THE INFLECTION-DERIVATION DIVIDE IN MĀORI AND ITS IMPLICATIONS[1]

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Abstract

This paper considers the application of the categories of inflection and derivation to the morphology of New Zealand Māori. It is shown that the categories as they are usually defined do not fit well with the facts about Māori. Nevertheless, a case can be made for an inflection-derivation divide in Māori. However, if this division is made as proposed in the paper, it has wider typological implications which need to be considered. In particular it re-opens the debate on defining heads by their position in the word.

1. Introduction

The distinction between inflection and derivation was first developed for the Indo-European languages, and then subsequently applied to languages of other families. In many instances, the types of morphology we find in these other languages seem to fit more or less easily into the framework for the distinction which is constructed on the basis of Indo-European, but there is no necessary reason why this should be true in all instances. The Māori language has a relatively limited range of affixal morphological types, and thus looks like an interesting case to consider from a typological point of view. This problem has

not, to our knowledge, previously been specifically addressed for Māori, and so the investigation may also be taken to add something to our understanding of the Māori language. Of these two aims, however, it is the former which is the main focus of this paper.

2. Some background

2.1 Māori

The Māori language is the language of the indigenous people of New Zealand. It is an Eastern Polynesian language within the Austronesian language family. It is closely related to Tahitian, and more distantly to Hawai'ian and Rapanui of Easter Island.

Structurally, Māori is superficially a VSO language, with modifying words following the head in Noun Phrases (and also with left-headed compounds such as *roro-hiko* 'brain-electricity = computer').

Māori is a threatened language. Good figures are hard to come by, but at a maximum, 22% of the ethnically Māori population of New Zealand (approximately 15% of the 4.1m inhabitants) show any real fluency in the language (Harlow 2007: 195). Even such figures seem rather optimistic. Because of the efforts at language revitalisation since the 1970s, a large proportion of the people who speak Māori are L2 learners. It would be expected that the manipulation of morphological structure – particularly derivational morphology, if the term is relevant – among this group would be relatively constrained or uncertain since morphological productivity is rarely taught in L2 classes and cannot be deduced in any straightforward manner from the frequency of existing forms. There is some evidence of an increasing use of some types of Māori words among the non-Māori population (Macalister 1999), but this is simply loan vocabulary, and does not carry with it any necessary knowledge of morphological structure.

2.2 Inflection and derivation

Although the distinction between inflection and derivation is often introduced as a clear-cut distinction between incompatible categories, many linguists have suggested that there is a cline between the two, with the distinction between the two categories being canonical rather than determined by necessary and sufficient conditions (Scalise 1988, Dressler 1989, Plank 1994, Haspelmath 2002, Bauer 2003). Plank (1994) presents some 25 criteria which may be used

to distinguish between inflection and derivation. If the division really was a straightforward one, it would be redundant to have so many criteria; the fact that so many criteria may be needed indicates that the question is not a simple one.

Of course, it is always possible to make the distinction simple by accepting a single criterion as providing the crucial evidence in a given context. This is probably what is often done, albeit covertly. The only discussion of Māori morphology of which we are aware which specifically makes this distinction (Harlow 2007: 114–21) simply states that some of the morphology is inflect–ional and other processes are derivational without motivating that division; the division that Harlow proposes could be determined by a single criterion, that of the semantics of the categories, but we cannot be sure how Harlow actually decides on the allocation of processes. A more interesting question, though, is whether there is evidence from the criteria available to allow a relatively clear decision to be taken. Plank (1994), for example, shows that the criteria align rather well in motivating a distinction between inflection and derivation in English, a language with a notoriously impoverished inflectional system. To this end, we shall consider the Māori morphological system, and attempt to apply the criteria from Plank and other sources to the Māori data to see what if any distinction can be drawn in Māori. The criteria that are used in this paper are standard ones referred to in the works cited above, and their application can be discovered from these sources. It is expected that not all of the criteria available in the literature will necessarily apply in any individual case, and even that there may be criteria which go against the general run of the evidence. This problem will be tackled in section 3.3.

One of the points which should be borne in mind in judging the outcome of this exercise is that individual languages do not necessarily have both inflectional and derivational morphology. Greenberg (1966: 93) reports that "if a language has inflection, it always has derivation", with the implication that there are languages with only one of these types of morphology (or, indeed, with compounding, but neither inflection nor derivation). A perfectly reasonable conclusion might therefore be that there is no distinction to be made in Māori between inflection and derivation. So the fundamental question is not merely what is inflectional and what is derivational in Māori, but whether there is a distinction, and if so how that distinction is to be drawn.

