

BARAI SYNTAX:
A COMPARATIVE STUDY
OF
TAGMEMIC AND TRANSFORMATIONAL ANALYSES

BY

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ABSTRACT

Although the major goal of transformational theory is to account for the speaker's competence, an accounting of the data is a fundamental concern as well. This is the level of observational adequacy typically ascribed to structuralist frameworks. And although the synthesis of Pike and Longacre's tagmeme aimed at accounting for all human behavior, an accounting of the data is also fundamental to tagmemic theory. With this common goal, it should be possible to compare the actual formalization of a transformational grammar with a similar formalization of a tagmemic grammar to determine if they account equally well for a set of data.

This study compares in a limited way formalizations of these two linguistic frameworks for Barai, a non-Austronesian language of Papua New Guinea. The analyses are limited to syntax and focus primarily on the structure of the phrase and the clause (or S), although there is some discussion of word structures and more complex sentences as well.

The method is basically a hypothetico-deductive one. The grammars are proposed, drawing from intuitions formed over five years of studying the language. From these proposed grammars are derived some test implications which are then checked to see if these derived sentences and structural descriptions do meet the common minimal goal of accounting for the data.

The results, although not entirely conclusive, tend to favor the transformational analysis. The tagmemic model emphasizes the particular; the transformational model emphasizes the general. The tagmemic model is explicit in capturing the function of each constituent element of the clause, but the transformational model reaches the same end implicitly and more formally via the phrase structure rules. The formalization of the transformational model overall is more explicit than the tagmemic analysis. And finally, the transformational analysis with its focus on rules captures certain relations between structures that are lost in the tagmemic analysis.

To my parents.

Every solution of a problem raises new unsolved problems; the more so the deeper the problem and the deeper the solution. The more we learn about the world, and the deeper our learning, the more conscious, specific, and articulate will be our knowledge of what we do not know, our knowledge of our ignorance.

— Karl Popper

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ABBREVIATIONS

1	first person
2	second person
3	third person
acc	accompaniment
adj	adjective
ag	agreement
alt	alternative (mood)
amp	amplification
app	appositive
asp	aspect
c	concord
C	mood clitic
ca	causative
cas	casual mood
cau	caution
Cl	clause
Clos	closure base
co	coordinate
cond	conditional
conj	conjunctive
cont	continuous
contr	contrafactual
d	dependent
dei	deictic
del	delayed
Dest	destination

Det	determiner
di	ditransitive
dis	distant
ds	different subject
dub	dubitative
emp	emphatic
excl	exclamation
f	final
fut	future
Hd	head
i	independent
imp	imperative
inc	inceptive
ind	indicative mood
int	intensive mood
inte	intensive aspect
Intro	introduction base
IO	indirect object
itr	intransitive
Kn	kinship noun
loc/Loc	locative
m	marker
me	medial
mo	mood clitic
Mod	modifier
n	noun (in tagmemic analysis)
N	noun phrase (noun in TG analysis)
\bar{N}	noun phrase
$\bar{\bar{N}}$	expanded noun phrase
Nom	nominative
O	object
P	postposition
P	predicate (to left of colon)
P	phrase (to right of colon)
par	parallel

past	past tense
pers	person
pl	plural
pm	person marker
poss/Poss	possessive
pre	present
pro	pronoun
Pro	pronoun phrase
proS	process sentence
quo	quote conjunctive marker
r	root
RA	relator-axis
re	realized
rea	reason conjunctive marker
rel	relator
s	stem
S	sentence (in TG analysis)
S	subject (in tagmemic analysis)
seq	sequence
sg	singular
sim	simple
simu	simultaneous
ss	same subject
st	stative
t	tense
T	time
tn	time noun
tr	transitive
u	unrealized
uv	uninflected verb
v	verb
\bar{V}	verb phrase
$\bar{\bar{V}}$	expanded verb phrase
voc	vocative

Along with the proposal and validation of theories based on principles and laws, one of the most critical problems faced by linguistics at the time of the inception of transformational theory was the need for a means of justifying a proposed grammar.

Chomsky's early work took place at a time when linguists were being criticized for playing 'mathematical games' rather than 'describing reality' in their linguistic analysis of particular languages.¹ And so the glaring problem was the need for the linguist to be able to justify his particular analysis. Chomsky reasoned that there were two major kinds of things involved in justifying a particular grammar: external conditions of adequacy, and a need to conform to the general theory. He then conceded certain currently acceptable external conditions such as: the acceptability of generated sentences to the native speaker; that grammatical elements have observable correlates; etc. But granting such criteria, it was apparent that these were still inadequate. Numerous grammars, all conforming to a general theory, could meet such 'vague and incomplete' external criteria. Thus he saw the problem as a need to justify a particular grammar from among competing grammars, all of which met such general criteria. He states the problem as follows:

"We then face the problem of choosing among the vast number of different grammars, each giving different structures, and all meeting these vague and incomplete external criteria. This is the facet of the problem of justification which is most interesting at the present stage of linguistic research, and to which we will devote our primary attention in this study."²

In the search for such an evaluation measure, the notions that received the most attention were simplicity, naturalness,

generality, and correspondence with intuition. It gradually became evident however, that the pursuit of an evaluation measure was to be an elusive struggle. Lytle is representative of the current prevailing attitude:

"There is no effective procedure for arriving at THE evaluation metric any more than there is a discovery procedure for arriving at the optimum grammar. Intuition suggests that economy and simplicity are the criteria to be applied. Unfortunately, neither of these notions is an absolute provided outside of linguistic theory."³

In any event, the evaluation measure was intended to select the best of competing grammars resulting from the same theory. What then of two grammars stemming from different theories? This appears to be an even more formidable task. A major goal of transformational theory is to account for the intrinsic linguistic 'competence' of the speaker, the assumption being that the optimum goal of earlier structural theories was merely to account for a finite set of primary data. The intent was not to refute the importance of the earlier goal, but to expand upon it.

Paramount in tagmemic theory is the construction of a procedure for discovering and describing language structure. Certainly, tagmemic theory claims to be more than just a tool, however. Pike's volume, *Language in Relation to a Unified Theory of the Structure of Human Behavior*,⁴ implies by its title that tagmemics attempts to capture basic fundamentals of human nature that are reflected in language.

This difference in basic goals makes any comparison of the two theories difficult. However, despite the broader theoretical bases, both theories converge on a lesser goal of an accounting

of the data. It should be possible then, seeing that this more modest goal is common to both theories, to evaluate the actual formalizations of the theories by comparing them for a particular language to see if they account equally well for a finite set of data.

What follows is a comparative analysis of the Barai language in each of the above frameworks. Barai is one of more than five hundred languages spoken in the now self-governing state of Papua New Guinea. It is a Non-Austronesian language, a member of the Baraic Sub-family of the Koiarian Family of languages⁵ and its 3000 speakers are probably close to the mean for the number of speakers per language group. The Barai are located in an area east of the Owalama Range around the headwaters of the Musa River in the Northern District and then across the Owen Stanley Range into the Central District around the Laba and Mimai tributaries of the Kemp Welch River (see map, Appendix A). The data upon which these analyses are based was collected over a period from January 1969 through June 1972, primarily in the villages of Ufia, Naokanane, and Itokama which comprise the Birare dialect.

The limited scope of this study reflects on the force of the conclusions reached. Nevertheless, in evaluating models for a more comprehensive grammar of Barai, this study provides some evidence for choosing which of the two above models reflects a better accounting of the data. However, because of the broader claims of each of the theories, this is ultimately only one of many factors to be considered.

I. The Tagmemic Model

This study necessarily presupposes some familiarity with tagmemics, a linguistic model conceived by Pike, revised by Longacre, and presented in summary by Cook in his *Introduction to Tagmemic Analysis*⁶. Still, some discussion of the more basic notions of the theory is included here to orient the reader to the particular school within the general theory from which this analysis is derived.

A focus on units is basic to tagmemic analysis. It was a search for a minimal unit of grammar to correspond to the minimal phoneme of phonology that led to Pike's tagmeme in the first place. Longacre distinguishes between this unit and another he calls the syntagmeme. The relation between the two is rooted in the theory's conception of language and behavior.

In the tagmemic view, language is one of various forms of human behavior and behavior is patterning so that the role of the grammar is to enumerate these patterns of the language. The patterns are labeled syntagmemes and specific points in the patterns are the tagmemes. Further, the tagmemes are themselves composite structures and single points of larger patterns.

The composite nature of the tagmeme is a fusion of form and function. A particular set of forms combines with a common function to constitute a tagmeme. Hence, Longacre's definition of the tagmeme is 'a functional point (not necessarily a point in fixed linear sequence) at which a set of items or sequences

occur'⁷. The two are closely related. Function is dependent on the set and the set is likewise dependent on the function.

The syntagmemes are arrangements of these tagmemes in strings or constructions that occur at various hierarchically ordered levels within the grammatical structure. Although there is not a universal range of levels for every language, typical levels are the stem, word, phrase, clause, and sentence. Higher levels such as paragraph and discourse are the theme of much current research. The ordering of the hierarchy is normally evidenced by a set of forms of a lower level manifesting a tagmeme of the next higher level. Thus, word level syntagmemes usually are forms that manifest phrase level tagmemes. This is not always the case however. The levels may also be inter-related by the layering of level within level to account for embedding and recursion.

Longacre's *Grammar Discovery Procedures (GDP)*⁸ are a method for exposing these patterns and pattern points. He requires one clear structural difference to establish a contrast between pattern points or tagmemes, but two such differences for distinguishing among patterns or syntagmemes. This latter requirement is commonly referred to as Longacre's Rule of Two. The various criteria necessary for determining what constitutes a structural contrast are laid out in his introduction to the above volume and are the criteria by which the following units of Barai syntactic structure have been defined. Regarding these criteria, the role of external distribution has been a theme of much discussion among practitioners of the model for some time.

Longacre and Gudschinsky assign it a lesser role whereas Pike and Rensch consider it fundamental. Generally, all will agree with Longacre's final point on the issue in *GDP*, permitting distributional differences as relevant when contrasts of internal structure are inadequate in themselves.

"On occasion, however, two similar sequences - not adequately contrastive in internal structure - may be considered to be separate because they belong to different classes which are otherwise separable (in that they are constituted by sequences adequately contrasting in internal structure)."⁹

The Clause Level

The application of Longacre's Rule of Two to the 'etic' clause patterns of Barai yields a variety of 'emic' clauses that contrast along several different parameters. One of these is transitivity where there are distinct patterns for transitive, intransitive, and di-transitive clauses. These differ in the number of tagmemes within the construction, in the different classes of verbs manifesting the predicate tagmeme, and in the type of agreement between the predicate and other nuclear clause level tagmemes. In contrast to these active clauses, there are stative, equational, and causative clause types. Significant differences occur here in the structure of the verb as well as the number and type of tagmemes in the constructions.

The labels of the parameters reflect some defining feature of the type. The intransitive permits no object. The transitive permits only a direct object. And the di-transitive

permits both a direct and indirect object. One of the defining features of the causative clauses is the causative marker, *-de*. Equational clauses have no verb. And stative clauses require an adjective along with the copula, *-e*.

All of these combine with still further distinctions to form dependent, 'medial', and independent (or 'final') clauses. This medial-final distinction is typical of many non-Austronesian languages where only the final clause is independent in most cases. Certain quasi-independent clauses that are not independent and yet are distinct from typically dependent structures are labeled 'medial' and their structural differences are then enumerated. Each of these types marks tense in a different way and both the dependent and medial clauses contain a distinct class of conjunctions. These differences plus mutually exclusive patterns of external distribution in various sentence types constitute the criteria for identifying them as syntagmemes. The resulting clause level syntagmemes can then be displayed in a matrix such as:

	independent	medial	dependent
intransitive	A	B	C
transitive	D	E	F
di-transitive	G	H	I
causative	J	K	L
equational	M	∅	N
stative	O		∅

A. The Independent/Intransitive Clause

The independent/intransitive clause may be represented by the following formula:

$$\begin{array}{l} \text{F1. } \text{itrCl} = \text{+ S:Nom/N/pro} \text{+ Dest:possP} \text{+ Time:tP...} \\ \text{+ Loc:loc:} \text{+ Acc:accP} \text{+ P:itr.v} \end{array}$$

The formula reads as follows: The independent/intransitive clause (i.itrCl) consists of an optional subject slot (S) manifested by a nominative phrase (Nom), a noun phrase (N), or a pronoun (pro), an optional destination slot manifested by a possessive phrase (possP), an optional time slot manifested by a time phrase (tP), an optional location slot manifested by a location phrase (locP), an optional accompaniment slot manifested by an accompaniment phrase (accP), and finally, an obligatory predicate slot manifested by an intransitive verb. The dotted line in the formula with the concord symbol 'c' indicates an optional number agreement factor.¹⁰ Since the internal structure of the verb can be one of the relevant factors for distinguishing the clause types in a tagmemic analysis, the structure of the independent verb is included here as well.

$$\text{F2. } \text{itr.v.} = \text{+ nu:itr.v.s.} \text{+ asp:asp.m.} \text{+ tense:i.t.m.} \text{+ emp:-no}$$

That is, the independent intransitive verb consists of an obligatory nucleus manifested by an intransitive verb stem

followed by an optional aspect slot manifested by a set of aspect markers, an optional tense slot manifested by a set of independent tense morphemes, and an optional emphatic slot manifested by -no, an emphatic marker.

The nuclear tagmemes of the clause string are the subject and predicate tagmemes. Of the peripheral tagmemes, only the optional destination tagmeme is unique to the intransitive clause types. The intransitive verb sometimes but not always marks the number of the subject via a stem change, e.g. fi, 'sit (subj. sg.)', and kari, 'sit (subj.pl.)', but no person marker ever occurs with these verbs. A permutation rule must be stated to account for the optional preposing of the time and location tagmemes and a further constraint that only one of the peripheral tagmemes may occur in any one clause must also be stated.

Note the examples:

- | | T ¹¹ | S | | Dest | | P | |
|----|--|-------------|---------------|----------------|-------------|----------------|------------------|
| 1. | <u>ude</u> | <u>bu</u> | <u>kumite</u> | <u>nuvuone</u> | <u>ij</u> | <u>-afuo</u> | <u>rua-e</u> |
| | <i>first</i> | <i>they</i> | <i>leader</i> | <i>our</i> | <i>that</i> | <i>poss.p.</i> | <i>come-past</i> |
| | <i>First, they come to our leader.</i> | | | | | | |

- | | S | Loc | P |
|----|--|--------------------|---------------|
| 2. | <u>bu</u> | <u>gam-ia</u> | <u>usiae</u> |
| | <i>they</i> | <i>that-loc.p.</i> | <i>arrive</i> |
| | <i>They arrived down¹² there.</i> | | |

B. The Medial/Intransitive Clause

The medial intransitive clause consists of a similar string of tagmemes with the same constraints.

c

F3. me.itrCl = ± S:Nom/N/pro ± Dest:possP ± Time:tP ± Loc:locP...

± Acc:accP + P:me.itr.v

This formula then reads as follows: The medial intransitive clause consists of an optional subject slot manifested by a nominative phrase, a noun phrase, or a pronoun, an optional destination slot manifested by a possessive phrase, an optional time slot manifested by a temporal phrase, an optional location slot manifested by a location phrase, an optional accompaniment slot manifested by an accompaniment phrase, and finally an obligatory predicate slot manifested by a medial intransitive verb. The concord marker 'c' represents optional agreement between the verb stem and the number of the subject. The difference between this syntagme and the independent/intransitive syntagme is in the structure of the verb manifesting the predicate tagme and in the external distribution of the clause itself in various sentence types. The medial verb has the same aspectual affixes but rather than the set of simple tense markers as in the independent/intransitive verb, the medial verbs take a set of portmanteau suffixes that mark both tense and the

kind of temporal sequence between this medial clause and the following clause, be it medial or final (independent). Finally, an agreement slot occurs as the last position of this medial verb filled by -na or -ga, indicating 'same subject' or 'different subject' in the following clause. The structure of the medial intransitive verb is given as F4.

F4. me.itr.v. = + nu:itr.v.s. + asp:asp.m. + time/seq:t/s.m...
+ ag:ag.m.

The formula reads as follows: The medial intransitive verb consists of an obligatory nucleus filled by an intransitive verb stem, an optional aspectual slot filled by a set of aspect markers, an optional time/sequence slot filled by a time/sequence marker, and an optional agreement slot filled by an agreement marker.

	S		P(me.v.)	S		P(f.v.)
3.	<u>viena</u>	<u>fu</u>	<u>fi-ga</u>	<u>viena</u>		<u>kuara-e</u>
	brother	he	sit-ds.	brother		talk-past

One brother sat and the other brother talked.

	S		P(me.v.)		T		P(f.v.)
4.	<u>bu</u>		<u>nao-eva</u>		<u>suake</u>		<u>va-e</u>

they sleep-del.past/seq early morning go-past

They slept and then later, early in the morning, they left.

Note the position of the medial clause in the sentence as well as the different structure of the medial verb.

C. The Dependent/Intransitive Clause

The dependent/intransitive clause consists of still a further similar string with similar constraints, the differences again being in the structure of the verb and in the external distribution of the clause itself.

-----^c-----

F5. d.intCl = + S:Nom/N/pro + Dest:possP + Time:tP...

+ Loc:locP + Acc:accP + P:d.itr.v

The dependent intransitive clause consists of an optional subject manifested by a nominative phrase, a noun phrase, or a pronoun; an optional destination slot filled by a possessive phrase; an optional time slot filled by a time phrase, an optional location slot filled by a locational phrase, an optional accompaniment slot filled by an accompaniment phrase, and an obligatory predicate filled by a dependent intransitive verb.

The dependent verb also has a set of aspect markers followed by a unique set of tense markers and, finally, a class of conjunctive morphemes that specify the relation of the dependent clause to the medial or final clause to which it is related.

F6. d.itr.v. = + nu:itr.v.s. ± asp:asp.m. ± tense:d.t.m....
 ± rel:d.conj.m.

That is, a dependent intransitive verb consists of an obligatory nucleus manifested by an intransitive verb stem, an optional aspect slot manifested by an aspect marker, an optional tense slot manifested by a dependent tense marker, and an optional relator slot manifested by a dependent conjunctive marker.

	T		S	P(d.v.)		S	O	P
5.	[<u>ve</u>	<u>ije</u>	<u>iro</u>	<u>nima-ko-no</u>]		<u>ni</u>	<u>sari</u>	<u>kiria</u>
	<i>time</i>	<i>that</i>	<i>yam</i>	<i>cook-d.fut.-d.conj.</i>		<i>you</i>	<i>feathers</i>	<i>tie</i>

Since, by that time, the yams will be cooked, tie the feathers.

	S	S	P(d.v.)		P
6.	<u>no</u>	[<u>bu</u>	<u>kari-iva</u>]	<u>ij</u>	<u>-ia</u> <u>va</u>
	<i>we</i>	<i>they</i>	<i>sit-d.past</i>	<i>that</i>	<i>loc. go</i>

We went to where they had sat.

In the first example, the dependent clause¹³ occurs in the initial base of a reason/imperative sentence. In the second, it is embedded in the location slot of an independent/intransitive clause. Since medial or independent clauses may not occur in these positions, external distribution is one of the defining features of this syntagmeme.

The structure of intransitive clauses in Barai is thus captured in a tagmemic system by three different syntagmemes, each

with a similar string of tagmemes, but each with a different verb construction manifesting its predicate tagmeme and each being distributed uniquely within sentence constructions.

D. The Independent/Transitive Clause

The following formula represents the structure of the independent/transitive clause.

F7. $\text{trCl} = \text{+ S:Nom/N/pro} \text{+ Time:tP} \text{+ Loc:locP} \text{+ Acc:accP} \dots$

$$\begin{array}{c} \text{c} \\ \text{-----} \\ \text{+ O:N/pro} \text{+ P:tr.v} \end{array}$$

The independent/transitive clause consists of an optional subject filled by a nominative phrase, a noun phrase, or a pronoun, an optional time slot filled by a time phrase, an optional location slot filled by a location phrase, an optional accompaniment slot filled by an accompaniment phrase, an optional object slot filled by a noun phrase or a pronoun, and finally, an obligatory predicate filled by a transitive verb. The concord symbol 'c' represents optional concord between the person marker of the verb and the stem of the object.

This construction differs from its intransitive counterpart in two ways. First, an additional object tagmeme occurs in this string and second, the predicate tagmeme is manifested by a different verb construction. The same constraints hold here on preposing and the number of co-occurring tagmemes except that the object may not be so preposed.

The independent/transitive verb has an optional first order set of person marker suffixes in agreement with the object tag-meme as well as a unique class of stems in the nucleus.

F8. tr.v. = + nu:tr.v.s. ± pers:p.m. ± asp:a.m. ± tense:t.m....
± emp:-no

The independent transitive verb consists of an obligatory nucleus manifested by a transitive verb stem, an optional person slot manifested by a person marker, an optional aspect slot manifested by an aspect marker, an optional tense slot manifested by a tense marker, and an optional emphatic marker manifested by -no.

The following are examples of this independent/intransitive syntagmeme.

	S		O		P
7.	<u>bara</u>	<u>bu</u>	<u>namu</u>	<u>me</u>	
	women	they	brush	work	

The women clear the brush.

	T		S		O		P
8.	<u>isuame</u>	<u>ame</u>	<u>nuvuone</u>	<u>bu</u>	<u>ume</u>	<u>kan-ia-e</u>	
	yesterday	children	our	they	bird	kill-3pl-past	

Yesterday, our children killed birds.

	S	Acc	O	P
9.	<u>fu bu</u>	<u>-ina</u>	<u>ire</u>	<u>i</u>
	<i>he they</i>	<i>acc.p.</i>	<i>food</i>	<i>eat</i>

He eats food with them.

E. The Medial/Transitive Clause

The medial/transitive clause is distinct from the independent/transitive clause in just the same respects that the medial/intransitive differed from the independent/transitive. A similar string of tagmemes occurs but the verb manifesting the predicate tagmeme is different as is the external distribution of the unit as a whole.

F9. $\text{me.trCl} = \text{+ S:Nom/N/pro} \text{+ Time:tP} \text{+ Loc:locP} \text{+ Acc:accP} \dots$

$$\begin{array}{c} \text{c} \\ \text{---} \\ \text{+ O:N/pro} \text{+ P:me.tr.v.} \end{array}$$

The medial/transitive clause consists of an optional subject filled by a nominative phrase, a noun phrase, or a pronoun, an optional time slot filled by a time phrase, an optional location slot filled by a locative phrase, an optional accompaniment slot filled by an accompaniment phrase, an optional object slot filled by a noun phrase or a pronoun, and an obligatory predicate filled by a medial transitive verb. Again, 'c' represents optional number agreement between the person marker of the verb and the filler of the object tagmeme.

Note the formula for the medial/transitive verb:

F10. me.tr.v. = + nu:tr.v.s. ‡ pers:p.m. ‡ asp:a.m. ‡ ...
time/seq:t/s.m. ‡ ag:ag.m.

The medial/transitive verb consists of an obligatory nucleus manifested by a transitive verb stem, an optional person slot filled by a person marker, an optional aspect slot filled by an aspect marker, an optional time/sequence slot filled by a time/sequence marker, and an optional agreement slot filled by an agreement marker.

The formula is roughly parallel to its intransitive counterpart except for the different class of stems in the nucleus and the additional person markers.

	S	O	P(me.tr.v.)	P(f.itr.v.)
10.	<u>fu</u>	<u>ume</u>	<u>kan-ia-na</u>	<u>rua-e</u>
	<i>he</i>	<i>bird</i>	<i>kill-3pl-ss.</i>	<i>come-past</i>

He killed the birds and came.

