Prepositional Phrases and Noun Phrases

   PSR 2. PP --→ P⌒ NP

   This rule states that PP is rewritten as a preposi-

tion (P) plus an NP. Determiner (Det), which is a consti-

tuent of an NP, may not occur when the NP follows P. In

other words, P is never followed by Det (cf. 4.3.1):

                             P   NP
(1) <u>kiaʔaʔacay</u> <u>kay</u> <u>cumay</u> <u>ara</u> <u>kwaŋ</u>.
    was-killed this bear with gun

    'This bear was-killed with a gun'
                            P Det NP
(2) *<u>kiaʔaʔacay</u> <u>kay</u> <u>cumay</u> <u>ara</u> <u>sa</u> <u>kwaŋ</u>.

(3)   P   NP   P   NP
    <u>kiaaniʔalay</u> <u>twalay</u> <u>tarumak</u> <u>ʔakila</u> <u>LigLig</u> <u>kayvay</u>
    was-blown   from   (place) to mountain this

    <u>tudaŋ</u>.
    tin-roof

'This tin-roof was-blown from Tarumak to the
mountain'

$$\text{(4)} \quad \underset{}{\text{*kiaani?alay}} \quad \underset{P}{\text{twalay}} \quad \underset{Det}{\text{inia}} \quad \underset{NP}{\text{tarumak}} \quad \underset{P}{\text{?akila}} \quad \underset{Det}{\text{sa}} \quad \underset{NP}{\text{LigLig}}$$

(4) *kiaani?alay twalay inia tarumak ?akila sa LigLig

kayvay tudaŋ.

The fact that P's and Det's are mutually exclusive
offers alternative solutions. One alternative is to treat
P's as part of NP in alternation with Det's. Although
this might be an interesting suggestion for the Formosan
as well as Philippine languages that do not keep a clear
distinction between prepositions and determiners, it has
been rejected because theoretically it would be hard to
justify such a treatment in terms of language universals.
Another alternative is to have only PP's after V in PSR 1
and PP $\dashrightarrow$ (P)NP for PSR 2. This is not satisfactory
mainly because we would have to treat prepositions as
non-nuclear attributes in prepositional phrases, thus
making case formalisms unworkable (cf. 4.3).

PSR 3.   NP $\dashrightarrow$ (Det(Num)(Adj))N(NP)^n

An NP can be rewritten as pronoun, which can come in
as a sisterless noun (N): [+___]. A determiner, which
may be optionally followed by a numeral (Num) and an
adjective (Adj), may precede an N, which may be optionally
followed by one or two NP attributes; cf. 4.2.5 and
4.6.8. The superscript ^{n} represents 1 or 2 here.

The following are examples for some possible expan-
sions of NP:

(5) N: <u>kunaku</u> 'I'

  (a) <u>kayvay</u> <u>ka</u> <u>daanli</u>. 'This is my-house'
       this   house-my

  (b) <u>kayvay</u> <u>Dusa</u> <u>ka</u> <u>daanli</u>. 'These two are my-houses'
       these two   house-my

The determiner <u>kayvay</u> in (a) and the Num <u>Dusa</u> in (b) are derived as N's in the above sentences; cf. 4.2.6.

(6) Det N: <u>kayvay</u> <u>daan</u> 'this house'

(7) Det Num N: <u>kayvay</u> <u>Dusa</u> <u>daan</u> 'these two houses'

(8) Det Adj N: <u>kayvay</u> <u>maDaw</u> <u>daan</u> 'this big house'

(9) Det Num Adj N: <u>kayvay</u> <u>Dusa</u> <u>maDaw</u> <u>daan</u> 'these two
                                    big houses'

(10) Det N NP: <u>kayvay</u> <u>daan</u> <u>ki</u> <u>umas</u> 'this house of that
                          man   man'

(11) *Adj N: *<u>maDaw</u> <u>daan</u>

(12) *Num N: *<u>Dusa</u> <u>daan</u>

There is no *Adj N or *Num N for an NP; in other words, Det is obligatory when Num and/or Adj are present in an NP. That is why in PSR 3 they are represented as: (Det(Num)(Adj))N.

PSR 3 will generate N NP without a preceding Det, but it is not clear if the utterance (13) below is possible or not:

(13) N NP: <u>daan</u> <u>ki</u> <u>umas</u>

4.2.1.   Personal Pronouns

4.2.1.1.   Independent Pronouns (Long Forms)

All independent personal pronouns that can serve as subject ([+NM]) of the sentence are lexically marked as such, and take the prefix ku- (cf. ku- also serves as the nominative marker in the demonstratives, which are used as determiners or derived pronouns; see 4.2.2). The independent pronouns that serve as the object ([+AC]) of the sentence are lexically marked as such, and take the suffix -a. The subject pronouns and object pronouns have the partially similar shapes. The two clearly distinct classes of pronouns must be marked in the lexicon. Both classes are called "independent pronouns" (or "long forms") because they can act as NP's by themselves. They are not like the short forms that are attached to the verb as verbal affixes or to the noun as nominal suffixes; see 4.2.1.3 for a comparison.

The third person pronouns are all demonstratives, sub-divided into "definite" and "indefinite" (or "non-remote" and "remote"; cf.4.2.2).

In the list of the personal pronouns, each pronoun will be marked with the morphemic boundary, whereas in the sentence examples the morphemic boundary will be left out.

(1)   Subject   Object
                             [+NM]   [+AC]

1st sg.   ku-n-aku   n-aku-a

2nd sg.   ku-su   mu-su-a

3rd sg. {definite   (ku-a-ni)   (i-ni-a)

        {indefinite (ku-a-Da)   (i-Da-a)

1st pl. {inclusive   ku-ta   mi-ta-a

        {exclusive   ku-nai   nai-a

2nd pl.   ku-numi   numi-a

3rd pl. {definite   (ku-l-i-ni)   (l-i-ni-a)

        {indefinite (ku-l-i-Da)   (l-i-Da-a)

Examples of independent pronouns in sentences are:

(2)   <u>kusu</u> <u>ka</u> <u>agili</u>.   'It is you who is my-younger
      you   (brother)'

(3)   <u>waciil</u> <u>musua</u> <u>kuani</u> <u>Lulay</u>.   'That child saw you'
      saw   you   that   child

There is a form <u>i-li</u> 'to me' used only for the
indirect object (the so-called "dative" in traditional
grammar) in an imperative sentence:

(4)   <u>ʔaciila</u> <u>ili</u> <u>inia</u> <u>kwaŋsu</u>.   'Show me your-gun!'
      show   me   that   gun-your

These remarks can be made about the form <u>i-li</u>:
(a) It does not take the accusative marker -<u>a</u>, (b) There
is no other comparable form of the other personal
pronouns, and (c) It is used only as an indirect object
after an imperative verb, as mentioned above.

The nominative independent personal pronouns are
"emphatic" and occur at the beginning of the sentence.

In other words, Rukai sentences never contain independent non-emphatic personal pronoun subjects; cf. 4.2.7.1:

(5) <u>kuta</u> <u>ka</u> <u>suaLidukuua</u>   <u>iakai</u> <u>kayvay</u> <u>caan</u>. (13-35)[2]
      we   plains-people   have   this   paddy

     'As for us plains-people, we have rice paddy'

(6) <u>la</u> <u>kunaku</u> <u>yaya</u> <u>inia</u>. (9-90)
     then   I   so   that

     'Then I keep-saying that'

(7) <u>kusu</u>, <u>naagili</u>, <u>aymauvagaynata</u>. (3-74)
     you   younger-my will-be-separated-soon-we

     'You, my-younger (sister), we-will-be-separated-
     soon'

An accusative personal pronoun serves as the direct or indirect object of the sentence:

(8) <u>aykіla</u> <u>ʔaθuθu</u> <u>musua</u>. (3-9)
     will-come nurse   you

     '(She) will-come to-nurse you'

(9) <u>kuaDa</u> <u>tamaɲial</u> <u>ka</u> <u>umas</u> <u>kialaLaana</u> <u>nakua</u>. (2-17)
     those ten-people   man   heard-still me

     'Those ten-people still-heard me'

4.2.1.2. Dependent Pronouns (Short Forms)

In contrast to the two sets of independent pronouns that occur as free forms, there are two sets of pronouns that are short in form and are always attached to the verb and noun stems. The set that is attached to the verb stem are the subject markers (SM's) of the verb, while the set that is attached to the noun stem indicates the personal possessives (PPo's) of the noun. The majority of the SM's and PPo's are identical. Like the independent pronouns, there are no personal SM's for the third person singular and plural, but there are possessive forms related to the demonstratives (see 4.2.2.1):

(11)

		Subject Markers	Personal Possessives
1st sg.		-(a)ku -n-aku naw-	-li
2nd sg.		-su	-su
3rd sg.	definite	Ø	-i-ni
	indefinite	Ø	-i-Da
1st pl.	inclusive	-ta	-ta
	exclusive	-nai	-nai
2nd pl.		-numi	-numi
3rd pl.	definite	Ø	-l-i-ni
	indefinite	Ø	-l-i-Da

There are three forms for the first person singular. The _a_ in -_aku_ is parenthesized because it is optional.

Based on the personal possessives, all nouns may be classified into two main classes: kinship and non-kinship terms. This is evidenced by the following utterances, which indicate that there are alternative expressions for possession of all nouns except for kinship terms:

(12) tama-li   = *ya-li ka tama 'my father'

      tina-li   = *ya-li ka tina 'my mother'

(13) daan-li   = ya-li ka daan 'my house'

      taw'un-li   = ya-li ka taw'un 'my dog'

      maca-li   = ya-li ka maca 'my eyes'[3]

      taLagi-li   = ya-li ka taLagi 'my friend'[4]

There are several justifications for treating the short personal pronouns, i.e. SM's and PPo's, that immediately follow the verb or noun as suffixes:

(14)(a) Stress normally falls on the last syllable of a
        noun or verb, e.g. [lalák] 'son/daughter',
        [davác] 'leave', but shifts to fall on the
        personal markers that immediately follow the
        noun or verb, e.g. [lalakwiní] 'his son/daughter'
        [davacakú] 'I leave'.

   (b) The personal markers never occur in isolation;
        most follow and are dependent on the noun
        or verb. Furthermore, nothing can intervene
        between the personal markers and the noun or
        verb, except the completive marker -ŋa, which is
        also a suffix; see (d) below.

(c)   The personal markers are short in form (only
      one or two syllables) as compared with the long
      free forms, cf. -ta with ku-ta 'we (inc.)',
      -numi with ku-numi 'you (pl.)'.

(d)   The alveolar nasal n is lost in a good number
      of stem forms in the word-final position, but
      kept when immediately followed by the personal
      markers, e.g. [kawriva] 'speak', [kawrivan-li]
      'my speech', [rɨtɨsa] 'relative', [rɨtɨsan-li]
      'my relative'; see 3.4.   That indicates that
      the personal markers are suffixes which protect
      the final nasal consonant.
      Likewise, the completive marker -ŋa should also
      be treated as a suffix, e.g. [kaθa] 'finish',
      [kaθan-ŋa] 'have finished already'.[5]

(e)   The subject markers get fused with the negative
      kay in some environment, e.g. ka/ta/y 'we do
      not', ka/su/y 'you do not'; cf. 4.7.2.

(f)   When a verb is followed by a subject marker that
      begins with the low vowel, namely -aku, the verb
      stem ends phonetically in the fricatives [ð] and
      [v] rather than the semiconsonants [y] and [w]
      as they would be before the open juncture. This
      can be accounted for only if it is assumed that

there is a close juncture between the stem and personal markers; cf. 3.1.

(g) There is phonetically no detectable boundary between the verb stem and the vowel-initial subject marker -aku, e.g.[iluk] 'bring' > [iluk-aku] 'I bring'. Also the normally optional final weak vowels, i.e. echo vowels, phonetically are always fully voiced and clearly enunciated when followed by the consonant-initial personal markers, e.g. [cail(i)] 'year' > [caili-li] 'my age', [butul(u)] 'pork' > [butulu-ta] 'our pork', as they are between consonants within a word; cf. 3.5.

As mentioned above, there are three variant forms for the first person singular. The selection of a particular form is determined by the syntactic features of the verb; the form naw- 'desiderative' occurs only before the verb stem, -n-aku only after the completive -ŋa and negative kay, and -(a)ku elsewhere:

(15) naw-kiburasi 'I-want-to-dig-sweet-potatoes'

(16) wauŋulŋa-n-aku[6] 'I-have-drunk-(wine) already'

(17) kay-n-aku θiŋal sa iakai ku maruDawDaŋli.
not-I know when lived parents-my

'I did-not know when my-parents lived'

(18) aydavac-aku. 'I-shall-leave'

4.2.1.3. Summary of Personal Pronouns

These general remarks can be made about the personal
pronouns:

(a) The independent nominative personal pronouns are
used only as preposed emphatic nouns, i.e. they occur as
topics. They are different from the subject markers of
the verb.

(b) The accusative personal pronouns which immediately
follow the verb are considered independent rather than
verbal suffixes because phonetically there is no close
juncture between the verb and these pronouns. For
example, n is not preserved in the verb kiatuman in the
following sentence:

(19) kaDua   ka kiatuma naia. (2-31)
      not-have   was-done us

'Nothing happened to us'

(c) The verbal suffixes correspond to nominatives,
agreeing with the implied subject of the sentence, while
the nominal suffixes are possessives, and can be affixed
to either nominative or non-nominative nouns (see
4.2.7.2.1).

The following table is a comparison of the independent and dependent personal pronouns listed side by side:

(20)

		Independent		Dependent	
		Subject	Object	Subject Marker	Personal Possessive
1st sg.		ku-n-aku	n-aku-a	$\begin{cases} \text{-(a)ku} \\ \text{-n-aku} \\ \text{naw-} \end{cases}$	-li
2nd sg.		ku-su	mu-su-a	-su	-su
3rd sg.	definite	(ku-a-ni)	(i-ni-a)	∅	-i-ni
	indef.	(ku-a-Da)	(i-Da-a)	∅	-i-Da
1st pl.	inc.	ku-ta	mi-ta-a	-ta	-ta
	exc.	ku-nai	nai-a	-nai	-nai
2nd pl.		ku-numi	numi-a	-numi	-numi
3rd pl.	definite	(ku-l-i-ni)	(l-i-ni-a)	∅	-l-i-ni
	indef.	(ku-l-i-Da)	(l-i-Da-a)	∅	-l-i-Da

4.2.2. Determiners

The following subcategorization rules are necessary for Rukai determiners:

(1) [+Det] --→ [±dem]

The feature [±dem] distinguishes demonstratives [+dem] from articles [-dem].

(2) {[+Det]}
    {[+N] } --→ [±NM]

All determiners are subclassified by the feature [±NM], and so are all nouns (cf. 4.3.2.2).

(3) [+dem] --→ [±rem]

Demonstratives can be either remote [+rem] or non-remote [-rem].

(4) [+rem] --→ [±def]

Remote demonstratives are either definite [+def] or indefinite [-def]. However, this distinction does not correspond to any difference in form.

(5) [-rem] --→ [±prox]

Non-remote demonstratives are either proximate [+prox] or non-proximate [-prox].

There are some redundant features statable by the following rules:

(6) [-rem] --→ [+def]

(7) [+rem] --→ [-prox]

(8) [+prox] --→ [-rem]

All non-remote demonstratives are definite, as

stated in (6). (7) and (8) are self-evident.

The following subcategorization rules apply only to articles:

(9) [-dem] --→ [±pers]

Articles can be personal [+pers] or non-personal [-pers].

(10) [-pers] --→ [±spec]

Non-personal articles can be either specific [+spec] or non-specific [-spec].

(11) $\begin{bmatrix} -\text{dem} \\ \alpha\text{pers} \end{bmatrix}$ --→ [αdef]

Personal articles are definite, whereas non-personal articles are indefinite. That is to say, the two features [±pers] and [±def] coincide.

The feature [±def] is, therefore, not distinctive for determiners.

All the determiners can be distinguished by feature specification. The redundant (non-distinctive) features are put in parentheses:

	kay(vay)	kikay	kuani	inia / ina / na	kuaDa	iDaa	ku	ki	ka	ka	sa
dem	+	+	+	+	+	+	−	−	−	−	−
NM	+	−	+	−	+	−	+	−	+	−	−
rem	−	−	−	−	+	+					
prox	+	+	−	−	(−)	(−)					
pers							+	+	−	−	−
spec										−	+
def	(+)	(+)	(+)	(+)	(±)	(±)	(+)	(+)	(−)	(−)	(−)

Fig. 1. Features of Determiners

Note that there are two different ka's. One is accusative and differs from sa only in the feature [±spec]; ka and sa share the features [−dem, −NM, −pers]. Another is nominative and differs from ku distinctively only in the feature [±pers].
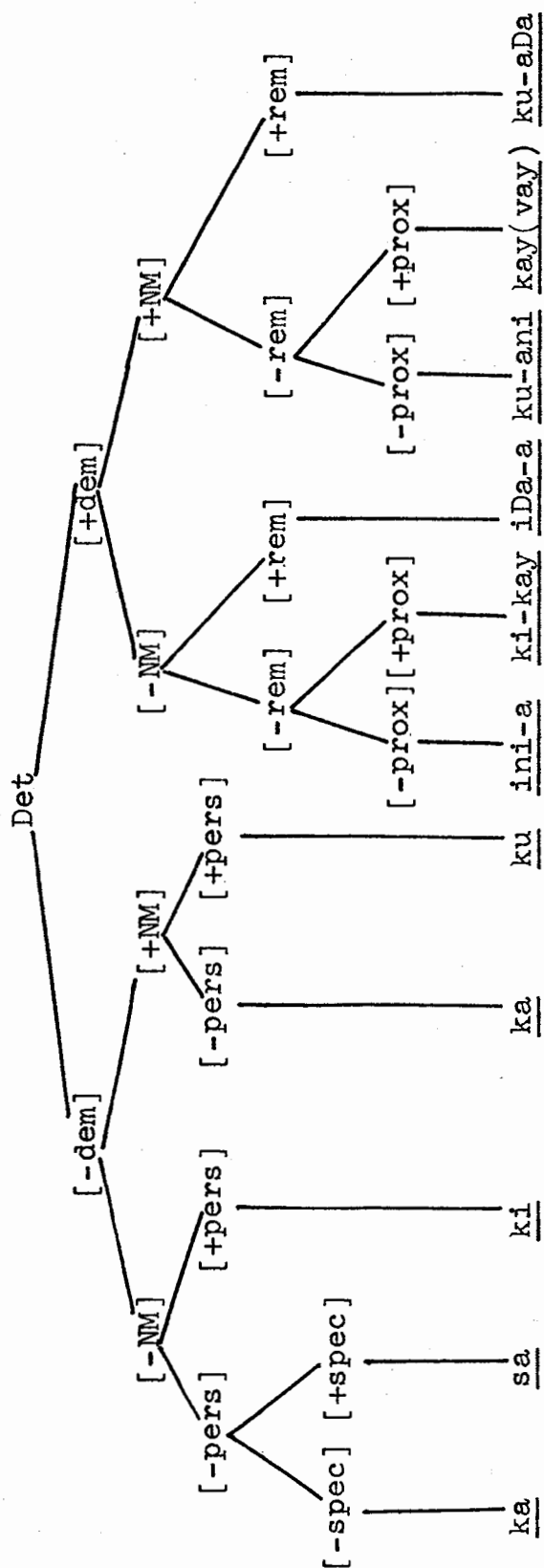
Fig. 2. Feature Classification of Determiners

4.2.2.1. Demonstratives

The important difference between subject and object can be illustrated with the examples below:

(1) iakai biliŋ kuani aŋatu.
    exist high that tree
          [+NM]

'That tree is high up there'

(2) iakai biliŋ inia aŋatu.
    exist high that tree
          [-NM]

'(It) is high up on that tree'

In (2) inia aŋatu is simply an attribute of the noun biliŋ. The subject 'it (something or somebody)' is understood, but absent in the sentence. The third person subject is not overtly marked in the verb; it is usually marked by the absence of a subject marker, i.e. the ∅ marker.

The difference between the distant nominative demonstrative kuani and remote nominative demonstrative kuaDa can be illustrated with the following examples:

(3) ania kuani umas?
    who that man

'Who (distant, but visible) is that man?'

(4) ania kuaDa (wa)damik ki lalaksu?
    who that   beat   child-your

'Who (remote and not visible) beat your-child?'

Sentences (5)--(8) have demonstrative pronouns in the subject position, and (9)--(11) in the object position:

(5) kayvay ka tai. 'This is a taro'
     this   taro

(6) kuani ka guuŋ. 'That (distant) is a cow'
     that   cow

(7) kaway ka LigLig. 'That (remote) is a mountain'
     that   mountain

(8) davacŋa   kuaDa. 'He (remote) has-left'
     has-left   that

(9) kuania ikay. 'Eat this!'
     Eat!   this

(10) ?ucilaya inia. 'Water that (distant)!'
     Water!   that

(11) waciilaku iDaa. 'I-looked-at that (remote)'
     looked-I that

The two items kaway 'that, over there' in (7) and
ikay 'this, here' in (9) are not listed in Figure 1 like
the other demonstratives. They are lexically demonstra-
tive pronouns because they cannot be used to modify the
following noun, e.g. *ikay tai '*this taro', *kaway LigLig
'*that mountain'. The item kayvay 'this' has an abbrevi-
ated form kay. Both full and short forms can be used
both as a demonstrative and pronoun. Both items have to
be listed in the lexicon with the same features.

All the demonstrative determiners can be used as
demonstrative pronouns, e.g. (5)--(8). For items with
this usage, the latter are derived from the former, and
their relationship is indicated by a derivation rule (DR):

(12) $\begin{bmatrix} +\text{dem} \\ \alpha\text{Fi} \end{bmatrix} >\text{---}\rightarrow \begin{bmatrix} +\text{N} \\ +\text{pron} \\ +\text{derv} \\ \alpha\text{Fi} \end{bmatrix}$

An arrow with flectching (>--→) indicates a DR. The feature [+derv] indicates that it is derived, and [αFi] indicates that the unspecified features are all carried over. See 5.0 for a more detailed illustration of this type of rule.

One main difference between demonstratives and articles is that while the former can always be derived as pronouns, the latter can never be so derived. This seems to be a universal rule; for the corresponding phenomenon in English, cf. Starosta (1971a:180).

4.2.2.2. Articles

Like the demonstratives, articles are also cross-classified into nominative [+NM] and accusative [-NM]. In addition, the feature [+pers] is necessary to distinguish all the articles since ku and ki are used only before personal nouns, i.e. proper nouns and the terms for 'father' and 'mother', common human nouns, and certain domesticated animals such as dogs and sheep:

(1) ku maLiŋa ʔatuababaas   sa guuŋ ki duLay.
    [+NM]   caused-cook-soup cow [-NM]

    'MaLiŋa made DuLay cook beef soup'

(2) "lamataka, anDakala, si la ua ʔurikani ki buʔaʔta,"
    brothers   Get-up! and   go feed   [-NM]sheep-our

    la ya ku   tinalini. (1-4)
    then so[+NM] mother-their

    'The mother said, "(You) brothers, get-up and go
    to tend our-sheep"'

(3) ciniilanŋa   kay huuŋ ki   maruDaŋ.
    has-been-seen   this book [-NM] old-man

'This book has-been-seen by the old-man'

The homophonous form laciŋ referring to 'vegetable'

or 'a personal name' is distinguished by the preceding

articles in the following two sentences:

(4) kuani ababay tuabaas   sa   laciŋ.
    that   woman cooked-soup [-pers] vegetable

'It is that woman who cooked vegetable soup'

(5) kuani ababay tuabaas   ki   laciŋ.
                                  [+pers] (person)

'It is that woman who cooked-soup with Laciŋ (the
person)' (She cooked the person.)

The article sa is always used as an accusative

marker:

(6) wauŋul sa   acilay kay maruDaŋ.
    drank [-NM] water this old-man

'This old-man drank water'

However, there may be a problem in determining

whether the article ka serves as a nominative or accusa-

tive marker. For example, cf. (7) and (8):

(7) maDaw ka Likulaw.
    big   leopard

'(A) leopard is big'

(8) maDaw kuani Likulaw.
           that
           [+NM]

'That leopard is big'

(9) iakai ka daan.
    exist   house

'There-is a house'

(10) <u>iakai</u> <u>ka</u> <u>daanini</u>   <u>kuani</u> <u>umas</u>.
     exist   house-his that man

'That man has a house'

It can be claimed that <u>ka</u> in (7) is nominative because it can be substituted by the nominatives such as <u>kuani</u> (cf. (8)), <u>kay</u>, <u>kuaDa</u>, but not by the accusatives such as <u>sa</u>, <u>ki</u>, <u>inia</u> and <u>iDaa</u>. However, the same claim cannot be made with regard to the <u>ka</u> in an existential sentence, as in (9) above. Neither equational sentences nor simple sentences with verbal constructions permit two nominatives in the sentence. An existential sentence always takes <u>ka</u> if there is only one nominal constituent and permits another nominal constituent with a nominative marker, as in (10). That clearly indicates that the <u>ka</u> in the existential sentences is an accusative rather than nominative. Another piece of evidence for saying that <u>ka</u> can function as an accusative marker is that, of all the determiners, only the accusatives <u>ki</u>, <u>inia</u>, <u>sa,ka</u> and <u>iDaa</u> occur as attributes:

(11) <u>kadaanan</u>   <u>ki</u> <u>maLiṇa</u> <u>kay</u>.
     original-house of   this

'This is MaLiṇa's original-house'

(12) <u>kay</u> <u>aga</u> <u>ʔakaʔakaniḷi</u> <u>inia</u> <u>tawʔuŋ</u>.
     this rice feeding-my   of   dog

'This rice is what I feed that dog with'

(13) <u>wabaayaku</u> <u>musua</u> <u>sa</u> <u>LiθiLiθiŋ</u>   <u>sa</u> <u>inamay</u>.
     gave-I   you   broken-thing of needle

'I-gave you a broken needle'

(14) <u>ku</u> <u>lacin</u> <u>wabaay</u> <u>nakua</u> <u>sa</u> <u>Lima</u> <u>ka</u> <u>?aysu</u>.
              gave   me   five of money

'Lacin gave me five dollars'

(15) <u>wa?icaku</u> <u>ki?aiLi</u>   <u>taikaian</u> <u>iDaa</u> <u>taw?un</u>. (9-27)
      slept-I be-joined place   of   dog

'I-slept next to the place of that dog'

Both articles <u>ka</u> and <u>sa</u> are non-personal and indefi-
nite, and occur as accusatives. What, then, distinguishes
them? The article <u>ka</u> indicates generic, not specific,
e.g. (7), occurs in the existential sentences, e.g. (9)
and (10), and marks a predicate , i.e. the caseless
nominal in an equational sentence (see 4.6.7 and 4.6.8),
e.g.

(16) <u>kuani</u> <u>kaan</u> <u>ka</u> <u>kinanianli</u>.
      that   fish   eating-my

'That fish was what-was-eaten-by-me'
whereas the article <u>sa</u> refers to a specific thing, e.g.
(13) and (14), or person, e.g.

(17) <u>waciilaku</u> <u>sa</u> <u>umas</u> <u>kucail</u>.
     saw-I   man last-year

'I-saw a man last-year'

4.2.2.3. Summary of Personal Pronouns and Determiners

As a summary, all articles, demonstratives (deter-
miners and pronouns), and independent personal pronouns
can be divided into two sets with different syntactic
functions: nominative and accusative. A nominative
denotes itself or its following nominal as the subject of
the sentence, whereas an accusative denotes itself or its
following nominal as the object of the sentence. With a
few exceptions, the typical marker of the subject is ku-[7]
and that of the object is -a for determiners and pronouns.

First I shall list only determiners, then I shall
list demonstrative and personal pronouns:

(1) Determiners:

   (a) Nominatives: ku, ka, kay(vay), ku-a-ni, ku-a-Da

   (b) Accusatives: ki, ka, sa, ki-kay, i-ni-a, i-Da-a

(2) Pronouns (demonstrative and personal):

   (a) Nominatives:

     (i) Demonstratives: kay(vay), ku-a-ni, ku-a-Da,
                         kaway

     (ii) Personal: ku-naku, ku-ta, ku-nai, ku-su,

                  ku-numi, ku-l-i-ni, ku-l-i-Da

   (b) Accusatives:

     (i) Demonstratives: ki-kay, i-kay, i-ni-a, i-Da-a

     (ii) Personal: naku-a, mi-ta-a, nai-a, numi-a,

                 l-i-ni-a, l-i-Da-a, mu-su-a

4.2.3. Numerals

For examples of numerals occurring in an NP as modifiers of N, see 4.2 (4).

Oftentimes numerals are used as nouns with the following NP serving as their attributes. For example, ka ʔaysu is an attribute of Lima in the following sentence:

(1) <u>kuani</u> <u>maruDaŋ</u> <u>wabaay</u> <u>inia</u> <u>Lulay</u> <u>sa</u> <u>Lima</u> <u>ka</u> <u>ʔaysu</u>.
    that old-man   gave   that child   five   money

'That old-man gave that child five dollars'

Numerals derived as nouns can be accounted for by a DR:

(2) $\begin{bmatrix} +\text{Num} \\ \alpha\text{Fi} \end{bmatrix}$ >--→ $\begin{bmatrix} +\text{N} \\ +\text{derv} \\ \alpha\text{Fi} \end{bmatrix}$

4.2.4. Adjectives

Adjectives and stative verbs (cf. 4.6.9) are identical in form.

Some justifications for setting up the feature [±stat] will be given in 4.6.9. When statives are treated as a type of verb, the phrase structure rules can be much simpler than if the category label "Adj" had to be used.

In this analysis, adjectives can be derived from stative verbs by a DR:

(1) $\begin{bmatrix} +\text{stat} \\ \alpha\text{Fi} \end{bmatrix}$ >--→ $\begin{bmatrix} +\text{Adj} \\ +\text{derv} \\ \alpha\text{Fi} \end{bmatrix}$

As stated in the NP rule (PSR 3), an Adj can immediately precede an N as long as it is preceded by a Det:

(2) kayvay ka maDaw daan.
     ‾‾‾‾‾‾   ‾‾‾‾‾ ‾‾‾‾‾
     this   big   house

     'This is a big house'

For further examples for Adj's occurring in an NP

as a modifier, see 4.2 (4).

Like demonstratives and numerals, adjectives can

serve as nouns. For example, the form maruDaŋ 'old (man)'

serves as a stative verb in (3), as an adjective in (4),

but as a noun in (5):

(3) maruDaŋ kuani umas.
     ‾‾‾‾‾‾‾ ‾‾‾‾‾ ‾‾‾‾
     old   that man

     'That man is old'

(4) kuani maruDaŋ umas ka tamali.
     ‾‾‾‾‾ ‾‾‾‾‾‾‾ ‾‾‾‾   ‾‾‾‾‾‾‾
     that old   man   father-my

     'It is that old man who is my-father'

(5) kuani Lulay kiasaaLu inia maruDaŋ sa Lima ka ʔaysu.
     ‾‾‾‾‾ ‾‾‾‾‾ ‾‾‾‾‾‾‾‾ ‾‾‾‾ ‾‾‾‾‾‾‾   ‾‾‾‾   ‾‾‾‾‾
     that child borrowed that old-man   five   money

     'It is that child who borrowed five dollars from
      that old-man'

Since a derived noun such as maruDaŋ in (5) is different

from the other nouns that are derived from the stative

verb base forms without the prefix ma-, this can be

accounted for if it is assumed that these nouns are

derived from adjectives rather than stative verbs, and

that ma- becomes part of the adjective stem when an

adjective is derived from a stative verb:

(6) $\begin{bmatrix} +\text{Adj} \\ +\text{derv} \\ \alpha\text{Fi} \end{bmatrix}$ >--→ $\begin{bmatrix} +\text{N} \\ +\text{derv} \\ \alpha\text{Fi} \end{bmatrix}$

4.2.5. Attributes

In this analysis, an attribute of a noun is not an independent category; it is simply an NP that serves as an attribute to the preceding noun head. The markers of an attributive NP must be accusatives, for example, see 4.2.2.2 (11)--(15). The restriction of the attributive markers can be indicated by the rule:

(1) [+N] --→ [-___[+NM]]

The restriction of the environment in the rule above is stated in terms of the head of the sister category. The grammar makes a claim that <u>kikay</u> also occurs as an attribute, but I have no such examples in my data and have not checked with my informant.

Another restriction about attributes is that they cannot be pronouns; they must be non-pronouns:

(2) [+N] --→ [-___[+pron]]

Moreover, personal pronouns do not allow attributes of any kind, and that will be handled by the rules in 4.2.7.1.

As indicated in the NP rule, a head noun may have two attributes; see 4.6.8 for examples.

4.2.6. Derived Nouns

All modifiers of nouns except articles, namely demonstratives, numerals, and adjectives, can serve as nouns. For examples of demonstratives as nouns, see 4.2.2.1 (5)--

(8); numerals as nouns, see 4.2.3; adjectives as nouns, see 4.2.4 (5). All items with this double usage can be handled by noun derivation rules (NDR's, see 5.2.1). The rules for numerals and adjectives can be collapsed. Demonstratives derived as nouns are pronouns, whereas derived numerals and adjectives are not.

Except for the demonstrative pronouns, derived nouns behave like the ordinary non-derived nouns in many ways. For one thing, they may follow a determiner and precede an attribute:

(1) <u>wabaayaku</u> <u>inia</u> <u>Lulay</u> <u>sa</u>   <u>Lima</u> <u>ka</u> <u>?aysu.</u>
    gave-I   that child   five   money
                        [+Det] [+N]

'I-gave that child five dollars'

For another, derived nouns may take the plural marker <u>la-</u> in addition to the fact that they are preceded by the determiners:

(2) <u>kuaDa</u> <u>abiLil</u> <u>naia</u> <u>ka</u> <u>amani</u> <u>kuaDa</u> <u>la-wa-?acay.</u> (2-34)
    those follow us   be   those   pl-past-die

'Those who followed us were those dead-people'

The nominalized locative verb takes the prefix <u>ta-</u>, and occurs after a determiner and before an attribute:

(3) <u>la</u>   <u>davac</u> <u>mua</u> <u>iDaa</u> <u>ta-ikai-an</u>   <u>ki</u> <u>mwakakay</u>
    then walk   go   that place-stay-nom   of (person)

    <u>makanaiLi.</u> (4-136) (See 5.2.2)
    all-people

'Then all-people went to the place of Mwakakay'

The prefix <u>ta-</u> marks derived location/time nouns, and the suffix <u>-an</u> is the nominalization marker; see 5.2.2.

4.2.7. Nouns

Anything that is dominated by N in a tree is a noun. See 4.5 for the criteria that are used to distinguish lexical nouns and verbs.

4.2.7.1. Features of Nouns and Cooccurrence Restrictions

Before getting into case features (see 4.3), I shall take up some properties of nouns that have syntactic or morphological consequences. See the following section (4.2.7.2) for examples in sentences.

(1) [+N] $\longrightarrow$ [$\pm$pron, $\pm$emph; $\pm$pl]

(The features before the semi-colon have syntactic consequences, whereas those after it do not.)

A noun can be either a pronoun or not a pronoun, distinguished by the feature [$\pm$pron]. As mentioned in 4.2.1, a pronoun is lexically marked as either in the nominative or accusative case form. Although the other nouns are not so marked, the same distinction of the case forms can be assumed to be an inherent feature of all nouns. A pronoun is not preceded by a determiner, whereas a non-pronoun is usually preceded by a determiner that indicates nominative or accusative.

A noun may be under emphasis (or more appropriately topicalized) in the sentence. If so, it occurs at the beginning of the sentence and immediately precedes the predicate, which may be a verb, or nominalized constructions

introduced by the particle ka. (See 4.2.7.2.4.)

A noun can be either singular [-pl] or plural [+pl]
indicated regularly by the prefix la-. The plural can
cooccur with the feature "collective", marked by redupli-
cation.

(2) [-pron] --→ [±pers, ±dual]

(3) [+pers] --→ [±human]

(4) $\begin{bmatrix} -\text{dual} \\ +\text{human} \end{bmatrix}$ --→ [±prop]

A non-pronoun can be either personal [+pers] or non-
personal [-pers] (cf. the determiners in 4.2.2), dual
[+dual], indicated by the prefix ma-, or non-dual [-dual].
A personal noun can be either human [+human] or non-human
[-human]. A human noun can be either proper [+prop] or
non-proper [-prop].

It is possible to have a combination of both [+pl]
and [+dual] by adding the prefixes la-ma- to the non-proper
human noun stem, meaning 'two people'.

(5) [-pron] --→ [±poss, ±nom]

A non-pronoun may be possessed [+poss] or not possessed
[-poss],a nominalized [+nom] gerundive verb, marked by the
suffix -an, or not nominalized [-nom]. A gerundive
behaves rather differently from the ordinary noun, usually
occurs in an equational sentence, indicates clearly the
time of the event such as past or future, and functions as
the predicate (a case-less NP) of the sentence; see 4.6.8.

(6) $\begin{bmatrix} +N \\ +pron \end{bmatrix}$ $\longrightarrow$ $[- \begin{Bmatrix} [+Det] \\ [+Num] \\ [+Adj] \end{Bmatrix} \underline{\quad}]$

No determiner, numeral, or adjective is permitted to precede a pronoun.

(7) $\begin{bmatrix} +N \\ -pron \end{bmatrix}$ $\longrightarrow$ [-spkr, -addr]

All non-pronouns are the third person [-spkr, -addr] except a vocative noun, which is the second person [+addr], indicated by the prefix <u>na</u>- in Rukai. Compare Starosta's (1971a:175) treatment of English nouns.

(8) [+pron] $\longrightarrow$ [±spkr, ±addr]

Pronouns can be the first person [+spkr, -addr], the second person [-spkr, +addr], the first and second persons, i.e. inclusive [+spkr, +addr], or the third person [-spkr, -addr].

(9) $\begin{Bmatrix} [+spkr, -addr] \\ [-spkr, +addr] \\ [-spkr, -addr] \end{Bmatrix}$ $\longrightarrow$ [±pl]

All the three persons can be plural [+pl] or singular [-pl].

(10) [+spkr, +addr] $\longrightarrow$ [+pl]

The inclusive 'we' is always plural. The separate rules (9) and (10) are needed to exclude the impossible combination 'singular inclusive'.

(11) [-spkr, -addr] $\longrightarrow$ [±def]

The third person, non-pronoun as well as pronoun, distinguishes between definite [+def] and indefinite [-def]

(see 4.2.1).

(12) $[+\text{prop}] \longrightarrow [-\left[\begin{array}{c}\{[+\text{dem}]\ \}\\ \{\left[\begin{array}{c}+\text{Det}\\ -\text{pers}\end{array}\right]\}\end{array}\right]\underline{}]$

Proper nouns can only be preceded by the personal determiners <u>ku</u> and <u>ki</u>.

(13) $\left[\begin{array}{c}+\text{N}\\ +\text{pers}\end{array}\right] \longrightarrow [-\left\{\begin{array}{c}[+\text{Adj}]\\ [+\text{Num}]\end{array}\right\}\underline{}]$

The personal determiners can only immediately precede personal nouns; they may not occur before an adjective or numeral. In other words, personal nouns cannot take an adjective or numeral. This rule, like the one above, is stated in terms of the head noun rather than the determiners, as they are sister categories in an NP.

(14) $\left[\begin{array}{c}+\text{N}\\ +\text{poss}\end{array}\right] \longrightarrow \left[\begin{array}{c}+\ \underline{}[+\text{AC}]\\ -\ \underline{}[-\text{DAT}]\end{array}\right]$

A possessed noun may be indicated by a following attribute realized as an accusative NP: [+___[+AC]]. The possessor is interpreted as a DATIVE actant; cf. 4.3.3.6. A possessed noun can also be indicated by a possessive suffix: [-___[+AC]]. These two types of possession may not simultaneously cooccur with the same N; that is to say, if a noun takes a possessive suffix, it can no longer take an attribute, and vice versa. These co-occurrence restrictions and the agreement in person, number, and definiteness can be stated by Rules (15)--(17):

(15) $\begin{bmatrix} +N \\ +\underline{\quad}[+AC] \end{bmatrix}$ --→ $\begin{bmatrix} -\underline{\quad}[+spkr] \\ -\underline{\quad}[+addr] \end{bmatrix}$

(16) $\begin{bmatrix} +N \\ +poss \\ -\underline{\quad}[+AC] \end{bmatrix}$ --→ $\begin{bmatrix} -\underline{\quad}[-DAT] \\ -\underline{\quad}[+spkr] \\ -\underline{\quad}[+addr] \\ -\underline{\quad}[+pl] \end{bmatrix}$

(17) $\begin{bmatrix} +N \\ -\underline{\quad}[+spkr] \\ -\underline{\quad}[+addr] \end{bmatrix}$ --→ $[-\underline{\quad}[\pm def]]$

The 4 rules, (14)--(17), give us ten different
matrices, including, for example, the following one:

(18) $\begin{bmatrix} +N \\ +poss \\ -\underline{\quad}[+AC] \\ -\underline{\quad}[-DAT] \\ -\underline{\quad}[+spkr] \\ -\underline{\quad}[+addr] \\ -\underline{\quad}[+pl] \\ -\underline{\quad}[+def] \end{bmatrix}$

The matrix in (18) can be read to mean that this is
a possessed noun. It does not appear with an overt attri-
bute. It does not permit a non-DATIVE attribute, which
is a way of stating that it implies a DATIVE attribute;
cf. Starosta's (1971c) treatment of subject agreement.
Similarly, the implied attribute must be the third person
singular indefinite. The last four features will be used
to assign the proper possessive suffix:

(19) $]_N$ --→ $iDa]_N$ / $\begin{bmatrix} -\underline{\quad}[+AC] \\ -\underline{\quad}[+spkr] \\ -\underline{\quad}[+addr] \\ -\underline{\quad}[+pl] \\ -\underline{\quad}[+def] \end{bmatrix}$

For a complete list of the morphophonemic rules for

the possessive suffixes;   see 6.2.2.3.