Another point to consider is that the distinction between inflection and derivation has been elaborated in recent years by the introduction of a distinction between contextual and inherent inflection (Booij 1996).

Contextual inflection is the kind of inflection that marks agreement between categories, while inherent inflection is independent of other parts of the sentence (and often contrastively meaningful, as for instance, the difference between past and non-past tense in English) but still meets other criteria for inflectional morphology.

The main criteria to which appeal will be made in this paper, from the 25 or so offered by Plank and others, are set out below. The ordering of the presentation does not indicate importance.

a. Derivational affixes tend to be phonologically more word-like than inflectional affixes. This point is specifically made by Plank (1994). Applied to Māori, this distinction would be realised by a difference in moraic structure. No lexical word of Māori can be less than two moras long (Bauer 1993: 536), and monomoraic forms thus look grammatical and, in Plank's terms, more inflectional.

b. Inflectional affixes tend to be semantically and formally regular; derivational affixes may not be. Where there is lexicalisation of an affix, so that either form or meaning has become unpredictable in some complex forms, this may thus indicate derivational status.

c. Inflectional affixes tend to be fully productive both in the sense that they apply to all bases in a class and also in the sense that they are automatically available to any new base. Derivational affixes are typically less productive, showing more unmotivated gaps in the paradigm.

d. Complex words containing derivational affixes, but not complex words containing inflectional affixes, can normally be replaced in context by a morphologically simpler word which is not overtly marked for the category under consideration. In the clearest cases, derivatives but not inflected forms can be replaced in the sentence by monomorphemic words. Compare (1) and (2) below, which use English examples, with the relevant morphology in (1) being derivational and in (2) being inflectional.

(1) Any poacher can find a pheasant.
Any boy can find a pheasant.

(2) She prefers to paint her house herself.
She *want to paint her house herself.

This criterion is, in effect, a way of operationalising the notion that inflection is obligatory, derivation is optional.

e. Some categories are more frequently inflectional or derivational than others, because they reflect semantic categories which have the potential to be very widespread across lexemes (inflection) or categories which are not likely to be applicable to as many bases (derivation). Thus tense is often assumed to be likely to be inflectional (it can apply to virtually any verb), while instrumental nouns are less likely to apply to large numbers of bases and are likely to be derivational. Linked to this, a category which recurs in very few languages is likely to be derivational rather than inflectional.

f. Inflection is syntactic, derivation is lexical. While this criterion is virtually a slogan, its interpretation is not necessarily easy. Anderson (1982: 587) says that 'inflectional morphology is what is relevant to the syntax', but leaves open the question of how to recognise something that is 'relevant to the syntax'. Clearly, contextual morphology is relevant to the syntax, and if this is what Anderson means it is relatively helpful, but restrictive. In a wider sense, the difference between a nominal and a verbal clause might be considered syntactic, and thus a nominalisation marker might be considered as inflectional, or passivisation might be relevant because the redistribution of arguments which accompanies passivisation is syntactic (see Bauer 2003: 104–5). Comments on the application of this criterion thus have to be made suitably tentatively. In many cases, change of argument-structure (e.g. the difference between transitive and intransitive verbs) is seen as typically falling within the domain of derivational morphology, so there is some tension here in interpreting the evidence. Contextual inflection is more clearly inflectional under this criterion than is inherent inflection; morphology which appears on grammatical words (such as articles) as opposed to lexical words (such as nouns) is also likely to be inflectional under this criterion.

g. Other things being equal, derivational morphology occurs closer to the root than inflectional morphology, and inflectional morphology is peripheral in the word-form. This does not prevent sequences of derivational or inflectional markers. However, relative ordering may

> be an important guide, since, for instance, anything that occurs closer to a root than a derivational affix is unlikely to be inflectional.

One set of criteria, usually considered very important in drawing a distinction between inflection and derivation, does not apply to Māori. In most languages, it is taken as important evidence if a particular morphological process causes a change in word-class. Thus the fact that *manage* is a verb but *management* is a noun is taken as evidence that the affixation of *ment* in English is derivational (but see Haspelmath 1996, 2002 for a dissenting view). Such arguments are not available in Māori because Māori does not clearly have word-classes (Bauer 1997: 65). Most, perhaps all, morphologically simple lexemes in Māori are multifunctional: the same form may head a verb phrase or a noun phrase. Words which look like adjectives to western Europeans pattern as verbs in Māori. Even words which can take plural marking (and thus are about as nominal as you get in Māori) can be found with nominalisation marking or passive marking. This means that criteria that depend upon a unique class being identifiable as the base or on causing a change in word-class are ruled out by the nature of Māori. This conclusion might appear at odds with the fact that we find morphological categories in Māori called 'nominalisation' and 'passive'. We deal with these in more detail below.

