

## Changes in the pronunciation of Māori and implications for teachers and learners of Māori

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### Abstract

*This paper discusses changes in the pronunciation of Māori and implications for teachers and learners of Māori. Data on changes in the pronunciation of Māori derives from the MAONZE project (Māori and New Zealand English with support from the Marsden fund). The project uses recordings from three sets of speakers to track changes in the pronunciation of Māori and evaluate influence from English. Results from the project show changes in both vowel quality and vowel duration and some evidence of diphthong mergers in pairs such as ai/ae and ou/au, especially amongst the younger speakers. In terms of duration the younger speakers are producing smaller length distinctions between long/short vowel pairs other than /ā, a/. We discuss the implications of such changes for those teaching Māori and for students learning Māori as a subject. These changes raise interesting questions concerning the pronunciation of Māori by future generations.*

### Introduction

Māori is the indigenous language of Aotearoa/New Zealand. Current estimates, based on the National Census of 2006, suggest that around 15 percent of New Zealand's population of four million belong to the Māori ethnic group. Māori have been interacting and intermingling with English speakers, i.e., immigrants and their descendants, for over two centuries. Because of the current ubiquity of English in New Zealand and compulsory schooling in the medium of English until the 1990s, all Māori adults are fluent speakers of English. Since the 1990s it has been possible for students to complete all their compulsory schooling in the medium of Māori. In practice only a few students actually do this because of lack of Māori-medium provision in years 9 to 13, i.e., New Zealand's high school years. The actual number of fluent speakers of Māori is more difficult to estimate (see Harlow (2007) for the most recent discussion). Census data (2006) indicates that less than 25 percent of Māori can hold a conversation in Māori about everyday topics. Although Māori is an endangered language, there have been tremendous efforts to increase the number of Māori speakers especially via education. Other areas of focus include the media, radio and television, and web-based and other IT resources. Government efforts to support Māori language revitalisation initiatives include the funding of a Māori Language Commission Te Taura Whiri i te Reo Māori (established in 1987), making Māori an official language of New Zealand (1987), support

for Māori language educational initiatives and broadcasting, and promoting increased use of Māori amongst government departments.

### **Māori Language in New Zealand Education**

Māori has been taught as a subject in New Zealand schools since the 1940s. Following World War Two an increasing number of high schools began to offer Māori as a subject. In the late 1950s/1960s Māori was introduced in New Zealand universities and teacher training colleges. Revitalisation efforts intensified in the 1970s and 1980s. Bilingual primary schools were established in rural Māori communities, *kōhanga reo* ‘language nests’ were established for pre-school aged children, *kura kaupapa Māori*, ‘Māori immersion schools based on Māori principles’ and immersion classes were initiated. Universities, polytechnics and other tertiary providers increased their offerings of Māori language courses especially in areas of high Māori populations. Formal schooling provision was complemented by community/tribal initiatives such as *wānanga reo*, ‘immersion courses for adults’, and *Te Ātārangi*, a national, Māori community-based programme for teaching adults Māori.

### **Basic Māori Phonology (Sound System)**

See Harlow (2007) and Bauer (1993) for detailed technical descriptions of Māori phonology and phonetics. In simple terms, Māori has ten consonants, represented in the orthography as <p, t, k, m, n, ng, wh, r, h>. There are five Māori vowels <i e a o u>. Sequences of similar vowels are realised as a single long vowel and this is often reflected in modern orthography by the use of a macron or bar over the vowel. Some sequences of dissimilar vowels form diphthongs. Diphthongs involve a glide or smooth movement between two sounds within a syllable (in terms of production) and are perceived as a single sound. Other sequences of dissimilar vowels involve an abrupt transition between two vowels and are, therefore, simply regarded as vowel sequences and not diphthongs. Vowels and diphthongs are discussed in more detail in later sections of this paper. Māori is an open syllable language (all syllables must end in a vowel). Consonant clusters are not permitted.

