

Prosodic Structure and Reduplication: Data from Some Languages of Maluku¹

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In his foundational paper (Marantz 1982), Marantz proposes an insightful framework to account for patterns of reduplication. Full reduplication, in which the entire morpheme is copied, is well known and rather easily treated; Marantz's major contribution is providing a means to account for patterns of partial reduplication through the use of a CV template, a principle of stem-copying, and the general types of association conventions familiar in autosegmental phonology (we assume knowledge of the details of his proposal in what follows). In this paper we first demonstrate that Marantz's proposal fails to account for patterns of reduplication in some languages of Maluku; we then consider the effectiveness of a more recent proposal (McCarthy and Prince 1990) to provide a more accurate account. For reasons of simplicity, we focus our discussion on the Roma language (Steven 1991); the pattern is found widely in southern Maluku, however, and we make reference to Tugun (Hinton 1991) and West Tarangan (Nivens 1992) in our discussion.

Roma is a member of the Central Malayo-Polynesian subgrouping of Austronesian (Blust 1977); it is spoken on Roma island in southern Maluku. Roma has an inventory of twelve consonants (p,t,d,k,s,h,m,n,l,r,w,y) and five vowels (i,e,a,o,u). There is, in addition, a phonetic transitional schwa which occurs in two environments: in clusters of /k/ and a following consonant within the same syllable, and in clusters of /h/ and a following consonant which is the onset of an unstressed syllable. This schwa is not included in the phonological inventory because it is shorter in duration than those vowels which occur as syllable nuclei, and it is not perceived as distinctive by Roma speakers.

There are two major syllable types in Roma. The 'simple syllable' may be characterized as (C)V(C); a nucleus is necessary, and in addition there may be an onset and/or a coda consisting of one consonant each. The 'complex syllable' may be characterized as (C)CCV(C); a nucleus and a complex onset occur, and in addition there may be an additional onset and/or coda consisting of one consonant each. It is in the onset of complex syllables, and in consonant clusters across syllable boundaries,

that the phonetic schwa occurs. While the simple syllable type has an unrestricted distribution (in word-initial position a phonetic glottal stop precedes all V and VC syllables), the complex syllable is limited to word-initial position (except that the minimal form CCV may occur medially and finally when the second C is a glide /y/ or /w/). Note the following examples (Steven 1991:55):

(1) V	o.ko	'that'
VC	ak.nik.ru	'youngest'
CV	ni.na	'his'
CVC	du.dul	'horn'
CCV	lpi.a	'sago palm'
CCVC	kdir.nu	'coconut shell'
CCCV	kdye.li	'ring'
CCCVC	hnyok.ri	'blanket'

The reader is referred to Steven 1991 for full discussion, including careful exemplification of distributional restrictions.

Stress placement in Roma is predominantly penultimate, with a secondary stress (indicated by , in the relevant examples) on the pre-antepenultimate syllable if there is one (Steven 1991:42ff):

(2) 'pi.ti	'mat'
'wo.ha	'paddle'
da'mu.lan	'bamboo (species)'
er'we.run	'gall, bile'

Morphemes four syllables in length are rare in Roma, with only two known forms (both nouns) as possible candidates:

(3) ,dil.kor'kor.ra	'frog'
,ko.kam'ma.u	'spider'

Morphologically complex forms are not unusual, however, and they also show secondary stress (see further examples in (5) below):

(4) ,i.tam.'tur.wi.ti	'we (incl) sleep/rest'
,a.mal'we.ra.mi	'we (excl) bathe'
,i.tal'we.ri.ti	'we (incl) bathe'

The examples in (4) illustrate a major exception to the pattern of penultimate stress which is important, viz. that suffixes are not considered when stress placement is assigned. Note the following also (in the verbal examples below, the stem is in bold type):

(5) klodan	'klo.dan	'shin'
klodan+na	'klo.dan.na	'his shin'
aw+ mturu +au	am'tur.wa.u	'I sleep'
na+ mturu +e	nam'tur.we	'he sleeps'
ama+ mturu +ami	,a.mam'tur.wa.mi	'we (excl) sleep'
ita+ mturu +iti	,i.tam'tur.wi.ti	'we (incl) sleep'