To see the multifunctionality of forms in Māori, consider the examples in (3) which illustrate different syntactic usages of the form *mōhio* usually glossed as 'know'.[2]

(3) a. Ka mōhio ia ki taku ingoa (verb)
TNS know 3SG DO my name
'(S)he knows my name.'

b. Ki tōku mōhio hei te marae te hui (noun)
To my know at(FUT) DET marae DET meeting
'As far as I know, the meeting is at the marae.'

c. He ngākau mōhio ia (noun modifier)
A heart know 3SG
'(S)he shows great understanding.'

d. Hongi mōhio ana rāua (verb modifier)
press-nose know TNS 3DU
'They hongied knowing [who they greeted].'

Even a word like *rākau* 'tree', which is typically used nominally, may be found used verbally, as illustrated in (4).

(4) Ka whakatoki-a tōna purapura ki te oneone, ka tupu-a
TNS bleach-PASS his seed to DET beach TNS grow-PASS

kia roa anō, ka rākau-tia
TNS long again TNS tree-PASS
'His seed was bleached on the beach, and grew, and after a period of time it became a tree.'

We even find examples like that in (5), where a place name is used verbally.

(5) I Puketapu ai te ingoa, he tū-ranga nō
TNS name POST-VERBAL_PARTICLE DET name a stand-NOM belong

taua puhi raka
that head there
'The hill was called Puketapu [tapu-hill] because the head stood there.'

Such examples illustrate the impossibility of assigning forms to classes in Māori.

2.3 Nominalisation and passive

If there are no word-classes in Māori, there might seem to be some contradiction in having a suffix called 'nominalisation' (which seems to imply a word-class of noun) and 'passive' (which seems to imply a word-class of verb).

In a language like English, the term 'nominalisation' is read as making a noun from a form belonging to some other word-class. When we apply it to Māori, it has to be read as marking a form which is preferentially used in noun phrases, without specifying the word-class of the base.

The first point to be made here is that the syntax of Māori does construct nominal phrases differently from verbal phrases: they take different particles, for instance. In standard European-based grammar these things are called noun phrases and verb phrases, thus confusing the nomenclature for the word-class and the function of the phrase. In many languages, including English,

this makes sense. A noun form like *animal* is found in the head of a nominal phrase and not in the head of a verbal phrase, while a verb form like *deny* is found in the head of a verbal phrase but not in a nominal one. Even in English, there are many forms which are ambiguous: *man* and *mother* can be found as the heads of noun phrases or the heads of verb phrases. It is not generally taken that the existence of these ambiguous forms invalidates the fundamental distinction between nouns and verbs in English.

Māori is just the opposite. The vast majority of forms, and particularly the morphologically simple ones, occur freely as the heads of nominal or verbal phrases. There are occasional forms which strongly prefer one or the other function, but these should not detract from the fundamental observation on the lack of word-classes. The fact that the forms termed nominalisations occur almost exclusively as heads of nominal phrases should not mean that Māori has word-classes any more than the existence of *man* and *mother* should prove that English does not have them.

It should also be noted that Māori nominalisations do not always occur as the heads of noun phrases, nor do passives necessarily occur in verb phrases. Waite (1989: 78) notes specifically that 'the passive verb can be inserted into the true NP' and gives examples such as (6).

(6) He uaua te mōhio-tia o ngā whakaaro o ngā kaihaina
TNS difficult DET know-PASS GEN DET thought GEN DET signatory
'It is difficult to know what the signatories had in mind.'

The example in (7) illustrates a word with a nominalisation marker being used in a verbal position.

(7) I te wā anō e paka-nga nei rāua ko Tiapani…
at DET time also TNS quarrel-NOM here 2DU SPEC Japan
'At the time when it and Japan were at war'

3. Māori morphology

3.1 Some irrelevant morphology

Māori is largely isolating in morphological structure. Tense/aspect, for instance, is marked by particles rather than by morphological means. Possession classes are marked on prepositions and determiners, and not on the content words.