### **Māori Consonants**

Many Māori consonants have similar or near equivalents in the varieties of English currently spoken in New Zealand, which linguists term New Zealand English (NZE). Learners of Māori as a second language are almost certainly told to produce Māori consonants according to NZE equivalent forms. These equivalent forms are not always accurate, for example, the voiceless plosives (or stops) in Māori, <p, t, k>, as with plosives in Polynesian languages traditionally show very little aspiration. MacLagan and King (2007) and Harlow, Keegan, King, MacLagan & Watson (2009) provide data that clearly show that younger speakers of Māori have dramatically increased the amount of aspiration in Māori plosives compared to earlier generations of speakers. This is almost certainly due to the influence of New Zealand English. Increasing aspiration of stops

sometimes draws comments from older speakers of Māori. In terms of understanding of sounds produced, it poses no real problems.

Two of the three nasal consonants /m, n/ are very similar to their New Zealand English equivalents. The velar nasal /N/ (spelt <ng>) does not occur (word) initially in New Zealand English (or any other English variety). Learners (native speakers of New Zealand English) often require time and effort in order to be able to produce clear, audible differences between minimal pairs such as ngā (a plural determiner) and nā (a possessive/grammatical marker). A further complicating factor is that many speakers of Tūhoe descent (a rural inland central North Island tribe, which possibly has the highest proportion of Māori speakers, especially younger speakers, and areas in which reasonable numbers of adult population still speak Māori) do not make a distinction in either speaking or writing between these two sounds, using <n> in writing and /n/ in speech for both. Tūhoe speakers are prominent in Māori broadcasting, TV and Māori language education. Learners should be taught that this ‘merger’ appears to be restricted to one region and that most speakers still produce a clear velar nasal. It is possible that this feature may spread further as a result of students learning from Tūhoe teachers or teachers who themselves have been taught by Tūhoe speakers. The consonant that causes most confusion for Māori learners is the one represented by <wh>. It is currently pronounced most commonly as /f/, like the English sound, i.e. a labio-dental fricative. MacLagan and King (2002) describe a speaker born in the 1880s and recorded in 1947 as producing five different realisations of /f/. Non /f/ variants (especially glottal fricatives, with and without lip rounding) are most commonly heard from speakers from the Northern region of the North Island in New Zealand. Variation in production is probably decreasing amongst younger speakers of Māori. Once learners are aware of the differences and the historical reasons behind the orthography used to write Māori it does not cause any problems. The most difficult consonant for New Zealand English speakers learning Māori is /r/. The Māori /r/ is alveolar tap or flap, i.e., a sound that is not used in word initial position in New Zealand English. This can require considerable practice for some learners of Māori.

### **Method and Data**

The Method and Data are well described in Harlow et al. (2009) and the following description comes from that chapter. The MAONZE project (funded by New Zealand’s Marsden Fund) analyses the pronunciation of three groups of speakers (see references in this paper for project publications). The first group, called the Mobile Unit (MU) speakers, were born in the late 1800s and were recorded by the Mobile Disc Recording Unit of the New Zealand Broadcasting Service between 1946-1948. Most were recorded speaking in both Māori and English. Interviews are of varying length (10 to 90 minutes), tend to consist of historical narrative, genealogy and legends, and were intended for radio broadcast. All of these speakers are first-language (L1) speakers of Māori. The other two groups of speakers, who were recorded from 2001 to 2006, were selected to match the MU speakers as closely as possible. They are all male as were the MU speakers, and were recorded for approximately an hour in each of Māori and English. Although less formal than the MU recordings, these are interview-style recordings rather than casual

conversations. The second group, the *kaumātua* (elder) group, consists of ten speakers born in the 1920s and 1930s and is referred to as the K group. All are L1 speakers of Māori who grew up in Māori speaking environments learning English after they started school. The third group of ten speakers, the younger (Y) group, were born in the 1970s and 1980s; five are L1 speakers of Māori, and five are L2 speakers. Despite language revitalisation efforts, there are very few younger L1 speakers of Māori and those interviewed for this project all have a good background of Māori language exposure, both from older speakers in their home and through their educational environment, even though it appears that none of them received direct transmission of the language from their parents. However, in contrast to the L1 *kaumātua*, younger L1 speakers were subject to considerably greater exposure to English from their earliest years. The younger L2 speakers are relatively fluent speakers of Māori, all of whom learnt Māori from their teenage years onwards. The data come from an acoustic analysis of the recorded speech and extracted formant frequencies (these are specific frequencies corresponding to resonant frequencies in the vocal tract) and the lengths or duration of vowels and diphthongs. Further details on the data and methods of analysis are provided in Harlow et al. (2009).

