In this paper the morphosyntactic and morphophonological status of Māori adverb particles is investigated, and on the basis of various prosodic and surface ordering facts, it is proposed that these particles are best analysed as second position clitics. Adopting a form of Distributed Morphology (Halle & Marantz 1993, Harley & Noyer 1999, Embick & Noyer 2001), an organization of the grammar is proposed whereby syntax feeds the phonological interface, which is mediated by various layers of morphological and prosodic components (PF). The second position effect is reduced to locality requirements stemming from certain prosodic subcategorization frames, evaluated and satisfied derivationally within PF at the point at which morphosyntactic feature bundles are replaced with phonological exponents (Vocabulary Insertion). Furthermore, ‘Prosodic Inversion’ (Halpern 1992) is reinterpreted as a filter operating at the end of the VI component, invoked to ensure only phonological bundles are inputted into the phonological interface.

By following a line of study which has PF, and not syntax, responsible for prosodic well-formedness (Hock 1996, Adger 2001), a direct challenge is made to recent authors (Peace 2001, De lacy 1999) who have proposed that the surface ordering of Maori particles be accounted for syntactically.

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1 Introduction

Māori (Eastern Polynesian), like other Polynesian languages, contains a number of unbound adverbial and adnominal functional elements, often termed ‘particles’ in the descriptive literature (Clark 1976). These modifying particles have a number of characteristics, both in terms of where they occur on the surface, and in how they behave prosodically. As to the former, they are post-positional, following the root (verb or nominal) that they modify (Bauer 1997), and their surface order is in an inverse relation to their syntactic (merge) ordering (Pearce 2000, 2001). With respect to the latter, they have clitic-like properties, being prosodically deficient and requiring adjacency with a stress-bearing root element in their clause (Biggs 1969, Bauer 1997).

In this paper I will propose that these elements are second-position clitics, and that their surface distribution is directly related to their prosodic deficiency. In terms of where prosodic requirements are met, I will follow authors such as Marantz 1988, Halpern 1995, Hock 1996, Radanović-Kocić 1996, Adger (unpublished) and others, who argue that morphophonological concerns are resolved at PF, while syntax is oblivious to prosodic needs. As such, if the syntax does not incidentally provide a viable host for a clitic, operations within PF may do so according to its own principles. As to the organization of PF and range of possible operations available there, I adopt a version of Distributed Morphology (Halle & Marantz 1993, Halle 1997, Harley & Noyer 1999, Embick & Noyer 2001) in which PF is layered into a series of derivationally-related subcomponents, each with its own principles and properties. Furthermore, I will follow Embick & Noyer 2001 in allowing operations at the level where hierarchical morphosyntactic terminals are replaced with linearized phonological exponents (Vocabulary Insertion) to produce the 2P effect. However, I diverge from Embick & Noyer’s analysis in viewing this effect as the result of local reordering at the point of exponent insertion, initiated by a need to satisfy prosodic insertion contexts, rather than from a type of morphological merger operating over the linearized output of VI.

This paper is organized as follows: Section 2 presents an overview of the relevant surface and prosodic aspects of Māori particles. Section 3 outlines my background assumptions regarding the organization of the syntactic and post-syntactic modules, and develops an interpretation of the 2P effect that relies on operations at the post-syntactic level of VI. Section 4 provides an analysis of the Māori clitic data in which the prosodic and surface behaviour of Māori adverbs is crucially linked. Section 5 is the conclusion.

2 Māori

In this section, I present the distribution and phonological behaviour of modifying particles in Māori.
2.1 Background

Māori is an accusative language (Herd 2002). The usual constituent order in verbal transitive clauses is predicate – subject – object (1a,b), with the subject surfacing unmarked and other participants marked pre-positionally.1 Surface order in passives (1c) is predicate – theme – agent, with the theme surfacing unmarked.2

As the following examples show, verbal predicates are usually preceded by one of several unbound phrase markers (T/A), which denote tense, aspect or modality.3 Nominal and locative/possessive clauses also display predicate – subject order, as in (1d,e). Predicate-initial order is derived by raising the clausal predicate (VP) to Spec,TP (Herd 2002).4,5

(1) a. Ka noho a Ngae
   T/A sit pers. Ngae
   ‘Ngae stayed there…’  Reedy 1993:65

   b. Kua kai te tamaiti i te ika
      T/A eat the.s. child ACC the.s. fish
      ‘The child has eaten/is eating the fish’  Pearce 2001:2

   c. …ka ōngia nei a ia e te hiainu
      T/A overcome nearI pers. him by the.s. thirst
      ‘…he is overcome by thirst’  Bauer 1997:486

   d. Kei te kainga a Hone
      At.pres. the.s. house pers. Hone
      ‘Hone is at home’  NT

   e. He ātaahua te hīhoitanga a Mere
      cls. beautiful the walking of Mere
      ‘Mary walks beautifully (lit. the walking of Mary is beautiful)’  NT