	S	O	P(me.tr.v.)	P(f.itr.v.)
11.	<u>fu</u>	<u>na</u>	<u>mesir-ie-na</u>	<u>va-ke</u>
	<i>he</i>	<i>me</i>	<i>take-lsg-ss</i>	<i>go-fut.</i>

He will take me and go.

F. The Dependent/Transitive Clause

Similarly, the dependent/transitive clause is distinctive

only in its verb structure and its external distribution.

F11. $d.trCl = \underline{+} S:Nom/N/pro \underline{+} Time:tP \underline{+} Loc:locP \underline{+} Acc:accP\dots$

c

 $\underline{+} O:N/pro \underline{+} P:d.tr.v.$

The dependent/transitive clause consists of an optional subject manifested by a nominative phrase, a noun phrase, or a pronoun, an optional time slot manifested by a time phrase, an optional location slot manifested by a location phrase, an optional accompaniment slot manifested by an accompaniment phrase, an optional object slot manifested by a noun phrase or a pronoun, and an obligatory predicate manifested by a dependent/transitive verb. And again, the concord of number holds between the person marker of the verb and the filler of the object tag-meme.

F12. $d.tr.v. = \underline{+} nu:tr.v.s. \underline{+} pers:p.m. \underline{+} asp:a.m.\dots$

$\underline{+}tense:d.t.m. \underline{+} rel: d.conj.m.$

The dependent/transitive verb consists of an obligatory nucleus manifested by a transitive verb stem, an optional person slot manifested by a set of person markers, an optional aspectual slot manifested by a set of aspect markers, an optional tense slot manifested by a set of dependent tense markers, and an optional relational slot manifested by a set of dependent conjunctive markers.

The independent/ditransitive clause consists of an optional object manifested by a noun phrase or pronoun, an optional subject manifested by a nominative phrase, a noun phrase, or a pronoun, an optional time slot manifested by a time phrase, an optional location slot manifested by a location phrase, an optional accompaniment slot manifested by an accompaniment phrase, an optional indirect object manifested by a noun or pronoun, and an obligatory predicate manifested by an independent (or final) ditransitive verb. Two kinds of concord are represented. The concord symbol 'c' represents an optional agreement factor between the *stem* of the verb and the *number* of the object. The concord symbol 'c'' represents person/number agreement between the person marker of the verb and the filler of the object tagmeme. A permutation rule also applies that shifts the direct object to the position of the indirect object if the indirect object doesn't occur.

As might be anticipated, the independent/ditransitive clause is most similar to the independent/transitive clause. The differences include: the initial position of the object tagmeme, the additional indirect object tagmeme (again optional), a different concord pattern, and a different verb syntagmeme manifesting the predicate. In the transitive clauses, the concord is between the object and the person marker in the verb, whereas in the ditransitive clauses, the concord shifts to the indirect object and the verb and it represents agreement in person and number. The only structural difference between the independent/transitive and ditransitive verbs is the class of

The medial ditransitive clause consists of an optional object filled by a noun phrase or pronoun, an optional subject filled by a nominative phrase, a noun phrase, or a pronoun, an optional time slot filled by a time phrase, an optional location slot filled by a location phrase, an optional accompaniment slot filled by an accompaniment phrase, an optional indirect object manifested by a noun phrase or pronoun, and finally an obligatory predicate manifested by a medial ditransitive verb. The same two kinds of concord again obtain as with the independent/ditransitive clause. The object permutation rule applies as well.

F15. me.di.v. = + nu:di.v.s. ± pers:p.m. ± asp:a.m....
± time/seq:t/s.m. ± ag:ag.m.

The formula then reads as follows: The medial ditransitive verb consists of an obligatory nucleus manifested by a ditransitive verb stem, an optional person slot manifested by a set of person markers, an optional aspectual slot manifested by a set of aspect markers, an optional time/sequence slot manifested by a set of time/sequence markers, and finally, an optional agreement slot manifested by the two agreement markers.

	O		P(me.di.v.)		S		P(f.itrv)
16.	<u>kofu</u>	<u>ije</u>	<u>m-uo-vo-ga</u>	<u>e</u>	<u>boeje</u>	<u>bu-ka</u>	<u>uri</u>
	<i>coffee that give-1pl-past.seq-ds. people many they-int. arise</i>						
	<i>(They) gave us that coffee and then many people rose (to the challenge).</i>						

F17. d.di.v. = + nu:di.v.s. + pers:p.m. + asp:a.m. + tense:d.t.m....
 + rel:d.conj.m.

The dependent/ditransitive verb consists of an obligatory nucleus manifested by a ditransitive verb stem, an optional person slot manifested by a set of person markers, an optional aspectual slot manifested by a set of aspect markers, an optional tense slot filled by a class of dependent tense suffixes, and finally, an optional relational slot manifested by a set of dependent conjunctive markers.

	S		O		S	IO
18.	<u>e</u>	<u>boeje</u>	<u>bu</u>	<u>kofu</u>	<u>bisinise</u>	[<u>bu</u> <u>no</u>]
	<i>people</i>	<i>many</i>	<i>they</i>	<i>coffee</i>	<i>business</i>	<i>they us</i>

P(d.di.v.)	O	P(f.v.)
<u>m-u-eva</u>]	<u>ije</u>	<u>abe-i</u>
<i>give=1pl-d.past</i>	<i>that</i>	<i>accept-past</i>

Many people accepted that coffee business¹⁴ that they gave us.

	S	O	P(d.di.v.)		S	P(f.v.)
19.	[<u>na</u>	<u>vame</u>	<u>nijas-a-eva-no</u>]		<u>ni</u>	<u>va</u>
	<i>I</i>	<i>path</i>	<i>show-3sg-d.past-rea</i>		<i>you(imp)</i>	<i>go</i>

Since I showed you the path, go!

As with the other dependent clause patterns, note that the distribution of this syntagme does not overlap that of medial and independent/di-transitive clauses, further distinguishing the unit. It occurs only in embedded relative clauses or

subordinate bases of various sentence syntagmemes.

J. Independent/Causative Clause

The independent/kausative clause is much more restricted than any of the above syntagmemes in terms of the number of tagmemes that may occur in the string. Time is the only peripheral tagmeme that occurs in the construction. The nuclear tagmemes are the subject, the predicate, and the indirect object. The subject, if expressed at all, is typically an impersonal third person singular pronoun or may be a specific noun, but never a noun phrase. The indirect object may or may not be overt, but is always marked in the verb by a person marker in agreement with it.

F18. caCl = + Time:tP + S:pro/n + IO:N/pro + P:ca.v.

The independent/kausative clause consists of an optional time slot manifested by a time phrase, an optional subject manifested by a pronoun or noun, an optional indirect object (one could conceivably relabel this tagmeme) manifested by a noun phrase or a pronoun, and an obligatory predicate manifested by a causative verb.

The causative verbs do not take the various aspect markers and their nuclei are manifested by a stem composed of an adjective or verb root and a causative affix, so that the formula for the independent causative verb is:

F19. i.ca.v. = + nu:ca.v.s. + pers:p.m. + tense:i.t.m. + emp:-no

This formula reads as follows: The independent causative verb is composed of an obligatory nucleus manifested by a causative verb stem, an obligatory person slot manifested by a set of person markers, an optional tense slot manifested by a set of independent tense markers, and an optional emphatic slot filled only by -no, the emphatic marker.

The composite causative verb stems are analyzed via the following formula.

F20. ca.v.s. = + core:aj.root/st.v.root + ca:-de/-nami

c

┌-----┐

└-----┘

The causative verb stem consists of either an adjective root or a stative verb root and one of two causative roots. The concord symbol 'c' represents agreement between the choice of a causative and the type of accompanying root. Only adjective roots have been observed to occur with the causative affix, -de. A further restriction that must be stated is that no third singular person marker ever occurs.

S IO P(f.ca.v.)

20. fu na ma-d-ie

it me good-cause-1sg

It causes good to me. Or, It pleases me.

- | | | | |
|-----|------------------|-----------|----------------------------|
| | T | IO | P(f.ca.v.) |
| 21. | <u>isuame</u> | <u>na</u> | <u>visi-nam-ie-i</u> |
| | <i>yesterday</i> | <i>I</i> | <i>sick-cause-1sg-past</i> |

'Yesterday, it caused me to be sick.' or, 'Yesterday, I was sick.'

- | | | | |
|-----|----------------|------------|----------------------|
| | S | IO | P(f.ca.v.) |
| 22. | <u>fu-ka</u> | <u>a</u> | <u>ise-d-a</u> |
| | <i>it-int.</i> | <i>you</i> | <i>bad-cause-2sg</i> |

'It caused you to be unhappy.' or, 'You are displeased.'

K. The Medial/Causative Clause

The medial/causative clause contains tagmemes with constraints as above except for the verb that takes the now familiar medial affixes. It is distinguished from other medial verb syntagmemes by its causative verb stem in the nucleus, by its lack of the aspectual tagmeme and by its obligatory person slot. The clause syntagmeme is further identifiable by its external distribution within sentences as has been the case with other medial syntagmemes.

F21. $me.caCl = \pm \text{Time:tP} \pm \text{S:pro/n} \pm \text{IO:N/pro} + \text{P:me.ca.v.}$

The medial/causative clause consists of an optional time slot manifested by a time phrase, an optional subject slot manifested by a pronoun or noun, an optional indirect object manifested by a noun phrase or a pronoun, and an obligatory predicate manifested by a medial/causative verb.

The following formula represents the structure of the medial/causative verb.

F22. me.ca.v. = +nu:ca.v.s. + pers:p.m. ± time/seq:t/s.m....

± ag:ag.m.

A medial/causative verb consists of an obligatory nucleus manifested by a causative verb stem, an obligatory person slot manifested by a set of person markers, an optional time/sequence slot manifested by a set of time/sequence markers, and finally an optional agreement slot manifested by a set of two affixes indicating either same or different subject in the following clause.

	S	P(me.ca.v.)	T	S
23.	<u>fu-ka</u>	<u>ise-d-u-ema</u>	<u>mufuo</u>	<u>Auri</u>
	<i>it-int.</i>	<i>bad-make-1pl-me.del.past</i>	<i>late.afternoon</i>	<i>Auri</i>

	O	P
	<u>fu no kume</u>	
	<i>he us call</i>	

'It was unpleasant to us and then in the late afternoon Auri called us.' or, 'We were unhappy and then...'

	S	P(me.ca.v.)	S	P
24.	<u>fu-ka</u>	<u>oefia-d-ia-ma</u>	<u>bu-me</u>	<u>unaro</u>
	<i>it-int.</i>	<i>sad-cause-3pl-me.cont.seq.</i>	<i>they-cas.</i>	<i>return</i>

It really makes them sad until (finally) they just go back.

L. The Dependent/Causative Clause

Again, the dependent/causative clause contains a similar string of tagmemes with similar constraints to those that occur with the independent/causative clauses.

F23. $d.caCl = \underline{+} \text{Time:tP} \underline{+} \text{S:pro/n} \underline{+} \text{IO:N/pro} + \text{P:d.ca.v.}$

The dependent/causative clause consists of an optional time slot manifested by a time phrase, an optional subject slot manifested by a pronoun or a noun, an optional indirect object manifested by a noun phrase or a pronoun, and an obligatory predicate manifested by a dependent/causative verb.

The verb syntagme manifesting the predicate slot however is contrastive because of its causative verb stem and, again because of its lack of an aspectual tagme and the obligatory nature of the person slot. It is distinguished from the medial verb syntagme by the final two tagmemes of the string. Note the verb structure.

F24. $d.ca.v. = + \text{nu:ca.v.s.} + \text{pers:p.m.} \underline{+} \text{tense:d.t.m....}$

$\underline{+} \text{rel:d.conj.m.}$

The dependent/causative verb consists of an obligatory nucleus filled by a causative verb stem, an obligatory person slot filled by a set of person markers, an optional tense slot

manifested by a set of dependent tense markers, and an optional relational slot manifested by a set of dependent conjunctive markers.

This contrastive verb construction plus the external distribution of the unit as a whole in positions mutually exclusive with medial and independent syntagmemes constitute the defining features of this clause level syntagmeme.

25. bu e [ije visi-nam-ia-mo] ije g-ia
they person that sick-cause-3pl-d.pre. that see-3pl

'They were visiting those to whom it was causing sickness.' or,

'They were visiting the sick people.'

In this example, the dependent/causative syntagmeme is a relative clause embedded in the object tagmeme of an independent/transitive clause.

26. fu kua fu-ka [oefia-d-ie-mo-no] kua
he say it-int. sad-cause-1sg-d.pre.-quote say

'He says, "It is really causing me sorrow."' or, 'I am really sorry.'

Here, the dependent/causative syntagmeme is manifesting the quoted base of a quote sentence.

M. The Independent/Equational Clause

The independent/equational clause is double-centered in

that there is no obligatory predicate as has been common to other clause level syntagmemes. The double center is first an initial expanded noun phrase (typical of the subject position in other clauses) and then a simple noun phrase without any intervening verb or copula. The formula for this clause is F25.

F25. eqCl = + Item:Nom/N/pro + App:N

The equational clause consists of an obligatory item slot filled by a nominative phrase, a noun phrase, or a pronoun and an obligatory appositive slot filled by a noun phrase.

	Item		App	
27.	<u>Auri</u>	<u>fu</u>	<u>e</u>	<u>mukore</u>
	<i>Auri</i>	<i>he</i>	<i>person</i>	<i>fine</i>
	<i>Auri is a fine person.</i>			

	Item		App
28.	<u>no</u>	<u>e</u>	<u>sibaneke</u>
	<i>we</i>	<i>people</i>	<i>sufficient</i>
	<i>We are enough people.</i>		

N. The Dependent/Equational Clause

In addition to the two obligatory tagmemes, the dependent/equational clause also has an obligatory relator tagmeme manifested by a set of conjunctive clitics. This additional tagmeme plus the external distribution of the unit as a whole are its

defining features.

F26. d.eqCl = + Item:Nom/N/pro + App:N + Rel:d.conj.cl.

The dependent/equational clause consists of an obligatory item slot manifested by a nominative phrase, a noun phrase, or a pronoun, an obligatory appositional slot manifested by a noun phrase, and an obligatory relation slot manifested by a dependent conjunctive marker.

	S	P		Item		App		P
29.	<u>fu</u>	<u>k-ia</u>		[<u>vame</u>	<u>ije</u>	<u>fu-ka</u>	<u>vame ma-no</u>]	<u>k-ia-e</u>
	<i>he</i>	<i>say-3pl</i>		<i>trail</i>	<i>that</i>	<i>it-int.</i>	<i>trail good-quo</i>	<i>say-3pl-past</i>
	<i>He says, "That trail is really a good trail."</i>							

0. The Independent/Stative Clause

The independent/stative clause may be represented by the following formula.

F27. stCl = + S:Nom/N/pro + P:st.v.

The stative clause consists of an obligatory subject slot filled by a nominative phrase, a noun phrase, or a pronoun, and an obligatory predicate filled by a stative verb.

Both the subject and the predicate are obligatory and no other clause level tagmeme occurs in the construction. Further,

there is a constraint that the subject can only be third person. A similar constraint with other persons is expressed in the causative syntagmemes. Further, the composition of the verb construction is a root plus the verbalizer or copula, -e. The root is clearly an adjective root in some cases, but every root that occurs here has not been established as an adjective elsewhere in the grammar, so that this point will have to be clarified by future research. For our purposes here, the set manifesting the root slot of the verb stem are adjective roots and stative roots to which the copula -e is affixed.

F28. st.v.s. = + core:adj.r./st.r. + copula:-e

The stative verb stem consists of an obligatory core filled by an adjective root or a stative root and an obligatory copula slot filled by a derivational affix, -e. No other affixation has been observed.

	S		P	
30.	<u>asie</u>	<u>-no</u>	<u>fu</u>	<u>ma-e</u>
	<i>mother</i>	<i>my</i>	<i>she</i>	<i>good-is</i>
	<i>My mother is fine.</i>			

	S		P	
31.	<u>aoge</u>	<u>ije</u>	<u>fu</u>	<u>fia-e</u>
	<i>ankle</i>	<i>that</i>	<i>it</i>	<i>painful-is</i>
	<i>That ankle is painful.</i>			

These fifteen constructions constitute the clause level syntagmemes for Barai. Note the gaps in the matrix on page 5. No medial construction occurs for the equational or stative patterns and no dependent/stative construction occurs either. There may be logical motivation for the lack of the two medial types, but the dependent/stative may well be a gap in the data.

The Phrase Level

A phrase is any structured word group that does not contain both a subject and a predicate (as is typical of clause level word groups) and that functions as a unit in manifesting one or more tagmemes. Phrase level syntagmemes are typically of three types: head-modifier, multiple head, or relator-axis.

Head-modifier phrases have an obligatory head tagmeme around which certain subordinate modifiers revolve, these usually being optional. Sometimes however, a modifying tagmeme will also be obligatory. This is the case in Barai with the deictics of certain phrase constructions. The noun phrase, the kinship phrase, the verb phrase, and the item-possessor phrase are all head-modifier phrases in Barai.

Multiple head phrases are phrase structures that exhibit more than one head. These may be single words or embedded phrases. They are obligatory and may or may not require an intervening connector.¹⁵ Temporal, locative, and nominative phrases are all multiple head phrases in Barai.¹⁶

Relator-axis phrases are composed of two tagmemes: a

relator and an axis. Both are obligatory so that neither can alone fill the slot that the unit does. Typically, relator-axis phrases are quite similar in internal structure. Consequently, a difference of relators combined with a distributional difference may be the only distinctions between relator-axis syntagmemes. The possessive and accompaniment phrases are both examples of Barai relator-axis phrases.

The Modified Noun Phrase

The tagmemic formula for the noun phrase is the following:

F29. N = + Hd:n ± Mod:num/adj/poss.pro ± Det:dei

The modified noun phrase consists of an obligatory head manifested by a noun, an optional modifier filled by either a numeral, an adjective, or a possessive pronoun, and an optional determiner filled by a deictic. The set of fillers manifesting the head tagmeme, (n), are to be distinguished from kinship nouns, (kn), as the latter require an entirely different construction. Numerals, adjectives, and possessive pronouns all occur with these non-kinship nouns and with the deictics, but they do not co-occur with each other so that together they comprise a single set. Note the examples:

32. vua fuone ije
talk his that
That talk of his.

33. mavua ireobo
box big
a big box

34. are ige
house this
this house

35. e inokoro ije
person two that
those two people

The Modified Verb Phrase

Another phrase syntagme is the modified verb phrase.

F29. $V = \underline{+} \text{Mod:adv} + \text{Hd:v}$

The verb phrase consists of an optional modifier manifested by a set of adverbs and an obligatory head filled by a set of verbs.¹⁷ The class of adverbs always occurs immediately preceding the verb with no intervening elements and no changes of linear ordering so that the pair are considered a word group.

36. difuri va
fast go
goes fast

37. saroroba tavua
suddenly explode
suddenly explodes

38. kuke re
again do
does (it) again

39. mauki fi
quietly sit
sits quietly

The Modified Kinship Phrase

The structure of the modified kinship phrase can be represented in the following formula.

F30. KN = + Hd:kn ± Num: -ki/-rafa + Poss:p.m. ± Det:dei

The modified kinship phrase consists of an obligatory head manifested by a kinship noun, an optional number slot manifested by the singular morpheme, -ki, or the plural morpheme, -rafa, an obligatory possession slot manifested by a set of person markers, and an optional determiner slot manifested by a deictic. While these three tagmemes are phonologically bound in one phonological word, they are similar to the tagmemes occurring at the phrase level with other nouns and so are analyzed with the kinship nouns as phrase level constituents. The following are modified kinship phrases.

40. asie -ki -no
mother sg 1st
my mother

41. asoe -rafa -fuo
father pl 3sg
his fathers

42. asoe -o
father 2sg
your father

43. asae -rafa -nuvuo
grandparent pl 1pl
our grandparents

The modified kinship phrase is distinct from the modified noun phrase in numerous respects. First, the fillers of the head slot are mutually exclusive in the two syntagmemes. Number and possession are two tagmemes rather than one, each with fillers distinct from the modified noun phrase. And finally, possession is obligatory in the modified kinship phrase.

The Item-Possessor Phrase

Note the following phrase structures.

44. e ig -afuo asoe
person this -poss.p. father
this person's father

45. are ij -afuo tarome ije
house that -poss.p. roof that
that roof of that house.

46. e ireobo gar -aduo mave
person big that poss.p. pig
a pig belonging to that big person

47. are none ij -afuo tarome ije
house my that poss.p. roof that
that roof belonging to that house of mine

48. ame inokoro gar -aduo juvuave
boy two that poss.p. spear
a spear belonging to those two boys

In the item-possessor phrase, there are three layers of phrase level embedding. A relator-axis phrase is manifested by the possessor slot where the axis itself is a noun phrase so that the noun phrase is embedded in the axis of a relator-axis

phrase that is embedded in the possessor slot of an item-possessor phrase. Note the formula for the item-possessor phrase.

F31. IP = + Poss:possRA + It:N/kn

An item-possessor phrase consists of an obligatory possessor slot filled by a possessive relator-axis phrase, and an obligatory item slot filled by a noun phrase or a kinship noun. Notice that, when modified, kinship nouns differ from other nouns in their resulting constructions, but kinship nouns and modified noun phrases comprise a set that function together in the item-possessor phrase. Since the possessive relator-axis phrase does not occur with modifiers, it is tempting to combine this phrase type with the modified noun phrase where the set of modifiers would include not only numerals, adjectives, and possessive pronouns but possessive relator-axis phrases as well. Then a permutation rule would be required to account for the movement of the possessive relator-axis phrase to the left of the head noun. However, in addition to the difference in the order of the tagmemes, the item-possessor phrase is further distinguished by its grouping of kinship nouns with modified noun phrases as one function-set unit. Hence the item-possessor analysis.

Now consider the noun phrase manifesting the item slot. It is structurally distinct from other modified noun phrases since only a deictic and never an adjective may co-occur with the head noun. This, plus the distribution of this construction only in the item slot of item-possessor phrases, yields the criteria

necessary for defining a phrase level syntagme. If we label this structure N_2 , then N_2 can be represented by F32.

F32. $N_2 = + Hd:n \pm Det:dei$

A modified noun phrase sub-two consists of an obligatory head filled by a noun and an optional determiner filled by a deictic.

The Possessive Phrase

The possessive phrase, then, is a relator-axis phrase that fills the possessor slot of item-possessor phrases. They also occur on the clause level manifesting the destination tagme of intransitive clauses.

F33. $possRA = + Ax:N + Rel: \overset{c}{\text{---}} / \text{---}$

The possessive phrase is a relator-axis phrase composed of an obligatory axis manifested by a noun phrase and an obligatory relator manifested by one of two possessive postpositions, -afuo or -aduo. The concord symbol 'c' represents agreement between the deictic in the noun phrase and the postposition in the relator. The stem of the deictic determines which postposition will occur.

The noun phrase manifesting the axis is structurally very similar to other noun phrases. One difference is significant,

however. Note that the deictic occurs in each example of the embedded phrase. This deictic is in fact obligatory to the embedded construction. The difference in the obligatory nature of the final determiner tagmeme plus the difference in distribution comprise the two-fold criteria for identifying a syntagmeme so that the embedded noun phrase is an emic pattern that can be represented as N_3 .

F34. $N_3 = + Hd:n \pm Mod:num/aj/poss.pro + Det:dei$

Noun phrase sub-three consists of an obligatory head manifested by a noun, an optional modifier filled by a numeral, an adjective, or a possessive pronoun, and an obligatory determiner filled by a deictic. This deictic is an example of an obligatory subordinate tagmeme mentioned above.

Now observe a further example.

49. asoe -no ig -afuo u
father my this poss.p. hair
the hair of this my father

It is also possible for a modified kinship phrase to manifest the possessor slot of an item-possessor phrase in Barai. This kinship phrase is distinct, however, since a deictic occurs with the head and possession tagmemes. Again, this one internal structural difference plus its external distribution constitute the criteria necessary for identifying a contrastive syntagmeme.