This pattern must be distinguished from that resulting from the attachment of other affixal material (referred to here as 'clitics'), which do cause the stress to shift (Steven 1991:45):

(6) lepa	'le.pa	'monkey'
lepa+ei	le'pei	'the monkey'
lepa+ida	le'pida	'a monkey'
krahan	'kra.han	'house'
krahan+ei	kra.ha'ne.i	'the house'
krahan+ida	kra.ha'ni.da	'a house'

The reader is referred to Steven 1991 for further discussion of this distinction, which plays no role in the patterns of reduplication which form the subject of this paper.

Having sketched the basic facts of Roma phonological structure, we turn now to the topic of this paper, reduplication (except where necessary to the discussion, we omit details of syllable structure and stress placement). There are two basic patterns for partial reduplication in Roma, that using a CV prefixed template and that using a CVC prefixed template. Both templates are used to derive adjectives from nouns and verbs, and apparently the choice of which template to use for a given stem is unpredictable and must be lexically specified. Note the following examples:

(7)a. CV template

'moti	'green (thing)'	mo'moti	'green'
'pokil	'circle'	po'pokil	'round'

b. CVC template

'pona	'fog, haze'	pom'pona	'gray'
'waru	'new (thing)'	war'waru	'new'

The CVC template alone is used to derive nouns from verbs (not included here) and to inflect verbs for the durative aspect:

(8)		<u>3sg non-durative</u>	<u>3sg durative</u>
paha	'to wash'	n-paha	n-pah-paha
kamur	'to sweep'	n-kamur	n-kam-kamur

Assuming that the appropriate template can be specified, there is no difficulty with examples such as these, and Marantz's proposal will handle the data elegantly and without complication. However, let us turn now to examine the durative forms in more detail (we return to further consideration of the nominal forms at the end of the paper).

Note that if a verb stem is vowel-initial in underlying representation (as mentioned above, a phonetic glottal stop precedes all vowel-initial forms when they end up word-initial on the surface), the final (or only) consonant of the subject prefix is incorporated into the reduplicated form (here we use the third person singular form as our example):

(9)		<u>3sg non-durative</u>	<u>3sg durative</u>
ala	'to take'	n-ala	nal-nala
ohun	'to massage'	n-ohun	noh-nohun
edin	'to kill'	n-edin	ned-nedin

Such patterns can be readily accounted for if reduplication is assumed to apply following subject prefixation. Otherwise, note that if only the stem is copied over the template, as Marantz proposes, the incorrect form results:

(10)	UR	template-prefixation	stem-copying	association	surface form
					*alala
	ala	ala	ala	ala	ala
				\\	
	VCV	CVC + VCV	CVC + VCV	CVC + VCV	

Unless subject prefixation takes place prior to reduplication, the presence of the medial nasal in such forms cannot be accounted for.

It is not the case simply that subject prefixation must precede, however; (re)syllabification following such prefixation must also precede. Note that if the stem begins with a consonant cluster, the first consonant is always syllabified with the prefix (which contains a vowel when attached to stems beginning with a consonant cluster), and the reduplication process incorporates only the second consonant of the cluster (the final form here is a reflexive verb which requires a suffix agreeing with the subject prefix):

(11)		<u>3sg non-durative</u>	<u>3sg durative</u>
krumat	'to slice'	na-krumat	na-krum-rumat
kdede	'to stand'	na-kdeda	na-kded-deda
prita	'to inform'	na-prita	na-prit-rita
troran	'to sit'	na-troran	na-tror-roran
mturu	'to sleep'	na-mturwe	na-mtur-turwe

If Marantz's approach is to be maintained without modification, it cannot be the case that the stem itself is what is copied over the template; whether the association is left-to-right (expected in prefixes) as in (a) below, or right-to-left (the marked case for prefixes) as in (b), the incorrect form results:

(12)a.	krumat	krumat	*krkrumat
	\		
	CVC	+ CCVCVC	
b.	krumat	krumat	*matkrumat
	CVC	+ CCVCVC	