The predicate may be followed by one or more modifying elements. These are organized into several main groups, where membership is determined by

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1 I ignore both Actor-Emphatic and ‘neuter’ verb constructions, which display different patterning. See Bauer 1997, Waite 1994, Pearce 1999 for details.
2 The marked order predicate – agent – theme is also common, however. See Bauer 1997:58 for details and discussion
3 Argued in Herd 2002 to surface in Finite⁰ as a complex T⁰–Finite⁰ head.
5 The following abbreviations will be employed throughout: T/A tense/aspect, pers. personal article nearl/nearII/nearIII near speaker/near addressee/distal cls. classifying particle asp asp asp accusative excl. exclamatory particle NT Nārah Thompson
constraints on surface concurrence and on similarity of semantic function. Using labels from Bauer 1997, these items are ordered as in (2).⁶

(2)  T/A – predicate – ‘lexical’ adverb (LA)– Manner particle – Directional – Deictic/Aspect – Emphatic – Sentential

While this ordering is common, sentential adverbs can also surface clause-initially. As discussed in Section 2.3, this alternation is accompanied by a change in prosodic status. Based on their prosodic and ordering patterning, I will further divide the predicate-modifiers in (2) into three groups: ‘root’ adverbs, sentential adverbs, and the rest.

2.2 Root adverbs

Unlike other adverbs, root adverbs - such as tere in (3a) - may also occur as adjectives (3b) nouns (3c) or even as verbs (3d).

(3)  

a. I oma tere te hōiho  
T/A run fast the.s. horse  
‘The horse ran quickly’  Foster 1987:73

b. He hōiho tere, he hōiho nui  
a horse fast a horse big  
‘A big, fast horse’  NT

c. Ka kaha ake te pōnānā, ka iti ake te tere  
T/A strong up the.s. hastiness T/A small up the.s. speed  
‘More haste, less speed’  Ngata 1993:494

d. E tere ana te haere a te manu rererangi  
T/A fast asp. the.s. move of the.s. aircraft  
‘An airplane goes fast’  Ngata 1993:164

Following Harley & Noyer 1999, these elements are root morphemes (hence the label ‘root adverb’), or L-morphemes, whose categorial status is determined structurally. For example, roots that are immediately c-commanded by a Determiner are assigned to the category ‘noun’, ‘verbs’ are roots immediately c-commanded by both v and T.

⁶ Due to lack of space, I have omitted a small group of four particles - tino ‘intensifier’, āta ‘slowly’, āhua ‘somewhat’, māhua ‘first’ - which surface immediately to the left of the predicate, between the predicate and T/A marker:

i. Kei te āta haere mai a Hone  
at.pres. the.s. slowly move hither pers. Hone  
‘John is coming here slowly’  NT

These particles can unproblematically be analysed as proclitics to the predicate root.
Another fact that distinguishes root adverbs from other adverbs is that they consistently surface with word stress. Briefly, stress in Māori occurs on the rightmost long vowel, or else the rightmost diphthong. If no heavy syllable is present, the initial syllable is usually stressed (Biggs 1969). Thus, the examples in (3) are stressed as follows, with syllables in boldface carrying word stress:

(4) a. I **oma tere te hāioho**
   T/A run fast the.s. horse
   ‘The horse ran quickly’

b. He hāioho **tere**
   a horse fast
   ‘A fast horse’

c. Ka **kaha ake te pōnana, ka iti ake te tere**
   T/A strong up the.s. hastiness T/A small up the.s. speed
   ‘More haste, less speed’

d. E **tere ana te haere a te manu rerangi**
   T/A fast asp. the.s. move of the.s. aircraft
   ‘An airplane goes fast’

With respects to surface order, root adverbs and adjectives consistently surface to the immediate right of the root that they modify. Pearce 2001 accounts for this by merging the adverb or adjective as complement to the modified root. Using bare phrase structure, this can be approximated as follows:

(5) a. root(V)   b. root(N)
    root(V)   root(Adv)   root(N)   root(A)

These structures correctly predict that a nominal can be modified by no more than one adjective, and a verb by no more than one root adverb in a single clause. As (3b) shows, modifying the nominal by more than one adjective necessitates repeating the entire NP. It also correctly explains why ‘incorporated’ nominals – stressed NPs that are thematically direct objects but surface in the same position as root adverbs and are interpreted as verbal modifiers - cannot co-occur with root adverbs (6b), on the assumption that the incorporated nominal is also merged as complement to the verbal root (7). Note that in (6b), the only interpretation is where the modifying root horohoro is adjectival.