(20) $\begin{bmatrix} +N \\ \alpha NM \end{bmatrix}$ $\dashrightarrow$ $[-[-\alpha NM]\_\_\_]$

Nouns and determiners must agree in the feature

[$\pm$NM], as stated in (20).

(21) $\begin{bmatrix} +N \\ -pers \end{bmatrix}$ $\dashrightarrow$ $[-[+pers]\_\_\_]$

The personal determiners <u>ku</u> and <u>ki</u> can only occur

before personal nouns, but personal nouns do not have to

follow personal determiners. Personal nouns, particularly

common human nouns, can be preceded by any of the deter-

miners. Rule (21) allows personal nouns to take either

type of determiner.

4.2.7.2   Illustration of Some Features in Sentences

Some important features of nouns will be treated more thoroughly later in some separate sections, e.g. case features in 4.3 and "nominalization" in 4.6.8.

Personal pronouns were discussed in some detail in 4.2.1, and demonstrative pronouns in 4.2.2, all illustrated with examples in sentences.

4.2.7.2.1   Possessive

A possessive noun occurring as a [+LOC] must be definite. Ungrammatical sentences will result if the noun is not marked as definite, such as by a demonstrative:

(1)   ku-ani ababay swa-swaswa? ina daan-li.
    that   woman is-sweeping that house-my

'That woman is-sweeping that house-of-mine'

(2) *ku-ani ababay swa-swaswa? daan-li.

As mentioned before, a noun with a personal possessive suffix, like a verb with a subject marker (cf. 4.4.2.3), has important syntactic consequences. When such a suffix occurs on a noun, there must be no overt possessive noun, and agreement in person, number, and definiteness with the potential possessor is implied. If a subject marker occurs on a verb, there must be agreement in person and number with the potential subject:

(3) k/in/anian-li ku-ani aga.
    eating-my   that rice

'That rice was what-was-eaten-by-me'

(4) *k/in/anɨan-li ki umas ku-ani aga.

    '*That rice was what-was-eaten-by-me by the man'

(5) wakanɨ-aku ini-a aga.
      ate-I   that   rice

    'I-ate that rice'

(6) *wakanɨ-aku ku-ani umas ini-a aga.

    '*That man I-ate that rice'

(4) and (6) are ungrammatical because of lack of agreement.
It is clear that the nominal and verbal personal suffixes
have parallel relations. A noun with a possessive suffix
cannot be followed by an attribute (cf. 4.2.5) (which is
part of an NP (see 4.2) and realized as accusative) to
disagree with it in person, number, and definiteness. A
verb with a subject marker also may not occur with a
subject constituent that disagrees with it in person and
number.

However, there are two main differences between the
nominal and verbal suffixes: (1) While the form of verbal
suffixes can be stated in terms of the inherent features
of the verb, the form of nominal suffixes has to be
stated in terms of contextual features, or else in a
single matrix there could be a conflict of the features
[±spkr, ±addr, ±pl], one feature referring to the noun
stem and the other to the possessor. (2) The verbal
suffixes have no overt marker for the third person,
whereas the nominal suffixes do, at least when no overt
attribute is present.

4.2.7.2.2. Personal, Human, and Proper

As mentioned in 4.2.2.2, personal nouns include common human nouns, proper nouns (including the terms for "father" and "mother"), and certain domesticated animals such as dogs and sheep. A common human noun may be preceded by any of the determiners, but a proper noun can only be preceded by ku and ki (ku marks the nominative while ki marks the accusative):

(1)
$$\left\{\begin{array}{l} \text{ku} \\ \text{*ka} \\ \text{*kay(vay)} \\ \text{*ku-ani} \\ \text{*ku-aDa} \end{array}\right\}$$
maLiŋa
(person)
ki-a-saaLu
borrowed
ina
that
maruDaŋ
old-man
sa
Lima
five

ka ?aysu.
money

'MaLiŋa borrowed five dollars from that old man'

(2) ku-ani ababay wa-damɨk
     that   woman   beat
$$\left\{\begin{array}{l} \text{ki} \\ \text{*sa} \\ \text{*ka} \\ \text{*kɨkay} \\ \text{*ini-a} \\ \text{*iDa-a} \end{array}\right\}$$
MaLɨŋa.

'That woman beat MaLɨŋa'

4.2.7.2.3. Dual, Plural, Collective

The features "dual", "plural", and "collective" have little or no syntactic consequence aside from the semantic content:

Dual:

(1) la   davac u-alu? ma-tama. (4-13)
     then leave hunt   father and son

'Then the father-and-son went hunting'

Plural:

(2) <u>la</u> <u>davac</u> <u>ku</u> <u>la-tama-li</u>.   (2-23)
       then leave   fathers-my

     'Then my-father's (family) left'

(3) <u>ku-ani</u> <u>la-maniman</u> <u>binaayan</u>   <u>mita-a</u>.
     those   things   were-given   us

     'Those things were-given to us'

(4) <u>la</u> <u>kilana</u> <u>ku-aDa</u> <u>la-umas</u>.   (2-48)
     then arrive those people

     'Then those people arrived'

Collective:

(5) <u>i-a-kai</u> <u>ka</u> <u>uma-umas</u>.
     exist   people

     'There are many-people'

Note that the dual subject in (1) is an exception
in not having a preceding nominative determiner.   Also
note that the main verbs do not take tense markers or
the prefix <u>m-</u> (for the <u>m-</u> type of verbs, see 5.1.5) when
preceded by <u>la</u> 'then'. I shall not treat this problem in
this study.

4.2.7.2.4. Emphatic

An NP under emphasis always occurs at the beginning
of the sentence:

(1) <u>ku</u> <u>lacin</u> <u>wabaay</u> <u>naku-a</u> <u>sa</u> <u>Lima</u> <u>ka</u> <u>ʔaysu</u>.
     (name) gave   me   five   money
     [+emph]

     'Lacin gave me five dollars'

(2) <u>kay</u> ʔaysu <u>b/in/aay-an</u> <u>naku-a</u> <u>ina maruDaŋ.</u>
    this money was-given   me   that old-man

'This money was-given to me by that old-man'

(3) <u>kay</u> <u>maruDaŋ</u> ka <u>ma-lisi-lisi</u> <u>ikai</u> <u>numi-ana</u> <u>musu-a.</u>
    this old-man   being-angry stay house-your you
    [+emph]

'This old-man is-being-angry at you in your-house'

The NP under emphasis immediately precedes the main verb
in (1), the nominalized verb in (2), and the nominalized
construction introduced by the particle <u>ka</u> in (3); that
is, it immediately precedes the predicate of the sentence,
and grammatically is always the subject of the sentence.

4.3. Case

4.3.1. Case Relations, Case Forms, and Case Markers

Case features are carried by nouns, determiners, or prepositions.

The following three terms have to be distinguished: case relations, case forms, and case markers. Case relations are the "functional relations of constituents of a sentence" and "deep cases" in Fillmore. Case forms are "surface cases" such as nominative and accusative. Both case relations and case forms are language-universal; A particular language may make use of all or only some of them. Case markers are actual realizations of cases, such as prepositions, determiners, nominal or verbal inflections, word order to indicate case relations and forms, etc., so case markers are more language-specific.

Ten case relations have been posited for Japanese by Taylor (1971), nine for Korean by Yang (1972), and twelve for Vietnamese by Tran (1972). Seven can be posited for Rukai: AGENT, OBJECT, DATIVE, INSTRUMENT, TIME, LOCATION, and BENEFACTIVE. It remains to be seen how many case relations are necessary for all languages in the world, but it seems certain that there is only a limited set, probably around ten.

There is also a limited set of case forms, five

or six in all (Starosta 1973). Rukai manifests these
four: nominative [+NM], accusative [+AC], locative [+L],
and instrument [+I] in addition to the sub-case forms:
directional [+dir] and non-directional [-dir], source
[+src] and goal [+gol].

Abbreviations are used for case relations and case
forms: a single or two capital letters for each case
form, e.g. NM for nominative, AC for accusative,[8] I for
instrument and L for location, and three capital letters
for case relations, e.g. AGT for AGENT, OBJ for OBJECT,
INS for INSTRUMENT, etc. Case features are indicated by
plus or minus value in square brackets, e.g. [+AGT], [+NM],
[-AC], all carried by nouns, determiners, or prepositions.

Prepositions, determiners, personal pronouns, verbal
formations, and occasionally word order (such as [+AC,
+DAT] before [+AC, +OBJ]) are case markers in Rukai.

The prepositions are identical or partially identical
to verbs:

Case Forms	Prepositions	Verbs (infiritive)
[+I]	ara 'with'	ara-kai 'to use'
[+L]	ʔa(kai) 'at'	i-kai 'to stay'
[+L, +src]	twalay 'from'	twalay 'to come from'
[+L, +gol]	ʔakɨla 'to'	ʔa-kɨla 'to cause to arrive'
		kɨla 'to arrive'

The forms in the central column above are treated as prepositions, not verbs, because

(1)(a) They do not take verbal inflections such as the subject markers or the infinitive infix -u̱-;

(b) They are never followed by determiners in Rukai;

(c) They must occur with a sister NP; and

(d) They are not inflected like the main verb when occurring at the beginning of the sentence.

These prepositions never occur with nominative or accusative. They occur only with these two case forms: [+L] and [+I], which are never marked by determiners. This explains why prepositions never cooccur with determiners. Their mutually exclusive distribution can be stated by the rule:

(2) $[+P]$ ---→ $[-\_\_[+[+Det]\_\_]]$

Both prepositions and determiners signal case forms, not case relations, in Rukai.

In summary, the differences between prepositions and determiners (demonstratives and articles) are:

(3)(a) Determiners mark only the subject [+NM] and object [+AC] of the sentence, while prepositions mark only the [+L] and [+I] case forms; and

(b) Prepositions are lexically derived from verbs (cf. 5.3). Determiners are lexically non-derived, and demonstratives are derivable as nouns.

4.3.2.   Case-related Subcategorization Rules (CRSR's)

and Redundancy Rules (CRRR's)

4.3.2.1. Rules Affecting N's

(1) [+N] --→ [±NM]

An important syntactic feature of a noun is [±NM]; that is, whether or not it is used as the subject (an actant in the nominative case form) in the sentence. This distinction is overtly marked in the determiners, demonstrative pronouns, and personal pronouns. Although the distinction is not overtly marked in the ordinary noun (non-pronoun), the feature [+NM] is needed for all nouns to preserve generality.

This rule is part of the one stated in 4.2.2, Rule (2).

(2) [-NM] --→ [+AC]

If a noun is not marked for nominative, then it is in the accusative case form; that is, it is the direct object (an actant in the accusative case form) of the verb, or the attribute of another noun.

(3) $\left\{\begin{matrix}[+NM]\\[+AC]\end{matrix}\right\}$ --→ [±AGT, -L, -I]

Either a nominative or accusative noun can have the case relation of AGENT [+AGT] or not [-AGT], and is distinct from locative [+L] and instrumental [+I] case forms.

(4) [-AGT] --→ [±OBJ]

A non-AGENT actant may be OBJECT [+OBJ] or not
[-OBJ]. The direct object may be an OBJECT actant, and
that is how OBJECT is realized in a transitive or ditran-
sitive active sentence. In an intransitive or in the
passive sentence, however, the OBJECT may be chosen as
the subject of the sentence.

(5) [-OBJ] --→ [±DAT]

(6) [-DAT] --→ [±INS]

(7) $\begin{bmatrix} +NM \\ -INS \end{bmatrix}$ --→ [+BEN]

(8) $\begin{bmatrix} +AC \\ -INS \end{bmatrix}$ --→ [±BEN]

(9) [-BEN] --→ [±LOC]

(10) [-LOC] --→ [±TIM]

Each of these cases: AGENT, OBJECT, DATIVE,
INSTRUMENT and BENEFACTIVE can be chosen either as the
subject or object of the sentence (see examples in
4.3.3.3--4.3.3.7). Only one isolated example has been
found where BENEFACTIVE is realized as the subject in a
passive sentence (see 4.3.3.7). No example has been
found where LOCATION or TIME is realized as the subject
in Rukai, so they are excluded in the rules (7)--(10).
TIME is usually realized as an object without an accusa-
tive marker; occasionally it is under emphasis (see
4.3.3.1).

As Starosta (1973) has pointed out, the rules are
also used to formally reflect the priority of the subject

and object choice in the sentence. The priority of the
subject choice is formally reflected in (11) and that of
the object choice in (12):

(11)

```
                              [+NM]
                            /       \
                     [-AGT]          [+AGT]
                    /      \
              [-OBJ]        [+OBJ]
             /      \
       [-DAT]        [+DAT]
      /      \
[-INS]        [+INS]
```
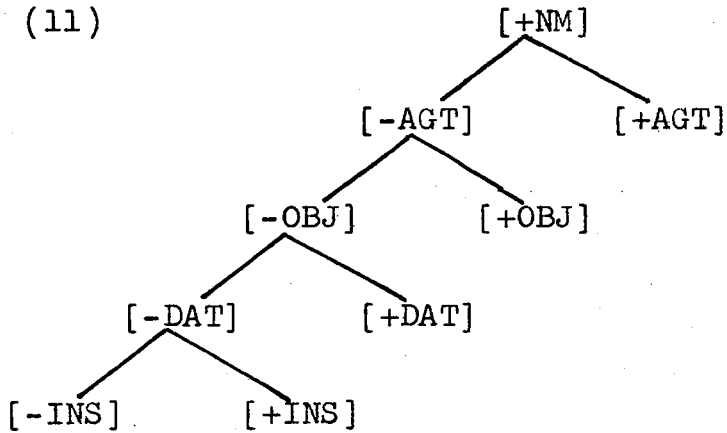
Fig. 3. Priority of Subject Choice

(12)

```
                                       [+AC]
                                     /       \
                              [-AGT]          [+AGT]
                             /      \
                       [-OBJ]        [+OBJ]
                      /      \
                [-DAT]        [+DAT]
               /      \
         [-INS]        [+INS]
        /      \
  [-BEN]        [+BEN]
 /      \
[-LOC]  [+LOC]
 /    \
[-TIM]  [+TIM]
```
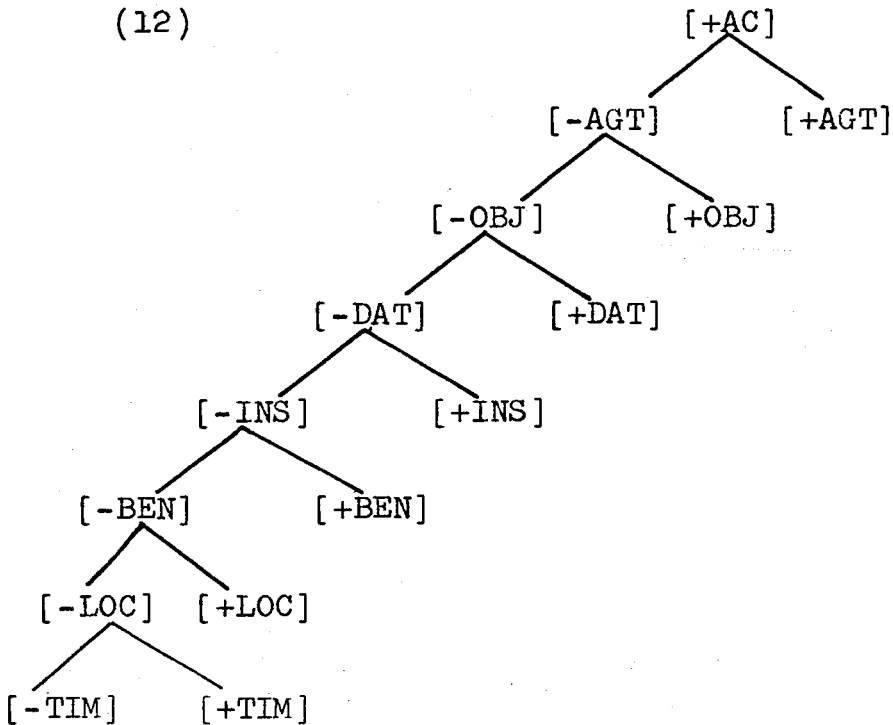
Fig. 4. Priority of Object Choice

4.3.2.2. Rules Affecting P's

According to the phrase structure rules presented
in 4.2, preposition (P) is not a sister category of noun
(N). Of the four main case forms treated in this study,
two of them are marked on P's, while the other two are
marked on N's. P's are marked for the two main case
forms: [+L] and [+I], and N's are marked for these two:
[+NM] and [+AC], as stated in 4.3.2.1.

(1) [+P] --→ [±L]

A preposition may be marked by either the [+L] case
form or not [-L].

(2) [+L] --→ [±dir, -NM, -AC, -I]

The [+L] case form can be either directional [+dir]
or non-directional [-dir]. The non-directional preposi-
tion is ?a(kai), e.g. ?akai inu 'at what place', ?a Labin
'on cheeks'. A preposition that marks the [+L] case form
is distinct from the nominative, accusative, and instru-
mental case forms.

(3) [+dir] --→ [±src]

Directional prepositions can be either source [+src]
or non-source [-src]. The source preposition is twalay
'from'.

(4) [-src] --→ [+gol]

Non-source is goal [+gol]. The goal preposition is
?akila 'to'.

(5) [-L] --→ [+I]

If a preposition does not mark the [+L] case form, it can only mark the [+I] case form.

(6)   [+I] --→ [-L, -NM, -AC]

A preposition that marks the [+I] case form is distinct from the locative, nominative, and accusative case forms.

(7)
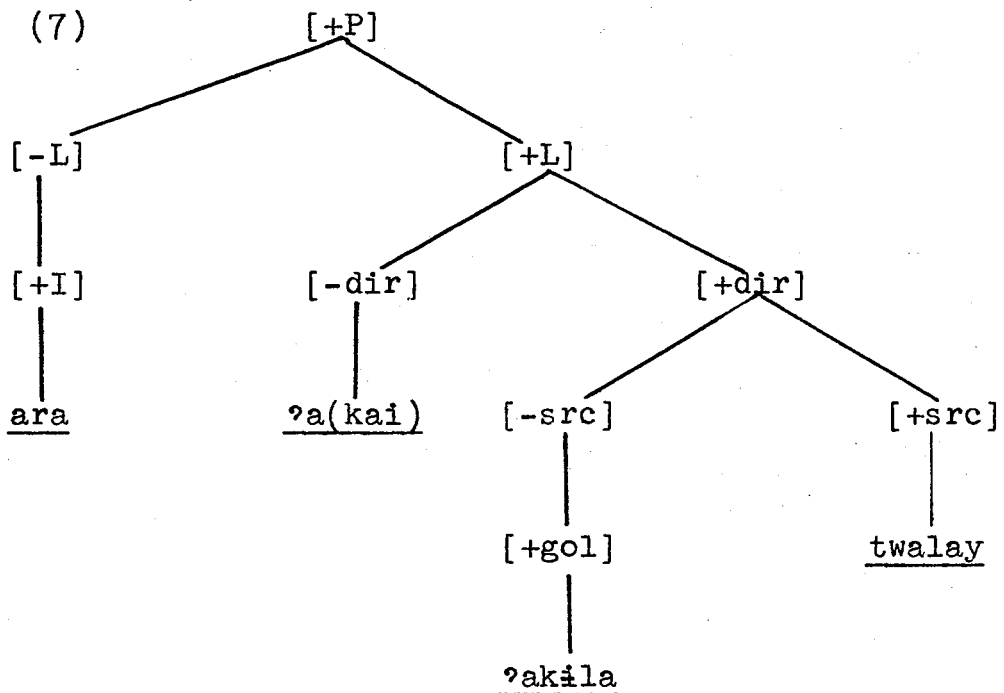
Fig. 5.   Feature Classification of the Prepositional Case Forms

4.3.3.   Case Exemplifications

4.3.3.1.   TIME

Taylor (1971:31) has given two main justifications for treating TIME as a case relation: (1) "A TIME actant's constituent structure and relationship to the Pred are of the same sort as those of all other case-relationship actants."   (2) This "allows generalizations to be made between TIME and LOCATION which would other-wise be difficult or impossible."

TIME can occur with all types of verbs, so it does not serve to subcategorize any of the lexical items in the verb.   The feature $[+\_\_([+\text{TIM}])]$ is added to the feature matrices of all verbs by CFRR 1 in 4.4.3.2.

TIME actants can appear either in the [+AC] or [+L] case form, and need not be preceded by any determiner when [+AC]:

(1)   waudal kuðaa.
       rained yesterday
              $\begin{bmatrix} +\text{AC} \\ +\text{TIM} \end{bmatrix}$

       'It rained yesterday'

(2)   ʔaʔaθaka luðaa iDaa   daLil.
       Break!   tomorrow that bottle
              $\begin{bmatrix} +\text{AC} \\ +\text{TIM} \end{bmatrix}$

       'Break that bottle tomorrow!'

(3)   waudaudalŋa   kayasa kaway LigLig.
       has-been-raining   now   there mountain
              $\begin{bmatrix} +\text{AC} \\ +\text{TIM} \end{bmatrix}$
       'It has-been-raining there on-the-mountain now'

(4) luðaa   ka aniaragila kuani mukabaLubaLua.
    tomorrow   dressed-up that   lady

'Tomorrow that lady will-be-dressed-up'

(4) seems to be an equational sentence; the time word luðaa is an NP and the rest of the sentence is also an NP. Or alternatively, ka aniaragila is an attribute of luðaa. It is not clear which interpretation is superior.

Occasionally ka precedes a time word in the sentence:

(5) aniaragilaŋa ka kuðaa   kay mukabaLubaLua.
    has-been-dressed yesterday this lady

'This lady was-dressed-up yesterday'

It is not clear whether ka serves as an article for the time word in (5).

The TIME actants may be marked by the source and goal sub-case forms like LOCATION; cf. (6) and (7):

(6) tuaLavay twalay myaLiaLi ʔakila mauŋ.
    worked   from   morning   to   evening
    $\begin{bmatrix} +P \\ +src \end{bmatrix}$ $\begin{bmatrix} +N \\ +TIM \end{bmatrix}$ $\begin{bmatrix} +P \\ +gol \end{bmatrix}$ $\begin{bmatrix} +N \\ +TIM \end{bmatrix}$

'He worked from morning to evening'

(7) mualuD twalay umauma ʔakila laDik kayvay Dakiral.
    flow   from   field   to   sea   this   river
    $\begin{bmatrix} +P \\ +src \end{bmatrix}$ $\begin{bmatrix} +N \\ +LOC \end{bmatrix}$ $\begin{bmatrix} +P \\ +gol \end{bmatrix}$ $\begin{bmatrix} +N \\ +LOC \end{bmatrix}$

'This river goes from the field to the sea'

The duration of time can be expressed by a subordinate clause introduced by the subordinate conjunctive sa 'when'. This involves a complex sentence type that goes beyond the scope of this study and will concern us no further.

4.3.3.2.   LOCATION

Rukai speakers tend to use the existential verb i(a)kai to indicate a location, as in (1) and (2):

(1)   watubi ikai daan kay Lulay.
      cried stay house this child
      $\begin{bmatrix} +V \\ +fin \end{bmatrix}$ $\begin{bmatrix} +V \\ -fin \end{bmatrix}$ $\begin{bmatrix} +AC \\ +LOC \end{bmatrix}$

   'This child cried in a house'

(2)   watubi ikai inia daanli kay Lulay.
      cried stay that house-my this child
      $\begin{bmatrix} +Det \\ +AC \end{bmatrix}$ $\begin{bmatrix} +N \\ +AC \\ +LOC \end{bmatrix}$

   'This child cried in that house-of-mine'

When the existential verb i(a)kai is used to indicate the location, either the following accusative noun is not marked by a determiner if it is indefinite, e.g. (1), or marked by a definite determiner if it is definite, e.g. (2).   (1) shows that the [+AC] case can occur without a determiner after the existential verb (cf. 4.6.4).

The prepositions ʔakai 'at', twalay 'from', and ʔakila 'to' may occur in a LOCATION actant.   LOCATION actants may occur with many verb types.

The preposition ʔakai is very close in shape and presumably historically related to the existential verb i(a)kai.   Compare (3) and (4):

(3)   lua ʔakai inu   kuaDa lalakli.
          at   where that child-my
          $\begin{bmatrix} +P \\ +L \end{bmatrix}$ $\begin{bmatrix} +AC \\ +LOC \end{bmatrix}$

   'It is not known where my-child is'

(4) <u>iakai</u> <u>inu</u> <u>kuaDa</u> <u>lalakli?</u>
    stay where that child-my
    [+V] $\begin{bmatrix} +AC \\ +LOC \end{bmatrix}$

    'Where is my-child?'

A justification for separating the preposition ʔakai
and the verb <u>i(a)kai</u> is that they cannot be used inter-
changeably:

(5) <u>kuani</u> <u>ababay</u> <u>swaswaʔ</u> $\left\{ \begin{array}{c} \underline{ʔakai} \\ \text{at} \\ \\ *\underline{i(a)kai} \end{array} \right\}$ <u>inu?</u>
    that woman sweep   where
                                      $\begin{bmatrix} +AC \\ +LOC \end{bmatrix}$

    'Where is that woman sweeping?'

Also the past tense form <u>iakai</u> may not follow the main
verb in the sentence, but the preposition ʔakai may:

(6) <u>amua</u> <u>ʔakai</u> <u>inu</u> <u>kuaDa</u> <u>maruDaŋ?</u>
    went at   where that old-man

    'Where did that old-man go?'

The verb <u>iakai</u> can be used only as the main verb in the
sentence, as in (2). Furthermore, it is possible to
have both items occur in sequence, with the preposition
following the main verb:

(7) <u>iakaiŋa</u> <u>ʔakai</u> <u>inu</u> <u>kuaDa</u> <u>kiaaniʔalay</u> <u>sa</u> <u>sasïvïra?</u>
    existed   at   where that was-blown   wind
    [+V]   [+P]

    'Where is that which has-been-blown-away by the
    wind?'

The locative sub-case forms source and goal are
clearly indicated by the prepositions <u>twalay</u> and ʔakïla
respectively:

(8)

ania?alay	twalay	ubula	?akila	tarumak	kay	aðaðam.
flew	from	hill	to	(place)	this	bird

$$\begin{bmatrix} +P \\ +L \\ +src \end{bmatrix} \quad \begin{bmatrix} +N \\ +AC \\ +LOC \end{bmatrix} \quad \begin{bmatrix} +P \\ +L \\ +gol \end{bmatrix} \quad \begin{bmatrix} +N \\ +AC \\ +LOC \end{bmatrix}$$

'This bird flew from the hill to Tarumak'

As mentioned previously, the source and goal prepositions are also related and identical in shape to the simple forms of the verbs twalay 'come from' and ?akila or kila 'arrive'. Cf. (9) with (10), and (11) with (12) or (13):

(9)

kayvay	Dakiral	mualuD	twalay	umauma	?akila	laDik.
this	river	flow	from	field	to	sea

[+P]

'As for this river, it flows from the field to the sea'

(10)

?a-twalay-aku	inia	Lulay	sa	Lima	ka	?aysu.
cause-come from-I	that	child		five		money

[+V]

'I-got five dollars from that child'

(11)

?akila	inu	kay	daidaisu?
to	where	this	land-your

[+P]

'How far is this land-of-yours?'

(12)

wa-?akila-su	?akai	inu?
past-arrive-you	at	where

[+V]

'Where did-you-go?'

(13)

wa-kila-su	?akai	inu?
past-arrive-you	at	where

[+V]

'Where did-you-go?'

When both the source and goal occur, the former must precede the latter; the order cannot be reversed:

(14) <u>kiaani?alay</u> <u>sa</u> <u>sasivira</u> <u>twalay</u> <u>tarumak</u> <u>?akila</u>
was-blown wind from to
[+src] [+gol]

<u>LigLig</u> <u>kayvay</u> <u>tudaŋ</u>.
mountain this tin-roof

'This tin-roof was-blown from Tarumak to the
mountain'

(15) *<u>kiaani?alay</u> <u>sa</u> <u>sasivira</u> <u>?akila</u> <u>LigLig</u> <u>twalay</u>
was-blown wind to mountain from
[+gol] [+src]

<u>tarumak</u> <u>kayvay</u> <u>tudaŋ</u>.
this tin-roof

Such a restriction of order can be stated by:

(16) [+gol] --→ [-___[+src]]

4.3.3.3. INSTRUMENT

As with the LOCATION case relation, Rukai speakers
tend to use a verb instead of preposition to indicate
the INSTRUMENT case relation. The instrumental verb is
<u>ara-kai</u> 'use' while the instrumental preposition is <u>ara</u>
'with, by'. It is obvious that both forms share the same
stem. When the verb is used, we get embedded structures
(cf. 4.7). The verb <u>arakai</u> may be used either as the
main verb or embedded; cf. (1) and (2), (3) and (4):

(1) <u>kuani</u> <u>maruDaŋ</u> <u>arakai</u> <u>inia</u> <u>balbal</u> <u>duamik</u> <u>inia</u> <u>taw?uŋ</u>.
that old-man use that bamboo beat that dog
$\begin{bmatrix} +V \\ +fin \end{bmatrix}$ $\begin{bmatrix} +AC \\ +INS \end{bmatrix}$ $\begin{bmatrix} +V \\ -fin \end{bmatrix}$.

'As for that old-man, he used that bamboo to-beat
that dog'

(2) ʔaʔaθak   arakai sa balbal kikay rumay kay Lulay.
    cause-break use   bamboo   this   bowl this child
    $\begin{bmatrix} +V \\ +fin \end{bmatrix}$ $\begin{bmatrix} +V \\ -fin \end{bmatrix}$ $\begin{bmatrix} +AC \\ +INS \end{bmatrix}$

'This child broke this bowel, using a bamboo'

(3) arakaikai tubaas   sa guuŋ inia ʔaluŋli kay ababay.
    is-using   make-soup   cow that pan-my this woman
    $\begin{bmatrix} +V \\ +fin \end{bmatrix}$ $\begin{bmatrix} +V \\ -fin \end{bmatrix}$ $\begin{bmatrix} +AC \\ +INS \end{bmatrix}$

'This woman is-using that pan-of-mine to cook beef
soup'

(4) tuababaas   sa guuŋ arakai inia ʔaluŋli kay ababay.
    was-making-soup cow   use   that pan-my this woman
    $\begin{bmatrix} +V \\ +fin \end{bmatrix}$ $\begin{bmatrix} +V \\ -fin \end{bmatrix}$ $\begin{bmatrix} +AC \\ +INS \end{bmatrix}$

'This woman was-cooking beef soup, using that pan-
of-mine'

This instrumental verb has the case frame feature:

$[+\underline{\quad} \begin{bmatrix} +AC \\ +INS \end{bmatrix}]$.

However, it is also possible to use the preposition
instead of the verb to indicate the INSTRUMENT case
relation:

(5) kiaʔaʔacay kay cumay ara kwaŋ.
    was-killed this bear with gun
                            $\begin{bmatrix} +P \\ +I \end{bmatrix}$ $\begin{bmatrix} +N \\ +AC \\ +INS \end{bmatrix}$

'This bear was-killed with a gun'

(6) kiacɨ́ɨlŋa   ara liŋu   kay Lulay inia isiŋ.
    was-looked-at   with glasses this child that doctor
                    $\begin{bmatrix} +P \\ +I \end{bmatrix}$ $\begin{bmatrix} +N \\ +AC \\ +INS \end{bmatrix}$

'This child was-looked-at with glasses by that

doctor'

(7) vałvałvaŋ ara suʔuŋ inia Lulay kuani maruDaŋ.
    was-amusing with branch that child that old-man
$$\begin{bmatrix} +P \\ +I \end{bmatrix} \begin{bmatrix} +N \\ +AC \\ +INS \end{bmatrix}$$

'That old-man was-amusing that child with a branch'

As Taylor (1971:41) pointed out in his study of Japanese, "INSTRUMENT actants may occur with all V's which can occur with an AGENT actant. They may also occur with all but a few other verbs, the 'stative'...and the 'intransitive transfer attachment'..." Rukai statives, however, are not compatible with INSTRUMENT actants:

(8) maʔaθak kay rumay (*ara balbal).
    broken this bowl   with bamboo

'This bowl is-broken (*with a bamboo).

(9) (*arakai sa balbal) maʔaθak kay rumay.
    use   bamboo broken this bowl

The following sentence might appear to contain an "intransitive" verb without an AGENT actant. However, a third person AGENT subject is implied. Third person subjects are never overtly marked on the verb (namely, with zero marker on the verb):

(10) mualłb ara suksuk inia sałlłlłba.
     opened with key   that   door
$$\begin{bmatrix} +P \\ +I \end{bmatrix} \begin{bmatrix} +N \\ +AC \\ +INS \end{bmatrix} \begin{bmatrix} +Det \\ +AC \end{bmatrix} \begin{bmatrix} +N \\ +AC \\ +OBJ \end{bmatrix}$$

'He opened that door with a key'

A third person AGENT subject is also implied in (11):

(11) arakai inia balbal ʔuaθak inia rumay.
     use   that bamboo to-break that bowl

'He used that bamboo to-break that bowl'

One sentence in the data raises a problem in treating _ara_ as a preposition. The structure of the sentence (12) seems to indicate that _ara_ is used as a main verb followed by the embedded verb _d/u/amɨk_ (an embedded non-finite verb is usually marked by the infix _u_ after the initial consonant if the first vowel is _a_; see 4.7):

(12)   _ara_ _balbal_ _d/u/amɨk_ _kuani_ _maruDaŋ_ _inia_ _tawʔuŋ_.
         bamboo to-beat that   old-man that   dog

'That old-man beat that dog with a bamboo'

Or   'That old-man used a bamboo to-beat that dog'
However, even in the example, _ara_ clearly behaves differently from the verb _arakai_, in that it is not followed by a determiner, and that is a characteristic of all prepositions in Rukai (see 4.3.1). Compare the following sentences:

(13)   _kiaʔaʔacay_ _kay_ _cumay_ _ara_ _kwaŋ_.
         was-killed this bear   with gun

'This bear was-killed with a gun'

(14) *_kiaʔaʔacay_ _kay_ _cumay_ _ara_ _sa_ _kwaŋ_.
                                  [+P] [+Det]

(15)   _kiaʔaʔacay_ _kay_ _cumay_ _arakai_ _sa_ _kwaŋ_.
                                  [+V]   [+Det]

'This bear was-killed by using a gun'

There may be a mistake in (12). We may suspect that a main verb has been omitted in (12), but which verb? A future re-check with an informant might help settle this problem.

The feature [+___ [+INS]] is added to the case frame features of all V's (except where blocked) by CFRR 2 in 4.4.3.2.

There is a question as to whether the natural elements such as "wind" should be treated as INSTRUMENT or AGENT actants:

(16) kiaani?alay ?akila LigLig kikay sasivira kay tudaŋ.
    was-bown   to mountain this   wind this tin

$$\begin{bmatrix} +AC \\ +LOC \end{bmatrix} \qquad \begin{bmatrix} +AC \\ +INS \end{bmatrix} \quad \begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$$

'This tin-roof was-blown to the mountain by this wind'

(17) kiaani?alay sa sasivira twalay tarumak ?akila
    was-blown   wind   from   to

LigLig kayvay tudaŋ.
mountain this tin-roof

'This tin-roof was-blown from Tarumak to the mountain by wind'

If the item for "wind" in the examples is treated as an INSTRUMENT actant, there will be the difficulty of accomodating the fact that on the one hand, in the general system of the language, INSTRUMENT actants are marked either by the preposition ara [+P] or manifested by the instrumental verb arakai [+V, +___ $\begin{bmatrix} +AC \\ +INS \end{bmatrix}$] followed by a direct object. On the other hand, "wind" could be treated as an AGENT actant: in the passive construction an AGENT actant is always realized as accusative [+AC] (see 4.3.3.4). However, if "wind" is an AGENT actant, then there is the difficulty of interpreting "wind" as

"animate" and "instigator of the action" as defined by
Fillmore (1968:24). (Note, however, that Fillmore says
that an AGENT is "typically animate".) What is more, it
cannot occur with another INSTRUMENT in the same sentence.
as we would expect for an AGENT.

One way out of the problem is to treat such items as
non-tool INSTRUMENT (Ramos 1973). These items do not
require an AGENT in the sentence. Verbs allowing non-
tool INSTRUMENTS as subjects would then take [+AC]
INSTRUMENTS when passive, as in (16) and (17).

In addition to the verbs that take non-tool INSTRU-
MENTS of natural elements as subjects, causative verbs
may also take [+NM, +INS] as in the following sentence:

(18) ?a-kauDiŋay   sa airu?an kay timu.
      cause-get-delicious   food   this salt
                         $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +NM \\ +INS \end{bmatrix}$

      'This salt makes food delicious'

4.3.3.4. AGENT

AGENT actants may occur with only certain V's, the
so-called "transitive" verbs, but not the existential
verbs, middle verbs, etc. These verbs have the case
frame feature [+___[+AGT]] in their lexical entries.
The referent of an AGENT actant is "typically animate"
and "the instigator of the action" (Fillmore 1968:24).
The action has some direct effect upon the referent of

the OBJECT actant.

A verb that takes a [+AGT] actant can cooccur with a [+INS] actant, a [+OBJ] actant, a [+TIM] actant, and a [+LOC] actant. The redundancy rules CFRR's 1 and 2 in 4.4.3.2 account for these occurrences. Some verbs that take [+DAT] actants can also cooccur with [+AGT] as well as [+OBJ] actants:

(1) ʔaʔacay kay umas kikay cumay ara kwaŋ kuðaa.
    kill   this man this bear with gun yesterday

$$\begin{bmatrix} +NM \\ +AGT \end{bmatrix} \quad\quad \begin{bmatrix} +AC \\ +OBJ \end{bmatrix} \quad\quad \begin{bmatrix} +AC \\ +INS \end{bmatrix} \begin{bmatrix} +AC \\ +TIM \end{bmatrix}$$

   'This man killed this bear with a gun yesterday'

(2) wabaay sa aʔas inia Lulay kuani maruDaŋ.
    gave   crab that child that old-man

$$\begin{bmatrix} +AC \\ +OBJ \end{bmatrix} \quad\quad \begin{bmatrix} +AC \\ +DAT \end{bmatrix} \quad\quad \begin{bmatrix} +NM \\ +AGT \end{bmatrix}$$

   'That old-man gave a crab to that child'

(3) kiabaay kuani Lulay inia maruDaŋ sa aʔas.
    was-given that child that old-man   crab

$$\begin{bmatrix} +NM \\ +DAT \end{bmatrix} \quad\quad \begin{bmatrix} +AC \\ +AGT \end{bmatrix} \quad\quad \begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$$

   'That child was-given a crab by that old-man'

The AGENT actant usually contains the feature [+NM]; in other words, it usually serves as the "grammatical subject" of the sentence as defined by Chomsky (1965). However, it may contain the feature [+AC] when the verb is in the passive form; in that case, either the OBJECT or DATIVE or BENEFACTIVE actant contains the feature [+NM]. The relationship between the active and passive sentences can be captured by a derivation rule (see

5.1.2; also see 4.6.6 for the passive sentences).

Chomsky's definition of the "grammatical subject" is stated in terms of constituent structure, so it does not work for Rukai. In the lexicase approach, case features mark subjects allowing us to relate sentences such as the active and passive directly. Moreover, various other types of sentences are directly generated by phrase structure rules without the use of transformations. There is a "skewed relationship" between case relations and case forms. In the following passage, Starosta clarifies this aspect of the lexicase approach to language analysis ([+0] is equivalent to [+AC] in this study):

"The favorite case will have priority in being allowed to occur in the subject position, the least marked pigeonhole. The next least marked pigeonhole is the direct object ([+0]), and the case relationships which could not get into the subject position madly scramble for the DO [indirect object and direct object] berth. Again, a pecking order will be established in this rush, and there will be a consequent establishment of an object choice hierarchy also, with the Objective case relation establishing its supremacy, although in this case certain other relations will also be allowed in the same sentence in the [+0] form, with certain restrictions on order and on the absolute number of [+0]'s allowable. In a sentence in an accusative language containing an Agent, Object, and Locative relation, the Agent occurs in the subject position in (unmarked) active sentence. The Object has priority over Locative in being represented by the [+0] case form, and the Locative occurs under [+L]. In a sentence in which the main verb does not allow an Agent, the Object has priority as the subject choice." (Starosta 1973)

Rukai is an accusative language. The "unmarked" subject choice is the AGENT if it is present in the active sentence, whereas the "marked" subject choice is the OBJECT, DATIVE, INSTRUMENT, or BENEFACTIVE in the passive sentence. (See Fig. 4 and Fig.5 in 4.3.2.1 for the priority of the subject choice and object choice.)

4.3.3.5. OBJECT

OBJECT actants may occur with any verb except meteorological ones (see 4.6.1).

