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REDUPLICATION IN MICRONESIAN LANGUAGES

1. THE MOKILESE VERBAL SYSTEM. Since reduplication in Micronesian languages is largely a feature of verbs (either of their inflection or of the derivation of verbs from other word classes), it is important from the outset to understand something about the verbal system of Micronesian languages. I will use data from Mokilese[1] to illustrate this system, largely because it is the nuclear Micronesian[2] language with which I am most familiar and because I do not believe it to be atypical with respect to the issues I shall be raising here. Of course, one should not expect to find complete uniformity throughout the group.[3]

I give the label *verb* to objects whose English semantic equivalents would belong to both the word classes *verb* and *adjective*. It includes, therefore, both active and stative and transitive and intransitive verbs. Although I know of no test that will unambiguously set off this class (verbs) from the second major word class, that of *nouns*, I feel fairly confident that such a division should be maintained. I have uncovered no evidence of any sort, however, to support the existence of a lexical category *adjective* that is distinct from the category *verb*.[4]

A significant division in the class of verbs is that between *transitives* and *intransitives*. Details aside, the former consists mostly of agent-goal verbs and the latter of statives and verbs of motion. There is in Micronesian languages, however, a conflict between surface transitivity and semantic transitivity in that many intuitively intransitive verbs have transitive properties and many transitive verbs have 'intransitive' forms. Viewed from a different perspective, many verbs whose intuitively unmarked form is [αtransitive] have a marked form that is [-αtransitive]. The significance of this statement will be made clear below.

One relevant verb type in Mokilese, and in all other Micronesian languages insofar as I am aware, is what I have called the *bitransitive* verb. Such verbs have a transitive form used to describe a particular occurrence of the activity in question performed by an expressed agent and directed towards a specific goal, and an intransitive form (called *pseudointransitive* in Sohn 1969) that is used to name the activity without reference to a specific goal. Some examples will serve to illustrate this distinction:

1a) Joamoaio loakjid rehnnoawe.

joamoa- -i -o loakjid rehn- -oawe

father my that fish day this

'My father fished today.'

1b) Joamoaio loakjidihdi mwumw limmennok.

loakjid- -i- -di mwumw lim- -men- -ok[5]

fish trans perf fish five class those

'My father caught those five fish.'

2a) Inoaio pirin kurujek.

inoa- -i -o pirin kuruj -ek

mother my that will grind intrans

'My mother is going to be grinding.'

b) Inoaio pirin kuruj mwehnggo.

'My mother is going to grind that taro.'

3a) Jeriho poak.
'That child defecated.'

b) Jeriho pakaddi ah raujijjo.
jeri- -o pakad- -di ah raujij -o
child that defecate-tr perf his pants that
'That child defecated in his pants.'

4a) Ih oaujoangoan noaroak.
he very greedy
'He is very greedy.'

b) Ih oaujoangoan noarkoa[6] joapwoan woallo.
he very covet-tr land of man-that
'He covets that man's land very much.'

5a) Ngoah pirin kodkod akpas.
I will husk now.
'I'll be husking now.'

b) Ngoah pirin kodom oaringkai akpas.
ngoah pirin kodom oaring- -kai akpas
I will husk-tr coconut these now
'I'll husk these coconuts now.'

The examples above show most of the major patterns of transitive-intransitive pairing for Mokilese bi-transitive verbs. Perhaps the most common (and productive) pattern is the addition of the suffix *-i* to the corresponding intransitive verb or to a noun to form a transitive verb. Example 1 above is such a case. Other examples are:

pok	'hit'	*poki*	'hit something'
widek	'spill, pour'	*wideki*	'pour, spill something'
pihn	'paint'	*pihni*	'paint something'
did	'wall'	*didi*	'wall in, make a wall'

A second at least semiproductive pattern is the formation of intransitive verbs from transitives by adding the suffix *-ek*.[7] It is productive in forming intransitives of causative verbs.

nikid]$_t$	'keep'	*nikidek*]$_i$	'keep'
jaun]$_t$	'stoke a fire'	*jaunek*]$_i$	'stoke a fire'
kamwinge]$_t$	'feed'	*kamwingehk*]$_i$	'feed'

Other patterns of transitive-intransitive relatedness (witnessed in examples 3-5 ignoring, for the moment, the reduplication in 5a) involve the application of two phonological rules, *Final Vowel Deletion* and *Final Consonant Deletion*.[8] The latter is a rule shared by all Micronesian languages, Polynesian languages, and a number of other Oceanic languages. Its operation can be seen in the appearance of the so-called 'thematic' consonants in derived verb forms like the 'passive' in Polynesian languages and the transitive verb forms of Fijian. Final vowel deletion is a feature of all nuclear Micronesian languages except Gilbertese (where it is incipient for some final high vowels) and a few Trukic dialects of the western Carolines (where final vowels have devoiced, but not dropped). Assuming a pre-Mokilese transitive suffix of indeterminate quality (represented here as +V) we can derive the verb forms of examples 3 and 4 in the following manner:

pakad]$_i$	pakad+V]$_t$	noaroakoa]$_i$	noaroakoa+V]$_t$	
paka	pakad+V	noaroakoa	noaroakoa+V	-C# Deletion
pak	pakad	noaroak	noaroakoa	-V# Deletion
poak	---	---	noarkoa	later rules

Intransitive forms like that of example 5 above can be derived by a subsequent application of a rule of reduplication (to be discussed below) to the output of derivations like those given above.

I have been purposely vague about the status of the rules of Final Vowel and Final Consonant Deletion and of the underlying forms to which they apply. It

is clear that they were historical rules and that the underlying forms in question are to some extent internal reconstructions of historical forms. The problem remains as to whether they are also to be considered synchronic rules relating synchronic underlying and surface forms. It should be obvious that such an analysis would require that abstract underlying segments that never appear on the surface, like the -V that appears in the derivations above, be postulated. In addition, there are problems in delimiting the set of forms to which these rules, were they synchronic, should apply. I shall not detail them here. The issue, then, is one of the abstractness of phonological derivations. It is an issue with which I do not wish to embroil myself here.

The intransitive forms of bitransitive verbs are one-place predicates that can be used with an agent or experiencer to name an activity or state, and often with an object (affected by the action) in a loosely passive sense. For example:

6a) Doaksoahu doakoahla ngoahi.

doaksoa -o doakoa -la ngoahi

doctor that poke-tr perf me

'The doctor gave me an injection.'

b) Ngoah dokla.

ngoah dok- -la

I poke-int perf

'I got an injection.'

where the intransitive perfective verb *dokla* 'injected' is being used 'passively' (with the person affected by the action as subject in 6b).

Intransitive verb forms are also found with following noun objects in what have been called *incorporated object constructions*. Thus:

7a) Jerimweinnok sapda *rapahki mwingehu.*

jerimwein -ok sap- -da rapahki mwinge- -u

boy those begin perf look-tr food that

'The boys began to look for that food.'

b) Jerimweinnok sapda *roapoan mwinge.*

jerimwein -ok sap- -da roapoan mwinge

boy those begin perf look-int food

'The boys began to look for food.'

8a) Kisain *pwileidi suhkoahk* rehnnoawe.

kisai -n pwilei -di suhkoa -ok rehnnoawe

we tns cut-tr perf tree those today

'Let's cut up those trees today.'

b) Kisain *pwileiek suhkoa* rehnnoawe.

kisai -n pwilei- -ek suhkoa rehnnoawe

we tns cut intr tree today

'Let's cut up trees today.'

9a) Ngoah *doli moaiok.*

ngoah dol- -i moai- -ok

I pick tr breakfruit those

'I'm picking those breadfruit.'

b) Ngoah *dol moai.*

ngoah dol moai

I pick-intr breadfruit

'I'm picking breadfruit.'

where the transitive verb-object noun phrase constructions italicized in the (a) sentences correspond to the incorporated object constructions italicized in the (b) sentences.

Except in Trukic languages and Marshallese, the noun object that appears in an incorporated object construction cannot be used with determiners.[9] Nouns

used without determiners, in Mokilese at any rate, can only be interpreted as generic, referring to a class of objects rather than to any specific member of that class. This seems to be the case with nouns in incorporated object constructions. Moreover, incorporated object constructions are *islands* (see Ross 1967:247, Postal 1969:228), so that the nouns that appear in such constructions cannot be questioned, relativized, etc. Thus:

10a) Ngoah kapang pukko ma arai dupukda.
ngoah kapang puk- -o ma arai dupuk- -da
I see book that rel they buy-tr perf
'I saw the book that they bought.'

from b) Arai dupukda pukko.
'They bought that book.'

but not c) *Ngoah kapang pukko ma arai dopdop.
ngoah kapang puk- -o ma arai dopdop
I see book that rel they buy-intr

from d) Arai dopdop puk.
arai dopdop puk
they buy-intr book
'They bought books.'

