A Phonological and Morphological Reanalysis of the Maori Passive[1]

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1. Introduction.

In this paper I present a phonological and morphological reanalysis of alternations in Maori like those shown in (1).[2]

(1) Alternations in Maori verbs

Verb	Passive	Gerund	stem gloss	
mahue	mahuetia	mahuetaŋa	'leave'	[W:165]
hopu	hopukia	hopukaŋa	'catch'	[W:59]
inu	inumia	inumaŋa	'drink'	[H:414]
tohu	tohuŋia	tohuŋa[3]	'point out'	[W:431]
mau	mauria	mauraŋa	'carry'	[W:196-7]
waru	waruhia	waruhaŋa	'scrape'	[W:480]
fao	faofia	faofaŋa	'put in'	[W:488]
noho	nohoia	nohoaŋa	'sit'	[W:223]
ehu	ehua	ehuaŋa	'bail out'	[W:26]
tahu	tahuna	tahuŋa[4]	'burn'	[W:360]

As shown in (1), a consonant of unpredictable quality appears in the passive and gerundial forms, but this consonant is absent when the verb occurs unsuffixed.

These alternations have received a good deal of discussion in the literature, starting with Hale (1968, 1973), and continuing most recently with Sanders (1990, 1991) and Hale (1991). Hale (1968, 1973:414-420) discusses one potential phonological account of these alternations in which the underlying representations in (2a) and (2b) are coupled with the rule of Final Consonant Deletion in (2c).

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[2] Data is taken from Biggs 1990 and Williams 1971 unless noted otherwise and all forms are given in broad IPA transcription. Page references for these sources are given with the abbreviations B and W respectively.
The following abbreviations are used: UR for underlying representation; SR for surface representation; CAUS for causative; and PASS for passive.

[3] Rules of metathesis, and haplology are motivated for /n/- and /ŋ/-final stems. See below.

[4] *tahuŋa* is not in W or B, but is attested in text.

(2) Basic ingredients of phonological analysis

a. URs of stems

/mahue/	'leave'
/hopuk/	'catch'
/inum/	'drink'
/tohuŋ/	'point out'
/maur/	'carry'
/waruh/	'scrape'
/faof/	'put in'
/noho/	'sit'
/ehu/	'bail out'
/tahun/	'burn'

b. URs of suffixes

/-ia/ PASSIVE
/-aŋa/ GERUND

c. Final Consonant Deletion (FCD)

$$C \rightarrow \emptyset\ /\ \_\_\ \$$$

An extended version of this phonological analysis, which includes additional rules of metathesis, elision, and haplology originally suggested by McCarthy (1981), is argued for by Sanders (1990, 1991). These additional phonological rules are presented in (3a-c) along with representative derivations assuming the phonological analysis.

(3) Additional phonological rules

a. Metathesis:
$$\begin{bmatrix} V \\ \alpha back \end{bmatrix} \begin{bmatrix} +nasal \\ -\alpha back \\ \alpha coronal \end{bmatrix} + \begin{bmatrix} V \\ -back \end{bmatrix}$$

$$1 \qquad 2 \qquad\qquad 3 \quad \rightarrow \quad 1\ \emptyset\ 3\ 2$$

Morpheme-final non-labial nasals metathesize with a following front vowel when the nasal is preceded by a vowel that differs from it in backness. (Sanders, 1990:154)

b. Elision:
$$V \rightarrow \emptyset\ /\ \begin{bmatrix} \left\{ \begin{matrix} V \\ +high \\ -back \end{matrix} \right\} \end{bmatrix} + \_\_$$

Morpheme-initial vowels have no phonetic manifestation after high or front vowels. (Sanders, 1990:154)

c. Haplology:
$$\left[\left\{ \begin{array}{c} \text{+nas} \\ \text{+cor} \\ \text{-ant} \end{array} \right\} \right] \text{+ a ŋ a}$$

$$1 \qquad 234 \qquad \rightarrow \qquad \text{Ø Ø 3 4}$$

Derived /naŋa/ and /ŋaŋa/ sequences are pronounced as [ŋa]. (McCarthy, 1981:240)[5]

Sample derivations:

UR	/mahuet-ia/	/hopuk-ia/	/noho-ia/	/mahuet/	/hopuk/
2c	n.a.	n.a.	n.a.	mahue	hopu
3a-c	n.a.	n.a.	n.a.	n.a.	n.a.
SR	mahuetia	hopukia	nohoia	mahue	hopu

UR	/ehu-ia/	/tahun-ia/	/tahun-aŋa/	/tohuŋ-ia/	/tohuŋ-aŋa/
2c	n.a.	n.a.	n.a.	n.a.	n.a.
3a	n.a.	tahuina	n.a.	n.a.	n.a.
3b	ehua	tahuna	n.a.	n.a.	n.a.
3c	n.a.	n.a.	tahuŋa	n.a.	tohuŋa
SR	ehua	tahuna	tahuŋa	tohuŋia	tohuŋa

While the phonological analysis appears to be well-motivated, Hale (1973:417ff., 1991) suggests that it is not consistent with additional Maori facts which all point to /-tia/ as the default form of the passive suffix. As a result, Hale concludes that the regular form of the passive is /-tia/, and that the alternations in (1) are instances of suffixal allomorphy. The basic ingredients of Hale's (1973) 'conjugation' analysis are summarized in (4).

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[5]Haplology only applies to sequences which arise as the result of suffixation. It does not apply to morpheme internal /naŋa/, /ŋaŋa/ sequences or to those which result from reduplication.

Rule (3a) can probably be simplified: metathesis of N+V to VN occurs, provided the nasal does not share place features with a preceding vowel. Rule (3b) is being extended to the more general V+V context: see examples in (13i) and footnote 20. Rule (3c) can be simplified as well, if, following Kawasaki 1988, a rule of assimilation, n→ŋ /_Vŋ, is assumed. This assimilation feeds Haplology, which can then be formulated as follows:

$$\begin{array}{c} \text{ŋ} \\ / \ \backslash \\ \text{C]VCV} \\ \backslash \ / \\ \text{a} \end{array}$$

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<... ></... >

(4) Conjugation Analysis (Hale 1973)

a. URs of stems

b. URs of suffixes

			PASSIVE	GERUND
/hopu/	[+k]	'catch'	/-kia/	/-kaŋa/
/inu/	[+m]	'drink'	/-mia/	/-maŋa/
/tohu/	[+ŋ]	'point out'	/-ŋia/	/-ŋaŋa/
/mau/	[+r]	'carry'	/-ria/	/-raŋa/
/waru/	[+h]	'scrape'	/-hia/	/-haŋa/
/noho/	[+V]	'sit'	/-ia/	/-aŋa/
/mahue/		'leave'	/-tia/	/-taŋa/

In (4a), stems are represented as vowel final, with diacritic features serving to condition the environment for rules specifying the phonological shape of the suffixal allomorphs. The diacritic feature [+k] of the stem /hopu/ triggers a rule supplying the /k/-initial allomorph of relevant suffixes, while [+V] of /noho/ selects the vowel-initial allomorphs of the passive and gerund.[6] In (4b) the passive and gerundial morphemes are shown, each instantiated by seven allomorphs. Of these allomorphs, /-tia/ and /-taŋa/ are the regular forms of the passive and gerundial suffixes. Rules of allomorphy determine choice of one of the irregular suffixes dependent on the diacritic feature of the stem; elsewhere, where a stem has no diacritic feature, the regular suffixes /-tia/ and /-taŋa/ occur.