F35. KN₂ = + Hd:kn + Num:-ki/-rafa + Poss:p.m. + Det: dei

That is, a modified kinship phrase sub-two consists of an obligatory head filled by a kinship noun, an optional number tagmeme filled by -ki/-rafa, an obligatory possession slot filled by a set of person markers, and an obligatory determiner filled by a set of deictics.

The Accompaniment Phrase

The accompaniment phrase is also a relator-axis phrase.

F36. accRA = + Axis: $\overline{\text{N}_2}$ + Rel:acc.p

And the formula reads as follows: the accompaniment relator-axis phrase has an obligatory axis slot manifested by a noun phrase sub-two and an obligatory relator slot manifested by an accompaniment postposition. Like the possessive phrase, the noun phrase embedded in the axis has an obligatory deictic. There is concord between this noun phrase and the postposition filling the relator tagmeme. In this instance, however, the concord is between the head of the embedded noun phrase and the postposition and indicates its number and whether it is human or non-human. That is, there are three accompaniment postpositions: -akuma, non-human; -aki, human singular; and -ena, human plural.

50. fu fari fuone ij -aki va
he son his that acc.p. go

He is going with his son.

51. do boeje ij -akuma i-ne
water much that acc.p. eat-imp

Eat (it) with a lot of water.

52. fu e fuone ij -ena va-e
he person his that acc.p. go-past

He went with these his own people.

The Location Phrase

The location phrase is also a relator-axis phrase. Note the following examples.

53. fu juare gam -ia va-e
he garden that loc.p. go-past

He went to that garden.

54. bu ij -ia kari
they that loc.p. sit

They are sitting there.

55. no kofu gum -ia bied-ia-e
we coffee that loc.p. meet-3pl-past

We met them there at those coffee trees

56. bu are nuvuone ig -ia usiae
they house our this loc.p. arrive

They arrived here at our house.

57. bu ij -ia nuj-a
they that loc.p. put-3sg

They put (it) there.

In each case -ia, the locative postposition, occurs as the filler of the relator slot. And the embedded phrase manifesting the axis is again the noun phrase, as in 56 for example, where the noun is followed by a possessive pronoun which is in turn followed by a deictic. But note that 54 and 57 do not follow that pattern. A deictic alone can manifest the axis as well as a noun phrase.

F37. locRA = + Axis:N/dei + Rel:loc.p.

The formula then reads as follows: The locative relator-axis phrase consists of an obligatory axis manifested by a noun phrase or a deictic and an obligatory relator manifested by the locative postposition, -ia. Selectional restrictions limit the head nouns that occur in the embedded noun phrase but considerable overlap is apparent between these and nouns functioning as heads of other modified noun phrases so that it is clear that location nouns do not constitute a closed emic class among themselves.

The Time Phrase

Now observe the following time phrases.

58. na suake uri
I early.morning arise

I got up early in the morning.

59. ve be no mave kana-e
time one we pig kill-past

One time we killed a pig.

60. bu iko dua uru
they first dance(n) dance(v)

First, they dance.

61. nituame fu unava
day.after.tomorrow he go.back

Two days later, he goes back.

62. ve ije fu visi
time that he sick

At that time, he was sick.

63. mu inokobeke bu ij -ia are-kidufuo
night three they that loc.p. leave-dis.fut.

They will leave (it) there for three nights.

The time phrase differs from other phrase level syntagmemes in several respects. First of all, time nouns do constitute a closed emic class, i.e., they occur only in the time phrase and only time nouns manifest the head of this phrase. Then, the only modifiers that occur are numerals.¹⁸ And finally, the deictic is optional and occurs as it does in noun phrases manifesting subject/object tagmemes without a bound postposition. The following formula represents the structure of this syntagmeme.

F38. T = + Hd:tn ± Num:num ± Det:dei

A time phrase is composed of an obligatory head slot filled by a temporal noun, an optional number slot filled by a numeral, and an optional determiner filled by a deictic. In addition to the internal structural differences noted above, the unit is distributed only in the time slot of clause level constructions.

The Nominative Phrase

The nominative phrase is one of the multiple head phrase syntagmemes. It occurs only manifesting the subject tagmeme.

Note the following examples:

64. buki none ige fu -ka irufui
book my this it int. heavy

This book of mine (it) is really heavy.

65. e none ige bu ig -ia kari
person my this they this loc.p. sit

These people of mine (they) are sitting here.

66. Vito fu na kan-ie
Vito he me hit-1st

Vito (he) hit.me.

67. fu -te tavua
it dub. explode

It might explode.

68. fu -me ij -ia mani
he cas. that loc.p stand

He is just standing there.

The mood clitics are phonologically bound to the subject pronoun and do not occur apart from such a pronoun. Multiple-head phrases are either coordinate or appositive depending on whether the referents of the fillers of the head slots are the same or different. In this construction, they are the same. One head is the item slot manifested by a noun phrase (N), and the other is a pronoun phrase (Pro). This modified pronoun phrase, as in 64, 67, and 68, consists of an obligatory head filled by a pronoun and an optional modifier filled by a mood clitic. It can be represented in the following formula.

F39. Pro = + Hd:pro + Mod:mo.

This modified pronoun phrase is then embedded in the nominative phrase.

┌ - ^c - - ┐

F40. Nom = + It:N + App:Pro

That is, the nominative phrase consists of an obligatory item slot manifested by a noun phrase and an obligatory apposition slot manifested by a pronoun phrase. Concord of person and number exists between the head tagmemes of the two filler classes.

Note further that this syntagmeme does not account for 67 above, where the pronoun phrase occurs apart from the noun phrase. The pronoun phrase must then be one of a set of structures manifesting the subject tagmeme on the clause level along with the noun phrase and the above nominative phrase.

F41. Cl = ± S:Nom/N/Pro ±...

This is by no means an exhaustive analysis of the phrase level syntagmemes of Barai, but these structures should be sufficient to provide a base from which to discuss the relations between the tagmemic and transformational models.

The Word Level

According to tagmemic analysis, a word level syntagmeme

consists, at least potentially, of two or more word level tagmemes. Uninflectable forms are simply morphemes by such a definition and not grammatical words. Typically, words are stem-affix strings with rigid linear ordering with tagmemes manifested by small closed classes.

In Barai, affixation is common to verbs, pronouns, deictics, and kinship nouns but relatively uncommon among adjectives, conjunctions, and most nouns. The verb constructions have been discussed along with related clause level constructions since different verb syntagmemes manifesting the predicate slot of clauses are frequently one of their defining structural differences. What at first might appear to be affixes on the deictics have proved to be phonologically bound clitics. Similarly, kinship nouns with three orders of bound morphemes function as phrase level constructions.

Consider now the pronouns. Possessive pronouns fill the modifier slot of certain noun phrase constructions. These pronouns have internal structure themselves.

<u>n-one</u>	<i>my</i>
<u>(a)-one</u>	<i>your(sg)</i>
<u>fu-one</u>	<i>his, hers, its</i>
<u>nuvu-one</u>	<i>our</i>
<u>j-one</u>	<i>your (pl)</i>
<u>bu-one</u>	<i>their</i>

The stems are allomorphs of the same stems that occur without affixes manifesting the subject and object tagmemes.

subj/obj pro allomorph with affix

<u>na</u>	<u>n-</u>
<u>a</u>	<u>∅</u>
<u>fu</u>	<u>fu-</u>
<u>no</u>	<u>nuvu-</u>
<u>ja</u>	<u>j-</u>
<u>bu</u>	<u>bu-</u>

The structure of these possessive pronouns can then be represented by the following rule:

F42. poss.pro = + nu:pro.s. + poss:-one

A possessive pronoun consists of an obligatory nuclear tagmeme manifested by a pronominal stem and an obligatory possession tagmeme manifested by the possessive marker, -one.

Similarly, an accompaniment pronoun can manifest the accompaniment tagmeme on the clause level. The different subordinate tagmeme plus a difference in the external distribution of the construction are its defining criteria.

F43. acc.pro = + nu:pro.s. + acc:-obiki/-ena

The accompaniment pronoun consists of an obligatory nuclear slot manifested by a pronominal stem and an obligatory accompaniment slot manifested by an accompaniment marker showing concord

of number with the pronominal stem.

These same stems combine with other affixes and patterns of distribution to form contrastive word constructions including the benefactive, emphatic, exclusive, reflexive and intensive pronouns.

The reader is referred to "Barai Grammar Highlights"¹⁹ for other Barai word level constructions.

The Sentence Level

At the sentence level of the grammatical hierarchy, a syntagme may be a single clause, a patterned combination of clauses, or even a clause fragment in which case it is typically some kind of phrase structure dependent in some sense on the context. There is more grammatical independence at the sentence level and, frequently, there is more evidence of closure from such elements as introductory conjunctions and intonation patterns.

Dual structural difference continues to be the criterion for identifying the relevant sentence level syntagmes. Higher up the hierarchy however, the constructions become more varied and the focus of the points of contrast that define the patterns changes somewhat. Absence versus presence of a tagme, obligatory versus optional, and transform potential continue to be relevant criteria for contrast at the sentence level. Also relevant, however, are the distribution of intonation contours, of conjunctions and particles, and of functionally ambivalent nouns (i.e., identical nouns or noun phrases functioning

differently in two consecutive clauses). And particularly relevant at the sentence level are 'patterned dependencies' between the component clauses, i.e., any sequence restriction between features of the internal structure of constructions filling particular sentence level slots. For example, a common patterned dependency is a restriction of the tenses permitted in the predicates of the various clauses of a sentential construction. Other patterned dependencies include restrictions on the type or linear ordering of clause syntagmemes that make up a sentence construction. Whether the referent of the actors is the same or different in a sequence of clauses is another potential patterned dependency. Another is whether the verb in a sequence of clauses is the same or different. The external distribution of sentence syntagmemes is relevant to the same degree as it is at other levels, but will not enter into this preliminary sketch since paragraph analysis of Barai is still incomplete.

No attempt will be made to define explicitly all the sentential syntagmemes for this language. Rather, it is hoped that a brief sketch of the more apparent constructions will provide a basis for some initial insight into how the two models relate to the sentence structure of Barai.

Certain peripheral tagmemes are common to virtually all the sentence constructions.²⁰ Pre-nuclear to the sentence are conjunctions, exclamations, vocatives, and occasionally a sentence topic of noun phrase structure. Post-nuclear elements include an emphatic morpheme and occasionally, an after-thought, again of noun phrase structure. Intonation contours do not define

contrastive sentence types in Barai. For each sentence pattern discussed below, a tagmemic formula will be given and, in addition, a brief summary of its contrastive features using the above criteria.

The Simple Sentence

The simple sentence consists of a single independent clause. But, it is distinguished from a clause by the optional peripheral tagmemes.

F44. SimS = + Intro:voc/excl/conj/N + S.Base:indCl + Clos:emp/N

The simple sentence consists of an optional introductory tagmeme manifested by a vocative, an exclamation, a conjunction, or a noun phrase, followed by a basic obligatory sentential base manifested by any independent clause, and an optional closure tagmeme manifested by an emphatic marker or a noun phrase.

69. ijafuo na naebe g-a-e
therefore I not see-3sg-past

Therefore, I didn't see him.

70. na moni m-a-e kanae
I money give-3sg-past indeed

I gave him money, indeed!

The Reason Sentence

F45. $\text{reaS} = + \text{Cause:depCl}^{n=1-2} + \text{Effect:iCl}$

The reason sentence consists of an obligatory cause tagmeme manifested by a dependent clause and an obligatory effect tagmeme manifested by an independent clause. Two causal bases may occur. Patterned dependencies require that the conjunctive marker, -do, must manifest the relational tagmeme of the dependent verb and that future tense may not occur in the initial base.

71. [difuri va-do] no biefuri
fast go-(because) we fall
Because we go fast, we fall.

72. [na i me-do] aem-ie
I work do-(because) tired-1sg
Because I am working, I am tired.

The Result Sentence

F46. $\text{resS} = + \text{Reason:depCl}^{n=1-3} + \text{Link:ijadufuo} + \text{Consequence:iCl}$

The result sentence consists of an obligatory reason base manifested by one to three dependent clauses, an optional link manifested by the conjunction, ijadufuo, and an obligatory consequence base manifested by an independent clause. A patterned

dependency requires that a consequence conjunctive marker occur in the dependent verb manifesting the predicate of the consequence base if the optional link does not occur. The two may also co-occur however. The conjunction manifesting the link tagmeme optionally permutes to follow the subject in the following clause manifesting the result base.

73. [i ige inauri-dufuo] no ijadufuo kuar-ia
work this advance-(purpose) we therefore talk-3pl

We talk to them so that this work might advance.

74. [no ij -ia are-iva] ijadufuo no unava
we that loc.p. leave-dep.past therefore we return

We left from there so we are going back.

The Statement/Analysis Sentence

F47. s/aS = + Statement:depCl + Analysis:ije/ba

The statement-analysis sentence consists of an obligatory statement base filled by a dependent clause and an obligatory analysis base filled by a clause fragment, either ije, *that*, or ba, a negative. Patterned dependencies prevent any other tagmemes from occurring in the analysis base.

75. [na a mad-a-vo] ba
I you be.angry.with-2sg-d.pre. no

I am angry with you, indeed not.

76. [fu tu dorasi vaj-a-eva] ije
he two dollars give-3sg-d.past that
He gave him two dollars, that (he did).

The Reason/Imperative Sentence

F48. rea/impS = + Reason:depCl + Command:indCl

The reason/imperative sentence consists of an obligatory reason base manifested by a dependent clause and an obligatory command base manifested by an independent clause. The patterned dependencies require the command base to be in the imperative mood and the relational tagmeme of the verb in the reason base to be -no, the reason-command conjunctive marker that is definitive of this syntagmeme.

77. [ise-d-ie-mo-no] are-ne
bad-cause-1sg-d.pre.-rea.imp stop-imp
Since it displeases me, stop it.
78. [ve mu-ima-no] no nao-ne
time be.dark-d.past-rea.imp we sleep-imp.
Since night has come, we must sleep.

The Caution Sentence

F49. cauS = + Result:depClⁿ⁼¹⁻³ + Command:indCl

The caution sentence consists of an obligatory result base manifested by one to three dependent clauses and an obligatory command base manifested by an independent clause. Patterned dependencies again require the imperative mood in the clause manifesting the command base. Also, no negative may occur in the clause expounding the result base and its verb must be in a non-past tense.

79. [mave sak-a-mo] g-a-ne
pig bite-2sg-d.pre. look-2sg-imp
Look out lest the pig bite you.

80. [fu davane bijunija-kuve-no] gaememare-ne
he ocean fall-inc-d.pre. ignore -imp
. Ignore him lest he fall into the ocean.

The Continuous Sequence Sentence

F50. cont.seq.S = + Continuous:meClⁿ⁼¹⁻³ ± Cessation:meClⁿ⁼¹⁻³
+ Subsequent:iCl

The continuous sequence sentence consists of an obligatory continuous base filled by one to three medial clauses followed by an optional cessation base filled by one to three medial clauses which is in turn followed by an obligatory subsequent base that is manifested by an independent clause. Various patterned dependencies are also definitive of the structure. The

cessation base is manifested by a very formulaic clause that permits only the location and predicate tagmemes. The only location phrase that occurs is ij-ia. And, furi, *finish* and areme, an irregular form of are, *stop* are the only verb stems expounding the predicate. The continuous sequence marker, -ma, must fill the time/sequence slot of the verb in the clause manifesting the continuous base and no agreement marker is permitted. Conversely, the agreement marker may occur on the verb in the clause manifesting the cessation base, but no time/sequence marker is permitted. There is also a constraint on the repetition of the first two bases. The continuous base may be repeated in nearly identical form up to three times, and if the cessation base occurs, the two are alternately repeated the same number of times.

81. bu ruo-ma are nuvuone ig -ia usiae
they come-cont.seq house our this loc.p. arrive
They kept coming until they arrived at our house.

82. rotire nij-a-ma areme rotire
underneath put-3sg-cont.seq stop underneath

nij-a-ma areme unava
put-3sg-cont.seq. stop go.back

They kept putting it underneath and stopped and they kept on putting it underneath and then stopped and went back.

The Past Sequence Sentence

┌-----c-----┐

F51. p.seqS = + Prior:me.Cl + Subsequent:iCl

The past sequence sentence consists of an obligatory prior action base manifested by a medial clause and an obligatory subsequent action base manifested by an independent clause. Patterned dependency restrictions require that the time/sequence tagmeme of the verb in the clause manifesting the prior action base be a past sequence marker and that only the past tense marker is permitted in the time slot of the verb in the clause manifesting the subsequent action base. The concord symbol 'c' represents concord of tense between the two bases.

83. fu ig -ia keke-mo na-si ku-a
he this loc.p. arrive-past/seq I-alt speak-3sg
When he arrived here, then I spoke to him next.

84. fu bae-mo-ga e ije bu abe-i
it ripe-past/seq-ds person that they take-past
When it was ripe, they took it.

The Future Sequence Sentence

┌-----c-----┐

F52. fut.seq.S = + Prior:me.Cl + Subsequent:iCl

The future sequence sentence is also composed of an obligatory prior action base filled by a medial clause and an obligatory subsequent action base filled by an independent clause. The differences come in the dependency restrictions. The relational tagmeme in the verb of the clause manifesting the prior action base must be filled by a future sequence marker and only a future tense marker is permitted in the time tagmeme of the verb construction in the clause manifesting the subsequent action base. In addition, the agreement tagmeme is permuted to precede the time/sequence tagmeme in the verb construction of the clause expounding the prior action base, whereas it normally follows that tagmeme. The concord symbol 'c' represents concord of tense between the two bases.

85. bu ije furi-ga-kuva na vua-ke
they that finish-d.s.-fut.seq. *I come-fut*
When they finish that, I will come.

86. bu isere-kuva na matamata bija-ke
they do.poorly-fut.seq *I new choose-fut*
When they do poorly, I will choose new ones.

The Delayed Sequence Sentence

- ┌-----c-----┐
- F53. del.seqS = + Prior:me.Cl + Subsequent:iCl

The delayed sequence sentence consists of an obligatory prior action base manifested by a medial clause and an obligatory subsequent action base manifested by an independent clause. Here the patterned dependency restrictions require a time tagmeme in the clause manifesting the subsequent action base. And the relational tagmeme of the verb in the clause expounding the prior action base must be filled by one of the delayed sequence markers. Again, 'c' represents concord of tense between the two bases.

87. no gam -ia va-eva suake unarua-e
we that loc.p. go-p.del.seq early.morning return-past
We went there and then in the morning we returned.

88. 'bu va-ekiro isuame juae me-ke
they go-fut.del.seq tomorrow garden make-fut
They will go and then tomorrow they will make a garden.

89. fu boro abe va ukua gam-ia mani
he ball take go middle that-loc.p. stand
He takes the ball and goes and stands there in the middle.

The Parallel Sentence

| --- ^c --- |

F55. parS = + Introduction:iCl + Parallel:iClⁿ⁼¹⁻⁵

The parallel sentence consists of an obligatory introduction base manifested by an independent clause and an obligatory

parallel base manifested by one to five independent clauses. The concord symbol 'c' represents concord of structure between the verbs of the various clauses, i.e., the same type of morphology occurs on each of the verbs when the sentence occurs independently and when it is embedded as well. Therefore, if the parallel sentence is embedded in the base of another sentence that is manifested by a dependent clause, it is not only the final verb that adopts the dependent verb morphology, but each of the verbs because of this concord of structure throughout the sentence. Unlike the process sentence, there are no dependency restrictions on the occurrence of any clause level tagmemes in any of the bases. But while there is no restriction on occurrence, the subject tagmemes that do occur must all have the same referent.

90. e nuvuone gafe bu kurisimase fatire-ke boro
person our that they Christmas have.a.party-fut. ball

kana-ke dua uru-ke ire bino ijere-ke
hit-fut. dance dance(v)-fut thing other do.that-fut.

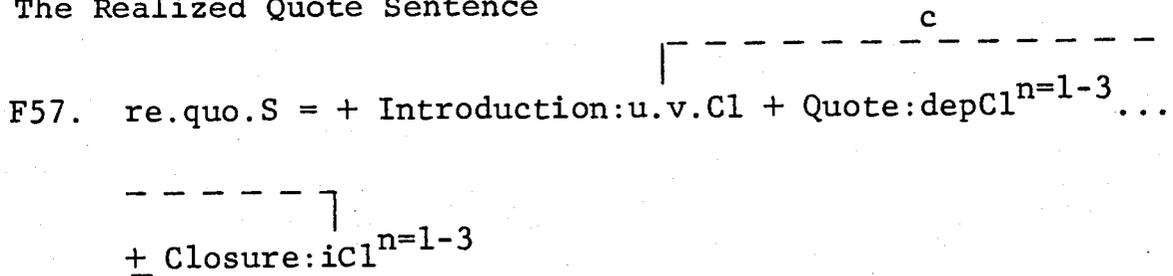
These people of ours will have a party at Christmas and will play ball and will dance and will do other things (like) these.

91. fada ro fada keke vame maje nijas-uo
priest come priest arrive way good show-1pl

The priest comes, the priest arrives, and he shows us a good way.

She intends to come, (she) intends to come here to her brothers.

The Realized Quote Sentence



The realized quote sentence consists of an obligatory introduction base filled by a clause with an uninflected verb, an obligatory quote base filled by one to three dependent clauses, and an optional closure base filled by one to three independent clauses. The concord symbol 'c' represents stem agreement between the two verbs. Each closure base must follow a quote base, i.e., no closure bases may follow one another in succession. There are other dependency restrictions as well. The relational tagmeme of the verb in the clause manifesting the quote base, if filled, must be filled with -no, the realized quote marker. Except for the person markers, the verb stems are uninflected in the clause manifesting the introduction base and only the predicate tagmeme is permitted in the clause manifesting the closure base. Identical verb stems from a limited class of verbs of saying occur in these two clauses. Tense is restricted to past or present in the verb of the clause filling the final closure base.

94. fu ku-a [na vua-ko-no] ku-a-e
he say-3sg I come-d.fut-quo say-3sg-past
He said, "I will come," (he said).

95. kumete bu k-ia [vame ije abe-no-no] k-ia-e
officer they say-3pl way that take-imp-quo say-3pl-past

The officers said to them, "Accept that method", (they said to them).

The Unrealized Quote Sentence

-----^c-----

F58. u. quo. S = + Introduction: iCl + Quote: depClⁿ⁼¹⁻² ...

 + Closure: iCl

The unrealized quote sentence consists of an obligatory introduction slot filled by an independent clause,²² an obligatory quote slot filled by one or two dependent clauses, and an optional closure slot filled by an independent clause. Only one clause ever manifests the closure base. No filler occurs in the relational tagmeme of the verb in the clause expounding the quote base. Rather, a future tense marker occurs on the otherwise uninflected stem of the verb in the clause expounding the introduction base. And again in the clause expounding the closure base, no tagmemes other than the predicate are permitted. The only tense marker permitted in the verb manifesting that predicate is the future tense marker.

96. fu ku-a-ko [na ig-ia mani-jo] ku-a
he say-3sg-fut I this-loc.p. stand-d.pre. say-3sg

He will say to him, "I am standing here", (he will) say to him.

97. e ije bu kume-ko [gavene buone fu ruo-vo]
person that they call.out-fut. leader their he come-d.pre.

kume

call.out

Those people will call out, "Their leader is coming," (they will) call out.

The Past Conditional Sentence

F59. past/con.S = + Protasis:meCl + Apodosis:iCl

The past conditional sentence consists of an obligatory protasis base manifested by a medial clause and an obligatory apodosis base manifested by an independent clause. The time/sequence tagmeme of the medial verb in the clause expounding the protasis must be one of the past conditional markers. And the verb of the clause manifesting the apodosis may take only past or present tense markers.