11a) Pukdahioaw arai dupukda?
puk- -da- -ioaw arai dupuk- -da
book what? indef they buy-tr perf
'What kind of book did they buy?'

from b) Arai dupukda pukkoaw.
'They bought a book.'

but not c) *Pukdahioaw arai dopdop?

d) Arai dopdop puk.

from 'They bought books.'

As should be clear from a number of the examples given above, a perfective suffix of varying shape (*-la, -di, -da,* etc.) can be added to both transitive and intransitive verbs to form the perfective aspect. In an incorporated object construction the perfective suffix is not added to the intransitive verb form, but is suffixed to the whole incorporated object construction. Thus:

12a) Ngoah doakoahdi mwumwwo.
ngoah doakoa- -di mwumw- -o
I poke-tr perf fish that
'I speared that fish.'

b) Mwumwwo dokdi.
mwumw- -o dok- -di
fish that poke-intr perf
'That fish was speared.'

c) Ngoah dok mwumwla.
ngoah dok mwumw- -la
I poke-intr fish perf
'I have been spear fishing.'

In the transitive sentence 12a), the perfective suffix *-di* is added to the transitive verb *doakoa* 'stab, spear, poke'. In the intransitive sentence 12b), it is suffixed to the intransitive verb *dok.* In the incorporated object construction in 12c), however, the perfective suffix *-la* is added at the end of the entire incorporated object construction rather than being suffixed to the verbal element therein. (The change of perfective suffix between 12b) and 12c) is semantically motivated and does not affect the issues presented here.)

Many cases of this construction show phonological as well as syntactic incorporation. For example, *johnoai* 'make a fire', formed from *oai* 'fire' and *john*, which seems to be related to the verb *jaun*]$_t$ *jaunek*]$_i$ 'feed a fire', and *jileimw* 'watch the house', which is related to *umw* 'house' and the verb *jiloa*]$_t$ *jilajil*]$_i$ 'guard'. These considerations

lead me to conclude that object incorporation in Mokilese is a process for the derivation of intransitive verbs, similar in many respects to English two-word verb constructions like 'baby-sit', but decidedly more productive.

As was pointed out earlier, a large number of transitive-intransitive pairs exist in which the intransitive form has undergone reduplication. Thus:

jaim]$_t$	joaijoai]$_i$	'sharpen'
koso]$_t$	koskos]$_i$	'cut'
nehk]$_t$	nehne]$_i$	'divide'
sipis]$_t$	sipsip]$_i$	'tie'
kidim]$_t$	kidkid]$_i$	'wrap'

In most such cases the unreduplicated form of the intransitive provides a base that is used in deriving intransitive verbs through object incorporation. For example:

joai jahr	'sharpen knives'	(joai + jahr 'knife')
kos moang	'cut hair'	(kos + moang 'head')
ne mwinge	'divide food'	(ne + mwinge 'food')
sip joal	'tie rope'	(sip + joal 'rope')
kid mwinge	'wrap food'	(kid + mwinge 'food')

This *combining form* of the intransitive verb seems to represent what should be the synchronic reflex of the intransitive verb base (unaffixed and unreduplicated). In cases where the intransitive member of a bitransitive pair is reduplicated, this 'base form' cannot appear as a finite verb outside of an incorporated object derivation.

In summary, most logically transitive verbs in Micronesian languages (those verbs I have termed *bitransitive*) have a *transitive form*, used to describe particular instances of an event directed towards a specific object, and an *intransitive form*, used to

name a state or activity. Except in Trukic languages and Marshallese (I am uncertain about this construction in Gilbertese), the intransitive form cannot have a specific noun complement. It can, however, be used with a 'naked' generic noun to form two-word intransitive verbs called *incorporated object constructions*. Such constructions are islands (as defined in Ross 1967). In most instances where the intransitive member of a bitransitive pair is reduplicated, an unreduplicated form appears in incorporated object constructions. This form cannot appear outside such constructions, however. In the sections that follow, we shall explore further the relationship between intransitive verb forms and reduplication, and attempt to relate this function of reduplication to other functions of the process.

2. TWO PATTERNS OF REDUPLICATION. On the surface, Mokilese shows an enormous diversity of reduplication patterns, as demonstrated by the following examples:

a) reduplication types in which the direction of reduplication is clear

1. left-moving from the beginning of the word

#CVC-

pina]$_t$	'to cover'
pinpina]$_t$	'to be covering'

#CVh-

wia]$_t$	'to do'
wihwia]$_t$	'to be doing'

#CV-

kaik]$_t$	'to scratch'
koakoaik]$_t$	'to be scratching'

2. right-moving from the end of the word

-CVC#

pwirej]$_N$ 'dirt, soil'

pwirejrej]$_{Vi}$ 'dirty'[10]

b) reduplication types in which the direction of reduplication is not clear

VCV

al]$_N$ 'road, line'

alahl]$_{Vi}$ 'striped'

CVCV

sikoa]$_t$ 'to talk about'

sikesik]$_i$ 'to converse'

VC-C

oaloa]$_t$ 'to take'

oalloal]$_i$ 'to take'

Assuming base forms with final vowels, two different derivations are possible for the reduplicated forms in the first two examples of section b) above. (In these derivations, the base is italicized.)

(i)

ala	*sikoa*	
ala + ala	*sikoa* + sikoa	Right Reduplication
*ala*al	*sikoa*sik	Final Vowel Deletion
---	*sikes*ik	i___i Raising[11]

(ii)

ala	*sikoa*	
ala + *ala*	sikoa + *sikoa*	Left Reduplication
ala*al*	sikoa*sik*	Final Vowel Deletion
---	sikes*ik*	

Derivation (i) would require a rule reduplicating -CVCV# rightward, while derivation (ii) would require a rule reduplicating #CVCV- leftward.

A close examination of the data reveals that a generalization would be missed if we were to select solution (ii), involving leftward reduplication. Recall first that some form of rightward reduplication must be assumed in the derivation of descriptive statives like *pwirejrej* 'dirty' from nouns like *pwirej* 'dirt'. In terms of the categories involved this is the same process as that involved in deriving forms like *alahl* 'striped' from *al* 'road' or *pikapik* 'sandy' from *pik* 'sand'. A generalization about the derivation of descriptive statives from nouns would be missed if we were to adopt a solution that derives these forms by different morphophonemic rules. This suggests that we try to account for at least the first two of the (b) cases above in a way parallel to (a) 2. That conclusion will be further strengthened if we can show that a rule of leftward #CVCV- reduplication is otherwise unmotivated.

We have suggested that reduplications like *poadpoadok*]$_t$ 'to be planting', from *poadok*]$_t$ 'to plant', be derived by a rule of #CVC- leftward reduplication. It would also be possible to derive such forms, along with reduplications like *sikesik* 'to converse', from *sikoa* 'to talk about', by a rule of #CVCV- leftward reduplication, if we consider the existence of an independently motivated rule of *vowel reduction* operating in Mokilese.

Problematic cases aside, vowel reduction deletes the nucleus of the second of two open syllables in a word of more than two syllables, except when the vowel of the first syllable is high. Thus, *oaljoa* 'his beard' (compare *alij* 'beard') is the result of the application of vowel reduction to **oalijoa*. On the other hand, vowel reduction does not apply to a form like *inasa* 'our (dual) mother', since the vowel of the first syllable is high. The forms *poadpoadok* and *sikesik* might then be derived in the following manner:

sikoa]$_i$	*poadok*+V]$_t$	
sikoa + *sikoa*	poadoa + *poadok*+V	Left Reduplication

sikoa*sik*	poadoa*poadok*	Final Vowel Deletion
sike*sik*	---	i__i Raising
---	poad*poadok*	Vowel Reduction

There are good reasons for not adopting this solution, however. Consider the following paradigm for *pina*]$_t$ 'to cover'.

pina]$_t$	'to cover'	pinapin]$_i$	'to cover'
pinpina]$_t$	'to be covering'	pinpinapin]$_i$	'to be covering'

These forms show quite clearly that two different reduplication processes are operating; one to relate the transitive *pina* to the intransitive *pinpina*, and the second to give the progressive forms *pinpina* and *pinpinapin*. If we were to attempt to derive both sets of forms by a single rule of leftward #CVCV- reduplication, it would be necessary to find some non ad hoc constraint on vowel reduction to explain why it does apply in the case of the progressive forms, but not in the case of the reduplicated intransitive. (Recall that vowel reduction should not apply when the nucleus of the first syllable is a high vowel.) It is not at all clear to me what form such a condition might take. Note, however, that if we choose to account for intransitive forms like *sikesik* and *pinapin* by the rule of rightward -CVCV# reduplication independently motivated for cases like *pwirejrej* 'dirty' and treat the progressive forms as the output of a rule of leftward #CVC- reduplication, as originally suggested, then the derivation of the *pina* paradigm is straightforward:

pina+V]$_t$	*pina*+V]$_t$	*pina*]$_i$	*pina*]$_i$	
---	---	*pina*pina]$_i$	*pina*pina]$_i$	Right Reduplication
---	pin*pina*+V]$_t$	---	pin*pina*pina]$_i$	Left Reduplication
pina]$_t$	pin*pina*]$_t$	*pina*pin]$_i$	pin*pina*pin]$_i$	Vowel Deletion

I conclude, therefore, that two independent reduplication processes are involved; #CVC- leftward reduplication and -CVCV# rightward reduplication. There seems to be no motivation for a rule of #CVCV- leftward reduplication.