However, if the prefix is attached and the string syllabified, a reduplicative process taking account of syllable structure can provide the proper organization of segments for reduplication to proceed correctly. The syllabification of the forms in (11) is as follows:

(13)	<u>3sg non-durative</u>	<u>3sg durative</u>
kru.mat	nak.ru.mat	nak.rum.ru.mat
kde.da	nak.de.da	nak.ded.de.da
pri.ta	nap.ri.ta	nap.rit.ri.ta
tro.ran	nat.ro.ran	nat.ror.ro.ran
mtu.ru	nam.tur.we	nam.tur.tur.we

We conclude, therefore, that not only must affixation of subject prefixes precede reduplication, but syllabification must also (the same correct result follows if syllabification is seen as persistent, Itô 1989). It should be clear that the data in (9) also can be handled by this analysis; the syllabification of *n-ala* is *na.la*, and when reduplicated *nal.na.la*.

But an additional problem is immediately evident from the data in (11)-(13), namely that the reduplicated portion of the stem is not in fact attached as a prefix to the stem, but rather is infix (Marantz (1982:453) refers to a similar phenomenon in Samoan but provides no explicit analysis). The fact that this is a general process in Roma becomes more evident when trisyllabic roots are reduplicated:

(14)	telelan	'to play'	te-lel-lelan	'playing'
	rampetan	'to act lazy'	ram-pet-petan	'acting lazy'
	kayoha	'to move'	ka-yoh-yoha	'moving'

Again the CVC reduplicative template is clearly evident, but crucial is its insertion (as an apparent infix) in a position following the first syllable. This is the same pattern seen with prefixed forms in (13) above as well. Note that the same pattern occurs also with reduplication involving a CV template in words with more than two syllables:²

(15)	mlaha	'to be long'	m-la-laha	'long'
	alyahi	'to be tall'	a-la-lahi	'tall'
	kadyehul	'shortness'	ka-de-dehul	'short'

We wish to propose that it is the structure of the metrical foot and the phonological word which is of crucial concern here, and for two reasons: (1) the foot is the point of reference for the attachment of the reduplicated form, with the template inserted at the left edge of the final foot (which is, in fact, the head foot) of the phonological word; (2) it is the final foot of the phonological word which is copied over the reduplicative template, not the

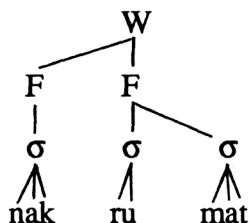
entire stem as Marantz (1982:445) suggests is universal. While Marantz mentions the possibility of reduplication involving feet (1982:438), he gives no examples or mechanisms as to how such reduplication can be fit into his proposal.

It is possible to characterize reduplication in Roma, then, as a carefully sequenced series of steps, as follows: prefixation of subject prefixes; construction of metrical structure (syllables, phonological feet, phonological words); prefixation of the appropriate CV template (in this case, CVC) at the left edge of the final foot of the phonological word; copying of the final foot over the template; association; rebuilding of metrical structure. Considering that Roma has left-headed non-quantity-sensitive binary feet (constructed right-to-left), and right-headed n-ary phonological words (see Steven 1991:126-27), the derivation for *nakrumrumat* would be as follows (for reasons of clarity we include the CV tier only at the intermediate stages):

(16) prefixation

na-krumat

construction of metrical structures



template prefixation

nak + CVC + ru mat

copying of final foot

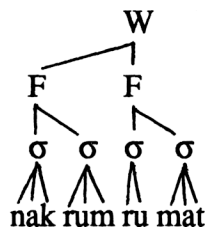
r u m a t

nak + CVC + ru mat

association

r u m a t
 | | |
 nak + CVC + ru mat

rebuilding metrical structure



Such a pattern is not uncommon; in addition to the Samoan examples cited by Marantz, and the Roma exemplified above,

similar forms are found also in such languages as Tugun (Hinton 1991), West Tarangan (Nivens 1992), and others of Maluku (prefixes appear not to be incorporated in West Tarangan). For example, note the following instances of nominalization from Tugun (the situation is exactly the same as in Roma, except that for Tugun the third singular prefix is zero with consonant-initial stems, and the reduplicative template is CV with a pre-associated *a*):

(17) hopan	's/he orders'	ha-hopan	'an order'
gisan	's/he makes'	ga-gisan	'a product'
n-oci	's/he carries'	na-n-oci	'what he carried'
v-oti	'I hang up (s.t.)'	va-v-oti	'what I hung up'
karia	's/he works'	ka-ra-ria	's/he who works'

Of particular interest here is the recurrence of the subject prefix in the reduplicated form, again providing support for the claim that reduplication follows subject prefixation. The zero form of the third person singular prefix with consonant-initial stems is comparably lacking also in the reduplicated form.