While the phonological solution in (2-3) is unable to account for the tendency of derived verbs and other categories to regularly take the /t/-initial form of the passive and gerundial suffixes, the lexical solution in (4) involves a proliferation of allomorphs, and captures the fact that verb stems take allomorphs with the same initial consonant in their passive and gerundial forms only by means of a lexical diacritic.

Sanders (1990, 1991) argues for the phonological solution, claiming that Hale's original generalizations regarding /-tia/ and /-taŋa/ as the elsewhere or default suffixal forms are unsound, and that even if they were sound, they would not constitute evidence for the lexical solution. The two points are summarized in Sanders (1990) as follows:

In summary, then, concerning the central premise of Hale's argument for the conjugation analysis of Maori passives - the premise that *tia* is the favored termination for passive words in this language - we must conclude that the six arguments he presents in support of this premise are either

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[6]This is a fleshed out version of Hale's 1973:416 original proposal. Alternatively, the cooccurrence of a stem with a particular suffixal allomorph could be listed as part of the suffixal entry. Under such an account, for example, suffixes /-kia/ and /-kaŋa/ would both be marked in the lexicon for selecting /hopu/ and a host of other stems. This alternative treats as accidental the fact that a particular stem is associated with the same consonant in both the passive and gerundial forms.

inconclusive or evidently contradicted by the facts about Maori. Indeed, these facts seem to suggest that *tia* is *not* a universally favored termination for passives in this language, and that if there are any most favored terminations at all they are the consonant-free terminations *ia* and *a*. (p.166)

And later:

..even if *tia were* the most favored termination for passives in Maori, this would still *not* constitute evidence in favor of a conjugation analysis of verbs in this language... given the phonological analysis of Maori verbs, it is clear that exactly the same consequences will result by assuming... a default principle for roots, namely... 'When there are no principles or evidence to the contrary, assume that a root ends in *t*.' (pp.167-68)

Hale (1991:99) replies to Sanders (1990, 1991) by reiterating his initial observation that "the consonantal passives in -*tia* had extended to a range of morphological associations significantly beyond that which can be considered ancestral in Maori or Eastern Polynesian," and provides additional supporting evidence along these lines. He acknowledges Sanders' second point above, but reiterates skepticism with regard to Sanders' phonological alternative.

In this paper I will argue for a phonological and morphological analysis of Maori suffixal alternations which is, in a sense, a merger of the purely lexical and purely phonological solutions proposed by Hale (1973) and Sanders (1990) respectively. The present analysis is consistent with the contradictory claims of Hale (1973, 1991) and Sanders (1990, 1991) regarding the regular form of the passive suffix, but has none of the weaknesses of these approaches. My primary claim is that there are two lexical forms of the passive and nominal suffixes, a vowel-initial form, and a consonant-initial form. As I will show, the distribution of /-ia,-a/ versus /-tia/ in innovative passives is predictable on purely phonological grounds. In addition to arguments presented by Sanders (1990) and Hale (1973, 1991) for these two regular suffixal forms, data from English loans and passive doublets in Maori is presented to support the lexical bifurcation. A secondary claim is that by framing the problem in autosegmental terms and making use of underspecification, a phonological solution is apparent which merges the phonological simplicity of the analysis in (2-3) with the empirical coverage of the analysis in (4), while also accounting for dialectal variation in the surface form of the innovative consonant-initial passives.[7]

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[7]From here on, the data and analysis centre on the passive forms, though all aspects of the analysis extend straightforwardly to gerundial suffixes /-aŋa/ and /-Caŋa/.

2. Arguments for /-tia/ as the regular or default passive.

The arguments for /-tia/ as the regular or default form of the passive suffix include the following:[8]

I. Stems which are basically nominal can be used verbally; when they occur in the passive, they take /-tia/.

II. Derived causatives regularly take /-tia/ in the passive when the base is a noun or adjective, and may also show a /-tia/ passive when the simple base has another passive form.

III. Postverbal adverbs which agree in voice with verbs take /-tia/ in the passive, regardless of the passive form of the verb.

IV. English borrowings take /-tia/ in the passive.

These points are slight emendations of arguments presented by Hale (1973:417), and maintained in Hale (1991).

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[8]A fifth point alluded to by Hale 1991:100 is that there are Maori verbs with /-tia/ which correspond historically to distinct passive forms, suggesting historical reanalysis of the passive as /-tia/. Hale's example is Maori *koorero* 'say', with passive *koorerotia* which he says reflects a proto-form with *-kia*, not *-tia*. This claim is based on Hawaiian cognate *?oolelo ?ia*, where /-?ia/ is said to reflect *-kia*. However, the regular correspondence between Hawaiian glottal stop and *k* does not carry over to /-?ia/, since /-?ia/ is the default passive suffix, and appears to reflect a range of proto-forms. Consider the following:

Hawaiian		Maori	
ako ?ia	'thatched'	ato-hia	'thatched'
pai ?ia	'pampered'	pai-ŋia	'approved'
wela ?ia	'burned'	wera-ina	'burned'
mana?o ?ia	'thought of'	manako-tia	'wanted'
hopu ?ia	'caught'	hopu-kia	'caught'

Only by comparing Maori passives with reconstructed passive forms or reconstructed consonant-final stems can we evaluate this fifth point. While a comparison of this sort is outside the scope of this study, it has been noted as early as Ray 1926:49 that there are consonants which do appear to reflect earlier stem-final consonants, and others which do not. Arms 1974:155 presents a comparison of this sort for Fijian, finding that of the 221 transitive endings which are clear reflexes of Proto-Austronesian stem-final consonants, only 99 reflect the expected proto-consonant, while 122 do not. Maori reflexes of the three reconstructed /n/-final stems below demonstrate the complexity of the situation:

Proto-Oceanic	*tapun	'heap over, cover'	(Blust 1976)
Maori	apu-a	'covered, spread over'	(W:13)
Maori	apu-ria	'heaped upon'	(W:13)
Proto-Central Pacific	*to(R)on	'soak'	(Geraghty 1990)
Maori	too-ia,		
	too-kia,		
	too-ŋia	'moistened, wet'	(W:428)
Proto-Central Pacific	*ujan	'load'	(Geraghty 1990)
Maori	uta-ina	'loaded'	

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Sanders (1990:159-160) questions the validity of I. above, citing the following passivized nouns *uaina* 'be rained upon' from *ua* 'rain'; *pooŋia* 'be benighted' from *poo* 'night'[9]; *puuhia* 'be shot by a gun' from *puu* 'gun'[10] and *paiŋia* 'be liked, approved' from *pai* 'good'. However, Sanders' examples are not counter-examples to I., since the stems from which these passives are derived fall into Biggs' (1973, 1990) syntactic category of 'universals'. Universals in Maori are distinct from noun (or 'basic nominals') which are referred to in I. Universals can regularly be used nominally, and as active and passive verbs, whereas true nouns must undergo a marked process of zero derivation (N→V) in order to function as verbs.[11] In Biggs' categorial terms then, Hale's generalization in I. refers to true nouns, not to universals, Since Sanders' putative counter-examples all involve universals, they are spurious. Hale's (1991:99) example is *faretia* from *fare* 'house'. To this we can add *porotia* from *poro* 'butt end' (W:294), *raahuitia* from *raahui* 'flock, bundle' (W: 237,321). Each of these stems /fare/, /poro/, and /raahui/ are considered nouns, and occur as novel verb forms through the process of zero derivation. The generalization in I. then seems sound, provided it is properly interpreted as referring to the class of true nouns.

Sanders (1990) also questions the validity of point II. above which concerns derived causatives. He notes that there are passive causatives which have the same passive forms as their non-causative passive counterparts. Representative examples are shown in (5).

(5) Causatives from verb stems

Verb	Passive	CAUS + PASS	gloss	
a. ara	arahia	fakaarahia	'raise'	[W:13]
b. ŋaro	ŋaromia	fakaŋaromia	'destroy'	[W:230]
c. popoo	popooria	fakapopooria	'smoulder'	[W:286]
d. noho	nohoia	fakanohoia	'sit'	[W:223]
e. mahue	mahuetia	fakamahuetia	'leave'	[W:165]

This fact is not in question. What still needs to be accounted for is the existence of causatives, particularly those formed from nouns and adjectives, which consistently show /-tia/, in the absence of a regular non-causative passive, as well as causatives in /-tia/ whose non-causative

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[9] Sanders actually cites *poŋia* 'be benighted', with a short /o/, and suggests this form is from *poŋi* 'dim'. The common word meaning 'to be overtaken by night' is *pooŋia*, with long /oo/ and is clearly from /poo/ 'night' (v. W:285).

[10] This is a false etymology; *puuhia* is the regular passive of *pupuhi* 'blow, shoot', and is not related to *puu* 'gun'.

[11] In categorial terms, the universal stems can be viewed as unspecified for categorial features [±N], [±V] in the lexicon.

passives show a different passive form. Representative examples of the former are given in (6), and of the latter in (7).

(6) Passivized causatives from noun and adjective stems

a.	mookaa	'muzzle (noun)'	[W:206]
	fakamookaatia	'muzzle (CAUS-PASS v.)'	[W:206]
b.	atamira	'stage, platform (noun)'	[W:18]
	fakaatamiratia	'lay out on a stage (CAUS-PASS v.)'	[W:18]
c.	maaori	'Maori (noun, adjective)'	[W:179]
	fakamaaoritia	'translate to Maori (CAUS-PASS v.)'	[W:179]
d.	kukuu	'grating sound (noun)'	[W:153]
	fakakukuutia	'beach a canoe (CAUS-PASS v.)'	[W:153]
e.	hoa	'friend'	[B:40]
	fakahoatia	'be friendly with (CAUS-PASS v.)'	[B:146]
f.	kaanifa	'barb'	[B:19]
	fakakaanifatia	'fashion a barb (CAUS-PASS v.)'	[B:147]
g.	koopeke	'cold (adjective)'	[B:27]
	fakakoopeketia	'cool, make cold (CAUS-PASS v.)'	[B:147]
h.	maroke	dry (adjective)'	[B:34]
	fakamaroketia	'dry, make dry (CAUS-PASS v.)'	[B:147]

(7) Non-causative and causative passives

	Base	Passive		
a.	koopee	koopeeŋia	'squeeze'	[W:136]
	fakakoopee	fakakoopeetia	'squeeze'	[W:136]
b.	hua	huaina	'name'	[W:64]
	fakahua	fakahuatia	'pronounce'	[W: 64]
c.	kino	kinoŋia	'dislike, hate'	[W:118]
	fakakino	fakakinotia	'dislike, hate'	[B:147]
d.	taakaro	taakarohia	'play'	[W:369]
	fakataakaro	fakataakarotia	'amuse'	[B:150]

Despite the existence of causatives like those in (5) then, forms like those in (6) and (7) are consistent with statement II. above. The forms in (6) provide additional evidence for /-tia/ as the default form of the passive suffix: /-tia/ is used just in case a non-verbal stem is used as a verbal passive. Data in (7) suggest that causative verbs derived from verbs stems may be lexicalized (i.e. listed as separate lexical items), with lexicalization resulting in novel verbs which then occur with the default passive /-tia/ as well.

The agreement between post-verbal adverbs and preceding verbs noted in III. is also questioned by Sanders (1990:161-62), who is unable to identify more than one convincing example of adverbial agreement in

the descriptions available to him.[12] This sort of agreement is not uncommon in the textual passages cited in Williams (1971). In (8) we list Hale's (1991:99-100) examples (8a-d), along with other representative examples in (8e-i).

(8) Adverbs with /-tia/ agreement

a. patua maaoritia 'struck unintentionally' [W:179]
    Adverb: maaori 'freely, without ceremony, without object' [W:179]

b. peia maaoritia 'banished without ceremony' [W:179]
    Adverb: maaori 'freely, without ceremony, without 'object' [W:179]

c. kaiŋa katoatia 'eaten wholly' [W:104]
    Adverb: katoa 'wholly, altogether' [W:104]

d. aakona tonutia 'learned still' [W:7]
    Adverb: tonu 'still, continually' [W:436]

e. fakanuia rawatia 'be made quite big' [W:287]
    Adverb: rawa 'quite, very much so' [W:332]

f. poia haeretia 'tossed up and down to and fro' [W:288]
    Adverb: haere 'to and fro' [W:30]

g. patua pokerehuutia noatia 'was hit without rhyme or reason' [W:290]
    Adverb: pokerehuu 'without cause' [W:280]
    Adverb: noa 'without conditions' [W:222]

h. mahia peenaatia 'worked in that case' [W:277]
    Adverb: peenaa 'in that case' (adverb) [W:276]

i. raŋona kautia 'only heard' [W:104]
    Adverb: kau 'alone, only' (adverb) [W:104]

Notice that in all examples in (8), the verbal passive suffix is something other than /-tia/, so that agreement is syntactic and/or morphological, but does not involve phonological identity. We are led to conclude that III. above is an accurate statement, and one which also supports /-tia/ as the default form of the passive suffix.