Compounding is productive in Māori. As well as the left-headed word-word compounds mentioned above and illustrated in (8) (from Bauer 1993: 519–21), there are forms with an *ā* link illustrated in (9). These are also left-headed. Bauer (1993: 522) says there is no reason to equate this linking element with the possessive preposition *a* (sometimes lengthened prosodically to *ā*), but compound-like constructions based on possessive constructions are widespread cross-linguistically. This *ā* could thus be seen as a preposition, or as a specific linking element. Since we are not concerned with the nature of compounding in Māori here, it makes very little difference which solution is adopted. In a wider sense, if the *ā* is a preposition, this might be used as an argument for saying that the items in (9) are complex lexical items but not compounds (see Bauer 2001: 704–5 for such argumentation with reference to other languages), though they are usually referred to as compounds in the literature on Māori.

(8)	kopa-mārō	wallet-hard	'briefcase'
	ipu-para	container-waste	'rubbish tin'
	pānui-whakamārama	notice-explain	'pamphlet'
(9)	waiata-ā-ringa	song-LINK-hand	'action song'
	utu-ā-hāora	price-LINK-hour	'hourly pay rate'

Reduplication is also widespread in Māori, and structurally and semantically complex (see Bauer 1993: 525–8 and Harlow 2007: 127–9 and references there). We shall largely ignore reduplication in what follows, since it does not add significantly to the discussion. With a single possible exception, which we shall discuss below, reduplication in Māori behaves like derivational morphology, and nothing would be added to the discussion here by including it, while its complications would make the discussion much harder to follow.

In what follows we consider the remaining synchronic morphological processes of Māori, and their place on the inflection-derivation cline. Krupa (1966) lists some affixes which will not be treated here on the grounds that they are no longer synchronically analysable.

3.2 Relevant morphological processes in Māori

Those processes which are deemed relevant here are those which might be classified as inflectional or derivational. Most of them are affixal, the plural marker being the only exception. The processes listed here, along with

the compounding and reduplication mentioned in section 3.1, provide an exhaustive list of analysable morphological processes in Māori.

a. Seven or eight nouns (all denoting people and family relations) mark the plural by vowel lengthening. Only one other noun has plural marking (Bauer 1993: 354). The nouns concerned are set out in (10) (see Bauer 1997: 160; Harlow 2007: 115).

(10)

SINGULAR	PLURAL	GLOSS
matua	mātua	'parent'
tangata	tāngata	'person'
teina	tēina	'same sex younger sibling'
tipuna/tupuna	tīpuna/tūpuna	'grandparent'
tuahine	tuāhine	'sister of a man'
tuakana	tuākana	'same sex elder sibling'
wahine	wāhine	'woman, wife'
and for some speakers:		
whaea	whāea	'mother'

Note that a word like *tungāne* 'brother of a female' and other relationship words do not mark plurality in this way.

The vowel lengthening could be viewed as a matter of apophony or as a matter of reduplication. Again, the analysis does not seem to be particularly relevant for our purposes. We can illustrate that there are features which are canonically inflectional and canonically derivational, even for this set of forms (see Table 1).

Table 1: Number marking on some nouns

INFLECTION	DERIVATION
• Meaning	• Irregular (not all relationship nouns)
• Marker one mora long	• Unproductive
	• Plural not usually marked on nouns

Table 1 is to be interpreted as follows. The relevant number marking looks inflectional because number-marking is frequently inflectional across languages and because the marker is monomoraic. The number marking looks derivational for the reasons given in the second

column of Table 1: the pattern of marking does not cover a natural class of nouns, it is unproductive, and the category is not usually marked on nouns in Māori at all. It might be possible to add to this list from the criteria given by Plank, but these seem to be the criteria which apply clearly (albeit not consistently) to these forms.

b. Singularity is marked on determiners such as *tēnei* 'this', *ēnei* 'these' (Bauer 1993: 386). This example can be used to represent the various forms with an initial *t* in the singular (see Bauer 1997: 151–6 for some of the others). The major reasons for attributing this marking to either inflection or derivation are as given in Table 2, but these reasons are not particularly convincing.