The difficulties inherent in applying Marantz's approach have not gone unnoticed by other scholars. Having seen the difficulties in applying it to Roma and other languages manifesting similar reduplicative patterns, we turn now to consider proposed modifications.

McCarthy and Prince 1990 set forth two proposals which bear directly on the discussion here. First, they propose (1990:209) the **Prosodic Morphology Hypothesis**: "Templates are defined in terms of authentic units of prosody: mora (μ), syllable (σ), foot (F), prosodic word (W), and so on." It is specifically the case that the template is not defined as a CV sequence lacking such prosodic structure, as proposed by Marantz. Second, they set forth the principle of **Prosodic Circumscription of Domains**: "The domain to which morphological operations apply may be circumscribed by prosodic criteria as well as by the more familiar morphological ones. In particular, the **minimal word** within a domain may be selected as the locus of morphological transformation in lieu of the whole domain." In the paper they demonstrate the effectiveness of their proposal in accounting for some morphological facts of several languages, with an emphasis on Arabic broken plurals. Leaving it to the reader to consult their work for a discussion of many details, we will now turn to a brief summary of the major considerations set forth. We will then examine the extent to which these proposals provide an account for Roma reduplication.

The traditional notion of extrametricality is incorporated within the principle of Prosodic Circumscription of Domains; an algorithmic 'factoring' operation applies to a base and returns that domain upon which the operation in question is to be applied, with the remainder coinciding with that structure which is commonly referred to as extrametrical (and excluded from the structure considered for application of the rule). As illustration we may take their example of Latin stress (pp 226ff), with a final syllable extrametrical. The factoring function Φ is stated as $\Phi\langle\sigma, \text{Right}\rangle$ (read: factor out the rightmost syllable). For the base (B) *spatula*, then, the 'extrametrical' syllable is stated as $B:\Phi$ (read: the portion of the base factored out by the function $\Phi = la$), and the string upon which the stress rule is to be applied is correspondingly B/Φ (read: the portion of the base remaining after the portion of the base factored out by the function Φ is removed = *spatu*). The operator * can be taken as specifying the relation between the two factors, namely right-concatenation, so that $B = B:\Phi * B/\Phi$. Given this algorithm, it is an easy matter to state how an operation (O) making use of the extrametricality concept is to be applied:

$$(18) \quad O/\Phi (B) = B:\Phi * O(B/\Phi)$$

That is, to apply the operation O to B is to apply it to the string resulting from (B/Φ) , then concatenating the result with the extrametrical portion $(B:\Phi)$. So for the operation of Latin stress:

$$(19) \quad \begin{array}{lll} O/\Phi (\text{spatula}) & = \text{spatula}:\Phi & * \quad O (\text{spatula}/\Phi) \\ & = la & * \quad O (\text{spatu}) \\ & = la & * \quad [\text{spátu}] \\ & = [\text{spátu}]la & \end{array}$$

Here the first line indicates that the operation (O = stress placement) for the string (B = *spatula*) under the control of the function (Φ = extrametricality, which requires that the last syllable be extrametrical) results in the concatenation (*) of: (i) the result of the application of the function of extrametricality to B (*la*), with (ii) the string resulting from the operation of stress placement applying to that portion of the base remaining when the function of extrametricality is applied (*spátu*). The second line shows the effect of the function, the third the effect of the operation itself, and the final line the concatenation. It is pointed out that such presentations are not genuine derivations, but rather simply clarifications of the outworking of the proposal.