Point IV. above highlights the status of /-tia/ as a productive passive suffix, since it is this form of the suffix which occurs in the majority of nativized loans from English.[13] Again, Sanders (1990:163) is unable to identify more than one convincing example in the descriptions

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[12]Sanders' sources include Williams' dictionary, which has many examples of this construction, some of which are given in (8) below.

[13] In Hale 1973:417 reference is made to 'unassimilated consonant-final' borrowings from English, in addition to assimilated ones. I have no data bearing on C-final unassimilated borrowings, and take the loans in Biggs 1990 as representative of assimilated loans which conform strictly to Maori phonotactics and contain only open (vowel-final) syllables.

available to him, that being *fakahoonoretia* from *fakahoonore* 'to honour'.[14] Additional examples from Biggs (1990) are provided in (9).

(9) Borrowings with /-tia/ suffix

Base	Passive		
a. hiiri	hiiritia	'seal' (stamp)	[B:66]
b. riiŋi	riiŋitia	'telephone'	[B:74]
c. toohi	toohitia	'toast'	[B:76]
d. reehita	reehitatia	'register'	[B:128]
e. paaera	paaeratia'	'boil'	[B:22]
f. parani	paranitia	'brand'	[B:119]
g. puruuma	puruumatia	'sweep'	[B:126]
h. taraiwa	taraiwatia	'drive a vehicle'	[B:34]
i. haafe	haafetia	'halve'	[B:44]
j. miraka	mirakatia	'milk'	[B:53]
k. mookete	mooketetia	'mortgage'	[B:54]
l. parakitihi	parakitihitia	'practise'	[B:60]

• Points I.-IV. above then all appear well founded, and contradict Sanders' (1990, 1991) claim that /-ia,-a/ is the default form of the passive suffix. Let us now review the evidence he presents for these vowel-initial allomorphs as the unmarked or default forms of the passive.

3. Arguments for /-ia,-a/ as the default passive.

Sanders (1990, 1991) presents only one empirical argument in favour of the view that /-ia,-a/ is the default form of the passive suffix and this is a statistical one. Sanders (1990:165) presents a count of passive endings of the 1,134 verbs entered in Biggs' (1966) *English-Maori Dictionary*. The results of this count are shown in (10).

(10) Count of passive forms from Biggs 1966 (Sanders 1990:165)

Passive suffix	Number	percentage
a. -ia	33	2.9
b. -a (</ia/)	466	41.09
c. -tia	353	31.1
d. -na (</-nia/)	52	4.5
e. -ina (</-nia/)	24	2.1

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[14] Sanders' 1990:163 suggestion that *hoonore* 'honour, honourable' could be from English 'honoured' with final /d/ seems quite unlikely. Of the loans in Biggs 1990 none represents inflectional affixes. In addition, consonant-final words undergo final epenthesis, so that the borrowed form of 'honoured' would be *hoonoreti* or *hoonorete*, not *hoonore*.
Sanders notes (ibid) that *kihi* 'kiss' from English passivizes as *kihia*, not *kihitia*, suggesting that /-ia,-a/ is the default form of the passive. This and other loans taking /-ia,-a/ are discussed in detail in section 4.

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f. -hia	72	6.3
g. -ŋia	45	3.9
h. -ŋa (</-ŋia/)	7	0.61
i. -ria	49	4.3
j. -kia	22	1.9
l. -mia	11	0.97
m. -fia	0	0

Forms (10a,b) are derived from the same underlying form /-ia/ by rule (3b), so that vowel-initial passive forms constitute a total of nearly 44% of the forms in this dictionary, while /-tia/ is found with only 31.1% of passivizable entries. Sanders (1990:166) draws a remarkable conclusion from this count:

> ...although the *tia* termination is seen to occur more frequently than any of the other consonantal terminations, it occurs SIGNIFICANTLY LESS FREQUENTLY than the consonant-free terminations, which should not be the case if *tia* were in fact the default form of the passive suffix morpheme... On the contrary, the frequency data strongly suggest that if there is any default form at all for passive terminations in modern Maori, it is the completely vocalic form *ia* and its vocalic alternant *a*. [Emphasis added.]

For the frequency data to 'strongly suggest' anything, they must be shown to be statistically significant. However, despite Sanders' claim that /-tia/ occurs significantly less frequently than the vowel-initial suffix, no argument is made that the percentages in (10) deviate in any significant way from expected percentages. This is most important, for as noted by Hale (1991:100), there is reason to expect passives with /-ia, -a/ to be relatively common in Maori:

> ...vowel-final stems were almost certainly the most common in Eastern Polynesian and, since Maori is relatively conservative in its retention of ancestral passives... it is reasonable to expect vocalic passives in *-a* to be plentiful.

Even if the percentages in (10) were shown to be significant, there is another serious problem with this line of argumentation. This is the assumption that the most frequent allomorph corresponds with a phonological or morphological default form. While this is clearly the case in many instances, what is at issue is whether there is *always* such a correspondence. Of particular interest are cases where, as in Maori, two allomorphs split the majority of the lexicon in half. Consider the situation in many Australian languages like Dyirbal (Dixon 1972:42) where suffixal allomorphy is determined by mora/syllable count in addition to the quality of the stem-final segment. In Dyirbal /-ŋgu/ is the form of the ergative

suffix for vowel-final disyllabic stems, while /-gu/ is the form after vowel-final stems which are trisyllabic or longer.[15] If we simply count inflected stems, we will find that /-ŋgu/ is more common than /-gu/, simply because the majority of Dyirbal stems are disyllabic and vowel-final. However, we would certainly not want to conclude from such a count that /-ŋgu/ is the default ergative suffix in Dyirbal, since /-gu/ must be considered the regular or default ending for any vowel-final stem over two syllables long.

I conclude that Sanders' frequency count in (10) tells us little about the synchronic status of passive allomorphs within the grammar. However, there does appear to be evidence for /-ia/ as well as /-tia/ functioning as default passive suffixes in Maori. I turn to this evidence directly.