98. no kuar-ia-vone bu-ka faememare-i
we say-3pl-past/con they-int. ignore-past

Whenever we talked to them, they certainly ignored it.

99. bu dua uru-vone e ije bu orore
they dance(n) dance(v)-past/con. person that they cheer

Whenever they danced, those people cheered.

Future Conditional Sentence

F60. fut.con.S = + Protasis:meCl + Apodosis:iCl

The future conditional sentence also consists of an obligatory protasis base manifested by a medial clause and an obligatory apodosis manifested by an independent clause. The time/sequence tagmeme of the medial verb construction in the clause manifesting the protasis must take one of the future conditional markers. The optional agreement tagmeme in that same construction is permuted to precede the time/sequence tagmeme in this pattern. The tense tagmeme in the verb of the clause manifesting the apodosis must be past or future.

100. a maeke mani-kumane fu naba kume-ke
you quietly stand-fut.cond. he number call-fut
If you stand quietly, he will call out the number.

101. ja izege ke-kuvane vame maje bu ije nijas-u-e
you how do-fut.cond. way good they that show-1pl-past
However you do (it), they still showed us that good way.

The Contrafactual Conditional Sentence

F61. cont.con.S = + Protasis:meCl + Apodosis:iCl

Similarly the contrafactual conditional sentence is composed

of an obligatory protasis filled by a medial clause and an obligatory apodosis filled by an independent clause. In this case the dependency restrictions require the time/sequence tag-meme to be filled by the contrafactual marker, -bitie, in the verb of the clause manifesting the protasis base. The optional tense morpheme of the verb in the independent clause manifesting the apodosis must be a future tense when it occurs.

102. a ig -ia fi-bitie a g-a-ke
you this loc.p. sit-contr you see-3sg-fut

If you had sat here, you would have seen it.

103. ivia suake ve mare-bitie na rua-ke
today early.morning time be.good-contr I come-fut

If the weather had been good early this morning, I would have come.

The Imperative Conditional Sentence

F62. imp.cond.S = + Protasis:meCl + Apodosis:iCl

A fourth conditional sentence also differs only in the dependency restrictions as it likewise consists of an obligatory protasis manifested by a medial clause and an obligatory apodosis manifested by an independent clause. Here, the verb construction of the clause filling the protasis must manifest a future/imperative marker in its relational tagmeme. The agreement tagmeme does not occur in this verb construction. And the

apodosis optionally takes either the imperative mood clitic in its subject tagmeme or an imperative marker in the verb construction manifesting its predicate.

104. fu va-kumaneja ni ig -ia ro-ne
he go-fut.imp.m. imp. this loc.p come-imp
If he is going to go, you must come here.

105. a do rue-kumaneja ni sofu ojuve-ne
you water wash-fut.imp.m. imp. soap buy-imp
If you are going to wash, you must buy soap.

The Coordinate Sentence

$$\begin{array}{c} \text{c} \\ \text{-----} \\ \text{F63. coS} = + \text{Coordinate}_1 : \text{meCl}^{n=1-6} \text{ + Link: } \underline{\text{areme}}^{n=1-6} \\ \text{-----} \\ \text{+ Coordinate}_2 : \text{iCl} \end{array}$$

The coordinate sentence consists of an obligatory coordinate₁ base filled by one to six medial clauses, an optional link filled by the conjunction, areme, and an obligatory coordinate₂ base filled by an independent clause. The concord symbol 'c' represents concord between the agreement tagmeme in the verb of a clause manifesting the coordinate₁ base (or in the link) and the subject tagmeme in the following clause. The link base may follow any coordinate₁ base but may not be repeated without such an intervening base. The link optionally takes the same set of

agreement markers as occurs with the verb in the clause manifesting the coordinate₁ base. These markers may occur in either position but not in both positions simultaneously. A further restriction prohibits the occurrence of the time/sequence morpheme in the verb of clauses manifesting the coordinate₁ base.

106. fu kamui one abe-na areme juvuave one abe-i
he bag your take-s.s. and spear your take-past
He took your string-bag and he took your spear.

107. bu kari-ke bu-si kan-a
they sit-ds they-alt. hit-3sg
They sit and they (different) hit it.

108. bu vaj-ia areme-ga bu ke-na are buone rua-e
they give-3pl and-d.s. they take-s.s. house their come-past
They gave them to them and then they (different) took them and came to their homes.

The Simultaneous Sentence

$$F64. \text{ simuS} = + \text{Action}_1 : \text{meCl}^{n=1-7} + \text{Action}_2 : \text{iCl}$$

The simultaneous sentence consists of an obligatory action₁ base manifested by one to seven medial clauses and an obligatory action₂ base manifested by an independent clause. The concord

* symbol 'c' represents concord between the time/sequence tagmeme in the verb of the clause manifesting the action₁ base and the subject tagmeme of the clause expounding the action₂ base. The simultaneous marker, -kinu, manifests the time/sequence tagmeme when the following subject referent is the same and -ko(ga) manifests that tagmeme when the following subject is different. This dependency restriction holds whether that subject tagmeme is manifesting an action₂ base or an action₁ base. One of the two simultaneous markers must occur in each construction manifesting an action₁ base.

109. bu rua-ko Moresi fu are fuone ij -ia
they come-sim(ds) Mores he house his that loc.p.

va-ko na ig -ia ruo
go-sim(ds) I this loc.p. come

While they were coming and Mores was going to his house, I was coming here.

110. bu ire ije m-ia-ko bu ijene i-kinu
they food that give-3pl-sim.(ds) they that eat-sim (ss)

dua uru
dance (n) dance (v)

While they were giving them that food and while they (different) were eating that food, they (the latter) were dancing.

The Alternative Sentence

F65. altS = + Statement:iCl + Link:ro/oⁿ⁼¹⁻³ + Alternative:iClⁿ⁼¹⁻³

The alternative sentence consists of an obligatory statement base manifested by an independent clause, an optional link manifested by one to three alternative conjunctions, and an obligatory alternative base manifested by one to three independent clauses. Dependency restrictions require that a base must follow each occurrence of an alternative link. The alternative mood marker, bite, optionally occurs in any clause of any base and optionally preposes to the beginning of the clause. Both the alternative conjunction and the alternative mood marker are optional but one must occur.

111. fu bite mare-ke bite isere-ke
it alt. be.good-fut alt. be.bad-fut

Either it will be good or it will be bad.

112. bu -te gam -ia kaukura rere-noe bite bu kaukura
they dub. that loc.p. work hunt-dur. alt. they work

abe-i
~~get-past~~

They might be looking for work there or they got work.

Many of these sentences embed into the various bases of other of the sentence patterns. Restrictions on this kind of criss-cross embedding are discussed in "Barai Sentence Structure and Embedding"²³ which gives additional emic sentence patterns as well as further examples of those patterns discussed above.

II. The Transformational Model

Among the schools that have developed within transformational-generative theory, the lexicalist position is the framework adopted here. By this view, syntactic behavior is not predictable from semantic primitives. Rather, the correlations between syntax and semantics are held to be more clearly stateable by syntactic structures.

It is the syntactic component of the model that is in focus for this comparison. Emonds gives a concise statement of the fundamental structure of this component.

"Part of the syntactic component is a set of *phrase structure* rules. A phrase structure rule consists of a symbol A on its *left-hand side* and a sequence of symbol B...C on its *right-hand side*.

"These rules define a set of formal objects called *phrase-markers*, which can be diagrammatically represented as *trees*. A partial tree can be constructed (graphically) from a phrase structure rule R by writing its left-hand symbol A over its right-hand symbols B...C, and connecting A to each of B,...,C by lines. A is then said to be *expanded* as B...C by R. A full tree is then constructed by expanding in turn each of B,..., C according to the phrase structure rules, and subsequently expanding the results of this until *pre-terminal symbols* are reached. Pre-terminal symbols are defined as those which do not appear on the left-hand side of phrase structure rules. To complete the tree, a *terminal element*, chosen from the lexicon, is placed under each pre-terminal element. The terminal elements are lexical entries of *semantic*, *phonological*, and *syntactic* features. The lexicon and the phrase structure rules together comprise the *base*.

"The trees defined or *generated* by the base are called *deep structures*. They are subject to a linearly ordered series of mappings called *transformations*, each of which maps input trees which satisfy its *structural description* into output trees according to the instructions in the transformation's *structural change*. The trees which result from applying in order to

the deep structures all the transformations whose structural descriptions are satisfied, are the surface structures...

"The branch points in the trees are nodes, whose labels are given by the phrase structure rules. Node A (*immediately*) dominates node B if it appears (*immediately*) over B in the path from B to the *highest* node in the tree, called the root of the tree. A string of lexical entries (*morphemes*) which is dominated by a node labeled A (more briefly, dominated by A) when A dominates no other lexical entries, is a *constituent* of type A: i.e., it is an A."²⁴

A. Form Classes and the Phrase Structure Rules

In a transformational grammar the various form classes are abstractions which speakers of the language 'know' and hence it is a task of the theory to produce a model that characterizes these abstractions.

However, it is not an easy task to try to characterize them via a practical definition or a set of formal characteristics, as numerous linguists have discovered. And yet there is little difficulty involved in recognizing them. Jespersen pointed this out back in 1933 in his *Essentials of English Grammar*.

"In dealing with linguistic subjects it is necessary to have names for the various classes into which words fall naturally, and which are generally, but not very felicitously, called "parts of speech". It is practically impossible to give an exact and exhaustive definition of these classes; nevertheless, the classification itself rarely offers occasion for doubt..."²⁵

Rather than attempting a set of defining features for each such abstraction, a transformational grammar characterizes these various form classes by a set of co-occurrence relations.

O'Neil builds on this notion when he points out that the main problem with defining parts of speech has been the insistence on building from small to large when in fact, it is only as we try to understand the 'sentence universe' properly that the parts of speech will take on any meaningful definition. That is, the parts have their greatest significance in the way they combine into larger and larger units. It then becomes an important consequence of the phrase structure rules that they end up defining the various parts of speech.

"A definition should however follow from the carefully built connections that carry us from the universe to the entity, not from the entity to the universe: from sentences to the parts of speech, not from the parts of speech to sentences. In botany, for example, our understanding of the abstraction *tree* (assuming for the moment that *tree* is a technical term akin to noun) follows from the botanist's attempt to understand the plant universe properly. The botanist certainly would not define a tree merely by saying it was a maple, a willow, or an oak, or that it is something found on mountainsides and along the edges of streams. Instead he would, beginning with the highest, most primary division of the plant universe into phyla, specify the class, the order, the family, and so on, in which trees would be found. *Tree* would thus be defined by the higher level classes to which it belongs, and we would expect all trees to share at least the defining characteristics of *trees*. But we would also recognize that *tree* is just another abstract category reached on our journey from the large obstruction *plant universe* to the particular maple that we are tapping for syrup. Between the category *tree* and any particular maple there would exist intermediate abstractions like *deciduous tree*, *hardwood tree*, and *maple*.

"Ultimate sentence constituents must be defined in just this way, moving from the abstract level *sentence* down to the individual part of speech to the sub-class to the individual word."²⁶

The definition of the form classes is thus dependent on

the phrase structure rules. But the fundamental importance of these phrase structure rules is much more than defining the form-classes. They capture the more basic structures that lie behind the actual sentences that are used. That is, there is an elemental structure represented by the phrase structure rules from which the multiplicity of actually occurring sentences can be derived. The phrase structure rules, in conjunction with the transformational rules, generate all (and only) the actually occurring sentences and these phrase structure rules must assign to each its structure as well.

Any transformational grammar of Barai, however limited, should then begin with the phrase structure rules, moving from the whole to the part, generating the underlying structures, and in the process, implicitly defining the parts of speech by their co-occurrence relations in the larger structure.

In proposing the phrase structure rules, each hypothesis will be tested by what takes place in the transformational processes of the language. A correspondence between the proposed rules and the transformational processes is considered supporting evidence for establishing the said phrase structure rules. Consequently, reference will be made to various transformations during the discussion of the proposed rules although the transformations themselves will be handled in detail at a later point.

The starting point, or highest node, for most transformational grammars is S, the sentence.

The Sentence

Consider the following Barai sentences:

1. Vito fu miane ifaje
Vito he fire make
Vito is making a fire.

2. fireni fu Itokama gafia ari
airplane it Itokama there descend
An airplane landed over there at Itokama.

3. e none no-me igia kari
people my we-cas. here stay
All my people are just staying here.

4. e boeje na gie
people many me see
Many people saw me.

5. e ireobo gafe fu-ka zie
person big that he-int. be angry
That big person is angry!

6. eove gafe fu izege ajia
old.man that he how go.up
How will that old man go up?

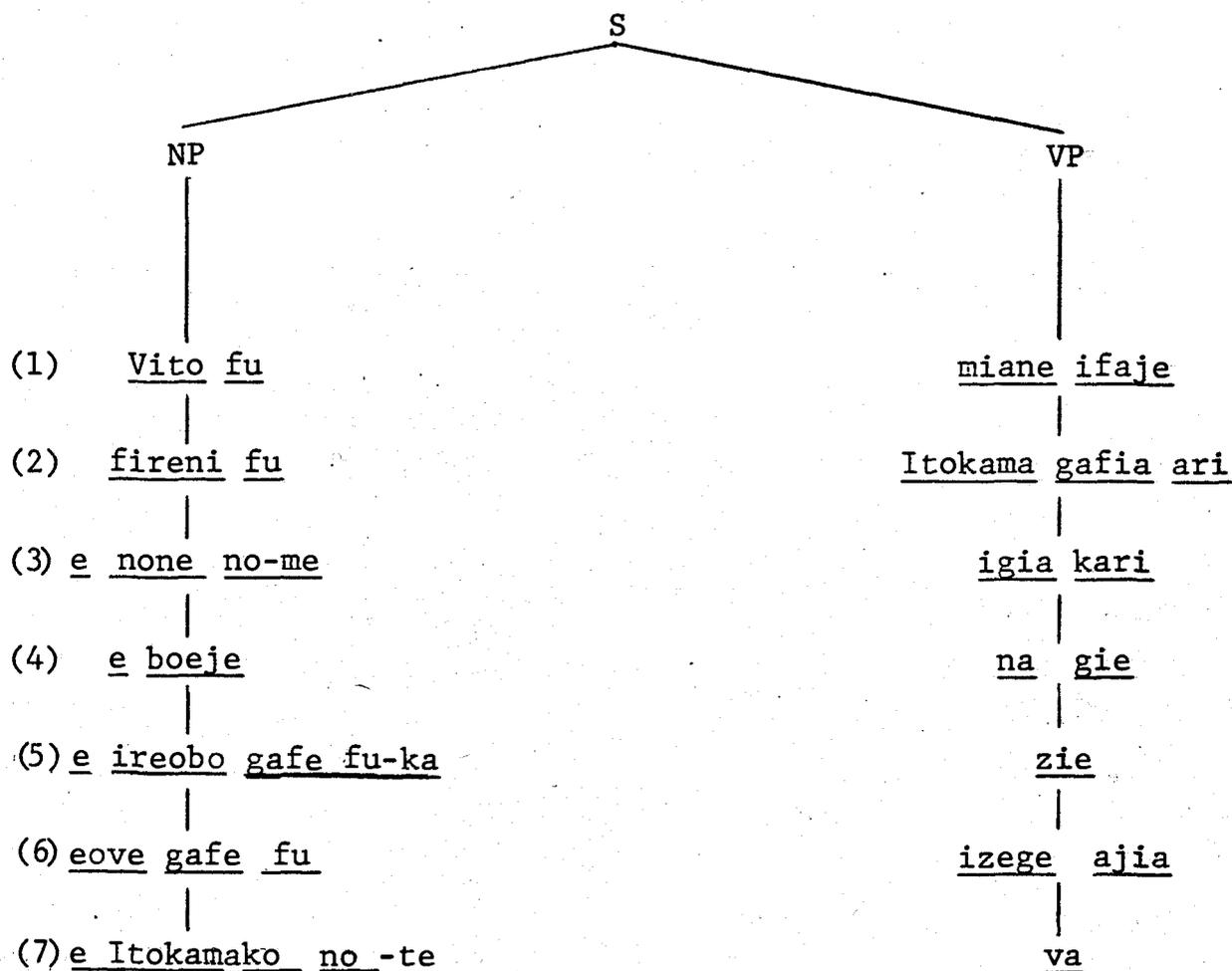
7. e Itokamako no-te isuame va
people from.Itokama we-dub. tomorrow go

We Itokama people might go tomorrow.

In Barai sentences, a natural break becomes apparent between two major divisions. The division is between an expanded noun phrase and the remainder of the sentence and might be represented by the following rule.

Rule 1: S → NP + VP

Such a rule can be paraphrased to read as follows:
Sentence is rewritten as a noun phrase plus a verb phrase. Or alternatively, the sentence consists of a noun phrase and a following verb phrase. The labels themselves are somewhat arbitrary but have commonly been selected to reflect something of the internal structure of the node where possible. The same rule can be graphically illustrated by means of a tree diagram.



Support for this division and hence the node status of both NP and VP is given independently under the discussion of each of these structures.

The Expanded Noun Phrase

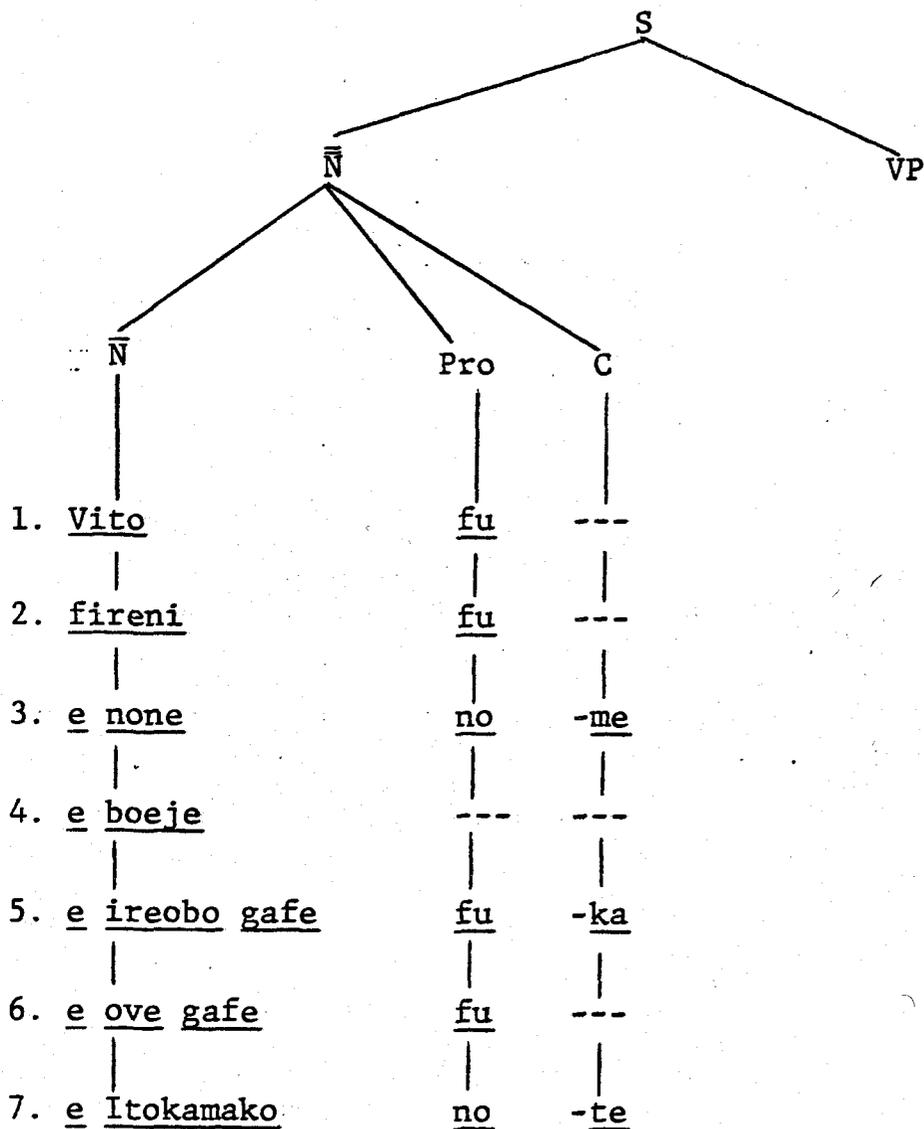
Refer again to the NP's of 1 - 7 listed above. Internally this node consists of three major structures. The first is a more abbreviated nominal structure that occurs elsewhere, as in the verb phrase. This unit is obligatory. The second is a set of pronouns with the feature specification [+pro, + noun] that

is related to the form class of nouns which have the feature specification $[+noun, \pm pro]$. (The morphology of nouns is similar to that of pronouns and in some cases they are identical.) The occurrence of the pronoun is optional and following it is another optional element, the mood clitic. In other words, a unit composed of an obligatory nominal phrase, an optional pronoun, and an optional clitic precedes the verb phrase of each S. To distinguish between this unit and the more abbreviated nominal phrase that is internal to this structure and occurs elsewhere, the larger unit will notationally be designated $\bar{\bar{N}}$ and the structure internal to $\bar{\bar{N}}$ will be designated \bar{N} .

$\bar{\bar{N}}$ can then be represented by the following rule:

Rule 2: $\bar{\bar{N}} \rightarrow \bar{N} (Pro) (C)$

This rule can be translated as follows: $\bar{\bar{N}}$ consists of a noun phrase (\bar{N}) followed by an optional pronoun (Pro) which is in turn followed by an optional clitic (C). The tree diagram below graphically portrays this structure.



One source of evidence for the node status of \bar{N} comes from a more complex structure we might call the process construction. The process construction is a string of three or four S's conjoined without any overt conjunctions that deletes \bar{N} in all but the first S. The following are examples of that construction. Brackets set off the various S's.

8. [e ije fu boro abe] [va ukua gamia mani]
 person this he ball take *go middle there stands*

This person takes the ball and walks over and stands there in the middle.

9. [taobota fu maje abe] [va] [teba garia nija]
white man he good.one take go table there put

The white man takes a good one and goes and puts it there on the table.

10. [meba ja dabe] [tarare ijia aru] [usiae]
members you take bush there go.in arrive

You members get up and head into the bush and (finally) arrive (at your destination).

The Abbreviated Noun Phrase

The abbreviated noun phrase, \bar{N} , may be dominated by any one of several phrase nodes as further discussion will reveal (viz., \bar{N} , \bar{V} , \bar{V} , or \bar{P}). Its internal structure is revealed by the following examples. Again, \bar{N} 's occur within the brackets.

11. [na] [sime iseki ije] m-a-e
I knife small that gave-him-past

I gave him that small knife.

12. [barasiki ije] fu [e ije] -afuo [amu]
old.woman that she person that poss.p. aunt

That old woman was his aunt.

13. [fu] [ume game] kanae
he bird that killed

He killed that bird.

14. [fu] [ajue bae] abei
he banana ripe took

He took a ripe banana.

15. [e umazie] bu [e gufe] kanaie
people Umazie they people those kill.them

The Umazie people killed those people.

16. [e nuvuone gafe] bu [nurie] me
people our those they brush clear

Those people of ours are clearing the brush.

17. [e ireobo gare] -aduo [mave] fu baronei
person large that possessive pig he died

That big man's pig died.

Notice that some but not all pronouns are dominated by \bar{N} . The obligatory element N of \bar{N} may be any lexical item with the feature specification $[+ \text{noun}, \pm \text{pro}]$. Pro, an optional element dominated by \bar{N} , may be any lexical item with the feature

specification [+ pro, + noun]. This distinction between noun and pronoun form classes explains why not all nouns, but only those with both features, i.e., [+ pro] and [+ noun], occur following the \bar{N} dominated by $\bar{\bar{N}}$. Thus, this formalization distinguishes the form classes by different sets of co-occurrence relations and yet specifies the close relationship of the two.