More directly to the point as regards Roma is the use of a prosodic constraint to positively identify the domain of a rule (rather than simply stating that an arbitrary string is extrametrical and thus not relevant to the rule). In their example (p 228), in Ulwa possessive pronouns are attached immediately following the first iambic foot of the base, resulting in apparent infixes when the base is longer than a single foot (e.g., *karasmak* 'knee', *karas-ka-mak* 'his knee'). The prosodic function is $\Phi\langle F_L, L \rangle$ (read: factor out the initial (iambic) foot on the left). Referring to the infixing operation here as -KA, the application proceeds as follows:

$$\begin{aligned}
 (20) \quad -KA:\Phi(\text{karasmak}) &= -KA(\text{karasmak}:\Phi) * \text{karasmak}/\Phi \\
 &= -KA(\text{karas}) * \text{mak} \\
 &= \text{karaska} * \text{mak} \\
 &= \text{karaskamak}
 \end{aligned}$$

Turning now to Roma, it can be seen from the discussion early in this paper that Roma attaches the reduplicated template as a prefix to the right-most (=final) foot of the prosodic word. Following the discussion of McCarthy and Prince (1991:230ff) regarding the similar pattern in Samoan, we may identify the function here as selecting the rightmost foot ($\Phi\langle F_L, R \rangle$, where F_L = last foot); then, we may refer to the reduplication process as RED, with the following result (taking *nakrumat* as our example, and ignoring for the moment the definition of the nature of the reduplicative template):

$$\begin{aligned}
 (21) \quad \text{RED}:\Phi(\text{nakrumat}) &= \text{RED}(\text{nakrumat}:\Phi) * \text{nakrumat}/\Phi \\
 &= \text{RED}(\text{rumat}) * \text{nak} \\
 &= \text{rumrumat} * \text{nak} \\
 &= \text{nakrumrumat}
 \end{aligned}$$

McCarthy and Prince (1990:230ff) point out that it is not unexpected that such a process makes reference to a single foot as the position at which the reduplicated material is to be inserted. If the minimal base of Roma is coextensive with the disyllabic foot (and it is in fact the case that the number of monosyllabic stems is highly restricted), this is precisely what is expected as a manifestation of their Prosodic Circumscription of Domains to which morphological processes may apply (the disyllabic foot corresponding to the minimal word). They comment about such patterns as found in Samoan (p 230): "In all such cases, the sometime infix is a prefix to a prosodically characterized base; any residual material outside the actual base $B:\Phi$ is outside the scope

of the operation, leading to infixation whenever the residue B/Φ is non-null."

Before continuing we should note, as pointed out above, that such an application process assumes that reduplication itself must be ordered following both foot-building and stress placement, and (by implication) syllabification. Given that some Arabic morphological processes apply before the construction of foot structure (McCarthy and Prince 1990:234ff), we observe that the ordering required for Roma must be stated explicitly. Nevertheless, it is clear that the proposals of McCarthy and Prince solve the problem cited for Roma of defining the position for placement of the reduplicated material.

The problem that remains is to specify the nature of the reduplicated material itself. McCarthy and Prince argue that Marantz's CV template notion is inadequate. Marantz had proposed that the template employed in instances of partial reduplication was best seen as a sequence of consonant and vowel positions because within the same language it is not always the case that a syllable from the stem is reduplicated. Particularly, in some instances of reduplication involving a CVC template the second C is the coda of a syllable of the stem, while in other cases it is the onset of the following syllable. Note the following examples from Agta (Marantz 1982:439, taken from Healey 1960:7):

(22) bari 'body' barbari-k kid-in 'my whole body'
takki 'leg' taktakki 'legs'

In the first instance the second C of the reduplicative template is *r*, the onset of the following syllable; in the second example the corresponding C is *k*, the coda of the initial syllable. We find a similar pattern in Roma:

(23)

	<u>3sg non-durative</u>	<u>3sg durative</u>
so.ru 'to pull'	nso.ru	nsor.so.ru
suk.ka 'to retreat'	nsuk.ka	nsuk.suk.ka