4. Evidence for two default passive forms.

As shown in (9), many English borrowings take /-tia/ passives. However, this is only part of the picture. A comprehensive list of borrowings with passives from Biggs (1990) is given in (11).

(11) Passive forms of English borrowings from Biggs (1990)
i. with /-tia/

haafe	haafe-tia	'halve'	[B:44]
haina	haina-tia	'sign'	[B:89]
hiiri	hiiri-tia	'seal' (stamp)	[B:66]
pauna	pauna-tia	'weigh'	[B:120]
pooti	pooti-tia	'vote'	[B:78]
riiŋi	riiŋi-tia	'telephone'	[B:74]
taake	taake-tia	'tax'	[B:132]
toohi	toohi-tia	'toast'	[B:76]
riihi	riihi-tia	'lease'	[B:129]
parai	parai-tia	'fry'	[B:41]
purei	purei-tia	'play'	[B:60]
miraka	miraka-tia	'milk'	[B:53]
parani	parani-tia	'brand'	[B:119]
perehi	perehi-tia	'print'	[B:61]
waea	waea-tia	'wire; telephone'	[B:74]
haamene	haamene-tia	'summon (legal)'	[B:89]
maarena	maarena-tia	'marry'	[B:53]
mookete	mookete-tia	'mortgage'	[B:54]
paaera	paaera-tia	'boil'	[B:22]
reehita	reehita-tia	'register'	[B:128]
puruuma	puruuma-tia	'sweep'	[B:126]
taraiwa	taraiwa-tia	'drive a vehicle'	[B:34]

---

[15]There are additional allomorphs for consonant-final stems, but these are less numerous than the vowel-final stems.

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| referii | referii-tia | 'referee' | [B:63] |
| parakitihi | parakitihi-tia | 'practise' | [B:60] |

ii. with /-ia,-a/

wepu	wepu-a	'flog, whip'	[B:80]
kiki	kiki-a	'kick'	[B:49]
kihi	kihi-a	'kiss'	[B:49]
pati	pati-a	'patch'	[B:58]
kape	kape-a	'copy, duplicate'	[B:99]
pine	pine-a	'pin'	[B:122]

A clear phonological generalization emerges from these forms: the default passive suffix for bimoraic stems is /-ia/, while the default suffix for stems of three or more moras is /-tia/. Maori is a language with a clear minimal word constraint: all nouns, verbs, adjectives and adverbs are minimally bimoraic. Monomoraic particles exist, but they cliticize on the surface to neighbouring words and do not inflect. The passive allomorphy in (11) then can be viewed in these terms as well. True minimal words in Maori take /-ia/, while bases which surpass the minimal word take /-tia/. This generalization does not hold of all Maori stems.[16] While many native stems taking /-ia,-a/ are bimoraic, there are longer stems which take this suffix as well: *haere-a* 'go; travel'; *inoi-a* 'appeal; request'; *komutu-a* 'surprise, ambush', etc. And there are also native bimoraic stems which have passives in /-tia/: *hiki-tia* 'adjourn; carry in the arms'; *kini-tia* 'nip, pinch'; *piki-tia* 'ascend, climb'. We conclude that where a word has no lexically specified passive form, the distribution of /-ia,-a/ and /-tia/ does appear to be phonologically predictable, so that both suffixes must be viewed as default forms. The allomorphy is determined by the rules in (12).

(12) Default passive allomorphy (preliminary)
    i. PASSIVE → /-ia/ / [$\mu\mu$] __
    ii. Elsewhere: PASSIVE → /-tia/

---

[16]However, a count of all (non-doublet) passives with these suffixes from Biggs 1990 is highly suggestive of a mora-based generalization predating modern Maori. The figures (which include loans) are as follows:

/-tia/	112	with trimoraic or longer bases (95%)
	6	on bimoraic bases (5%)
	118	TOTAL
/-ia/	133	on bimoraic bases (78%)
	24	on trimoraic or longer bases which could be analysed as compounds (14%)
	13	on nonanalysable trimoraic or longer bases (8%)
	170	TOTAL

Additional evidence supporting the allomorphy rules in (12) is provided by passive doublets. Hale (1973:417) observes that when the conventional termination for the passive cannot be remembered, /-tia/ is used instead. If the rules in (12) are part of modern Maori grammar, then we would also expect /-ia/ to occur when a conventional ending is not remembered, provided the base is bimoraic. Such use could give rise to passive doublets during a stage in the language where the 'conventional' or inherited passives coexist with the innovative passives determined by the rules in (12). Such a development is suggested by passive doublets in Biggs (1990).[17] A comprehensive list is given in (13).

(13) Passive doublets from Biggs (1990)

i. If bimoraic base, default suffix is /-ia/.

ahu-a/ahu-ria	'tend, foster'	[B:85]
poka-ia/poka-ina	'pierce; operate; castrate'	[B:123]

With regularization of rule (3b):

huna-ia/huna-a	'conceal, destroy'	[B:95]
paŋa-ia/paŋa-a	'cast, throw'	[B:118]

In causatives formed from passives:

faka-[pai-a]/fakapai-ŋia	'approve; put in order'	[B:148]
faka-[tapu-a]/fakatapu-ria	'sanctify, cherish'	[B:150]
faka-[poto-a]/fakapoto-hia	'abbreviate; abridge'	[B:149]

ii. If trimoraic or longer, default suffix is /-tia/.

koopiro-tia/koopiro-a	'duck, immerse'	[B:104]
paakaru-tia/paakaru-a	'break, smash'	[B:119]
aarai-tia/aarai-a	'block;barricade'	[B:87]
hohou-tia/hou-hia	'bind'	[B:93]
karaŋa-tia/karaŋa-hia	'call out, hail'	[B:100]
tuumanako-tia/tuumanako-hia	'hope, expect'	[B:140]

---

[17] Not included in (13) are doublets where each form of the passive occurs with a distinct meaning. In this class we find:

taa-ia	'beat; tattoo'	[B:131]
taa-ŋia	'bail (a canoe)'	[B:131]
aroha-ina	'love'	[B:52]
aroha-tia	'like'	[B:51]
here-a	'bind, tie'	[B: 21]
here-ŋia	'oblige, conciliate'	[B:28]

and a handful of others.

| fiitiki-tia/fiitiki-ria | 'put on a belt' | [B:153] |

In passivized causatives:

fakaara-tia/fakaara-hia	'arouse, awaken; raise'	[B:149]
fakaoho-tia/fakaoho-kia	'arouse, awaken'	[B:148]
fakaora-tia/fakaora-ŋia	'cure; save'	[B:148]
fakarewa-tia/fakarewa-ina	'melt (as grease)'	[B:149]

iii. Others

haapai-ŋa/haapai-ŋia	'elevate, raise'	[B:90]
hopu-kia/hopu-kina	'catch, seize; surprise'	[B:94]
roŋo-hia/raŋo-na	'feel, sense, hear'	[B:130]
tiimata-ria/tiimata-ŋia	'start, begin'	[B:137]