The exact nature of the rule of rightward reduplication is yet to be determined because of problems in accounting for the presence or absence of a reflex of the historical final vowel trapped word-internally after reduplication has taken place. If it were the case that all such reduplications preserve a word-internal reflex of the final vowel, then rightward reduplication might be characterized as -CVCV# reduplication (as, in fact, we have been assuming so far). If a reflex of the final vowel were never preserved word-internally, then the rule would have to be formulated in terms of the final -CVC#. If, on the other hand, a word-internal reflex of the final vowel were preserved in some cases but not in others, then some other principled basis must be sought to account for its occurrence. This is in fact the situation we find in Mokilese--a reflex of the final vowel appears in forms like *pinapin*]$_{i}$ 'to cover' and *pikapik*]$_{Vi}$ 'sandy' (from *pik*]$_{N}$ 'sand', but not in forms like *pwirejrej*]$_{Vi}$ 'dirty' and *sakaikai*]$_{Vi}$ 'rocky' (from *sakai*]$_{N}$ 'rock').

This problem appears to be of the same nature as the one we sought to avoid in rejecting the notion of #CVCV- reduplication, since both involve the question of word-internal reflexes of final vowels. That case, however, involved the problem of the application of the rule of vowel reduction to forms to which it should not have applied; namely, cases in which the vowel of the first syllable is high. Our present case involves differing outputs (with and without reflexes of the final vowel) from what we would like to consider the same process--rightward reduplication.

Close examination of the data reveals that a reflex of the final vowel is preserved in just those examples of rightward reduplication to which vowel reduction cannot apply--when the vowel in the first syllable is high, as in *pinapin, pikapik, sikesik,* etc., and when the reduplication process creates a long vowel in the second syllable, as in *alahl*

'striped'.[12] Other items that we might want to handle through right reduplication show no reflex of a final vowel; for example, *pwirejrej*]$_{Vi}$ 'dirty', *loangloang*]$_{Vi}$ 'full of flies' (from *loang*]$_{N}$ 'fly'), *poadpoad*]$_{i}$ 'to plant' (compare *poadok*]$_{t}$ 'to plant'), etc.[13] In such cases, we might want to infer that vowel reduction has operated.

The issue, then, seems to revolve around the application of vowel reduction to the output of rightward reduplication. An example like *aproapoar*]$_{i}$ 'to shoulder', related to the transitive verb *aproa*]$_{t}$ 'to shoulder' and to the noun *aproa* 'his shoulder', seems to shed some light on the operation of this rule. The form *aproapoar* can be derived from an underlying form **apoaroa* by rightward reduplication. This yields the form **apoaroapoar*. The correct surface outputs *aproa* and *aproapoar* can then be derived by the application of vowel reduction. This is a case, then, where vowel reduction has applied, but to a vowel other than the word-internal reflex of the final vowel. Thus, the word-internal reflex of the final vowel (the *oa* of apr*oa*poar) is preserved even though vowel reduction has taken place.

If we were to assume that vowel reduction has applied to forms like *pwirejrej* or *sakaikai*, it must have applied in a different domain than in the case of *aproapoar* (to the third rather than to the second syllable). Moreover, it is impossible in such cases to be sure that vowel reduction has applied at all, since there are no alternating forms of these roots that show reflexes of the final vowels. It is possible, then, that forms like *pwirej* 'dirt' and *sakai* 'stone' have been restructured without final vowels in their underlying form. In this case we might want to consider that rightward reduplication applies to a final -CVC(V)#.

Thus, the issue of final vowel preservation in rightward reduplications might involve either:

a) the nature of the underlying forms to which the rule applies (whether or not they have final vowels)

or b) a paradigm condition determining the domain of application of vowel reduction (to the second syllable in forms like *aproapoar* to conform with the canonical shape of the related form *aproa*, but to a non-recoverable third syllable in forms like *sakaikai* to conform with the canonical shape of the related form *sakai*).

Without a deeper consideration of the theoretical issues underlying the choice between these two solutions, the problem is insoluble. Since, in any event, rightward reduplication is not a productive process in Mokilese but is restricted to certain roots, there does not seem to be any great difficulty in postulating a historical rule of -CVCV# reduplication whose synchronic reflexes have been altered by subsequent restructuring of underlying forms or adjustments to paradigm pressures.

A final case in which the direction of reduplication is not clear is that of the VC-C reduplications in forms like *oalloal*]$_i$ 'to take' (compare *oaloa*]$_t$ 'to take') and *onggong*]$_i$ 'to wring out' (compare *ungud*]$_t$ 'to wring out'). Comparative evidence seems to suggest that the internal geminate consonants in these reduplications arose from earlier $V_1C_1V_2$+$V_1C_1V_2$ sequences, where V_1 was [-hi] and V_2 was [+hi]; compare Mokilese *pallali*, Ponapean *peliali* 'be partners'. This approach fails to account for both our examples however. No reduplication of *oaloa* could yield *oalloal* according to this principle, since neither V_1 nor V_2 is [+hi]. Similarly, no reduplication of a hypothetical base **ungu* (the lowering of /u/ to /o/ taken to be a later development) could yield *onggong*, since neither V_1 nor V_2 is [-hi]. A hypothetical base **ongu* would yield the correct output but I know of no way as yet to justify it as either a historical or a synchronic form.

The correct output for these forms could be derived if we consider them to be leftward reduplications operating at a historical stage of Mokilese in which all vowel initial words carried a prothetic glide (a stage still attested in some Trukic languages). This original prothetic glide must be assumed to have been deleted later. This theory would yield the derivations:

yoaloa	*yongo*	
yoal*yoaloa*	yong*yongo*	Leftward Reduplication
oal*yoaloa*	ong*yongo*	Initial Glide Deletion
oal*yoal*	ong*yong*	Final Vowel Deletion
oal*loal*	ong*gong*	Cy Gemination

I find this particular analysis unsatisfying, however, since it is the only case (with one other well-motivated exception) in which leftward reduplication must be used in the derivation of reduplicated intransitives of bitransitive verbs. I have so far been unable to propose a well-motivated solution involving rightward reduplication and I doubt that one will appear until more work is done on the historical phonology of Mokilese. Until then, this reduplication pattern remains somewhat problematic.

In addition to the patterns of rightward reduplication we have been discussing, there are three patterns of *leftward reduplication* in Mokilese (ignoring the direction of VC-C reduplications): #CVC-, #CVh-, and #CV-. These are at least partially phonologically conditioned. It is trivial, of course, to point out that #CVC- reduplication is limited to roots in which the first three segments are CVC. #CVh- reduplication is used with roots whose first three segments are #CV[-con]; that is, where the third segment is either a vowel or a glide. (Some younger speakers use #CVh- reduplication in roots of either shape, but agreement is far from total on the appropriateness of this usage.) #CV- reduplication is found in the same environment as #CVh- reduplication, but is limited to a very few lexical items; for example, *doadoahk*]$_{i}$ 'to work' (compare *doahkoa*]$_{t}$ 'to work at'), *mwamwahl*]$_{i}$ 'to malign' (compare *mwahl*]$_{Vi}$ 'bad'), etc. It is the only leftward reduplication pattern regularly used in the derivation of intransitive forms of bitransitive verbs (those whose roots are of the shape #CV[-con]C#). In Ponapean, perhaps the closest relative of Mokilese, #CV- reduplication is the only leftward reduplication found in these environments, the #CVh- pattern not being found in that language. It seems likely, then, that #CV- reduplication is the historical antecedent of the productive #CVh- pattern in Mokilese, some occurrences of which became 'lexically trapped' when

the dominant pattern became #CVh-. If it is possible to account for the variety of leftward reduplication patterns as for the most part phonologically conditioned, then we can conclude that there are two basic patterns of reduplication in Mokilese, one a *leftward reduplication* and the other a *rightward reduplication*.