Because of such examples Marantz concluded that a universal statement of reduplication in terms of a unit of prosodic structure was not possible. McCarthy and Prince (1990:264ff) point out, however, that in another instance in which the same CV template approach has been set forth (viz., Arabic broken plurals) it cannot be the case that the template determining the form of such broken plurals is a series of Cs and Vs alone, because in fact the resulting forms differ with regard to the number of Cs and Vs which actually occur. In particular, if the final vowel of the stem is long, the corresponding vowel of the broken plural is also long; if the vowel of the stem is short, the corresponding vowel

of the broken plural is also short. Assuming that vowel length is accounted for by association of a single segment with two positions on the CV tier, this fact cannot be accounted for through a CV template because the CV template gets its explanatory power in the first place from its nature as a morpheme which has a consistent shape, a claim which is shown to be violated in Arabic broken plurals where vowel length is transferred from the stem and is not represented as part of the template. Note the following examples:

(24)	<u>stem</u>	<u>broken plural</u>	
	jundub	janaadib	'locust'
	sultaan	salaatiin	'sultan'
	xaatam	xawaatim	'signet ring'
	jaamuus	jawaamiis	'buffalo'

The replacement of the stem vocalic melody by the broken plural vocalic melody is clear, as is the length of the vowels in the first two syllables. But the vowel length of the final syllable is not definable in terms of a template assignment, though it is predictable in that it is identical to the length found in the stem. Based upon such facts and others of a similar nature, McCarthy and Prince propose their Prosodic Morphology Hypothesis calling for defining templates in terms of prosodic units. Among the prosodic units available, of course, is the syllable, and it is this unit which is used in Roma reduplication. As we have shown above, Roma exhibits two basic syllable types: the 'simple' (C)V(C) and the 'complex' (C)CCV(C). Further, we have demonstrated that the latter occurs only as the initial syllable of the word. In that there is no guarantee that in the process of Roma reduplication the reduplicated syllable ends up in initial position (and in fact, the Prosodic Circumscription of Domains which selects the final foot of the word as the point for attachment of the reduplicated material predicts that in many cases it will not), the complex syllable type is ruled out as a possible candidate for the prosodic unit to be employed as the template.³ Still, it remains to account for why the reduplicative syllable is CVC, and not CV, VC, or even V.

We mentioned above that Samoan reduplication also selects the rightmost foot as the point of affixation. It is the case also that the reduplication template is a syllable, as the following data illustrate (McCarthy and Prince 1990:230, syllable divisions, and stress on plural forms added):

(25)		<u>plural</u>	
	tá.a	ta.tá.a	'strike'
	nó.fo	no.nó.fo	'sit'
	a.ló.fa	a.lo.ló.fa	'love'
	ga.lú.e	ga.lu.lú.e	'work'
	sa.vá.li	sa.va.vá.li	'walk'

Samoaan differs from Roma, however, in that it has only a single syllable type, (C)V. Thus given the fact of reduplication by a syllabic prosodic unit, CV is to be expected as one of the options available (syllables of the type V are apparently limited in distribution and do not fall under the domain of reduplication). The identical pattern is found also in Chamorro (McCarthy and Prince 1990:230, syllable divisions, and stress on continuative forms added):

(26)		<u>continuative</u>	
	sá.ga	sa.sá.ga	'stay'
	hu.gán.do	hu.ga.gán.do	'play'

However, McCarthy and Prince point out that Chamorro has a richer syllable inventory than Samoaan, and thus the fact that it also reduplicates with a CV syllable (rather than another of the possibilities available) must be stated (the prefix must be a light syllable).

In light of such facts, it is particularly interesting that in forming the durative aspect, Roma elects not to make use of the CV syllable type which is part of its inventory, but rather a more complex CVC syllable. This is especially striking because, as shown above, Roma manifests reduplication by CV syllables in addition to CVC syllables in deriving adjectives from nouns (data from (6a) and (6b), repeated here):

(27)	'moti	'green (thing)'	mo'moti	'green'
	'pokil	'circle'	po'pokil	'round'
	'pona	'fog, haze'	pom'pona	'gray'
	'waru	'new (thing)'	war'waru	'new'