Table 2: Marking on deictics

INFLECTION	DERIVATION
• Grammatical	• Not productive • Not used on all determiners

Historically, the initial *t-* in such forms derives from the form *te*, usually glossed as the singular definite article (see Bauer 1997: 144 for some discussion), and while the morphophonemics of the mergers is to some extent unpredictable, it seems clear that this is univerbation of a syntactic process. It is thus not particularly surprising that the inflection-derivation distinction does not fit neatly onto what was originally a syntactic sequence.

c. The prefix *taki-* added to numerals 1–9 means 'in groups of' (Bauer 1993: 498).

d. The prefix *hoko-* added to numbers 1–9 (possibly only 2–7) means '20 times', thus *hoko·whitu* (20 × 7 = 140) means a group of 140 or a large number, esp. an army (Bauer 1993: 499).

(11) Ka whao·na te wharau nei e te hoko·whitu rā
TNS enter·PASS DET shed this by DET 20 × 7 there
'The party entered the construction' (Bauer 1993: 499)

Bauer notes that there may or may not have been precisely 140 people involved.

e. The prefix *tua-* is added to numbers 1–9 to mark ordinals (Bauer 1993: 497)

(12) Ko te tohu tua·rua tēnei i tae mai ki a ia
EQ the sign ORD·two this TNS arrive hither to PERS 3SG
'This was the second sign that came to him' (Bauer 1993: 247)

There is a syntactic periphrasis that can be used in place of this, and which must be used with numbers greater than nine.

f. The prefix *toko-* is added to numbers from 1–9 when counting people (Bauer 1993: 496–7), and also on the question words for numbers: *toko-hia* 'how many people?' and some quantifiers.

(13) Toko·rima ōna tuākana
COUNT·five 3PL.GEN same-sex_sibling
'He had five older brothers' (Bauer 1993: 496)

g. The prefix *pū-* is used on a few bases and probably not productively to mark attenuation: *pū·whero* 'reddish' (Bauer 1993: 511).

All of these markers in (c)–(g) look as if they are fairly well-behaved instances of derivation. They are not productive; their semantics seems to belong to categories which might be expected to be derivational; the meaning 'twenty times' is not common cross-linguistically; they are all two-mora markers, and thus like words in phonological structure; they can all be replaced by monomorphemic words in context; most of them are not required by the syntax. However, the prefix in (f) has some inflectional characteristics, being used on grammatical words, being obligatory in its narrowly-defined construction and showing agreement for person-hood. The presence of a syntactic periphrasis for the item in (e) might also be seen as suggesting inflectional characteristics.

h. The suffix *-(C)anga* (where C represents a variable consonant[3]) marks a nominalisation. The same affix applies to some modifiers of the nominalisation: *puta·nga ohorere·tanga* appear·NOM sudden·NOM = 'sudden appearance' (Bauer 1993: 512). There is a certain amount of lexicalisation of these nominalisations, so that *kā·inga* 'home' derives from *kā* 'to set on fire, burn', and *moe·nga* 'bed' derives from *moe* 'to sleep'. The contrasting nominalisations *poro·nga* 'end' and

poro·hanga 'fragment' both come from *poro* 'end, broken off' (Bauer 1997: 516).

Table 3 shows the features of this affix which might be considered inflectional or derivational.

Table 3: Nominalisation marking

INFLECTION	DERIVATION
• Used to mark agreement on modifiers • Productive – possibly fully • Observed outside passive: *kite·a·tanga* 'see·PASS NOM being seen', though this is rare • Possibly grammatical usage	• Formally unpredictable[4] • Some lexicalisation (semantic); some different allomorphs contrast • Mainly bimoraic structure • Can be replaced by monomorphemic form in some uses

i. The prefix *kai-* creates human agentives where the base would be transitive if it headed a verbal phrase, as illustrated in (14) (Bauer 1993: 514; Harlow 2007: 124).

(14)	BASE	GLOSS	COMPLEX FORM	GLOSS
	ako	'teach'	kaiako	'teacher'
	kōrero	'speak, speech'	kaikōrero	'speaker, story-teller'
	mahi	'work, do'	kaimahi	'worker'
	titiro	'watch'	kaititiro	'watchman'
	waiata	'sing, song'	kaiwaiata	'singer'
	whakahaere	'administer'	kaiwhakahaere	'administrator'

This prefix seems fairly solidly derivational, as is shown in Table 4.

Table 4: Agentive marking

INFLECTION	DERIVATION
• Regular form and meaning	• Not productive on all base types: **kaihaere* • Meaning is of the type expected for derivation • Bimoraic structure • Can be replaced by monomorphemic words

j. The prefix *whaka-* is a causative marker as illustrated in (15) (Bauer 1993: 515–6; Harlow 2007: 124–6).