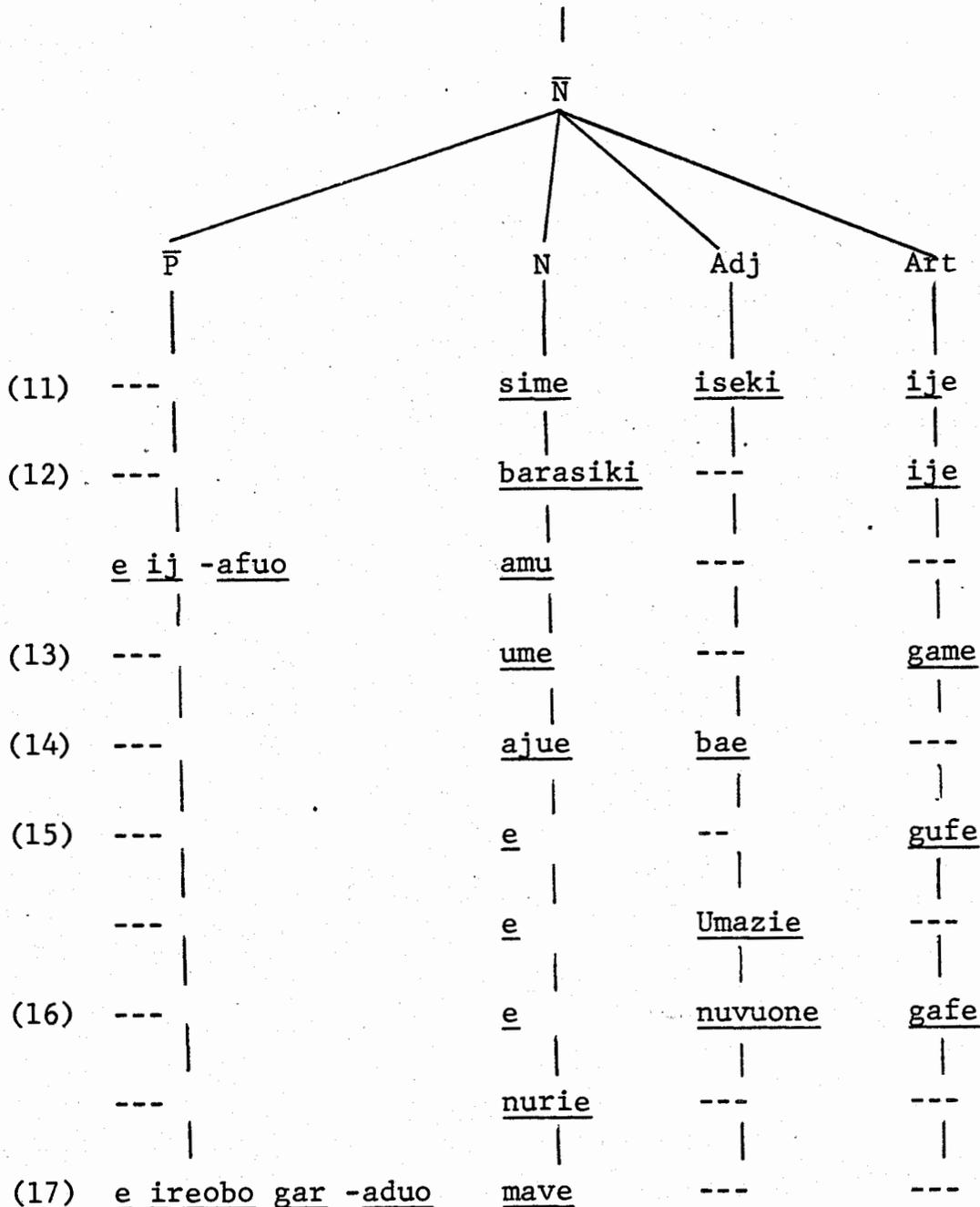
When the adjectives and articles do occur along with the obligatory N, the order is consistent; first the noun, then the modifier, and finally the article. But the picture is complicated somewhat by possession which is realized via two related structures. Sentence 12 shows a possessive relationship between a noun, amu, and an entire postpositional phrase which precedes that noun, e ije -afuo.

Sentence 16 illustrates a possessive relationship between a noun with the feature specification [+noun, -pro] and a noun with the feature specifications [+ noun, +pro] with the latter and its possessive affix occurring in the position of the modifier following the noun. Further examples show a transformational relationship between the two structures as noted below. For our purpose here, however, this transformational relationship is evidence that this possessive postpositional phrase is in fact part of the structure of the noun phrase itself.

Therefore, the structure of the noun phrase can be represented by the following rule.

Rule 5: $\bar{N} \rightarrow (\bar{P}) \quad N \quad (\text{Adj}) \quad (\text{Art})$

Rule 5 reads as follows: The \bar{N} consists of an optional postpositional phrase (\bar{P}), followed by an obligatory noun (N), an optional adjective (Adj), and an optional article (Art). This structure is illustrated in the following tree diagram.



The object preposing rule is good supporting evidence for

- the hypothesis that \bar{N} is a node of Barai phrase structure.

The Verb Phrase

The following sentences introduce the general range of structures that are potential to the verb phrase. The brackets in these examples are used to indicate the verb phrase.

18. no [juae me]
we garden work
We are making a garden.
19. fu [ize kuar-uo]
he what talk-2pl
What is he telling us?
20. fu [no kuar-uo]
he us talk-2pl
He is talking to us.
21. meba ja [tarare ij -ia aru-i]
citizens you jungle that loc.p. enter-past
You citizens went into the bush.
22. [gue] no - ne [kine ije vaj-ia-e]
some we-ind. spirit.leader that gave-3pl-past
We gave some to those spirit leaders.

23. kumete no [isema narir-ia]
officers we poorly supervise-3pl

We officers supervise them poorly.

24. [ig -ia] ja [kaukura ige defija]
this-loc.p. you work this do

You are doing this work here.

25. no [va]
we go

We are going.

Three internal structures are made apparent by the fact that the second of the three structures can be preposed under certain conditions. These three elements are a noun phrase (\bar{N}) that functions as the direct object, a postpositional phrase (P), and still another embedded structure whose obligatory element is the verb. This abbreviated verb phrase will be represented by the symbol \bar{V} and the larger unit that dominates it will be represented by the symbol $\bar{\bar{V}}$. The elements of the $\bar{\bar{V}}$'s in examples 18 - 25 are then as follows:

	\bar{N}	\bar{P}	\bar{V}
(18)	<u>juae</u>	---	<u>me</u>
(19)	<u>ize</u>	---	<u>kuaruo</u>
(20)	---	---	<u>no kuaruo</u>
(21)	---	<u>tarare ij-ia</u>	<u>arui</u>

- (22) gue --- kine ije vajiae
- (23) --- --- isema nariria
- (24) kaukura ige ig-ia defija
- (25) --- --- va

Notice in 20, 22, and 23 that \bar{N} 's that function as indirect objects and certain adjectives²⁷ are in construction with the verb. This is a rigid unit which does not permit any intervening elements. Nor do any of its member elements ever prepose.

Also notice that both the \bar{N} and the \bar{P} dominated by \bar{V} , do under certain circumstances, prepose. For example, in 22, the \bar{N} that functions as a direct object is preposed and in 24 the \bar{P} is preposed. Only one phrase node can occur between the object dominated by \bar{V} and the abbreviated \bar{V} .

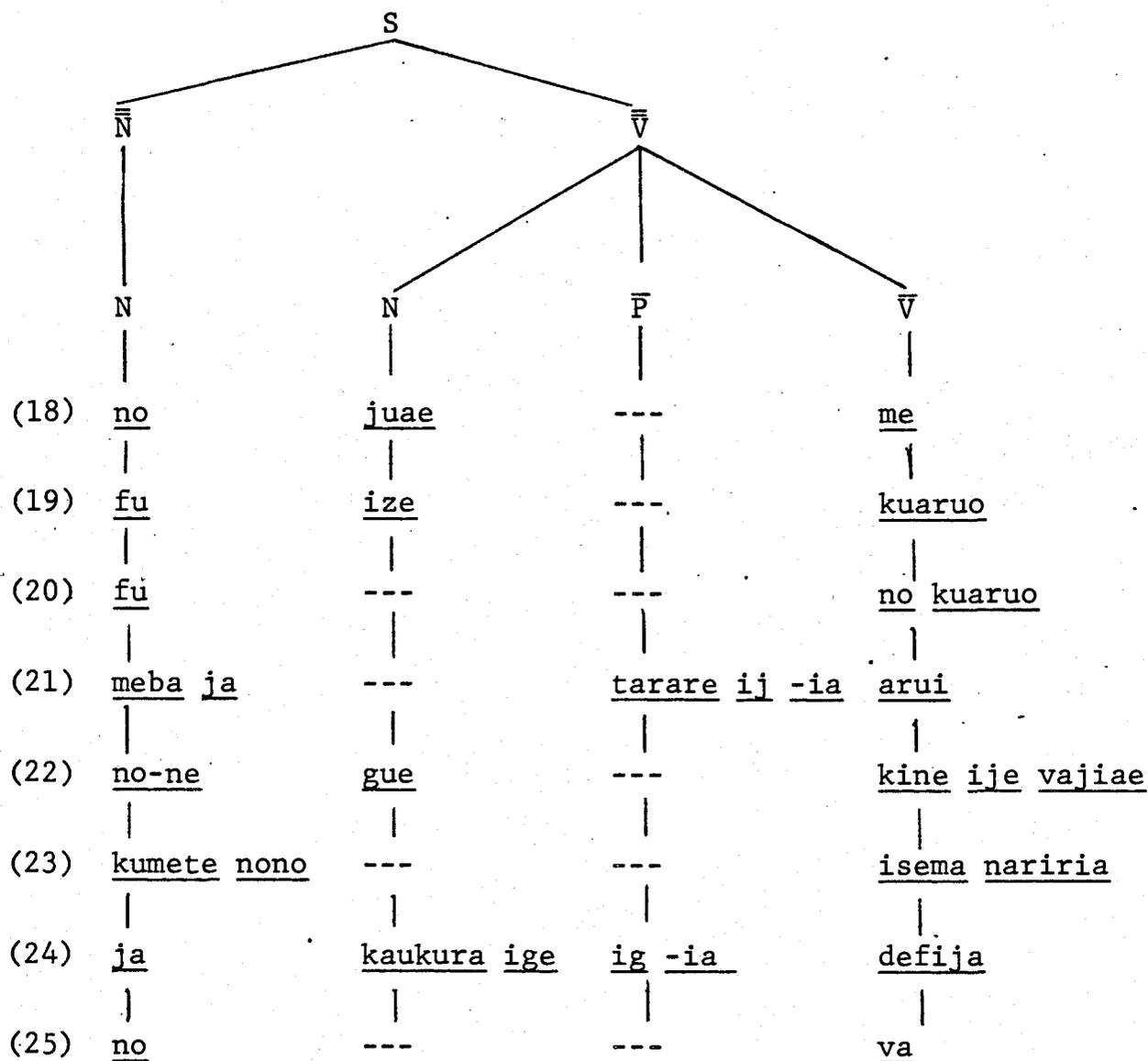
The object preposing rule and the postpositional phrase preposing rule formalize the constraints under which elements of \bar{V} prepose. The structural descriptions that are inputs to these rules fail to apply to \bar{V} .

The relationships among these elements are expressed in Rule 3.

Rule 3: $\bar{V} \rightarrow (\bar{N}) (\bar{P}) \bar{V}$

This rule can be paraphrased as follows: \bar{V} consists of an optional noun phrase followed by an optional postpositional phrase, and a final obligatory verb phrase. Thus, the underlying

structure for examples 18-25 can be represented by the following tree diagram:



The antithetical construction supports the unity of this node. In the underlying structure, two S's are conjoined where the \bar{V} of one is the antithesis of the \bar{V} in the other. In the surface structure, the latter \bar{V} is realized as the verbal negative, ba, that might be glossed 'do not'. It is the substitution of this verbal negative for the entire \bar{V} of the underlying

S that demonstrates that \bar{V} is a functional unit and hence a node of the phrase structure.

26. na juae me ro fu ba
I garden work but he do.not
I work a garden but he doesn't.

27. e baru no ig -ia kari ro bara bu ba
person man we this loc.p. sit but women they do.not
We men sit here but women don't.

The Abbreviated Verb Phrase

For considering the internal structure of the final element of the string dominated by \bar{V} , the following examples are helpful along with 20, 22, and 23 above.

28. fu bara ij -afuo orafa ije vaj-ia
he woman that poss.p. relative that give-3pl.
He gave to those relatives of that woman.

29. vame ige no e ije isema nijas-ia
way this we person that poorly show-3pl
We are poorly showing those people this way.

Again, three basic structures occur: a noun phrase, an adjective, and the verb itself. This structure is much more rigid than those discussed so far in that no order changes are

permitted and no intervening elements occur. This in itself is evidence for the unity of the node. And the fact that the \bar{N} dominated by \bar{V} (functioning as the direct object) preposes while this one (functioning as the indirect object) does not, is good evidence that this \bar{N} is dominated by \bar{V} and not \bar{V} . For example, the following variations of 23 are never possible:

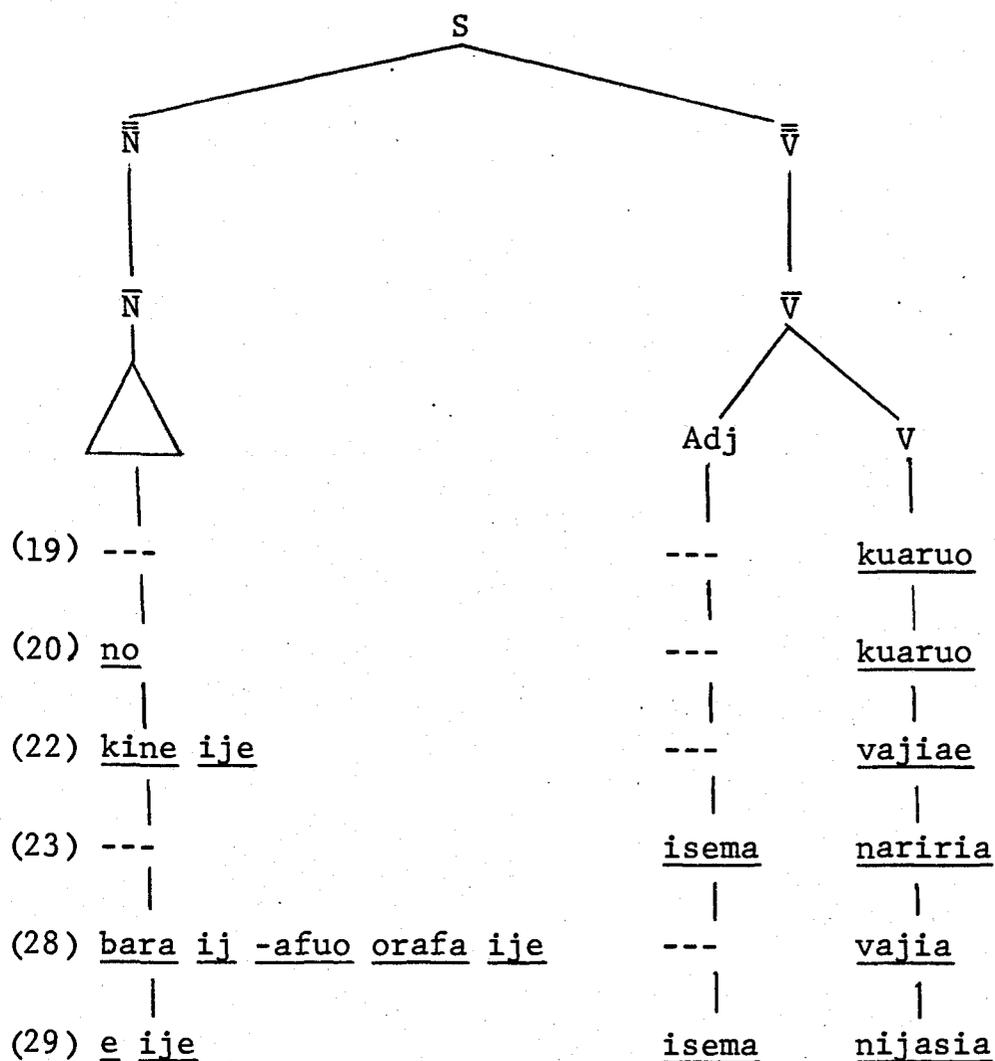
30. * isema kumete nono narir-ia
poorly officer we supervise-3pl

31. * kumete nono narir-ia isema
officer we supervise-3pl poorly
We officers supervise them poorly.

The structure of this abbreviated verb phrase can then be represented by Rule 4:

Rule 4: $\bar{V} \rightarrow (\bar{N}) (\text{Adj}) V$

This rule reads as follows: The verb phrase consists of an optional noun phrase followed by an optional adjective which in turn is followed by an obligatory verb. Note the tree diagram:



The Postpositional Phrase

Finally, there is a wide assortment of postpositional phrases. In addition to 12 and 17 above, consider the following sentences:

32. bu e none ij -ena va-e
they people my that acc.p. go-past
They went with my people.

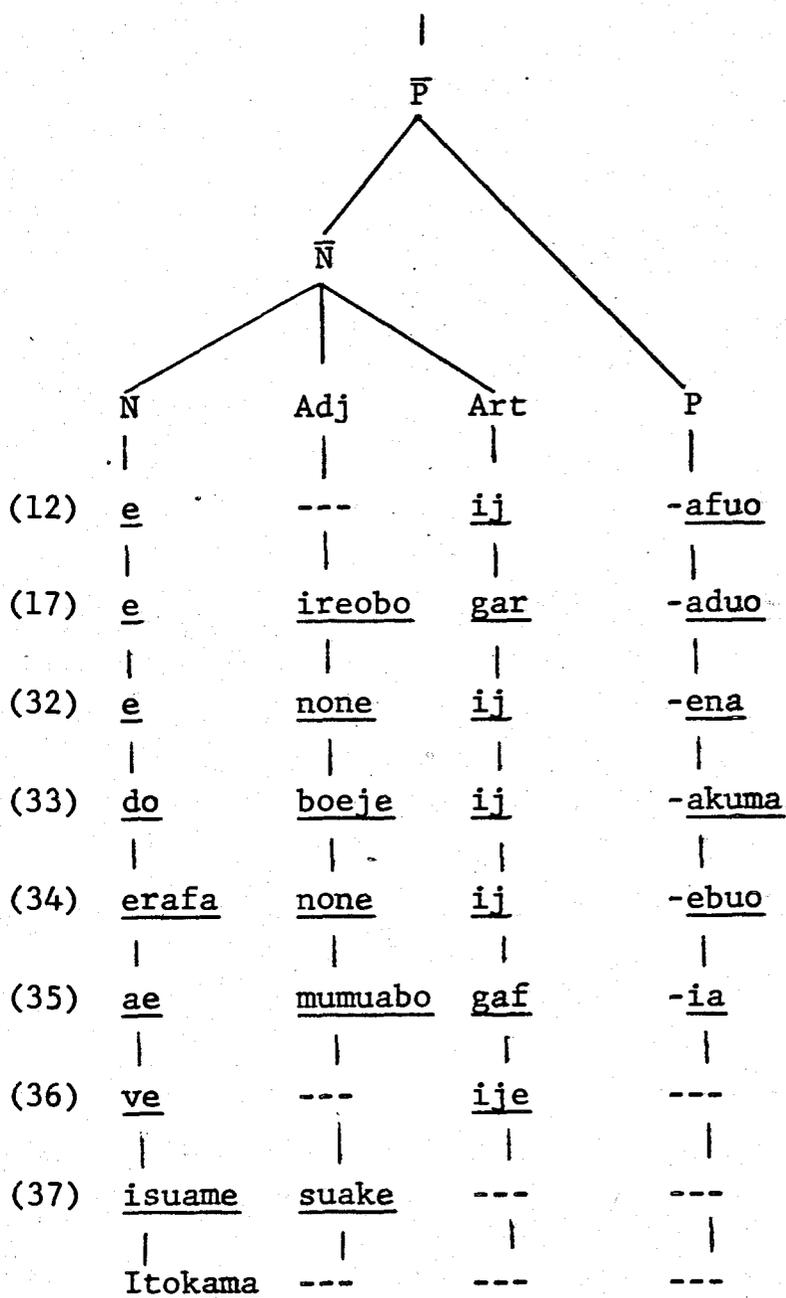
33. ni do boeje ij -akuma i
imp. water much that acc.p. eat
Eat it with a lot of water.
34. fu erafa none ij -ebuo va
he relatives my that poss.p. go
He went to my relatives.
35. fu ae mumuabo gaf -ia va-e
he place distant that loc.p. go-past
He went to that distant place.
36. ve ije no boro kana
time that we ball kick
At that time we played ball.
37. isuname suake na Itokama va-e
yesterday early.morning I Itokama go-past
Early yesterday I went to Itokama.

Notice that all but the last element of each of these phrases parallels the structure of the noun phrase (\bar{N}) so that the postpositional phrase (\bar{P}) is simply the combination of a noun phrase with a following clitic postposition. Although the clitic normally occurs, it can be omitted with temporal and locative nouns. The postpositional phrase preposing rule is a root movement transformation that moves the unit as a whole, giving support to its node status in the phrase structure. Rule 6 then

reflects the structure of this phrase.

Rule 6: $\bar{P} \rightarrow \bar{N} (P)$

It reads as follows: The postpositional phrase consists of a noun phrase followed by an optional postposition. This structure can be captured by a tree diagram such as the following:



If N is a pronoun rather than a noun and its specifiers, (that is, has the features specifications $[+pro, +noun]$), a slightly different but related set of postpositions is used.²⁸

B. Summary of the Phrase Structure Rules

In summary then, the tentative phrase structure rules for at least this limited grammar of Barai are the following:

- Rule 1: $S \rightarrow \bar{N} + \bar{V}$
- Rule 2: $\bar{N} \rightarrow \bar{N} (\text{Pro}) (\text{C})$
- Rule 3: $\bar{V} \rightarrow (\bar{N}) (\bar{P}) \bar{V}$
- Rule 4: $\bar{V} \rightarrow (\bar{N}) (\text{Adj}) V$
- Rule 5: $\bar{N} \rightarrow (\bar{P}) N (\text{Adj}) (\text{Art})$
- Rule 6: $\bar{P} \rightarrow \bar{N} (\text{P})$

While these phrase structure rules are still a tentative hypothesis, various transformations and certain deletion constructions have given support to the hypothesis.

C. Summary of the Form Classes

Once the phrase structure rules are established, the form classes may then be uniquely defined by the set of their co-occurrence relations. On the strength of the evidence to date, the form classes for Barai are defined as given below. The co-occurrence relations are represented by series of brackets

representing successively higher dominating nodes of the generalized phrase marker.

Not every element of the string dominated by the same node as the form class being defined must obligatorily occur. That is, a noun (N) dominated by an abbreviated noun phrase (\bar{N}) that is in turn dominated by an expanded noun phrase ($\bar{\bar{N}}$) may co-occur with any combination of the postpositional phrase (\bar{P}), adjective (Adj), or article (Art). That being so, the parentheses in the following formulas represent in themselves small sets of potential co-occurrence relations. The larger set of these generalized formulas then explicitly defines the form class.