In (13i,ii) the forms on the left side of the slash appear to be innovative, and follow the rules in (12), while those on the right of the slash appear to reflect inherited passive forms. For instance, though both *aaraitia* and *aaraia* 'blocked; barricaded' are listed in Biggs (1990), Williams dictionary dating from 1917 shows only *aaraia*. In this case, *aaraitia* can be seen as an innovative form, reflecting rule (12ii). Such doublets then may be viewed as additional evidence in favour of two default suffixes, since they suggest that reanalysis is moving towards these two suffixes at the expense of the others.[18]

If we review points I.-IV. from section 2, we find that only points II. and IV. support /-ia/ as an additional default ending for bimoraic stems. We have already looked at loans (IV.), on which the original phonological generalization was based. Derived causatives (II.) involving the /faka-/ prefix will always be minimally quadrimoraic, since the minimal base which is prefixed is bimoraic. Given this, the consistent occurrence of derived causatives with /-tia/ can also be seen to support the mora-based generalizations in (12): derived causatives stems like those in (6) and (7) are minimally quadrimoraic, hence they invariably take /-tia/ as determined by (12ii).

On the other hand, it appears to be the case that non-verbal (or non-universal) stems which include nouns, adjectives, and adverbs, take /-tia/ regardless of their mora-count. We have already seen passives *faretia,*

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[18]The doublets in (13iii) can be explained without reference to a default passive form, and are shown for the purpose of completeness. The first two stems /haapai-/ and /hopu-/ show the same basic consonantism under passive-formation, and differ only as to whether a minor phonological rule has applied. The stem /roŋo-, raŋo-/ 'feel, sense, hear' has two historical passive forms, both of which are reflected in modern Maori. And /tiimata-/ 'begin' has passive *tiimata-ria*, which reflects the Proto-Polynesian passive, along with *tiimata-ŋia* which appears to be a back formation from the nominalized *tiimataŋa* 'beginning'.

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porotia, noatia and *kautia* from bimoraic stems *fare* 'house' (noun), *poro* 'butt, end' (noun), *noa* 'without conditions' (adverb), and *kau* 'alone, only' (adverb) respectively. Hence there appear to be syntactic and phonological conditions on the choice of the default form of the suffix. To (12) then, we add the default rule in (14).

(14) PASSIVE → /-tia//] X^0___   [X=noun, adverb, adjective]

(14) expresses the general rule that categories other than verbs and universals take /-tia/ in the passive: in categorial terms, this is the class of [+N] stems.

      To conclude this section, I have presented evidence for both /-ia/ and /-tia/ as default forms of the passive in Maori. I have suggested that the choice of default allomorph is prosodically determined in verbal forms according to the rules in (12), while rule (14) supplies /-tia/ for all nominal, adverbial and adjectival bases. This is the basic morphological analysis I am proposing: two passive allomorphs, with their selection determined by phonological and syntactic factors. I now turn to the phonological representation of these two suffixes, and demonstration of how this analysis can be extended to the majority of passive forms in the language.

5. Lexical representation of stems and suffixes.

I suggest that the two default suffixes /-ia/ and /-tia/ have the underlying phonological representations shown in (15).

(15) Phonological form of the two passive allomorphs

    i.   ia   ii.   ia

           | | | |

        -VV   -CVV

The consonant-initial suffix (15ii) is represented not with an underlying /t/, but with an empty C-slot. This C-slot will either be filled by the floating final consonant of a stem, or by phonological default rules. Proposed representations for the stems in (1) are shown in (16).

(16) Autosegmental representations of Maori stems
i. Vowel-final

m a h u e   n o h o   e h u
| | | | | | | | | | | |
C V C V V   C V C V   V C V

ii. Final floating consonant

```
h o p u k      i n u m        t o h u ŋ      t a h u n
| | | |        | | |          | | | |        | | | |
C V C V        V C V          C V C V        C V C V


m a u r        w a r u h      f a o f
| | |          | | | |        | | |
C V V          C V C V        C V V
```

The stems in (16i) are vowel-final, while those in (16ii) include a final floating melody element which is not associated to a skeletal position. These floating melody elements trigger the additional allomorphy rule in (17).

(17)   PASSIVE   →
```
                    i a  x  y
                    | |  |
              -CVV / V      ] __
```

Rule (17) simply states that if a stem ends in a floating melody element, like those in (16ii), it will take the /-Cia/ allomorph. Note that such a rule is necessary, since all of these stems are bimoraic, and would otherwise take /-ia/ by rule (12i). When this suffix is concatenated with a base ending in a floating melody element, the two associate by rule (18).

(18) Associate a floating segment with an empty C-slot:
```
                                                    o
                                                    :
                                                    C
```

In unsuffixed forms, the floating melody element cannot be syllabified, and so, fails to surface (cf. rule 2c). If a base lacks a final floating melody element, but takes the /-Cia/ passive due to rule (12ii) or (14), phonological default rules provide features to the empty C-slot. In most dialects, the default consonant is /t/, giving rise to /-tia/. However, at least one dialect is reported to show default /-hia/, and another /-ŋia/.[19] Default rules for these three dialects are shown in (19).

(19) Default rules

a. T-dialect	b. H-dialect	c. NG-dialect
t	h	ŋ
:	:	:
C	C	C

---

[19] I am grateful to Ray Harlow and an anonymous reviewer for bringing this dialect variation to my attention.

I return to a discussion of default rules and these dialect differences in section 6.

Derivations illustrating the application of rules (18) and (19) for the T-dialect are provided in (20).

(20) Association and default spell-out

```
           m a h u e   ia      h o p u k  ia    m a h u e      h  o p  u k
           | | | | |   ||      | | | |    ||    | | | | |      |  | | |  |
UR         C V C V V-CVV        C V C V- CVV    C V C V V       C V C V
```

```
                               h o p u k  ia
                               | | | |  \ ||
(18)          n.a.             C V C V   CVV    n.a.           n.a.
```

```
           m a h u e t ia
           | | | | | : ||
(19)       C V C V V-CVV         n.a.                n.a.           n.a.
```

```
SR         mahuetia             hopukia         mahue          hopu
```

Recall that a small percentage of vowel-final trimoraic or longer stems take /-ia/ (8% in Biggs 1990), while an even smaller percentage of bimoraic vowel-final stems take /-tia/ (5% in Biggs 1990). Under the present analysis, the exceptional trimoraic stems must be marked in the lexicon with a diacritic feature which determines selection of V-intial suffixes, while bimoraic stems will have a final floating /t/ melody element in underlying representation. Representative stems of this sort are shown in (21).