3. THE FUNCTIONS OF REDUPLICATION.

3.1 *Derivational and inflectional reduplication.* The existence of two dominant reduplication patterns (-CVCV# and #CVC-) is supported by the fact that these tend to correspond to two distinct functions; the former to a process deriving descriptive or facultative statives from nouns or verbs[14] and the latter to a progressive-continuative inflection on predicates of all types. Although there are numerous examples of the first process in the language, it does not seem to be productive. Some cases are:

pikapik	'sandy'	(from *pik* 'sand')
koalohlo	'full of roots'	(from *koalo* 'root')
alahl	'striped'	(from *al* 'line')
dikolkol	'lumpy'	(from *dikol* 'lump')
kadipdip	'treacherous'	(from *kadip* 'to betray')
lullul	'always flickering'	(from *lul* 'to flicker')
lisipwasipw	'breakable'	(from *sipwang* 'to break')

As the last example shows, this process is often accompanied by some kind of affixation, in this case the prefix *li-*.

In contrast to the stative derivation, the progressive inflection in Mokilese is fully productive. Its normal function is to assert the ongoingness of an event, but often acquires an unambiguously continuative interpretation if it has applied to a previously progressive form. A clear example is the verb *rik sakai* 'to gather stones', which has a progressive form *rikrik sakai* 'to be gathering stones' from which a continuative can be derived by a second

application of #CVC- reduplication, yielding *rikrikrik sakai* 'to continue to gather stones'. This is a case of functional *triplication* in Mokilese.

Some leftward reduplications of transitive verbs have, in addition to their normal progressive interpretation, a second interpretation with a slightly altered contentive meaning. For example:

13. Ngoah *kapkapang* jeriho. (from *kapang* 'to see')
'I'm watching that child.'

14. Ih *sipsipid* joallo. (from *sipid* 'to tie')
'He's tying that rope sloppily.'

These interpretations are reminiscent of what Bender (1971:453) calls the 'distributive' reduplication in Marshallese. In Mokilese, however, they must be viewed as secondary to the main progressive interpretation of these reduplications. This becomes clear when we consider the fact that even in these extended interpretations these forms obey the same constraints as all progressive reduplications. They do not co-occur freely with the perfective inflection, for example. (There is no form **kapkapangda*, analogous to *kapangda* 'came to see', in either interpretation of the progressive inflection.) My data concerning such form are too scant to make further conclusions.

3.2. *Aspect and reduplication*. To understand the relationship between the form and function of reduplication in Mokilese, we must examine in some detail the various nonperfective aspects of verbs. Two have already been introduced--the *progressive* (ongoing action) aspect and the *continuative* (durative) aspect. The third major nonperfective aspect is what Forsyth (1970:82) calls the *denotative* aspect--the simple identification or naming of the action or state without reference to its ongoingness or completion. Thus, a form like *rik sakai* 'to gather stones' is denotative in that it merely names and identifies an activity, without necessarily asserting that it is ongoing, etc. (Such an example may be considered a 'derived' denotative in a very weak sense--derived from the base *rik* 'gather' and

the base *sakai* 'stone' through the process of *object incorporation*.) While there are large classes of derived denotatives, most verbs are denotative in their base form. Three classes of verbs have distinct forms for denotative, progressive, and continuative aspects--incorporated objects constructions, semelfactive verbs, and verbs of changeable state. Thus:

a) incorporated objects

Denot.	rik sakai	'to gather stones'
Progr.	rikrik sakai	'to be gathering stones'
Cont.	rikrikrik sakai	'to continue to gather stones'

b) semelfactive verbs

Denot.	roar	'to give a shudder'
Progr.	roarroar	'to be shuddering'
Cont.	roarroarroar	'to continue to shudder'

c) verbs of changeable state

Denot.	soang	'tight'
Progr.	soangsoang	'being tight'
Cont.	soangsoangsoang	'still tight'

It is difficult for English speakers to distinguish between the senses conveyed by the denotative and the progressive aspect of statives like *soang* 'tight'. In this regard, another example might help make this distinction more transparent. Consider the following sentences exemplifying the aspectual paradigm of *moadoak* 'to hurt'.

15a) Oai ohlahi moadoak.
'My wound hurts.'

b) Oai ohlahi moadmoadoak.
'My wound is hurting.'

c) Oai ohlahi moadmoadmoadoak.

'My wound is still hurting.'

English can capture the distinction between the denotative and the progressive aspect for English stative verbs, but cannot do so freely for adjectives.

The progressive and continuative aspects are neutralized for most verbs in Mokilese. This is true of verbs that 'triplicate' in the progressive as, for example, *doau* 'to climb', which has a progressive-continuative form *doaudoaudoau* 'to be/continue climbing', but no simple reduplicated form **doaudoau*. A transitive verb like *pakad* 'to defecate on' has a progressive-continuative reduplication *pakpakad* 'to be/continue defecating on' and a marginal triplication *pakpakpakad*. Most Mokilese agree that this latter form is possible and that, if produced, would necessarily be continuative in meaning. Most feel, however, that it would be synonymous with one reading of the reduplicated form *pakpakad*.

As was pointed out earlier, English often finds it difficult to distinguish between denotative and progressive aspects. This seems to be true of English adjectives, as was suggested above, but also for many active verbs. Thus, a sentence like:

16. I am climbing.

seems to me to be ambiguously an identification and naming of an activity ('climbing') and an assertion that that activity is ongoing. Example 16, therefore, seems to be a possible translation for the Mokilese denotative in 17a) and for the progressive reading of 17b):

17a) Ngoah doau.

'I'm climbing.'

b) Ngoah doaudoaudoau.

'I'm climbing.'

Much of an English speaker's difficulty in distinguishing denotative and progressive aspect in Mokilese seems to arise from the fact that in most cases English fails to distinguish between them. The Mokilese, it would seem, often have a similar difficulty in distinguishing progressive and frequentative aspects.

3.3. *Telic transitive verbs.* A puzzling but perhaps not an accidental fact of transitive-intransitive pairing in Micronesian languages is the large number of intransitive forms of bitransitive verbs that appear to be a rightward reduplication (leftward in the case of some #CV[-con]C# roots)[15] of what we would expect to be the intransitive verb root (after the application of Final Consonant Deletion and Final Vowel Deletion). Some examples have already been given in Section 1. Others are:

daun]$_t$	'to fill in'
doaudoau]$_i$	
kiroa]$_t$	'to peel'
kirakir]$_i$	
piload]$_t$	'to pick with a pole'
pilepil]$_i$	
lim]$_t$	'to fold'
limlim]$_i$	
weij]$_t$	'to pull out'
weiwei]$_i$	
sohk]$_t$	'to fish with a net'
sohso]$_i$	
ijir]$_t$	'to husk with the teeth'
ejjej]$_i$	
wina]$_t$	'to pluck, to scale'
winaun]$_i$	

It is perhaps surprising to find a large number of intransitive forms of bitransitive verbs that are not reduplicated.

sipwang]$_t$	'to break'
sipw]$_i$	'broken'
daur]$_t$	'to climb for'
doau]$_i$	'to climb'
jangid]$_t$	'to cry about'
joang]$_i$	'to cry'
widinge]$_t$	'to fool'
widing]$_i$	'sly'

I should like to claim that there is a semantic distinction between those bitransitive verbs whose intransitives are reduplicated and those that are not. The former seem to be for the most part the class of *telic verbs* and the latter, the class of *atelic verbs*. For my purposes I am defining a 'telic' activity as one that cannot be conceived without reference to a goal or object.[16] That is, it is difficult to conceive of an activity like 'sharpening' without reference to the object that is sharpened or to 'boiling' without reference to the thing boiled. This accounts for what to me is the strangeness of:

18. ?I'm sharpening.

19. ?I'm boiling.

unless, in this last case at least, the 'I' refers to what is being boiled. These examples contrast sharply with essentially 'atelic' verbs in the same construction:

20. I'm singing.

21. I'm defecating.

The telic-atelic distinction parallels the transitive-intransitive distinction in English, but this correlation is rather loose, as is shown by the fact that some atelic verbs may be transitive. Thus:

22. I'm singing a song.[17]

I would not like to claim, however, that telicity is uniquely determinable on semantic grounds. Rather, languages, and indeed individual speakers of the same language, may not agree on the telicity of a given verb. Thus, there appear to be speakers of English who find a sentence like:

23. I'm cooking.

to be as strange as example 19 above, while others treat it as a simple denotative or progressive sentence identifying the activity 'cooking'. We should not then be surprised to find cross-linguistic differences.

The bitransitive verbs with unreduplicated intransitive forms cited above seem to conform to our claims about telicity and reduplication. The verbs *doau* 'to climb' and *joang* 'to cry' are atelic in both Mokilese and English. (Recall that the atelic nature of a verb does not preclude its being transitive, but simply suggests that it does not require an object or goal to be meaningful.) Thus:

24. Ngoah doau.
'I'm climbing.'

25. Ngoah joang.
'I'm crying.'

The verb *sipwang*]$_t$ 'to break' is telic. This produces no contradiction, though, since the intransitive form *sipw* 'broken' must take a goal-case subject, so that the goal of the verb is always expressed. That is:

26. Ngoah sipw.

cannot mean 'I am breaking.', but only 'I am broken.' A similar interpretation might be given to human attribute statives like *widing* 'sly'.