The Noun

The noun can be generated in five positions within the phrase marker. These five sets of co-occurrence relations define the form-class noun.

$$S \left[\bar{N} \left[\bar{N} \left[(\bar{P}) \text{---} (\text{Adj}) (\text{Art}) \right] \bar{N} \right] \bar{N} \right] S$$

$$S \left[\bar{V} \left[\bar{N} \left[\text{---} (\text{Adj}) (\text{Art}) \right] \bar{N} \right] \bar{V} \right] S$$

$$S \left[\bar{V} \left[\bar{V} \left[\bar{N} \left[\text{---} (\text{Adj}) (\text{Art}) \right] \bar{N} \right] \bar{V} \right] \bar{V} \right] S$$

$$S \left[\bar{V} \left[\bar{P} \left[\bar{N} \left[\text{---} (\text{Adj}) (\text{Art}) \right] \bar{N} \right] \bar{P} \right] \bar{V} \right] S$$

$$S \left[\bar{N} \left[\bar{N} \left[\bar{P} \left[\bar{N} \left[\text{---} (\text{Adj}) (\text{Art}) \right] \bar{N} \right] \bar{P} \right] \bar{N} \right] \bar{N} \right] S$$

$$S \left[\bar{N} \left[\bar{N} \left[N \text{ (Adj) } ______ \right] \bar{N} \right] \bar{N} \right] S$$

$$S \left[\bar{V} \left[\bar{N} \left[N \text{ (Adj) } ______ \right] \bar{N} \right] \bar{V} \right] S$$

$$S \left[\bar{V} \left[\bar{V} \left[\bar{N} \left[N \text{ (Adj) } ______ \right] \bar{N} \right] \bar{V} \right] \bar{V} \right] S$$

$$S \left[\bar{V} \left[\bar{P} \left[\bar{N} \left[N \text{ (Adj) } ______ \right] \bar{N} \right] \bar{P} \right] \bar{V} \right] S$$

$$S \left[\bar{N} \left[\bar{N} \left[\bar{P} \left[\bar{N} \left[N \text{ (Adj) } ______ \right] \bar{N} \right] \bar{P} \right] \bar{N} \right] \bar{N} \right] S$$

The Adjective

$$S \left[\bar{V} \left[\bar{V} \left[(N) ______ V \right] \bar{V} \right] \bar{V} \right] S$$

$$S \left[\bar{N} \left[\bar{N} \left[N ______ (Art) \right] \bar{N} \right] \bar{N} \right] S$$

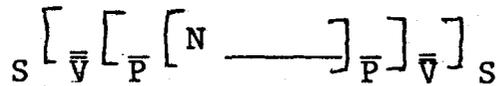
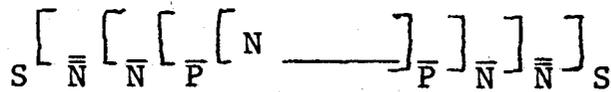
$$S \left[\bar{V} \left[\bar{N} \left[N ______ (Art) \right] \bar{N} \right] \bar{V} \right] S$$

$$S \left[\bar{V} \left[\bar{V} \left[N ______ (Art) \right] \bar{V} \right] \bar{V} \right] S$$

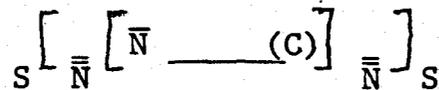
$$S \left[\bar{V} \left[\bar{P} \left[\bar{N} \left[N ______ (Art) \right] \bar{N} \right] \bar{P} \right] \bar{V} \right] S$$

$$S \left[\bar{N} \left[\bar{N} \left[\bar{P} \left[\bar{N} \left[N ______ (Art) \right] \bar{N} \right] \bar{P} \right] \bar{N} \right] \bar{N} \right] S$$

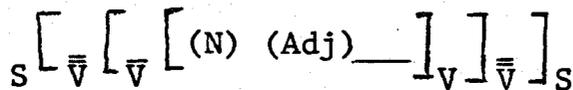
The Postposition



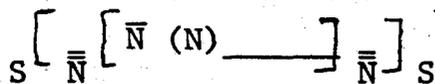
The Pronoun



The Verb



The Clitic



D. The Basic Transformations

It is unfortunate that the term 'transformation' has not been handled consistently in the literature. Not only do theories known to be 'transformational', such as those of Harris, Chomsky, and Shaumjan, differ in their definitions of the term, but also certain structural frameworks, not conceived as

transformational, have adopted the term with related but still unique definitions. For example, the notion of transformation that Cook adopts for his tagmemic model is defined as follows:

"The transformational rule is simply a rule of change. This rule has an input string, a rule of change, and an output string. With kernel sentences as input, it is possible to set up a series of optional rules that will produce the output, the derived sentences.

INPUT STRING	T-RULE	OUTPUT STRING
kernel sentence	transformation	derived sentence" ²⁹

For Cook at least, surface structures are of two types, kernel and derived, and the relationships between them are the transformational rules. Although Cook's notion of 'kernel' and Harris' focus on 'morphological co-occurrence' are distinctive, the two do have essentially the same notion of transformation, viz., a process rule that relates surface structures.

Gleason broadens his definition of transformation and avoids the issue of deep and surface structures altogether.

"A transformation is a statement of the structural relation of a pair of constructions which treats that relation as though it were a process. Hence, it is normally stated in the form of rules which may be applied to one of the pairs--an input--altering it to produce the other--an output."³⁰

Shaumjan, on the other hand, has quite a different notion of transformation. He distinguishes between the notion of transformation in his applicational model and Chomsky's in the following manner:

"In the transformational model, transformations are used for the purpose of simple derivation and supplement the immediate constituent model (which is contained within the transformational

model), since the latter is inadequate for generating sentences. The applicational model, however, does not need transformations for simple derivation, since the operation of application alone is capable of generating any phrase. Here transformations are used for the multiple derivation of phrases constituting a transformational field. As a result we have a semantic generator which produces as its output a maximal number of synonymous expressions."³¹

With so many notions of transformation in the literature, it becomes necessary for each analyst to make himself explicit. And yet the intent of this study is not to exhaust any specific transformational approach, but to draw from the general framework the basics for a preliminary look at Barai grammar. Accordingly, it will be necessary to limit the term to a general sense that, although wide enough to include many transformational approaches nearer to that of Chomsky's, will eliminate some of the more extended uses such as those given above. Lyons and Hockett³² both do something similar when they refer to transformational relationships as the 'deeper connections between sentences that cut across surface grammar' so that transformations become the rules that relate an underlying structure to that found in a surface analysis. Therefore, transformations in this study will relate structures generated by the above phrase structure rules to other derived structures found in the corpus.

Generally, the form for representing transformational rules in a particular analysis has been to first specify a 'structural description' with a numbered sequence of terminal elements and then a 'structural change' showing the reordering, deletions, etc. However, such a form fails to represent all the changes in

the phrase structure because of its confinement to terminal elements. Marina Burt, Jacobs and Rosenbaum, O'Neil, et al, have all attempted in various ways to show these supra-elemental changes by including tree diagrams of the phrase structure along with the structural description and structural change of the terminal elements. Accordingly, a similar pattern is being adopted here.

Let us turn now to some of the more basic transformations of Barai.

The Possessive Movement Rule

Consider again the following examples from above -

(12) e ij -afuo amu
person that poss.p. aunt
...that person's aunt...

(16) e nuvu -one gafe
people we poss.p. that
...those people of ours...

(17) e ireobo gar -aduo mave
person big that poss.p. pig
...that big man's pig...

And in addition, consider the following:

38. na sari fu -one ke
I feathers he poss.p. take

...his feathers...

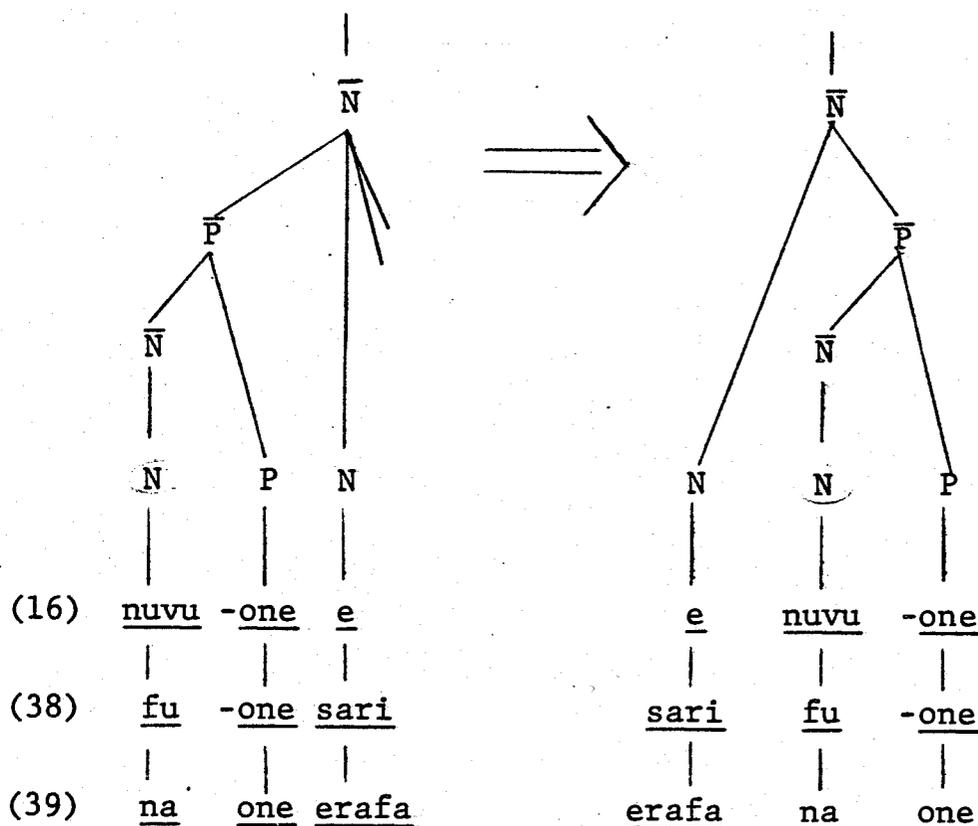
39. erafa na -one bu ruae
relatives I poss.p.they came
...my relatives...

40. kofu bosi ij -afuo asie fu uria fi
coffee boss that poss.p. mother she still lives
The mother of that coffee superintendent...

Note the two different structures used for possession. Positionally one structure occurs directly before the noun of the noun phrase (\bar{N}); the other occurs immediately following \bar{N} . Also, the two are mutually exclusive, i.e., at no time is there a possessive postpositional phrase both before *and* following this primary noun. Note further that it is only the pronoun that occurs in the structure following the head noun and that no modifiers or articles ever occur with it. Finally, it is only the postposition -one that occurs with the pronoun.

There is a transformational relationship between the two above structures conditioned by the choice of a pronoun as the expansion of the noun phrase within the possessive postpositional phrase. Since pronouns never occur in the \bar{P} before the N and always in the \bar{P} that follows, the transformation is obligatory. Of those examples considered, 16, 38, and 39 meet the structural description for the transformation. This transformation, a minor movement rule, is given below as Rule 7:

Rule 7: Condition: N must be [+pro,+noun]



In 12, 17, and 40 the condition was not met since the N dominated by \bar{P} was not a pronoun and so the transformation was blocked, whereas in 16, 38, and 39 the condition was met and in each case the transformation, being obligatory, applied. The fact that Adj and \bar{P} do not co-occur with \bar{N} can be accounted for by syntactic features of strict subcategorization.

The Pronoun Conflation Rule

We have said that a summary pronoun normally occurs following \bar{N} within \bar{N} . The obvious exception is when that \bar{N} is

manifested by a noun with the feature specification [+noun, +pro]. In this case, the underlying structure is an open question where three possibilities obtain.

Either...

- 1). the surface pronoun is generated in the \bar{N} and no summarizing Pro occurs...

or...

- 2). the surface Pro is generated as the summarizing Pro and no \bar{N} occurs...

or...

- 3). the Pro is generated in both positions and conflated by an identity transformation.

Option 2 is unlikely since pronouns are generated within \bar{N} in other positions, e.g., within the verb phrase and the postpositional phrase as we will see later. And since all other \bar{N} 's in this position are followed by a summarizing Pro with *only* Pro being generated in this latter position, the evidence supports a sequence of Pro's. Other surface evidence for this deletion comes from the emphatic pronouns which occur only in this same position and are a sequence of two identical morphemes although the second has lost its primary stress.

(41). nono isema narir-ia
we(we) poorly supervise-3pl

We supervise them poorly.

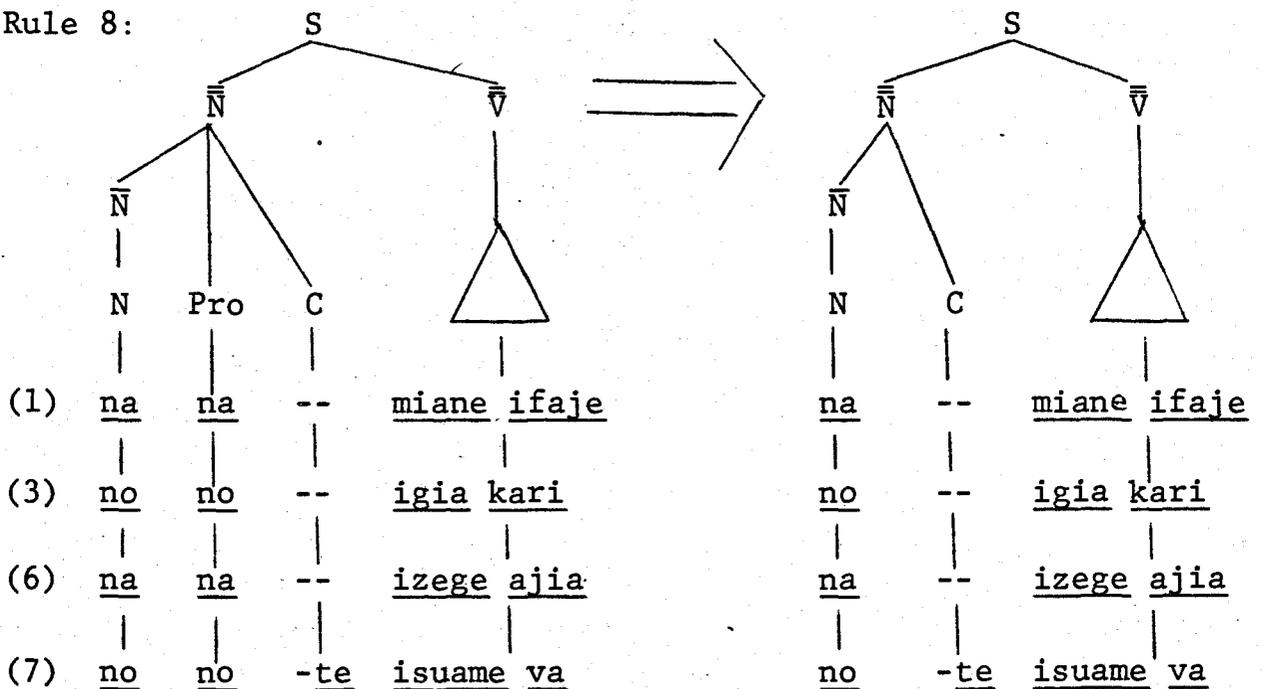
- (42) nana fu kan-a-e
 I (I) him hit-3sg-past
I hit him.

However, there is also the possibility that these emphatic pronouns are the result of a stem reduplication process and hence were derived from a single stem.

In any case, what account can be given for the lack of sequences such as bu bu (they, they), na na (I, I), fu fu (he, he), etc.? The pronoun conflation rule explains this gap via an identity deletion transformation. This rule deletes the optional pronoun that is generated following the \bar{N} of \bar{N} leaving only the pronoun manifesting \bar{N} itself.

Consider again examples 1 - 7 above; 1, 3, 6, and 7 all meet the structural requirements for this transformation and hence, undergo Rule 8.

Rule 8:



This rule, then, captures both the underlying structure and the resulting surface structure.

Object Preposing Rule

There are potentially three positions preceding the verb where an \bar{N} is possible even after excluding potential \bar{P} 's. The object preposing rule is one of the mechanisms of Barai grammar that controls ambiguity among these \bar{N} 's.

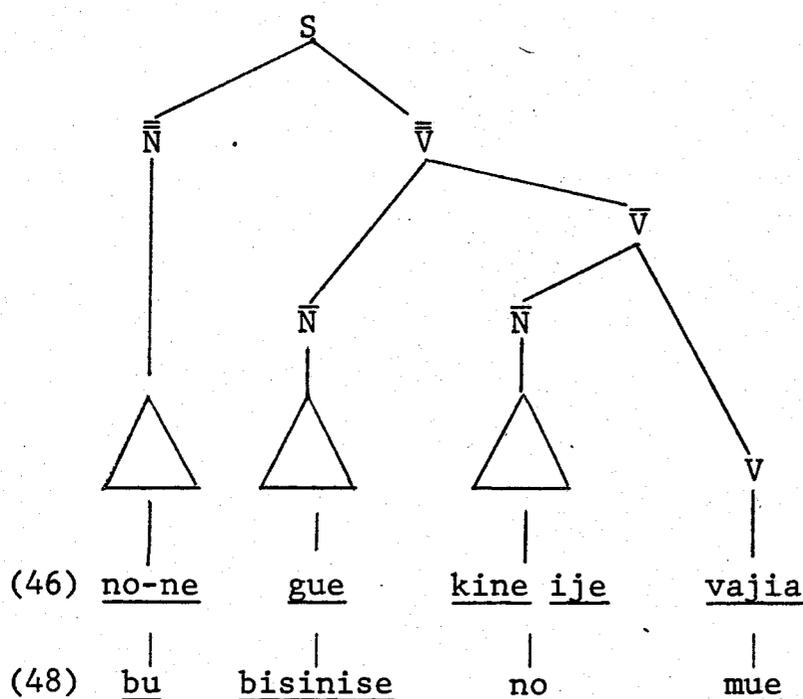
43. bu kuku be m-ie
they tobacco one give-1st
Give me some tobacco.
44. fu meba m-ia
he associates give-3pl
He gave (it) to (his) associates.
45. kumete -buo itire ja -ka abe
officers poss.p. mouth you int. accept
You really accepted the officer's words.
46. gue no -ne kine ije vaj-ia
some we ind. spirit that give-3pl
We gave some to those kine spirits.
47. bu kofu ije m-u-e
they coffee that give-1pl-past
They gave us the coffee industry.

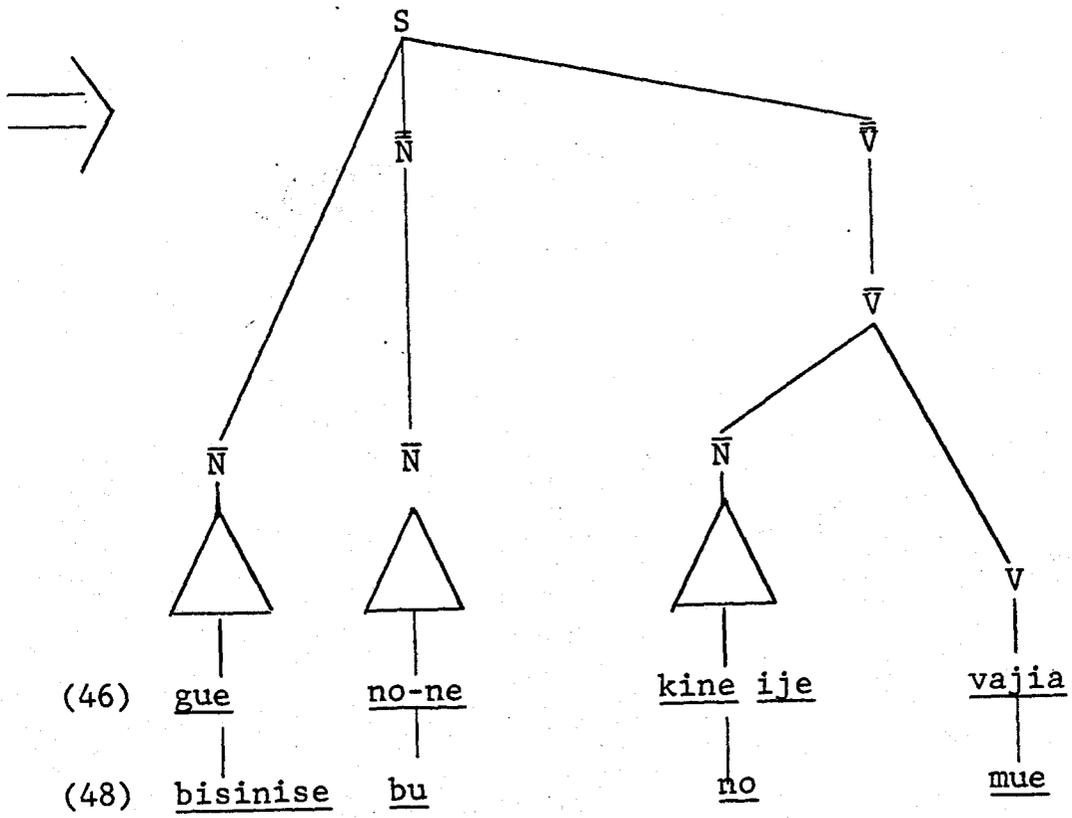
48. bisinise bu no m-u-e
business they we give-1pl-past

They gave us a business.

In 43 and 44, the \bar{N} dominated by \bar{V} occurs between the initial \bar{N} and the final verb. In 44 and 48, both the \bar{N} dominated by \bar{V} and the \bar{N} dominated by \bar{V} occur. As a consequence of their co-occurrence, the \bar{N} dominated by \bar{V} is preposed over the \bar{N} to the initial position. A check of the data shows this process to be obligatory. There are just a few such di-transitive verbs and only rarely do they overtly express both 'object' \bar{N} 's, but in each case where they do, the \bar{N} directly dominated by \bar{V} is preposed. Rule 9 captures this root movement transformation which then applies to 46 and 48 above.

Rule 9:





The Postpositional Phrase Preposing Rule

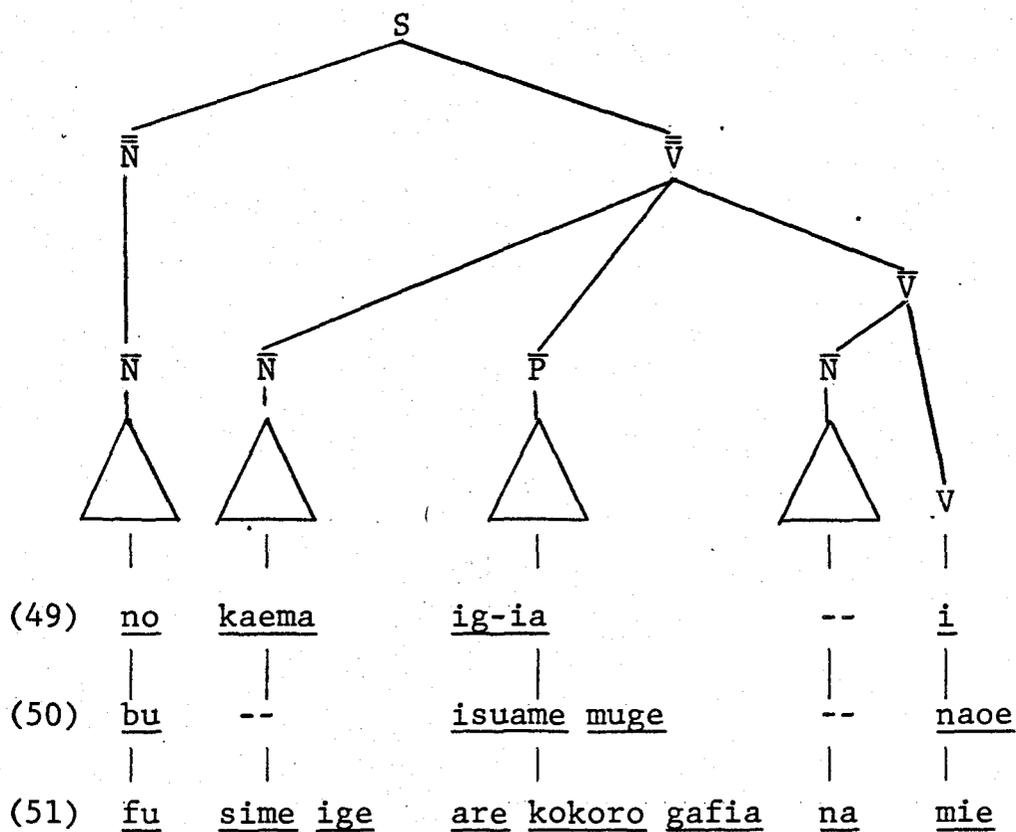
Temporal and locational postpositional phrases dominated by \bar{V} are also preposed under certain conditions. They must be proposed if either the \bar{N} dominated by \bar{V} or the \bar{N} dominated by \bar{V} occur. However, even in the absence of these \bar{N} 's, they are still optionally preposed.