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7 See also Alexiadou 1997 for a similar view regarding the merge position of manner adverbs
9 On the standard X-bar assumption that a root may have at most a single complement. Pearce notes that this raises the question of how to derive transitive clauses containing both a direct object and root adverb. Since it is not crucial to my analysis, I adopt the structure in (5), although this may require further reassessment.
(6) a. Kei te kai ika rātou
   at.pres the.s. eat fish they
   ‘They are eating fish’ (lit. ‘fish-eating’)       Pearce 2001:10

   b. Kei te kai ika horohoro rātou
   at.pres the.s eat fish gobble they
   ‘They are eating gobbling fish’ ≠ ‘They are gobbling (some) fish’

(7) root(V)
    root(V)    root(N)

2.3 Sentential adverbs

Particles grouped under this label include pea ‘perhaps’, ia ‘however’, koā ‘but, however’, ianei, iana ‘then’. These elements typically surface as the rightmost member of the particle string, as in (8a-d). In this position they are consistently unstressed, and do not affect stress placement on the predicate. Like root adverbs, sentential adverbs form a domain with a single intonation curve. Unlike other verbal modifiers, however, at least one of these elements - the epistemic pea ‘perhaps’ - may also occur clause initially, either on its own (8e) or proceeded by tēnā (8f). When surfacing clause initially pea is stressed, while in (8f) tēnā is stressed and pea is left unstressed:

(8) a. E haere tonu mai nei pea (ia)
   T/A move still hither nearI perhaps (he)
   ‘He is perhaps still coming here now’       Harlow 1996:12

   b. Rongo kau anō koā ērā i Takapuna, me ērā i Raratonga
   hear excl. exact however those at Takapuna with those at Raratonga
   ā māua kua moe…
   ACC our T/A sleep
   ‘However, when those in Takapuna and Raratonga heard that we were
   married…’                                     Bauer 1997:331

   c. I raro pea i te tēpu tō pukapuka mō te tekau meneti
   at(past) under perhaps ACC the.s. table the.s.poss. book for the.s. ten minute
   ‘Perhaps his book was under the table for ten minutes’     NT

   d. Mena he ngākau kino tōna, he hara pea ōna, he ngākau pōuri
   If a spirit evil the.s.poss.I a sin perhaps the.pl.possI a spirit bad
   rānei ki tāna whānau…
   or to the.s.poss. family
   ‘If the person is troubled with a bad disposition, or has some sin or ill
   feelings they have not repented of…’            Barlow 1991:141
e. Pea i raro i te tēpu tō pukapuka mō te tekau meneti
f. Tēnā pea i raro i te tēpu tō pukapuka mō te tekau meneti

(8c-e) are judged as semantically equivalent, with pea taking scope over the entire clause. This suggests that they are represented identically at LF. Since the output of the narrow syntax provides the input to LF, I will assume that (8c-e) have similar syntactic structures, with sentential adverbs merged high in the syntactic structure as the head of ForceP, the functional head in Rizzi’s (1997) expanded C-system responsible for encoding information pertaining to interclausal dependencies. Anticipating arguments in Section 4, the surface differences in (8c-e) result from choices made at VI regarding which allomorph of pea – clitic or non-clitic – is inserted.

2.4 Other adverb particles

The remainder of the modifying elements listed in (2) are unstressed, do not affect stress placement on the modified verbal root, and form a domain for intonation contours with the modified verb. Examples – with stressed syllable in boldface – are given in (9).

(9) a. E tupu nei anō ianānianei
   T/A grow nearI still today
   ‘It is still growing there today’ Biggs 1997:21

b. I reira a Whatihua i taua wā e titiro ana ki te teina e
   At there pers. Whatihua at that time T/A look asp. ACC the.s. brother T/A
   pōkaikaha noa iho ana ki tana manuhiri
   confuse freely down asp. Prep. The.s.poss. guest
   ‘Whatihua was there at that time watching his brother, who was completely
   confounded by his guest’ Biggs 1997:26

c. Ka hoki tika mai a Mere ki konei
   T/A go straight hither pers. Mere to here
   ‘Mere came straight here’ NT

Based on their closed-class status, I will follow Pearce 2001 in analysing these particles as functional heads. As to their syntactic position, I follow Pearce 1998, 2001 and Delacy 1999 in merging them between v and T, with their hierarchical order in an inverse relation to their surface order – that is, elements that surface closer to the predicate are structurally lower than those to their right. This is in keeping with work on adverb universals by Jackendoff 1972, Cinque 1999 and others, who place VP-modifying elements (manner particles, directional) structurally lower than speaker-oriented (emphatics, sentential adverbs).
2.5 Summary

In this section I have outlined several of the prosodic and surface facts that will be the focus for the rest of this paper. These are listed here:

- Root adverbs and incorporated nominals are always stressed, non-sentential particles are never stressed, and (some) sentential adverbs have stressed and non-stressed allomorphs.
- Stressed sentential adverbs surface clause-initially, root adverbs and incorporated nominals surface to the immediate right of the verbs, while all other modifiers – including unstressed sentential adverbs – surface to the right of the clausal predicate in a mirror-image to their syntactic ordering.
- Root adverbs, incorporated nominals and adverb particles do not form a prosodic domain with the predicate for the purposes of stress assignment.
- Particles form a prosodic domain with the predicate onto which is mapped a single intonation contour.

