

18 Gahua he tohi vagahau Niue: *Niue dictionary project: orthography and vowel quality*

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Fakaalofa lahi atu! Welcome! – spelling variation (or misspelling?): *fakalofa lahi atu!*

1 Niue dictionary project¹

This project is funded by the Niue Government (Department of Education) and UNDP. It provides for technical equipment (computer hardware and software, printers, photocopier, etc.), office space, a seven-member Dictionary Panel, a secretary, an international consultant (Professor Bruce Biggs) and a resident lexicographer (W. Sperlich). Project duration is March 1993 to March 1996, with a possible extension to September 1996. Primary output objectives are an archival database, a bilingual and a monolingual dictionary. The archival database and the bilingual dictionary are now close to completion. The dictionaries are to be published by University of Hawaii Press. The project has to provide camera-ready copy.

Orthography, generally, and how to deal with different vowel qualities (short, long and possibly slightly or fully rearticulated) in particular, have been important issues for the dictionary makers. Literacy (English and Niuean) in Niue is one of the highest in the USP region, and Niueans passionately care about their language (Lui in prep.; Sperlich 1994). Niuean language matters are therefore of wide public concern. This article recounts the steps

¹ I am grateful for help received from Atapana Siakimotu, Pita Tanaki, Fellow Pahetogia, Iris Lui, Hula Funaki and Sifa Ioane. At the conference I received many interesting comments which have been incorporated in this revision. Professor Biggs made a number of important written comments, most of which are also incorporated here. Naturally I alone am responsible for any errors and omissions that remain.

that led to the eventual orthographic standards adopted for the Niue Dictionary Project. As such the narrative emphasises the question as to how certain decisions were made, rather than detailing the decisions first. The path taken was neither straight nor narrow, but not in flagrant violation of linguistic and scientific principles. The problem with linguists is sometimes that they fix their scientific 'gaze' (to borrow Foucault's (1973) famous word) on language as if it were a capacity that happens to reside inside human beings, rather than focusing on human beings who have a language capacity. Lexicography as a team effort, in my experience at least, largely deals with the latter.

2 A brief history of Niuean orthography

Orthography, like no other branch of linguistics (if it is one) excites the popular imagination. Correct spelling is an obsession to some, a nuisance to others:

All future attempts to simplify the spelling of English words will, with all certainty, meet the same fate as those unsuccessful efforts made in the past. The genius of the English language does not lend itself to such manipulative devices. (Horan 1994:5)

...perhaps they find standardisation helpful for linguistic description and dictionary making, or perhaps they believe that it makes it easier for beginners to learn how to read ... with regard to dictionary making, ignoring variants in favour of a single 'standard' spelling is certainly convenient for the lexicographer, but it certainly does not contribute to the completeness of the description. (Black 1990:84)

...designing an orthography in the beginning stages at least is really the job of a specialist linguist. But the linguist can only go so far in designing an orthography, because at the same time, the way that people are going to spell their language is going to depend on the way they are happy to see it written. (Crowley 1986:443)

Whether one agrees with one or the other, the historical evolution of any writing system must impact on any current issues.

The reduction of spoken Niuean to a written form is, as elsewhere in Polynesia, closely tied to missionary history. Ryan's (1994) thesis gives an illuminating account of this general process for Niue. Suffice to say here that missionisation from 1830 onwards, under the guiding hand of John Williams' Samoan station, proceeded in an orderly way, culminating in the long term consecutive residencies of the Lawes brothers from 1861 to 1910. Various religious tracts were translated into Niuean from 1830 to 1861 by Samoan teachers who would use the Samoan Bible to translate into Niuean and then send the drafts to Samoa to be edited and revised by G. Pratt (Niueans sent to Samoa to be trained as missionary teachers assisted Pratt). This resulted in one of the earliest known linguistic texts for Niuean, Pratt's (1861) *Niue vocabulary*. The remaining scriptures were translated under the linguistic influence of the Lawes brothers (the first complete Bible was published in 1884). The first grammar was Tregear and Smith (1907) in *Vocabulary and grammar of the Niue dialect of the Polynesian language*, based on the work of Rev. W.G. Lawes (resident in Niue 1861 to 1872). Of immediate orthographic interest is their title page which gives Niue as NIUE (with 'accent' as diacritic) and in its subtitle as NIUE (with 'macron' as diacritic).