## Results

The results discussed here focus on just three areas of Māori vowel change over time. They provide the first objective data on changes to the Māori vowels over time. The first is vowel quality, the second is vowel length or duration given in milliseconds, the third looks at a small number of diphthongs suspected to be changing. Vowel quality is determined by formants read from spectrograms. In this paper we are primarily concerned with the first two formants of a vowel, F1 (the lowest formant in Hz) and F2 (the second to lowest formant) which can be directly related to tongue height (F1) and tongue backness (F2).

### Māori Vowel Quality Change

As previously mentioned Māori is often said to have a five vowel system (Harlow 2007). Generally most Māori vowels do not pose problems for learners. The Māori /e/ can cause some difficulties as it never occurs in English in the syllable final position, in other words at the end of word, however, it does occur in the final position of many Māori words. Because of this, there is a tendency for English speakers to diphthongise a final /e/ in Māori to /eI/.

Vowel quality can be represented by formant plots of F1 and F2, as these values alone can clearly distinguish each vowel. Formants of a vowels are usually displayed on a formant chart. F1 is plotted on the y (vertical) axis with a reversed scale, F2 on the x (horizontal) axis, also with a reversed scale, forming a third quadrant graph. This gives an acoustic representation of vowels. The advantage of this form of graph is that formant representation is correlated to an articulatory description of tongue position. Tongue height during production of a vowel correlates to F1 and is inversely related to formant frequency. F2 represents how far forward the highest point of the tongue is in the mouth.

The lower the F2 value, the more ‘back’ the tongue is when producing that vowel, for example /u/ in Māori was traditionally a high back vowel. The /i/ vowel is usually termed a high-front vowel. Individual instances of vowels can be represented on a formant chart, or mean values of an individual’s formants or group’s formants can be plotted for each vowel. This allows easy comparisons between individuals or groups of speakers and vowels from different languages.