3 Background Assumptions

In this section I will present my working assumptions regarding the organization of the grammar, and the role of the individual components.

3.1 Distributed Morphology

Distributed Morphology (Halle & Marantz 1993, Halle 1997, Marantz 1997, Harley & Noyer 1999, Embick & Noyer 2001) advocates an organization of the grammar in which morphology (PF) manipulates the output of the syntactic component, and feeds the phonological level. There is no lexicon in the traditional pre-syntactic sense of the word – instead, ‘lexical’ processes such as word-formation and affixation take place either in the syntax or in one of several levels of PF. Thus the input to syntax is not phonologically-realised segments, but rather syntactic terminals housing morphosyntactic features. A simplified sketch of PF, adapted from Embick & Noyer 2001, is given below:

(10) Narrow Syntax

\[ \text{PF} \rightarrow \text{LF} \]

\[ \begin{aligned}
\text{Morphological Operations} \\
\text{Vocabulary Insertion/linearization} \\
\text{Building of Prosodic Domains} \\
\text{Phonology}
\end{aligned} \]

Within PF several processes may occur, including insertion of structure to house morphological features (dissociated morphemes, including case and agreement features), feature deletion (impoverishment), and movement of terminal elements.
Deriving Prosodic Inversion

(morphological merger). The latter is the operation often invoked to account for 2P effects. In Marantz (1988:261), Morphological Merger (henceforth Merger) is defined as follows:

(11) **Morphological Merger**
At any level of syntactic analysis (D-Structure, S-Structure, phonological structure), a relation between X and Y may be replaced by (expressed by) the affixation of the lexical head of X to the lexical head of Y.

By hypothesis (Harley & Noyer 1999, Embick & Noyer 2001), Merger can occur in the syntax (Head Movement), at PF prior to VI (lowering), after or simultaneous with VI (local dislocation), or after VI at a level where prosodic labels are inserted (Prosodic Inversion). All types of Merger are argued to contain an adjacency requirement. How this requirement is stated depends on the level at which it occurs. In syntax and before VI, relations are structural and hierarchical. Hence Merger can only take place between hierarchically adjacent strings. This derives the Head Movement Constraint (Travis 1984), and explains why lowering of T-v to V in English is not blocked by intervening adverbs (Bobaljik 1994). Since linearized strings at VI replace hierarchical structure, Merger applying simultaneous with or following VI requires linear adjacency.

Local Dislocation is argued in Embick & Noyer 2001 (henceforth E&N) to be a variety of Merger taking place directly after VI. As a representative example (9a), the Latin conjunctive –que ‘and’ adjoins to the right edge of the zero level element to its right. A (simplified) pre-VI representation (12b) is supplied, the linearization of which is given in (12c):

(12) a. bon-i puer-i bon-ae-que puell-ae  
    good-NOM.pl.msc. boy-nom.pl.msc. good-NOM.pl.fem-and girl-nom.pl.fem.  
    ‘Good boys and girls’

b. 
   conj
   /   
  root(N)  root(N)
     /   
    root(A)  [case,etc.]  root(N)  [case,etc.]  root(A)  [case,etc.]  root(N)  [case,etc]

c. boni pueri –que bonae puellae

E&N propose that Merger applies to (12c) and adjoins –que to the right edge of bonae, to which it is linearly adjacent. E&N:574 differentiate between the

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10 Although the theoretical status of syntactic head movement is questionable within the minimalist program (Chomsky 1998, 1999). DM provides a framework that could potentially be formulated in such a way as to constrain all head-movement to PF prior to VI.
Morphological Word (MWd), defined as an $X^0$ segment of $X^0$ not contained within another $X^0$, and the Subword (SWd), an $X^0$ terminal that is not an MWd. This difference is used to account for why –que does not interpolate between the root stem *bon* and the agreement morphology –ae, since the former would be closer linearly than the entire root+affix *bonae - bon* is a SWd, while *bonae* and –que are both MWds. E&N propose a condition which prevents MWds from adjoining to SWds, and SWds from adjoining to MWds, thus making the adjunction of –que to *bon* impossible.