The OBJECT case is "the semantically most neutral case" (Fillmore 1968:25) and "the entity that moves or changes or whose position or existence is in consideration" (Fillmore 1969b:77).

OBJECT actants may be realized either as [+NM] or [+AC], and occur in the following different sentence types (cf. 4.6):

(1) [+AC, +OBJ] with "transitive" verb in active sentences:

E.g.
wakani	kuani	umas	sa	Likulaw.
ate	that	man		leopard
		$\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$		$\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

'That man ate a leopard'

(2) [+NM, +OBJ] with "transitive" verb in passive sentences:

E.g. <u>kiakani</u> <u>kuani</u> <u>umas</u> <u>sa</u> <u>Likulaw.</u>
    was-eaten that man   leopard
                   $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +AC \\ +AGT \end{bmatrix}$

'That man was-eaten by a leopard'

See also the examples in the preceding section 4.3.3.4.

(3) [+AC, +OBJ] with "information transfer" verb

(Taylor 1971:38-39, 324)

E.g. <u>ku</u> <u>maLiŋa</u>, [<u>tubaasa</u> <u>ina</u> <u>kinsas</u> <u>sa</u> <u>guuŋ</u>]
       N S Cook soup! that police   cow S N
                          $\begin{bmatrix} +N \\ +derv \\ +quote \\ +AC \\ +OBJ \end{bmatrix}$

<u>amya</u>   <u>ki</u> <u>duLay.</u>
was-so

'MaLiŋa said to DuLay, "Cook beef soup for that policeman!"'

(4) [+AC, +OBJ] with "information (non-transfer)" verb

(Taylor 1971:325)

E.g. [<u>naw?akiragay</u>] <u>amya</u> <u>kuaDa</u> <u>kiDimDim</u> <u>ki</u>
   N S I-make-happy S N was-so that thought of
            $\begin{bmatrix} +N \\ +derv \\ +quote \\ +AC \\ +OBJ \end{bmatrix}$

<u>tamaini.</u>
father-his

'"I-want-to-make-(them-)happy," his-father thought'

A difference between the two sentences given above is that while the first one contains a [+DAT] actant, the second does not.

Note that the direct object of the quotations in the two sentences (3) and (4) above, are not marked by determiners. That has implications for case form: The absence of determiners implies that the case form is accusative, which with a few exceptions is the only case form that can be unmarked by any determiner or preposition.

The quotation verb is <u>amya</u> (or <u>la ya</u>) 'was so', the gloss given consistently as Mandarin <u>nèi yàng</u> 'so, like that', not <u>shuō</u> 'say' by the informant. The form <u>amya</u> has the past tense marker <u>a-</u>, indicating that it is a verb, or at least derived from a verb.

The order between the verb and the direct object has been switched, however; the "normal" order would be that the direct object follows the main verb (cf. 4.1). Maybe that is a special signal for a quotation object, different from all the other objects. "The referent of such [+O, +OBJ] actants is always interpreted as some sort of quotation" (Taylor 1971:38).

(5) [+NM, +OBJ] with all stative and "intransitive" verbs

E.g.   <u>mabilin</u> <u>kuani</u> <u>anatu.</u>
       tall   that   tree
      [+stat] $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

       'That tree is tall'

      <u>watubi</u> <u>kuani</u> <u>Lulay.</u>
      cried   that   child
      [-stat] $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

       'That child cried'

Verbs of this sub-class include stative verbs and all V's
(except the few meteorological verbs) without the feature
[+___[+AGT]]. Lexical case-frame subcategorization and
redundancy rules in 4.4.3 add the feature [+___([+NM,
+OBJ])] to stative verbs. The same feature is also part
of the lexical entry for all V's (except meteorological
and existential ones) that do not have the feature
[+___[+AGT]].

See also the preceding section 4.3.3.4 for the
relationship between AGENT and OBJECT actants with the
same verb in the same sentence.

4.3.3.6. DATIVE

DATIVE actants can occur with only a very limited
set of verbs, e.g. verbs such as "give", "borrow", "sell",
"teach", "learn", and "show". All members of this set of
verbs have the case-frame feature [+___[+DAT]] in their
lexical entries. To sub-classify these verbs in Rukai,
the feature source [+src] might be assigned, for instance,
to the AGENT of the verb baay 'give' and to the DATIVE
of the verb kiasaaLu 'borrow' "to indicate the direction-
ality associated with verbs... All non-source DATIVE's
are marked [-src]" (Taylor 1971:44). That is to say, the
AGENT and DATIVE cases might be sub-divided into [±src]
sub-cases. However, no syntactic motivation has been
found for sub-classifying [+AGT] and [+DAT] occurring

with verbs like "give" and "borrow" into [±src] in Rukai.
In fact, the feature [±src] is used to sub-classify only
the case form [+dir] in this study, not the case relations
(see 4.3.2).

(1) <u>ku</u> <u>lacɨŋ</u> <u>wabaay</u> <u>nakua</u> <u>sa</u> <u>ʔaysu</u>.
                gave   me   money

$$\begin{bmatrix} +NM \\ +AGT \end{bmatrix} \qquad \begin{bmatrix} +AC \\ +DAT \end{bmatrix} \begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$$

'As for Lacɨŋ, he gave me some money'

(2) <u>kiasaaLu</u> <u>nakua</u> <u>sa</u> <u>ʔaysu</u> <u>kuani</u> <u>maruDaŋ</u>.
  borrowed me   money that old-man

$$\begin{bmatrix} +AC \\ +AGT \end{bmatrix} \quad \begin{bmatrix} +AC \\ +OBJ \end{bmatrix} \qquad \begin{bmatrix} +NM \\ +DAT \end{bmatrix}$$

'That old-man borrowed some money from me'

See 4.3.3.4 for a discussion of the case forms of
the DATIVE, AGENT, and OBJECT actants when all these
occur in the same sentence. Also see 4.6.6 for the passive
sentences and 5.1.2 for the passive derivation rule.

With regard to the word order of [+AC, +DAT] actant
and [+AC, +OBJ] actant in the same sentence, see the
illustration in 4.1. The restriction of the order can be
stated by the rule:

(3) $\begin{bmatrix} +AC \\ +DAT \end{bmatrix} \longrightarrow [-\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}\underline{\quad}]$

The DATIVE actant is realized either as [+AC] or
[+NM], depending on the type of verb and sentence
structure. There is no [+D] case form in Rukai, and
unlike many other languages, [+DAT] in Rukai cannot occur
with a [+L] case form.

4.3.3.7.   BENEFACTIVE

The referent of a BENEFACTIVE actant is a benefici-
ary (normally human) of the activity done by an AGENT
actant, e.g. (1), or by a DATIVE actant in a causative
sentence, e.g. (2) below. The case form of a BENEFACTIVE
actant can be either [+NM] or [+AC]. The referent of
the BENEFACTIVE is always realized as [+AC] in the active
construction, as in (2) and (3). When it is realized as
[+NM], the sentence is in the passive construction, as in
(1):

(1)   kuani tumutumu kiatubabaas sa guuŋ inia kaykayŋu.
      that   old-man   was-cooked-soup cow that old-woman
      $\begin{bmatrix} +NM \\ +BEN \end{bmatrix}$ $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +AC \\ +AGT \end{bmatrix}$

      'As for that old-man, he was-being-cooked some
      beef soup by that old-woman'

(2)   ku maLiŋa ʔatuababaas ki duLay inia kinsas sa guuŋ.
            cause-cook-soup   that police   cow
      $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$ $\begin{bmatrix} +AC \\ +DAT \end{bmatrix}$ $\begin{bmatrix} +AC \\ +BEN \end{bmatrix}$ $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

      'As for MaLiŋa, he made DuLay cook some beef soup
      for the policeman'

(3)   wailukaku sa maniman ki umas.
      brought-I   thing   man
                 $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +NM \\ +BEN \end{bmatrix}$

      'I-brought something for the man'

Perhaps (2) is a better example to prove the existence
of the BENEFACTIVE actant. There are four actants in the
sentence: three are AGT, OBJ, DAT, and the fourth must
be BEN. Furthermore, the main verb kiatubabaas in (1) is

in the passive form; there is no causation involved.
(The causative marker ʔa- would precede the passive ki-,
e.g. ʔa-ki-kani 'cause to be eaten'.)

Sometimes there is difficulty in distinguishing
between [+BEN] and [+DAT], e.g. (3). Syntactically both
are realized as [+AC] case form when they do not occur
in the subject position. Semantically the nominal cons-
tituent ki umas seems to be BENEFACTIVE. As for the
constituent kuani tumutumu in (1), it is more clearly a
BENEFACTIVE than DATIVE because the type of verb seman-
tically does not occur with a DATIVE actant.

4.3.3.8. Case Relations Not Utilized in Rukai

The case relations of COMITATIVE, RESULT, MANNER,
and EXTENSION as posited by Taylor and/or Tran are not
utilized by Rukai. They are generally expressed by
verbs, not by nouns or prepositions. I tried to elicit
examples for these cases from my informants, but could
not get any of them.

(This section must, of course, be read with this
born in mind: One can prove that something does exist,
but no one can really prove that something does not
exist.)

4.3.3.8.1. DIRECTION

Direction can be expressed by the prepositions twalay 'from' and ʔakɨla 'to', e.g. (8) and (14) in 4.3.3.2. But "direction" can be treated as a sub-case of [+L] rather than a separate case by itself. There is a close relationship between the two, and that can be stated by the rules:

(1) [+L] --→ [±dir]

(2) [+dir] --→ [±gol]

(3) [-gol] --→ [+src]

See 4.3.2.2 for a discussion of the case forms and how they are realized.

It is not really necessary to posit a DIRECTION case for Rukai as Taylor has done for Japanese. Direction is very often expressed by verbs, not by nouns or prepositions:

(4) ʔualataD inia matiagawgaw kuani mukabaLubaLua.
     took-out that dirty-stuff that   lady

'That lady took-out that dirty-stuff'

The causative verb ʔualataD 'cause to go outside' is derived from a self-moving verb mulataD 'go out', which is in turn derived from the noun lataD 'outside'. See 5.1.5.1 for the motion derivation rule, which states that the derived verb cannot take [+gol] nouns, and 5.1.5.2 for the causative derivation rule.

(5) davacŋa kuaDa maruDaŋ mubaLaŋaw.
     has-left that old-man go-to-BaLaŋaw

'That old-man has-left for-BaLaŋaw'

The main verb in (5) is davacŋa, and the directional
verb mubaLaŋaw is an embedded and non-finite verb that
does not take any tense or aspect marker. The verb
mubaLaŋaw is in the same class as mulataD; both are 'self-
moving' and directional. The following tree illustrates
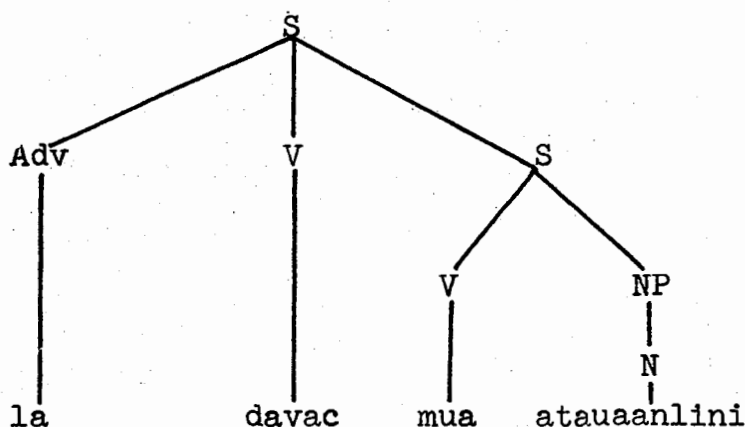the structure of (5):

(5')
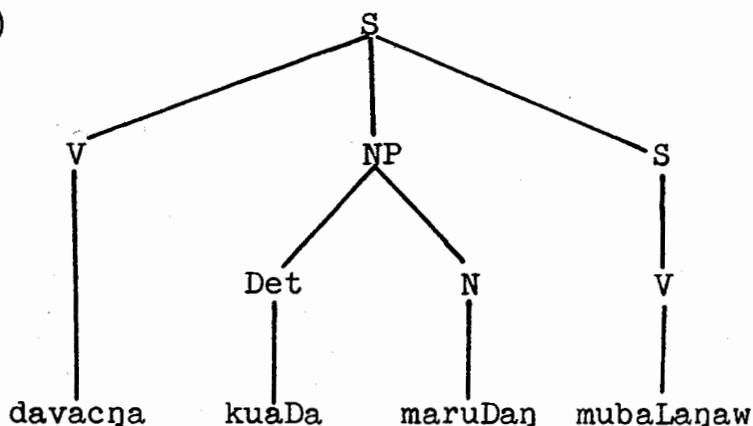
(6) la   davac mua atauaanlini.
     then leave go place-their

'Then (they) went to their-place'

The main verb in (6) is davac, which does not take
the past tense marker wa- after the item la. Direction
is expressed by the embedded verb mua. (All embedded
and non-finite verbs must follow, not precede, the main
verb in Rukai; see 4.4.2.4 and 4.7.) The following
tree illustrates the structure of (6):

(6')


```
        S
    ／   |   ＼
  Adv    V     S
   |     |    ／ ＼
   |     |   V    NP
   |     |   |     |
   |     |   |     N
   |     |   |     |
   la   davac mua atauaanlini
```

(7) muabaLaŋawaku.

'I-went-to-BaLaŋaw'

The examples above show that direction can be expressed by the verb mua or the directional verbal prefix mu-. It can also be expressed by the causative ʔaua 'cause to go', e.g.

(8) ʔaua   ciiLi daɨdaɨ ku maLɨŋa inia bɨlbɨl.
    cause-go throw ground   that banana

'MaLɨŋa threw that banana to the ground'

4.3.3.8.2. COMITATIVE

There is no COMITATIVE case in Rukai. A conjunctive si 'and' may be used, as in (1), but si with the following noun cannot shift position, as in (2):

(1) tarukuk si maymay maʔɨLɨLɨ ikai.
     chicken and duck   accompany stay
                        [+fin]   [-fin]

'The chicken and duck stay together'

(2) *si maymay tarukuk maʔɨLɨLɨ ikai.
    and duck   chicken accompany stay

The subject of (1) is of the A-and-A pattern that is not treated in this study. The main verb is maʔɨLɨLɨ, and the embedded verb is ikai, which can be left out in the sentence.

The verb ʔaɨLɨ 'accompany' or its derived form kiʔaɨLɨ 'be accompanied' may be used in the sentences to express comitative:

(3) waʔɨcaku kiʔaɨLɨ inia Likulaw iDaa taikaian iDaa
     slept-I   be-joined that leopard that place   of

     tawʔuŋ.
     dog

     'I-slept with that leopard in the doghouse'

(4) la   kiʔaɨLɨ iDaa kualaub kuaDa sakacɨkɨlli.(19-17)
     then   that burning that husband-my

     'Then my-husband was-burned together (with the others) by fire'

(5) muabaLaŋaw   kiʔaɨLɨ   nakua ku lacɨŋ.
     went-to-BaLaŋaw   be-joined   me
     [+fin]   [-fin]

     'Lacɨŋ went-to-BaLaŋaw with me'

The verb kiʔaɨLɨ in (3) and (5) is embedded and non-finite. It will take the past tense marker a- when it occurs at the beginning of the sentence as the main verb:

(6) kiaʔaɨLɨ   nakua ku lacɨŋ mubaLaŋaw.
     was-joined   me   go-to-BaLaŋaw
     [+fin]   [-fin]

     'Lacɨŋ went-to-BaLaŋaw with me'

4.3.3.8.3.   RESULT

"Result (R), the entity that comes into existence
as a result of the action" (Fillmore 1969b:77)

"The RESULT case relationship indicates that into
which the OBJECT is changed or which the OBJECT
becomes like" (Taylor 1971:431)

There is no RESULT case in Rukai.   Result is expressed
by a verb formative, not an independent noun:

(1)   kuaDa sakacɨkɨlini mutiatulik.   (3-71)
      that wife-his   turn-into-a-mouse
      $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

      'His-wife turned-into-a-mouse'

(2)   tuadaan   kuani umas.
      built-house   that man
                          $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$

      'That man built-a-house'

(3)   tualalak   kuani ababay kuðaa.
      had-baby   that woman yesterday
                        $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

      'That woman had-a-baby yesterday'

(4)   tuabava   kuaDa lakaukaul.
      made-wine those common-people
                       $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$

      'Those common-people made-wine'

(5)   tatubaas   ki Dɨɨtɨ. (6-16)
      let's-make-soup   sausage
                          $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

      'Let's make-soup out of the sausage'

Note that in (5) the accusative personal determiner ki marks the non-personal noun D̶i̶i̶t̶i̶ 'sausage', which was actually transformed from the human noun tama 'father' in the story.

As far as could possibly be determined from data elicited from informants, all creative acts pattern similar to that stated above. Further examples: tua?uy 'start a fire', tubatuk 'lay eggs', tukaDay 'make a net', tuaDiṇay 'make good, mend, repair', etc. See the derivation rules for these verbs in 5.1.4. This type of verb takes no RESULT actant.

4.3.3.8.4. MANNER

"All MANNER actants are interpreted as describing the way or manner in which one or more of the other actants is related to the Pred." (Taylor 1971:46)

Manner is expressed by verbs in Rukai:

(1) aniaLaLaṇ duadavac kuani maruDaṇ.
     was-slow   to-walk   that   old-man
     $\begin{bmatrix} +V \\ +fin \end{bmatrix}$ $\begin{bmatrix} +V \\ -fin \end{bmatrix}$ $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

     'That old-man walked slowly'

(2) kiararagay kivaivaivaṇ kuani Lulay.
     was-happy   be-playing   that   child
     $\begin{bmatrix} +V \\ +fin \end{bmatrix}$ $\begin{bmatrix} +V \\ -fin \end{bmatrix}$ $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

     'That child was-playing happily'

(3) aniaLaLaṇa suarar.
     Be-soft!   to-put-down
     $\begin{bmatrix} +V \\ +fin \end{bmatrix}$ $\begin{bmatrix} +V \\ -fin \end{bmatrix}$

'Put-it-down slowly (softly)!'

(4) ?akuaDawa   sinay.
    Make-big!   sing
    $\begin{bmatrix} +V \\ +fin \end{bmatrix}$ $\begin{bmatrix} +V \\ -fin \end{bmatrix}$

'Sing loudly!'

(5) kilaluduDa   aniDakal.
    Be-quick!   get-up
    $\begin{bmatrix} +V \\ +fin \end{bmatrix}$ $\begin{bmatrix} +V \\ -fin \end{bmatrix}$

'Get-up quickly!'

All these sentences have an embedded structure containing
a main verb and a following non-finite verb in each
sentence (cf. 4.7). The word that translates as Manner
in English is realized as the main verb in each sentence.

4.3.3.8.5. Distinctions between Non-finite Verbs and
            Prepositions

In this section (4.3.3.8), many examples have been
given to show that verbs instead of nouns or prepositions
are used to express some case relations utilized in some
languages such as Japanese and English. These verbs may
occur either as the main verb or embedded non-finite
verb in the sentence.

     Since Rukai prepositions are derived from non-finite
verbs (cf. the discussions of prepositions in 4.3.1 and
the preposition derivation rule in 5.3), the question
must be raised as to how to distinguish between them
syntactically. Some criteria can be set up to distinguish

them when they occur in the sentence:

(1) A non-finite verb in Rukai can be followed by a
determiner preceding the object of the verb, but a
preposition cannot.

(2) A non-finite verb can occur without a sister NP,
i.e. taking no object, whereas a preposition cannot occur
without a sister NP.

(3) A non-finite verb, which is embedded, is inflected
and takes the subject markers, tense markers, etc. when
shifted to the position of the main verb, whereas a
preposition never changes its shape wherever it appears
in the sentence.

(4) A non-finite verb must always take the infix u
in the embedded position if the stem begins with a
consonant followed by the low vowel.

The verbs in all the examples given in this section
all manifest one or more of the characteristics of verbs
and satisfy the criteria stated above.

4.3.4. Case Compatibility

The following rules state the compatibility of N's with P's or Det's. The cooccurrence restrictions are all selectional features stated in terms of sister categories. Cf. Taylor (1971:211-13).

(1) $\left\{\begin{matrix}[+\text{pron}]\\ [+\text{dual}]\\ [+\text{excl}]\\ [+\text{mass}]\\ [+\text{quote}]\end{matrix}\right\}$ $\dashrightarrow$ $[-[+\text{Det}]\underline{\quad}]$

A pronoun, dual, exclamation, mass noun, or quote noun may not occur after a determiner, no matter whether they occur as the subject or object in the sentence.

(2) $[+\text{NM}]$ $\dashrightarrow$ $[+[+\text{Det}]\underline{\quad}]$

This rule is ordered after (1). With the exceptions stated in (1), a subject must be preceded by a determiner.

(3) $\begin{bmatrix}+\text{AC}\\ +\text{LOC}\\ -\text{def}\end{bmatrix}$ $\dashrightarrow$ $[-[+\text{Det}]\underline{\quad}]$

An indefinite LOCATION actant in the object position may not be preceded by a determiner (see 4.6.4).

(4) $\begin{bmatrix}+\text{AC}\\ \left\{\begin{matrix}[+\text{INS}]\\ [+\text{TIM}]\end{matrix}\right\}\end{bmatrix}$ $\dashrightarrow$ $[\pm[+\text{Det}]\underline{\quad}]$

An accusative INSTRUMENT or TIME actant may or may not occur after a determiner (see 4.3.3.1 and 4.3.3.3).

The following redundancy rule of verb, which should more appropriately belong to the verb section (4.4.3), is relevant to the cooccurrence restriction of the accusative INSTRUMENT, and is thus listed here:

$$(5) \quad \begin{bmatrix} +V \\ +\underline{\quad} \begin{bmatrix} +AC \\ +INS \end{bmatrix} \end{bmatrix} \quad \dashrightarrow \quad [-\underline{\quad} \begin{bmatrix} +AC \\ +INS \\ -[+Det]\underline{\quad} \end{bmatrix}]$$

This rule states that the instrumental verb <u>arakai</u> 'use' may not occur before an accusative INSTRUMENT actant without a determiner (see 4.3.3.3).

Although these rules generate [+AC, +INS] actants without determiners, these actants will never appear in sentences. This is because only the verb <u>arakai</u> allows [+AC, +INS] actants, and it requires them to have a determiner. All other INSTRUMENT actants must be [+I]. In conjunction with the rule that prevents determiners from occurring with prepositions, these rules account for the properties of INSTRUMENT actants: in the [+AC] case form, they always take determiners, and in the [+I] case form, they never do.

$$(6) \quad [+AC] \quad \dashrightarrow \quad [+[+Det]\underline{\quad}]$$

This rule is ordered after (1), (3) and (4). With the exceptions stated in those rules, an object must be preceded by a determiner.

$$(7) \quad \begin{bmatrix} +N \\ \alpha K_i \end{bmatrix} \quad \dashrightarrow \quad [-\begin{bmatrix} +Det \\ -\alpha K_i \end{bmatrix}\underline{\quad}]$$

This is a case agreement rule stated negatively to prohibit the occurrence of any two successive items (of sister categories) having different case values. (K is an abbreviation for case features.) This rule requires that N's and Det's which precede them be "case compatible".

The same requirement does not hold true also of all N's in the sister categories of an NP rule such as attributes, which are always accusative and indicated by the rule: $[+N] \longrightarrow [-\underline{\hspace{1em}}[+NM]]$ in 4.2.5.

$$(8) \quad [+P] \longrightarrow \begin{bmatrix} -\underline{\hspace{1em}}[+[+Det]\underline{\hspace{1em}}] \\ -\underline{\hspace{1em}} \begin{cases} [+AGT] \\ [+OBJ] \\ [+DAT] \\ [+BEN] \end{cases} \end{bmatrix}$$

This rule states that a preposition may not occur before a determiner, or any of the cases: AGT, OBJ, DAT, or BEN. In fact, a preposition may occur only before TIM, LOC, and INS.

$$(9) \quad \begin{bmatrix} +P \\ +L \end{bmatrix} \longrightarrow \begin{bmatrix} +\underline{\hspace{1em}} \begin{Bmatrix} [+LOC] \\ [+TIM] \end{Bmatrix} \\ -\underline{\hspace{1em}}[+INS] \end{bmatrix}$$

The $[+L]$ case form occurs only before LOC or TIM case. It may not precede INS.

$$(10) \quad \begin{bmatrix} +P \\ +I \end{bmatrix} \longrightarrow \begin{bmatrix} +\underline{\hspace{1em}}[+INS] \\ -\underline{\hspace{1em}} \begin{cases} [+LOC] \\ [+TIM] \end{cases} \end{bmatrix}$$

The $[+I]$ case form occurs only before INS. It may not precede LOC or TIM.

$$(11) \quad \begin{bmatrix} +L \\ -dir \end{bmatrix} \longrightarrow [-\underline{\hspace{1em}}[+TIM]]$$

TIME actants realized by the $[+L]$ case form must be directional. Unlike LOCATION, TIME is never marked by a non-directional preposition.

4.4. Verbs

Anything that is dominated by V in a tree is a verb. See 4.5 for the criteria by which verbs are distinguished from nouns.

4.4.1. Features of Verbs and Cooccurrence Restrictions

(1) [+V] --> [±fin, ±cont]

A verb can be either finite [+fin] or non-finite [-fin], either continuative [+cont] or non-continuative [-cont]. All [-fin] verbs appear only in embedded or imperative sentences, though not all embedded sentences are [-fin]; some embedded sentences have [+fin] in sub-ordinate constructions. [-fin] verbs do not take tense markers, subject markers, etc. [+cont] is indicated by reduplication, complete or partial, of the verb stem (see the reduplication rules in 6.1). [+cont] and [-cont] may occur with [-fin], as stated in (1).

(2) [+fin] --> [±stat, ±comp, ±spkr, ±addr]

Finite verbs are sub-classified into stative [+stat] and non-stative [-stat]. Stative verbs are roughly equivalent to the traditionally termed "adjective" functioning as predicate of the sentence. The motivation for treating adjectives as a type of verb is to simplify the phrase structure rules and gain generality. Rukai statives have more limited distribution than in other languages such as English. For example, a stative verb

may not occur as a non-finite verb in Rukai (see (10) below), and may not be causativized (see (7) below).

The completive [+comp] marker is invariably the suffix -ŋa.

Finite verbs can be marked for the persons analyzable in terms of the two features [±spkr, ±addr]: the first person [+spkr, -addr], the inclusive 'we' [+spkr, +addr], the second person [-spkr, +addr], and the third person [-spkr, -addr]. These are the features underlying the subject markers realized as verbal affixes (see 4.2.1.2, also cf. the personal possessive suffixes treated in 4.2.7).

$$(3) \quad \left\{ \begin{matrix} \begin{bmatrix} +\text{spkr} \\ -\text{addr} \end{bmatrix} \\ \begin{bmatrix} -\text{spkr} \\ +\text{addr} \end{bmatrix} \\ \begin{bmatrix} -\text{spkr} \\ -\text{addr} \end{bmatrix} \end{matrix} \right\} \quad \dashrightarrow \quad [\pm\text{pl}]$$

$$(4) \quad \begin{bmatrix} +\text{spkr} \\ +\text{addr} \end{bmatrix} \quad \dashrightarrow \quad [+\text{pl}]$$

(These two rules are the same as those for nouns; see 4.2.7.1.)

The subject markers distinguish between singular [-pl] and plural [+pl]; cf. the personal possessive suffixes in 4.2.7.1. They all agree in person and number with the subject, which may never occur overtly in a sentence unless the verb is the third person:

$$(5) \quad [+V] \quad \dashrightarrow \quad \left[-\underline{\quad}\begin{bmatrix}+NM \\ [+spkr] \\ [+addr]\end{bmatrix}\right]$$

Thus in a sense the suffixes could be considered "nominative", since they are in complementary distribution with [+NM] constituents and mark the person and number of the subject. (Formally, these affixes are not marked [+NM], since in a lexicase grammar, affixes cannot have features distinct from the stem.)

The following rules indicate subject agreement in person and number. Verbs are marked for person and number by affixes, and verbs may not disagree for these features with any actant in the nominative case form:

$$(6)(a) \quad \begin{bmatrix}+V \\ \alpha spkr\end{bmatrix} \quad \dashrightarrow \quad \left[-\begin{bmatrix}+NM \\ -\alpha spkr\end{bmatrix}\right]$$

$$(b) \quad \begin{bmatrix}+V \\ \alpha addr\end{bmatrix} \quad \dashrightarrow \quad \left[-\begin{bmatrix}+NM \\ -\alpha addr\end{bmatrix}\right]$$

$$(c) \quad \begin{bmatrix}+V \\ \alpha pl\end{bmatrix} \quad \dashrightarrow \quad \left[-\begin{bmatrix}+NM \\ -\alpha pl\end{bmatrix}\right]$$

For this type of rule, a convention needs to be set up: A negatively stated feature matrix on the right of the arrow without specifying the environment ___ indicates that it may not occur before or after the feature matrix on the left of the arrow.

The rules in (6) are stated negatively so that they do not require the presence of a subject, but if a subject does appear, it cannot disagree in person and number with the verb. These features can also be read as implications,

as can all selectional features: a verb which excludes
the possibility of, say, a non-first-person subject
implies a first-person subject. The formalization of
these rules follows Starosta (1971c:439).

(7) [-stat] --→ [±inch, ±fut, ±caus]

Non-stative verbs can be either inchoative [+inch]
or non-inchoative [-inch], either future [+fut] or non-
future [-fut], either causative [+caus] or non-causative
[-caus]. Rukai statives may not be causativized.

(8) [+stat] --→ [-fut]

Statives may not occur with the future tense.

(9) [+inch] --→ [-past]

Rukai inchoatives may not occur with the past tense.

(10) [-fin] --→ [-stat]

Non-finite verbs may not be statives. (8)--(10)
are all redundancy rules.

(11) [-fin] --→ [±imp]

Imperative verbs are a sub-class of non-finite verbs,
marked by the suffix -a, e.g. uŋul-a 'Drink!'

(12) [+imp] --→ [±polite]

Imperatives may or may not be polite. Polite
imperatives are marked by the suffix -na, e.g.ʔa-θuθu-a-na
'Please nurse (the baby)!'

(13) [-fut] --→ [±past]

Non-future tense can be past [+past] or non-past
[-past].

(14) [+V] ---→ [-[-emph]___]

A verb does not occur after a non-emphatic noun. In other words, a noun occurring before a verb indicates emphasis; see 4.2.7.1. Maybe post-verb nouns can also be emphatic and take contrastive stress, but it is not clear if this is the case in Rukai.

(15) [+fin] ---→ [-___[+fin]]

A sentence does not allow two finite verbs (unless there is a coordinate construction or time or conditional clause, which is beyond the scope of the present study). The first verb is finite and the embedded verb can only be non-finite. The rule, as usual, can be stated in terms of sister categories, because the embedded S is a sister of the main verb and the V dominated by S is the head. The non-finite verb is the head of an embedded S, just as N is the head of an NP:

(16)
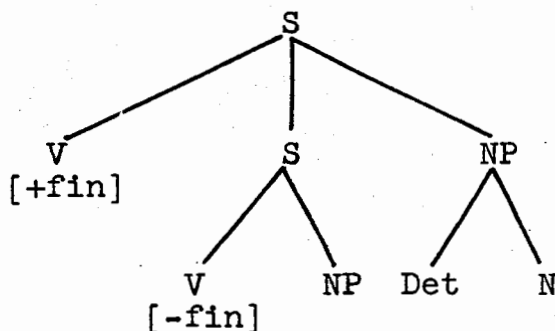
Non-finite verbs may not precede the main finite verb of the sentence.

The very first verb of the sentence must be the main verb and be finite unless it is imperative, which is non-finite and occur sentence-initially.

(17) [+fin] ⟶ [-[+AC]___]

The main verb may not occur after a direct object in the sentence; cf. 4.1.

OA (1935:337) provide a table of tenses for Rukai, as based on the dialect of Tanan:

| | Class I | Class II | | |
	Agent-subject	Object-subject	Location subject	Instru-subject
Def. Pres.	kani 'eat'	?	?	?
Pres. Prog.	k-o-ani-kani	?	?	?
Indef. Pres.	oa-kani, k-o-kani	vaLiŋiviŋ-ani 'miss'	ta-oa-ani 'go'	sa-saLimi 'plant'
Def. Past	oa-kani-ŋa	?	?	?
Indef. Past	na-kaoriwa 'talk'	b-in-aað-a 'give'	na-ta-oa-ani 'go'	?
Def. Fut.	ai-kani 'eat'	?	?	?
Indef. Fut.	kani-kani	a-kani-aʔ 'food'	ta-aga-aga-aʔ 'kitchen' sa-tsabo-tsabo-aʔ 'wrapping cloth'	

OA (1935:337) note that "for lack of data, lots of things are unclear, and further research is required" (my translation).

I would like to make a few remarks on their table. First, the missing inflected forms suspected by OA simply

do not exist in the language. Second, some of the forms listed in their table are rejected as unacceptable by my informants, e.g. *k-o-ani-ani, *k-o-ani. Third, they mix underlying and surface representations. With a few exceptions, word-final -n is not pronounced except before suffixes, thus the forms listed in the table roughly correspond to the underlying representation. However, the final echo vowel is a surface phonetic phenomenon, e.g. vaLinivin-ani 'to miss', ta-oa-ani, na-ta-oa-ani 'went'. Fourth, various possible forms have been missed by OA, e.g. the y- variant of the morpheme 'future', the a-, -a- and aw variants of 'past'. Fifth, the distinction between "definite" and "indefinite" for all the three tenses (present, past, and future) made by OA is extremely suspect. I have found no evidence for the existence of such a distinction. Sixth, they mix verbal and nominal forms in the same table, e.g. na-kaoriwa 'talk' in their Class I and all the forms in their Class II are nominal, while the rest are verbal. Seventh, they miss the ki-passive forms.

Actually, the Rukai tense and aspect forms which I have elicited for the same verb stem kani 'to eat' include only the following:

(1) Verbal:

 (a) Active (AGENT-subject):

Aspect / Tense	Plain	Completive	Continuative
Present	kanɨ	kanɨ-ŋa	kanɨ-kanɨ
Past	wa-kanɨ	wa-kanɨ-ŋa	wa-kanɨ-kanɨ
Future	ay-kanɨ	ay-kanɨ-ŋa	ay-kanɨ-kanɨ

 (b) Passive (OBJECT-subject):

Aspect / Tense	Plain	Completive	Continuative
Present	ki-kanɨ	--	ki-kanɨ-kanɨ
Past	ki-a-kanɨ	ki-a-kanɨ-ŋa	ki-a-kanɨ-kanɨ
Future	ay-ki-kanɨ	ay-ki-kanɨ-ŋa	ay-ki-kanɨ-kanɨ

(2) Nominal (For a discussion of differences between verbal and nominal, see 4.5):

Aspect / Tense	Plain	Completive	Continuative
Past	{ ni-kanɨ-an / k/in/anɨ-an	{ ni-kanɨ-an-ŋa / k/in/anɨ-an-ŋa	{ ni-kanɨ-kanɨ-an / k/in/anɨ-kanɨ-an
Future	a-kanɨ-an	a-kanɨ-an	a-kanɨ-kanɨ-an

The nominalized forms have only past and future, no present.

What OA call "location-subject" and "instrument-subject' in their class II are simply derived nouns denoting place and implement respectively (see 5.2.2).

4.4.2.   Illustration of Some Verb Features in Sentences

Some of the important features of verbs will be discussed more thoroughly and exemplified with sentences in 4.6, e.g. "passive" in 4.6.6, "stative", "nonstative", and "inchoative" in 4.6.9, "imperative" in 4.6.10, "non-finite" in 4.7.1.   In addition, "causativization" will be treated in 5.1.3.   In this section, I shall take up only a few and treat them briefly.

4.4.2.1.   Tense and Aspect

Only finite verbs can take tense and the completive aspect markers.   Cf. the derivation rules in 5.1.6.

The future tense is indicated by <u>ay-</u> or <u>y-</u>;   generally the former is used, though the latter may be used optionally when the verb stem begins with a vowel:

(1)   <u>ay-tumawlayaku</u> <u>kyasa.</u>
      fut-tell-tale-I now

      'I-shall-tell-a-story now'

(2)   <u>(a)y-uasu</u> <u>inu?</u>
      fut-go-you where

      'Where will-you-go?'

The past tense may be indicated by adding the affixes <u>a-</u>, <u>-a-</u>, and <u>wa-</u> (or <u>aw-</u>) to the verb stem:

(3)   <u>a-muasu</u>   <u>inu?</u>
      past-go-you   where

      'Where did-you-go?'

(4)   <u>tu-a-lalak</u>   <u>kuani</u> <u>ababay.</u>
      have-past-baby   that   woman

'That woman had-a-baby'

(5) <u>wa-kani</u> <u>kuani</u> <u>umas</u> <u>sa</u> <u>aga.</u>
     past-eat that man   rice

'That man ate rice'

See 5.1.7 for an explanation of the three different types

of verbs that form the past tense in the different ways.

Incompatible tense features of the verb and noun

will result in ungrammatical sentences:

(6) *<u>ay-kani</u> <u>kuani</u> <u>umas</u> <u>sa</u> <u>aga</u> <u>ku-ðaa.</u>
     fut-eat that man   rice past-day

'*That man will-eat rice yesterday'

(7) *<u>wa-kani</u> <u>kuani</u> <u>umas</u> <u>sa</u> <u>aga</u> <u>lu-ðaa.</u>
     past-eat that man   rice fut-day

'*That man ate rice tomorrow'

In fact, only a few nouns have "tense" markers or bear

tense features, e.g. <u>ku-cail</u> 'last year', <u>lu-cail</u> 'next

year', <u>ku-iga</u> 'when (past)', <u>lu-iga</u> 'when (future)'; cf.

5.2.4. Tense features have to be marked on these lexical

items. Tense agreement rules are needed:

(8)(a) $\begin{bmatrix} +V \\ \alpha fut \end{bmatrix} \ \dashrightarrow \ [-\begin{bmatrix} +N \\ -\alpha fut \end{bmatrix}]$

(b) $\begin{bmatrix} +V \\ \alpha past \end{bmatrix} \ \dashrightarrow \ [-\begin{bmatrix} +N \\ -\alpha past \end{bmatrix}]$

The completive marker is invariably the suffix -<u>ŋa</u>:

(9) <u>wa-kani-ŋa</u>   <u>sa</u> <u>bilbil</u> <u>kayvay</u> <u>Lulay.</u>
     past-eat-comp   banana this child

'This child has-eaten a banana'

(10) <u>ay-laub-ŋa-naku</u> <u>musua?</u>
     fut-burn-comp-I you

'Shall-I-soon-burn you?'

The completive occurs not only with the past tense, e.g. (9), but also with the future, e.g. (10) above. The future completive has the meaning of 'right away, immediately, soon, etc.' See the table in 4.4.1 for the various possible combinations of tenses and aspects.

4.4.2.2. Continuative

Continuative is indicated by the reduplication of the verb stem:

(1) ki-kani-kani̱ kuaDa bu?a?lini.
    being-eaten those sheep-their

    'Their-sheep are-being-eaten'

Unlike the tense markers and the completive aspect marker, continuative can occur with non-finite verbs:

(2) iakai ina daanli tubi-tubi kay Lulay.
    stayed that house-my crying this child
    [+fin]   [−fin]
                          [+cont]

    'This child stayed in my-house crying'

Continuative may occur with statives as well as inchoatives:

(3) ma-lisi-lisi nakua kay maruDaŋ.
    is-being-angry me this old-man
      [+cont]
      [+stat]

    'This old-man is-being-angry at me'

(4) ay-ka-lisi-lisi musua kay maruDaŋ.
    fut-be-getting-angry you this old-man
      [+cont]
      [+inch]

    'This old-man will-be-getting-angry at you'

Continuative may occur with causative:

(5) <u>ʔa-ka-lisi-lisi</u> <u>numia</u> <u>kay</u> <u>umas</u>.
   make-get-angry   you this man
   $\begin{bmatrix} +cont \\ +caus \end{bmatrix}$

   'This man made you get-angry at each other'

(6) <u>ku maLiŋa</u> <u>ʔa-tu-a-ba-baas</u>   <u>sa</u> <u>guuŋ</u> <u>ki</u> <u>duLay</u>.
             .make-cook-past-soup   cow
                  $\begin{bmatrix} +cont \\ +caus \end{bmatrix}$

   'As for MaLiŋa, he made DuLay cook beef soup'

Continuative may occur with passive:

(7) <u>ki-a-ba-baay-aku</u> <u>matuLul</u> <u>si</u> <u>Lima</u> <u>ɨa</u> <u>ka</u> <u>Damar</u>.
   pass-past-being- thirty and five one month
   paid-I
        $\begin{bmatrix} +cont \\ +pass \end{bmatrix}$

   'I-was-being-paid thirty-five dollars per month'

Continuative may occur with completive:

(8) <u>wa-uda-udal-ŋa</u>   <u>kaway</u> <u>LigLig</u>.
   past-being-raining-already there mountain
        $\begin{bmatrix} +cont \\ +comp \end{bmatrix}$

   'It has-been-raining over-there on-the-mountain'

Continuative verbs may be nominalized (see 4.6.8) and

take a possessive suffix (e.g. -<u>li</u> in (9) below) or

follow the article <u>ka</u>:

(9) <u>kay</u> <u>aga</u> <u>ʔaka-ʔakanɨ-li</u> <u>na</u> <u>tawʔuŋ</u>.
   this rice be-feeding-my that dog
           $\begin{bmatrix} +cont \\ +nom \\ +poss \end{bmatrix}$

   'This rice is what I use to feed that dog with'

(10) <u>kay</u> <u>maruDaŋ</u> <u>ka</u> <u>ma-lisi-lisi</u> <u>ikai</u> <u>numiana</u> <u>musua</u>.
   this old-man   being-angry stay your-house you

   'As for this old-man, he is-being-angry at you

in your-house'

Continuative may also occur with imperative in the
infinitive form:

(11) $\underset{\substack{\text{Make-good!} \\ \begin{bmatrix} +\text{cont} \\ +\text{caus} \\ +\text{imp} \end{bmatrix}}}{\text{ʔu-Da-Diŋay-a}}$ $\underset{\text{work}}{\text{tuLavay.}}$

'Work well!'