2.1 Tregear and Smith (1907)

The 'letters' of the Niuean alphabet in this work (1907:1) are explained rather inconsistently: while long *ā* (with macron) is commented upon (as opposed to short *ā*- written

with a half-moon diacritic), long \bar{e} is mentioned with less certainty, and the possibility of other long vowels is not mentioned at all, while in the vocabulary section long \bar{o} and \bar{u} are used (but not long \bar{i}). In the vocabulary section the diacritic for short vowels is also sometimes used when emphasising contrast, as in:

Ku 'short'
Kūkū 'short'
Kūkū 'to hold fast'

While this example also begs the question why *ku* should have a short vowel when its reduplicated form has long vowels, the additional convention of emphasising 'short' vowels with the '˘' diacritic (when normally short vowels are unmarked) must be confusing.

It should be noted that the same confusing spelling conventions and diacritics appear in the Niuean Bible from this date. The Bible has many spelling mistakes, probably due to technical interference (intentional and unintentional) between Niuean resident translators and editors, typesetters, and publishers in Samoa (and in Sydney and later London). As already noted, given that the early texts were translated by Samoan teachers from Samoan into Niuean and edited and revised by the 'Samoast' Pratt (he also advised W.G. Lawes), it is not surprising that the Niuean Bible was heavily influenced by the Samoan language. In Niue there is currently a committee in session, in association with the Bible Society of Melbourne, to review the translation and orthographic conventions. By and large it is recognised that the 'first' translation was done badly, with many misspellings and other shortcomings. On the other hand there are many Niueans who consider this text sacrosanct, even to the extent that some words have changed in pronunciation to accommodate spelling errors.

The 'naming' of the Niuean consonant letters, as invented by the missionaries, is also important to note (in Tregear and Smith 1907:3, it is given incomplete and/or wrongly):

f a, ga, ha, ka, la, mo, nu, pi, ti, vi (ro, sa)

This naming scheme can influence the way which borrowings (mainly from English) are transliterated, especially as English consonant clusters have to be split up by inserting vowels. Note that *ti* is pronounced [ti], contrary to the Niuean rule of pronouncing *t* as [s] before high vowels (*i, e*).

The spelling conventions evolved so far also found their way into the influential book by Loeb (1926) *History and traditions of Niue* which is consulted to this day by many Niueans.

2.2 McEwen (1970)

The next substantial published account that deals with orthographic conventions is that of McEwen's (1970) *Niue dictionary*. His treatment of the Niuean alphabet has a number of innovations: vowels are either short (never marked) or long (with macron) or 'double' (for details see §2.4.2). Letters *s* and *r* (to a lesser degree) are added to the consonants, and *ng* replaces *g*.

McEwen's unilateral decision to change *g* to *ng* was met by Niueans with derision: the Niue Assembly even carried a motion 'deploring' the use of *ng*, thus virtually outlawing the new dictionary, at least for the public sector (especially education). Consequently the archaic orthographic conventions first summarised by Tregear and Smith (1907) are still in force today. Many Niueans view the Bible (as used by virtually all the churches in Niue) as setting

the orthographic standards, and in view of McEwen's unfortunate experiment, many Niueans are highly suspicious about any attempts to reform such conventions.

2.3 Rex et al. (1981)

A small booklet entitled *Everyday words and phrases in English and Niuean* was published by the USP Niue Extension Centre, being a revised and edited version of a similar booklet devised by the National Council of Women of New Zealand for five Pacific languages, namely Samoan, Cook Islands Maori, Tokelauan, Tongan and Niuean. Six Niuean language experts under Leslie Rex, the long time official translator for the Niuean Government (he was also the principal informant and collaborator for McEwen), were responsible for the revision, and it was approved by the Niuean Language Committee (which later became defunct, but recently was revived as the Niue Language Commission). Given this 'authoritative' background their 'Guide to Pronunciation' is interesting, notably that 'double vowels' are described as:

Two vowels the same in a word (e.g. *maama*) are each pronounced but run together to form almost one sound. Two different vowels (e.g. as in *koe*) are each pronounced but also run smoothly together. (Rex et al. 1981:iv)

Note that *g* is in use, but no 'long vowels' (with macron or marked in any other way). The 'double vowel' as described above is used only sparingly and never word initially or finally. The spelling system thus mirrors that of popular usage which largely disregards long or rearticulated vowels. The booklet, however, as it was designed primarily for 'palagi' language learners, was not noticed by Niueans themselves.

2.4 Niue dictionary project

With the inauguration of the present Dictionary Project it seemed a good opportunity to make a new start, based on the informed consent of the Dictionary Panel (who represent the public at large). As can be imagined this process is both difficult and time consuming; 'difficult' because the technicalities involved are rather complex, 'time consuming' because consensus building in a fiercely egalitarian Niuean society involves myriads of individual points of views.