It is well-documented (Selkirk 1986, 1995, Hayes 1989, Nespor & Vogel 1996, Zec & Inkelas 1990) that phonological rules often target prosodic domains, such as prosodic word or phonological phrase. As such, a number of authors have proposed a separate post-syntactic level of prosody, and made this level the locus for establishment of prosodic domains. Prosodic structure is traditionally assigned representationally via a mapping algorithm.

The domains formed by the insertion of prosodic structure have also been used as targets for dislocation processes in a number of languages (Schütze 1994, Hock 1996, Radanović-Kocić 1996, Adger (unpublished)), where Merger makes reference to linear adjacency of prosodic labels. Since it is usually assumed that adjunction to a prosodic category incorporates the moved element into that prosodic domain, Merger at the level of Prosody is usually invoked in order to satisfy a clitic’s prosodic deficiency. Prosodic Merger can be viewed as a way for the prosody to satisfy Ito & Mester’s 1993 Prosodic Licensing Condition, which states that all phonological elements must be assigned to a prosodic category.

In the remaining sections I will propose an organization of the VI component that potentially makes both the operation Local Dislocation and the separate Prosodic level redundant. This proposal is predicated on two assertions: first, that prosodic labels are created derivationally at VI simultaneous with the insertion of phonological material; and second, that prosodic insertion contexts can cause mismatches between the input to VI and surface realisation of that input.

3.2 Insertion Contexts

As mentioned above, phonological exponents are inserted derivationally into morphosyntactic terminals at the level of VI. Work on contextual allomorphy (Bobaljik 2000) has argued that insertion takes place from the most deeply embedded category (i.e. root) outwards, while Adger (unpublished), argues that insertion is also bottom-up and cyclic. This latter point is often assumed in the DM literature without being explicated, and brings VI into line with other derivational components such as the narrow syntax (Chomsky 1999), which are also assumed to progress bottom-up.

Possible exponents are listed alongside insertion contexts. For example, Harley & Noyer 1999 supply the following insertion contexts (13b,c) for Dutch adjectival endings (13a), assumed to be a dissociated morpheme inserted post-syntactically:

11 See also Anderson 1992, where ‘Stray Adjunction’ plays the role of Prosodic Merger
(13) a. [-neuter] [+neuter]  
    [-pl] -e ^  
    [+pl] -e -e  

    b. ^ ↔ [ _ , +neuter –plural] / Adj + ___  
    c. –e ↔ Adj + ___  

(10a) shows that when the adjectival stem is [+neuter –plural] ^ is inserted; elsewhere, -e is chosen. These choices are explained by assuming that where two vocabulary items could potentially be inserted in a morphosyntactic terminal, the item whose insertion context shares more features with the terminal will win out. What is of interest in (10b,c) is that in addition to providing information allowing for the resolving of insertion competition, insertion contexts also carry information regarding where to insert particular exponents. (10b,c) state that these vocabulary items are adjectival suffixes, adjoining to an adjectival host. Recall in DM that there is no lexicon; hence affixation – traditionally viewed as a lexical process – is effected derivationally within one of the syntactic or post-syntactic components. This means that the labels affix and clitic – traditionally used to describe elements whose dependencies are resolved in the lexicon or in the syntax respectively - do not have any substantive worth in DM. They both describe a prosodic dependency on the part of a vocabulary item.

The ‘affixal’ information in (13) is reminiscent of prosodic subcategorization frames proposed in the lexicalist theory of Inkelas 1990,\(^\text{12}\) where prosodic deficiency is specified in the lexicon via frames such as the following (14):

(14) a. Enclitic to prosodic word:                [[ ]_o___]_o  
    b. Enclitic to phonological phrase     [[ ]_p___]_p  
    c. Proclitic to prosodic word        [___ [ ]_o]_o  
    d. Proclitic to phonological phrase   [___ [ ]_p]_p  

According to Inkelas, these frames can make reference to either the Prosodic Word or Phonological Phrase, and also specify whether the left or right edge of a prosodic domain is required – if the left, then the element is a proclitic, if the right it is an enclitic:\(^\text{13}\) It is unproblematic to incorporate these frames into the insertion contexts of particular Vocabulary items – i.e. those traditionally termed ‘clitics’ or ‘affixes’.