Black 1991 describes a similar variation in accounting for reduplication in Axininca Campa. In particular, there is a similar pattern such that prefixes are incorporated into the reduplicative morpheme, and the reduplicative morpheme itself is infixal (the point of infixation is apparently following the leftmost foot):⁴

(28) no-na-wai-i 1-carry-CONT-FUT 'I will continue to carry'	nonan ona waiti 'I will continue to carry more and more'
na-wai-ak-i carry-CONT-PERF-NF 'has continued to carry'	natan ata waitaki 'has continued to carry more and more'
naa-wai-ak-i chew-CONT-PERF-NF 'has chewed'	naana aa waitaki 'has chewed more and more'

The incorporation of the prefix into the reduplicative morpheme is clear in the first example, as is the apparent infixation of the reduplicated portion itself (possibly interpreted as suffixation to the stem); the pattern, then, is not unlike that of Roma. Crucial to our discussion here is the fact that the reduplication involves a prosodic unit, viz. an iambic foot (e.g., *nona* in the first example). Furthermore, if the stem is monosyllabic and there is no prefixal material present, the default syllable *ta* may be inserted (a case of double epenthesis of the minimally specified consonant and the minimally specified vowel) to produce an iambic foot, as seen in the second example (the insertion of the default *t* to break up an impermissible vowel sequence later in the word is seen in these examples as well). However, the last example is important because it shows that if the stem is monosyllabic and there is no prefixal material present, if the stem is a heavy syllable, it will suffice as satisfying the iambic foot corresponding to the reduplicative template without insertion of the default syllable *ta* (Black states that a sequence of two light syllables is preferred, but in the case of a single heavy syllable, insertion of the *ta* syllable would result in a sequence which is not a foot). Thus two patterns emerge as manifestations satisfying the iambic foot template: CVCV and CVV. Crucial, however, is the fact that either is interpreted as constituting an iambic foot.

As a second example of variation in reduplicative template, consider West Tarangan (Nivens 1992). Here three reduplicative patterns are found: CVC, CVCV, and CV. However, Nivens argues that the particular template selected in a given instance may be defined on phonological grounds. Like Roma, the reduplicated portion is attached at the edge of the last foot of the word: if that foot is of the shape CVCV(C) the template will be CVCV, reduced to CV in contexts definable in phonological

terms; if the foot is of any other shape (i.e., vowel initial, monosyllabic, or containing an internal cluster of vowels or consonants) the template used is CVC (corresponding to the maximal syllable of the language).

As regards Roma reduplication, however, we see no means to provide such a uniform account throughout the system. In particular, there is no indication that the form of the reduplicating syllable is related to the form of the stem. We have shown above that vowel-initial stems are reduplicated in the same way as others, except that prefixal material may be incorporated. Further, although monosyllabic stems are rare, when they do occur in a reduplicated form they are not treated differently from other stems except that stress is confined to the stem and is thus not penultimate:

(29)		<u>3sg non-durative</u>	<u>3sg durative</u>
mna	'to steal'	nam'na	namna'na
wla	'to walk'	naw'la	nawla'la

Nor does the nature of the syllables making up the stem itself appear to have any effect; note that CVCV and CVCVC adjective stems reduplicate with either CV or CVC syllables (30a), and conversely both CVCV and CVCVC stems reduplicate with CV syllables (30b):

(30)a.	'moti	'green (thing)'	mo'moti	'green'
	'waru	'new (thing)'	war'waru	'new'
	'moran	'sharp (thing)'	mor'moran	'sharp'
b.	'moti	'green (thing)'	mo'moti	'green'
	'pokil	'circle'	po'pokil	'round'

Thus, while it is clear that a **syllable** must be reduplicated, that syllable can be CV (for some adjectives) or CVC (for other adjectives and all nouns and durative verbs), and apparently the reduplicative template must be lexically specified.⁵