Some issues, however, could be resolved quickly: the return to *g* as the grapheme for the velar nasal (even though the *ng* has been adopted for a few names such as *Tongatule*, and presumably will remain so); no need for marking short vowels with the macron even in exceptional cases; adoption of *s* as a dictionary letter (there are many words beginning with *s*) but not *r* (since there are no transliterated words beginning with *r*).

The biggest headache was the question of how to deal with long vowels, which involved first the question of how to recognise and define a long vowel, and then how to represent it as a grapheme.

2.4.1 How to mark long vowels

Let us assume that we recognise long vowels without difficulty: the options before us are to write a long vowel as a 'double vowel' or as a 'single vowel with a macron' (one could imagine other options, but none were acceptable to all involved). As is well known from New

Zealand Maori, choosing between these two options can inflame the hearts and minds of linguists and innocent language users alike. There is the argument that the use of macrons is counterproductive because it is not commonly available on typewriters (and still not available on many text editors on computer, or if available it cannot readily be exported to other editors requiring different keystrokes, etc.). In handwriting too, it is argued, macrons will be largely left out because they are too cumbersome to apply, as Niueans (and New Zealand Maori) are used to the English script (but, cry the proponents, the French and Germans, and many more besides, have no difficulty in applying their various diacritics!). Writing 'double vowels' is seen as no problem, particularly for those used to English spelling conventions (frequently using 'ee' and 'oo', but rarely 'aa', and rarely if ever 'uu' and 'ii'). In defence of the 'macron' it is argued that technology should bow to common (linguistic?) sense (if one needs macrons then demand a typewriter that has them, etc.), and that the macron is visually neat, especially for languages which have a lot of vowel use ((C)V syllable rule in Niuean). In the process of word formation it can happen that two long vowels meet (and phonetically remain a rearticulated sequence), necessitating four vowels in a row (under the 'double vowel' convention) which looks 'terrible'. Then there is the tricky question of how to distinguish between a 'double vowel' and 'two rearticulated (same) vowels'.

Within the Niuean context this thorny issue was made even thornier because the international consultant to the project, Professor Bruce Biggs, is a great champion of the 'double vowel' convention (for NZ Maori – but is satisfied with the macron version in Cook Islands Maori, while for Niuean he considers either as adequate, but prefers the 'double vowel' because of rule simplicity). However he clearly stated early on that the final decision must be that of the Dictionary Panel. Nevertheless he was confronted with a popular spelling system that lacked consistent rules for writing short and long vowels.

Niueans positively hate to see double vowels (or more) at the end of a word; they don't mind them in the middle of a word; they don't much like them at the beginning of a word (but are willing to be convinced otherwise in this instance); they hate to see a sequence of more than two same vowels (though they are quite happy with other sequences, as in the word *moui*). If you have to mark a long vowel at the end of a word you 'must' use a macron. Many Niueans regard the macron as not so much a sign for a 'long' vowel as a stress sign, especially when applied to final vowels (see McEwen's (1970) 'stress and intonation' rule which states that words ending in a long vowel will also receive stress on that last syllable). Many Niueans largely disregard 'long' vowels when writing, only using them in contexts where there is possible confusion (minimal pairs), a practice that largely mirrors that of the Bible.

From a purely linguistic point of view, this system (if it is one) needed to be reformed, because, even if one disregards the choice of orthographic conventions, one must insist that a language be written as it is pronounced. Failure to do so will only result in a crazy system (if it is one) as evident in English. What's more, clearly established rules within Polynesian languages **ought** to be upheld in any new dictionary:

- P1. Polynesian languages generally distinguish between short and long vowels, and that distinction *ought* to be upheld in the written form (some contrasts between long and short vowel can however be neutralised under certain statable conditions).
- P2. Polynesian monosyllabic words with lexical content have a long vowel.

Pitted against this is the popular Niuean rule, which could be formally stated thus:

- N1. Mark long vowels (with a macron) only to avoid homographs (words spelt the same but pronounced differently).
- N2. Word-final long vowels in words with two (or more) syllables **should** be marked (with a macron) regardless of whether or not homographs would result, since the final long vowel also confers stress (which normally is on the penultimate syllable).