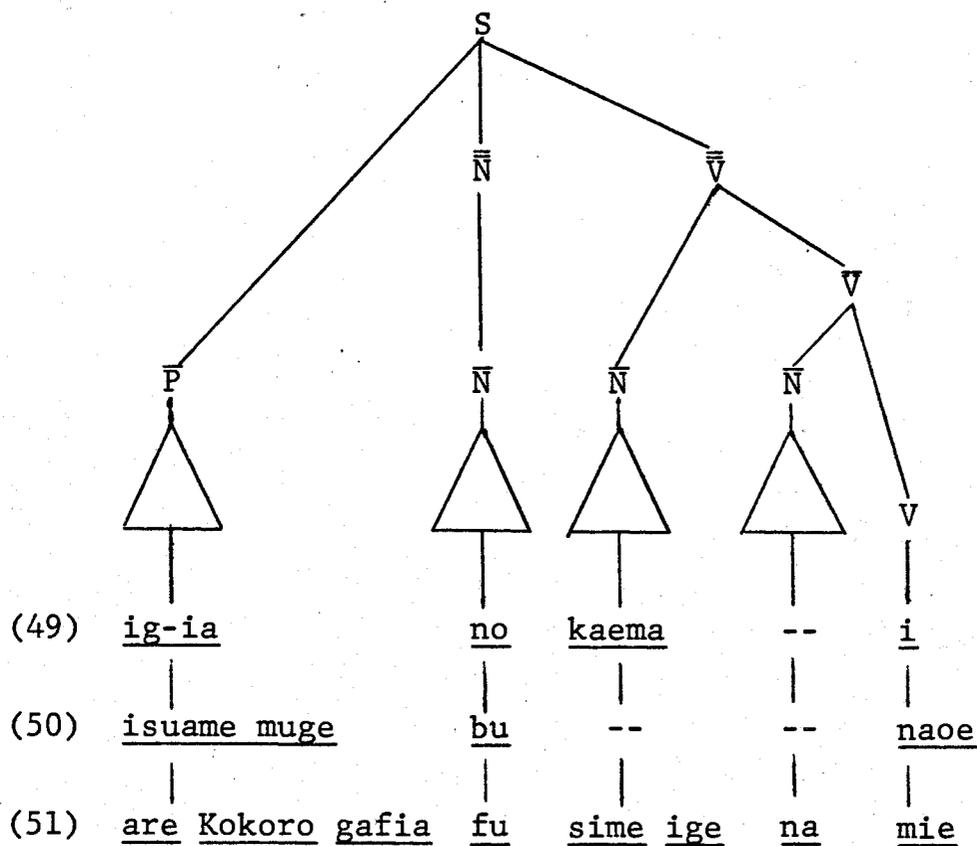
49. ig -ia no kaema i
this loc.p. we sweet.potato eat
Here we eat sweet potatoes.
50. isuame muge bu nao-e
yesterday night they sleep-past
Last night, they slept.
51. are kokoro gaf -ia sime ige fu na m-ie-i
place Kokoko that loc.p. knife this he me give-1sg-past
At that place Kokoro, he gave me this knife.
52. mave nuvuone bu gam -ia oe
pig my they that loc.p. walk.around
My pigs are walking around over there.

To avoid stating a different rule for each of the three possible structural descriptions that result in the same structural change, one rule is given and with it certain restrictions are given as conditions. Notice that in the case of 51, both

the postpositional phrase and the direct object are preposed. The order of the elements indicates that the object preposing rule is ordered ahead of the postpositional preposing rule.

Rule 10: Conditions: Rule applies to \bar{P} 's with temporal or locational nouns if either the \bar{N} dominated by \bar{V} or the \bar{N} dominated by \bar{V} occurs. The rule is optional if neither occurs.





In 51, the object preposing rule would have preposed the \bar{N} dominated by \bar{V} . In 52, no change occurs since the postpositional phrase preposing rule is optional when no \bar{N} occurs within \bar{V} .

The Causative and Copula Deletion Rules:

Observe the following:

53. fu ise -e
he bad is
He is bad.

54. fu -ka na ise -d-ie
it int. I bad cause-1sg

It really causes bad to me. Or, more naturally, I am really displeased by it.

55. fu idua -e
he cold is

He is cold.

56. no idua -d-uo
we cold cause-1pl

(It) causes cold to us. Or, more naturally, We are cold (on account of it).

57. fu ma -e
he good is

He is fine.

58. na visi-nam-ie
I sick caus-1sg

It causes me sickness. Or, I am made sick.

59. fu e ireobo
he person large

He is a large person.

60. Vito fu koki ij -afuo fari
Vito he Koki that poss.p. son

Vito (is) Koki's son.

The Barai equivalent to the English copula is the clitic -e which occurs with predicate adjectives but not with predicate nominals. The hypothesis here is that both predicate adjective and predicate nominal constructions derive from the same underlying structure. The deletion of the copular verb with predicate nominals signals equivalence in much the same way as the deletion of the subject pronoun in English signals the imperative.

However, an obvious constraint in the pattern is that only third person singular N's occur in the position dominated by \bar{N} when the predicate adjective and copular verb co-occur. On the other hand, the causative elements also occur with adjectives. In this case, the noun of the \bar{N} that is dominated by \bar{V} and in construction with both this adjective and the causative element, is never a third person singular form. As a result, the two constructions are non-overlapping, suggesting that a transformational relationship exists between them.

Two facts suggest that the causative has been deleted in those strings where only the copula occurs in surface structures. One is that the causative element occurs in construction with nouns of every other person and number except the third person singular dominated by \bar{V} . The other is that, just as with the copula element, the causative occurs only with third person nouns in the position dominated successively by \bar{N} and \bar{N} . The causative becomes a kind of auxiliary and the deletion becomes one of its defining features. The copula is then deleted when it occurs in construction with nouns of other person and number. This explains why there is no overlap in person and number

between the two constructions.

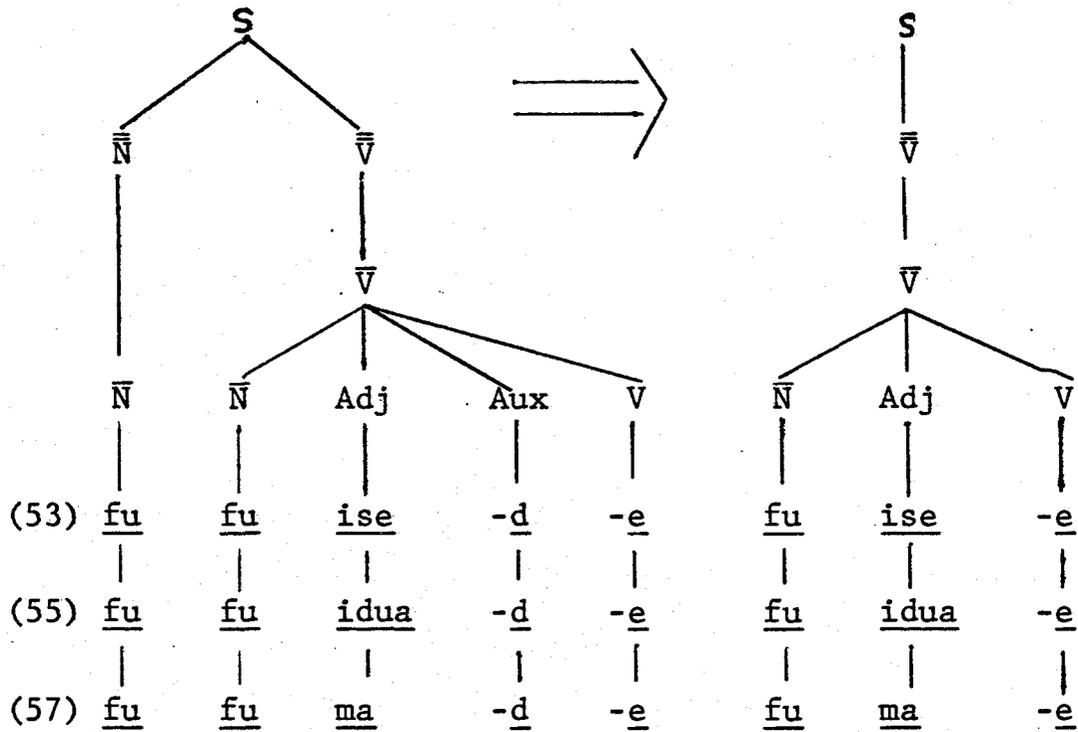
The pronoun fu is the only possible subject when the causative occurs. The question that remains is whether it is this subject pronoun fu that is being deleted or the indirect object pronoun fu. Since the mood clitics only occur with pronouns in the subject position and since they never occur with the fu of this string, it must be the indirect object fu that is being deleted.

However, co-occurrence of the auxiliary and the verb in the surface structure is also required to substantiate such an analysis. This is realized by verbs other than the copula that do occur with the causative, although in this case, there is a different linear ordering. Note the example.

61. bu no vaj-uo -nami
they we give-lpl caus.
They made us give the food.

Two rules then obtain. They are the causative deletion rule and the copula deletion rule and they depend on a revised phrase structure rule of \bar{V} , that being \bar{V} (\bar{N}) (Adj) (Aux) V. Additional support for Aux must be pursued in a more exhaustive analysis. Rule 11 is the causative deletion rule.

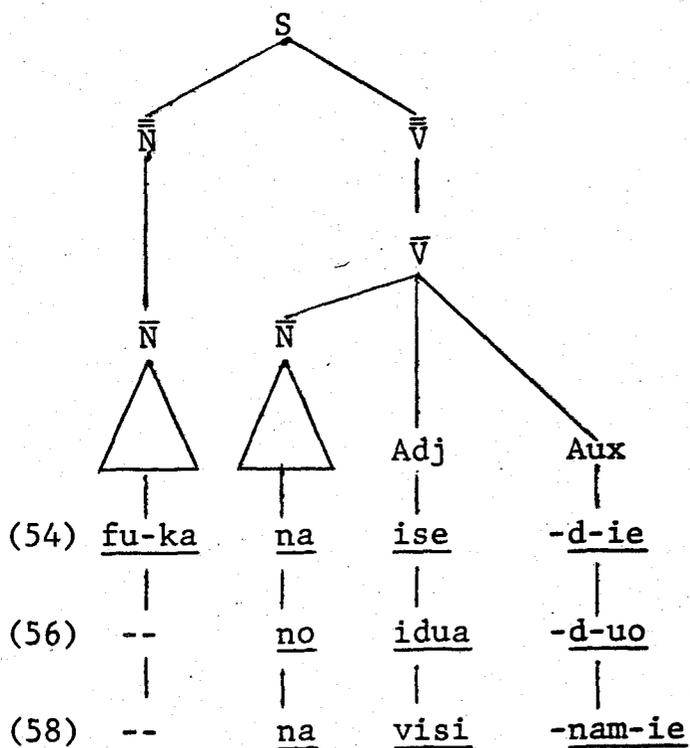
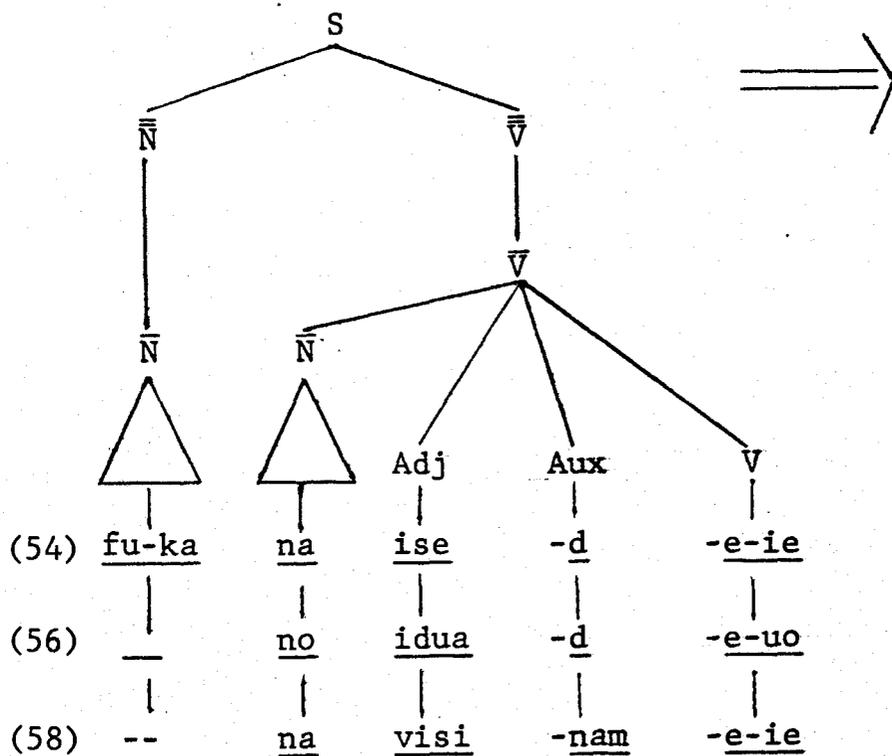
Rule 11: Condition: The N of the \bar{N} dominated by \bar{V} must be 3rd person singular



Both the \bar{N} dominated by \bar{N} and the Aux have been deleted.

Rule 12 is the copula deletion rule.

Rule 12: Condition: The verb must be the copula, -e, and the N of the \bar{N} dominated by \bar{V} must not be third person singular.



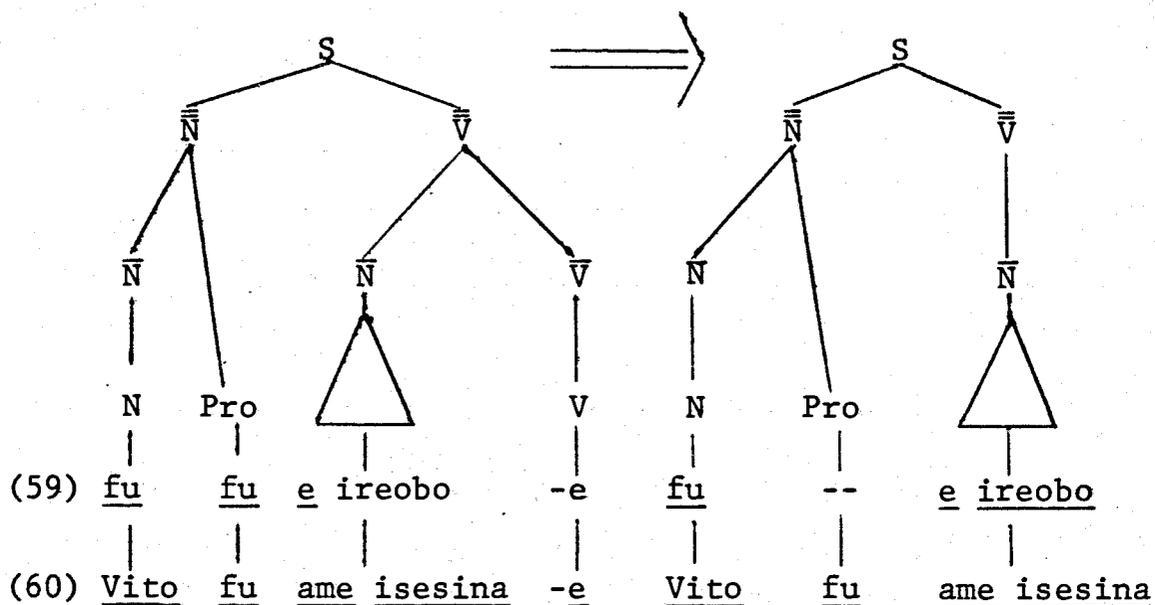
The copula verb -e has been deleted and its person markers copied onto the causative auxiliary.

These two rules provide an explanation for the fact that only third person singular nouns are dominated by \bar{N} when the verb is a copula and the fact that no third person singular nouns are dominated by \bar{V} when the causative element occurs.

The Predicate Nominal Rule

What then of the predicate nominals with which no verbal element occurs in the surface structure? The hypothesis here is that the copular verb that occurs with predicate adjectives is deleted with predicate nominals. It is this deletion that signals the equivalence in much the same way as the deletion of the subject pronoun in English signals the imperative. It is 'understood', so that in predicate nominal structures such as 59 and 60 above, rule 13 applies.

Rule 13: Condition: V is a copular verb.



Note that it is not unambiguous that the predicate nominal is generated as the \bar{N} dominated by \bar{V} since it could also be generated as the \bar{N} dominated by \bar{V} . However, in every unambiguous case of \bar{N} dominated by \bar{V} , the person/number of that \bar{N} is redundantly marked in the morphology of the verb. The fact that the copular verb is never so marked supports the generation of these predicate nominals as \bar{N} under \bar{V} .

III. The Comparison

The traditional clause is the focal point of both a tagmemic and a transformational analysis. In a tagmemic analysis, the clause is a useful starting point within the grammatical hierarchy. Hence, Longacre begins his discussion of discovery procedures with the clause. The closest analogue for this structure in the transformational analysis is S, the sentence. The clause in tagmemics is a word group with both a subject and a predicate. The sentence in transformational analysis typically consists of a noun phrase and a verb phrase. In the tagmemic analysis clauses combine in various ways to form sentences, whereas in the transformational analysis, S's combine in various patterns of recursion to form more complex S's. The two are simply notational variants.

It is the internal structure of this clause (or S) that is the primary focus of this comparison, i.e., the clause and phrase levels of tagmemics are compared with the phrase structure rules of the transformational model. The morpheme and word level constructions of tagmemics are not so directly comparable with the formatives or terminal elements of the transformational model. And competing analyses of coordination and subordination cloud the formalization of the more complex sentence structures of a transformational grammar making any comparison at this level difficult. Added to this is the fact that in a tagmemic grammar the distribution of sentences in paragraph structures is relevant to the definition of sentence syntagmemes. And since

paragraph structure is still being investigated both in tagmemics in general and in the analysis of Barai in particular, any comparison is further complicated.

Both frameworks give grammatical function a prominent role. The tagmemic analysis accomplishes this by directly specifying the function of each constituent element. In the transformational model, grammatical function is not directly stated but is held to be implicit within the phrase structure rules. Both systems however insist that grammatical function must be formally specified without any direct reference to semantics.³³ This is basic to the lexicalist's position in transformational theory but how does it apply in tagmemics where the tagmeme is held to be a form-meaning composite? Longacre clarifies the point as follows:

"...it seems best that meaning nowhere come into the foreground. We assume with Pike that the units we handle are form-meaning composites. Nevertheless, it seems necessary to insist that it is the formal side of the composite which is amenable to initial systemic analysis. We work with formal correlates of meaning. For example, from what we know of meaning, we may suspect that two given constructions contrast with each other. Nevertheless, we never pronounce them to be in contrast until formal contrasts are encountered. The contrasts need not be formal in any narrow, restrictive sense of the word - they may, for example, include difference in transform potential - nevertheless, formal contrasts must be found. It is required, therefore, of writers of tagmemic grammars and grammatical sketches, that they present clearly the formal features which justify an alleged contrast."³⁴

This common insistence on form or structural definition facilitates the comparison. The direct specification of the

function of each constituent element would certainly seem preferable to an implicit specification. The problem arises in formalizing this grammatical function. While the tagmemic analysis attaches a specific label for the function of each set of forms, there is no formal specification of the significance of that label. In other words, the specification of the various grammatical relations between forms becomes a function of labeling. Although in another context, Hale comments on the loose definition of the functional slot of the tagmeme.

"The functional points are not rigidly defined. They are largely intuitive and correspond to traditional notions of subject and predicate, head and modifier."³⁵

Chomsky's view of tagmemic function has been summarized by Cook.

"In Chomsky's view, these "grammatical relationships" need not be explicitly stated formulas of the grammar, as long as they are well defined in the context of the theory. For example a formula such as $S \rightarrow NP + VP$, purely in terms of form, implies that the NP is subject of the VP and likewise that the VP is predicate of the NP. Therefore, a notation which specifies S:NP and P:VP is redundant."³⁶

Cook then points out that while this argument is valid for this kind of binary relationship, the tagmemic strings are frequently more than binary so that function does need to be made explicit in the tagmemic analysis. The most relevant issue is the formal definition of such function.

Consider the formula for the independent transitive clause (F7). The function labels distinguish the function of a noun phrase labeled as subject from the function of a noun phrase

labeled as object. The fact that the labels differ formally indicates a difference in function, but how they differ is not made explicit. On the other hand, the phrase structure rules specify explicitly the function of these two noun phrases in a transformational model by a comparison of the hierarchy of dominating nodes. Looking at R1, R2, and R3, the noun phrase specified as subject in the tagmemic model is dominated first by the expanded noun phrase node ($\bar{\bar{N}}$) and then by S.

$$S \left[\bar{\bar{N}} \left[\bar{N} \right] \bar{\bar{N}} \right] S$$

And then, the noun phrase specified as the object in the same formula, is dominated in the transformational analysis first by the verb phrase ($\bar{\bar{V}}$) and then by S.

$$S \left[\bar{\bar{V}} \left[\bar{N} \right] \bar{\bar{V}} \right] S$$

Thus the phrase marker formally defines the function of the constituent elements in terms of their relation to other elements, although, normally, it is only implicit in the actual formalization of the grammar.

Representations of concord and permutation rules also need to be made explicit in the tagmemic analysis. F1, F3, F13, F20, F33, F36, F40, F43, F51, F52, F53, F54, F55, F56, F57, F58, F63, F64 all include a concord bar in the actual formalization of the syntagmeme. Typically, the concord bar includes the symbol 'c' which is given again below the formula with a statement of the

kind of concord. F1, F3, F43, and F54 represent number agreement. In F13 and F40, 'c' represents agreement of both person and number. In F20 and F33, 'c' represents agreement in the selection of functional morphemes. In F36, the agreement concerns number and the constraint that both forms be either human or non-human. In F51, F52, and F53, 'c' represents agreement of tense. In F55-58, 'c' represents identical stems. And in F63 and F64, 'c' represents a same/different constraint. The one notation has numerous referents that must be informally specified by accompanying statements.

Permutation rules are largely concerned with variations of linear ordering. In F2, for example, reference is made to a permutation rule. Typically such rules would be labeled P1, P2, etc., with a following statement. No formal representation of these rules has been adopted.

More explicit formalization of both concord relations and P-rules could easily be incorporated into tagmemic grammars and this deficiency is recognized even by proponents of the theory.

"Tagmemic grammars have up to the present time been content to present formulae (accompanied by statements) in nonformalized fashion. Such grammars can (and should) be more explicitly formalized."³⁷ *Langage '68*

Note, however, that many of the transformational rules for Barai also require accompanying statements. That is, the formalization of the following rules all require an accompanying conditional statement: the possessive movement rule (R7), the postpositional phrase preposing rule (R10), the causative deletion rule (R11), the copula deletion rule (R12), and the

predicate nominal rule (R13).