(21) Lexical representation of exceptional vowel-final stems
i. Trimoraic or longer taking /-ia/

```
           k o t i                         k o m u t u
           | /\ | |                         | | | | | |
           CVV C V      [+V]                C V CV CV    [+V]
           'reap' [B:105]                   'surprise, ambush' [B:104]
```

ii. Bimoraic taking /-tia/

```
           k i n i t                       m e a t
           | | | |                          | | |
           CVCV                             CV V
           'nip, pinch' [B:102]             'do, say, think' [B:111]
```

Stems like those in (21i) have a diacritic feature which overrides the regular allomorphy rules: [+V] indicates that the stem selects the vowel-initial allomorphs of both the passive and gerundial suffixes.

The critical components of the analysis presented up to this point are summarized in (22), and are generalized to cover alternations in both passive and gerundial forms.

(22) I. Morphological
    a. Suffixal allomorphy rules:
        i. Suffix → C-initial /] X^0 __ [X=noun, adverb, adjective]
        ii. Suffix → C-initial/ x y
                         |
                   V   ] __
        iii. Suffix → V-initial / [μμ] __
        iv. Suffix → C-initial (Elsewhere)
    b. Lexical diacritic: a small percentage of vowel-final stems are marked [+V] in the lexicon indicating that they select V-initial suffixes, overriding the allomorphy rules above.

II. Phonological
    a. Phonological rules:
        i. Rules (3a-c) of metathesis, elision, and haplology
        ii. Rule (18) of association
        iii. Rule (19) of default spell-out
    b. Phonological representations
        i. Empty C-slot in C-initial suffixes
        ii. Floating melody element in 'C'-final stems

Under the present analysis, two default suffixes are posited, one V-initial, the other C-intial, and stem-final consonants of any kind are extremely rare in the Maori lexicon. Compare this with Sanders' (1990) account, where /-ia/ is the single default passive suffix, and there is a proliferation of /t/-final stems in the lexicon. Also rare are lexical diacritics of suffixal selection, so numerous in the conjugation account of Hale (1973): the only feature of this sort made use of is [+V], and this for only a small percentage of vowel-final stems. I turn now to further discussion of two somewhat undermotivated aspects of this analysis: the default spell-out of the empty C-slot, and the general status of floating melody elements.

6. Independent support for underspecification of Maori consonants.

The Default Rules in (19) spell out empty C-slots in Maori as /t/, /h/ and /ŋ/ in three different dialects. Here I will suggest that both /t/ and /h/ can be viewed as default consonants in Maori. The appearance of /-ŋia/ as the default passive in the NG-dialect is independent of phonological underspecification. Rather, it seems to be based on analogy with the only

other suffix in Maori, the gerundial /-aŋa/ (with consonant-initial allomorph /-Caŋa/), which surfaces regularly as [-ŋa] due to elision (3b).[20] It is for this reason that I include a morpheme boundary in rule (19c); (19c) is an attempt to encode the default status of [ŋ] as a suffix-intial segment in the NG-dialect. Let us now turn to spell-out of the empty C. positions in the other two dialects.

The T-dialect is that discussed by Hale (1973), Sanders (1990, 1991), and is also that represented in Biggs (1990). Rule (19a) suggests that the default consonant in these dialects is /t/, and that other surface [t]s in Maori may lack underlying feature specifications, receiving their spellout by the same default rule. Independent support for this view is found in the range of consonant cooccurrence constraints which hold within Maori roots. These constraints are discussed by Krupa (1966, 1968, 1971) and carefully reassessed and reformulated within modern feature-based frameworks by Kawasaki (1988). The Maori consonant inventory comprises /m p w f t n r k ŋ h/. Kawasaki (1988) finds significant dissociations within roots between non-identical velars /k, ŋ/, non-identical labials /m, p/, and between the two coronals /n, r/ However, no significant dissociations involving /t/ are found. A summary of all dissociations observed in her study is provided in (23).

(23) Significant root dissociations (Kawasaki 1988)
i)   between labials /m, p, w, f/
ii)   between coronals /n, r/
iii) between dorsals /k, ŋ/
iv)   between 'aspirates' /f, h/

Kawasaki attributes the dissociations to the Obligatory Contour Principle (v. McCarthy 1986 and references therein) which prohibits adjacent

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[20]   In fact, rule (3b) needs to be modified, or an additional rule needs to be introduced, to take into account the vowel/Ø alternations found in the gerund. The general pattern is as follows: i) after short vowels, the initial vowel of /-aŋa/ is deleted:

mahi/mahiŋa	'work/working',	[W:xxxvi]
mote/moteŋa	'suck/drawing in'	[W:211]
pono/ponoŋa	'taunt/slave'	[W:291]
huka/hukaŋa	'foam/foam'	[W: 67]
tau/tauaŋa	'alight/resting place'	[W:396]

ii) after long vowels, the initial vowel of /-aŋa/ is optionally deleted if the vowel is [-back], and obligatorily deleted after long /aa/:

|		
kii/kiiaŋa,kiiŋa	'say/saying'	[W:116]
hee/heeaŋa,heeŋa	'err/erring'	[W:43]
kaa/kaaŋa	'burn/burning'	[W:81]
too/tooaŋa	'drag/place of dragging'	[W:428]
ruu/ruuaŋa	'shake/shaking'	[W:349]

sequences of identical feature matrices.[21] She suggests that the failure of /t/ to take part in such dissociations is indicative of underspecification: /t/ lacks place of articulation features, and hence is not subject to the Obligatory Contour Principle, whereas the consonants in (23i-iii) have specified place features and take part in root cooccurrence constraints.[22]

The same line of argumentation can be extended to /h/ to account for the H-dialect. The only dissociation Kawasaki (1988) finds for /h/ is in /f-h/ sequences (/h-f/ frequencies are too low to evaluate.) In this case, it is not place of articulation features, but the laryngeal feature [spread glottis] which gives rise to an Obligatory Contour Principle violation. In lacking place of articulation features, /h/ may be viewed as the unspecified glide (i.e. [-consonantal] segment) in Maori.

H-dialects then can be viewed as those where the default (or 'epenthetic') C is spelled out as a glide with unspecified place of articulation, while T-dialects can be viewed as those where the default C is spelled out as an obstruent with unspecified place of articulation. In sum, the failure of both /t/ and /h/ to take part in dissociative root cooccurrence constraints involving place of articulation provides independent evidence for the underspecification of these segments in Maori.