Note that N2 is a weaker rule than N1 (the rule is strongest when N1 and N2 coincide, as in *malolo* 'fall' versus *malolō* 'strong'). The very word *Niuē*, with stress on the last syllable, is rarely written as it should be – it was so written by Tregear and Smith (but strangely McEwen used the 'anglicised' version 'Niue' on his cover!) The anglicised (sic) version *Niue* is used in Niuean texts. Rules (sic) N1 and N2 are in common use today, as evidenced in the local weekly newspaper the 'Niue Star' or in Government documents (usually translated from English into Niuean), in primary education readers, or in one of the few 'general' publications in Niuean such as *Niue: a history of the island* (Chapman et al. 1982), written in both Niuean and English.

2.4.2 *How to determine vowel quality*

...Polynesian languages...have just five vowel sounds. They are represented conveniently by the five vowel letters of our English alphabet. Each vowel is either long or short. The distinction between long vowels and short vowels carries meaning and is all-pervasive (every vowel is either long or short). There is an extraordinarily persistent misconception that it is only necessary to mark a long vowel in a word to distinguish it from some other word which differs only by having a short vowel. Nothing could be further from the truth. (Biggs 1990:7)

The length of vowels in individual forms, however, is often difficult to reconstruct, and many sources fail to indicate it. (Clark 1976:24)

Let us assume for the moment that rules P1 and P2 are to be implemented for the Niuean dictionary. The following questions arise:

- what depth of linguistic analysis is required with regard to Niuean phonetics, phonology and morphophonology (understood to be the interface between phonology and morphology, and as developed by Dressler 1985) in order to establish vowel quality?
- if vowel quality is established in a root word, what exactly happens to long vowels when word formation occurs (affixation, reduplication, compounding, contraction)?
- how is such derived knowledge translated into spelling conventions acceptable to the Dictionary Panel?

It must be noted that to date no in-depth phonetic (phonological or morphonological) study of Niuean has been done. Obviously the person best suited to do such a study would be a native speaker trained in linguistics, or, to a lesser degree, a linguist fluent in Niuean. Neither of these choices has been available so far. The present linguist-resident-lexicographer has been 'learning' Niuean on the job for some two years, and he has 'trained' the members of the Dictionary Panel in the essentials of dictionary making (which could be described also as 'linguistics'). The outcome within these constraints, by all accounts, has been excellent, but nevertheless they lack the expertise to confidently tackle the above questions. In this context it is also important to note McEwen's (1970) contribution, who as

a noted amateur linguist and competent speaker of Niuean (he spent some ten years on Niue as a Resident Commissioner) grappled with the same questions.

So what were the points of departure for the NDP?

There are any number of 'minimal pairs' that prove that there is a phonological contrast between short and long vowels in Niuean, for example:

- (1) *moli* 'orange'
mōli 'lamp'

This, however, within general linguistic theory, does not mean that there will be a short/long vowel contrast in every phonological position. Apart from having the short/long contrast only in storable positions, there may be cases of neutralisation, free variation, dialect variants or conditioned variants. Professor Biggs (pers. comm.) gives an example from NZ Maori (note his orthographic convention of writing long vowels as 'double' vowels):

/a/ preceding stressed */Caa/* is always phonetically quite long. In this position there is no contrast between long */aa/* and short */a/*. We can say that the contrast between */a/* and */aa/* is neutralised under storable conditions. The linguist will describe this situation variously according to his theoretical background. The lexicographer, having determined the facts, can choose to write *ataarangi* or *aataarangi*.

I am afraid that such comparable depth of analysis is not yet available for Niuean. Pending further research the NDP has taken the probably simplistic view that a vowel is either short or long in any position. Members of the panel were convinced by the linguistic facts that their language makes this basic distinction, and henceforth members called on their linguistic intuition to determine in each case whether a vowel is short or long. This procedure extends to derived words, and indeed some trends and rules were established with regard to the question of long vowels in derivational processes (for details see below and §2.4.3).

Still, this was not the end of the story. An initially baffling phenomenon in Niuean is the existence of many synchronic base words (they 'may' be derived diachronically) which have rearticulated same vowels, such as:

- (2)a. *mooli* 'true'
b. *haana, haau, haaku* 'his/her/its, your, my'

Synchronically closely related are such words as *fakaalofa* 'greeting' which have been lexicalised and where the derivation is not fully transparent. While *faka-* is clearly a common prefix, there is no extant Niuean word **alofa* (neither perhaps **a-lofa*, but there is a word *ofa* 'love'). Diachronically it is rather obvious that the rearticulated *-aa-* sequence is across a morpheme boundary, but as we know from linguistic dogma, such data cannot determine synchronic facts, it can only confirm them. Another such related example is *aafe* 'turn' which historically is a partially reduplicated form of **afe* (not extant in Niuean, though the fully reduplicated form *afeafe* is).