(15)

BASE	GLOSS	COMPLEX FORM	GLOSS
atu	'away from speaker'	whakaatu	'point out'
haere	'go'	whakahaere	'administer'
kā	'burn'	whakakā	'turn on (a machine etc)'
kāhore	NEG	whakakāore	'deny'
kite	'see'	whakakite	'show'
roa	'long'	whakaroa	'lengthen'
rongo	'hear'	whakarongo	'listen'
tangata	'man'	whakatangata	'change into a man'

We see in (15) some unexpected classes of base (and *whaka-* may be added to phrases, though this is not illustrated in (15)), some cases of lexicalisation and some instances where argument structure has been affected. The characteristics of inflection and derivation shown by this prefix are listed in Table 5. In a few lexicalised forms there is an alternative form *whā*, as in *whāngote* 'breastfeed' from *ngote* 'suck' or *whāinu* ~ *whakainu* 'cause to drink'.

Table 5: Causative marking

INFLECTION	DERIVATION
• Form and meaning regular • High productivity • Possibly grammatical usage in that affects argument structure	• Occurs inside *kai-* marking • Can be replaced by monomorphemic forms • Bimoraic structure • Lexicalisation of *whaka-* forms

k. The suffix *-(C)ia* (where C represents a variable consonant) is used to mark the passive, which in verb phrases with canonical transitive verbs may be functionally an imperative (Bauer 1997: 447). Manner particles, the quantifier *katoa* 'all' and lexical modifiers take the *-(C)ia* suffix in agreement with a passive verb when they follow the verb: *kite·a rawa·tia* see-PASS INTENS-PASS 'finally seen' (Bauer

1997: 487). There are a few verbs which do not traditionally take passive endings, even in the imperative, such as *hōmai, hōatu* 'give' or *waiho* 'to leave (behind)'; the result is that sometimes it is possible to replace forms with the suffix *-(C)ia* with a form with no passive ending in context. The passive suffix may be added to names and other words which might be expected to be nouns, and even occasionally to nominal phrases (Harlow 2007: 120).

The morphology of the Māori passive has been well covered by linguists since Hale (1968). The particular consonant that is used in the suffix is largely lexically determined, though there is a default used on unfamiliar words, in agreement contexts, or if memory fails. What that default consonant is varies from dialect to dialect: /t/ in some, /ŋ/ (written <ng>) or /h/ in others (Harlow 2007: 116). The result is that the same verb may be heard with different passive suffixes, though usually the complex forms thus created are synonymous. Just occasionally, different passive suffixes may be semantically distinguished (see Williams 1971 sv *aroha* 'love'[5]). The extent to which the various forms of the passive can be treated as allomorphs of the same morpheme is thus marginally in doubt in the current state of the language.

Table 6: Passive marking

INFLECTION	DERIVATION
• Meanings • Used to mark agreement • Occurs outside causative marking • Does not usually co-occur with *-Canga* • Grammatical usage in that it affects argument structure (but the syntax is controversial)	• Unpredictable form, albeit with default • In some uses can be replaced by forms with no passive ending • Largely bimoraic structure • Some lexicalisation: *kawea* (< 'carry') = 'situated'

3.3 Summarising the findings

The discussions that have been provided in section 3.2, and which can be taken to cover all the potentially relevant morphology of Māori, can be summarised as in Table 7, where some of the relevant criteria are listed and 'I'

indicates that the morphological markers for that category appear inflectional by the relevant criterion and 'D' indicates that they appear derivational. Cases where there are problems have been discussed.

Table 7: Summary of findings

	PROD-UCTIVE	AGREE-MENT	REGULAR FORM	MEANING	SYNTAX	LEXICAL-ISED	MORAIC STRUC-TURE	REPLACE WITH SIMPLER
Pl	D	D	I	I	I	I	I	D
Numbers (& attenuation)	D	D	I	D	D	D	D	D
Noml	I	I	D	?	I	D	D	D
Agt	I	D	I	D	D	D	D	D
Caus	I	D	I	?	I	D	D	D
Pass	I	I	D	I	I	D	D	(D)

The rather irregular placement of 'I's and 'D's in Table 7 is, of itself, a rather unsatisfactory result for a theory which expects to see a fairly clear distinction between the two categories (as Plank 1994 finds for English, for instance). However, there are two things to be said about a table of this kind.