Figure 1: Formant Values of Māori Vowels by Speaker Group

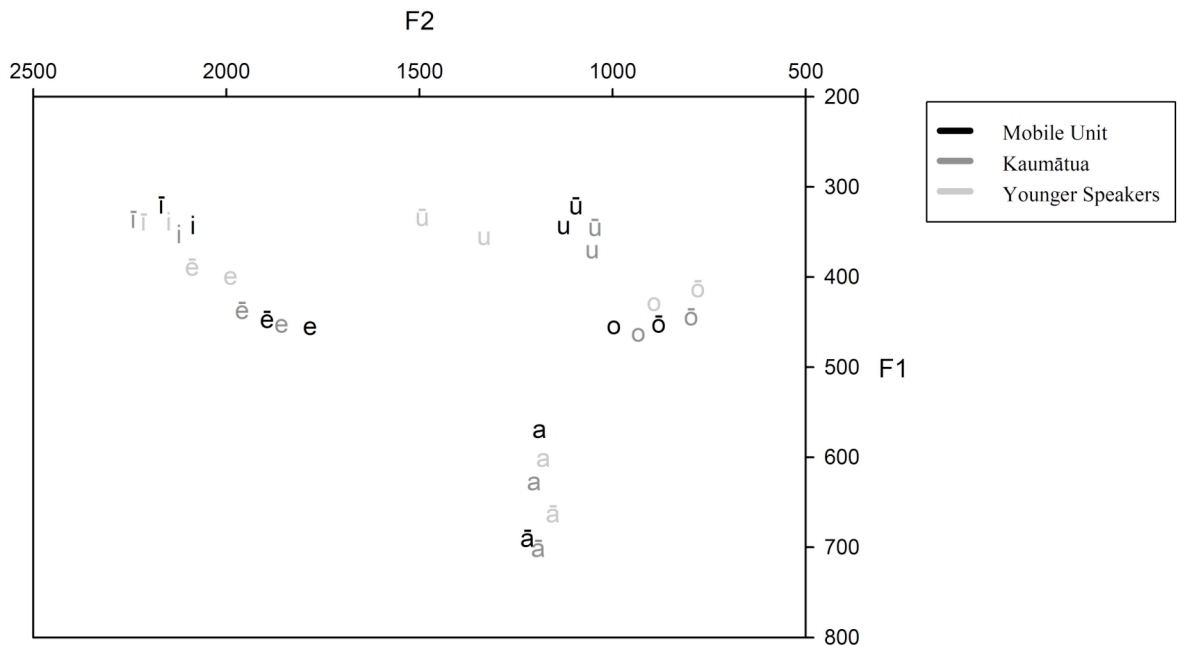


Figure 1 presents the mean formant values of Māori long and short vowels by the three speaker groups. Each vowel plotted is the (arithmetic) mean value of the mean of all individual speakers, which includes up to 30 tokens of that vowel for each speaker. There are clear differences between the speaker groups. The Mobile unit speakers (in black) have clear distinctions between their /a/ and /ā/. In other words, acoustically the long /a/ vowel is a not short /a/ vowel being lengthened, it is also different in terms of vowel quality. The Kaumātua and Younger /i/, /ī/ and /e/, /ē/ vowels tend to be pronounced further forward (higher in F2) compared to the MU group and the /o/, /ō/ vowels correspondingly are further back. Most striking is the difference between the /u/ and /ū/ of the Younger group compared to Kaumātua and MU groups. In other words there have been clear changes in vowel production over these three groups of speakers (possible reasons for changes are complex and are discussed in Harlow et al. (2009)).

### Māori Vowel Quantity (Length) Change

Determining the length of Māori vowels is relatively straightforward, reading a length or duration of a vowel in milliseconds on a spectrogram. Figure 2 presents Māori vowel length by speaker group. As with figure 1, lengths of up to 30 tokens of each vowel per

speaker were read to provide speaker means. The group means are means of all speakers within that group. Sometimes it was not always possible to find thirty clear tokens for the long vowels other than /ā/, as these occur rarely in Māori words. Figure 2 displays each vowel by speaker group via a box plot. The black lines in the box plot represent the median values. The upper ends of the box plot represent the 75th percentile, the lower end the 25th percentile. The upper circle above the top box plot hinge represents the 95th percentile and lower circle below the lower hinge represents the 5th percentile.