What appears to be unique about most telic verbs in Mokilese (and other Micronesian languages insofar as I am aware) is that they do have denotative forms that simply name the activity *without reference to a goal or object*. These are treated as derived forms, however, and are made to undergo rightward reduplication.[18] Incorporated object constructions (in which the object *is* expressed) need not be reduplicated in the denotative aspect, which explains the appearance of the unreduplicated intransitive root in such constructions. Thus:

27a) Ngoah pilepil.
'I am engaged in picking.'

b) Ngoah piloamoai.
ngoah piloa + moai
I pick breadfruit
'I am picking breadfruit.'

28a) Ngoah deidei.
'I am engaged in digging.'

b) Ngoah dei warwar.
'I am ditch-digging.'

29a) Ngoah joaijoai.
'I am engaged in sharpening.'

b) Ngoah joai jahr.
'I am knife-sharpening.'

To sum up, thus far we have identified three non-perfective aspects in Mokilese; denotative (or action-naming), progressive (or ongoing) and continuative. The latter two are generally neutral-

ized in Mokilese in a leftward reduplication pattern, but are kept distinct in some verb classes. Denotative aspect is normally expressed by the base form of the verb, but is made to undergo rightward reduplication in the case of intransitive forms of telic bitransitive verbs. With such verbs, however, the unreduplicated intransitive base is used in incorporated object constructions.

3.4. *Reduplication and stative derivation.* There are a number of possible explanations for the fact that many statives seem to have undergone rightward reduplication. The most obvious, of course, is their status as denominal derivatives. This will account for the most transparent cases, where there is an extant noun to which the stative is related. Numerous examples have already been given. Some are:

loangloang	'full of flies'	(from *loang* 'fly')
jirangrang	'curly, wavy'	(from *jirang* 'ray, wave')
nohno	'lots of waves'	(from *no* 'wave')
loaploap	'divided into teams'	(from *loap* 'part, side')
mwajangjang	'spread'	(from *mwajang* 'space between')

More problematic, however, are those cases in which there is no extant noun from which the stative might be derived. Some examples are:

korohro	'white'
siksik	'small'
kenken	'respected'
moakojkoj	'kinky'
moadoandoal	'smooth'[19]
pokuhku	'numb (from exposure)'
pwulopwul	'young'
ripakpak	'flat'
welwel	'curved'

We might want to infer that even these statives are denominal and that the nouns to which they were related have been lost. This can only be determined by comparative evidence. An equally weak explanation (because of the difficulty in either proving or disproving it) is one based on paradigm pressure, by which originally unreduplicated statives began to reduplicate on analogy with derived statives. A third explanation is that these forms are the result of the generalization of an earlier rule reduplicating attributive (noun phrase internal) statives even to cases in which the statives are used predicatively. (The reduplication of attributive, as opposed to predicate, statives has been reported for Marshallese by Bender (1971:452). Even Marshallese, however, has a set of obligatorily reduplicated statives.) It is tempting, in this regard, to search for a correlation between the attributive and predicative functions of statives and the derived status of telic denotatives, but it is not at all clear to me what direction such an explanation might take. We shall return to this issue briefly in §3.6 below.

3.5. *Mokilese triplication.* In the preceding sections we have been attempting to correlate leftward reduplication with the progressive-continuative inflection and rightward reduplication with a number of derivational processes, such as the derivation of telic denotatives and denominal statives. Earlier, in Section 2, we pointed out the derivational ambiguity in reduplications of CVC bases. That is, a CVC-CVC reduplication could be derived either through leftward reduplication of an underlying CVCV, followed by Final Vowel Deletion, or through rightward reduplication, followed by Final Vowel Deletion and Vowel Reduction. Thus, the following hypothetical derivations produce the same surface output.

CVCV	CVCV	
CVC+CVCV	--	Leftward Reduplication
---	CVCV+CVCV	Rightward Reduplication
CVC+CVC	CVCV+CVC	Final Vowel Deletion
---	CVC+CVC	Vowel Reduction

In this way, a progressive form and a derived form (a stative for example) of a base of this shape would be homophonous, both yielding surface forms of the shape CVC-CVC. Similarly, a reduplication from an underlying #CV[-con]C# base (to which Final Consonant Deletion does not apply) would also be ambiguous as to progressive or derived reading, since bases of this shape allow only leftward reduplication.

Mokilese does not tolerate even the possibility of such ambiguity. Rather, it makes use of the fact that it is possible to compound the operation of leftward reduplication (as in the case of continuatives of incorporated object constructions) and of the fact that the resulting *triplications* are unambiguously inflectional. Thus, verbs whose simple reduplicated form would be ambiguously progressive and derivational are triplicated to form the progressive. A verb like *moair* 'to sleep', therefore, has a triplicated progressive-continuative *moahmoahmoair* 'to be/continue sleeping' and a derived reduplicated stative *limoahmoair* 'always sleeping'. (The fact that the derived stative also involves the prefix *li-* does not seem to affect the triplication process in any way.) Moreover, roots of the appropriate canonical shapes will triplicate in the progressive even in cases where no derived stative is extant. For example, there is no derived stative **pwahpwa* or **lipwahpwa*, etc. from the verb *pwa* 'to say', yet the inflectional reduplication, both progressive and continuative, must be the triplicated form *pwahpwahpwa* 'to be/continue saying'. It appears that if a form **pwahpwa* did exist, it could only be interpreted as a derived form.

Thus, the progressive aspect of Mokilese monosyllabic verbs of the shapes CV(C), CVV(C), VC, or VVC (long vowels and vowel-glide sequences do not seem to be treated as bisyllabic) is formed by *two* applications of the process of leftward reduplication, resulting in forms that I call *triplications*. As stated above, this seems to be motivated by the fact that single reduplications, if they existed, would be interpreted as derived statives rather than as progressives. Some other examples of triplication progressives are:

koaul]$_i$	'to sing'
koahkoahkoaul	'to be/continue singing'
doau]$_i$	'to climb'
doaudoaudoau	'to be/continue climbing'
kang]$_{t,i}$	'to eat'
kangkangkang	'to be/continue eating'
pa]$_t$	'to weave'
pahpahpa	'to be/continue weaving'

Exceptions to triplication (monosyllables that form their progressives by simple reduplication), in the case of semelfactive verbs and some verbs of changeable state, have already been noted in §3.2. above. It should also be stressed that derived reduplicated telic intransitives have progressive forms that undergo leftward reduplication. For example:

pinapin]$_i$	'to cover'
pinpinapin	'to be/continue covering'
doadoahk]$_i$	'to work'
doaddoadoahk	'to be/continue working'[20]

3.6. *Unity of reduplication function.* We have been attempting to show the existence of two principal reduplication patterns in Mokilese; one rightward and derivational, the other leftward and inflectional. It remains an issue as to whether the selection of the *process* of reduplication, in all its forms, to signal these various functions is purely fortuitous. In other words, it is interesting to speculate as to the existence of some unified principle that might account for the numerous functions of reduplication that have been outlined above.

Considering first the derivational functions, we have seen reduplication used to form intransitive denotatives of telic verbs and to derive stative verbs (generally from nouns but often from other verbs), and we have noted the frequency with which non-derived statives are reduplicated, in spite of the lack of an obvious source.

In the case of denotative intransitive formation, reduplication was used to derive a form that identifies a telic activity without reference to its goal. The clue to the choice of the reduplication process in this function lies perhaps in the problems noted above in our attempts to translate the denotative aspect into English. We pointed out that English does not seem able to distinguish denotative from progressive aspect for large classes of verbs. That is, the identification of an activity cannot be separated from an assertion of its ongoingness. Thus, an English sentence like:

30. I am sharpening knives.

might be translated into Mokilese in either the denotative (as in 31a) or progressive (as in 31b) aspect:

31a) Ngoah joai jahr.

b) Ngoah joaijoai jahr.

I should like to claim that, in Mokilese, the same problem arises for telic verbs--an identification of a telic activity, without reference to its goal, was impossible without an accompanying assertion of its ongoingness[21]--and that this might account for the fact that reduplication is used to form the denotative aspect of telic intransitive verbs.