In short, continuative may cooccur with any other
feature of the verb discussed in 4.4.1.

4.4.2.3. Subject Markers and Nominatives

The subject markers of the verb were touched on for
comparison with the possessive suffixes of the noun in
4.2.7. It was stated again in the previous section that
verbs are marked for person and number by affixes, and
that verbs may not disagree for these features with any
actant in the nominative case form. For example,

(1) $\underset{\text{saw-you}}{\text{wacɨɨl-su}}$ $\underset{\text{that}}{\text{iDaa}}$ $\underset{\text{fire}}{\text{aʔuy.}}$

'You-saw that fire'

(2) *wacɨɨl-su kuani Lulay iDaa aʔuy.
          └── that ──┘ child

'*That child you-saw that fire'

If verbs are marked for the first or second person by
affixes, the subject of the first or second person
(singular or plural) verb never occurs overtly in the
sentence:

(3) *wacɨɨl-aku kunaku iDaa aʔuy.
     saw-I   I

   '*I I-saw that fire'

(4) *wacɨɨl-su kusu iDaa aʔuy.
     saw-you you

   '*You you-saw that fire'

However, if the verb is in the third person, there is no overt subject marker on the verb, and there can be a nominative constituent for the third person in the sentence:

(5) wacɨɨl (kuani Lulay) iDaa aʔuy.
    saw   that child that fire

   '(That child) saw that fire'

Thus the third person is the most neutral of all persons. A verb cannot take two subjects:

(6) *wacɨɨl kuani Lulay kuani umas.
    saw   that   child that   man

   '*That child that man saw (it)'

An equational sentence cannot contain two subjects either:

(7) *kuani umas kuani tamali.
    that   man   that father-my

   '*That man is that father-of-mine'

4.4.2.4. Finite and Non-finite Verbs

There must be a finite verb in every non-imperative sentence. As stated in 4.4.1, the first verb of the sentence must be the main verb and be finite unless it is imperative:

(1) wauŋul sa acilay ikai daan kuani umas.
    drank   water stay house that man
    [+fin]   [-fin]

'That man drank water in a house'

A non-finite verb may not precede a finite verb in the sentence:

(2) *uŋul sa acilay iakai daan kuani umas.
    [-fin]   [+fin]

A sentence may not contain two finite verbs (unless there is a coordinate construction or time clause, which is beyond the scope of this study):

(3) *wauŋul sa acilay iakai daan kuani umas.
    [+fin]   [+fin]

A sentence may not contain only two non-finite verbs unless the main verb is imperative; cf. (1) and (2):

(4) *uŋul sa acilay ikai daan kuani umas.
    [-fin]   [-fin]

4.4.3.   Case-frame Subcategorization and Redundancy Rules

4.4.3.1.   Case-frame Subcategorization Rules (CFSR's)

CFSR 1.   [+V]   --→   [± ___([+NM])]

A verb may or may not allow a subject in the sentence.

CFSR 2.   [-___[+NM]]   --→   [± ___([+OBJ])]

Verbs that do not allow subjects may or may not
allow OBJECT actants (as objects of the sentences). Verbs
that allow neither subjects nor objects are "meteorologi-
cal" (see 4.6.1). Verbs that allow no subjects but do
allow objects are "existential" (see 4.6.2).

CFSR 3.   [+___[+NM]]   --→   [± ___([+AC, +OBJ])]

Verbs that take subjects may or may not have OBJECT
actants as objects of the sentences. This is roughly
equivalent to saying that they may or may not be "transi-
tive" verbs (see 4.6.5).

CFSR 4. $\begin{bmatrix} + \underline{\quad} [+NM] \\ - \underline{\quad} [+AC, +OBJ] \end{bmatrix}$ --→   [± ___([+AC, +LOC])]

Verbs that take subjects but do not have OBJECT
actants as objects may or may not have LOCATION actants
as objects of the sentences. If they do, they are
"locative" (see 4.6.4).

There are two sub-types of locative sentences:
One of them is with LOCATION actants present, and the
other is with LOCATION absent in the sentences (see

examples (7) and (8) in 4.6.2).

CFSR 5. $\begin{bmatrix} + \underline{\quad}[+NM] \\ - \underline{\quad}[+AC, +OBJ] \\ - \underline{\quad}[+AC, +LOC] \end{bmatrix}$ $\longrightarrow$ $[\pm \underline{\quad}([\pm INS])]$

Verbs that have subjects but take neither OBJECT nor LOCATION actants as objects may or may not take INSTRUMENT actants. If they do, they are "non-stative"; if they do not, they are "stative" (see 4.6.9).

CFSR 6. $\begin{bmatrix} + \underline{\quad}[+NM] \\ + \underline{\quad}[+AC, +OBJ] \end{bmatrix}$ $\longrightarrow$ $[\pm \underline{\quad}[+NM, +AGT]]$

"Transitive" verbs may or may not have AGENT actants as subjects of the sentences.

CFSR 7. $\begin{bmatrix} + \underline{\quad}[+AC, +OBJ] \\ - \underline{\quad}[+NM, +AGT] \end{bmatrix}$ $\longrightarrow$ $[\pm \underline{\quad}([+NM, +DAT])]$

"Transitive" verbs that take OBJECT actants as objects of the sentences but do not have AGENT actants as subjects can only have DATIVE or INSTRUMENT actants as subjects (cf. CFRR 9 in 4.4.3.2). The former type of sentence includes "possessive", "perceptual", "psychological", etc. The latter includes "causative" and "non-tool INSTRUMENT of natural elements" (see 4.3.3.3). Verbs with INSTRUMENT subjects are predicted by CFRR 9 in 4.4.3.2.

CFSR 8. $\begin{bmatrix} + \underline{\quad}[+NM] \\ - \underline{\quad}[+AC, +OBJ] \\ - \underline{\quad}[+INS] \end{bmatrix}$ $\longrightarrow$ $[\pm \underline{\quad}([+DAT])]$

"Stative" and "inchoative" verbs may or may not allow DATIVE actants (see 4.6.9).

Fig.6. Case-frame Subcategorization of Verbs

The dendrogram above indicates the relationships of verb classes based on subcategoriza-tion of their case-frames. The labels put in quotation marks are the "pseudo-features", as used in Taylor (1971:174-5). They are merely convenient labels or abbreviations for case frames. The number in the tree refers to the number of CFSR that applies at each node.

4.4.3.2. Case-frame Redundancy Rules (CFRR's)

In the following case-frame redundancy rules (CFRR's), the superscript n following the end-parentheses or square brackets means that the actant may occur n number of times in the S in which the V occurs. Fillmore claims that each case except OBJECT can occur only once per sentence. However, we have seen examples that TIME and LOCATION actants can occur more than once in the same sentence (see 4.3.3.1 and 4.3.3.2). Cf. the CFRR's in Taylor (1971:219-23).

CFRR 1. $[+V] \quad \longrightarrow \quad \left[\begin{array}{l} + \underline{\quad} \left\{ \begin{array}{l} [+OBJ] \\ [+TIM] \end{array} \right\}^n \end{array} \right]$

This rule states that every verb must receive these two case frames. "Meteorological" verbs have to be marked as exceptions to this general rule by the feature $[-\underline{\quad}([+OBJ])]$ (see 4.6.1).

CFRR 2. $\begin{bmatrix} +V \\ -stat \end{bmatrix} \quad \longrightarrow \quad \left[\begin{array}{l} + \underline{\quad} \left\{ \begin{array}{l} [+INS] \\ [+LOC] \end{array} \right\}^n \\ - \underline{\quad} [+BEN] \\ - \underline{\quad} [+AGT] \\ - \underline{\quad} [+DAT] \end{array} \right]$

This rule states that every non-stative verb receives 2 case frames in which it can potentially occur and 3 in which it may not occur in the "normal" (unmarked) situation in Rukai. Transitive and ditransitive non-statives are marked for $[+\underline{\quad}[+AGT]]$ and $[+\underline{\quad}[+DAT]]$ respectively in the lexicon, and other classes do not

allow them. Verbs with [+___[+BEN]] are rare in Rukai, and also must be lexically marked.

CFRR 3.   [+V] --→ [-[+NM][+NM]]

No verb can occur with two subjects in the same sentence.

CFRR 4. $\begin{bmatrix} +V \\ -fin \end{bmatrix}$ --→ [-[+NM]]

Non-finite verbs, including imperatives and embedded verbs, may not cooccur with subjects.

CFRR 5.   "Transitive" V rule

$$\begin{bmatrix} +V \\ +\underline{\quad}[+AGT] \\ +\underline{\quad}[+OBJ] \\ +\underline{\quad}([+LOC])^n \\ -pass \\ -caus \\ <+\underline{\quad}[+DAT]> \end{bmatrix} \longrightarrow \begin{bmatrix} -\underline{\quad}[-NM, +AGT] \\ -\underline{\quad}[-AC, +OBJ] \\ -\underline{\quad}\begin{bmatrix} +AC \\ +LOC \end{bmatrix} \begin{bmatrix} +AC \\ +LOC \end{bmatrix} \\ <-\underline{\quad}[-AC, +DAT]> \end{bmatrix}$$

This rule is stated negatively. When AGENT, OBJECT, and LOCATION actants all occur in non-passive and non-causative sentences, the AGENT actants cannot but be realized as nominatives, OBJECT actants must be accusatives, and LOCATION actants must be as [+L] or [+AC], but not [+NM]. There may be one or more directional [+L, +dir] LOCATION actants, but there can be only one accusative LOCATION actant. The angle brackets < > indicate, as in phonological rules, that that which is within them must be both present or both absent on both sides of the arrow. That is to say, if DATIVE actants are present in the

input, they cannot but be realized as accusatives in the
output.

BENEFACTIVE actants are rare and occur only with a
few verbs. Of all the data I have in hand, [+BEN]
appears only once as the subject in a passive sentence,
once as the object in a causative sentence, and once
doubtfully as the object in a transitive, non-causative
and non-passive sentence (see 4.3.3.7), so I have not
included [+BEN] in this rule.

The feature [±caus] is introduced in a verb subcat-
egorization rule (see 4.4.1, Rule (7)) as well as a
causative derivation rule (see 5.1.5.2), and the feature
[±pass] is introduced by a passive derivation rule (see
5.1.2).

CFRR 6. $\begin{bmatrix} -\underline{\quad}[+NM] \\ +\underline{\quad}[+OBJ] \end{bmatrix} \longrightarrow \begin{bmatrix} -\underline{\quad}[-AC, +OBJ] \\ -\underline{\quad}([+DAT]) \end{bmatrix}$

Verbs that do not allow subjects but take OBJECT
actants must have OBJECT actants as objects. Such verbs
may not allow DATIVE actants. They are "existential"
(see 4.6.2).

CFRR 7. $[+\underline{\quad}[+NM]] \longrightarrow [+\underline{\quad}[+OBJ]]$

This rule says that all verbs that take subjects
must have OBJECT actants in the sentences. OBJECT
actants are the most neutral of all cases.

CFRR 8. $\left[\begin{array}{c} +\underline{\quad}[+NM] \\ -\underline{\quad}[+AC, +OBJ] \end{array}\right] \longrightarrow [+\underline{\quad}[+NM, +OBJ]]$

This rule states that verbs that take subjects but not OBJECT actants as objects of the sentences must have OBJECT actants as subjects of the sentences.

CFRR 9. $\left[\begin{array}{c} +\underline{\quad}[+AC, +OBJ] \\ -\underline{\quad}[+NM, +DAT] \end{array}\right] \longrightarrow [+\underline{\quad}[+NM, +INS]]$

Verbs that have subjects and take OBJECT actants as objects but do not have AGENT or DATIVE actants as subjects must have INSTRUMENT actants as subjects (see 4.3.3.3). This redundancy rule can only apply after CFSR 7 in 4.4.3.1.

4.5.   Distinctions between Nouns and Verbs

There is a problem of distinguishing between noun and verb. Relating to this problem is that of deciding whether a nominalized verb is a verb or a noun. A nominalized verb may be considered a nominal because it contains the nominalizer suffix -an. However, it still may function like a verb in that it may take a surface object. What is more, it expresses tense, aspect, etc.-- typical features of a verb. Should it be considered a verb or a noun?

The problem has been noted and argued by some linguists working on languages of Indonesia and the Philippines. Lopez (1937) and Capell (1964) consider the "passive" constructions to be nouns. Their position is rejected by Dahl (1951:208) and McKaughan (1962:49) respectively. Both positions can be summarized by a passage from McKaughan (1962:49, N.8):

> "A. Capell of Sydney University, in a MS he is preparing for publication, contends that because attributive pronouns (and phrases introduced by particles such as o in Maranao) occur with substantives to mark possession, the same relation exists when these occur attributive to verb-like words, and that therefore the verb-like words should be considered nominal. I do not agree that verbs should be called nouns simply because they occur with such attributives. Verbs in Philippine languages are those words which contain certain affixes indicating voice relations as well as tense, aspect, and mode."

Ferrell (1971) discusses the advantages and disadvantages of each view, and he seems to favor McKaughan and Dahl's

position. But the problem is far from settled.

If we use only morphological criteria to decide the question, the choice as to whether a form is a verb or a noun in Philippine languages must be made arbitrarily, since such evidence is contradictory. To resolve this difficulty, we can adopt syntactic as well as morphological criteria. The following are some criteria that might be adopted to distinguish between verb and noun, at least in Rukai:

(a) The nominalized forms all take the suffix -an. Any verb that takes the nominalizing suffix could be considered a derived noun, e.g. kalisi 'get bad' > kalisi-an 'bad place'.

(b) The set of pronominal verb affixes and that of personal possessives (see 4.2.1.2) are mostly identical but different in the first person singular and third person singular and plural. The first set serve as suffixes of verb stems while the second serve as suffixes of noun stems. An element could be identified as either verb or noun depending on which of the two sets it takes.

(c) A form could be considered a verb if it has the tense markers that are typical markers of verbs, not nouns. For example, all types of clearly verbal forms take the past tense markers wa-, a-, and -a-, whereas all clearly nominal forms indicate the past time by na- (and rarely ku-). The nominalized "passive" constructions

also take na- to indicate the past event. Verbal passives
(ki-) as well as nominalized verbs in equational sentences
take wa-.

The criteria discussed above are all morphological.
They are not always reliable. Lexical items can change
classes by taking different syntactic positions. For
example, the verb wakani with the past tense marker wa-
can be nominalized and appear in the typical noun slot
after a determiner in an equational sentence. Compare
(1) in which such nominalization occurs, with (2) which
is a "pure" equational sentence.

(1)   kayvay kaaŋ ka wakani.
       this   fish   ate

    'As for this fish, it is what-was-eaten'

(2)   kayvay umas ka tamali.
       this   man   father-my

    'As for this man, he is my-father'

To make the matter worse, morphological evidence may be
contradictory. For example, in the form wa-kani-li
'past-eat-my' the prefix indicates that it is a verb
whereas the suffix indicates that it is a noun--a contra-
diction between (b) and (c). In the form b/in/aay-an-aku
'I was given' the nominalizing suffix -an indicates that
it is a derived noun whereas the subject marker -aku
indicates that it is a verb--a contradiction between (a)
and (b). But the latter contradiction is rare. In fact,
that is the only one I have found. (Cf. 4.6.8.)

Now let us examine some possible syntactic criteria:

(d) A verb-like form should be considered a noun if it is immediately preceded by determiners ("attributive pronouns" and "particles" in McKaughan's terms). Determiners occur only before nouns, never before verbs, e.g. *kuaDa kani '*that eat', *kayvay vaivaŋ '*this amuse'. However, the verb-like elements in "passive" sentences can often be preceded by these determiners, e.g. (1) above. For this reason, verb-like elements should be considered nouns.

(e) Noun-like elements may occur in the main verb position of a sentence, and when they do, they are marked with typically verbal affixes:

(3) Damar 'moon'   >   ay-Damar-ŋa 'The moon will
                                       rise soon'
(4) Linig 'rock'   >   a-Linig-ŋa 'It will turn into
                                      a rock soon'
(5) tarukuk 'chicken' >   wa-tarukuk-ŋa 'The chicken
                                         has crowed'

The syntactic criteria have the following merits:

(a) They are never contradictory.

(b) They do not assume that a given stem must occur in only one class. Such an assumption would be contrary to everything we know about human languages.

(c) They allow us to explain the morphological facts, and resolve the contradictions:

(i) All -an forms do in fact act as nouns syntactically.

(ii) All forms with possessive suffixes act as nouns syntactically, and those with verbal pronominal affixes (subject markers) satisfy the syntactic criteria for verbs.

(iii) Forms with verbal affixes may meet the syntactic criteria for either verbs or nouns. This can be explained as follows:

1) Stems can occur in different syntactic classes;

2) Past, completive, passive, etc., are distinct though derivationally related syntactic classes; they are not inflected forms of members of the same syntactic class;

3) Verbs from these classes can also act as nouns;

4) When they do, their class-marking affixes carry over into the noun position.

One further kind of semantic evidence is that verb-like forms with verbal affixes have concrete referents when they occur in the syntactic position of nouns. For example,

(5) kayvay kaaŋ ka wakani.
     this   fish   ate

'As for this fish, it is what-was-eaten'

Thus, syntactic criteria give consistent non-contradictory identifications, explain apparently contradictory evidence, and fit in with what is known about human languages in general.

It is true that almost any "word" can occur either

as noun or verb. And it is a well-known fact that almost any noun can be verbalized and almost any verb can be nominalized in the languages of Indonesia and the Philippines. It has been claimed that such languages do not differentiate nouns and verbs, but it would be impossible to maintain this position and capture all the significant syntactic and morphological generalizations.

In conclusion, syntactic evidence is the most reliable evidence, whereas morphological evidence may be contradictory and irrelevant in settling the problem of noun-verb dichotomy. Syntactic criteria may sometimes coincide with morphological criteria, but not always. Instead of making an arbitrary choice as to which morphological criteria are more important, I have considered mainly that evidence which is syntactic.

4.6. Basic Sentence Types

In this study, I shall not treat certain complex sentence structures such as the coordinate construction, the time clause introduced by sa 'when', the conditional clause introduced by lu 'if', etc. However, I shall discuss embedded verbs in a separate section, 4.7.

There is quite a variety of sentence types in the language, but in this section I shall only discuss briefly some of the more basic sentence types.

Interrogative sentences are not treated as a separate sentence type because they are not different from statements (declarative sentences) in syntactic structure. Yes/no questions are simply indicated by rising intonation at the end of the sentence. Content questions are exactly the same as statements in syntactic structure. Therefore, various examples of interrogative sentences will be given in the following sections.

4.6.1. Meteorological Sentences

Meteorological sentences are subject-less, and each usually has only one main verb. Verbs of this group are commonly used in reduplicated forms to indicate the continuative aspect:

(1) uda-udal. 'It-is-raining'

(2) θɨ-θɨŋ. 'It-is-drizzling'

(3) vai-vai. 'It-is-sunny'

(4) <u>imɨ-imɨm</u>. 'It-is-cloudy'

(5) <u>ma(-sa)-sɨvɨ-sɨvɨr</u>. 'It-is-windy; the wind is
                                 blowing'

The meteorological verbs can, of course, be used in
various tenses:

(6) <u>ay-udal</u> <u>lu-ðaa</u>. 'It will-rain tomorrow'
     <u>will-rain</u> <u>tomorrow</u>

(7) <u>wa-udal</u> <u>ku-mauŋ</u>. 'It rained last-night'
     <u>rained</u> <u>last-night</u>

Adverbial nouns such as time and place may occur in
the meteorological sentences:

(8) <u>wa-udal</u> <u>ku-ðaa</u>. 'It rained yesterday'
     <u>rained</u> <u>yesterday</u>

(9) <u>ma-sɨvɨr</u> <u>balaŋaw</u>. 'It is-windy in Balaŋaw'
     <u>windy</u>   <u>(place)</u>

(10) <u>wa-udal</u> <u>ku-ðaa</u>   <u>balaŋaw</u>. 'It rained in Balaŋaw
      <u>rained</u> <u>yesterday</u> <u>(place)</u>   yesterday'

This type of verb has the case frame: $\begin{bmatrix} -[+NM] \\ -[+OBJ] \end{bmatrix}$.

The idiosyncracies of permitting no subject and OBJECT
actant have to be marked in the lexicon. The CFRR's in
4.4.3 will add TIM and LOC actants to the case frame.

4.6.2. Existential Sentences

The negator <u>kaDu(a)</u> 'not exist' is the negative
existential verb, whose corresponding affirmative verb is
<u>i(a)kai</u> 'exist'. They belong to a special class of verbs
with the case frame: $\begin{bmatrix} -[+NM] \\ +\underline{}[+AC, +OBJ] \end{bmatrix}$.

(1) kaDu-a   ka   cɨkɨl.
    not-exist   village
                     $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

    'There-was-no village'

(2) i-a-kai ka   cɨkɨl.
    exist   village
                     $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

    'There-was a village'

After the existential verb, the noun is always preceded
by the indefinite non-specific article ka, which phonolog-
ically goes with the verb rather than the noun; that is,
the pause usually comes after, not before, ka. The syn-
tactic position and function of ka in (1) and (2) seem to
parallel those of the nominative article ku and demonstra-
tives ku-ani and ku-aDa; cf. (3) and (4). The sentence
structure of all the four is a verb plus an NP, which in
turn consists of a determiner plus a noun.

(3) wa-kanɨ ku   tama-li.
    ate   father-my
                    $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

    'My-father ate'

(4) a-mua-ŋa   ku-aDa umas.
    has-gone   that   man
                       $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

    'That man has-gone'

Nevertheless, there is a difference between (1), (2) and
(3), (4). While ku in (3) and ku-aDa in (4) are clearly
nominatives, the ka in (1) and (2) is accusative; see

4.2.2.2. In an existential sentence, the verb does not require a nominative. The same phenomenon is found in many other languages such as Chinese.

An alternative analysis of the ka as in (1) and (2) would be to treat it as the predication marker of the sentences. The strange thing about such an analysis, however, would be that no other particle occurs after the verb and goes with it to form a constituent in Rukai.

Could ka be a verbal suffix and comparable to the completive -ŋa and suffix pronouns such as -aku? That is unlikely because -ŋa and -aku receive stress on the final syllable, whereas ka is never stressed.

In the existential sentence, the determiners are always indefinite. The following two sentences cannot be interpreted as indicated:

(5) *i-a-kai ku-ani cikil.
    exist   that village

   '*There-is that village'

(6) *kaDu-a ku-ani lalak-ini.
    not-exist that child-his

   '*There-is-not his-child; *he has-no children'

Sentences (5) and (6) would be interpretable as locative sentences with the revisions shown (cf. 4.6.4):

(7) i-a-kai-ana ku-ani cikil.
    exist-still that village

   'That village still-exists'

(8) kaDu-a   ku-aDa lalak-ini.
    not-exist   that child-his

'His-child is-not-present'

It is perhaps language universal that an existential sentence does not normally take a definite nominal. Cf. "There is a man", but not "*There is the man" in English. Similarly, yǒu rén 'There is a man' is grammatical, whereas *yǒu zhè ge rén '*There is this man' is ungrammatical in Mandarin.

Existential sentences cannot take indefinite accusative determiners other than the non-specific article ka:

(9) *i-a-kai sa umas.

(10) *kaDu-a iDa-a umas.

In short, it is only ka that can be used right after the existential verb in a pure existential sentence. The NP may consist of a single N and attribute:

(11)   i-a-kai ka ta-tuLu ka buʔaʔ.
       exist   three   sheep

'There-are three sheep'

In conclusion, existential sentences never have any nominative, i.e. are "subject-less". They usually have only one accusative nominal constituent in the sentence. In this respect, they are structurally different from meteorological sentences, which may have no nominal constituent in the sentence at all. Both types of sentences may have TIME actants. In addition to TIME, meteorological sentences may also have LOCATION actants. Once LOCATION actants are introduced into existential sentences,

however, they become locative sentences, to be discussed
in 4.6.4.

That existential sentences can only have indefinite
OBJECT actants can be specified as: [+___[+AC, +OBJ,-def]].

4.6.3.   Possessive Sentences

In so far as there is only one NP in the sentence,
there is little structural difference between an existen-
tial sentence and a subject-less possessive sentence.
Both types of sentences employ existential verbs and an
indefinite nominal marked by ka;   cf. (1) and (2):

(1)   i-a-kai ka buʔaʔ.
     exist   sheep
                    $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

     'There-is a sheep'

(2)   i-a-kai ka buʔaʔ-li.
     exist   sheep-my
                    $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

     'I have a sheep'

Nevertheless, while an existential sentence usually
has only one NP, a possessive sentence may have two: one
indicates the possessed and the other the possessor, as
in (3) and (4).   The possessor is usually animate.   As for
the possessed, it can be either animate or inanimate, and
that holds true of both the possessive sentence and exist-
ential sentence.

(3) <u>i-a-kai</u> <u>ka</u> <u>kwaŋ-ini</u> <u>ku-aDa</u> <u>tara-aluʔ</u>.
    exist   gun-his   that   hunter

$$\begin{bmatrix} +AC \\ +OBJ \end{bmatrix} \qquad \begin{bmatrix} +NM \\ +DAT \end{bmatrix}$$

'That hunter has a gun'

(4) <u>kaDu-a</u>   <u>ka</u> <u>lalak-ini</u> <u>ku-aDa</u> <u>umas</u>.
    not-exist   child-his   that   man

$$\begin{bmatrix} +AC \\ +OBJ \end{bmatrix} \qquad \begin{bmatrix} +NM \\ +DAT \end{bmatrix}$$

'That man has-no children'

The case frame for possessives is: $\begin{bmatrix} +\underline{\quad} [+AC, +OBJ] \\ +\underline{\quad} ([+NM, +DAT]) \end{bmatrix}$.
That the nominative DATIVE case is optional explains why
this type of sentence can be structurally similar to the
existential when the DATIVE is not present.

Note that the possessive sentence indicates possession
by a personal possessive manifested as the nominal suffix,
as in (2)--(4).

That the OBJECT actant must be possessed can be
further specified as: [-___[+AC, +OBJ, -poss]].

4.6.4. Locative Sentences

A locative sentence may also employ the existential
verb. However, the locative NP is not marked by the typi-
cal indefinite non-specific article <u>ka</u>, although it may be
marked by a demonstrative if it is a definite or possessed
N. Compare the following three types of sentences:

Existential:

(1) <u>i-a-kai</u> <u>ka</u> <u>daan</u>.   'There-is a house'
    exist   house

Possessive:

(2) <u>i-a-kai</u> <u>ka</u> <u>daan-li</u>.
    <u>exist</u>   <u>house-my</u>

   'I have a house'

(3) <u>i-a-kai</u> <u>ka</u> <u>daan-ini</u> <u>ku-ani</u> <u>umas</u>.
    <u>exist</u>   <u>house-his</u> <u>that</u> <u>man</u>

   'That man has a house'

Locative:

(4) <u>i-a-kai</u> <u>daan</u> <u>ku-ani</u> <u>umas</u>.
    <u>exist</u>   <u>house</u> <u>that</u> <u>man</u>

   'That man is at home'

(5) <u>i-a-kai</u> <u>ini-a</u> <u>daan-li</u> <u>ku-ani</u> <u>Lulay</u>.
    <u>exist</u>   <u>that</u> <u>house-my</u> <u>that</u> <u>child</u>

   'That child is in that house-of-mine'

Their case frames are all different from each other:

Existential	Possessive	Locative

$$\begin{bmatrix} +V \\ -[+NM] \\ +\underline{} \begin{bmatrix} +AC, +OBJ \\ -def, -spec \end{bmatrix} \end{bmatrix} \quad \begin{bmatrix} +V \\ +\underline{} \begin{bmatrix} +AC, +OBJ \\ +poss \end{bmatrix} \\ +\underline{} ([+NM, +DAT]) \end{bmatrix} \quad \begin{bmatrix} +V \\ +\underline{}[+AC, +LOC] \\ +\underline{}[+NM, +OBJ] \end{bmatrix}$$

An accusative LOCATION actant may not follow a determiner if it is indefinite, and that can be stated by the rule:

(6) [+AC, +LOC, -def] --→ [-[Det]__]

In the locative sentence, the accusative LOCATION actant immediately follows the verb and precedes the nominative OBJECT actant. Given below is a locative sentence with case forms and case relations indicated:

(7) i-a-kai inu   ku-aDa daan-numi?
    exist where   that   house-your
           [+AC]   [+NM]
           [+LOC]   [+OBJ]

'Where is your-house?'

A locative NP may be a "locative compound", e.g.
tuu-bilin 'table top' or a location head noun followed by
an attributive NP, as exemplified in (8) and (9):

(8) i-a-kai tuu-bilin ku-ani taLu?un.
    exist   table-top that   hat
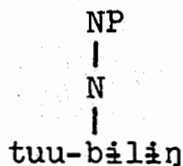   [+AC]   [+NM]
            [+LOC]   [+OBJ]

'That hat is on the table-top'

(9) i-a-kai bilin ini-a tuu   ku-ani taLu?un.
    exist   top   of   table that   hat
            [+AC]   [+NM]
            [+LOC]   [+OBJ]

'That hat is on the top of the table'

A locative compound is made up of two nouns (cf. the
DR's in 5.2). For example, tuu-bilin 'table top' is made
up of tuu 'table' plus bilin 'top'. Other examples of
such locative compounds are tuu-aDin 'table-under = under
the table', tuu-talicubun 'table-front = in front of the
table', anatunatu-kabcyaka 'forest-middle = in the midst
of the forest', Dakiral-diie 'river-near = near the river',
etc. All these locative compounds can be treated as a
single N. Compare:

(10) Locative Compound   (11) Noun Attribute

            NP   NP
            | / \
            N   N   NP
            | | Det   N
        tuu-bilin   bilin ini-a tuu
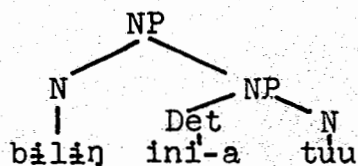
Not all locative sentences employ existential verbs,
but the same rule must be always observed: The locative
NP may not take any determiner unless it is definite or a
possessed noun:

(12) ku-ani ababay wa-aga-aga daan.
      that   woman was-cooking house
          $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$ $\begin{bmatrix} +AC \\ +LOC \end{bmatrix}$

'That woman was-cooking in the house'

(13) ku-ani ababay wa-aga-aga ini-a daan-ini.
      that   woman was-cooking that house-her

'That woman was-cooking in that house-of-hers'

See also the examples in 4.3.3.2 for LOCATION
actants.

4.6.5.   Active Sentences

4.6.5.1.   Intransitive Sentences

Intransitive sentences are numerous. The following sentences each contains only a verb (V) and subject (S), but no object (O); every subject is an OBJECT actant:

VS:

(1) <u>mu-a-lu-luD</u> // <u>ku-ani</u> <u>acilay</u>.
      <u>is-flowing</u>   <u>that</u> <u>water</u>

  'That water is-flowing'

(2) <u>kuani-ŋa</u> // <u>Likulaw!</u> (1-24)
      <u>has-come</u>   <u>leopard</u>

  '(A) leopard has-come!'

(3) <u>ma-bitak</u> // <u>kay</u> <u>sakakiriŋ</u>.
        <u>broken</u>   <u>this</u> <u>string</u>

  'This string is-broken'

(4) <u>davac-ŋa</u> // <u>ku-ani</u> <u>maruDaŋ</u>.
      <u>has-left</u>   <u>that</u> <u>old-man</u>

  'That old-man has-left'

(The slash // between words indicate the first immediate constituent (IC) cut.)

Note that the nominative marker can be left out in an exclamation like (2). Otherwise, with a few exceptions subjects always require nominative determiners (see 4.3.2.2).

4.6.5.2. Transitive Sentences

A transitive sentence usually contains a verb, a subject, and an object. As mentioned previously, Rukai is a verb-initial language. VOS and VSO are the two common types of transitive sentences. Sentences that have personal affixes (subject markers) have no overt subjects in the sentences and result in the VO type. In other words, since personal affixes are considered part of the verb, sentences marked for subject-agreement are not considered VSO sentences.

If the subject of the sentence is preposed to precede the main verb, then it is an emphatic type: SVO (cf. 4.2.7.2.4).

VOS:

(1) <u>wa-kani</u> // <u>iDa-a</u> <u>airu?an</u> // <u>ku-ani</u>.
     ate   that   food   that, he

$\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$

'He ate that food'

(2) <u>rivu</u> // <u>naku-a</u> // <u>ku-ani</u> <u>umas</u>.
    scold   me   that   man

$\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$

'That man scolds me'

(3) <u>wa-unul</u> // <u>sa acilay</u> // <u>kay</u> <u>maruDan</u>.
    drank   water   this old-man

$\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$

'This old-man drank water'

VSO:

(4) wa-kani // ku-ani umas // iDa-a airu?an.
    ate   that man   that food
                   $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$ $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

'That man ate that dish'

(5) wa-damik // kay umas // ini-a Lulay.
    beat   this man   that child
                  $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$ $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

'This man beat that child'

VO:

(6) wakani-aku // iDa-a airu?an.
    ate-I   that   food
                      $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

'I-ate that food'

(7) ?u-lataD-aku // ini-a ma-ti-a-gawgaw.
    took-out-I   that dirty-thing
                      $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

'I-took-out that dirty-thing'

SVO:

(8) ku-ani ababay // swaswa? // ina daan.
    that woman   sweep   that house
    $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$ $\begin{bmatrix} +AC \\ +LOC \end{bmatrix}$

'That woman sweeps that house'

(9) ku-ani Lulay // wakani // ini-a sa-ba-buu.
    that child   ate   that medicine
    $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$ $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

'That child took that medicine'

As far as the verb is concerned, there may be no overt morphological distinction between "transitive" and "intransitive"; cf. (10) and (11):

(10) ma-ca-cava naku-a ku-ani.
     is-laughing me he
                $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$

    'He is-laughing at me'

(11) ma-ca-cava ku-ani.
                $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

    'He is-laughing'

However, there may also be an overt morphological distinction; cf. (12) and (13):

(12) wa-laub ini-a daan ku-ani umas.
     burned that house that man
                $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$

    'That man burned that house'

(13) ku-a-laub ku-ani daan.
     burned that house
                $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

    'That house burned'

See the derivation of ku-laub from laub in 5.1.3.

The label VSO is used to refer to a variety of sentence types, and so are the labels of VOS, SVO, etc. The symbol "S" stands for the subject of the sentence all right, but "O" does not necessarily have to be the object. It may be misleading to speak of "O", since if there is an "O", it may be an AGENT in the passive sentence (see

4.6.6), or any other case actant. Moreover, there may be
more than two actants in a sentence (cf. 4.3.3.6 and
4.3.3.7); in that case, "O" would have to stand for more
than one case actant. Consequently, the term VSX has been
suggested to replace VSO.[9]

A simple sentence (without an embedded sentence)
rarely takes more than two actants, possibly due to the
very limited number of distinct case forms (see 4.3.1);
ambiguity may arise if more than two actants are present
in a simple sentence. In such cases, word order (see 4.1)
can sometimes disambiguate and give clues to a single
interpretation. The number of actants that can be present
in a simple sentence depends very much on the type of verb.
Generally speaking, causative verbs can take the most--as
many as four actants. For example,

(14) ku maLiɲa ʔa-tu-a-ba-baas ki duLay na kinsas sa
     (name) cause-cook-soup (name) police
    $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$ $\begin{bmatrix} +AC \\ +DAT \end{bmatrix}$ $\begin{bmatrix} +AC \\ +BEN \end{bmatrix}$

    gúuŋ.
    cow
    $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$

    'MaLiɲa made DuLay cook beef soup for the police'
This is easily understandable: the causative involves an
agent of the causative verb in addition to the actual
actor, the beneficiary of the action, and the object of
the action, in that order (cf. 5.1.5 for the causative
derivation rule). All the cases in the example are marked

by nominal particles rather than introducing an embedding structure;   the latter is a more favored sentence construction in Rukai.

Verbs such as <u>baay</u> 'give' that imply the three case relations AGENT, OBJECT and DATIVE usually have all the three present as separate constituents in the sentence, although one of them may be realized only as a subject marker of the verb (cf. 4.3.3.6).

4.6.6. Passive Sentences

Rukai is an accusative language like English. The preferred subject of an unmarked transitive verb is [+AGT]:

(1) wa-kani̱ sa umas   ku-ani Likulaw.
     ate   man   that   leopard
                [+AC]   [+NM]
                [+OBJ]   [+AGT]

     'That leopard ate a man'

(2) wa-baay ini-a umas   sa aʔas   ku-ani Lulay.
     gave   that man   crab   that   child
                   [+AC]   [+AC]   [+NM]
                   [+DAT]   [+OBJ]   [+AGT]

     'That child gave that man a crab'

whereas that of the passive voice marked by the prefix ki- is [+OBJ], [+DAT], or [+BEN]:

(3) ki-a-kani̱ ku-ani umas   sa Likulaw.
     was-eaten that   man   leopard
                       [+NM]   [+AC]
                       [+OBJ]   [+AGT]

     'That man was-eaten by a leopard'

(4) ki-a-baay ku-ani umas   ini-a Lulay sa aʔas.
     was-given that   man   that child   crab
                      [+NM]   [+AC]   [+AC]
                      [+DAT]   [+AGT]   [+OBJ]

     'That man was-given a crab by that child'

(5) ki-a-baay ku-ani aʔas   ini-a umas   ini-a Lulay.
                      [+NM]   [+AC]   [+AC]
                      [+OBJ]   [+DAT]   [+AGT]

     'That crab was-given to that man by that child'

(6) ku-ani umas   ki-a-tu-baas   sa guuŋ ini-a ababay.
     that   man   was-cooked-soup   cow   that woman
            [+NM]   [+AC]   [+AC]
            [+BEN]   [+OBJ]   [+AGT]

'That man was-cooked some beef soup by that woman'
The function of ki- is comparable to that of be + ...-en
in English. It reverses the subject choice priorities.
Since the prefix ki- indicates focus on the [+OBJ], [+DAT]
or [+BEN], a nominal in the sentence is a [+OBJ] (or
[+DAT] or [+BEN] with a ditransitive verb) if it is pre-
ceded by a nominative marker, and it is the [+AGT] (or
[+DAT] with psychological verbs) if it is preceded by an
accusative marker.

The dichotomy between "active" (focus on AGENT) and
"passive" (focus on cases other than AGENT) as made by
Bloomfield (1917) in his analysis of Tagalog and by Ogawa
(1935:337) in his analysis of Rukai is quite appropriate
here because a binary active-passive distinction in Rukai
is clearly marked by the absence (active) or presence
(passive) of the verbal prefix ki-.

However, depending on our definition of "passive",
we could say that there are two different types of passive
constructions: the verbal ki- passives and a type of
nominalized construction to be discussed in 4.6.8.