The first is that not all the criteria are of equal value: regular form in derivation is far from unusual and is thus a relatively weak argument for inflectional status; correspondingly, irregular inflection is well-known, but usually in specific word-forms rather than in the general form of the affix concerned; the problems with the criterion of syntactic relevance were discussed earlier; a certain amount of lexicalisation is not uncommon in inflection (consider forms like *brethren* in English which is not synonymous with *brothers*) and so some may easily be tolerated. Moreover, as we have seen, the application of some of the criteria is in doubt, and these criteria are presumably less relevant in their application to Māori than they might be in relation to other languages.

The second is that there appears to be an oversupply of 'D's in the table. This could indicate, in terms of the discussion above, that there is no clear distinction between inflection and derivation in Māori and that the distinction simply does not apply. Alternatively, it could be a signal that if there is a

difference between inflection and derivation in Māori the distinction is not precisely the same as the one that is found in English (or, a fortiori, in other languages, whether in the Indo-European family or not). In other words, if we have a distinction between inflection and derivation in Māori, it may be a distinction which is defined for Māori, and where the criteria do not neatly match the criteria that are found in other languages.

Acknowledging that possibility, we should like to suggest that there may well be a useful distinction to be drawn in Māori. That distinction would be based on deciding which of the criteria in Table 7 are the most important and prioritising those criteria. If we focus on the first two criteria in Table 7 (as illustrated in Table 8), then nominalisation and passive start to look as though they might be candidates for the inflectional category in Māori, while all the other morphology is derivational.

Table 8: Selecting criteria from the summary

	PROD-UCTIVE	AGREE-MENT	REGULAR FORM	MEANING	SYNTAX	LEXICAL -ISED	MORAIC STRUC-TURE	REPLACE WITH SIMPLER
Pl	D	D	I	I	I	I	I	D
Numbers (& attenuation)	D	D	I	D	D	D	D	D
Noml	**I**	**I**	D	?	I	D	D	D
Agt	I	D	I	D	D	D	D	D
Caus	I	D	I	?	I	D	D	D
Pass	**I**	**I**	D	I	I	D	D	(D)

In the discussion section the reasons for this choice will be made clearer, and the implications of such a choice for linguistics and in particular linguistic typology will be examined.

It should be noted, however, that if the conclusion sketched in Table 8 is adopted, it is a very selective conclusion: over twenty of Plank's criteria are being – if not ignored – downgraded in strength for this language. This may be a problem. Where the evidence is as far from clear-cut as it is here, it is obvious that alternative analyses of the data would be possible; all that would be required would be a different prioritising of the criteria. In particular, we have argued that we cannot use word-class to argue for derivation in Māori.

If nominalisation and passivisation were taken to be derivational on some reinterpretation of the word-class arguments, then a strong argument could be made for there not being any inflection in Māori at all. However, as we have indicated, we do not believe that such a strategy would be justified. Furthermore, if were used, it would leave some other factors to be explained, as we show below.

4. Discussion

The proposal put forward in the last section can be argued for on the basis of the standard characteristics of inflection and derivation, and perhaps particularly because the affixes selected as inflectional by this method are the only ones which are used to mark agreement (so are instances of contextual inflection, the type of morphology most clearly at the inflectional end of the cline). However, this proposal has a particular benefit for the discussion of Māori, in that if we adopt it, we find that inflection in Māori is always suffixal, while derivation is always prefixal. This is a very unusual distribution, and a very neat outcome. If any other conclusion about the inflection-derivation split in Māori were postulated, this division between prefixation and suffixation would remain an unexplained oddity. However, this conclusion has some implications which need to be considered.

First, the information in Table 9 shows that across languages we have a range of patterns in the position of the head in compounds, the position of derivational morphology and the position of inflectional morphology. The list of patterns in Table 9 is not exhaustive, but it is often difficult to determine from descriptive grammars precisely what should be considered inflection and what derivation in that particular language, and so it is difficult to decide how the categories are distributed. For instance, it looks from Schadeberg's (1984) description of Swahili morphology as though inflection and derivation may both occur on both sides of the root, but since no overt claims are made about this by Schadeberg, the interpretation may be faulty.

Some of the implications of the data presented in Table 9 will be discussed below. However it is worth saying that its implications are not necessarily clear: it is beyond the scope of this paper to go into the various cross-linguistic patterns to see if there are any correlates of this division and thus whether it might itself be a typological dimension.