Synchronically related (or arguably not related) are those rearticulated same vowel sequences which arise synchronically across morpheme boundaries from derivation, such as reduplication, affixation and compounding, as in:

- (3) *fakaatāaga* 'permission' (the root word is *atā* 'free'; *faka-* is a causative prefix; and *-aga* is a nominalising suffix.)

To account for these phenomena I was initially drawn to the idea that the 'rearticulated' vowels in root words like *mooli* 'true' were in fact a vowel quality attributable to a single vowel segment (similar to a diphthong perhaps, but in any case in additional contrast to 'short' and 'long'). Rearticulation arising from synchronic derivational processes I would consider a different phenomenon. In this I followed McEwen (1970:x) who made a similar three-way distinction (short-long-double, whereby the word 'double' is distinct from 'rearticulation' proper), that can be characterised as follows:

- E1. 'Short vowels' can occur in all environments and are written as a plain vowel.
- E2. 'Long vowels' can occur in all environments and are written with a macron.
- E3. 'Double vowels' are the result of diachronic consonant elision or vowel assimilation. The stress fall on the second vowel.
- E4. Rearticulated same vowel sequences occur across morpheme boundaries as in derivational processes.

E1, E2 and E3 refer to the three-way distinction of vowel quality.

For E3, McEwen does not elaborate how that stress rule integrates with the general stress rule (on penultimate syllable), but since practically all words with double vowels are disyllabic with the double vowel in penultimate position, there is no problem; double vowels thereby also cannot enter into any cross-morphemic processes. For E4 McEwen does not elaborate on the possible sequences, but those observed are 'short-short', 'short-long' and 'long-short'. McEwen (1970) is uncertain about base words which have 'rearticulated' vowels but cannot be 'derived' accordingly. Such cases he presents in a rather contorted way:

MŌLI adj. true, correct. NOTE: This word is more properly written *mooli* as the letter *o* is usually pronounced twice, with the accent on the second. It is the same word as *Maori* in New Zealand. *Ao* tends to become *oo* in Niue.

If McEwen had known the relevant proto Polynesian form to be **maaqoli* would he have suggested that the Niuean witness resulted from both consonant elision (glottal stop) and vowel assimilation?

As Professor Biggs has pointed out (pers.comm.), both McEwen and I, by placing undue emphasis on diachronic data, failed to see that in each synchronic case of such double vowels the stress fell on the second one, hence the apparent three-way distinction [short]-[long]-[double] is reduced to the basic two-way distinction of [short]-[long or double]. In synchronic terms there seemed to be supporting evidence from Tongan (and Niuean is after all a Tongic language, with Tongan being its closest relative) where long vowels in penultimate position tend to become rearticulated with stress on the second (Biggs pers. comm.).

After prolonged discussion of these 'linguistic facts' with the Dictionary Panel, a consensus was reached whereby this observation was elevated to a rule:

NDP1: long vowels in penultimate position (and under the condition that there is no final long vowel) become rearticulated with stress on the second.

The whole rule convention with regard to long vowels was determined thus:

NDP-LV: If a long vowel occurs at the end of a word it is written with a macron; elsewhere it is written as a double vowel. If the second half of a double vowel is penultimate it is rearticulated receiving stress; otherwise it is heard as a single vowel.

Hence in words like *kaalagi* ‘a bird’ the double vowel /aa/ is a single long vowel, while in a word like *faanau* ‘children’ the second part of the double vowel falls on the penultimate, hence it is rearticulated and stressed. In words like *malolō* ‘strong’ the final long vowel is written with a macron.

At this juncture it became evident that the Niuean stress rule, apart from the basic ‘stress on the penultimate’, must include the exception whereby a long vowel at the end of a word receives primary stress. Indeed it was observed that long vowels in general attract a measure of stress. The question arose if a double vowel in penultimate position would still be rearticulated if the word ended in a long vowel with primary stress. Initial tests seemed to indicate that a secondary stress on the penultimate still had this effect. Long vowels in non-final and non-penultimate positions would also receive a secondary stress (or conceivably ‘tertiary’), but would remain as a long ‘single’ vowel. Stress in Niuean also requires further study (see also Hooper (1986:xiii), who for Tokelauan makes the observation that “stress is a complicated matter, and has not been systematically studied yet”, and Elbert and Pukui (1986:xvii) state in their Hawaiian dictionary that “contrary to many statements about Polynesian languages, there are no rules to predict which syllable will be stressed in words of more than four syllables”).