The ki- passives are directly generated by the PSR's
of the grammar in the same manner as the actives. Whether
a verb takes the ki- passive form or not is determined by
the features of the verb (see 4.3.1). The morphophonemic
rules (MR's, see Chapter 6) will give the appropriate
phonological realization depending on the syntactic

features of the verb. Cf. (1') and (3'):

(1')
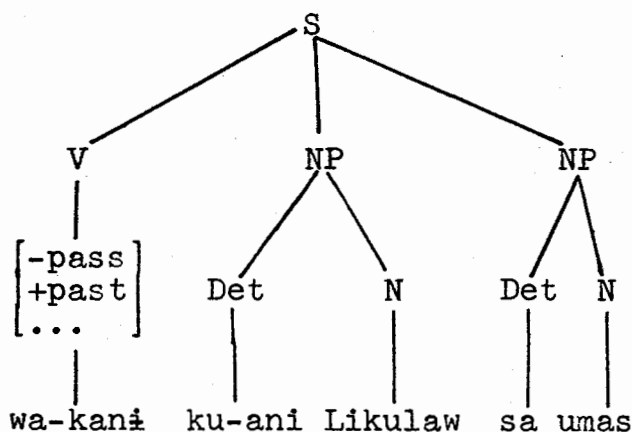
(3')
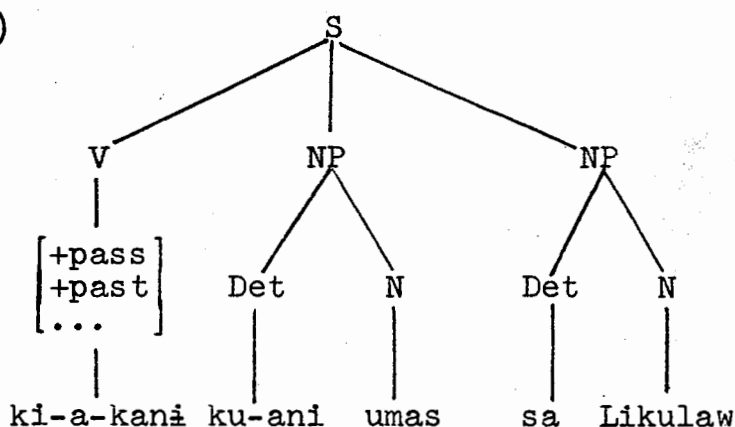
Both the active form <u>wa-kani</u> and the passive form
<u>ki-a-kani</u> ("full words" in Bloomfield's term) are gener-
ated directly by the PSR's. The relationship between
the active and passive sentences can be handled by a der-
ivation rule (see 5.1.2):

$$
(7) \quad
\begin{bmatrix}
+V \\
+\underline{\quad}[+NM, +AGT] \\
\begin{bmatrix}
+\underline{\quad}[+OBJ] \\
+\underline{\quad}[+DAT] \\
+\underline{\quad}[+BEN]
\end{bmatrix} \\
1 \qquad\qquad\quad 1
\end{bmatrix}
>\text{--}\rightarrow
\begin{bmatrix}
+V \\
+pass \\
+\underline{\quad}[+AC, +AGT] \\
+\underline{\quad}[+NM, \begin{bmatrix}[+OBJ]\\{[+DAT]}\\{[+BEN]}\end{bmatrix}] \\
+derv \qquad 1 \qquad\qquad 1
\end{bmatrix}
$$

The inner square brackets with 1 at the bottom of both sides indicate the context-sensitive correspondence: if [+OBJ] rather than [+DAT] or [+BEN] is chosen, then the [+OBJ] actant in the corresponding derived passive verb must occur in the case form of [+NM], and similarly with [+DAT] or [+BEN] if it is chosen. Either [+OBJ] or [+DAT] or [+BEN], or all of them, may be present in the same sentence, depending on the type of verb and sentence structure. Thus for ditransitive verbs, either part of the rule could apply, so two different subject choices are possible for such verbs.

Let it be noted that the past tense prefix _a_ occurs inside the derivational prefix _ki-_, as in (3)--(6), while the future tense prefix _ay-_ occurs before _ki-_, as in

(8) ay-ki-θiŋal-su   sa umas.
     will-be-known-you   man

'You-will-be-discovered by a man'

The correct phonological realizations can be obtained by ordering of morphophonemic rules: (1) past tense formation, (2) passivization, (3) future formation, in that order (see 6.2.1.1).

The affixes of the passive forms are carried over when these forms are derived as nouns, as in

(9) ku-aDa ki-ba-baay-li ka ma-tuLu-l.
     that   be-given-my   thirty

'My-salary is thirty dollars (a month)'

This is, in fact, strong supporting evidence for treating passivization as a derivational process and stating it by a derivation rule, as in (7), since inflectional affixes do not carry over when a lexical item changes classes (see 5.0).

A few remarks may be made about the word order of different case relations in passive sentences. As mentioned before (see 4.1 and 4.3.1), [+AC, +DAT] precedes [+AC, +OBJ] when there is a possibility of ambiguity. As for the relative order for the pairs [+AC, +AGT] and [+AC, +OBJ], [+AC, +AGT] and [+AC, +DAT], etc., I have insufficient data for these. It seems that there is often a possibility of ambiguity whenever there are two or more objects in the same sentence. They are either assumed to be known to both the hearer and the speaker or unimportant for the message. When a passive sentence is used, the focus of interest is on the subject, not the objects of the sentence.

(10) <u>kay</u> <u>ʔaysu</u> <u>b/in/aay-an</u>   <u>naku-a</u> <u>ina</u> <u>maruDaŋ</u>.
    this money was-given   me   that old-man
    $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +AC \\ +DAT \end{bmatrix}$ $\begin{bmatrix} +AC \\ +AGT \end{bmatrix}$

'This money was what-was-given to-me by-that old-man'

The example above seems to show that [+AC, +DAT] precedes [+AC, +AGT], but it is not very clear to me whether the sentence can be ambiguous.

4.6.7. Equational Sentences

An equational sentence is made up of NP͡NP. One of
the NP's is the predicate of the sentence, and the other
is the subject of the sentence.

4.6.7.1. Ordinary Equational Sentences

Sentences (1)--(4) are ordinary equational sentences,
each of which consists of two NP's with the same referent.
The first NP is the predicate, and the second NP is the
subject:

(1) <u>manɨman</u> // <u>kuani</u>?   'What is that?'
       what   that
                 [+NM]

(2) <u>anɨa</u> // <u>kuani</u> <u>umas</u>? 'Who is that man?'
    who   that man
                 [+NM]

(3) <u>Lɨgɨay</u> // <u>kuani</u>.   'He is Lɨgɨay'
   (name)   that
              [+NM]

(4) <u>anɨa</u> // <u>kuaDa</u> <u>damɨk</u> <u>iDaa</u> <u>lalaksu</u>?
   who   that   hit that child-your
    [+NM]

'Who is the-one-that hit your-child?'

The following tree illustrates the structure of an
equational sentence:

(2')
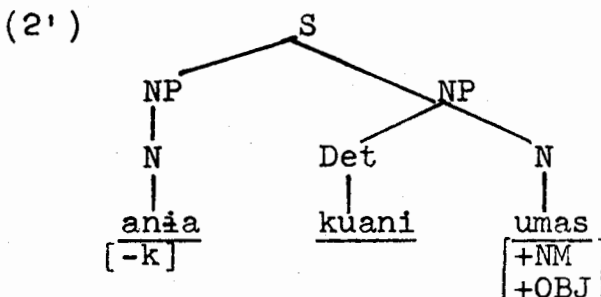
(4) is also an equational sentence, but the second ṄP is
a nominalized clause that includes the demonstrative
pronoun <u>kuaDa</u>, embedded nominalized verb <u>damɨk</u>, attribute
<u>iDaa</u> and the following noun with a possessive suffix
<u>lalaksu</u>:

(4')

```
                              S
                  _____/ _____
                 /                          \
               NP                           NP
                |               _____/ | _____
                N              /             |             \
                |            Det             N             NP
                |             |              |            /  \
                |             |              |          Det    N
                |             |              |           |     |
              anɨa          kuaDa          damɨk        iDaa  lalaksu
              [-k]          [+NM]                              ┌ +AC ┐
                                                              └ +OBJ┘
```
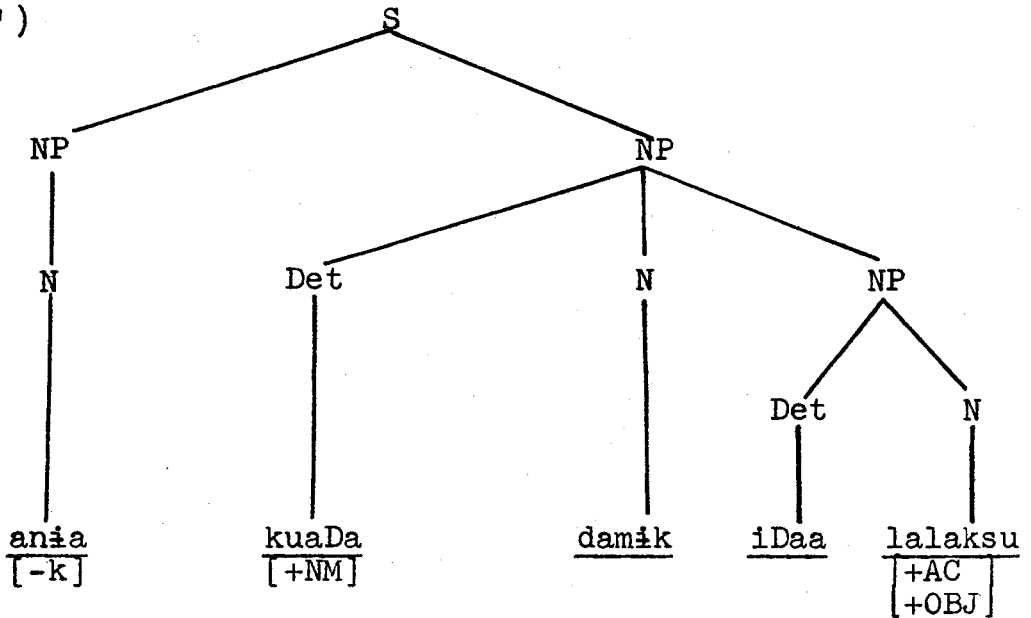
All nominalized sentences are a type of equational
sentences, to be more fully discussed in the following
section (4.6.8). It suffices now to say that the nomi-
nalized clause in (4) is not equational, but the sentence
is.

In equational sentences, like verbal sentences,
there can only be one nominative, and the predicate
which has no case relation, i.e. is caseless with the
feature [-k], which is an abbreviation for the absence
of all case relations, viz. [-AGT], [-OBJ], [-LOC], etc.
This is consistent with a statement made in 4.3.1 that a

verb cannot occur with two nominatives in the same sentence in Rukai.

4.6.7.2. Sentences with Emphatic Nouns (Topicalized)

In an equational sentence, the subject may precede the predicate to indicate emphasis (i.e. topicalized):

(5) <u>kunaku</u> // <u>ka</u> <u>taraalu?</u>.
     I   hunter
$\begin{bmatrix} +NM \\ +emph \end{bmatrix}$

'As for me, I am a hunter'

(6) <u>kusu</u> // <u>ka</u> <u>ritisanli</u>.
    you   relative-my
$\begin{bmatrix} +NM \\ +emph \end{bmatrix}$

'As for you, you are my-relative'

(7) <u>kay</u> <u>umas</u> // <u>ka</u> <u>tamali</u>.
    this man   father-my
        $\begin{bmatrix} +NM \\ +emph \end{bmatrix}$

'As for this man, he is my-father'

4.6.7.3. Sentences Which Are Only Topicalized

In equational as well as verbal sentences, personal pronoun subjects can only occur as preposed topics, never in the normal post-predicate position:

(8) <u>kunaku</u> // <u>ka</u> <u>taraalu?</u>.
     I   hunter
$\begin{bmatrix} +NM \\ +emph \end{bmatrix}$

'As for me, I am a hunter'

(9) *<u>taraalu?</u> <u>kunaku</u>.
    hunter   I

(10) *taraalu?-aku.
    hunter-I

4.6.7.4. Comparisons of Equational Sentences and Others

    Compare (11) and (12) below. While (11) is an

equational sentence, (12) is verbal:

  (11) Ligiay // kuani. 'He is Ligiay'
        (name)   that
                   [+NM]

  (12) siaLigiay // kuani. 'He was-named Ligiay'
        bear-name   that
                   [+NM]

    Compare (13) and (14):

  (13) kusu // ka ritisanli. 'As for you, you are
        you   relative-my my-relative'
        [+NM]

  (14) (ka) ritisanli // musua. 'My-relative is you'
           relative-my   you

The first NP of (13) is nominative, but the first NP of

(14) is not clearly marked and the second NP is accusa-

tive. It is not clear how to account for the structure of

(14). That the article ka may be present in the first

NP seems to indicate that it is a nominative, yet it is

not true of any other sentence (with a few exceptions

such as exclamation) that a nominative determiner can

be omitted. Another problem with the sentence is: That

musua is an accusative which seems to indicate that one

of the NP's may be accusative in an equational sentence,

but the ka in (5)--(8) cannot be substituted by any other

accusative. Then the predicate must be [+AC, -specific].

4.6.8.   Nominalized Constructions

Aside from the verbal passive sentences taking the prefix ki-, "passive" in Rukai can also be expressed by nominalization of the verb.   For example,

(1)   <u>ku-ani</u> <u>kaaŋ</u> <u>ka</u> <u>k/in/ani-an-ŋa.</u>
      that fish   was-eaten-already
$\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

      'That fish was-eaten-already'

(2)   <u>ku-ani</u> <u>kaaŋ</u> <u>ka</u> <u>ta-kani-an-li.</u>
                       eating-place-my
$\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

      'That fish is where-I-ate'

(3)   <u>ku-ani</u> <u>kaaŋ</u> <u>ka</u> <u>wa-kani-li.</u>
                     eating-my
$\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

      'That fish was my-eating = That fish was eaten-by-me'

(4)   <u>wa-kani-li</u> <u>ku-ani</u> <u>kaaŋ.</u>
                       $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

      'My-eating was that fish = That fish was eaten-by-me'

Why are the forms <u>k/in/ani-an-ŋa</u>, <u>ta-kani-an-li</u> and <u>wa-kani-li</u> in (1)--(4) considered to be nominalized?   A simple answer to this is that syntactically they occur in the position of nouns preceded by the determiner <u>ka</u>, e.g. (1)--(3).   In addition, morphologically they can all take the nominal possessive suffix -<u>li</u> 'my', e.g. (2)--(4).

It seems that there is no clear syntactic evidence
to prove that the verb in (4) is nominalized although
morphologically it is clear that it has the nominal pos-
sessive suffix -li. However, the structure of the sentence
exactly parallels that of a purely nominal equational
sentence; cf. (4) and (5):

(5) tama-li ku-ani umas.
     father-my that   man
                       $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

'My-father is that man'

As a matter of fact, in structure all the nominalized
sentences are equational sentences with identical proper-
ties to purely nominal equationals. The predicates of
both types of equationals are marked by the determiner ka
when the sentences are topicalized, or to put it in
another way, when the predicates occur as the second NP;
cf. (3) and (6):

(6) ku-ani umas ka tama-li.
     that   man   father-my

'That man is my-father'

In fact, the ka preceding the predicates in both types
can be left out. According to my informants, it is more
"emphatic" with ka. But when the equational predicates
occur sentence-initially, they are never preceded by ka,
and this is true of both the nominalized constructions
and pure equationals; cf. (4) and (5).

Even in negation (cf. 4.7.2), the two types of equationals behave in exactly the same manner:

(7) ku-ani kaaŋ ka kay wakani-li.
    that fish   not eating-my
$$\begin{bmatrix} +\text{NM} \\ +\text{OBJ} \end{bmatrix}$$

    'That fish was not my-eating = That fish was not
    eaten-by-me'

(8) ku-ani umas ka kay tama-li.
    that man   not father-my
$$\begin{bmatrix} +\text{NM} \\ +\text{OBJ} \end{bmatrix}$$

    'That man is not my-father'

(9) kay wakani-li ku-ani kaaŋ.
    not eating-my that   fish
$$\begin{bmatrix} +\text{NM} \\ +\text{OBJ} \end{bmatrix}$$

    'Not my-eating that fish = That fish was not eaten-
    by-me'

(10) kay tama-li ku-ani umas.
    not father-my that man
$$\begin{bmatrix} +\text{NM} \\ +\text{OBJ} \end{bmatrix}$$

    'Not my-father that man = That man is not my-
    father'

Compare the trees of the nominalized construction (11) and the purely nominal equational (12):

(11) S — NP — N — wakani-li; NP — Det — ku-ani, N — kaaŋ

(12) S — NP — N — tama-li; NP — Det — ku-ani, N — umas
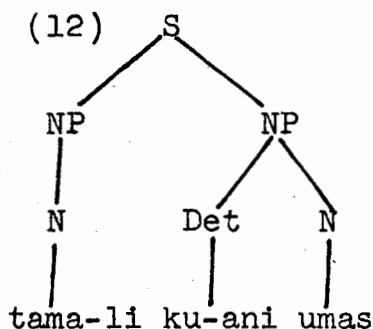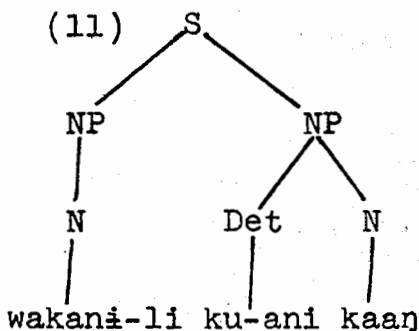
It is striking how similar they are to each other in structure.

In short, there are many parallels between the nominalized constructions and purely nominal equational sentences. If the nominalized forms were treated as verbs, a number of generalizations would be unstatable.

According to one of my informants, (7) and (9) are acceptable, but rarely used.

Now let us look at some more examples of nominalized sentences in some detail. As in other languages, the nominalized verbs can, of course, take complement NP's; cf. (17)--(19).

(13) ku-ani kaaŋ ka k/in/ani-an.
      that fish   eaten-object
      $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

      'That fish was-eaten (completely)'

(14) ku-ani kaaŋ ka ni-kani-an.
      that fish   eaten-object
      $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

      'That fish was-eaten (not completely)'

(15) ni-kani-an ku-aDa aðaðam.
      eaten-object that bird
                          $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

      'That bird was-eaten'

(16) ni-kani-an iDa-a aðaðam.
      eaten-object that bird
                        $\begin{bmatrix} +AC \\ +AGT \end{bmatrix}$

      '(It) was-eaten by a bird'

(17) ni-kani-an iDa-a aðaðam ku-aDa.
      eaten-object that bird   that
                        $\begin{bmatrix} +AC \\ +AGT \end{bmatrix}$ $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

    'That was-eaten by that bird'

(18) ku-ani la-maniman b/in/aay-an mita-a.
      those things   were-given us
             $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +AC \\ +DAT \end{bmatrix}$

    'Those things were-given to us'

(19) ku-ani la-maniman ni-baay-an mita-a.
      thosᴇ things   were-given us
             $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +AC \\ +DAT \end{bmatrix}$

    'Those things were-given to us'

(13)--(19) are examples for the nominalized past tenses. The main markers for the nominalized past tense are -in- -an and ni- -an. The difference between the two types of markers is sometimes in the completive aspect of the action, e.g. that between (13) and (14), but oftentimes it is vague, e.g. (18) and (19).

In (17), the subject of the sentence is the demonstrative pronoun ku-aDa 'that', and the complement is iDa-a aðaðam 'by a bird'; the nominalized verb ni-kani-an 'the thing that was eaten' takes the complement NP iDa-a aðaðam forming a single NP constituent. In (18) and (19), the nominalized verbs take the complement NP mita-a 'us'. The complement is syntactically an attributive NP in an NP, with the whole construction meaning 'that which was given to us'.

The tree diagrams (13') and (18') are illustrations of sentences (13) and (18):

(13')

```
                        S
             _____|_____
            NP                      NP
          /    \                  /    \
        Det     N              Det      N
         |      |               |       |
       ku-ani  kaaŋ            ka     k/in/ani-an
```

(18')

```
                        S
             _____|_____
            NP                      NP
          /    \                  /    \
        Det     N               N       NP
         |      |               |       |
                                        N
                                        |
       ku-ani la-maniman     b/in/aay-an mita-a
```
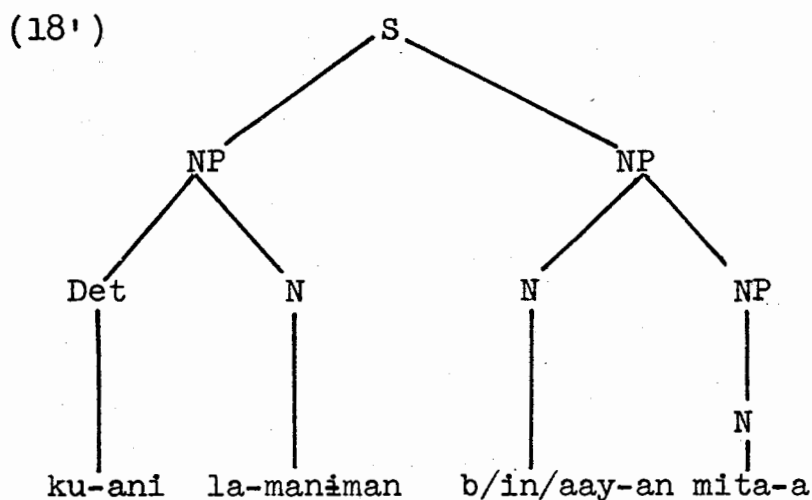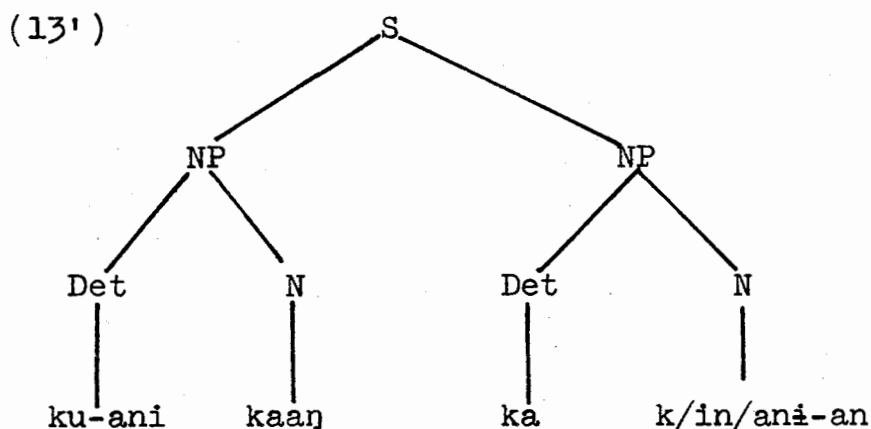
In addition to the nominalized past tense markers mentioned above, there are also markers for the future action: a-(RED) -an (RED is an abbreviation for reduplication) indicating an action to be done, -in-RED -an and ni- RED -an indicating an incomplete action to be continued. For example,

(20) <u>a-kani-an</u>   <u>ku-ani</u> <u>kaaŋ</u>.
     food-to-be-eaten   that   fish
$$\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$$

'That fish will-be-eaten'

(21) <u>a-kani-kani-an</u>   <u>ku-ani</u> <u>kaaŋ</u>.
$$\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$$

'That fish will-be-eaten'

(22) <u>ni-kani-kani-an</u> <u>ku-ani</u> <u>kaaŋ</u>.
$$\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$$

'That fish would-be-eaten'

(23) <u>k/in/ani-kani-an</u> <u>ku-ani</u> <u>kaaŋ</u>.
$$\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$$

'That fish would-be-eaten'

All the three markers that contain reduplication of the
verb stem may indicate not only a future action but also
repetitive:

(24) <u>ni-buLu-buLu-an</u>   <u>ku-aDa</u> <u>Lulay</u>.
     person-instructed   that   child
$$\begin{bmatrix} +NM \\ +DAT \end{bmatrix}$$

'That child was-being-instructed-and-instructed'

In both verbal and equational sentences, the syn-
tactic properties of deverbal and underived nouns are
identical as illustrated at the beginning of this section,
except that deverbal nouns allow a greater variety of case
relations in their NP attributes. For example,

(25) kay ?aysu b/in/aay-an naku-a ini-a maruDaŋ.
      this money given-object me   that old-man
      [+NM]   [+AC]   [+AC]
      [+OBJ]   [+DAT]   [+AGT]

'This money was-given to me by that old-man'

The nominalized verb includes two attributes in the sentence:

(25')
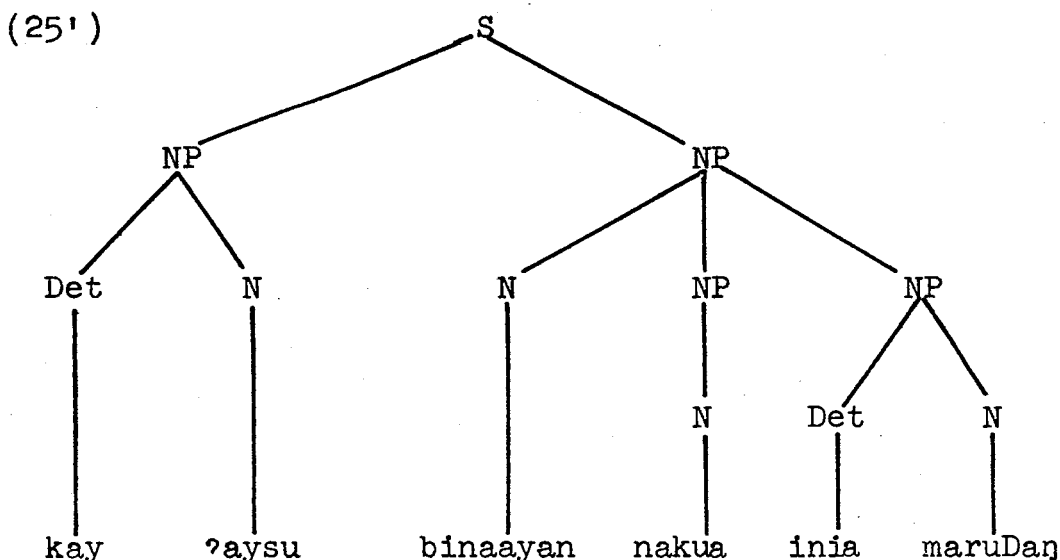
If naku-a [+DAT] or ini-a maruDaŋ [+AGT] is left out, we will get the same structure as in (18).

There is a sentence that would pose a problem to the analysis adopted in this study:

(26) b/in/aay-an-aku sa umas ?a-si-lalak.
      was-given-I   man cause-have-child

'I-was-given to a person to raise'

If there is no mistake in the sentence (and I have no way of checking the accuracy of the sentence now), then it may be a counter-evidence to the analysis of nominalized constructions. The syntactic structure of the sentence

is clearly verbal. The sentence has the causative verb ʔa-si-lalak in the embedded clause. There is no subject constituent other than the verbal personal suffix -aku in the sentence. The verbal suffix is added to the deverbal form b/in/aay-an. But note that that -aku appears after the nominalizing suffix -an is also the only exception I can find, as noted in 4.5. Starosta (personal communication) has suggested that it may be a case of re-derivation:

$$V \quad \text{>---→} \quad N \quad \text{>---→} \quad V$$

baay   b/in/aay-an   b/in/aay-an-aku

Such things are not uncommon, and would be what we would expect if the noun comes to mean 'someone given out to be raised'. If so, then the example is not counter-evidence to my analysis.

In conclusion, I have found enough similarities between the nominalized constructions and purely nominal equationals to treat the former also as a type of equationals. I have discussed and illustrated all these in a separate section instead of putting them in the same section as "Equational Sentences" (4.6.7) because of the following considerations:

(1) I have to prove that the nominalized constructions are equational in structure.

(2) Syntactically the nominalized constructions can be

far more complex than purely nominal equationals. As
illustrated above, deverbal nouns allow a greater variety
of case relations in their NP attributes. In addition,
they can express different tenses by quite a variety of
tense markers.

(3) Semantically the nominalized constructions can be
interpreted as a type of "passive" sentence, since they
all in some sense "focus" a non-AGENT actant of a
transitive verb. They are syntactically related to
"equationals" but also semantically to "passives".

(4) I would like to leave the question somewhat open
as to whether the "nominalized" constructions should be
treated as "nominal" or "verbal", particularly with the
example (26), although I prefer the former alternative.
Future field workers can confirm or disconfirm my
argumentation when further evidence is obtainable.

4.6.9. Stative, Nonstative, and Inchoative Sentences

As mentioned in 4.4.1, the two main classes of verbs are "stative" and "nonstative", and "nonstative" can be further subclassified into "inchoative" and "noninchoative", etc.

The stative verb describes a state not changing, whereas the nonstative shows an action in process. The inchoative involves the process of changing and, as Lakoff (1965, Section 4.15) pointed out, corresponds to English expressions such as "get", "become", and "come to be".

As mentioned in 4.2.4, statives and adjectives are identical in form, and a great generality can be gained by treating the former as a type of verbs. The main difference between the two is that while the former is used as the main verb in the sentence, the latter is used only as a modifier of the head noun.

The characteristic case frame for statives is

$\begin{bmatrix} + \underline{\quad} [+NM, +OBJ] \\ - \underline{\quad} [+AC, +LOC] \end{bmatrix}$ and the case frame for inchoative is

$\begin{bmatrix} + \underline{\quad} [+NM, +OBJ] \\ - \underline{\quad} [+AC, +LOC] \\ + \underline{\quad} ([+AC, +DAT]) \end{bmatrix}$; cf. 4.4.3.

As for nonstatives, they include various verb types, such as "existential", "possessive", "locative", "intransitive", "transitive", and their case frames have been given in various sections.

Lakoff's (1966) distinction between "stative" and "nonstative" ("active") is certainly useful and meaningful in describing Rukai. As has been noted by Lakoff and restated in Fillmore (1968:31), "the 'true' imperative, the progressive aspect, the occurrence of benefactive (B) phrases, and do so substitution occur only with 'nonstative' verbs." Although there are some important problems with these tests,[10] Rukai at least confirms Lakoff'; argument that imperatives occur only with nonstatives, e.g. (12) and (13) below.

Lakoff (1965) introduced the feature "inchoative" to explain the difference between (1) and (2) and to show that (3) is synonymous with (2), concluding that (2) and (3) must have similar deep structures:

(1) The metal is hard.

(2) The metal hardened.

(3) The metal became hard.

In spite of the fact that Fillmore questioned the validity of regarding "stative" and "nonstative" as "primitive features in the lexical entries for verbs", and counter-examples have been found, perhaps part of Lakoff's position can be substantiated by the fact that Formosan languages (at least the ones that I have studied) make a distinction between "stative" and "nonstatives" by using different prefixes for the same verb stem.[11] In Rukai, there is a close relationship between statives and

inchoatives, e.g. ma-bilin 'tall' vs. ka-bilin 'become tall', ma-du 'cooked' vs. ka-du 'get cooked' (cf. 5.1.1).

Rukai statives and inchoatives have their special idiosyncratic features and behavior different from many other languages such as English. For instance, Rukai statives do not occur with the future tense or as nonfinite verbs. On the other hand, Rukai inchoatives do not occur with the past tense; see examples below.

The stative verbs cannot take the future tense marker, whereas the inchoatives can; cf. (4), (5) and (6). On the other hand, the inchoatives cannot take the past tense, whereas the statives can; cf. (7), (8) and (9):

(4) ma-bilin ku-ani aŋatu.
     tall   that   tree
$$\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$$

'That tree is tall'

(5) *ay-ma-bilin ku-ani aŋatu.

(6) ay-ka-bilin ku-ani aŋatu.
   will-get-tall that   tree
$$\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$$

'That tree will-get-tall'

(7) ma-du-ŋa   ku-ani tai.
   cooked-already that taro
$$\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$$

'That taro is-cooked-already'

(8) wa-ma-du-ŋa   ku-ani tai.
   was-cooked-already that taro

'That taro was-cooked-already'

(9) *wa-ka-du-ŋa ku-ani tai.

A piece of counter-evidence to Lakoff's statement is that Rukai statives as well as nonstatives (including inchoatives) do occur with the continuative (progressive) aspect, which is indicated by reduplication of the verb stem:

(10) ma-sa-sivi-sivir.

'(It) is-being-windy'

(11) ka-u-riva-riva ku la-ta.
     be-talking   friend-our
$$\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$$

'Our-friend is-talking'

Rukai confirms Lakoff's statement that imperative can occur only with a nonstative verb:[12]

(12) haw?a, ka-Daw-a ka acilay!   (not *ma-Daw-a!)
    EXCL. Get big!   water
$$\begin{bmatrix} + \\ +OBJ \end{bmatrix}$$

'May the water get-big!'

The prose statements concerning the features of verbs and cooccurrence restrictions given in this section can be summarized and formalized by the subcategorization rules and redundancy rules, as given in 4.4.1.

In (12), there is a problem of deciding what case form the nominal constituent after the causativized inchoative verb kaDaw-a is. One may think of the three alternatives: (1) [+NM], (2) [+AC] and (3) [+VO] (vocative), but all of these alternatives seem equally undesirable.

It cannot be [+NM] because an imperative does not occur
with a subject (see the following section). Neither can
it be [+AC] because an inchoative verb does not take an
object unless there is a DATIVE actant, and "water" is not
animate. The third alternative is also out because Rukai
vocative is indicated by the prefix na- before the per-
sonal nouns, but no such marker is used in the example.
Also, a vocative occurs before the main verb. For example,

(13) na-agi-li,   ay-mawvagay-ŋa-ta. (3-74)
      VO-younger-my will-depart-soon-we

      'My-little-sister, we-shall-soon-depart'

(14) na-ina, nyamana ʔa-θuθu ki agi-li. (3-7)
      Mommy come   nurse   younger-my

      'Mommy, please-come to nurse my-little-sister!'

Unless we can say that inanimate vocatives do not take
the prefix na- and are allowed to follow the imperative
verb, I can see no solution to this problem.

All Rukai verbs with the prefix ka- (alternating with
the stative prefix ma-) are precisely what Lakoff would
label as "inchoative" marking each of them with the fea-
ture [+Inchoative]. However, not all non-inchoatives are
statives; for example, the verb davac 'leave, walk' is
not inchoative because it does not involve the kind of
change from one state to another like the verbs with ka-,
nor is it stative, because it does not describe an unchang-
ing state. In short, in addition to the feature
"inchoative", another feature "stative" is also needed to

distinguish the verbs I have discussed in this section.

Concerning the features discussed in this section, there are two possible divisions:

(15)

```
            V
       ┌────┴────┐
     stat     nonstat
   ┌───┴───┐
 inch   noninch
```

(16)

```
            V
       ┌────┴────┐
     stat     nonstat
              ┌───┴───┐
            inch   noninch
```
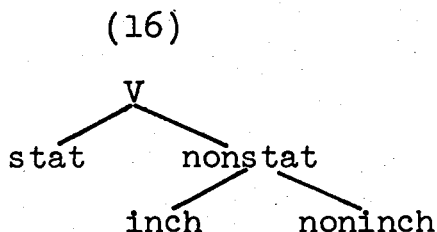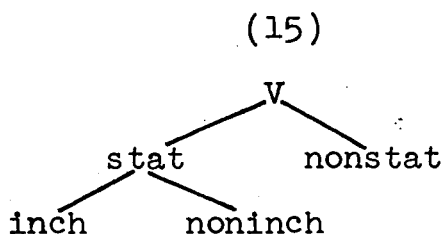
Rukai evidence seems to support (16).

Some inchoative verbs may take a DATIVE actant as the object of the sentence:

(17) arwa   ka-lisi-lisi   musu-a kay   maruDaŋ.
      more   getting-angry   you   this   old-man
      [+Adv]   ⎡+V   ⎤   ⎡+N ⎤   ⎡+N ⎤
                ⎢+cont⎥   ⎢+AC ⎥   ⎢+NM ⎥
                ⎣+inch⎦   ⎣+DAT⎦   ⎣+OBJ⎦

'This old-man is-getting-angry at you'

However, this is only possible if the source stative ma-lisi 'angry' can also have a DATIVE actant; cf. (17) and (18):

(18) ma-lisi-lisi   ikai   numi-ana   musu-a kay   maruDaŋ.
      being-angry   stay   house-your   you   this   old-man
      ⎡+V   ⎤   ⎡+V ⎤ ⎡+N ⎤   ⎡+N ⎤   ⎡+N ⎤
      ⎢+fin ⎥   ⎣-fin⎦ ⎢+AC ⎥   ⎢+AC ⎥   ⎢+NM ⎥
      ⎢+cont⎥   ⎣+LOC⎦   ⎣+DAT⎦   ⎣+OBJ⎦
      ⎣+stat⎦

'This old-man is-being angry at you in your-house'

This instance indicates that (15) may be more correct. Further study is required to come to a decisive conclusion which division, (15) or (16), is more correct.

4.6.10. Imperative Sentences

Imperatives occur only with nonstative verbs.

Let us examine the following imperative verbs with no objects:

(1) idi-a 'Stand up!'

θiruul-a 'Urinate!'

mucaki-a 'Defecate!'

miLib-a 'Open (it)!'

(2) k/u/ani-a 'Eat!' (not *kani-a)

L/u/abwal-a 'Run!' (not *Labwal-a)

t/u/akaynin-a 'Sit down!' (not *takaynin-a)

The examples of (1) all involve a straightforward suffixation of -a to the verb stem, while those of (2) indicate that, in addition to the suffix, -u- must be infixed right after the initial consonant of the verb stem if the following vowel is a. (We could not simply infix -u- for all imperatives and then delete it before high vowels, because we do get high vowel sequences such as ui, as in lu-iga 'when', mabui 'pregnant'.) Except for the suffix -a, imperative forms are identical with infinitives (see 4.7.1).

There is a close connection between infinitives and imperatives in many languages, and Rukai is but one of many languages that manifest such a phenomenon. Such a relationship is stated by the subcategorization rule in 4.4.1:

(3) $\begin{bmatrix} -\text{stat} \\ -\text{fin} \end{bmatrix} \dashrightarrow [\underline{+}\text{imp}]$

Imperatives may not occur with personal suffixes, and never with the so-called "understood" second person pronouns, which sometimes appear overtly in English:

(4) You do it!

Thus in Rukai the rule is needed:

(5) $[+\text{imp}] \dashrightarrow [-[+\text{NM}]]$

The rule states that imperatives may not occur with subjects. Such a redundancy rule must apply before all the case-frame subcategorization rules (see 4.4.3) to prevent a verb from getting conflicting case frame features, such as:

(6) $*\begin{bmatrix} +\text{V} & \begin{bmatrix} +\text{NM} \\ +\text{AGT} \end{bmatrix} \\ +\underline{\quad} \\ -\underline{\quad}[+\text{NM}] \end{bmatrix}$

In fact, this is good evidence to prove that some redundancy rules should apply before subcategorization rules.

That imperatives generally do not occur with subjects is perhaps a language universal rule. The restriction is found in languages from all families such as Chinese, English, and Japanese as well as related Formosan languages like Ami. The only minor difference is that the second person pronouns may occasionally occur with imperatives for emphasis in languages like English and Chinese, and frequently occur in Northern Tepehuan, an American Indian language spoken in Mexico.[13]

With the set of rules given in 4.4.1, imperatives are not marked for person, and they will not be marked with personal suffixes. There should be a universal rule that says that imperatives imply second person subjects:

(7)
$$[+imp] \longrightarrow \left[-\begin{bmatrix}+NM\\-addr\end{bmatrix}\right]$$

This is needed to account for various facts. The rule is stated negatively because it does not require the presence of a subject.

The following are imperative sentences with objects:

(8) ?a?acay-a ini-a cumay. 'Kill that bear!'
    kill   that bear

(9) u-a?ic-a ikay. 'Sleep here!'
    sleep   here

The following are imperative sentences, each with an embedded clause:

(10) u-a?ic-a ikai ini-a. 'Sleep there!'
     sleep   stay there
     [+imp]   [-fin] [+AC]
                     [+LOC]

(11) u-a?ic-a ikai ini-a kaway. 'Sleep over there!'
                    that yonder
                          [+AC]
                          [+LOC]

(12) ikai-a ini-a u-a?ic. 'Stay there to sleep!'
     stay   there to-sleep
     [+imp] [+AC] [-fin]
            [+LOC]

(13) mua-a ma-aLa. 'Go to take (it)!'
     go   take
     [+imp] [-fin]

(14) mua-a ki-?a-kani. 'Go to get-fed!'
     go   get-fed
     [+imp] [-fin]

The problem of embedding will be taken up in 4.7.

A kind of mild request is expressed by the suffix -na immediately following the imperative marker -a; cf. (15) and (16), (17) and (18):

(15) ʔaθuθu-a 'Nurse (the baby)!'

(16) ʔaθuθu-a-na 'Please nurse (the baby)!'

(17) nyama 'Come!'

(18) nyama-na 'Please come!'

Further examples in sentences:

(19) ʔaθuθu-a-na ki agi-li; mawlay-ŋa ku-aDa
nurse-please   sister-my long   that
     [+imp]   [+AC]
     [+mild]   [+OBJ]

ta-tubi-an-ini. (3-14)
crying-time-her
    [+NM]
    [+OBJ]

'Please-nurse my-sister; she has-been-crying
for a long time'

(20) na-ina, nyama-na   ʔaθuθu ki agi-li. (3-7)
Mommy come-please nurse   sister-my
     [+imp]   [-fin]   [+AC]
     [+mild]   [+caus]   [+OBJ]

'Mommy, please-come to-nurse my-sister'

4.7. Embedding Structures

The general tendency of Rukai is to use a complex sentence with embedded clause(s) rather than several nominals with case markers in a simple sentence with a single verb.