I will take this one step further, and suggest that if vocabulary items are specified for prosodic deficiency, then they are also specified for prosodic constituency. This again follows Inkelas, who proposes that ‘content words’ (roots) are lexically specified as prosodic words. Consider again the Māori data in Section 2. The generalisation regarding stress was that all roots are assigned word stress,

\(^{12}\) Also Halpern 1992, Hock 1995 and many others.  
\(^{13}\) Radanović-Kocić 1995 suggests that the Intonation Phrase may be relevant in determining 2P in Serbo-Croatian
regardless of their categorial status. Assuming the domain for word stress to be the prosodic word, then all stressable items are also prosodic words. This information can be encoded within the insertion contexts for roots and other stressable items (e.g. stressed sentential adverbs). As an example, the root tere ‘fast’ would have the following information encoded within its insertion context:

\[(15) \quad \text{tere} \leftrightarrow [\_\_]_o\]

(15) states that tere is inserted inside prosodic word brackets. Note that by placing prosodic information within the vocabulary listing at VI, rather than a pre-syntactic lexicon, variants of single morphosyntactic terminal whose only difference is relative prosodic dependency (e.g. the English auxiliary full form is or has vs. clitic ‘s) are identical syntactically, and thus should be treated identically within the syntax. Since prosodic deficiency is only evident post-syntactically, syntactic mechanisms should not be invoked to resolve prosodic requirements. Since the subcategorization frames in (14) may make reference to higher prosodic categories than the prosodic word. I propose that phonological phrase boundaries are automatically mapped onto prosodic words at the point at which prosodic words are inserted. This derives Selkirk’s 1986 Strict Layering Hypothesis, since phonological phrases will always be at least as large as the prosodic words contained within them.

3.3 English reduced auxiliaries

Consider how this works for the two variants of the English auxiliary is:

\[(16) \quad \text{a. John is arriving tomorrow/ John’s arriving tomorrow} \]
\[\quad \text{b. The woman I love is arriving tomorrow/The woman I love’s arriving tomorrow} \]
\[\quad \text{c. The person I wrote to is arriving tomorrow/The person I wrote to’s arriving tomorrow} \]
\[\quad \text{d. The butler that you said was rude is arriving tomorrow/The butler that you said was rude’s arriving tomorrow} \]
\[\quad \text{e. Your friend who walks awkwardly is arriving tomorrow/Your friend who runs awkwardly’s arriving tomorrow} \]

Assuming that is is inserted into T, the full form is simply inserted as a prosodic word. Consider the clitic variant. The clitic ‘s forms a prosodic unit with whatever happens to immediately precede it, regardless of categorical status - it may attach to a nominal (16a), a verb (16b), a preposition (16c), an adjective (16d) or adverb (16e). As Hock 1996 discusses, the fact that the dependency is prosodic can be illustrated by inserting a prosodic break (a pause) between ‘s and the preceding element. We can state this informally as ‘s being enclitic to whatever happens to be the closest prosodic label. Insertion contexts for the auxiliaries are as follows, where ‘p’ refers to any prosodic label. Note that unlike the Dutch adjectival desinences in (13), these items are not in competition with each other. Rather, one or the other is freely generated:
(17) a. /is/  \(\leftrightarrow [\_\_\_]_0\)
b. /s/  \(\leftrightarrow [\_\_\_]_p\)

The fact that clitic requirements are a part of the insertion context means that insertion of ‘s cannot proceed until the required prosodic host has been generated. It is assumed that insertion will take place as soon as the required insertion context is derived.

Furthermore, note that in (16), what is deemed ‘closer’ to ‘s for the purposes of cliticization is the element to its left, rather than the verbal element that follows it. We can see this clearly when we place ‘s in a wh- question, where English T undergoes movement to C:

(18) When’s John arriving? / *When John’s arriving?

Again ‘s cliticizes to the element to its left - the wh- item in Spec,CP – rather than a prosodic label to its right. That clitic-like elements often look for prosodic hosts to their left if possible has been noted in Halpern 1995, Adger (unpublished), and others, and seems to be a general tendency. Note that this necessitates a relaxation in the strict bottom-up derivationality of the component, since at the point at which ‘s looks to be inserted, no prosodic information has yet been constructed to its left to which it could be attached.\(^\text{14}\)

In the next section I will show how this conception of the VI component correctly derives both the surface and phonological facts presented in section 2.

4 Māori Revisited

Since Māori adverb particles are unstressed (excepting clause-initial sentential particles), I propose that they are clitics. Furthermore, since unstressed particles consistently follow the root that they modify, they are enclitics. With regards to expressing this dependence via subcategorization frames, two main possibilities arise - they are enclitic to a prosodic word, or to a phonological phrase.\(^\text{15}\) Evidence from intonation and stress assignment suggests the latter, as discussed below.

4.1 Intonation and Stress

Recall that predicate-modifying particles, including unstressed sentential adverbs, did not form a prosodic unit with the modified root at the level of the prosodic word. This was evidenced by the inability of particles to influence stress

\(^{14}\) It may be that the notion of phases (Chomsky 1999) could be used to explain why ‘s does not attach to its right in (13), since only the subject is within the same phase as the auxiliary. However, the same strategy does not explain why ‘s does not attach to John in (15).