In considering the class of reduplicated statives, we find a large percentage to be permanent states or 'attributes'--expressing size, color, shape, etc. Most temporary states or 'conditions'--health, mental state, state resulting from an action, etc.--are unreduplicated. For example:

Attributes		*Conditions*	
siksik	'small'	air	'worried'
soausoau	'heavy'	moadoak	'in pain'
roairoai	'long'	lioas	'angry'

korohro	'white'	roj	'empty'
imwpwilapwil	'pink'	deng	'tight'
laplap	'important'	inoang	'desirous'
manman	'able to do magic'	jor	'chapped'
dangahnga	'lazy	pa	'talented'[22]
moahmoahk	'spongy'	moahk	'crushed'
paspas	'flat'	pas	'cling'

While it is to be expected that there will be exceptions in each class, the overall tendency for 'attributes' to be reduplicated while 'conditions' are unreduplicated seems to hold. The tendency for 'attributes' to be reduplicated might be explained by a conceptual difficulty in separating the description of an attribute from an assertion that it is being manifested. It appears that there is no such conceptual problem for 'conditions'. Compare:

32a) Poahioa siksik.
'My hand is small.'

b) Poahioa siksiksik.
'My hand is still small.' (continuative)
but not *'My hand is being small.' (progressive)

33a) Poahioa moadoak.
'My hand hurts.'

b) Poahioa moadmoadoak.
'My hand is hurting.'

Perhaps this conceptual distinction between 'attributes' and 'conditions' has had some part in the choice between verbal and adjectival coding for statives in English.[23]

We have tried to suggest that both telic intransitive derivation and 'attribute' stative derivation might involve a conceptual difficulty in distinguish-

ing between 'denotation' and 'manifestation'. Note also that this last notion, 'manifestation' or 'manifestation of ongoingness', is a fair characterization of the meaning of the progressive inflection itself. It seems possible, then, that all the major functions of reduplication in Mokilese can be captured by the single notion *manifestation*. (There are minor reduplication functions in Mokilese and in other languages which are not freely capturable under this rubric. They have not been considered in this review, however.) Its realization as inflectional or derivational reduplication seems to depend on other factors (word class, etc.--see below). While this theory is, of course, wildly speculative, it seems to point to interesting avenues of exploration in the field of universal semantics.

4. OTHER MICRONESIAN LANGUAGES.

4.1. *Progressive and derivational functions*. In the preceding sections we have discussed two major functions of reduplication in Mokilese: a derivational reduplication that creates stative or denotative verbs, and a progressive-continuative inflection that asserts the ongoingness or continuation of the action or state in question. Both the derivational function and the use of rightward reduplication in that function appear to be features of all nuclear Micronesian languages. (This is not to say, of course, that other reduplication patterns are not used in the derivation or statives or denotative telic intransitives.) A few examples from each of several languages should suffice to establish the generality of this process, without attempting to be exhaustive.

Kusaiean

fasr	'coral lime'	fasrfasr	'white'
fiye	'grey hair'	fiyeye	'grey-headed'
mata	'to stay'	matɛta	'to visit'
paki]$_t$	'to select'	pakpək]$_i$	'to select'
sri	'bone'	srisri	'boney'

Marshallese

kewel'	'hair'	kewel'wel'	'hairy'
bahat	'smoke'	bahathat	'to smoke'
jek]$_t$	'to chop'	jekjek]$_i$	'to chop'
diy	'bone'	diydiy	'boney'
jeqen	'cane'	jeqenqen	'to use a cane'

Trukese

pisek	'goods'	pisekisek	'wealthy'
kineey]$_t$	'to pick'	kinikin]$_i$	'to pick'
takir	'to laugh'	takirikir	'laughing'
kṷna]$_t$	'to find'	kṷnėkṷn]$_i$	'to find'
fėwṷṷw]$_t$	'to weave'	fėwṷfėw]$_i$	'to weave'

Woleaian

ranga	'tumeric'	rangaranga	'yellow'
fiyaa]$_t$	'to squeeze it'	fiyafiya]$_i$	'to squeeze it'
bata	'low tide'	batabata	'thirsty'

What I have been calling the 'derivational' function of reduplication seems to parallel what Bender (1971:453) has called the 'distributive' reduplication in Marshallese. Both involve for the most part rightward reduplication, although the productive pattern in Marshallese involves initial gemination as well as rightward reduplication. For example:

kewel'	'hair'	kkewel'wel'	'covered with hairs'
kilmeyej	'black'	kkilmeyejyej	'black and overcast'
paniq	'to pile up'	ppaniqniq	'to pile carelessly'
gep̈tak	'to snore'	ggep̈taktak	'always snoring'

There are other patterns of distributive formation, involving only gemination, only final reduplication, or a suffix of some sort, etc., but these are minor. Some examples are:

y&k	'fish'	yikey	'full of fish'
liqej]$_t$	'to tie'	liqliqej	'to tie loosely'

Bender characterizes the meaning of the distributive form as 'emphasizing frequency, intensity, pervasiveness, multiplicity, discontinuity, and carelessness' (1971:453). He distinguishes this function from denominal verb derivation and from denotative (intransitive verb) derivation, but does not justify this separation. Perhaps one difference is that distributive forms need not change word class membership, although such changes are possible; for example, *qil'ab* 'club' and *qqil'abl'ab* 'to go drinking at a club', in which a noun has a verb as its distributive form. Productivity does not seem to be able to distinguish these various functions in Marshallese either, since semantic compatibility seems to be the only restriction on distributive reduplication in Marshallese. This productivity is a definite departure from the lack of productivity of derivational reduplication in Ponapeic[24] and in Trukic languages. The relationship between Marshallese distributive reduplication and derivational reduplication in other Micronesian languages will be considered below.[25]

Gilbertese has two principal reduplication patterns--a right-moving reduplication which I equate with the -CVCV# pattern we have been discussing, and an initial-syllable reduplication. I have abstracted these two patterns from four patterns of which I became aware in one session with a Gilbertese informant. These were:

-CVC#			
korom	'to husk'	koromrom	'husking'
ran	'liquid'	ranran	'watery'
-CVCV#			
tang	'to cry'	tangitang	'always crying'
nango	'a fly'	nangonango	'full of flies'
#CV-			
koromrom	'husking'	kokoromrom	'always husking'

#CV-			
nima	'to drink'	nīnima	'always drinking'
rikoa	'to gather'	rīrikoa	'often gathering'

I am assuming that the first two patterns are variants of a single pattern and, similarly, that the second two are variants of another pattern. Any conclusions reached on the basis of the Gilbertese data must be considered tentative in view of my scant exposure to it.

Reduplication in Gilbertese is quite reminiscent of Marshallese, as opposed to reduplication in the Trukic and Ponapeic languages. Like Marshallese, Gilbertese has no progressive inflection (see below). If we are able to associate initial-syllable reduplication in Gilbertese with initial gemination in Marshallese (an issue to be considered in detail below), then the two principal patterns of reduplication in Gilbertese also parallel those of Marshallese.

The functions of reduplication in Gilbertese are also very similar to those that Bender catalogues for Marshallese, including the 'distributive' interpretation (as opposed to a progressive interpretation) of the reduplications of transitive verbs. Even considering my brief exposure to the data, it still appears easier to correlate rightward and leftward reduplications in Gilbertese with distinct functions than to attempt any such correlation for Marshallese. Rightward reduplication seems to indicate, for the most part, the manifestation of an event or state (often denotation or ongoingness, in the manner of §3.6 above). Thus:

bwenā	'to split it'	bwenabwena	'splitting'
kung	'to grunt'	kungkung	'grunting'
nang	'cloud'	nangnang	'cloudy'

Initial syllable (leftward) reduplication appears to indicate characterization:

tang	'to cry'	tātang	'always crying'
kunea	'to find it'	kukune	'able to find things'

With some verbs it appears either that these two functions have been confused or that only one interpretation is possible. For example, the reduplication *tangitang* 'always crying' was judged by my informant to be synonymous with *tātang*.

Gilbertese can optionally combine the two patterns of reduplication in a way reminiscent of the productive distributive pattern of Marshallese. Thus, the forms *tatangitang* and *tatātang* were offered by the informant, both glossed 'crying all the time'. A complete evaluation of reduplication in Gilbertese must await an analysis of the verbal system of that language. This work is yet to be done. From the data, available, however, particularly the lack of a progressive inflection and the fact that both unreduplicated transitive and unreduplicated intransitive bases are reduplicated productively and with much the same meaning, it would appear that Gilbertese reduplication is in closer agreement with the reduplication patterns of Marshallese than either are to reduplication in other Micronesian languages.

The progressive inflection, marking the ongoingness of continuation of an event, is a feature of Trukic and Ponapeic languages only. In the former languages it is expressed by a leftward #C_1VC_1- reduplication and in the latter by a leftward #CVC-, #CV-, or #CVh- reduplication, depending on the canonical shape of the root and, to some extent, on the particular language involved. For example:

Trukese

mȯȯt	'to sit'	mȯmmȯȯt	'to be sitting'
turufi	'to seize'	tutturufi	'to be seizing'

Woleaian

pirafa	'to steal'	pippirafa	'to be stealing'
mila	'to stay'	mimmila	'to be staying'

Ponapean			
mwenge	'to eat'	mwengmwenge	'to be eating'
taur	'to weigh down'	tataur	'to be weighing down'
Mokilese			
mwinge	'to eat'	mwingmwinge	'to be eating'
pohk	'to sweep'	pohpohpohk	'to be sweeping'

The progressive interpretation that seems possible for some occurrences of the distributive forms of Marshallese and Gilbertese appears to be no more than one of a number of possible interpretations of that reduplication pattern. This is in sharp contrast to the fully productive nature of the progressive inflection in Trukic and Ponapeic languages. It remains to be seen whether these differences in reduplication can provide evidence for a subgrouping within nuclear Micronesian.