Figure 2: Box Plots of Māori Vowel Duration by Speaker Group

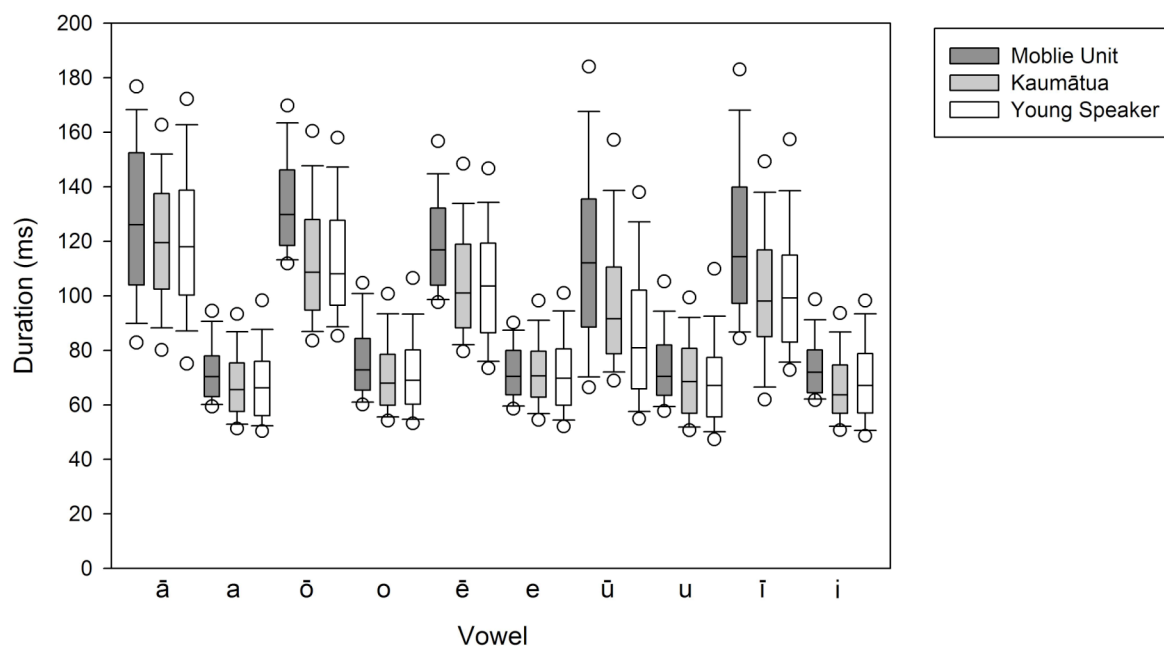


Figure 2 indicates that there are only small differences in short vowel lengths among all the short vowels across the three groups. The long vowels, however, appear to have changed much more over time (i.e. across speaker group) especially the /ū/. The long /ā/ appears to have changed only slightly. The MU speakers clearly keep all their long vowels distinctly different from their short vowels, usually they are on average twice the length of the short vowels. The Y speakers generally have the shortest long vowels, indicating that most long vowels are decreasing in length when compared to previous generations. In practice this means that the younger speakers are shortening the long vowels in words such as pīrangī ‘desire, want’, tīmata ‘begin, start’, tūpato ‘cautious’ and tūtaki ‘to meet or close’. Some younger speakers show some variation in the length of the previously mentioned words. In other cases younger speakers are lengthening some short vowels, e.g. the second vowel in ehara ‘not’ and engari ‘but, however’ and the first vowel in roto ‘lake, inside’ and rongo ‘hear, listen, feel’. We suggest that the major influence of these changes is the rhythm of New Zealand English. We have discussed these influences in Harlow et al. (2009) and will be investigating the influences of New Zealand English in more depth in the near future.

## Māori Diphthong Change

Māori diphthongs and their changes are well described in Harlow (2007) and Harlow et al (2009). Here we discuss two pairs which cause difficulties for learners because of proximity, i.e. ai/ae and ou/au. Data suggests that these pairs may be merging or have merged together for some younger speakers of Māori. Figure 3 presents a formant charts of four Māori diphthongs for each speaker group. The charts display the diphthong beginning and ending points indicated by a straight line. For example the /ae/ diphthong begins with an /a/ and glides to the /e/ vowel. The ellipsoid indicates the 95 percent range of individual short vowel centred on the mean value. The groups consist of the mean values of the means of 30 tokens for each individual speaker of that group.

Figure 3: Some Maori Diphthongs by Speaker Group

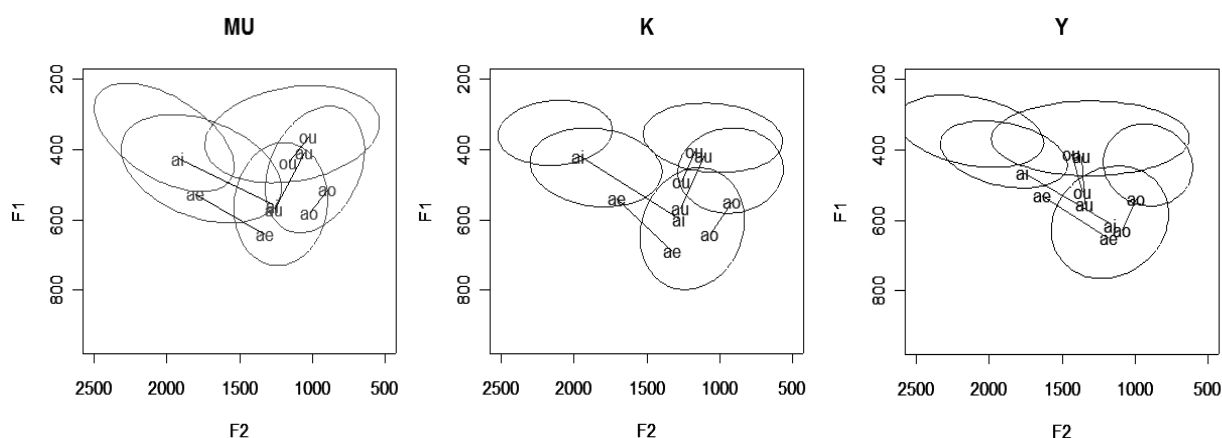


Figure 3 indicates little difference between the MU and K groups, however in the Y group the ai/ae and ou/au pairs are much closer in acoustic space, clearly indicating that these pairs are merging, i.e., gradually becoming indistinguishable from each other. For some speakers in the Y group these pairs have already merged. This results in pairs such as pai ‘good, ok’, pae ‘horizon, beam, to lie across’ and tai ‘sea, tide’, tae ‘to arrive’ being indistinguishable when heard from younger speakers. It may be argued that the merger may not pose great problems for spoken Māori as merged pairs are mostly likely to be disambiguated by the context of the dialogue. It does mean that those writing Māori should be aware that Māori orthography no longer always matches pronunciation.