\(^{15}\) For the sake of brevity I ignore the possibility that they are enclitic to an undetermined prosodic label, as proposed for the English clitic auxiliary.
assignment, which was argued to take as its domain the prosodic word. However, intonation suggests that particles do form a prosodic domain with the root predicate at a higher level. De lacy 2002, Bauer 1997 show that in a simple declarative clause (19a), the intonation contour raises in pitch to a high point (1) corresponding to the syllable bearing word stress, and ends in a low pitch (2) that marks the end of the intonation domain (19b).

(19) a. ka whaka-hoki mai a Hone i te kurī ki au  
T/A cause.return hither pers. Hone ACC the.s. dog to me  
‘Hone returned the dog to me’ De lacy 2002:9

b. 1 2 12 12 12
   ka (whaka) hoki mai a Hone i te kurī ki au

The inclusion of the directional particle with the intonation domain in (19a) implies that the root+particle sequence does form a prosodic unit at a level higher than the prosodic word. I will assume that this higher prosodic unit is the phonological phrase. Clitic particles are thus specified as follows:

(20) [ ]p

Sentential adverbs behave like other adverb particles phonologically when following the predicate, as in (8a-c) above. However, recall that in clause-initial position they are stressed. Furthermore, they form their own intonation contour when in this clause-initial position:

(21) a. pea i raro i te tēpu tō pukapuka mō te tekau meneti  
perhaps at(past) under ACC the.s. table the.s.poss. book for the.s. ten minute  
‘Perhaps his book was under the table for ten minutes’ NT

b. 12 1 2 12 1 2 1 2 1 2
   pea i raro i te tēpu tō pukapuka mō te tekau meneti

This follows straightforwardly if two distinct vocabulary items are posited, one with clitic properties, the other specified as a prosodic word:

(22) a. pea ↔ [ ]p

b. pea ↔ [ ___ ]o

As with the English auxiliaries, the allomorphs are not in competition, but rather one or the other is freely inserted in Force0. If (22b) is inserted, pea remains clause-initially and forms a domain for both stress and intonation. If (22a) is inserted, however, a prosodic host will be sought.

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16 The causative prefix whaka- does not generally receive stress, suggesting that it, too, is a phrasal affix.
4.2 Deriving second position

An issue that arises here is how to supply a prosodic host to a left-peripheral clitic such as *pea*, since VI will look to the left of *pea* for a prosodic label to cliticize to but none will be created. It is precisely such a scenario that prompted Halpern 1996 to formulate *Prosodic Inversion* as a last-resort measure to ensure prosodic well-formedness:

(23) Prosodic Inversion (Halpern 1996:5)
   For a clitic X, which must have a prosodic host \( \omega \) to its left (respectively right)
   a. if there is a \( \omega, Y \), comprised of material which is syntactically immediately to the left (right) of X, then adjoin X to the right (left) of Y
   b. else attach X to the right (left) edge of the \( \omega \) composed of syntactic material immediately to its right (left)

(23) allows an evaluative procedure at a defined point in the post-syntactic derivation to repair a prosodically ill-formed (hierarchical) string via a form of Merger. I will adopt a version of (23) as a filter at the conclusion of VI, invoked to ensure only phonological features – and not morphosyntactic structure or features – are allowed to enter the phonology. (23) requires changing, however, so that ‘inversion’ does not make reference to hierarchical structure, which is no longer present at VI; instead, left-peripheral clitics are inserted at the closest relevant prosodic boundary to their right, where ‘closest’ in determined by linear precedence. Thus in (24b), the partially completed VI for (24a), Prosodic Inversion will correctly insert *pea* to the right of the nearest phonological phrase to the right, *he tamaiti*:

(24) a. He tamaiti pea au nā te tangata kē
    a child perhaps I belong the.s man contrastive
    ‘Perhaps I am the child of some other person’ Bauer 1997:330

    b. (pea) [[he tamaiti]_φ [au]_φ [nā te tangata]_φ kē]_φ

This procedure also predicts that when clitic *pea* co-occurs with one or more post-predicate adverb particles, it will be inserted to the right of the predicate+particle unit. Consider (25):

(25) I rongo anō pea te kōtiro rā i te reo o tana matua
    T/A hear exact perhaps the.s girl nearIII ACC the.s voice of her parent
    ‘Perhaps the girl really heard the voice of her father’ Bauer 1997:330

Based on the discussion in Section 2, the simplified (and partial) input to VI is as follows:
Progressing bottom-up, \textit{anō} will attempt to be inserted, but since there is not as yet any prosodic material created to its left, it will remain in VI limbo. Next, \textit{rongo} is inserted, along with prosodic word and phonological phrase brackets (27a). Since there is now a viable host, \textit{anō} will immediately be inserted (27b). The T/A marker \textit{i} will then be inserted.\textsuperscript{17} \textit{Pea} will try (and fail) to have its insertion context met, and prosodic inversion will be invoked. Since the input at this point is (27c), insertion at the closest right-hand Phonological Phrase boundary will correctly place \textit{pea} to the right of \textit{anō} (27d).