It is possible to have several verbs in sequence in the same sentence. For example, in (1) and (2) the first three words are all verbs:

(1)   <u>aswala</u> <u>kayŋanay</u> <u>mu-baLiw</u> kay maruDaŋ.
        first   return   go-home this old-man
        [+fin] [-fin]   [-fin] $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

        'This old-man went home first'

(2)   <u>mu-a-baLiw</u> <u>aswala</u> <u>kayŋanay</u> <u>kay</u> maruDaŋ.
        went-home   first   return   this old-man
        [+fin]   [-fin] [-fin] $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

        'This old-man went home first'

All such sequences will be treated as instances of embedding, with the first verb as the matrix verb. The following tree diagram illustrates the structure of (2)

(2')
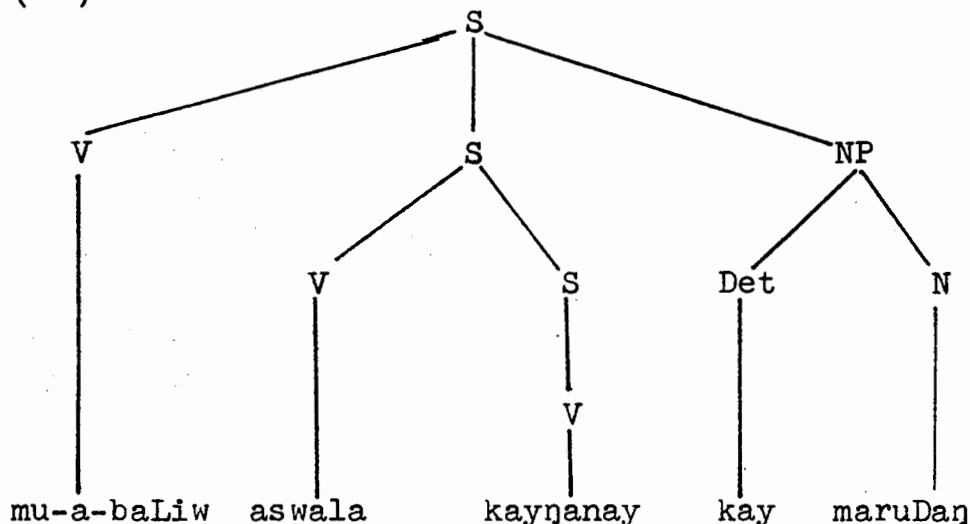
4.7.1. Properties of Embedded Verbs

The embedded verb does not take tenses like the main

verb of the sentence:

(1) <u>i-a-kai</u> <u>daan</u> <u>uŋul</u> <u>sa</u> <u>acilay</u> <u>kay</u> <u>maruDaŋ</u>.
    stayed house drink   water this old-man

$$[+fin] \quad \begin{bmatrix} +AC \\ +LOC \end{bmatrix} [-fin] \quad \begin{bmatrix} +AC \\ +OBJ \end{bmatrix} \quad \begin{bmatrix} +NM \\ +AGT \end{bmatrix}$$

'This old-man stayed in the house drinking water'

(2) *i-a-kai daan wa-uŋul acilay kay maruDaŋ.

(3) <u>wa-uŋul</u> <u>sa</u> <u>acilay</u> <u>i-kai</u> <u>daan</u> <u>kay</u> <u>maruDaŋ</u>.
   drank   water stay house this old-man

$$[+fin] \quad \begin{bmatrix} +AC \\ +OBJ \end{bmatrix} [-fin] \quad \begin{bmatrix} +AC \\ +LOC \end{bmatrix} \quad \begin{bmatrix} +NM \\ +AGT \end{bmatrix}$$

'This old-man drank water in the house'

(4) *wa-uŋul sa acilay i-a-kai daan kay maruDaŋ.

In (1) the main verb is <u>i-a-kai</u>, which has the past tense

marker <u>a</u>, and the infinitive verb is <u>uŋul</u>, which cannot

take the past tense marker <u>wa-</u>, as in (2). Similarly, in

(3) the main verb is <u>wa-uŋul</u> and the infinitive <u>i-kai</u>,

which cannot take the past tense marker <u>a</u>, as in (4).

The following tree diagram illustrates the structure

of (1):

(1')
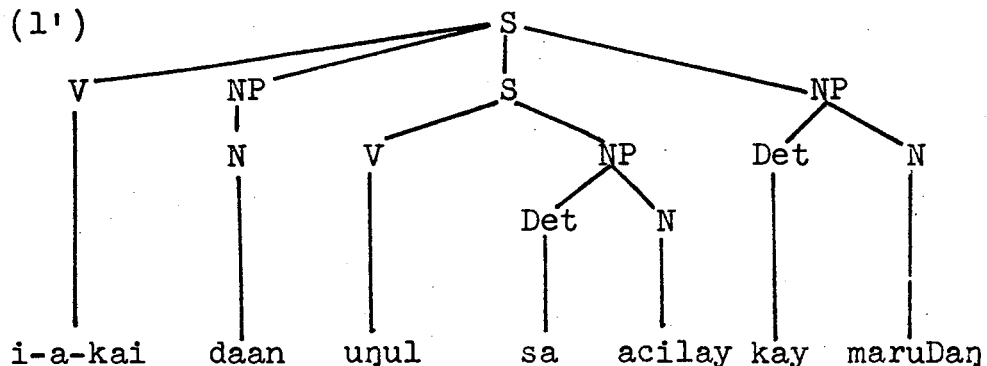
We can see that a sentence has at most one finite verb (cf. 4.4.1 and 4.4.2.4):

(5) [+V] --→ [±fin]

(6) [+fin] --→ [-___[+fin]]

(6) states that a sentence does not allow two finite verbs.

Furthermore, the main verb must occur sentence-initially; it may not occur after a non-finite:

(7) [+fin] --→ [-[-fin]___]

For example, (8) would be ungrammatical:

(8) *uŋul   sa acilay i-a-kai daan kay maruDaŋ.
    drink   water   stayed   house this old-man
    [-fin]   [+fin]

Although the verb in an embedded clause may not take tense markers, the verb in a subordinate sa 'when' clause may do so:

(9) wa-θiŋal-su sa wa-ʔacay tumu-su?
     know-you   when died   grandfather-your
     [+fin]   [+fin]

'Do/Did you-know when your-grandfather died?'
Such a complex sentence structure goes beyond the scope of the present study.

The verb stem of the embedded verb may be reduplicated like that of the main verb:

(10) ku-ani ababay ara-kai-kai tu-ba-baas sa guuŋ
      that   woman   is-using   cooking-soup   cow
              [+NM] [+fin]   [-fin]   [+AC]
              [+AGT] [+cont]   [+cont]   [+OBJ]

      ina ʔaluŋ-li.
      that pan-my

'That woman is-using my-pan to-keep-cooking
beef soup'

The embedded verb must be inflected by adding the
infix u̱ after the initial consonant if the following vowel
is a̱. In other words, the infix u̱ is an infinitive marker
whenever the embedded verb begins with a consonant
followed by the low vowel:

(11) ku-ani maruDaŋ arakai ina balbal d/u/amɨk ina
     ‾‾‾‾‾ ‾‾‾‾‾‾‾‾ ‾‾‾‾‾‾ ‾‾‾ ‾‾‾‾‾‾ ‾‾‾‾‾‾‾‾ ‾‾‾
      that old-man   use   that bamboo to-hit that
            ⎡+NM ⎤   [+fin]   ⎡+AC ⎤ [-fin]
            ⎣+AGT⎦   ⎣+INS⎦

taw?uŋ.
‾‾‾‾‾
dog
⎡+AC ⎤
⎣+OBJ⎦

'That old-man used that stick to-hit that dog'

(12) m-ua-a d/u/avac mu-umauma.   'Go to the field!'
     ‾‾‾‾‾ ‾‾‾‾‾‾‾‾ ‾‾‾‾‾‾‾‾‾
      Go!   to-leave go-to-field
     [+fin] [-fin]   [-fin]

(13) ki-a-aŋatu-aku l/u/a?u ki la-lalak-li.   (9-116)
     ‾‾‾‾‾‾‾‾‾‾‾‾‾ ‾‾‾‾‾‾   ‾‾‾‾‾‾‾‾‾‾
     gathered-wood-I support   children-my
      [+fin]   [-fin]   ⎡+AC ⎤
                              ⎣+OBJ⎦

'I-gathered-wood to-support my-children'

In (11)--(13) the embedded verbs are the inflected forms
of the simple forms damɨk, davac and la?u. The infini-
tives observed here parallel morphophonemically with
imperatives. This evidence tends to support my claim
that infinitives and imperatives are closely related,
since it allows me to handle the affixation of both types
with the same morphophonemic rule (see 6.2.1.2).

Further evidence for grouping embedded verbs and

imperatives together is that neither of them take overt
subjects:

(14) $\left\{\begin{matrix}[-\text{fin}]\\ [+\text{imp}]\end{matrix}\right\}$ $-\!-\!\rightarrow$ $[-\underline{\qquad}[+\text{NM}]]$

Cf. "imperatives" in 4.6.10 and embedded verbs (or infini-
tives) discussed in this section.

In fact, according to the subcategorization rules
presented in 4.4.1, [+imp] can only be [-fin]. In other
words, non-finite verbs include imperatives, so (14) can
be simplified as

(15) [-fin] $-\!-\!\rightarrow$ $[-[+\text{NM}]]$

as given in 4.4.3.1.

The following tree illustrates the structure of (11):

(11')

```
                              S
          _____/|_____
         /            /       |           \
       NP            V        NP            S
      /  \           |       /  \          / \
    Det   N          |     Det   N        V   NP
     |    |          |      |    |        |   / \
     |    |          |      |    |        |  Det  N
     |    |          |      |    |        |   |   |
  ku-ani maruDaŋ  arakai   ina  balbal d/u/amɨk ina tawʔuŋ
```
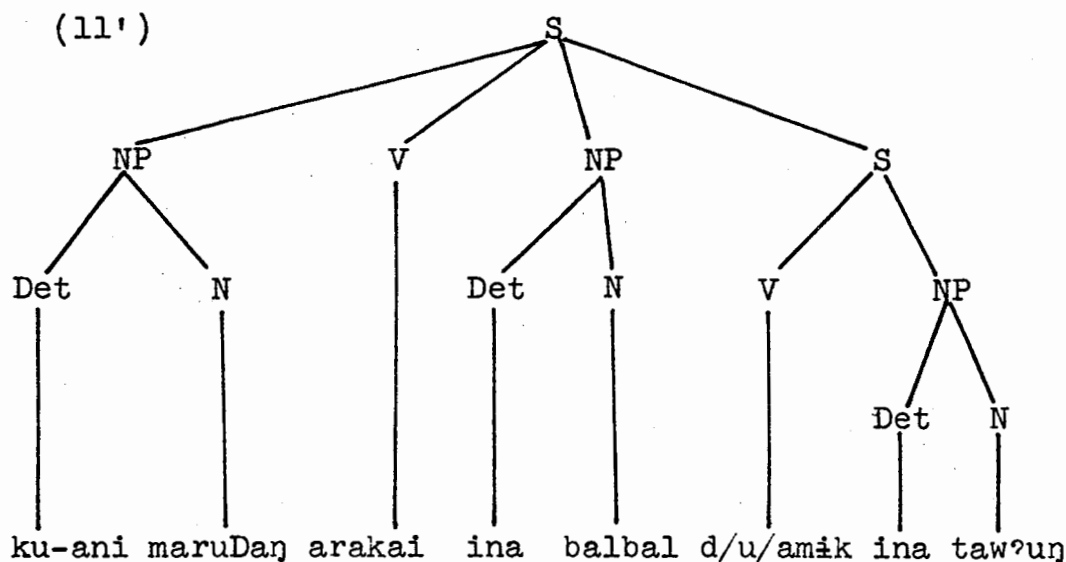
4.7.2. Negatives

Rukai has two negators: <u>kay</u> and <u>kaDu(a)</u>, the former indicating the "realistic negative" and the latter the "general negative" (in Ogawa's terms; see OA 1935:337).

In a negative sentence, personal pronouns are suffixed to the negator instead of the following verb:[14]

(1) <u>kaDu-a-aku</u> <u>u-a?ɨc</u>. 'I-did-not-sleep'
     not-have-I sleep

(2) <u>kay-naku</u> <u>u-a?ɨc</u>. 'I-do-not-want to-sleep'
     not-I   sleep

Cf. (3) <u>wa-a?ɨc-aku</u>. 'I-slept'
        slept-I

One simple and revealing explanation of the position of the personal pronouns is that the negators are main verbs, since they take the personal suffixes like ordinary verbs: then everything is regular and predictable. Even though the negator <u>kay</u> does not behave like a verb in that it does not, for instance, take tense or aspect markers, the other negator <u>kaDu</u> does take the past tense marker -<u>a</u>, as in (7) below. (The past tense marker precedes the verb stem for all the regular verbs.) This form is, of course, identical to the negative existential verb, and there seems to be no reason other than their English translations for supposing that <u>kay</u> and <u>kaDu</u> are not verbs. In Maori (Hohepa 1970, Chung 1970), for example, the negators behave like verbs.

With regards to the position of the personal pronouns

in the negative sentences, let it be noted that they may be fused with the negator kay:

(4)(a) ka/su/y tu-Lavay. 'You(sg.)-do-not work'

   (b) ka/numu/y tu-Lavay. 'You(pl.)-do-not work'

   (c) ka/ta/y tu-Lavay. 'We(inc.)-do-not work'

   (d) ka/nai/y tu-Lavay. 'We(exc.)-do-not work'

   (e) na/ku/y tu-Lavay. 'I-do-not work'

   (f) ka/Du/y tu-Lavay. 'He-does-not work'

   (g) ka/Du/y tu-Lavay 'They-do-not work'
       ku-l-ini (ku-l-iDa).

Therefore, the following morphophonemic rules would seem necessary to take care of the fusion:

(5)(a) kay + su → ka/su/y

   (b) kay + numi → ka/numu/y, (not *ka/numi/y)

     (Note the process of assimilation in vowels.)

   (c) kay + ta → ka/ta/y

   (d) kay + nai → ka/nai/y

   (e) kay + (a)ku → na/ku/y, (not *ka/ku/y)

     (Note the process of dissimilation in consonants.)

   (f) kay + ∅ → ka/Du/y, (not *kay)

However, it is not economical to take the above six rules to handle the similar pattern ka + pron + y. The -y is optional for most of these words in the present tense. In the past tense, -y is always left out:

(6)(a) ka-su aw-baay. 'You(sg.)-did-not give'

   (b) ka-numu aw-baay. 'You(pl.)-did-not give'

     etc.

Or: (7)(a) kaDu-a-su baay. 'You(sg.)-did-not give'

     (b) kaDu-a-numi baay. 'You(pl.)-did-not give'

     etc.

Also note that both negators begin ka-, which can be treated as the negative verb stem, and end with -y and -Du respectively; the latter can be considered bound morphemes, although their meanings are unclear. Then, instead of listing all the morphophonemic rules (5), all that we have to state is that with a few exceptions the personal affixes must be suffixes to the negative prefix ka-, then add -y by an optional rule for present tense.

However, there is very little gain in generality to require a separate morphophonemic rule for the existential negative verb ka-Du, even though it seems likely to be related to the non-existential negative verb ka-y historically. In this study, kaDu and ka- will be listed as two separate lexical entries. The full form of the latter must be either kay or the stem ka- with personal suffixes, since it never appears in the stem form alone. Then a few morphophonemic rules plus an optional one for the present tense will be needed to get all the correct negative verb forms (see 6.2.1.2).

Now that the negators are treated as verbs, most negative sentences are complex ones with embedded verbs, as in (4)--(7). That there are simple verb forms tu-Lavay in (4) and baay in (7) seems also good evidence that nega-

tives are the main verbs of the sentences. But since
there is no /u/ infix in the verb <u>baay</u>, it is counter-
evidence to the claim that negators are main verbs.

Footnotes to Chapter 4

1

That the dative occurs before the object seems to be a universal rule, cf. German, in which the dative must precede the object when they both occur in the same sentence unless there is a pronoun. Also in English, the dative precedes the object if the dative has no preposition, e.g. John gave Mary a book or John gave a book to Mary, but not *John gave a book Mary. According to Starosta (personal communication), this is also true in the other Formosan languages he has studied, such as Ami, Bunun, Saisiyat, Tsou and Seediq, but not true in Thai.

2

The number in the parenthesis right after each Rukai sentence example indicates the source; the number on the left of the hyphen indicates the text number and that on the right indicates the sequential sentence number in the text. The Rukai texts referred to were collected by the author and are unpublished manuscripts (Li 1971).

3

Both of these expressions can be ambiguous: inalienable as well as alienable.

4

Roughly the difference is that the one on the left is a single possessed noun, while the one on the right is either an equational sentence S or an NP with an attribute.

5

As a matter of fact, when both -ŋa and subject markers occur with a verb, the former precedes the latter, e.g. tuman-ŋa-ta 'we have done' (see 6.2.1.2).

An explanation for the preservation of the final -n in Rukai would be something like that for liaison in French. However, while the French environment can be stated phonologically, viz. a final consonant is kept when the following word begins with a vowel, it would be difficult to state the Rukai environment without treating the personal markers as suffixes.

6

Can the underlying form of the completive be -ŋan? This is unlikely because -n does not turn up when it is immediately followed by the other subject markers, e.g. wauŋul-ŋa-su 'have-you-drunk (wine)?', but not *wauŋul-ŋan-su, at least not in the speech of older speakers, although I have noticed the starred form occasionally in the speech

of some younger speakers. Moreover, the other Rukai dialects such as Budai that do preserve -n also have the completive marker -ŋa, not *ŋan.

7
Cf. the focus particle ko in Ami, a in Paiwan, aŋ in Tagalog, and so in Maranao; each of these focus particles can be used freely before most nominals in these languages except proper nouns. Of all Rukai particles, only ku and ki can precede proper names of person.

8
The label [+AC] has been chosen instead of [+O] used in the previous lexicase literature because: (1) The term "accusative" is a traditional accepted term, and (2) The label "O" implying "object" is a little misleading. In Rukai, for instance, the accusative case form includes more than just the "object". The choice of [+AC] is to avoid confusion between [+O] and [+OBJ]. Cf. 4.4.6.

9
Teresa Cheng, at a Formosan language Seminar meeting held in Taipei, 1971, pointed out the inappropriateness of the formula VSO. Rudolph Troike suggested the term VSX to replace it and that X stand for any case form other than the nominative.

10
Counter-examples and arguments have been given by Starosta(personal communication):
(a) The "true imperative" claim is empty and circular, since counter-examples are simply brushed aside as "not true imperatives" or "another sense of the verb".
(b) As Brent De Chene (1970) has pointed out, progressive indicates process rather than non-stative. Also, this is a situational rather than a grammatical test, since any putative "stative" verb can be used in the progressive given the appropriate extralinguistic context.
(c) The absence of benefactives is again situational rather than grammatical. If we imagine a situation in which the existence of a state is under conscious control, then we can use any "stative" verb with benefactives to describe such a situation. Note that in Japanese it is quite normal to have benefactives with statives (Taylor 1971).

11
The information for the other Formosan languages is based on various sources: for Thao on F. K. Li et al (1956), Paiwan on Ferrell (1970a, 1970b, 1971), Ami on

Ferrell and Teresa Cheng (personal communication), etc.

12
    Lakoff (1965, Section 3) gave the following English
example to show that stative verb cannot undergo the
imperative-transformation:
  (a) *Be tall!
However, Starosta argues that the sentence above is
perfectly grammatical and would be accepted given the
appropriate situation. In Rukai the expression would be
grammatical if the inchoative prefix ka- is used, whereas
it would be ungrammatical if the stative prefix ma- is
used, regardless of situation:
  (b) ka-biliŋ-a!   'Become tall!'
  (c) *ma-biliŋ-a!   '*Be tall!'

13
    The data for Northern Tepehuan are some 200 sen-
tences given in Elson and Pickett (1962). The observa-
tion is based on my personal analysis of the data.

14
    The same phenomenon is also found in other
Austronesian languages like Hawaiian (Elbert 1965:xix-
xxvi) and Tagalog (de Guzman, personal communication).
They are the VSO type of language. The subject, whether
it is a noun or pronoun, normally follows the verb.
In the negative sentence, however, the pronoun always
precedes the verb. Thus the word order is: Neg + Pron
+ V.

Chapter 5

Derivation and Lexical Relations

5.0. Derivation and Inflection

Definitions given for derivation and inflection by different linguists (cf. Gleason 1961, Hockett 1958, Francis 1958) are contradictory with each other, and none of the definitions works very well.

Given below are some criteria that may serve our purpose of describing any language:

Typical characteristics of derivation are

(1) that an item changes syntactic class,

(2) that a derivational affix can be carried over from one part of speech to another,

(3) that the form, meaning, and semantic properties are often not predictable,

(4) that a derived form is subject to further derivation or inflection, and

(5) that the new class contains some underived members.

Typical characteristics of inflection are

(1) that an item does not change syntactic class,

(2) that an inflectional affix cannot be carried over from one part of speech to another,

(3) that the form, meaning, and semantic properties are nearly completely, if not 100%, predictable, and

(4) that an inflected form is not subject to any further derivation.

By Criterion (1), the -ing form in English, for instance, is a derivational suffix, not inflectional. The item "read" is a verb, but "reading" is a noun in "Reading is my delight" and an adjective in "The reading copy should be ready by March 23". Such gerunds and participles are completely predictable in form, meaning, and semantic properties, though they are subject to further derivation. The example shows that the first criterion is crucial to deciding what is a derivation and what is an inflection.

By the other criteria, the English verbal suffix -s indicating the third person singular present tense is inflectional, not derivational, e.g. "reads" can only be used as a verb like the simple form "read", but can never be used as a noun. In other words, the affix -s of "reads" can never be carried over to a different part of speech (Criterion (2)). The form, meaning, and semantic content of "reads" are completely predictable (Criterion (3)). Furthermore, the inflected form "reads" is not subject to further change; no other affix can be added to the form. On the other hand, the plural suffix -s can be added to the derivational form "reading" as "readings" (Criterion (4)).

In English there are some underived nouns, e.g. "boy", and underived adjectives, e.g. "nice", comparable to the nominal "reading" and adjectival "reading"

respectively (Criterion (5)).

Following these criteria, then, Rukai has indeed
only a few inflections, e.g. the verbal and nominal
personal suffixes such as -aku, -li, the imperative -a,
etc. The verbal suffix -aku cannot be carried over to a
noun, nor can the nominal suffix -li be carried over to
a verb. Moreover, their forms are invariable and pre-
dictable. On the other hand, all the tense and aspect
markers of the verb including wa-, a-, ay-, -ŋa, etc.
are derivational, simply because they can all be carried
over to noun, even though the completive marker -ŋa is
completely predictable.

Since inflections are predictable, it takes only
some "spelling rules" (in Lakoff's 1965 term) to give
the phonological shapes for all verbal and nominal inflec-
tions. Derivations are far more complicated. They
involve changes of syntactic function, semantic content,
case features, etc. A set of rules is needed to specify
clearly the derived forms. These are an unordered set of
rules. They state generalizations about lexical relations
and form new lexical items on the basis of the old ones.
Rules of this type have been formalized by Starosta (1971b)
and Taylor (1971). It has been well demonstrated that
derivation rules (DR's) can best capture generalizations
of lexical relations. DR's are a somewhat powerful
device. On the one hand, they are given enough power to

do the necessary job. They can take words, sentences, or even non-linguistic sounds utterable by human beings as input, and can add or delete syntactic, semantic, or phonological features to produce new lexical items. On the other hand, they are restrained so as not to be too powerful like some transformation rules. They operate on lexical items, not trees, and so cannot perform permutations, additions, deletions, or any other changes in bracketing or labeling.

The following notational conventions are used: an arrow with fletching (>--→) indicates a derivation rule. A DR is typically in a form such as:

$$
\begin{bmatrix} +N \\ +OBJ \\ \alpha Fi \end{bmatrix} \quad >\text{--}\rightarrow \quad \begin{bmatrix} +V \\ +producing \\ -\underline{\quad}[+OBJ] \\ +derv \\ \alpha Fi \end{bmatrix}
$$

If a certain feature is specified on the left of the arrow but is absent on the right, it means that the feature is absent in the new item formed by the derivation, e.g. [+N] and [+OBJ] in the example above. If a new feature appears only on the right, it refers to a feature newly created as a result of the derivation, e.g. [+V] and [+producing]. All the other features not mentioned by the rule are carried over and indicated by the symbols αFi, βFj, etc. The feature [+derv] indicates that the output is a derived form.

5.1.   Verb Derivation Rules (VDR's)

5.1.1.   Stative and Inchoative Derivation Rules

Rukai statives take the prefix ma-.   The base forms such as bilin, Tulay, and -Daw are lexically statives and need obligatory ma- prefixing.   Thus we get ma-bilin 'high', ma-Tulay 'deaf', and ma-Daw 'big' in their surface phonological realizations (see 4.6.9 for stative sentences).

VDR 1. $\begin{bmatrix} -stat \\ \alpha Fi \end{bmatrix}$ >--→ $\begin{bmatrix} +stat \\ +derv \\ \alpha Fi \end{bmatrix}$

VMR 1. $_V[$ --→ $_V[ma$ $/ [+stat]$

VDR 1 states that statives can be derived from some non-stative verb stems, e.g. ?aθak 'break' > ma-?aθak 'broken', liDa 'lighten' > ma-liDa 'bright'.   Note that the form liDa can be either a noun or verb.

For ease of later reference (Chapter 6), each morphophonemic rule (MR) is listed side by side with each DR.   The notations of MR's follow Starosta (1973).   VMR stands for verb morphophonemic rule.

The base forms can be represented as below:

bilin	-Daw	?aθak	liDa
$\begin{bmatrix} +V \\ +stat \end{bmatrix}$	$\begin{bmatrix} +V \\ +stat \end{bmatrix}$	$\begin{bmatrix} +V \\ -stat \end{bmatrix}$	$\begin{bmatrix} +V \\ -stat \end{bmatrix}$

VDR 2. $\begin{bmatrix} +\text{stat} \\ \alpha\text{Fi} \end{bmatrix}$ >--→ $\begin{bmatrix} +\text{inch} \\ +\text{derv} \\ \alpha\text{Fi} \end{bmatrix}$

VMR 2. $_V[$ --→ $_V[\text{ka}$ / [+inch]

Inchoatives can be derived from statives by the
addition of the prefix ka- to the stative base forms,
thus we get ka-bilin 'get tall', ka-liDa 'get bright',
and ka-Daw 'get big'. The morpheme ka- alternates with
ma- by taking exactly the same base forms, derived as
well as underived. Thus we get ka-ʔaθak 'get broken' as
well as ka-bilin (see 4.6.9 for inchoative sentences).

VDR 3. $\begin{bmatrix} +\text{stat} \\ \alpha\text{Fi} \end{bmatrix}$ >--→ $\begin{bmatrix} +\text{stat} \\ +\text{affecting} \\ +\text{derv} \\ \alpha\text{Fi} \end{bmatrix}$

VMR 3. $_V[$ --→ $_V[\text{ti}$ / [+affecting]

There is a small class of statives different from
the ordinary class of statives by the addition of the
prefix ti-, with the resultant meaning of 'causing some-
one else to feel...', e.g. ma-ti-gawgaw 'making someone
else feel dirty' as compared to ma-gawgaw 'dirty'. Only
a relatively small percentage of statives can be con-
verted into this sub-class.[1] We do not get, for instance,
*ma-ti-Daw, *ma-ti-bilin.

The morpheme ti- is not compatible with inchoative
verbs, e.g. *ka-ti-gawgaw, *ka-ti-kuru, *ka-ti-samali.

5.1.2. Passive Derivation Rule

There are various ways of relating the active and the corresponding passive sentences. One is by the following derivation rule:

VDR 4.
$$
\begin{bmatrix} +V \\ +\underline{\quad}[+NM, +AGT, \alpha Fi] \\ +\underline{\quad}[\begin{bmatrix} +OBJ \\ +DAT \\ +BEN \end{bmatrix}, \ \beta Fj] \\ \quad\quad 1 \quad\quad\quad 1 \\ \gamma Fk \end{bmatrix}
>\text{--}\rightarrow
\begin{bmatrix} +V \\ +pass \\ +\underline{\quad}[+AC, +AGT, \alpha Fi] \\ +\underline{\quad}[+NM, \begin{bmatrix} +OBJ \\ +DAT \\ +BEN \end{bmatrix}, \beta Fj] \\ \quad\quad\quad\quad 1 \quad\quad\quad 1 \\ +derv \\ \gamma Fk \end{bmatrix}
$$

VMR 4. $[\quad\text{--}\rightarrow\quad [ki \qquad / \ [+pass]$
          $_V$ $_V$

The symbols αFi and βFj show which actants correspond to each other. See 4.6.6 for explanations of the relationships of the different actants with sentence examples.

Another way of accounting for the relationships is by the following two ordered rules (assuming verbs are marked [±pass] by a subcategorization rule:

$[+V] \text{--}\rightarrow [\pm pass]$):

(1) $\begin{bmatrix} +V \\ +pass \\ +\underline{\quad}[+DAT] \end{bmatrix} \text{--}\rightarrow \begin{bmatrix} \pm\underline{\quad}[+NM,+DAT] \\ +\underline{\quad}[+AC,+AGT] \end{bmatrix}$

(2) $\begin{bmatrix} +pass \\ -\underline{\quad}[+NM, +DAT] \\ +\underline{\quad}[+OBJ] \end{bmatrix} \text{--}\rightarrow \begin{bmatrix} +\underline{\quad}[+NM, +OBJ] \\ +\underline{\quad}[+AC, +AGT] \end{bmatrix}$

These two rules say the same thing, but in a more complicated manner. In addition to the ordering of the

rules, a disadvantage of the alternative solution is that it mixes the redundancy rule and subcategorization rule in (1). This is not as neat as the single VDR above. Still another drawback is that it treats the ki- passive form as inflection. Moreover, it will take a third rule to account for [+BEN] actants.

Still another alternative is by case-frame redundancy rules:

(3)
$$
\begin{bmatrix}
+V \\
+\underline{\quad}[+AGT] \\
+\underline{\quad}[+OBJ] \\
+\underline{\quad}[+DAT] \\
+pass \\
-cause
\end{bmatrix}
\longrightarrow
\begin{bmatrix}
+\underline{\quad}[+AC, +AGT] \\
+\underline{\quad}[\alpha NM, -\alpha AC, +OBJ] \\
+\underline{\quad}[-\alpha NM, \alpha AC, +DAT]
\end{bmatrix}
$$

(4)
$$
\begin{bmatrix}
+pass \\
+\underline{\quad}[+AGT] \\
+\underline{\quad}[+OBJ]
\end{bmatrix}
\longrightarrow
\begin{bmatrix}
+\underline{\quad}[+AC, +AGT] \\
+\underline{\quad}[+NM, +OBJ]
\end{bmatrix}
$$

Rule (3) states clearly that in a passive and non-causative sentence either the OBJECT or DATIVE is the subject, and one of them must be the object of the sentence. But the rule does not contain the flexibility of leaving either of them optional, so it takes a second rule (4) for non-transitive verbs. Moreover, I do not see how [+BEN] can be added to (3) by using the α switching rule when a language has such a case relation.

A few ki- prefixed verbs seem to be "reflexive" and have the notion of self-doing. For example,

(5) vaivaŋ 'entertain someone else' > ki-vaivaŋ
'enjoy oneself'

ʔɨlaɨla 'tell' > ki-ʔɨlaɨla 'talk to oneself'

Since these verbs have the same prefix as the passive

ki-, and they are all interpretable as ki-vaɨvaŋ 'be

entertained (by oneself)', ki-ʔɨlaɨla 'be talked to (by

oneself)', with the AGENT assumed to be identical, they

can be treated as passives, but with AGENT actants

absent in the sentence. Compare the two sentences below:

(6) ku takaini vaɨvaɨvaŋ   ki agiini. (3-9)
    elder-her entertaining   younger-his

    'It is the elder (brother) who was-entertaining
    the younger (sister)'

(7) iakaiaku   iDaa kivaɨvaɨvaŋ. (9-67)
    stayed-I   there being-entertained

    'I-stayed there to-be-entertained (by myself)'

Such a derivation could also be treated as "intransitivi-

zation" (cf. the following section). But the alternative

analysis has been rejected because it would lose a

generality with passives.

5.1.3. Intransitivization Derivation Rules

An intransitivization derivation rule deletes a case

from a verb's case frame.

5.1.3.1. Middling Derivation

$$
\text{VDR 5.} \quad
\begin{bmatrix}
+V \\
+\underline{\quad}([+AGT]) \\
+\underline{\quad}[+OBJ, \alpha Fi] \\
\beta Fj
\end{bmatrix}
>\text{--}\rightarrow
\begin{bmatrix}
+V \\
+\text{middling} \\
-\underline{\quad}([+AGT]) \\
+\underline{\quad}[+NM, +OBJ, \alpha Fi] \\
+\overline{\text{derv}} \\
\beta Fj
\end{bmatrix}
$$

VMR 5.   [--→   [ku   / [+middling]
       V   V

E.g.   laub 'burn something' > ku-laub 'something burns'

(1)   ay-laub   inia   daan   kay   umas.
      fut-burn that   house this man
                       ⎡+AC ⎤   ⎡+NM ⎤
                       ⎣+OBJ⎦   ⎣+AGT⎦

      'This man will-burn that house'

(2)   ku-a-laub-ŋa   kuaDa   daan.
      self-past-burn-already   that   house
                                            ⎡+NM ⎤
                                            ⎣+OBJ⎦

      'That house has-burned-already'

The prefix ku- may be called an "intransitivizer"
in the sense that when the original verb stem can take
both the AGENT and OBJECT actants, the corresponding
derived verb with ku- can no longer cooccur with both
case actants; it can only occur with the OBJECT actant.
The derived verb removes the AGENT case from the case
frame. Starosta (1971b:202-3) calls the similar deriva-
tion in Sora "middling".

The ku- middling may be related to the ki- passive,
since the prefixes are so close phonologically, and
the two types of derived verbs behave in a similar way
by having OBJECT actants as subjects, with AGENT actants
absent in the sentence.

5.1.3.2. Abilitative Derivation

A similar process of converting a transitive verb
to intransitive is observed in such examples as:

(1) kanɨ 'eat'   >   mu-kanɨ 'edible'

     ʔaθak 'break'   >   mu-ʔaθak 'breakable'

     Lɨɨd 'swallow'   >   mu-Lɨɨd 'swallowable'

The mu- verbs and ma- statives are different, cf.
mu-ʔaθak 'breakable' and ma-ʔaθak 'broken'.

The feature "abilitative" or "potential" can be
used to designate such mu- derived verbs.

The mu- type of intransitive is different from the
ku- type in that while the mu- type can take a DATIVE
object, the ku- type cannot. For example,

(2) $\underline{\text{mu-kanɨ}}$ sa $\underline{\text{umas}}$ $\underline{\text{kay}}$ $\underline{\text{Lacɨŋ}}$.
     $\overline{\text{edible}}$ $\overline{\text{man}}$ $\overline{\text{this}}$ $\overline{\text{vegetable}}$
            $\begin{bmatrix} +AC \\ +DAT \end{bmatrix}$ $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

     'This vegetable is edible to man'

(3) *$\underline{\text{ku-a-laub}}$ sa $\underline{\text{umas}}$ $\underline{\text{kay}}$ $\underline{\text{daan}}$. (Cf. (2) in
     $\overline{\text{self-past-burn}}$ $\overline{\text{man}}$ $\overline{\text{this}}$ $\overline{\text{house}}$ 5.1.3.1)

The mu- type of verb can also occur with INSTRUMENT:

(4) $\underline{\text{mu-kanɨ}}$ $\underline{\text{kay}}$ $\underline{\text{Lacɨŋ}}$ $\underline{\text{inia}}$ $\underline{\text{umas}}$ $\underline{\text{ara}}$ $\underline{\text{kidiŋ}}$.
     $\overline{\text{edible}}$ $\overline{\text{this}}$ $\overline{\text{vegetable}}$ $\overline{\text{that}}$ $\overline{\text{man}}$ $\overline{\text{with}}$ $\overline{\text{spoon}}$
          $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +AC \\ +DAT \end{bmatrix}$ $\begin{bmatrix} +I \\ +INS \end{bmatrix}$

     'This vegetable is edible to that man with a spoon'

The CFRR in 4.4.3 will add [+INS] to the case frames of
all non-statives, so we need only to specify the possible
occurrence of [+DAT] in the mu- type of verb:

VDR 6. $\begin{bmatrix} +V \\ +\underline{\quad}([+AGT]) \\ +\underline{\quad}[+OBJ, \alpha Fi] \\ \\ \beta Fj \end{bmatrix}$ >--→ $\begin{bmatrix} +V, +\text{abilitative} \\ -\underline{\quad}([+AGT]) \\ +\underline{\quad}[+NM, +OBJ, \alpha Fi] \\ +\underline{\quad}([+AC, +DAT]) \\ +\text{derv} \\ \beta Fj \end{bmatrix}$

VMR 6. $_V[$ --→ $_V[$mu   / [+abilitative]

5.1.4. Some Verb-forming Derivation Rules

In addition to the verb derivation rules discussed in the previous sections, I shall list in this section some major processes for deriving verbs from nouns as well as verbs. Only a few general remarks will be made concerning these derivations. Further refinements may be necessary for some of the rules. The complete case frames can be predicted by the CFRR's in 4.4.3.

5.1.4.1. Crossing Derivation

$$\text{ani-} + \begin{Bmatrix} \text{N (place)} \\ \text{V} \end{Bmatrix} \quad \text{'go across or along'}$$

E.g. taluD 'bridge' > ani-taluD 'cross a bridge'

takilil 'lift' > ani-takilil 'pass by lift-
ing something'

VDR 7.
$$\begin{bmatrix} \begin{Bmatrix} \begin{bmatrix} +N \\ +LOC \end{bmatrix} \\ [+V] \end{Bmatrix} \\ \alpha Fi \end{bmatrix} >\text{--}\rightarrow \begin{bmatrix} +V \\ +crossing \\ -\underline{\quad}[+AC, +LOC] \\ +derv \\ \alpha Fi \end{bmatrix}$$

VMR 7. $[\quad\quad \text{--}\rightarrow \quad [\text{ani} \quad\quad / \text{ [+crossing]}$
 V   V

The class of verbs in the structural description of VDR 7 should be restricted, but I do not know yet what the relevant features are.

Since the LOCATION actant has now become part of the verb, the verb can no longer take an accusative LOCATION, although other LOCATION actants such as directionals may be possible. This LOCATION incorporation in the derived

verb in Rukai resembles OBJECT incorporation in some of
the rules to be discussed below and the one in Sora
described by Starosta (1971b:201-2).

5.1.4.2. Consuming Derivation

ani- + N (food) 'eat, drink'

  E.g. abay 'cake' > ani-abay 'eat cake'

        bava 'wine' > ani-bava 'drink wine'

VDR 8.
$$
\begin{bmatrix} +N \\ +OBJ \\ +consumable \\ \alpha Fi \end{bmatrix} \rightarrow \begin{bmatrix} +V \\ +consuming \\ -\underline{\quad}[+OBJ] \\ +derv \\ \alpha Fi \end{bmatrix}
$$

VMR 8. $[\underset{V}{\quad} \rightarrow \underset{V}{[}ani \quad / \; [+consuming]$

Some verbs are derived from consumable nouns that
have to do with eating and drinking. Once such a noun
is derived as a verb, the original noun [+OBJ] becomes
part of the verb stem, and the verb can no longer take
any OBJECT actant in the sentence. Like other "transi-
tive" verbs, verbs of this class may have AGENT subjects
if they are not inflected for person.

     Similarly, when the LOCATION actant forms part of
the derived verb, the verb cannot take any LOCATION
actant, directional or non-directional, in its case
frame; cf. VDR 9 below.

5.1.4.3. Locative Derivation

i- + N (place) 'stay at/in', cf. ikai 'stay at/in'

    E.g. baLiw 'home'   >   i-baLiw 'stay at home'

         bilin̂ 'height'   >   i-bilin̂ 'stay above'

         talivaivai 'outside' >   i-talivaivai 'stay outside'

VDR 9.
$$
\begin{bmatrix} +N \\ +LOC \\ \alpha Fi \end{bmatrix} > \text{--} \rightarrow
\begin{bmatrix} +V \\ +locative \\ -\underline{\quad}[+LOC] \\ +derv \\ \alpha Fi \end{bmatrix}
$$

VMR 9. $_V[$ --→ $_V[i$ / [+locative]

Understandably enough, the locative verbs are derived from place nouns. If the verb is past, the past tense marker a- is morphophonemically added prior to the locative marker i-.

5.1.4.4. Gathering Derivation

ki- + N (plant) 'dig, gather'

    E.g. tai 'taro'   >   ki-tai 'dig taros'

         burasi 'sweet potato'>   ki-burasi 'dig sweet potatos'

         aŋatu 'firewood'   >   ki-aŋatu 'gather firewood'

VDR 10.
$$
\begin{bmatrix} +N \\ +OBJ \\ +plant \\ \alpha Fi \end{bmatrix} > \text{--} \rightarrow
\begin{bmatrix} +V \\ +gathering \\ -\underline{\quad}[+OBJ] \\ +derv \\ \alpha Fi \end{bmatrix}
$$

VMR 10. $_V[$ --→ $_V[ki$ / [+gathering]

Plant nouns including vegetables and wild plants can be converted into verbs, meaning 'digging' and 'gathering'

5.1.4.5. Mutual Derivation

ma- + V (non-stative) 'mutual, reciprocal'

Cf. ma- + N 'dual' in 5.2 and 6.2.2.

E.g. kadalam 'love'   > ma-kadalam 'love each other'

kawriva 'talk'   > ma-kawriva 'talk to each
                               other'

ikai 'live, stay' > ma-ikai 'live or stay together
                               as a couple'

VDR 11.
$$\begin{bmatrix} +V \\ -stat \\ \alpha Fi \end{bmatrix} \text{>--→} \begin{bmatrix} +V \\ -stat \\ +mutual \\ -\underline{\quad}[+AC, \begin{Bmatrix}[+OBJ]\\[+DAT]\end{Bmatrix}] \\ +derv \\ \alpha Fi \end{bmatrix}$$

VMR 11.   [--→   [ma   / [+mutual]
        V   V

Only non-statives, which may or may not be derived
(e.g. the inchoative kadalam is derived from a stative;
see 5.1.1), can be further derived as "mutual" or
"reciprocal" verbs denoting mutual action of two people.