## Implications of Changes for Teachers and Learners of Māori

There is anecdotal evidence that older speakers of Māori (generally native speakers) are critical of the Māori spoken by many younger speakers. It is often said that the ‘mita’ ‘metre, rhythm, intonation’ has changed. One may suppose that older speakers are

hearing younger speakers and lack the technical knowledge or terminology to describe what is different. Data from the MAONZE project clearly shows that Māori, especially amongst younger speakers is changing.

Teachers and learners of Māori certainly need to be aware of the variation in the pronunciation of Māori amongst current speakers and think carefully about which speakers are used as role models for pronunciation and that it will probably be very difficult for younger speakers of Māori to sound like speakers from older generations. There are resources such as CD-Roms (e.g., Niwa, 2003) and web sites, which provide good models (usually of older speakers) of Māori being pronounced in traditional ways. To our knowledge there is no research on the effectiveness of such resources (which often have extremely naïve descriptions of Māori phonology and phonetics) or how well second language learners actually pronounce Māori or what time and amount of exposure to Māori is required in order to achieve an acceptable standard of pronunciation. Teachers of Māori language may be more effective teachers of pronunciation with proper linguistic training and tools to easily assess their own students' pronunciation. Learners also should be aware of variation amongst age groups, and need to be aware that they may never sound the same as older fluent speakers of Māori. There is much scope for the development of online pronunciation tools for independent learners, although these are of little use unless their effectiveness is carefully evaluated and ongoing developments are carried out. In terms of language planning, groups like the Māori Language Commission and other government agencies involved in Māori language education need to be aware of changes and support research and resources to improve the teaching and learning of Māori pronunciation.

There are other areas for further research. One area of interest to the Māori community is the nature and extent of dialect or regional variation. To date the MAONZE project has not attempted to look at the variation in pronunciation of Māori by dialect or tribal regions. The data contain a reasonable number of speakers (Kaumātua) from the Ngāti Porou region and they appear to show some variation amongst themselves. It may be almost impossible to do a complete survey on the basis of dialect/tribal regions, as many areas now lack numbers of older speakers of Māori who are very fluent speakers and have spent most of their lives speaking Māori. We suspect, however, that the speech of many younger speakers throughout New Zealand may be more similar than different simply due to high Māori urbanisation, and being exposed teachers and the media with speakers from different tribal areas. It may well be that a standardised Māori pronunciation is emerging from the students who have attended Māori-medium programmes. Another area of research is Māori women's speech. As previously mentioned the data in this paper is based on male speech. The MAONZE project has received further funding from the Marsden Fund and will be investigating Māori women's speech and rhythm in 2008-2010. A further area for research is the pronunciation of Māori proper names by New Zealand's media who began to cease using Anglicised versions of Māori names over a decade ago. Some media personnel appear to pronounce Māori words more traditionally than others.



## Conclusion

Clearly the pronunciation of Māori is changing. All languages change, vowels especially, change over time and there will always be a tension between natural language change and efforts to retain the language in a form that is acceptable to the majority of Māori speakers. Teachers and learners need to be aware of the nature of these changes and not impose unrealistic expectations on themselves and their students. However, attempting to emulate the speech of older native speakers of Māori is still a worthwhile goal. Teacher practice and education in terms of how and how well Māori pronunciation is taught requires research. There is a clear need for pronunciation resources that go beyond providing good examples of Māori pronunciation. Resources need to be carefully evaluated and improved as a result of ongoing research and feedback. Further research is required on other aspects of changes in Māori speech and in other areas of Māori language including the lexicon and Māori grammar. The MAONZE team will be investigating Māori women's speech and rhythm in 2008-2010, publishing further results on existing and new data in the future and reporting on more findings at the 3rd International Language, Education and Diversity Conference.

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