(27) a. \{[rongo]\}_φ\{anō\}_φ
   b. \{[rongo]\}_φ\{anō\}_φ
   c. (pea) [ i [rongo]\}_φ\{anō\}_φ
   d. [ i [rongo]\}_φ\{anō\}_φ

4.3 Topicalization

Subjects in Māori may undergo topicalization (Pearce 1999, Bauer 1993, 1997), in which case they surface to the left of the T/A marker. I follow Pearce in identifying the landing site for such movement as Spec,TopicP, between FiniteP and ForceP within the C-system. The VI strategy used in the previous section predicts that if sentential adverbs co-occur with topicalized elements, the topic – being linearly closer to Force\textsuperscript{0} than the predicate after linearization – will act as the prosodic host for the sentential adverb. Further, if the topic conjoined, the sentential adverb will appear after the initial member of the conjunct. As (28) shows, this prediction is proved correct (sentential adverbs shown in italics):\textsuperscript{18}

(28) a. Ko ana hoa\textit{top} ia i wairangi noa iho ki te koteteki ki te hameme...
   top. his friend however T/A excited freely down to the chatter to the mutter
   ‘his friends, however, were excitedly chattering and muttering…’
   Bauer 1997:331

   b. Ko Ponga\textit{DP1} koā rāua\textit{conj} ko Puhihui\textit{DP2} i noho kau noa iho…
   top. Ponga however they.dl top. Puhuhua T/A sit excl. freely down
   ‘Ponga and Puhihua, however, just sat…’
   Bauer 1997:331

4.4 Multiple adverb particles

\textsuperscript{17} I assume unproblematically that T/A markers, case markers and determiners are proclitics to the phonological phrase. However, there is no positive evidence for such a move, since these elements influence neither stress or intonation assignment, and there are no PPhrase-level processes that could apply at such a position.

\textsuperscript{18} (28b) is marked for some speakers; however, those that find this example ungrammatical also deem \textit{koā} ungrammatical in all other positions. This suggests a dispreference for this particle, rather than this ordering.
The examples in (28) raise an ordering problem. Consider the partial VI input for (28a), given as (29), and based on the syntactic ordering discussed in 2.4:

\[(29)\]
\[\text{ia ko ana hoa i wairangi iho noa} \ldots\]

*Noa* tries and fails to be inserted, as does *inho*. However, once *wairangi* and its accompanying prosodic information is inserted, the insertion contexts for both *noa* and *inho* are simultaneously met (30). What determines which element gets inserted first?

\[(30)\]
\[\text{[[wairangi] } \text{[noa] } \text{[inho] } \text{(noa)}\]

I return to the idea – assumed throughout - that insertion works in a bottom-up and cyclic fashion. This predicts that, following the insertion of *wairangi*, the derivation will cycle back to the most embedded element – *noa* – and satisfy its insertion context before moving on to insert *inho*. This in fact makes the correct prediction, as (28a) shows. The partial derivation is given in (31).

\[(31)\]
\[\text{a. [[wairangi] } \text{[noa]} ]_{\Phi} (inho) (noa)\]
\[\text{b. [[wairangi] } \text{[noa iho]} ]_{\Phi}\]

5 Conclusion

In this paper I presented an analysis of Māori adverb particles that drew a correlation between their prosodic behaviour and surface ordering. I argued that certain asymmetries between syntactic and surface ordering were effected by the derivational VI component, applying cyclically and bottom-up. These asymmetries were driven by a need to satisfy prosodic insertion contexts, evaluated at VI. Prosodic Inversion was reinterpreted as a filter operating at the end of the VI component, invoked to ensure only phonological features were inputted to the phonological interface.

References

Adger, David unpublished. Interfacing syntax, morphology and prosody: The case of the Old Irish Verb. m.s. University of York, UK.


Bauer, Winifred 1997 *The Reed Reference Grammar of Māori*. Auckland: Reed Books


Clark, Ross 1976. Aspects of Proto-Polynesian Syntax; Te Reo Monograph. Auckland: Linguistic Society of New Zealand


Foster, John 1987. He Whakamārama – a new course in Maori Auckland: Heinemann


Harlow, Ray 1996. Māori München: Lincom Europa

Herd, Jonathon 2002. Deriving the Māori clause: a predicate-fronting analysis. ms. University of Toronto


Pearce, Elizabeth 2001. "X or XP movement." ms. University of Victoria, Wellington
Pearce, Elizabeth & Waite, Jeffrey 1997. "kia and ki te complementation in Maori: an unaccusative analysis" Te Reo 40, 45-75