The verbal prefix ma- may be related to the nominal
prefix ma- meaning "dual"; see 5.2 and 6.2.2.

This type of verb may have AGENT as the subject and
allows no OBJECT or DATIVE object in the sentence. For
example,

(1) makawrivariva   kuaDa lamataka.
     talking to each other those brothers
                                  $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

     'Those brothers are-talking-to-each-other'

5.1.4.6. Searching Derivation

<u>muri-</u> + N (field object) 'search'

E.g. maDu 'fruit' > muri-maDu 'search for fruit'

kaθyaθyaθila 'ant-hill' > muri-kaθyaθyaθila 'search for ant-hills'

tukuL 'trap' > muri-tukuL 'search and check traps'

VDR 12.
$$
\begin{bmatrix}
\text{+N} \\
\text{+OBJ} \\
\text{+field object} \\
\text{+obscure} \\
\alpha\text{Fi}
\end{bmatrix}
>\text{--}\rightarrow
\begin{bmatrix}
\text{+V} \\
\text{+searching} \\
\text{-\_\_\_[+OBJ]} \\
\text{+derv} \\
\alpha\text{Fi}
\end{bmatrix}
$$

VMR 12. $_V[\quad\quad \text{--}\rightarrow \quad _V[\text{muri} \quad / \text{[+searching]}$

A noun that denotes an object in an uncultivated area not easily perceived can be converted into a verb by adding the prefix <u>muri-</u> and have the meaning of 'searching'. It is not clear whether the derivation <u>aŋatu</u> 'bush' > <u>muri-aŋatu</u> 'clear away a bush' is the same derivation and belongs to the same group of verbs or not.

5.1.4.7. Transforming Derivation

<u>muti-</u> + N (concrete object) 'turn into'

E.g. aðaðam 'bird' > muti-aðaðam 'turn into a bird'

Lɨnɨg 'rock' > muti-Lɨnɨg 'turn into a rock'

VDR 13.
$$
\begin{bmatrix}
\text{+N} \\
\text{+OBJ} \\
\text{-abstract} \\
\alpha\text{Fi}
\end{bmatrix}
>\text{--}\rightarrow
\begin{bmatrix}
\text{+V} \\
\text{+transforming} \\
\text{-\_\_\_[+AC, +OBJ]} \\
\text{+derv} \\
\alpha\text{Fi}
\end{bmatrix}
$$

VMR 13. $_V[\quad\quad \text{--}\rightarrow \quad _V[\text{muti} \quad / \text{[+transforming]}$

A concrete noun can be converted into a verb and take the prefix muti- meaning 'to turn into the object denoted by the noun'. Such concrete nouns include alibaɨbaŋ 'butterfly', tulik 'rat', Dɨɨtɨ 'sausage', and many others. The meanings of the derived verbs are always regular and predictable, perhaps with the only exception being umas 'man' > muti-umas 'turn into a chicken = hatch' (the word for chicken is tarukuk). The verbs may have OBJECT actants as subjects, but allow no OBJECT actants as objects.

5.1.4.8. Possessing Derivation

si- + N (concrete) 'wear, possess, carry, possess as a
result of killing'

 E.g. ki?iŋ 'clothes' > si-ki?iŋ 'wear clothes'

  ra?al 'baby'   > si-ra?al 'carry/possess a baby'

  nagan 'name'   > si-nagan 'be named'

  baða 'enemy'   > si-baða 'kill (i.e. possess)
           an enemy'

VDR 14. $\begin{bmatrix} +N \\ +OBJ \\ -abstract \\ \alpha Fi \end{bmatrix} >\text{--}\rightarrow \begin{bmatrix} +V \\ +possessing \\ -\underline{\quad}[+OBJ] \\ +\underline{\quad}([+DAT]) \\ +derv \\ \alpha Fi \end{bmatrix}$

VMR 14. $_V[\quad\quad\quad \text{--}\rightarrow {}_V[si \quad\quad / [+possessing]$

A concrete noun can be converted into a verb which has the meaning of 'wearing, possessing the object denoted

in the noun'.

The object becomes part of the verb. The derived
verb may take a DATIVE actant as the subject in the sen-
tence. The derived verbs with the meaning of 'possession
after killing' are from "animate" nouns such as cumay
'bear', ?ana 'game, hunting' and are highly restricted.

5.1.4.9. Expelling Derivation

su- + N (concrete) 'spit, clean, give out, send out'

E.g. ŋaLay 'sputum'   > su-ŋaLay 'spit'

baik 'nasal mucus'   > su-baik 'clean one's nose'

buur 'bowels'   > su-buur 'defecate'

nagan 'name'   > su-nagan 'call out one's
                                name'

VDR 15.
$$
\begin{bmatrix}
+N \\
[+src, +LOC] \\
-abstract \\
\{[+body]\} \\
\{[+secretion]\} \\
\alpha Fi
\end{bmatrix}
>\text{--}\!\rightarrow
\begin{bmatrix}
+V \\
+expelling \\
-\underline{\quad}[+src, +LOC] \\
+\underline{\quad}([+AGT]) \\
+derv \\
\alpha Fi
\end{bmatrix}
$$

VMR 15. $[\ _V \quad \text{--}\!\rightarrow \ [su_V \quad / \ [+expelling]$

A concrete noun which is usually a body part or
secretion and the term for 'name' can be converted into
a verb and have the meaning of cleaning that part of body
or secretion. The derived verb has the meaning of
'expelling from the body'. This type of verb may have an
AGENT actant as subject, but may not cooccur with
[+src, +LOC] as object. Cf. the motion (mu- prefixed)verb.

5.1.4.10. Fearful Derivation

ta- + V (temperature) 'fear..., susceptible to...'

  E.g. DaŋDaŋ 'hot'(weather)' > ta-DaŋDaŋ 'fear hot
                                            weather'
      θulak 'hot (things)'   > ta-θulak 'fear hot things'

VDR 16.
$$\begin{bmatrix} +V \\ +temperature \\ \alpha Fi \end{bmatrix} >\text{-}\text{-}\rightarrow \begin{bmatrix} +V \\ +fearful \\ -\underline{\quad}[+AC, +OBJ] \\ +derv \\ \alpha Fi \end{bmatrix}$$

VMR 16.   [$_V$ --> $_V$[ta   / [+fearful]

All the stems (the base forms) affected by this rule
can be used as either verbs or nouns. It is assumed that
they are lexically verbs and derivable as nouns; cf. 5.2
NDR 3. All verbs that have to do with temperature can be
converted into this sub-class of verbs with the result-
ing meaning of 'fearing the temperature as denoted by the
verb stem'. For example,

(1) kuani kulkul ka ta-DaŋDaŋ aramur.
     that pig   fear-hot very

    'As for that pig, it is very afraid-of-hot-weather'

This type of emotional verb has an OBJECT actant as
the subject of the sentence in Rukai syntax, although
there may be evidence for treating the actant as DATIVE
in terms of language universals and in languages such as
English. For example,

(2) I fear hot weather.
   [+DAT]   [+OBJ]

5.1.4.11. Rubbing Derivation

taw- + N (body parts) 'wash or rub'

E.g. maca 'eye' > taw-maca 'wash face'

Lima 'hand' > taw-Lima 'wash hands'

baŋsar 'a rite at which poisonous leaves are used to rub body'

> taw-baŋsar 'rub poisonous plant on body'

VDR 17.
$$
\begin{bmatrix} +N \\ +OBJ \\ +\text{body parts} \\ \alpha Fi \end{bmatrix} >\text{-}\!\rightarrow \begin{bmatrix} +V \\ +\text{rubbing} \\ -\underline{\quad}[+OBJ] \\ +\underline{\quad}([+AGT]) \\ +\text{derv} \\ \alpha Fi \end{bmatrix}
$$

VMR 17. $_V[\quad \text{-}\!\rightarrow \quad _V[\text{taw} \quad / \ [+\text{rubbing}]$

A noun denoting a body part or any activity having to do with the body can be converted into a verb with the meaning of washing or rubbing the part of body denoted by the noun. The rule has actually applied to a case involving a noun that does not refer to any body part, but has to do with the body, i.e. baŋsar. This type of verb allows no OBJECT. It may have AGENT for its case frame like other transitive verbs.

5.1.4.12. Producing Derivation

tu- + N (concrete) 'do, make, produce, bring forth'

E.g. abay 'cake' > tu-abay 'make cake'

aʔuy 'fire' > tu-aʔuy 'start a fire'

lalak 'son' > tu-lalak 'have a baby'

VDR 18.
$$\begin{bmatrix} +N \\ +OBJ \\ -abstract \\ \alpha Fi \end{bmatrix} \;>\text{--}\rightarrow\; \begin{bmatrix} +V \\ +producing \\ -\underline{\quad}[+OBJ] \\ +\underline{\quad}([+AGT]) \\ +derv \\ \alpha Fi \end{bmatrix}$$

VMR 18. $\quad [\;_V \qquad \text{--}\rightarrow \;_V[\,tu \qquad / \;[+producing]$

This is a very productive rule; almost any concrete noun can be converted into a verb having the meaning of 'producing the thing denoted by the noun'.

Like many of the derived verbs described in the preceding VDR's in this section, the derived verb cannot take OBJECT in its case frame since the noun object has already formed part of the verb. This type of verb may also take AGENT if it is not inflected for person.

Of the 12 VDR's exemplified so far in this section, many of them can be partially collapsed to gain generality and simplicity. Some of them can be collapsed as below (with some contextual restrictions left out):

VDR 19.
$$\begin{bmatrix} +N \\ +OBJ \\ \begin{bmatrix} +consumable \\ +plant \\ +obscure \\ -abstract \\ -abstract \\ +body\ parts \\ -abstract \end{bmatrix}_1 \\ \alpha Fi \end{bmatrix} \;>\text{--}\rightarrow\; \begin{bmatrix} +V \\ -\underline{\quad}[+OBJ] \\ +\underline{\quad}([+AGT]) \\ \begin{bmatrix} +consuming \\ +gathering \\ +searching \\ +transforming \\ +possessing \\ +rubbing \\ +producing \end{bmatrix}_1 \\ +derv \\ \alpha Fi \end{bmatrix}$$

Most of these rules have very limited productivity.

5.1.5. Motion and Causative Derivation Rules

5.1.5.1. Motion Derivation

$\underline{u}- + \begin{Bmatrix} \text{N (place)} \\ \text{V (transitive)} \end{Bmatrix}$ 'go (of one's own accord; self-moving, not caused by external force'

E.g. daan 'house' > u-daan 'enter a house'

caki 'excrement' > u-caki 'defecate'

ciiLi 'throw' > u-ciiLi 'fall'

Tirag 'fell' > u-Tirag 'fall'

VDR 20.
$$\begin{bmatrix} \begin{Bmatrix} [+\text{N}, +\text{LOC}] \\ \begin{bmatrix} +\text{V} \\ +\underline{\quad}([+\text{AGT}]) \\ +\underline{\quad}[+\text{OBJ}] \end{bmatrix} \end{Bmatrix} \\ \alpha\text{Fi} \end{bmatrix} \quad >\!-\!\!\rightarrow \quad \begin{bmatrix} +\text{V} \\ +\text{motion} \\ +\underline{\quad}[+\text{NM}, +\text{OBJ}] \\ -\underline{\quad}[+\text{AGT}] \\ -\underline{\quad}[+\text{gol}] \\ +\text{derv} \\ \alpha\text{Fi} \end{bmatrix}$$

VMR 20a. $[\quad\quad -\!\!\rightarrow \quad _V[\text{u} \quad\quad / [+\text{motion}, +\text{derv}]$
        $_V$

Only place nouns and "transitive" verbs can be derived as "intransitive" motion verbs with the resultant meaning of 'leaving spontaneously without external cause'. Thus the derived verbs can only have the OBJECT actants as subjects. No [+gol] or [+AGT] is allowed.

The VMR is conditioned not only by [+motion] but also by [+derv] because [-derv] motion verbs do not take u-, e.g. davac 'leave'.

An example of an underived member of this new class is -ua 'go'.

This type of derived verb may be used as an embedded verb, e.g. u-daan in the following sentence:

(1) <u>lu</u> <u>nawmudaan</u>   <u>kuani</u> <u>sa</u> <u>aga</u>, <u>lu</u> <u>yaaku</u>, <u>ka</u>
    <u>if</u> <u>I-want-enter-house</u> <u>to-eat</u> <u>rice</u> <u>if</u> <u>so-I</u>

    <u>kaDu</u> <u>kiawmaw</u> <u>nakua</u> <u>u-daan</u>. (9-33)
    <u>not</u> <u>allow</u>   <u>me</u> <u>enter-house</u>

    'If I-was-to-enter-the-house to-eat rice, (they
    would) not allow me to-enter-the-house'

It may also be used as a main verb with the future tense

markers:

(2) <u>(a)y-ua</u> <u>kuani</u> <u>umas</u>.
    <u>fut-go</u> <u>that</u> <u>man</u>

    'That man will-go'

However, it must take the prefix <u>m-</u> when it occurs with

the present or past tense (unless it is preceded by a

sequential clause introduced by <u>la</u> 'then', which is beyond

the scope of this study):

(3) ⎧ <u>a-mua</u> ⎫ <u>kuani</u> <u>umas</u>. 'That man went'
    ⎪ <u>past-go</u> ⎪ <u>that</u> <u>man</u>
    ⎨   ⎬
    ⎪ *<u>a-ua</u> ⎪
    ⎪ *<u>ua</u>   ⎭
    ⎩

It must also take <u>m-</u> in an imperative:

(4) <u>mua-a</u>! 'Go!'

Therefore, another morphophonemic rule is needed to give

the prefix <u>m-</u>:

VMR 20b.   [--→   [m   / $\left[\begin{smallmatrix} \left\{ \begin{smallmatrix} [\text{-fut}] \\ [\text{+imp}] \end{smallmatrix} \right\}, & \text{+motion} \\ & \text{+derv} \end{smallmatrix} \right]$
         V   V

    This type of verb is related to causative verbs to

be discussed in 5.1.5.2. It is also related to tense to

be taken up in 5.1.6.

5.1.5.2. Causative Derivation

Causative has the effect of making another party act. All causative verbs are transitive and can take AGENT. Some causative verbs can also take DATIVE and BENEFACTIVE; see the case frame in the VDR below.

The feature "causative" [+cause] is closely related to that of non-statives and cooccurs only with [-stat] in Rukai.

Lakoff (1965, 4.16) said, "Causative operates on inchoative verbs--usually on the product of the inchoative rule." He argues that (1) and (2) are transformationally related, and (2) and (3) are synonymous and each is ambiguous:

(1) The metal hardened.

(2) John hardened the metal.

(3) John brought it about that the metal hardened.

The problem of ambiguity is not our concern here. As for the argument for synonymity, it has been severely criticized and refuted by Fodor (1970), particularly when the theory is applied to a language like English. Fodor's criticisms are well made and he has got good justifications for rejecting Lakoff's proposals that 'kill' be derived from 'cause to die' by a LEXICALIZATION rule and that the latter be the underlying structure of the former. Fodor said,

> "Lexicalization is a transformation which purports to derive words from phrases. But phrases are,

> _ipso facto_, syntactically complex objects in a
> way that words _ipso facto_ are not. Because they
> have internal syntactic structure, phrases inter-
> act with syntactic rules in ways that can prove
> embarassing for lexicalization... the phrases
> offered as candidates for lexicalization permit
> of modifiers. The corresponding words resist
> some of these modifiers simply because they lack
> internal structure on which to hang them."

If one wants to use transformations to derive causatives

from non-causatives as Lakoff did, one will have to refute

Fodor. A better device has been found to account for

their relationships. That is by derivation.

A common phenomenon found in Austronesian and many

other languages is that many causative verbs are derived

from non-statives by adding an affix. There are definitely

lexical relations between causatives and non-statives--

both have the same verb stems in Rukai:

(4) NON-STATIVES   CAUSATIVES

ʔacay 'die'   ʔa-ʔacay 'cause to die = kill'

kani 'eat'   ʔa-kani 'cause to eat = feed'

davac 'leave'   ʔa-davac 'cause to leave =
                                  release'

kaDaw 'get big'   ʔa-kaDaw 'cause to get big =
                                  enlarge'

ciil 'see'   ʔa-ciil 'cause to see = show'

It is clear that Rukai causatives are marked by the

addition of the prefix ʔa- to the verb stem. The quite

regular relations between causatives and non-causatives

can be best stated by a derivation rule. As stated and

formalized for Sora by Starosta (1971b:200):

"The corresponding syntactic consequence of the

derivation is that the original agent of the action becomes the direct object of the derived verb while a new agent is added to its case frame.

$$\begin{bmatrix} +V \\ +\begin{bmatrix} +NM \\ \beta Fj \end{bmatrix} \\ -derv \\ \alpha Fi \end{bmatrix} \quad >\text{--}\rightarrow \quad \begin{bmatrix} +V \\ +cause \\ +\begin{bmatrix} +OBJ \\ \beta Fj \end{bmatrix}\underline{\quad} \\ +\begin{bmatrix} +NM \\ +AGT \end{bmatrix}\underline{\quad} \\ \alpha Fi \quad\underline{\quad} \end{bmatrix}^{"}$$

The same statement and rule will also apply to Rukai with a few minor modifications or clarifications: (1) The "original agent" does not have to be an AGENT actant; it may be an OBJECT or DATIVE (cf. 4.3.3.5 and 4.3.3.6). But that does not require much change of the rule unless the original subject is DATIVE. (2) The "new agent" is realized as subject provided that the sentence is in the active (not passive) voice. But no modification of the rule is required in absence of [+pass]. (3) If the AGENT actant is realized as subject, then the OBJECT and/or DATIVE actants are realized as objects. (4) As mentioned above, causatives occur only with non-statives. (5) The environment order must also be changed, since Sora is verb-final and Rukai is verb-initial. The following VDR is adapted for Rukai:

VDR 21.
$$
\begin{bmatrix}
+V \\
-stat \\
+[+NM, \begin{bmatrix} +AGT \\ +OBJ \\ +DAT \end{bmatrix}, \ \beta Fj] \\
\qquad 1 \qquad\qquad 1 \\
-derv \\
\alpha Fi
\end{bmatrix}
>\text{--}\rightarrow
\begin{bmatrix}
+V \\
-stat \\
+cause \\
+\underline{\quad}[+AC, \begin{bmatrix} +AGT \\ +OBJ \\ +DAT \end{bmatrix}, \beta Fj] \\
\qquad\quad 1 \qquad\qquad 1 \\
+\underline{\quad}[+NM, \ +AGT] \\
+derv \\
\alpha Fi
\end{bmatrix}
$$

VMR 21a. $\underset{V}{[}$ $\text{--}\rightarrow$ $\underset{V}{[}{}^{?}a$ $/\ [+cause]$

Lakoff's statement quoted above that "Causative
operates on inchoative verbs--usually on the product of
the inchoative rule" is only partially true. From the
Rukai syntactic configuration, it must be refined to
state that "Causative operates on non-stative verbs
including inchoatives and non-inchoatives".

The following examples show the corresponding non-
causative and causative verbs:

(5)   aw?acay ku tamaini.
      died   father-his
                  $\begin{bmatrix} +NM \\ +OBJ \end{bmatrix}$

'His-father died'

(6)   ?a-?acay   inia tamaini   kay   umas.
      cause-die   that father-his   this man
                        $\begin{bmatrix} +AC \\ +OBJ \end{bmatrix}$ $\begin{bmatrix} +NM \\ +AGT \end{bmatrix}$

'This man killed his-father'

There is another group of causative verbs that are
not marked by prefixing ?a- to non-stative verb stems.
They are instead formed by prefixing ?u- to locative noun

stems, or more precisely by prefixing ?- to verb base

forms (derived or underived motion verbs). In fact, this

type of causative occurs only with motion verbs (cf.

5.1.5.1). Compare the following forms:

(6) NOUNS   MOTION VERBS   CAUSATIVES

    daan 'house'   > u-daan   > ?-u-daan
                       mu-daan
    baLiw 'home'   > u-baLiw   > ?-u-baLiw
                       mu-baLiw
    aDiŋ 'inside' > u-aDiŋ   > ?-u-aDiŋ
                       mu-aDiŋ

The following examples show the corresponding motion

verb with its causative:

(7)   <u>muadaan</u>   <u>kuani</u> <u>ababay.</u>
      entered-house that woman
      [+motion]   [+NM]
                         [+OBJ]

      'That woman entered-the-house'

(8)   <u>?uadaan</u>   <u>inia</u> <u>ababay</u> <u>kuani</u> <u>sawalay.</u>
      put-into-house that woman that   man
      [+cause]   [+AC]   [+NM]
                         [+OBJ]   [+AGT]

      'That man put that woman into the house'

It can, therefore, be stated that the ?- causatives

are derived from the base forms of motion verbs (not <u>m</u>-

forms), e.g. <u>u-daan</u> 'enter a house' > <u>?-u-daan</u> 'put into

a house'. Phonologically the ?- verbs share the same

initial as the regular causative prefix <u>?a-</u>. Syntacti-

cally the ?- verbs have the same function as the regular

<u>?a-</u> causatives. So they should be considered syntacti-

cally and phonologically to be derived from the motion
verbs by regular causativization. All that is needed is
a verb morphophonemic rule:

VMR 21b. $_V$[ʔau   --→ $_V$[ʔu   / [+cause]

5.1.6. Tense and Aspect Derivation Rules

Verbs with tense and aspect markers are derived
because the markers can be carried over to nouns, e.g.
wa-kanɨ 'past-eat' > wa-kanɨ-li 'past-eating-my',
ay-ki-θiŋal 'fut-pass-know; will be known' >
ay-ki-θiŋal-lini 'fut-pass-know-their; their being known
in the future', kanɨ-ŋa 'eat-comp' > k/in/anɨ-an-ŋa 'past-
eat-nom-comp; object that has been eaten already'.

5.1.6.1. Future Derivation

(a)y- + V 'future tense'

E.g. kanɨ 'eat'   > ay-kanɨ 'will eat'

    ʔacay 'die'   > ay-ʔacay 'will die'

    ɨlɨb 'close the door' > (a)y-ɨlɨb 'will close the
                                                     door'

VDR 22. $\begin{bmatrix} +V \\ +fin \\ -derv \\ \alpha Fi \end{bmatrix}$ >--→ $\begin{bmatrix} +V \\ +fin \\ +fut \\ +derv \\ \alpha Fi \end{bmatrix}$

VMR 22a. $_V$[--→ $_V$[ay   / [+fut]

VMR 22b(optional). $_V$[ayV   --→ $_V$[yV   / [+fut]

The future tense is indicated by <u>ay</u>- or <u>y</u>-; generally the former is used, though the latter may be used optionally when the verb stem begins with a vowel, including the <u>m</u>- type of verb. Verbs such as <u>m-ua</u> and <u>m-aLa</u> 'take' are called the <u>m</u>- type of verbs. The base forms of the <u>m</u>- type of verb begins with a vowel; see 5.1.5.1.

It takes two VMR's to account for alternants <u>ay</u>- and <u>y</u>-. The second rule optionally deletes the <u>a</u> when the vowel stem begins with a vowel. This is a reasonable rule and might be connected with reductions common in rapid speech; cf. 1.3 and 2.2. An alternative would be to have 22b ordered before 22a. If the optional rule applies, the non-optional one cannot.

The feature [-derv] on the left of the arrow is needed to prevent the rule from reapplying to its own output.

5.1.6.2. Past Derivation

$$\left\{ \begin{matrix} \text{a-} \\ \text{-\underline{a}-} \\ \text{w\underline{a}-} \end{matrix} \right\} + V \text{ 'past'}$$

(1) <u>a</u>- + V

    E.g. m-aLa 'take'   >   a-m-aLa 'took'

          m-ua 'go'   >   a-m-ua 'went'

(2) -<u>a</u>- + V

    E.g. tu-lalak 'have a baby' > tu-a-lalak 'had a baby'

si-ki?iŋ 'wear clothes' > si-a-ki?iŋ 'wore
                                            clothes'

ki-kanɨ 'be eaten'   > ki-a-kanɨ 'was eaten'

mu-bais 'hungry'   > mu-a-bais 'was hungry'

ki-laLa 'hear'   > ki-a-laLa 'heard'

Some of these verbs are derived from nouns, e.g.

tu-lalak < lalak 'child', si-ki?iŋ < ki?iŋ 'clothes'

(see 5.1.4). Others are lexically verbs and need obliga-

tory verb-prefixing, e.g. mu-bais and ki-laLa; they are

underived and cannot occur unaffixed even in present

tense or non-finite forms.

(3) $\begin{Bmatrix} wa- \\ aw- \end{Bmatrix}$ + V

E.g. kanɨ 'eat'   > wa-kanɨ 'ate'

    uŋul 'drink'   > wa-uŋul 'drank'

    takaynɨn 'sit'   > wa-takaynɨn 'sat'

These are lexically verbs and need no obligatory

verb-prefixing.

VDR 23. $\begin{bmatrix} +V \\ +fin \\ -derv \\ \alpha Fi \end{bmatrix}$ >--→ $\begin{bmatrix} +V \\ +fin \\ +past \\ +derv \\ \alpha Fi \end{bmatrix}$

VMR 23a. $_V[$ --→ $_V[a$ / [+past]

VMR 23b. $_V[a$ --→ $_V[\begin{Bmatrix} wa \\ aw \end{Bmatrix}$ / [+past, +derv]

The three different types of verbs listed above form

the past tense in three different ways although they all

share the common past tense marker a. The selection of

each of the affixes depends on the type and form of the

verb. The m- type of verb simply takes the prefix a- and nothing more, verbs that are composed of a verb-forming prefix and stem must morphophonemically[2] take the past tense prefix before the verb-forming prefix, and all the other verbs must take the segment w sequentially after or before taking the past-tense marker a, giving the free variants wa- and aw-.

The future and past tenses are mutually exclusive, so the two VDR's can be combined as:

VDR 24.
$$\begin{bmatrix} +V \\ +fin \\ -derv \\ \alpha Fi \end{bmatrix} >\text{---}\rightarrow \begin{bmatrix} +V \\ +fin \\ \left\{\begin{matrix} [+fin] \\ [+past] \end{matrix}\right\} \\ \alpha Fi \end{bmatrix}$$

5.1.6.3. Completive Derivation

-ŋa + V 'completive'

  E.g. kanɨ 'eat'   >   kanɨ-ŋa 'have eaten'

        mawlay 'long' >   mawlay-ŋa 'has been long'

VDR 25.
$$\begin{bmatrix} +V \\ +fin \\ -derv \\ \alpha Fi \end{bmatrix} >\text{---}\rightarrow \begin{bmatrix} +V \\ +fin \\ +comp \\ +derv \\ \alpha Fi \end{bmatrix}$$

VMR 25.   ]$_V$ $\text{--}\rightarrow$ ŋa] / [+comp]

Note that only finite verbs can be derived as future, past, and/or completive; non-finite verbs cannot. VDR 25 has to be kept separate from VDR 24 because various combinations, the completive and past or future, are possible.

5.1.7. Reduplication as a Process in Verb Derivation

Reduplication may signal a change in the part of
speech or syntactic function. In this section, I shall
present only the VDR's involving reduplication and discuss
the various functions of reduplication that have to do
with verbs.

Morphophonemic rules for reduplication are varied
and complicated, and will be formalized in the following
chapter on morphophonemic rules; see 6.1.

5.1.7.1. Duration Derivation

N (numerals) +   RED 'lasting for ... day(s)'

E.g. Lima 'five'   >   Lima-Lima 'last for five days'

maŋɨal 'ten'   >   maŋɨa-maŋɨal 'last for ten days'

VDR 26.
$$
\begin{bmatrix} +N \\ +numeral \\ \alpha Fi \end{bmatrix}
>\text{--}\rightarrow
\begin{bmatrix} +V \\ +duration \\ +day \\ +derv \\ \alpha Fi \end{bmatrix}
$$

A numeral can be reduplicated to form a verb with
the resulting meaning of duration 'lasting for the number
of day(s) as denoted by the numeral'. This takes
"complete" reduplication of the numeral to get the
phonological shape of the derived verb. Except for
numerals, all the other reduplicated nouns are still
nouns, not verbs, and the reduplication always indicates
plurality; see 6.2.

5.1.7.2. Continuous Derivation

V + RED 'continuous, keep doing, do repeatedly, progressive'

E.g. davac 'walk/leave' > da-davac 'be walking/leaving'

tubi 'cry' > tubi-tubi 'be crying'

VDR 27. $\begin{bmatrix} +V \\ \alpha Fi \end{bmatrix}$ >--→ $\begin{bmatrix} +V \\ +continuous \\ +derv \\ \alpha Fi \end{bmatrix}$

This is by far the most productive rule. Any verb, stative as well as non-stative, finite as well as non-finite, can be reduplicated to indicate a continuous action or state. However, this type of reduplication is not considered inflection mainly because the reduplicated verb can be derived as a noun, e.g. baay 'give' > ki-ba-baay-li 'pass-RED-give-my = my being given repeatedly = my salary'.

5.1.7.3. Future Derivation

V + RED 'future'

E.g. tu-lalak 'have a baby' > tu-la-lalak 'will have a
baby'
Cf. English 'is having a
baby'

davac 'walk/leave' > dava-davac 'will walk/leave'

Cf. English 'is leaving'

(The verb dava-davac also means to 'keep walking'.)

VDR 28. $\begin{bmatrix} +V \\ \alpha Fi \end{bmatrix}$ >--→ $\begin{bmatrix} +V \\ +future \\ +derv \\ \alpha Fi \end{bmatrix}$

Future tense is generally indicated by the prefix ay-,
but very occasionally by reduplication of the verb. The
problem with this rule is how to distinguish it from
VDR 27 above. The 'future' interpretation might be just
a matter of situation. Cf. the English progressive aspect
of the verb, which can also be interpreted as 'future' in
some situations.

5.1.7.4. Intensifying Derivation

V (stative) + RED 'intensity, comparatively greater'

   E.g. ma-Daw 'big'   > ma-Da-Daw 'rather big'

       mu-aDiŋay 'delicious' > mu-aDi-aDiŋay 'rather
                                        delicious'

$$\text{VDR 29} \quad \begin{bmatrix} +V \\ +\text{stat} \\ \alpha Fi \end{bmatrix} > \text{--} \to \begin{bmatrix} +V \\ +\text{stat} \\ +\text{intensifying} \\ +\text{derv} \\ \alpha Fi \end{bmatrix}$$

Intensity of state can be indicated by reduplication
of stative verbs.

5.2. Noun Derivation Rules (NDR's)

5.2.1. General Derivation Rules

NDR 1. $\begin{bmatrix} +\text{dem} \\ \alpha\text{Fi} \end{bmatrix}$ >--→ $\begin{bmatrix} +\text{N} \\ +\text{pron} \\ +\text{derv} \\ \alpha\text{Fi} \end{bmatrix}$

Demonstratives can be derived as pronouns; see
4.2.2.1. As pronouns they cannot be preceded by any
modifier such as adjective. That is why this NDR has to
be kept separate from the following one for numerals and
adjectives. When demonstratives are derived as demonstra-
tive pronouns, there is no change of phonological shapes,
so no morphophonemic rule is needed.

NDR 2. $\begin{bmatrix} \begin{Bmatrix} [+\text{Num}] \\ [+\text{Adj}] \end{Bmatrix} \\ \alpha\text{Fi} \end{bmatrix}$ >--→ $\begin{bmatrix} +\text{N} \\ +\text{derv} \\ \alpha\text{Fi} \end{bmatrix}$

This is a combination of two rules. Numerals and
adjectives can both be derived as nouns and behave just
like ordinary nouns; see 4.2.3--4.2.4 and 4.2.6. Like
demonstrative pronouns, these derivations do not involve
any change of phonological shape. For example, Dusa 'two',
maruDaŋ 'old (man)' can be used as nouns.

NDR 3. [   ] >--→ $\begin{bmatrix} +\text{N} \\ +\text{AC} \\ +\text{OBJ} \\ +\text{quote} \\ +\text{derv} \end{bmatrix}$

This rule states that anything from discourse to

whistle can be derived as a noun and serve as the direct
'quotation' object; see 4.3.3.5. This is called the
'Camel-belching Rule' by Taylor (1971:205).

NDR 4. $\left[\begin{array}{l} +V \\ \alpha Fi \end{array}\right]$ >--→ $\left[\begin{array}{l} +N \\ +derv \\ \alpha Fi \end{array}\right]$

Nouns can be derived from various types and forms
of verbs: the past tense verb form ku-a-laub 'burned' >
la-ku-a-laub 'burned people', the passive form ki-baay
'be given' > ki-baay-li 'being given my', the stative
base form bilin (surface form with the prefix ma-) 'high'
> bilin 'height, highness'. (See 5.1.1.)

When the stative base forms are derived as nouns,
they are no longer statives, and do not take ma-. Thus
we get bilin 'highness', Tulay 'a deaf man', liDa 'light',
but some statives such as -Daw cannot be derived as nouns
and have to be marked in the lexical entries non-applica-
tion of NDR 4.

The main justification for doing the derivation in
the verb to noun direction rather than the other way
around is to capture certain syntactic and semantic
generalities. (Cf. also Taylor's (1971) treatment of
Japanese.)

Any verb can be derived as a noun, but the inflectional
affixes do not carry over. In other words, a noun derived
from a verb is no longer a verb.

5.2.2. Nominalization Derivation Rules

5.2.2.1. Nominalization Derivation

-an + V 'nominalized'

    E.g. kalisi 'get bad'   > kalisi-an 'bad place'

        vai 'sun, sunny'   > vai-an 'daytime'

        dadavac 'be walking' > dadavac-an 'a walk'

NDR 5. $\begin{bmatrix} +V \\ -stat \\ \alpha Fi \end{bmatrix} >\!-\!-\!\rightarrow \begin{bmatrix} +N \\ +nom \\ +derv \\ \alpha Fi \end{bmatrix}$

VMR 5. $\underset{N}{]} \quad -\!-\!\rightarrow \quad \underset{N}{an]} \;/\; [+nom]$

    A non-stative verb can be nominalized and take the
suffix -an, whose -n is truncated in word-final position;
see 3.4 for -n truncation and 4.6.8 for nominalization.

5.2.2.2. Future and Past Nominalization

a- + N (nominalized) 'future'

    E.g. kani-an 'eating object' > a-kani-an 'object to be
                                                 eaten'
        baay-an 'giving object' > a-baay-an 'object to be
                                                 given'

ni- + N (nominalized) 'past'

    E.g. kani-an 'eating object' > ni-kani-an ~ k/in/ani-an
                                          'object that was eaten'
        baay-an 'giving object' > ni-baay-an ~ b/in/aay-an
                                          'object that was given'

NDR 6. $\begin{bmatrix} +N \\ +nom \\ +OBJ \\ +derv \\ \alpha Fi \end{bmatrix} >\!-\!-\!\rightarrow \begin{bmatrix} +N \\ +nom \\ \begin{Bmatrix} [+fut] \\ [+past] \end{Bmatrix} \\ +derv \\ \alpha Fi \end{bmatrix}$

VMR 6a. $\underset{N}{[}$ $\dashrightarrow$ $\underset{N}{[a}$ / [+fut, +nom]

VMR 6b. $\underset{N}{[}$ $\dashrightarrow$ $\underset{N}{[ni}$ / [+past, +nom]

VMR 6c(optional). $\underset{N}{[niC}$ $\dashrightarrow$ $\underset{N}{[Cin}$ / $\begin{bmatrix} +\text{nom} \\ +\text{past} \end{bmatrix}$

The derived nominalized verbs can be further derived as either future or past, indicated by the prefixes a- and ni- (or infix in) respectively. Both types of nominalization with different time dimensions are often used as the caseless predicates in nominalized construc-tions; see 4.6.8.

VMR 6c is an optional metathesis rule alternating with 6b. The metathesis rule is simply a type of rearrangement rule.

5.2.2.3. Place and Time Nominalization

ta- + N (nominalized) 'place and/or time'

E.g. kani-an 'eating object' > ta-kani-an 'eating place (table)'
tubi-an 'crying' > ta-tubi-an 'crying place or time'

NDR 7. $\begin{bmatrix} +N \\ +\text{nom} \\ -\text{fut} \\ -\text{past} \\ +\text{derv} \\ \alpha Fi \end{bmatrix}$ $>\!\dashrightarrow$ $\begin{bmatrix} +N \\ +\text{nom} \\ -\text{fut} \\ -\text{past} \\ \left\{ \begin{matrix} [+\text{place}] \\ [+\text{time}] \end{matrix} \right\} \\ +\text{derv} \\ \alpha Fi \end{bmatrix}$

NMR 7. $\underset{N}{[}$ $\dashrightarrow$ $\underset{N}{[ta}$ / [+nom, $\left\{ \begin{matrix} [+\text{place}] \\ [+\text{time}] \end{matrix} \right\}$]

The derived nominalized verbs can also be further derived as nouns with the prefix <u>ta</u>- indicating place and/or time.

To prevent this rule from applying to the output of NDR 6, the features [-fut, -past] are specified on the left side of the rule. Alternatively, NDR 7 can be simplified by leaving out [-fut, -past] if there is such a redundancy rule (RR) as the following:

$$
\begin{bmatrix} +N \\ +nom \\ \left\{\begin{matrix}[+fut] \\ [+past]\end{matrix}\right\} \end{bmatrix} \dashrightarrow [-NDR\ 7]
$$

In fact, several RR's may be necessary when there are several possible further derivations from nominalized nouns (see also the 'implement' derivation below):

(1)
$$
\begin{bmatrix} +N \\ +nom \\ \left\{\begin{matrix}[+fut] \\ [+past]\end{matrix}\right\} \end{bmatrix} \dashrightarrow \begin{bmatrix} -NDR\ 7 \\ -NDR\ 8 \end{bmatrix}
$$

(2)
$$
\begin{bmatrix} +N \\ +nom \\ \left\{\begin{matrix}[+place] \\ [+time]\end{matrix}\right\} \end{bmatrix} \dashrightarrow \begin{bmatrix} -NDR\ 6 \\ -NDR\ 8 \end{bmatrix}
$$

etc.

5.2.2.4. Implement Nominalization

<u>sa</u>- + V (non-stative) 'implement'

E.g. tuʔtuʔ 'peck' > sa-tuʔtuʔ 'object used to peck = beak'

　　 aluʔ 'hunt' > sa-aluʔ 'object used to hunt = hunting suit'

<u>sa-</u> + N (nominalized) 'implement'

  E.g. baay-an 'object of giving' > sa-baay-an 'wedding
                                                                gift'
      cabu-an 'object of wrapping'> sa-cabu-an 'cloth
                                                               wrapper'
      si?i-an 'object of dreaming'> sa-si?i-an 'good
                                                               luck'

NDR 8.
$$\begin{bmatrix} \begin{Bmatrix} [+V, -stat] \\ \begin{bmatrix} +N, +nom \\ -fut, -past \\ -place, -time \end{bmatrix} \end{Bmatrix} \\ \alpha Fi \end{bmatrix} > \text{---} \rightarrow \begin{bmatrix} +N \\ +nom \\ +implement \\ +derv \\ \alpha Fi \end{bmatrix}$$

NMR 8. $[\quad$ ---→ $[sa$ / [+implement, +nom]
         N   N

5.2.3. Number Derivation Rules

    The plural form of nouns is completely regular and predictable (with the only exception being the item <u>Lulay</u> 'child'; see 6.2.2), so it can be treated as an inflection and requires no NDR. But an NDR is needed for the collective form marked by reduplication of the noun stem.

NDR 9. $\begin{bmatrix} +N \\ -prop \\ \alpha Fi \end{bmatrix}$ >---→ $\begin{bmatrix} +N \\ -prop \\ +collective \\ +derv \\ \alpha Fi \end{bmatrix}$

    The rule above states that a non-proper human noun (see 4.2.7.1) can be derived as a collective noun marked by reduplication, e.g. <u>umas</u> > <u>uma-umas</u> 'many people', <u>-valak</u> > <u>-va-valak</u> > <u>la-va-valak</u> 'many children', <u>taLagi</u> 'friend' > <u>taLagi-Lagi</u> 'many friends'.

An NDR is also needed for the dual form:

NDR 10.
$$\begin{bmatrix} +N \\ -prop \\ \alpha Fi \end{bmatrix} >-\!-\!\rightarrow \begin{bmatrix} +N \\ +dual \\ +derv \\ \alpha Fi \end{bmatrix}$$

This rule states that a non-proper noun can be derived as a "dual" noun, e.g. taLagi 'friend' > ma-taLagi 'two friends', daan 'house' > ma-daan 'two houses', aŋatu 'tree' > ma-aŋatu 'two trees', tama 'father' > ma-tama 'father and son'. The meaning is not always predictable. The prefix ma- can be added to both human and non-human nouns.