In this regard, the position of Kusaiean is unclear. It has a productive leftward reduplication (either #CVC- or #CV-) that resembles the progressive inflection of Ponapeic languages *in form*. However, it appears that the semantics of this inflection in Kusaiean is parallel to the Marshallese distributive rather than the Ponapeic progressive reduplication, expressing notions like carelessness, discontinuity, etc. Recall also that some Mokilese progressives can have a second, distributive interpretation. An evaluation of these parallels will be attempted below.

4.2. *Initial gemination*. Another reduplication process, initial gemination, is found to some extent in all nuclear Micronesian languages. In Kusaiean and Gilbertese, the extant cases of initial gemination have no geminated cognates in other languages, however. We can only assume that these forms arose independently and do not reflect typical Micronesian initial gemination.

In Marshallese, initial gemination is found in most distributive forms (usually together with -CVC# reduplication) and in some intransitive counterparts

of transitive verbs. Phonetically, the resulting geminate clusters are 'softened' by a prothetic vowel in the Ralik dialect and by an epenthetic vowel in the Ratak dialect. For example; *bbaq* 'swollen'--Ralik [ɛbbɔk], Ratak [bʌbɔk]. In the Trukic languages, initial gemination is a frequent exponent of the derivational reduplication function, as well as being found in some isolated nonalternating forms. Some examples of initial gemination in Marshallese and Trukic are:

Marshallese

jjibiṁ]$_i$	'to hug'	jibiṁiy]$_t$	'to hug'
qqiṅ]$_i$	'to extinguish'	qiṅey]$_t$	'to extinguish'
kk&n]$_i$	'to invent'	kiney]$_t$	'to invent'
lliw	'angry'	liw	'to scold'
jjelaq	'negative existential'		

Trukese

ffin]$_i$	'to select'	fini]$_t$	'to select'
ppos]$_i$	'to stab'	posuu]$_t$	'to stab'
ttapw]$_i$	'to chase'	tapweey]$_t$	'to chase'
ttur]$_i$	'to seize'	turufi]$_t$	'to seize'
cc̀n	'wet'	c̀nṅn	'liquid of'

Woleaian

mmata	'to wake up'	mata	'eye'
bbwuha]$_i$	'to boil'	bwuhaa]$_t$	'to boil it'

In the Ponapeic languages, initial gemination is a very minor pattern found only in isolated lexical items and never, to my knowledge, in alternation with a nongeminate form. The first member of an initial geminate cluster undergoes a rule of nasal dissimilation in Ponapeic languages. In Mokilese, initial geminates are always accompanied by a prothetic vowel.[26] Some examples will be given below.

As was first suggested by Goodenough (1963:78), initial gemination in Trukic, Ponapeic, and Marshallese is cognate with Gilbertese #CV- reduplication. This latter language probably reflects a more conservative state of affairs.[27] Consider:

	Mokilese	*Trukese*	*Marshallese*	*Gilbertese*
'sharp'	ingkoang	kken	kkag	kakang
'vomit'	umwwuj	mwmwu̇s	m̄m̄&j	mumuta
'blood'	insa	cca	dah	raraa
'heavy'	soausoau	ccow	ddew	rawawata

The languages considered do not show complete agreement with regard to the initial gemination (#CVC- reduplication in the case of Gilbertese) of cognate items. For example, all the languages considered, except Marshallese, show an initial geminate in the cognate for 'blood'. The cognate for 'heavy' shows -CVCV# reduplication in Mokilese. The Gilbertese cognate for this item cannot be evaluated until the increment *-ta* is identified.

Goodenough (1963:78-79) attempts to account for the genesis of the Trukic #C_1VC_1- progressive inflection in a manner parallel to that which he proposes for initial geminates. He assumes that this pattern arose from an earlier #$C_1V_1C_2V_2$- sequence through loss of V_2 and subsequent total assimilation of C_2 to a following C_1 of the root. I reject this treatment on several grounds. First, it forces us to revise our notion of the progressive inflection to include a rule (deletion of V_2) whose workings are obscure and which is totally superfluous if the process is treated as a type of #CVC- 'closed syllable' reduplication. In his consideration of this pattern, Goodenough fails to note the existence of -CVCV# reduplications in Trukese whose surface shape would be the same as that of his #CVCV- reduplications, but to which his rule of 'internal vowel deletion' (deletion of V_2) does not apply. Thus, *mȯ̇ȯ̇t* 'to sit' and *mȯmmȯ̇ȯ̇t* 'to be sitting', but *gas* 'to sigh' and *gasagas* 'to breathe'. Secondly, though he tries to associate the Trukic progressive inflection with complete reduplications in Gilbertese (-CVCV#

reduplications in my view), all his examples are hypothetical. He shows no true cognates between Gilbertese complete reduplications and the Trukese progressive inflection. In short, what Goodenough has failed to consider is the innovative nature of the progressive inflection in Trukese. Those reduplications in Trukese that we would expect to parallel Gilbertese complete reduplications are the -CVCV# reduplications, which show similarities of both form and function in all nuclear Micronesian languages. Since Gilbertese (and Marshallese) have no forms parallel to the progressive inflection of Ponapeic and Trukic languages, we must be very cautious about trying to relate this inflection to any patterns in the former languages. Goodenough's principle error was in not paying attention to the function, as well as the form of reduplications in attempting to relate them.

4.3. *Historical evaluation.* If we can assume that those forms and functions common to the reduplication patterns of all nuclear Micronesian languages were part of the original proto-Micronesian machinery, then it is probably safe to conclude that proto-Micronesian used reduplication at least to derive denotative forms of telic verbs and to derive stative verbs from roots belonging to other word classes. It is difficult to determine whether the fully productive distributive function that we see in contemporary Marshallese was a part of the original machinery that later became restricted in Ponapeic and Trukic, or is an extension of an earlier pattern of simple stative derivation.

Comparative evidence shows that we must postulate at least two formal patterns of reduplication for proto-Micronesian--a leftward #CV- pattern and a rightward -CVCV# pattern. The former evolved into initial geminate consonants in all the languages except Gilbertese (bearing in mind subsequent reduction of these geminates in languages like Pingelapese and Kusaiean) and, except in a small residue of non-alternating forms, seems to have been replaced by -CVCV# reduplication or by unreduplicated forms in the Ponapeic languages. Thus; MAR *jjibi#*]$_i$ 'to hug' MOK *jupwurek*]$_i$ 'to hug', MAR *kk&n*]$_i$ 'to extinguish' MOK *kun*]$_i$ 'to extinguish', MAR *jjelaq* 'negative existential' MOK *dalok* 'destitute', TRU *ffin*]$_i$ 'to

select' MOK *pilpil*]$_i$ 'to select', and TRU *ccow* MAR *ddew* MOK *soausoau* 'heavy'.

It is not clear whether we can assign different functions to these two patterns in the proto-language. As has been suggested above, Gilbertese shows a tendency to use #CV- reduplication for derivatives with roughly the meaning 'characterized by....', and -CVCV# reduplication in cases that we might gloss 'manifestation of....' or 'demonstration of....'. In one view, this distinction is now being confused in Gilbertese and has already been lost in the other languages, in which the choice of reduplication pattern is now completely lexical.

All these facts do suggest one interesting, but highly speculative, account of the evolution of reduplication in Micronesian languages. We must assume the proto-language to have had two forms of reduplication--#CV- and -CVCV#--used in essentially one function, a generalization of Bender's 'distributive' function and what I call 'manifestation'. This would have derived stative verbs, denotative telic intransitives, and distributives. The choice of #CV- or -CVCV# reduplication I might speculate to have been a function of the form to which the process of reduplication was to apply. Unaffixed *roots* would have tended to use -CVCV# reduplication, while inflected forms such as suffixed transitive verbs, etc., would have tended to use #CV- reduplication. In the western languages, Ponapeic and Trukic, the original #CV- pattern was largely replaced by innovative closed syllable patterns, perhaps in response to new canonical patterns in these languages that arose as a result of the devoicing (and later the loss) of final vowels. In addition, its function changed into a marker of progressive aspect. Marshallese preserves the original functions of reduplication but has innovated in evolving a productive pattern that combines both #CV- (#C- in modern Marshallese) and -CVCV# patterns. Kusaiean can be considered an intermediate stage, having basically western reduplication forms but without a fully productive progressive function. In this view, Gilbertese might be taken to represent an even more conservative stage in reflecting distinct functions of the two reduplication patterns. The position of Gilbertese is difficult to evaluate. Comparison

with other Oceanic languages would undoubtedly be helpful in this and in other respects as well.