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[21] The absence of dissociations of identical consonants as in /popo/ 'rotten', /koko/ 'shovel, scoop', etc. is attributed to representations like the following, where there is only a single melodic element, and hence no violation of the Obligatory Contour Principle:

```
        p                    k
       / \                  / \
     C V C V              C V C V
       \ /                  \ /
        o                    o
```
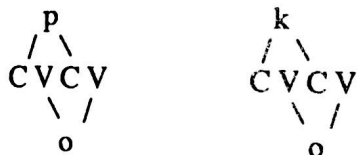
[22] Given the rigid (C)V(V) syllable structure of Maori and the general tolerance of vowel clusters, there is no rule of consonant epenthesis to be examined for similar supporting evidence. Furthermore, loan-word phonology is unrevealing in this respect: English [t,d,θ,ð] are usually realized as [t] in Maori, as expected since /t/ is the only coronal obstruent in the language, while stridents [ʧ,ʤ,s,z,ʃ,ʒ] are most often realized as a palatalized [h]. This second case is attributed by Kearns 1990 to the feature [-grave], which she claims is shared by [ʧ,ʤ,s,z,ʃ,ʒ,h]. However, her account fails to explain why /h/, which she specifies as [+high,Øback] must be adjacent to /i,e/ in such borrowings. A much simpler analysis would be that the stridency of English [ʧ,ʤ,s,z,ʃ,ʒ] is matched by the only true strident in Maori, /h/, and that by placing /h/ in an /i,e/ context where it will be heavily palatalized, a closer acoustic approximation of these sibilants is achieved. Such an account maintains the claim (see below) that /h/ is also unspecified for place features in Maori.
A summary of evidence in support of coronal as the cross-linguistic default place of articulation for obstruents is presented in Paradis and Prunet 1991, while Steriade 1987 highlights the absence of phonological place features for laryngeals /h,ʔ/ cross-linguistically.

7. The status of floating melody elements.

Under the suggested analysis, the Proto-Polynesian suffixes */-ia/ and */-aŋa/ have been only partially reanalysed: they have acquired a skeletal slot from the verb stem, but the melody element once associated with this C-slot remains as a stem-final floating feature matrix. In a sense, the once stem-final consonants have been split into their two autosegmental components with featural specifications severed from the timing slot which now forms part of the suffix.

A general question which arises is to what extent such splitting is attested in other languages. In particular, are there other languages which exhibit melody elements whose surface distribution is in part dependent on the availability of an empty skeletal slot in an adjacent morpheme? An extreme example of such floating melody elements is found in the root and pattern morphology of Semitic languages as analysed by McCarthy (1981), where floating consonants compose entire morphemes. The 'latent' final consonants of French, which surface in liaison environments and under suffixation before vowels, have been analysed as floating (or 'weightless') segments by Hyman (1984). Finally, Tunen, a Bantu language spoken in southwestern Cameroun exhibits similar alternations in vowels. Dugast (1971: 49) describes the insertion of 'liaison vowels' which eliminate C-C sequences in abutting words. Word-final vowels of unpredictable quality show up when followed by consonant-initial words within the phrase, but not when followed by vowel-intitial words, or phrase-finally. These vowels contrast with non-liaison vowels, which show up in all contexts except before vowel-initial words within the phrase. Some examples are provided in (24).

(24) Tunen final vowels
i. **Final 'Liaison' vowels**
a. mɛsɛ̀ yè mwə̀nd   'the chimpanzee of the woman'
    mɛsò yè mwə̀nd   'the parrot of the woman'
b. ... mɛ̀s   'the chimpanzee'
    ... mɛ̀s   'the parrot'
c. mɛ̀s ífòndì   'two chimpanzees'
    mɛ̀s ɛ̀fəndì   'two parrots'
ii. **Final non-liaison vowels**
a. myɔ̀kɔ́ yè mwə̀nd   'the chicken of the woman'
b. yə̀nɔ́ ye myɔ̀kɔ́   'the egg of the chicken'
c. myòk ɛ̀fəndì   - 'two chickens'

As the c. examples in (24) show, vowel sequences never surface across word boundaries within the phrase in Tunen. Only in phrase-final contexts (24b) can the non-liaison vowels which surface be distinguished from the liaison vowels which do not surface. If we analyse the liaison vowels as floating elements, a phrase-level rule of vowel-epenthesis between consonants will provide a V-slot for the floating vowel melody to

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associate with. Sample derivations are shown in (25), assuming the epenthesis rule Ø → V/ C_C, and the same association rule (18) posited for Maori:

(25) /mὲso ye mwə̀n di/ /myɔ k ɔ ye mwə̀ndi/ /mὲso/
      | | | | | | | | | | | | | | | | | | | | | | | | |
      CVC CV CVVCC   CVVCV CV CVVCC   CVC

V-Epenthesis, /mὲso ye mwə̀n di/
Association | | | : | | | | | | |
               CVCV CV CVVCC   n.a.   n.a.

SRs: [mὲso yὲ mwə̀nd]   [myɔkɔ ye mwὲnd]   [mὲs]

In sum, the lexical representations suggested for Maori, which include stem-final floating melody elements are not altogether unique in the domain of modern phonological analyses.

8. Concluding remarks.

Hale's (1973) analysis of the alternations in (1) focuses on the catalyst of the historical reanalysis involved, namely the loss of rule (2c), and the reassociation of the once stem-final consonants with the passive and gerundial morphemes. He suggests that reanalysis of this sort is the result of the principle stated in (26).

(26) Hale's Tendency (1973:420)
     There is a tendency in the acquisition of a language for
     linguistic forms to be analyzed in a way which minimizes
     the necessity to postulate underlying phonological
     representations of morphemes which violate the universal
     surface canonical patterns of the language.

In this case, the universal or exceptionless canonical pattern in question is that all Maori words (and indeed all Maori syllables) end in vowels. This surface pattern is viewed as the catalyst for loss of rule (2c) with concomittant reanalysis of the stem-final C as part of the suffix.

The morphological and autosegmental reanalysis presented here is consistent with the hypothesis in (26): not only do the URs proposed for Maori stems and suffixes conform prosodically to the basic syllable canons of the language, but they do so without the proliferation of diacritic stem features. Further, the use of underspecification allows the same underlying representations for suffixes to be proposed for the three dialects under discussion, with variation in surface forms a result of distinct phonological default rules. Perhaps most interestingly, the prosodic and syntactic allomorphy rules discovered suggest that conjugation analyses, like that outlined in (4), are costly enough to serve as catalysts for innovative rules

of association between syntactic, morphological and phonological form. In sum, the viability of this reanalysis suggests that the tendency outlined in (26) may be respected at less cost, measured in terms of grammatical complexity and opacity, than previously assumed.

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