Table 9: Distribution of heads in morphological categories

	COMPOSITION	DERIVATION	INFLECTION
Māori	Left	Left	Right
English	Right	Right/(left)	Right
French	Left	Right/(left)	Right
Warrwa (McGregor 1994)	none mentioned	Right	Left/Right
Ura (Crowley 1998)	Left	Left	Left/Right
Mandan (Mixco 1997)	Left/Right	Left	Left/Right

It is, in principle, clear that – independent of our findings in this paper – a particular feature can be inflectional in one language and derivational in another. This could be true even if all the same criteria applied in the languages being compared. Thus there is no contradiction in a conclusion that, for example, plural is inflectional in German (Fleischer 1975: 47) but derivational in Diyari (Austin 1981: 41). It is nevertheless important to state this overtly, since many authorities appear to believe that certain categories will automatically be inflectional or derivational categories. It is difficult to find overt statements to this effect, and likely that authors of less clearcut statements would argue if challenged. Thus Hall (1992: 58) comments that cross-linguistically "many… inflectional features such as tense, plurality and definiteness are prefixed in a great number of languages" but might argue that these are the examples given by the sources he cites, and that this is not a definition. It is in non-specialist dictionaries that such definitions can be found, as in Pearsall (2002) where inflection is defined as "a change in the form of a word… to express a grammatical function or attribute such as tense, mood, person, number, case, and gender".

It ought, equally, to be clear that, if the distinction between inflection and derivation can be defined by a large number of potentially intersecting criteria, what counts as 'inflectional' in one language may not necessarily count as 'inflectional' in another. The oversupply of 'D's in Table 7 mentioned above could be a signal that morphology in Māori is all closer to the derivational end of the continuum than might be expected on the basis of our experience with Indo-European languages.

From this it follows that saying, as we did just above, that a particular category is inflectional in one language but derivational in another (plural is inflectional in German but derivational in Diyari) is not necessarily

informative: we cannot tell whether it means that the language behaves differently in regard to a stated set of criteria, or whether it means that different criteria have to be used to distinguish between inflection and derivation in the two languages (or, indeed, a mixture of the two). This has implications for those engaged in language typology. Distinctions which are claimed to be distinctions in terms of the inflection-derivation dichotomy may not be at all relevant. The case of Māori makes this point particularly clear.

The major point about inflection and derivation that emerges from Table 9 and from the research reported here concerns headedness, and, specifically, the notion that headedness might be determined by the relative position of the head and the non-head, something that was postulated in the Righthand Head Rule. When the Righthand Head Rule was introduced to morphology (Williams 1981), it was argued that compounds and derivatives were always right headed. In the years following that original statement of the rule, it was pointed out many times that the original statement was far too strong: there are many languages, including French and Vietnamese (and, as we have seen, Māori), which have left-headed compounds, for instance. The discussion of the headedness of derivatives has raised rather less controversy. In most cases, derivational affixes are accepted as heads, though most clearly when they determine word-class, something which is not relevant to Māori. The discussion of inflection, however, has not led to any clear outcome. Lieber (1992) argues that inflections are not heads, while Di Sciullo & Williams (1987) argue that they are, but 'relativised' heads – that is, they are heads only in so far as the grammatical category they realise is involved.

What the proposal put forward about Māori here suggests is that if headedness is related to handedness, and derivational endings are typically heads, then inflectional affixes cannot be heads. We have not previously seen evidence which makes this point so clearly, and it has the effect of re-opening the discussion of inflectional morphology and headedness.

Notes

1 We should like to thank Ingo Plag, Liza Tarasova, Natalia Beliaeva and attendees at the IMM15 Conference in Vienna, February 2012, for their discussion and feedback, as well as the anonymous referees for *Te Reo*.

2 Abbreviations used in glosses are: 2 'second person', 3 'third person', DET 'determiner', DO 'direct object', DU 'dual', EQ 'equative', FUT 'future', GEN 'genitive', INTENS 'intensifier', NOM 'nominalisation', ORD 'ordinal',

PASS 'passive', PERS 'person marker', PL 'plural', SG 'singular', SPEC 'specifying', TNS 'tense, aspect'.

3 There are some variants which have a slightly different form: *-inga* or *-nga*.

4 The consonant was originally a base-final consonant in an earlier stage of Austronesian, and was not predictable because it was simply part of the base. In modern Māori there is some variation in the consonant in individual instances and the consonant is not always the same as the one in the passive ending (see below) which has the same origin.

5 Such cases are rare, and, as in this case, controversial; but part of the motivation for the current slogan of *Arohatia te reo* ('Cherish the language') was that the form *arohaina* (the traditional passive form) would be semantically inappropriate.

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