5. SUMMARY. This paper has been an attempt to show that the variety of reduplication patterns found in a language like Mokilese can be considered to be exponents of two basic patterns--one leftward and the other rightward. Moreover, there is a high degree of correlation between these two formal patterns and two distinct functions--a progressive inflection and a number of derivational processes involving descriptive or facultative statives, active denotatives, etc. Pressure to keep these two functions distinct has led to the development of *triplicating* verb forms in Mokilese.

Even in Mokilese, however, there seems to be an underlying unity of reduplication function, which I have termed *the assertion of the manifestation of an action or state*. I would not want to claim any special status, either historical or synchronic, for this unified function, though. It seems to reflect a universal semantic tendency that is at least latent in all languages at all times.

The various functions of reduplication that I have called *derivational* are common to all Micronesian languages. Progressive inflection, however, is an innovation of Ponapeic and Trukic languages. I have suggested that the form of reduplication in proto-Micronesian was determined by the status (root or inflected form) of the stem to which it applied. The functions of reduplication in proto-Micronesian seem to have been essentially those of the modern languages (bearing in mind the progressive aspect innovation and concomitant restriction of distributives in the Ponapeic and Trukic languages). The status of reduplication in Gilbertese as archaic in both form and function might be demonstrable by comparisons with languages outside Micronesia.

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NOTES

[1]Mokilese is spoken by the approximately 400 inhabitants of Mokil Atoll in the Eastern Caroline Islands and by perhaps 600 to 800 Mokilese residents of the island of Ponape.

Mokilese forms are for the most part cited in the standard orthography of the language concerned, or in that employed in the major reference source for that language. Occasional departures from standard practice are made, as, for example, the marking of vowel length in the Gilbertese examples when this was known. In interpreting the Mokilese examples the reader should be aware that:

a) *h* following a vowel marks that vowel as long,
b) *oa* is the unit phoneme /ɔ/, *ng* the unit phoneme /ŋ/, *mw* the unit phoneme /mʷ/, and *pw* the unit phoneme /pʷ/,
c) the sequence *ngg* represents a geminate /ŋ/, the sequence *mww* a geminate /mʷ/, and the sequence *pww* a geminate /pʷ/.

The following abbreviations are used:

POC	Proto-Oceanic
MOK	Mokilese
PON	Ponapean
TRU	Trukese
MAR	Marshallese

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[2]I use the term 'nuclear Micronesian' as in Bender (1971:429) to refer to the Oceanic languages of the Caroline, Marshall, and Gilbert Islands, Yapese excepted. The position of Nauruan is also in some doubt, but I have used no Nauruan data in this report.

[3]The existence of a distinct Micronesian subgroup of Oceanic is still problematic. I can only hope that the data I am presenting here, insofar as it proves to be particular to Micronesia, will shed some light on the subgrouping hypothesis.

[4]The problem of defining lexical categories in these, or in any languages for that matter, is a difficult one and one I wish to avoid as much as possible in this exposition.

[5]Lengthening of vowels (as in the case of the surface form of the transitive suffix *-i* in example 1b) and gemination of consonants (as in the case of the final *-n* of the classifier *-men* 'animate') is a feature of a particular juncture type in Mokilese. The perfective suffix *-di* may be omitted in (1b) with a slight change in meaning (*loakjidi* 'try to fish up', but *loakjidihdi* 'fish(ed) up').

[6]The form *noarkoa* 'to covet' is the result of the application of a rule of *vowel reduction* (see below) to *noaroakoa*.

[7]This suffix appears to be a reflex of POC **-aki*, and survives in a number of Micronesian languages. In Kusaiean it is the 'passive' suffix *-yək*, which is fully productive. In Ulithian it is a fossilized 'passive' suffix *-eh*. In both of these languages intransitive verbs so formed have [+___0] subjects only. In Mokilese they are one place predicates taking either agent or object case actants--with some verbs in either interpretation, with others only one. The agentive intransitive use of *-ek* seems to be an innovation of Mokilese.

[8]There is also, of course, the matter of morphophonemic changes in the root vowels of some of these forms--*poak*]$_i$ 'to defecate' and *pakad*]$_t$ 'to defecate on', for example. These alternations will not be considered here.

[9]In these languages, V$_i$-N-Det constructions are possible and receive a loosely partitive interpretation. For example, the Trukese sentences:

a) Wupwe wun eey kkonik.
   wu- -pwe wun]$_i$ eey kkonik
   I will drink this water.
   'I'll drink some of this water.'
b) Wupwe wunumi eey kkonik.
   wu- -pwe wunumi]$_t$ eey kkonik
   I will drink this water.
   'I'll drink this water.'

[10]George Grace (personal communication) has suggested to me that rightward reduplication might be interpreted as leftward reduplication that ignores a (perhaps fossilized) prefix. This could be true for many of the examples of this process, but is unlikely for cases like *pwirejrej* 'dirty', from POC **mpurit* 'excrement', where there is no evidence of a prefix.

Even if rightward reduplication is considered to have entered the language as a leftward process, as Grace suggests, it seems clear to me that it must have been reanalyzed later as a rightward one.

[11]i___i Raising is an independently motivated rule raising and fronting lower mid vowels. It can perhaps be generalized to a less restricted high-vowel environment. The formulation of this rule is not pertinent here, however.

[12]Long vowels, it should be obvious, are not subject to Vowel Reduction.

[13]This analysis reflects the assumption that, insofar as is possible, *all* denominal statives and reduplicated intransitives should be accounted for by the same morphophonemic process: in this case, rightward reduplication.

[14]The derivation of intransitive forms of bitransitive verbs will be treated below.

[15]#CV- reduplication applies only to those forms with the canonical shape #CV[-con]C# in their intransitive stem. That is, forms that undergo Final Consonant Deletion in the process of deriving their intransitive stem are not subject to this constraint. For example; *sohk*]$_t$ *sohso*]$_i$ 'to fish with a net', but *pohk*]$_t$ *popohk*]$_i$ 'to sweep'.

[16]A slightly different interpretation of telicity is found in Bauer 1970:192.

[17]I choose to ignore the possibility that there are two different verbs 'to sing', one transitive and the other intransitive.

[18]I am not sure whether the creation of denotatives from telic verbs is a productive, semantically motivated process, or whether the forms extant reflect 'lexically trapped' survivals of an earlier process that has ceased to function in the language.

[19]The change /ld/ to /nd/ suggests that this is a loanword from Ponapean, where nasalization is expected in this environment.

[20]It is interesting that Ponapean, which does not allow triplication, used the auxiliary *wie* 'to do' to form the progressive aspect in such cases. Thus:

PON mwenge 'to eat' mwengmwenge 'to be eating'
but PON doadoahk 'to work' wie doadoahk 'to be working'

[21]I use the past tense *was* because it is unclear to me whether this semantic distinction is transparent in the synchronic grammar of Mokilese or whether it represents a historical artifact. I might point out that speakers of Mokilese often have difficulty in identifying the aspect of simple (not incorporated object) telic intransitives. Thus, there is considerable confusion between a denotative and a progressive reading for intransitive forms like *joaijoai* 'to sharpen' and between progressive and continuative readings for forms like *joaijoaijoai*. I note also, without further comment, that the progressive reduplication of an incorporated object intransitive is often homophonous with an incorporated object construction formed directly from an intransitive verb. For example, the form *joaijoai jahr* 'to be sharpening knives' might be either the progressive of *joai jahr* 'to sharpen knives' or a simple denotative formed on the intransitive verb *joaijoai* 'to sharpen'.

[22]A number of human attributes of this type are not reduplicated.

[23]Since both *small* and *hurt* are stative in these sentences, the fact that *hurt* has a progressive contradicts one of Lakoff's (1966) assertions about statives. Perhaps the distinction that Lakoff sought to capture was in fact that between 'attributes' and 'nonattributes'. In this regard, a re-examination of his data would be necessary.

[24]I use the term Ponapeic to refer to a number of closely related languages spoken in Ponape district, including Ponapean, Mokilese, Pingelapese, and Ngatikese. It is not yet clear whether Kusaiean, despite its phonological deviance, can be considered Ponapeic.

[25]It was pointed out in Section 3A that some cases of the progressive inflection in Mokilese have second interpretations that seem similar to Marshallese distributives. There is without doubt a parallel here, but it is not yet clear to me how it should be treated. This question will be raised again briefly in Section 4C.

[26]In Pingelapese, $\#C_1C_1$- sequences have become $\#VhC_1$-, where the vowel in question is a lengthened version of what, in Mokilese, is a prothetic vowel.

[27]In his review, Goodenough also considers internal consonant gemination, as in Trukese *wukkun* 'his fingernail', compare Mokilese *kikin* 'his fingernail'.

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