In fact, the last two rules can be collapsed:

NDR 11.
$$\begin{bmatrix} +N \\ -prop \\ \alpha Fi \end{bmatrix} >-\!-\!\rightarrow \begin{bmatrix} +N \\ -prop \\ \left\{ \begin{matrix} [+collective] \\ [+dual] \end{matrix} \right\} \\ +derv \\ \alpha Fi \end{bmatrix}$$

5.2.4.   Time Word Derivation Rules

A few time words indicate the "past" and "future" by the prefixes ku- and lu- respectively:

ku- + N (time) 'past'

E.g. mauŋ 'night' > ku-mauŋ 'last night'

      cail 'year' > ku-cail 'last year'

      -ðaa 'day' > ku-ðaa 'yesterday'

      -iga 'when' > ku-iga 'when (past)'

      -myayaa 'day before (or after) > ku-myayaa 'day
                             before yesterday'

lu- + N (time) 'future'

   E.g. mauŋ 'night'   >   lu-mauŋ 'tomorrow night'

      cail 'year'   >   lu-cail 'next year'

      -ðaa 'day'   >   lu-ðaa 'tomorrow'

      -iga 'when'   >   lu-iga 'when (future)'

      -myayaa   >   lu-myayaa 'day after tomorrow'

    Some of these time words are free morphemes, e.g. mauŋ and cail. Others are bound and thus need obligatory past or future tense prefixing, e.g. -ðaa, -iga, and -myayaa. An NDR rule is needed to put mauŋ and cail into the [+point] class, whereas -ðaa, -iga, -myayaa are already in the class:

NDR 12. $\begin{bmatrix} +N \\ +time \end{bmatrix}$ >--→ $\begin{bmatrix} +N \\ +time \\ +point \end{bmatrix}$

In addition, a subcategorization rule and a redundancy rule are needed:

(1) $\begin{bmatrix} +time \\ +point \end{bmatrix}$ --→ [±fut]

(2) $\begin{bmatrix} +time \\ +point \\ -fut \end{bmatrix}$ --→ [+past]

    The [+point] feature on nouns with the future or past tense markers has syntactic consequences; see 4.3.2.

    This rule has more limited application than the na-prefixing rule, which can be added to many nouns, but never to time words, e.g. na-daan 'former house', na-kawriva 'former speech', etc.; see also 6.2.2.

<u>na-</u> prefixing rule is predictable in meaning, but not in application, so an NDR is needed:

NDR 13.
$$\begin{bmatrix} +N \\ -time \\ \alpha Fi \end{bmatrix} \; >\text{--}\rightarrow \; \begin{bmatrix} +N \\ +former \\ +derv \\ \alpha Fi \end{bmatrix}$$

$$[\;\;]_N \;\text{--}\rightarrow\; [na\;\;]_N \quad / \; [+former]$$

5.3. Preposition Derivation Rule (PDR)

PDR
$$\begin{bmatrix} +V \\ -fin \\ -cont \\ \alpha Fi \end{bmatrix} \; >\text{--}\rightarrow \; \begin{bmatrix} +P \\ +derv \\ \alpha Fi \end{bmatrix}$$

Non-finite and non-continuative verbs, viz. verbs in simple form, can be derived as prepositions. This is a potentially productive rule, although it has actually applied only in a few cases to form the instrumental and locative prepositions (4 altogether), i.e. <u>ara-kai</u> 'use' > <u>ara</u> 'with', <u>twalay</u> 'come from' > <u>twalay</u> 'from', <u>ʔakɨla</u> 'arrive' > <u>ʔakɨla</u> 'to, till', <u>ikai</u> 'exist' > <u>ʔa(kai)</u> 'at'. Two pairs have identical phonological shapes, and two hav⋅ slightly different shapes. See 4.3.1 for the justifications for treating the four items as prepositions.[3]

Notes to Chapter 5

1

Exceptions to derivational rules can be marked by
rule features as proposed by Lakoff (1965) or by listing
all the output items in the lexicon. Starosta suggests
(personal communication) that the latter is more prefer-
able because it is more in keeping with the nature of
derivational rules as patterns of production rather than
synchronic rules of grammar.

2

It could be that the morphophonemic rule ordering
is not a direct reflection of the order of derivation.
I have found no evidence to prove that derivation rules
are ordered like morphophonemic rules. In this paragraph,
the order of application ("before" and "after") refers to
the morphophonemic rules rather than the derivation rules.

3

In her forthcoming dissertation on Vietnamese
coverbs, Marybeth Clark discusses this P-derivation rule
in detail, and suggests a means to condition the applica-
tion of this rule in terms of the presence of certain
features in the verb's case frame.

Chapter 6

Morphophonemic Rules

6.0. Notations and Ordering of Morphophonemic Rules (MR's)

The notations of morphophonemic rules (MR's) follow Starosta (1973).

There are two sub-types of MR's. One is "Spelling Rules" that give the phonological shape of a form if certain syntactic (or morphological) features are present and indicated in the environment, for example,

$$]_V \dashrightarrow \quad \mathfrak{\eta}a]_V \ / \ [+comp]$$

Another may be called "Rearrangement Rules" that operate on the output of the first sub-type and make necessary rearrangements, such as reordering or replacement of certain segments, for example,

$$_V[kaakuy] \dashrightarrow \ _V[nakuy] \ / \ [+neg]$$

Unlike derivation rules, morphophonemic rules must be ordered to give correct phonological shapes. Like the other phonological rules, they are partially ordered.

The following MR's are arranged in order according to the two main types of rules: reduplication and affixation. Affixation rules are further arranged according to the syntactic categories V and N. Under each category, the rules are listed according to the order in which they apply. The relative order of each rule with respect to the other rules is noted where relevant.

6.1. Reduplication Rules (RR's)

The following important observations can be made about the process of reduplication:

(1) Reduplication is a property of the stem rather than the affix. In other words, only the stem gets reduplicated, never the affix. This implies that reduplication rules should precede all affixation rules to get the correct forms.

(2) The reduplicated part of the stem is either "complete" or partial. A complete reduplication is, for example, <u>kani</u> 'eat' > <u>kani-kani</u> 'be eating', <u>tubi</u> 'cry' > <u>tubi-tubi</u> 'be crying'. But even in a "complete" reduplication, the final consonant of the stem (if there is one) is never reduplicated, <u>udal</u> 'rain' > <u>uda-udal</u> 'be raining', <u>umas</u> 'person' > <u>uma-umas</u> 'many people', not *<u>udal-udal</u>, *<u>umas-umas</u>. The "complete" reduplication rule can thus be formalized as: (The following rules are only informal representations.)

RR 1.   [X(C)   --→   [XX(C)
     N, V   N, V

(3) In a partial reduplication, only the first two segments of the stem get reduplicated, e.g. <u>davac</u> 'walk' > <u>da-davac</u> 'be walking', <u>iluk</u> 'bring' > <u>il-iluk</u> 'be bringing'. If this is a vowel-initial stem, it can be formalized as:

RR 2.   [V C X   --→   [V C V C X
     N, V 1 1   N, V 1 1 1 1

(4) If only C_1V_1 of the stem gets reduplicated, then the reduplicated vowel is always the low vowel regardless of the original vowel quality, e.g. culul 'kill' > ca-culul 'be killing', Diiti 'sausage' > muti-Da-Diiti 'is turning into a sausage', sila? 'search' > ma-sa-sila? 'be searching for each other', Liw 'touch' > ma-La-Liw 'be touching each other'. If the stem is vowel-initial, then the reduplicated vowel remains unchanged, e.g. iluk 'bring' > il-iluk 'be bringing', ibiL 'smoke' > tu-ibi-ibiL 'be producing smoke'. The reduplication of C_1V_1 can be formalized as below:

RR 3. $_{N, V}[C_1V_1X \quad \dashrightarrow \quad _{N, V}[C_1aC_1V_1X$

Of the above three rules, RR 3 must apply before RR 1 to get the correct forms. The rules are disjunctive; that is, if the first rule applies, the second does not. For example, the reduplication of Liw > ma-La-Liw, in which the stem contains only three segments, must be treated as reduplication of C_1V_1 rule rather than "complete" reduplication. The rules should, therefore, be ordered as below:

RR 1. $_{N, V}[C_1V_1X \quad \dashrightarrow \quad _{N, V}[C_1aC_1V_1X$

RR 2. $_{N, V}[V_1C_1X \quad \dashrightarrow \quad _{N, V}[V_1C_1V_1C_1X$

RR 3. $_{N, V}[X(C) \quad \dashrightarrow \quad _{N, V}[XX(C)$

Which rule applies is lexically conditioned.

The reduplicated part is added to the beginning of the stem and is somewhat comparable to a prefix. This relative position is already indicated in the rules.

The reduplication rules apply to only two syntactic categories, V and N, as indicated in the rules.

6.2. Affixation Rules
6.2.1. Verb Morphophonemic Rules (VMR's)
6.2.1.1. Derivation

The following morphophonemic rules must apply as a result of the derivation rules presented in 5.1 (except 5.1.7, reduplication):

VMR 1. $[_V$ $-\!-\!\rightarrow$ $_V[a$ / [+past]

The rule adding the past prefix a- is ordered before all the other morphophonemic rules.

See 5.1.6 for the three different ways of past tense formation. Since they all share the common element a, a can be treated as the common past tense marker. The prefix wa- (or aw-) contains the extra element w. For the wa- (or aw-) type of verb, an extra rule is needed to add w before or after the past tense a:

VMR 2. $[_V a$ $-\!-\!\rightarrow$ $_V[\begin{Bmatrix} wa \\ aw \end{Bmatrix}$ / [+past]

The problem is how to state the conditioning environment precisely. Not all verbs that begin with a take the marker w for the past tense, e.g. arakai 'use(d)', not

*<u>warakai</u>, <u>aswala</u> '(did) first', not *<u>waswala</u>. Unless some phonological conditioning factor can be found, this will have to be treated as lexically conditioned.

VMR 3. $[$ $\quad$ $-\rightarrow$ $[ti$ $\quad$ / [+affecting]
$\quad\quad$ V $\quad\quad\quad\quad\quad\quad\quad$ V

VMR 4. $[$ $\quad$ $-\rightarrow$ $[ma$ $\quad$ / [+stat]
$\quad\quad$ V $\quad\quad\quad\quad\quad\quad\quad$ V

VMR 4 is a "major rule" in the sense that it applies to most statives (with the exceptions being <u>bikilay</u> 'little', <u>iDikay</u> 'short', <u>tikia</u> 'small'). VMR 3 is a "minor rule" in the sense that it applies only to a few dozen statives (cf. Lakoff 1965). VMR 4 must apply after VMR 3 applies.

VMR 5. $[$ $\quad$ $-\rightarrow$ $[ka$ $\quad$ / [+inch]
$\quad\quad$ V $\quad\quad\quad\quad\quad\quad\quad$ V

VMR's 4 and 5 are disjunctive; see 5.1.1.

All the following rules are ordered after VMR 1, the <u>a</u>- 'past' prefixing rule, but before the <u>ʔa</u>- 'causative' rule; see 5.1.5. Ordering is irrelevant among these rules (VMR's 6--19); these are disjunctive:

VMR 6. $[$ $\quad$ $-\rightarrow$ $[ani$ $\quad$ / $\left\{\begin{array}{l}[+crossing]\\ [+consuming]\end{array}\right\}$
$\quad\quad$ V $\quad\quad\quad\quad\quad\quad\quad$ V

The rules yielding the same form can be combined, as the rule above.

VMR 7. $[$ $\quad$ $-\rightarrow$ $[i$ $\quad$ / [+locative]
$\quad\quad$ V $\quad\quad\quad\quad\quad\quad\quad$ V

VMR 8. $[$ $\quad$ $-\rightarrow$ $[ki$ $\quad$ / [+gathering]
$\quad\quad$ V $\quad\quad\quad\quad\quad\quad\quad$ V

VMR 9. $[$ $\quad$ $-\rightarrow$ $[mu$ $\quad$ / $\left\{\begin{array}{l}[+removing]\\ [+abilitative]\end{array}\right\}$
$\quad\quad$ V $\quad\quad\quad\quad\quad\quad\quad$ V

VMR 10. $_V[$ $\longrightarrow$ $_V[$muri / [+searching]

VMR 11. $_\sqrt{}[$ $\longrightarrow$ $_V[$muti / [+transforming]

VMR 12. $_V[$ $\longrightarrow$ $_V[$si / [+possessing]

VMR 13. $_V[$ $\longrightarrow$ $_V[$su / [+expelling]

VMR 14. $_V[$ $\longrightarrow$ $_V[$taw / [+rubbing]

VMR 15. $_V[$ $\longrightarrow$ $_V[$tu / [+producing]

VMR 16. $_V[$ $\longrightarrow$ $_V[$ta / [+fearful]

VMR 17. $_V[$ $\longrightarrow$ $_V[$ma / [+mutual]

VMR 18. $_V[$ $\longrightarrow$ $_V[$ku / [+middling]

VMR 19. $_V[$ $\longrightarrow$ $_V[$u / [+motion, +derv]

VMR 20. $_V[$ $\longrightarrow$ $_V[$m $/ \left[\begin{Bmatrix} [-fut] \\ [+imp] \end{Bmatrix}, \begin{matrix} +motion, \\ +derv \end{matrix} \right]$

It takes two rules, VMR's 19 and 20, to derive motion verbs with various features. VMR 19 is ordered before VMR 20. See 5.1.5.1 for the explanation as to how these two rules apply.

VMR 21. $_V[$ $\longrightarrow$ $_V[$ki / [+pass]

The ki-'passive' rule is ordered after VMR's 6--18 if the rule applies (it is applicable only to some "transitive" verbs; see 5.1.2), but before the ?a-'causative' rule, e.g. ?a-ki-kani 'cause-be-eaten'; see

5.1.5.2.

VMR 22. $_V[\quad \longrightarrow \quad _V[\text{ʔa} \quad / \text{[+cause]}$

VMR 23. $_V[\text{ʔau} \quad \longrightarrow \quad _V[\text{ʔu} \quad / \text{[+cause]}$

To preserve generality, both types of causatives: ʔa- + V and ʔ- + u- motion verb are treated as having the same underlying causativizer ʔa-; see 5.1.5.1. Cf. the u- motion verb rule VMR 19 above. Examples: ʔa-kani 'cause to eat', ʔ-u-daan ʔa-u-daan 'cause to enter the house'.

VMR 24.1. $_V[\quad \longrightarrow \quad _V[\text{ay} \quad / \text{[+fut]}$

VMR 24.2 (optional). $_V[\text{ayV} \quad \longrightarrow \quad _V[\text{yV} \quad / \text{[+fut]}$

VMR 24.2 is an optional rule which may apply if the verb stem is vowel-initial, e.g. ay-ua > y-ua 'will go'.

That VMR's 1, 21, and 24 are ordered can be illustrated with the words: kani 'eat', ki-a-kani 'pass-past-eat', ay-ki-kani 'fut-pass-eat'. See 4.6.6 for the ordering of these three rules.

VMR 25. $]_V \quad \longrightarrow \quad \text{ŋa}]_V / \text{[+comp]}$

The completive marker -ŋa is the only verbal derivation that is realized as a suffix, e.g. wa-kani-ŋa 'past-eat-comp'. All the other verbal derivations are realized as prefixes.

6.2.1.2. Inflection

All the following infixing and suffixing rules are verbal inflections, not derivations. Inflections can only apply after derivations, so the rules in this section apply after those in the previous section (6.2.1.1).

There is only one infixing rule that applies to non-finite verbs:

VMR 26. $\begin{bmatrix} Ca \\ V \end{bmatrix}$ ---→ $\begin{bmatrix} Cua \\ V \end{bmatrix}$ / [-fin]

If a non-finite verb begins with a consonant followed by a, then u is infixed between them; otherwise there is no such infixing, e.g. kanɨ > k/u/anɨ 'to eat', damɨk > d/u/amɨk 'to beat', but siʔi 'to dream', not *s/u/iʔi.

VMR 27.   ]$_V$ ---→   a]$_V$ / [+imp]

The imperative -a suffixing rule applies only to non-finite verbs, e.g. k/u/anɨ-a 'Eat!', d/u/amɨk 'Beat it!'.

VMR 28.   ]$_V$ ---→ $\begin{Bmatrix} \eta a \\ na \end{Bmatrix}$] / [+polite]

The "polite" markers -ŋa and -na can only be added to an imperative, e.g. ʔa-ʔacay-a-ŋa 'cause-die-imp-polite; please kill it!', ʔa-θuθu-a-na 'cause-milk-imp-polite; please nurse the baby!' The markers -ŋa and -na are considered suffixes rather than particles because they receive stress. Both apply after the imperative rule,

but both may not apply to the same verb at the same time. They may be free variants of the same morpheme.

The "polite" marker -ŋa is phonologically identical with the "complete" marker -ŋa. The main difference between them is that while the former is an inflection the latter is a derivation (see VMR 25 in 6.2.1.1).

The following seven rules are for the subject markers (personal affixes) of verb:

VMR 29.1a.
$$[]_V \longrightarrow [naw]_V \quad / \quad \begin{bmatrix} +spkr \\ -pl \\ +desiderative \end{bmatrix}$$

29.1b.
$$]_V \longrightarrow naku]_V \quad / \quad \begin{bmatrix} +spkr \\ -pl \\ \left\{ \begin{matrix} [+neg] \\ [+comp] \end{matrix} \right\} \end{bmatrix}$$

29.1c.
$$]_V \longrightarrow (a)ku]_V \quad / \quad \begin{bmatrix} +spkr \\ -pl \end{bmatrix}$$

The rules a, b, and c in VMR 29.1 are disjunctive.

29.2.
$$]_V \longrightarrow ta]_V \quad / \quad \begin{bmatrix} +spkr \\ +addr \end{bmatrix}$$

29.3.
$$]_V \longrightarrow nai]_V \quad / \quad \begin{bmatrix} +spkr \\ -addr \\ +pl \end{bmatrix}$$

29.4.
$$]_V \longrightarrow su]_V \quad / \quad \begin{bmatrix} +addr \\ -pl \end{bmatrix}$$

29.5.
$$]_V \longrightarrow numi]_V \quad / \quad \begin{bmatrix} +addr \\ +pl \end{bmatrix}$$

All the personal affixing rules listed VMR 29 above are disjunctive. See 4.2.1.2 for the list of subject markers and 4.4.2.3 for subject agreement.

The completive rule must apply before all the subject marker rules, e.g. wa-kani-ŋa-naku 'past-eat-comp-SM = I have eaten already', a-mua-ŋa-su 'past-go-comp-SM = you have gone already'. The completive marker -ŋa is derivational, while the subject markers such as -naku and -su are inflectional.

All the following rules, VMR 30, have to do with negative verbs; see 4.7.2:

VMR 30.1. $] _V \dashrightarrow y]_V / \begin{bmatrix} +neg \\ -exist \\ -spkr \\ -addr \end{bmatrix}$

The form ka- is entered as a negative non-existential verb stem, which must appear with either the first or second person suffixes, e.g. ka-ta 'we do not', ka-su 'you do not', or else (i.e. the third person, zero marker) take -y and appear as kay:

(1)(a) ka-su 'you (sg.) do not'

(b) na-aku 'I do not'

(c) ka-numu 'you (pl.) do not'

(d) ka-ta 'we (inc.) do not'

(e) ka-nai 'we (exc.) do not'

VMR 30.2 (optional). $]_V \dashrightarrow y]_V / \begin{bmatrix} +neg \\ -exist \\ -fut \\ -past \\ \begin{Bmatrix} [+spkr] \\ [+addr] \end{Bmatrix} \end{bmatrix}$

This optional rule applies after the rules of verbal personal suffixes; in other words, VMR 29 must precede

VMR 30.2, e.g. <u>ka-su-y</u> or <u>ka-su</u> 'you (sg.) do not':

  (2)(a) ka-su(y)   'you (sg.) do not'

      (b) ka-numu(y) 'you (pl.) do not'

      (c) ka-ta(y)   'we (inc.) do not'

      (d) ka-nai(y)   'we (exc.) do not'

      (e) na-aku(y) 'I do not'

VMR 30.3. $_V$[kanumiy] --→ $_V$[kanumuy] / [+neg]

VMR 30.4. $_V$[kaakuy] --→ $_V$[nakuy] / [+neg]

The last two rearrangement rules are needed to get the two correct negative suffixed verbs instead of the expected *<u>kanumiy</u> and *<u>kakuy</u>.

6.2.2. Noun Morphophonemic Rules (NMR's)

6.2.2.1. Derivation

6.2.2.1.1. Collective, Dual, and Plural

The plural form of most nouns is the noun stem plus the prefix <u>la-</u>, the dual form is the non-proper noun stem plus the prefix <u>ma-</u>, and the collective form is indicated by partial or complete reduplication.

In the following examples, (1) gives regular examples, (2) shows that one of two identical vowels <u>a</u> is deleted, the phenomenon that can be taken care of by the identical vowel deletion rule (see 3.6), and (3) lists the only case of suppletive plural form (The regular

singular form <u>valak</u> is still preserved in the other Rukai
dialects, but inexplicably lost in Tanan):

(1) sawalay 'man'   la-sawalay 'men'

    lalak 'one's child'   la-lalak 'one's children'

    Laŋʔaw 'family name' la-Laŋʔaw 'the Laŋʔaw's'

    maniman 'thing'   la-maniman 'things'

    daan 'house'   la-daan 'houses'

    tama 'father'   { la-tama 'fathers (pl.)'

                            ma-tama 'father and son (dual)'

    umas 'person'   { la-umas 'people (pl.)'

                             uma-umas 'people (collective)'

    ta-Lagi 'friend'   { la-ta-Lagi 'friends'

                             ta-Lagi-Lagi 'friends'

                             la-ta-Lagi-Lagi 'many friends'

                             ma-ta-Lagi 'two friends'

                             la-ma-ta-Lagi 'two or more
                                                friends'

    daan 'house'   ma-daan 'two houses'

(2) ababay 'woman'   la-ababay [lababay] 'women'

    agan 'grandchild' { la-agan [lagan] 'grandchildren'
                               la-aga-agan [lagagan] 'many
                                                  grandchildren'

(3) Lulay 'child'   { la-valak 'children'

                               la-va-valak 'many children'

Here we are concerned with the following three types
of rules: (1) reduplication of the noun stem to indicate
collectiveness, (2) prefixing <u>ma-</u> to indicate duality,
and (3) prefixing <u>la-</u> to indicate plurality, in that order.

It is possible to have two of the three types of rules applied to the same noun stem, e.g. <u>la-ma-ta-Lagi</u>, <u>la-ta-Lagi-Lagi</u>. The collective may cooccur with plural, but not dual. Plural may also coocur with dual, but not all three. To prevent all three from being simultaneously marked on the same noun, a redundancy rule is needed:

(4) [+coll] --→ [-dual]

This rule states that collective may not cooccur with dual. It is clear that <u>ma</u>- prefixing should precede <u>la</u>-prefixing.

It takes three reduplication rules and two prefixing rules to give the phonological shapes:

Reduplication Rules (see 6.1):

1. $_N[C_1V_1X \quad$ --→ $\quad _N[C_1aC_1V_1X$

2. $_N[V_1C_1X \quad$ --→ $\quad _N[V_1C_1V_1C_1X$ $\Big/$ [+coll]

3. $_N[X(C) \quad$ --→ $\quad _N[XX(C)$

Prefixing Rules:

4. $_N[\qquad$ --→ $\quad _N[ma \qquad$ / [+dual]

5. $_N[\qquad$ --→ $\quad _N[la \qquad$ / [+pl]

All the five rules above are ordered. Plural is an inflection and can apply to any noun. The choice of which rule (reduplication or <u>ma</u>- prefixing) to apply to a certain noun stem is lexically conditioned.

6.2.2.1.2. Nominalization and Prefixing Rules

NMR 1. $]_N \longrightarrow$ an$]_N$ / [+nom]

A non-stative verb can be nominalized and take the nominalizing suffix -an (the -n is truncated in the word-final position; see 3.4), e.g. kalisi 'get bad' > kalisi-an 'bad place'.

NMR 2. $[_N \longrightarrow [_N a$ / $\begin{bmatrix} +fut \\ +nom \end{bmatrix}$

NMR 3.1. $[_N \longrightarrow [_N ni$ / $\begin{bmatrix} +past \\ +nom \end{bmatrix}$

3.2. (optional) $[_N niC \longrightarrow [_N Cin$ / $\begin{bmatrix} +past \\ +nom \end{bmatrix}$

A nominalized verb can be further derived as either future or past, e.g. kani 'object of eating' > a-kani-an 'object to oe eaten', ni-kani-an 'object that was eaten'. The latter has an optional alternative form k/in/ani-an, with the n and the initial consonant of the stem metathesized. The metathesis rule is a special type of segment rearrangement rule.

NMR 4. $[_N \longrightarrow [_N ta$ / $[\left\{ \begin{bmatrix} +place \\ +time \end{bmatrix} \right\}, +nom]$

A nominalized verb can also be further derived as a locative and/or time noun, e.g. kani-an > ta-kani-an 'eating place = table', tubi-an > ta-tubi-an 'crying place or time'.

NMR 5. $[_N \longrightarrow [_N sa$ / $\begin{bmatrix} +implement \\ +nom \end{bmatrix}$

Implement nouns can be derived from either non-stative verbs or nominalized verbs, e.g. alu? 'hunt' > sa-alu? 'implement used in hunting = hunting suit', baay-an 'object of giving' > sa-baay-an 'object used to give on the occasion of a wedding = wedding gift'.

NMR 1 applies before NMR's 2--5. NMR's 2--3 are disjunctive. Only one of the rules 2--5 can apply to a nominalized verb. The NDR's and redundancy rules in 5.2.2 prevent any two from applying simultaneously to a nominalized verb, although NMR 3.2 can only optionally apply after NMR 3.1.

NMR 6. [--→ [na   / [+former]
    N   N

The prefix na- 'former' can only be added to a non-time noun, derived or non-derived, e.g. na-ta-kani-an 'former eating place', na-sa-kani-an 'former eating implement', na-Dakiral 'former river', na-daan 'former house'. The examples show that the na- prefixing rule applies after the nominalization rules NMR's 1--5. See 5.2.4.

NMR 7. [--→ [lu   / $\begin{bmatrix} \text{+fut} \\ \text{+time} \\ \text{+point} \end{bmatrix}$
   N   N

NMR 8. [--→ [ku   / $\begin{bmatrix} \text{+past} \\ \text{+time} \\ \text{+point} \end{bmatrix}$
   N   N

Only one of the two rules above can apply to a lexical item at a time, e.g. lu-ðaa 'tomorrow', ku-ðaa 'yesterday'.

6.2.2.2. Inflection

The following eight rules are for possessive suffixes. See 4.2.7.2.1 for explanations as to how the rules apply and 4.2.1.2 for the list of the possessive suffixes.

NMR 9. $]_N \dashrightarrow$ li$]_N$ / $\begin{bmatrix} -\underline{\quad}[+AC] \\ -\underline{\quad}[-spkr] \\ -\underline{\quad}[+addr] \\ -\underline{\quad}[+pl] \end{bmatrix}$

NMR 10. $]_N \dashrightarrow$ nai$]_N$ / $\begin{bmatrix} -\underline{\quad}[+AC] \\ -\underline{\quad}[-spkr] \\ -\underline{\quad}[+addr] \\ -\underline{\quad}[-pl] \end{bmatrix}$

NMR 11. $]_N \dashrightarrow$ ta$]_N$ / $\begin{bmatrix} -\underline{\quad}[+AC] \\ -\underline{\quad}[-spkr] \\ -\underline{\quad}[-addr] \\ -\underline{\quad}[-pl] \end{bmatrix}$

NMR 12. $]_N \dashrightarrow$ su$]_N$ / $\begin{bmatrix} -\underline{\quad}[+AC] \\ -\underline{\quad}[+spkr] \\ -\underline{\quad}[-addr] \\ -\underline{\quad}[+pl] \end{bmatrix}$

NMR 13. $]_N \dashrightarrow$ numi$]_N$ / $\begin{bmatrix} -\underline{\quad}[+AC] \\ -\underline{\quad}[+spkr] \\ -\underline{\quad}[-addr] \\ -\underline{\quad}[-pl] \end{bmatrix}$

NMR 14. $]_N \dashrightarrow$ l$]_N$ / $\begin{bmatrix} -\underline{\quad}[+AC] \\ -\underline{\quad}[+spkr] \\ -\underline{\quad}[+addr] \\ -\underline{\quad}[-pl] \end{bmatrix}$

NMR 15. $]_N \dashrightarrow$ ini$]_N$ / $\begin{bmatrix} -\underline{\quad}[+AC] \\ -\underline{\quad}[+spkr] \\ -\underline{\quad}[+addr] \\ -\underline{\quad}[-def] \end{bmatrix}$

NMR 16. $]_N \dashrightarrow$ iDa$]_N$ / $\begin{bmatrix} -\underline{\quad}[+AC] \\ -\underline{\quad}[+spkr] \\ -\underline{\quad}[+addr] \\ -\underline{\quad}[+def] \end{bmatrix}$

NMR 14 gives the plural marker -l for the third person possessive suffixes and is ordered before NMR's 15 and 16, as it is clear from the plural suffixes -l-ini 'their (definite)' and -l-iDa 'their (indefinite)'.

Chapter 7

Conclusion

Many phenomena in phonology and syntax observed in Rukai are language universals or near language universals. The solutions proposed and some of the rules stated in this study are applicable to many other languages, perhaps with some minor modifications for each specific language.

Some interesting phenomena of phonology in Rukai have been observed and treated in the generative fashion in this study. The morphophonemic alternations between the semiconsonants and fricatives or high vowels, identical vowel deletion, echo vowel addition, final n truncation, etc. are some of the phenomena observed not only in Rukai, but also in other languages. In fact, some of these phenomena are fairly widespread in languages. Alternative solutions to each problem have been discussed and compared. These problems have important implications for the theory of phonology. In particular, part of the distinctive feature system as presented in "The Sound Pattern of English" (SPE) has been shown to be inadequate. The deficiency of the SPE system requires a drastic revision. By and large, the principle of using underlying phonological representations for the alternations is sound in that it can greatly simplify the orthography, and that it "always spells the same morpheme in the same way," which supposedly represents

the psychological reality of the speaker of the language.

The core of this study is syntax. The lexicase theory of grammar, which has been used only once before this dissertation (Taylor's "Case in Japanese"),has been applied to the analysis and description of Rukai. This grammar makes a particularly strong claim about the nature of language. Rigorous formalisms have been strictly observed in stating all types of rules. Readers who are not interested in such formalisms or find it difficult to read the rules can get the same information from the prose statements alone. Therefore, this dissertation is useful not only for specialists, but also for the general reader.

This study has gone beyond Taylor's lexicase model in various points. Five major contributions to and refinements of the lexicase theory of grammar have been proposed:

(1) The subject-verb and noun-attribute agreement relations are for the first time explicitly formalized by rules in this model. A set of rules is given for each type of agreement, with illustrative Rukai sentences.

(2) Taylor's dissertation hardly touched on the problem of embedding. This study has treated embedded structures in some detail. Finite and non-finite verbs must be clearly distinguished in such structures.

(3) This study has made the first attempt at formaliza-

tion of the morphophonemic rules of reduplication and agreement affixation within the lexicase framework.

(4) A refinement of Taylor's theory (as well as Chomsky's theory) is made by clearly distinguishing subcategorization rules and redundancy rules.

(5) Taylor treats case relations and case forms as redundantly marked on both nouns and prepositions, requiring nouns and prepositions to agree in both case relation and case form. In this study, I have treated case relations as marked only on nouns, with case forms marked on nouns, prepositions and determiners. Such a change may not be significant in the description of Rukai, but is essential for treating case-inflecting languages such as German.

These changes have made it possible to explicitly classify and account for a broader range of phenomena. They have been found to facilitate the description in several areas.

This study has come to the conclusion that derivation rules rather than transformations can best capture the generalizations of lexical relations. Sentences are related by derivation rules, such as "passivization", "causativization", "intransitivization", and "nominalization". Again, alternative solutions have been compared and discussed. Justifications are given for choosing only one out of several possible alternatives.

Various criteria for distinguishing nouns and verbs have been evaluated and tested, and a conclusion has been reached that syntactic evidence is the most reliable for settling the problem of noun-verb dichotomy. Derivation and inflection have also been clearly distinguished by the criteria proposed in this study.

Language universal or near language universal phenomena in syntax observed in Rukai and stated by rules in this study include:

(1) The dative (indirect object) precedes the direct object.

(2) The direct object may not precede the main verb and subject.

(3) The goal may not precede the source.

(4) There can only be one subject in a simple sentence.

(5) There is subject-verb agreement, but no subject-object agreement.

(6) Meteorological sentences are subject-less, and require no object.

(7) Existential sentences are also subject-less, but contain objects.

(8) Imperative and non-finite verbs are closely related.

(9) Imperative implies the second person.

(10) Articles may not be derived as nouns; demonstratives are derivable as pronouns; numerals, adjectives, and uninflected verbs are all derivable as nouns, etc.

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「魯凱語結構」中文摘要

魯凱是臺灣高山族的一種語言。本書的研究主要根據作者在十九週中所蒐集的田野資料，整理分析而成。承蒙「中美人文社會科學合作委員會」的資助，在中央研究院歷史語言研究所撰寫初稿，前後兩年（1970～1972），接着又在夏威夷大學修改補充，費時九個月，始克完成。

日本學者小川尙義、淺井惠倫、安倍明義等以前也做過魯凱語調查，但材料非常少，分析簡略，而且記音跟分析都有不少的錯誤。

本書所使用的語言學理論體系既不是結構學派（structuralism），也不是變換學派（transformationalism），而是折衷兩種學派，擷取兩者的優點而成的一種新的理論體系——詞格語法（lexicase grammar）。本書的主要目的之一就是材料的提供。

第一章　緒　　論

緒論中敍說研究的一般背景，臺灣高山族語言及魯凱各方言的地理分佈，語言分類的種種問題，以及老少兩代在語言上的差異。

魯凱跟其他的臺灣高山族（包括平埔族）語言都是屬於南島語系。學者一向把魯凱當做排灣羣的一支，可是它在臺灣高山族（或整個南島語系）的地位仍然未定。

魯凱包括五個方言，分佈在三個不同的地區：（一）臺東縣卑南鄉大南村的大南方言，（二）屏東縣霧台鄉的霧台方言，（三）高雄縣茂林鄉的所謂「下三社」方言——茂林，多納，以及萬山的三個方言。這三個方言羣不但地理位置不同，而且文化跟語言都有所差異。它們都受鄰近別種土著語言的影響，同時方言之間也交互影響，特別是大南跟霧台兩個方言。本書的研究對象是大南方言。

第二章　音　　韻

本章簡略說明魯凱音韻系統，包括辨音徵性（distinctive features），語音描述，

語音分佈，長元音及重音的處理，音節結構，以及詞位結構規律（morpheme structure rules）等。

本書的辨音徵性系統雖然大致採用杭士基（Noam Chomsky）及哈理（Morris Halle）的理論，但也提出了對他們的修正意見。

魯凱聲韻表

輔音：

		唇音	齒/齒齦	捲舌	舌根	喉音
塞音	清	p	t	T	k	ʔ
	濁	b	d	D	g	
塞擦音	清		c			
鼻音	濁	m	n		ŋ	
擦音	清		s			
			θ			h
	濁	v	ð			
半元音	濁	w	y			
邊音	濁		l	L		
顫音	濁		r			

元音：

i		ɨ, u
	a	

二十三個輔音都出現在字首及字中。除了唇齒音 v 外，所有的輔音都出現在字尾。除了半元音可以跟在字首輔音後外，一個音節中沒有輔音羣。上表半元音排在濁擦音之下，因為它們互相轉換（參見第三章）。

因為分佈缺漏（distributional gaps）以及種種理由（詳見第四節），長元音可以做連音（geminates）處理。除了疑問詞（重音在倒數第二音節）及單音節介繫詞（無重音）外，每個字的重音都在最後音節。半元音 y, w 必需跟高元音 i, u 分別分開，因為考慮到音長，重音，轉換，重疊等各種因素（詳見第六節）。

第三章　詞音位轉換 (Morphophonemic Alternations)

魯凱語的詞音位轉換的現象包括(一)半元音跟擦音 y~ð, w~v, (二)高元音跟半元音 i~y, u~w, (三)塞音跟塞擦音 T~c, (四)詞尾舌尖鼻音的消失，即 n~φ, (五)回響元音 (echo vowels) 的增加，(六)相同元音 (identical vowels) 的刪減等。如果對於這些詞音位轉換都採用基層音韻表象 (underlying phonological representations)，魯凱文字就可以大大地簡化，這樣一來，只要八條規則（見第九節）就可以得到正確的語音了。

對於每一個轉換問題，本章都盡可能提出不同的解決方案來，加以討論跟比較，然後才決定採取其中最理想的一個方案。這些問題對於音韻學的理論都有重大的意義。

此外，還有一些零星的詞音位轉換 D~ʔ, ɨ~v, φ~ŋ 等，只出現在「一」跟「二」兩個數詞，只不過是孤立的幾個例子而已，因很不規則，也無法理出一個系統來。

這些詞音位轉換問題跟語音演變有關。本章雖只着重於平面的描寫，却也給縱面的語音史提供不少的材料。

第四章　語　　法

語法是本書的研究重點。前四節討論語序(word order)，詞組律(phrase structure rules)，以及前置詞，名詞，動詞等的分類律 (subcategorization rules) 跟可測律 (redundancy rules), 都有例句說明。第一節即語序。第二節即介繫詞片語跟名詞片語，包括人稱代詞，指示詞，冠詞，數詞，形容詞，修飾詞 (attributes)，衍生名詞 (derived nouns) 以及名詞。第三節專討論名詞的「格」(case)。第四節則為動詞。

魯凱有七種格關係 (case relations)：時間 (TIME)，位置 (LOCATION)，工具 (INSTRUMENT)，主動者 (AGENT)，受動者 (OBJECT)，間接受動者 (DATIVE)，以及受惠者(BENEFACTIVE)；又有四種格形式(case forms)：主格 (nominative)，受格 (accusative)，位置格(locative)，及工具格(instrumental)。

從語法現象看來，魯凱並沒有使用方向 (DIRECTION)，伴同 (COMITATIVE) 及結果 (RESULT) 這三種格關係，也沒有使用間接受格 (dative) 的格形式。有關格的討論主要在第三節。第四節動詞部份也有一個分節討論動詞跟格的關係，因為動詞的分類是視動詞能夠跟那些格在一個句子中同時出現而定。

每一種詞類都有它的詞性 (features)。指示詞跟冠詞的詞性包括指示 (demonstrative)，遙遠 (remote)，固定 (definite)，接近 (proximate)，人稱 (personal)等等。名詞的詞性除了格關係及格形式詞性外，還有代名詞，加重語氣，多數，雙數 (dual)，人稱，人性 (human)，專有 (proper)，所有 (possessive)，名詞化 (nominalized)等等名詞詞性。動詞的詞性包括定性(finite)，連續(continuative)，靜態 (stative)，完成 (completive)，人稱及單複數，變成 (inchoative)，未來，過去，使役 (causative)，命令 (imperative)，禮貌 (polite) 等。以上所舉皆屬於內含詞性 (inherent features)。談到各種詞類可能出現環境的限制就是外含詞性 (contextual features) 或共同出現限制 (cooccurrence restrictions) 了。

第五節專門討論如何分辨名詞跟動詞的問題，並評估各種分辨標準。結論是句法才是辨別名詞跟動詞的最可靠的證據。

最後兩節描述基本句型跟包孕句。基本句型是：(一)氣象句，(二)存在句，(三)擁有句，(四)位置句，(五)主動句，(六)被動句，(七)等式句，(八)名詞化結構句，(九)靜態句，動態句及變成句，(十)命令句。否定詞是主要動詞的一種，只出現於包孕句。句與句之間的關係是用對應的句法表象 (syntactic representations) 以及（或者）以詞類衍生律 (lexical derivation rules) 來表示。

第五章　詞類衍生 (Derivation) 與詞彙關係

本章討論詞彙間的關係 (lexical relations)。表達這種關係用詞類衍生律 (derivation rules) 勝於變換律 (transformation rules)。詞類衍生跟曲折變化 (inflection) 可以用五種標準來清楚地劃分。詞類衍生的過程跟別的語法規律不同類型，性質也不同。詞類衍生律沒有次序。

本章討論下面幾種詞類衍生律：

一、動詞類衍生律 (verb derivation rules)：

    1. 靜態詞與變成詞衍生律

    2. 被動詞衍生律

    3. 不及物動詞衍生律

    4. 一些動詞形成衍生律

    5. 動作詞 (motion) 與使役詞 (causative) 衍生律

    6. 時態詞 (tense) 與形貌詞 (aspect) 衍生律

    7. 重疊 (reduplication) 為形成動詞之程序

二、名詞類衍生律 (noun derivation rules)：

    1. 一般衍生律

    2. 名詞化衍生律

    3. 數詞衍生律

    4. 時詞衍生律

三、介繫詞類衍生律 (preposition derivation rules)

第六章　詞音位律 (morphophonemic rules)

詞音位律跟詞類衍生律不同：前者有次序，而後者沒有次序。詞音位律包括重疊 (reduplication) 跟附加 (affixation) 兩大類。因為詞根 (stem) 才會重疊，附加詞 (affix) 不會重疊，所以重疊律必須在附加律之前使用才能得到正確的結果。附加律再根據動詞跟名詞兩種不同的詞類分列。在每種詞類之下，再依其使用次序列舉。每一條規律跟其他的規律的前後次序，如有關係，都略加以說明。

本章依序列舉下面幾種詞音位律：

一、重疊律（共三條，有前後次序）

二、附加律 (affixation rules)

    1. 動詞詞音位律 (verb morphophonemic rules)

      a. 詞類衍生詞音位律

      b. 曲折變化詞音位律

2. 名詞詞音位律（noun morphophonemic rules）

  a. 詞類衍生詞音位律

    i. 集體（collective），雙數，多數

    ii. 名詞化與詞頭律（prefixing rules）

  b. 曲折變化詞音位律