While this state of affairs does not contradict the Prosodic Template Hypothesis, it does suggest that perhaps there are situations in which the explanatory force of the hypothesis is limited. For Roma, for example, the difference between CVC and CV must be stated if only to distinguish the pattern for verbal inflection and nominal derivation from that of adjective derivation (assuming that adjective derivation has a unified account, see fn 5). This distinction may be stated as a heavy vs. a light syllable as the hypothesis predicts. We have seen in (23) above, however, that the consonant which fills the coda of the reduplicated syllable may be either the coda of a syllable of the stem itself, or simply the onset of the following syllable (and the same pattern is found also in Agta, shown in (22)). Because of

the need to state which template will be used in some Roma contexts, and the fact that in cases of CVC reduplication the second consonant has an inconsistent prosodic status in the stem being duplicated, appealing to prosodic requirements shows little advantage over a specification in terms of CV sequences as far as Roma itself is concerned. Nevertheless, because of the fact that patterns such as that found in Arabic broken plurals show evidence against the use of a simple CV template, the more restricted Prosodic Template Hypothesis, claiming that the template must be a prosodic unit and not an arbitrary sequence of consonants and vowels, is to be preferred even in cases like Roma.

Before concluding our discussion, however, we wish to raise one further notion for discussion. It is proposed that Semai (Diffloth 1976a, 1976b) shows in expressives apparent reduplication consisting only of two consonants, one from initial position and one from final position in the syllable constituting the stem (glosses approximate):⁶

- (31) dyɔ̃:l dl-dyɔ̃:l 'appearance of object going downriver'
 dɔ̃h dh-dɔ̃h 'appearance of nodding constantly'

If the resulting form would be identical to that used for the indeterminate form of the verb, /r/ is substituted for the final consonant of the reduplication:

- (32) hã:c hr-hã:c 'sound of dragging something'
 kũc kr-kũc 'all the noises in one gulp'

Diffloth points out that phonetic vowels are inserted to break up the resulting consonant clusters (Diffloth refers to such vowels as 'minor vowels' and the resulting pattern as 'minor syllables'), but these vowels have questionable phonological status because of their predictable nature, and they are omitted in the phonological representations proposed (shown above). It may be the case that in terms of current phonological theory (note the date of the publications) the status of the vowels as vowels is definite (so that a V position is actually present in the reduplication), and that it is only the nature of the vowel in question which is predictable and thus considered only phonetic. But if in fact the correct phonological analysis is one in which the vowels are missing from the reduplicative template, the Prosodic Template Hypothesis will be shown by such data to be untenable, because a C position alone has no inherent prosodic status. Diffloth's analysis assumes a type of reduplication which is phonologically supported but in which the result is a sequence which cannot without phonetic modification be syllabified. It may be the case that Marantz' CV template is useful in such contexts, while the

Prosodic Template Hypothesis finds expression in terms of syllables which are closer to the phonetic surface. For many language situations, of course, there is no significant difference between the two, but explicit recognition of the possible contradictory nature of phonetic vs phonological structure may be as useful in discussing syllable patterns as it has been in contrasting underlying and phonetic forms of segments.

Notes

¹ We are grateful to Bryan Hinton, Mary Huttar, Craig Marshall, and John McCarthy for reading an earlier version of this paper and for offering many valuable comments and criticisms.

² The first two forms here are verbs, the third a noun. The nasal in the first is syllabic and thus not included within the reduplication; the glide in the two final forms is unassociated in UR (Steven 1991:97ff, 116) and does not become associated with the CV tier until reduplication is completed and thus is not expected to be copied in the reduplicated portion. We have at present no explanation for its absence even from the non-reduplicated portion in the reduplicated form, however.

³ Steven 1991:99-102 argues that by treating glides as being unassociated in UR (see fn 2), and the initial consonant of word-initial consonants as extrametrical, the two syllable types may be reduced to one: (C)V(C). The problem of determining the proper syllable shape (CV or CVC) for reduplication is not solved in this manner, however.

⁴ Here *w* is the velar glide whose distribution Black is accounting for as the main purpose of the paper, the abbreviation NF means "non-future".

⁵ Data in hand suggest that the template may be CVC when the medial consonant of the stem is a sonorant, CV otherwise. Further research is needed to verify this hypothesis.

⁶ We are grateful to Gérard Diffloth for bringing these data to our attention. Semai is a member of the Senoic branch of the Aslian sub-family of the Austroasiatic language family (Parkin 1991).

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