A further observation relevant to the sentence syntagmemes is relevant here. The further one moves up the tagmemic hierarchy, the more reliance on the patterned dependencies is required to define the relevant syntagmemes. Few contrasts can explicitly be represented in the formulas at the sentence level because the relevant distinctions are no longer optional vs. obligatory, number of tagmemes, or contrastive linear orderings, but rather, various kinds of patterned dependencies among the elements. These are included by accompanying statements that lead further away from explicit formalizations of syntactic structures.

Analysts within both frameworks would agree that a formalized grammar yields a better accounting of the data than an informal one. Longacre's statement on that point is tantamount to a plea of no contest, despite the need in the transformational framework to make explicit the conditions on transformational rules.

The particular versus the general is perhaps the most obvious point of contrast between the tagmemic and the transformational analysis. The tagmemic analysis with its focus on units emphasizes the particular; the transformational model with its focus on rules, emphasizes the general. The implication here is that the tagmemic analysis with its emphasis on the particular cannot also capture more general structures, and conversely, that the transformational analysis with its emphasis on the general misses certain particular structures.

However, at least within the domain of these two limited

analyses of Barai syntax, the transformational formalization still accounts for the particular despite its focus on generalities. The tagmemic formalization however, misses certain of the more general relations between structures with its focus on distinguishing units.

For example, the tagmemic analysis distinguishes between 15 clause level syntagmemes. These differences, although not in focus, are still represented in the transformational model, however, by three phrase structure rules, five transformational rules, and subcategorization features of various lexical items. The tagmemic units under consideration here are the following:

- F 1 - the independent/intransitive clause
- F 3 - the medial/intransitive clause
- F 5 - the dependent/intransitive clause
- F 7 - the independent/transitive clause
- F 9 - the medial/transitive clause
- F11 - the dependent/transitive clause
- F13 - the independent/ditransitive clause
- F14 - the medial/ditransitive clause
- F16 - the dependent/ditransitive clause
- F18 - the independent/causative clause
- F21 - the medial/causative clause
- F23 - the dependent/causative clause
- F25 - the independent/equational clause
- F26 - the dependent/equational clause
- F27 - the independent/stative clause

The three phrase structure rules are:

R 1: $S \rightarrow \bar{N} + \bar{V}$

R 3: $\bar{V} \rightarrow (\bar{N}) (\bar{P}) \bar{V}$

R 4: $\bar{V} \rightarrow (\bar{N}) (\text{Adj}) V$

And the relevant transformations are:

R 9 - The Object Preposing Rule

R10 - The Prepositional Phrase Preposing Rule

R11 - The Causative Deletion Rule

R12 - The Copula Deletion Rule

R13 - The Predicate Nominal Rule

The transformational model generalizes the basic structure of the 15 formulas via three rules. Many of the remaining constraints however, that are critical to the definition of the syntagmemic units are still captured, either via transformations or subcategorization features of specific lexical items. Consider the first nine tagmemic formulas immediately above. One of the major criteria for distinguishing units along the transitivity parameter are constraints between certain verbs and the presence or absence of an object. These constraints are found as subcategorization features of just those verbs in a transformational analysis. They are not in focus but are still accounted for. The initial position of the object in F13, F14, and F16 is represented in R9 of the transformational analysis.

The postpositional preposing rule of the transformational analysis is simply a notational variant of a permutation rule in the tagmemic analysis. Relevant to each of the formulae are differences in the internal structure of the verb. These would be handled outside the phrase structure rules in a transformational analysis by rules of word formation. Restrictions on co-occurring elements of the causative, equational, and stative clause level syntagmemes are specified as subcategorization features of the copula and causative elements. The double centered nature of the independent clause with no copula, the restrictions on the subject and indirect object tagmemes of the causative syntagmemes, and restrictions on the subject and predicate of the copula are accounted for by a combination of the copula substitution rule, the copula deletion rule, and subcategorization features of the copula and causative elements. The distribution criterion of the tagmemic analysis involves questions of recursion and coordination in the transformational analysis which again is outside the scope of this study, but presumably would be handled via transformational rules.

Interestingly, in the three summarizing phrase structure rules of the transformational analysis, two units or nodes are posited that are not considered relevant to the unit oriented tagmemic analysis. That is, the abbreviated verb phrase (\bar{V}) and the expanded verb phrase ($\bar{\bar{V}}$) are not related to any of the 15 clause level syntagmemes. Rather, the constructions that justify these nodes in the transformational analysis are defining features of some of the numerous sentence level syntagmemes in

the tagmemic analysis.

Therefore, the transformational analysis succeeds in capturing the particular, though it may not be in focus, as well as the general. But the general is lost in the tagmemic analysis. It fails to show the close relationship between the causative and copula syntagmemes. Further, it misses the relationship between copula and equational clauses that is represented in the predicate nominal rule. Also, no underlying base common to all the clause level structures is evident in the tagmemic model. While it is implicit in the collection of formulas there is no explicit formalization of such a base.

A similar situation occurs with the noun phrases. The tagmemic model posits four phrases that are generalized to one in the transformational grammar. These tagmemic syntagmemes are:

- F29 - The Modified Noun Phrase
- F30 - The Modified Kinship Phrase
- F31 - The Item Possessor Phrase
- F32 - The Possessive Phrase

The generalized rule of the tagmemic grammar is:

R 5 - $\bar{N} \rightarrow (\bar{P}) N (\text{Adj}) (\text{Art})$

The special number markers and the restrictions on the modifiers of kinship nouns are handled as lexical features of those particular nouns as is the constraint on the co-occurrence

of \bar{P} and Adj. The item/possessor phrase is more notational than structural but is represented by the sequence of the first two elements in the expansion of \bar{N} . The possessive phrase corresponds to \bar{P} and the two are largely notational variants.

Besides positing a general underlying base that defines the fundamental relations among the four phrase level syntagmemes the transformational analysis captures an important relationship between one of the noun modifiers (viz., the possessive pronoun) and the possessive phrase. This relationship is represented by the possessive movement rule. Whether the tagmemic analysis handles the structure of the possessive pronoun on the phrase or word level, it has no mechanism for defining the relationship between the two.

While word structures are generally outside the concern of this study, it is worthy of note that a transformational analysis can also formally define the relationship between certain word classes that are obviously related but must be either combined or separated in a tagmemic analysis. The feature specifications for the noun and the pronoun in the transformational analysis are exemplary of this. Thus, pronouns have the feature specification [+pro, +noun] while nouns may be either [+pro, +noun] or [+noun, -pro]. With such features, one can distinguish the pronouns that occur with mood clitics and the nouns and pronouns that both manifest the obligatory element of the abbreviated noun phrase. The tagmemic analysis handles the same occurrence restrictions but fails to formally define any relationship between the two. The overlap of adjectives and adverbs

before the verb but not within the noun phrase could be handled in a similar fashion with adverbs having the feature specification $[+adv, -adj]$ and $[+adj, +adv]$ and adjectives having the feature specification $[+adj, +adv]$ only.

While a comparison of more complex sentence structures can not be conclusive for the reasons outlined above, some discussion may illuminate profitable areas for further study of Barai. Does the transformational model account for the same range of structures as the tagmemic analysis?

Lester³⁸ distinguishes four kinds of rules in a transformational grammar. These are phrase structure rules, transformational rules, embedding rules, and joining rules. We have already considered phrase structure rules and transformational rules. Embedding rules are recursive rules that can be applied over and over to produce longer and longer sentences and are part of the phrase structure rules. Rule 6 of Barai is an embedding rule since \bar{P} contains a \bar{N} which can in turn contain a \bar{P} , etc. Sentences may also be embedded. For example, the sentence is a potential modifier in the noun phrase (\bar{N}) of Barai. Although a discussion of relative clauses is outside the scope of this study, both analyses can account for embedded relative clause structures equally well.

The type of joining rule that has received the most attention combines independent sentences as coordinate structures. Liles³⁹ accounts for these structures with an additional expansion of S, i.e., $S \rightarrow S^n$. However, such a conjoining rule still corresponds to only a few of the sentence level syntagmemes of

the tagmemic analysis; viz., the parallel sentence and the alternative sentence. Generally speaking, clauses other than relative clauses and parallel independent clauses are derived from some predicate or verb phrase node. By such an analysis, all the sentence syntagmemes of Barai that are composed of a dependent and an independent clause could be generalized into one underlying structure. This still leaves the many combinations of medial and independent clauses however. Intuitively it seems highly implausible that these S's, so nearly independent, could be dominated by some kind of verb or predicate phrase.

Lytle has recently postulated three basic kinds of joining operations: adjunction, conjunction, and subjunction. Adjunction is basically the familiar rewrite technique, $X \rightarrow YZ$. Conjoined structures can then be represented as $X \rightarrow X \text{ and } X$. And what is interesting is his reappraisal of the relative clause rule, $NP \rightarrow NP S$. This is the third joining process, subjunction, which he generalizes to account for a variety of subordinate constructions: $X \rightarrow XY$.

"This form of junction is our central concern. It is our contention that subjunction is a distinct operation resulting in relationships which are different from those resulting from adjunction and conjunction. We assert that it is not possible to generate subordinate constituents by adjoining them to their antecedents. Furthermore, it is our conviction that the failure of modern theoreticians to acknowledge the authenticity of the traditional concept of subordination as distinct from other types of junction has hindered the progress of descriptive syntax and semantics."⁴⁰

The entertaining possibility here is that the various sentence level syntagmemes composed of a medial clause and an

independent clause might be generalized to one underlying structure exhibiting this kind of junction. But again, this is an area for further investigation.

Popper⁴¹ suggests that theories spring from problems so that the problem from which a theory comes is important to understanding that theory. The problem from which tagmemics sprang was the need for a set of tools that would enable a non-native analyst to master the system of communication for any given culture. For such 'communicative acculturation', as Hale calls it⁴², units or distinguishable chunks are understandably of paramount importance. Underlying structure is of marginal relevance.

For transformational theory, on the other hand, the original problem was the 'discovery' of obvious relations between certain sets of sentences that were not accounted for by then current syntactic theory.⁴³ It comes as no surprise then that transformational grammars still focus on general, underlying relations.

Each of the models may very well solve the problems for which they were originally devised. On this level, there are no grounds for comparison. This study, however, has been restricted to a consideration of a lower level goal common to both systems, that being an accurate accounting of the data. It is on this level that the evidence from this limited study of the syntactic structures of Barai indicates that the formalization of a rule oriented transformational grammar more fully accounts for the data than the formalization of a unit oriented tagmemic grammar.

FOOTNOTES

1. Chomsky, 1955:12
2. Ibid, 11.
3. Lytle, 1974:8
4. Pike, 1967
5. The most extensive study of this language family and other languages in this part of Papua New Guinea is that of T. E. Dutton, entitled, "The Peopling of Central Papua: Some Preliminary Observations", 1969.
6. Cook, 1969
7. Longacre, 1964:15-16
8. Ibid.
9. Ibid, 22-23
10. The concord bars throughout the tagmemic analysis represent different kinds of agreement that will be spelled out with a statement for each particular case and discussed in further detail in Chapter Three.
11. Abbreviations corresponding to the slots of the formulas will sometimes appear with the examples to assist the reader in assimilating the data.
12. A set of nine stems constitutes the deictics.

<u>gar-</u>	'that, to the side'
<u>gam-</u>	'that, down at an angle'
<u>gaf-</u>	'that, up at an angle'
<u>gur-</u>	'that, to the side of the person spoken to'
<u>gum-</u>	'that, straight down with rereference to the speaker'
<u>guf-</u>	'that, straight up with reference to the speaker'
<u>ig-</u>	'this, general'
<u>ij-</u>	'that, general'
<u>iz-</u>	'what, general'

To simplify the glosses, ig- will be glossed as 'this', iz- will be glossed as 'what', but all the rest will be glossed simply as 'that'.

13. Here and throughout the paper, brackets will be used simply as a notational device to assist the reader and will indicate a dependent clause.
14. Lexical borrowing of this sort is common. Cultural innova-

tions that have resulted from recent contact with the West are frequently incorporated as transliterations of basic English words although they generally are assigned a wider range of reference. Thus kofu refers to the coffee garden as well as the coffee bean, and in rare instances, the actual drink. bisinise (business) refers to any activity that results in a cash income. The term fireni (plane) refers to the airstrip as well as the aircraft.

15. Phrase level syntagmemes of this type in Barai include the appositive, process, intensive, and exclusive phrases. Discussion of these has been omitted however in an effort to limit the scope of this study.
16. Other multiple-head syntagmemes omitted here are the similitative, coordinate, and purpose constructions.
17. An optional mood tagmeme probably precedes the modifier tagmeme of this construction, where the set of fillers includes the negative as well as the interrogative and imperative markers. These have been eliminated from this brief sketch however, because intricate selectional restrictions between the two tagmemes raise complications beyond the scope of this study.
18. Combinations like isuame suake, *yesterday*, *early morning*, are analyzed as double-headed, embedded, item-apposition phrases. Generic-specific combinations of this sort occur manifesting the head slots in all of the various noun phrase syntagmemes. Note: ame mumokana, *boy*, *teenager*, ine jinume ij -ia, *at that tree trunk*; etc.
19. Olson, 1974
20. There are co-occurrence restrictions among the various peripheral tagmemes of the sentence that must be pursued in an exhaustive analysis. For some discussion of these, see *Barai Sentence Structure and Embedding*, Olson, 1973.
21. 'take' verbs

<u>dabe</u>	<i>take, carry</i>
<u>abe</u>	<i>take (obj.sg)</i>
<u>ke</u>	<i>take (obj.pl)</i>

'motion' verbs

<u>inauri</u>	<i>get up</i>	(subj.sg)
<u>uri</u>	<i>get up</i>	(subj.pl)
<u>keke</u>	<i>arrive</i>	(subj.sg)
<u>usiae</u>	<i>arrive</i>	(subj.pl)
<u>va</u>	<i>go</i>	
<u>ajia</u>	<i>go up</i>	
<u>ari</u>	<i>go down</i>	
<u>aru</u>	<i>go in</i>	
<u>una</u>	<i>go back</i>	
<u>asi</u>	<i>pass by</i>	
<u>ro</u>	<i>come</i>	

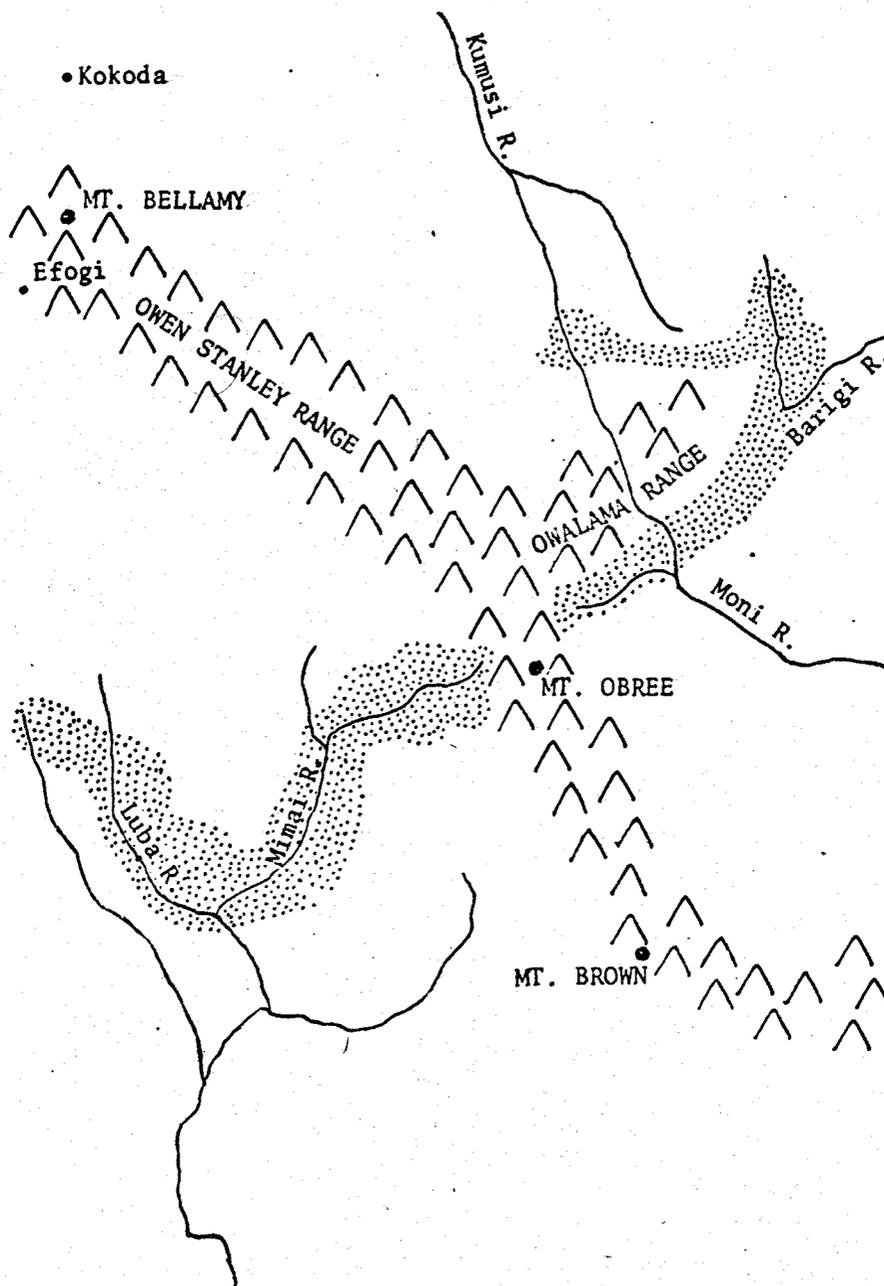
22. Since -ko is the general future tense marker for dependent verbs and also the immediate future tense marker for independent verbs, and since future is the only tense marker that occurs here in this construction, it is not immediately apparent whether this base is filled by a dependent or an independent clause. Since the final closure base is optional, however, it is assumed that an independent clause manifests the obligatory introduction base.
23. Olson, 1973.
24. Edmonds, 1970:1-2
25. Jespersen, 1933:22
26. O'Neil, 1965:23-5
27. There is sufficient overlap between the morphemes that occur in this position and those that occur in subordinate positions of the noun phrase that adjectives and adverbs are grouped as one form class.
28. These related pronominal affixes include the following:

<u>-one</u>	possessive
<u>-efuo</u>	destination, benefactive
<u>-obiki</u>	accompaniment (singular)
<u>-ena</u>	accompaniment (plural)
<u>-e</u>	reflexive
29. Cook, 1969:42
30. Gleason, 1961:172
31. Shaumjan, 1971:207
32. Lyons, 1969:248 and Hockett, 1958.
33. To be more specific, there are other schools within both frameworks that make more direct reference to semantics, but the school of tagmemic theory loosely behind Longacre and the lexicalists of transformational theory both insist on defining syntactic structures on formal grounds apart from direct reference to semantics.
34. Longacre, 1968:23-24
35. Hale, 1974
36. Cook, 1969:146
37. Longacre, 1968:32

- 38. Lester, 1971:30
- 39. Liles, 1971:121
- 40. Lytle, 1974:23
- 41. Popper, 1963:222
- 42. Hale, 1974:2
- 43. Chomsky, 1955:1

APPENDIX A

DISTRIBUTION OF BARAI SPEAKERS



APPENDIX B

Sample text: "HOW TO MAKE A GARDEN"

1. na vua juae me -kidufuo ijadufuo kua no juae me-kuvane
1sg talk garden make d.fut concerning talk 1pl garden make-fut.seq.
no va-kamama taraebo gamia usiae areme ufiiae-noe-nama fu
1pl go-cont bush there arrive and.then go.around-dur-cont 3sg
ma-re-ga namu me-na rua. 3. namu me-na ruo-mama
good-vblzr-ds brush clear-ss. come brush clear-ss come-cont
vemu-ga no ijia are-na rua. 4. rua nao-ekina suake
nite.falls-ds. 1pl there stop-ss come come sleep-del.fut.seq morning
una va gamia usiae kuke me-na me-na ruo-mama furi dabe
do.again go there arrive again work-s.s work-s.s come-cont finish take
akoe. 5. ijia are-na ro oeno -ke maza kana-na namu no
throw there stop-s.s or go.around-d.s. sun hit - s.s brush 1pl
me-eva ije vare-mama are-ga no ame meru-mama areme bu
clear-d.past that dries-cont stop-ds. 1pl boys get - cont and.then 3pl
no-ena va gamia usiae i mukie. 6. ame mumokana no
1pl-acc go there arrive tree de-limb boys teenager 1pl
i mukie-ke e maki bu zinume fike-noe. 7. fike-noe-
tree de-limb-dis person adult 3pl trunk dig.out-dur. dig.out-dur.-
namama ijia are-na rua. 8. no mukie va-kamama ga ine
cont there stop-ss. come 1pl de-limb go-cont look tree
naebe furi-kuma-ne no ijia are-na rua. 9. rua-ekina
not finish-fut.seq-d.conj 1pl there stop- s.s come come-del.fut.seq
suake kuke una va usiae mukie -moe-namama furi dabe akoe.
morning again do.again go arrive de-limb- dur.- cont. finish take throw
10. furi dabe akoe-na ijia are-na rua. 11. rua oeno-ke fu
finish take throw-s.s there stop-s.s come come ga about-ds. 3sg
maza keke-na kana-mama vare ga. 12. vare ga-kuva-ne ve
sun arrive-s.s hit- cont dry see dry see-fut.seq-d.conj. time

be no usiae ke dabe ifaeje. 13. ke dabe ifaeje fu nae-mama
another 1pl arrive do take cook do take cook 3sg burn-cont.

furi dabe akoe. 14. areme nituame no usiae fae
finish take throw and.then day.after.tomorrow 1pl arrive fence

nioe. 15. ine taraebo ine ufu-na nioe-mama
prepare.to.build tree bush tree cut-s.s prepare.to.build-cont

ijia are-na va. 16. ijia are-na va-ekina nituame
there stop-s.s go there stop-s.s go-del.fut.seq day.after.tomorrow

no usiae kira-na rua fa kira-na rua. 17. fa kira-na
1pl arrive build-s.s come fence build-ss. come fence build-ss.

va-kama ubine nija va-ekiro ve be ro kuke una
go-cont end put go-del.fut.seq time another come again do.again

kira-na va
build-s.s go etc., etc.

TRANSLATION:

1. I am going to talk about how to make a garden. 2. Whenever we make a garden we walk until we arrive at the jungle and then we walk around until (we find) a good place, and then we clear away the small brush and work in one direction. 3. We keep working until night falls and then we stop and go (home). 4. We go home and sleep and then later, in the morning, we go back there and when we get there, we work again and keep working until it is completely finished. 5. Then we stop and go and do other things and the sun hits it and the brush that we cleared keeps drying until it's all dry and then we get some boys and they come with us and when we get there we cut the limbs from the

trees. 6. We teenage boys cut the limbs off the trees and the older men keep busy digging out the trunks. 7. They keep busy digging out the stumps until they stop and go back. 8. We keep cutting the limbs and if we see that the trees are not finished we stop and go back. 9. We go back and then later in the morning we come back again and continue cutting limbs until it is completely finished. 10. When it is completely finished we stop and go back. 11. We go back and walk around and the sun comes up and strikes the (cut brush) and dries it and then we see it. 12. If we see that it is dry, at another time we will come and set it on fire. 13. We will set it on fire and it will burn and burn until it is completely finished. 14. And then a couple of days later we will return and prepare to build a fence. 15. We will cut some trees from the jungle and keep preparing things and then stop and go back. 16. We will stop and go back and then later in another couple of days we will come back and build it... we will come back and build the fence. 17. We will keep building until we put in the corner, and then we'll go and later, at another time, come back and build again and then go and...(etc.)

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