The NDP-IV rule, in combination with the extended stress rule elaborated above, was applied to word formations also, such as full reduplication:

- (4) *tā* ‘to hit’
taatā ‘to hit continuously’

where according to our rule a long vowel moves into penultimate position and thus becomes a rearticulated double vowel with stress on the second.

The main shortcoming of this system was that using both double (in non-final, non-penultimate positions) and macron for long vowels creates unnecessary confusion. Essentially it was a compromise solution to the question as to whether it was better to write long vowels as double or with a macron.

However, as part of the evolving learning process between all concerned, the native speakers on the Dictionary Panel became more and more expert linguists (and the resident linguist became more competent in Niuean – and possibly linguistics) and they became more assertive as to what they knew to be the ‘proper’ pronunciation: it appeared that the system adopted led to some wrong results.

In particular it seemed that the rule requiring all penultimate long vowels to be rearticulated is incorrect. The long ‘penultimate’ vowel in *fānau* (until then written as *faanau*) is pronounced as a single long vowel. However there are words where the double ‘rearticulated’ vowel remains, as in *haaku*, *mooli*. No synchronic rule could however be found to determine which words have those ‘double’ vowels (the diachronic data merely help to confirm), and as such the ‘double’ vowel remains an idiosyncratic feature of Niuean. While it is true that in base words the rearticulated double vowel only appears in penultimate position, native speakers are now adamant that the rearticulation remains even when derivational processes shift it to another position, as in:

- (5) *fakamooliaga* ‘evidence’ (made up of *faka-*, *mooli*, *-aga*)

It was therefore proposed to do away with the convention of writing a long vowel with a macron only at the end of a word. The decision was taken to write all long vowels with a macron.

Furthermore, since the idiosyncratic 'double' vowel is essentially (phonologically) not different from any other rearticulation, one can do away with the notion of double vowels as well.

Altogether this results in a straightforward orthographic convention which can be 'read back' with the correct pronunciation in virtually all cases:

NDP: all long vowels are written with macron; all same vowel sequences are rearticulated.

Note that the dictionary will clearly indicate which same vowel sequences are the result of derivation (rearticulation across morpheme boundaries), and which are confined to base-word internal positions. The only difficulty remaining on the surface is to distinguish diphthongs from rearticulated vowel sequences (most of which arise from derivational processes, and are indicated as such in the dictionary), as in:

- (6) *fouu* 'new' which according to our rule so far could be pronounced (or 'read back') as *fo-o-u* or *fo-ou*.

To account for the correct pronunciation of *fo-ou*, the rule can be amended to say that the maximum number of segments to be rearticulated within base words is two. For the example above this is also confirmed by diachronic data, e.g. PN **foqou* 'new'. Note that McEwen's solution for this particular item is *fōu*, and while logically possible, it is not born out by the actual pronunciation.

A small remaining problem is the suspicion that the rearticulated double vowel in base words may not be restricted to the penultimate syllable (in mostly disyllabic words). Given the Niueans' dislike of seeing double vowels at the end of a word, does this interfere with the discovery of such words? Since there are very few possible examples (all are suspected on diachronic grounds) I will not push the issue, and only present these examples for discussion:

- (7)a. *fā* 'four' (**faa* 'four')
fāgofulu 'forty' (*fā* 'four' and *gofulu* 'ten')
- b. *fā* 'habitual' (**faqa* 'habitual')
fāvale 'wild' (*fā* 'habitual' and *vale* 'fierce')

The homonyms differ in their historical roots. While *fā* 'four' is pronounced with a long vowel (as is its historical root), it may be that *faa* 'habitual' is rearticulated as a double vowel (reflecting the loss of the intervocalic glottal stop).

Nevertheless the orthographic conventions arrived at so far by NDP are more consistent (and more correctly reflect the pronunciation) than any spelling system Niuean has had before. This is demonstrated in the following table:

Table 1: NDP orthographic conventions compared with other spelling systems

NDP	Proto Polynesian	McEwen	Tregear & Smith	Bible
<i>mā</i> 'ashamed'	* <i>maa</i> 'ashamed, embarrassed'	<i>mā</i>	<i>mā</i>	<i>ma/mā</i>
<i>fālō</i> 'lash'	* <i>faaloo</i> 'stretch, tighten'	<i>fālō</i>	<i>fālō</i>	–
<i>mooli</i> 'lamp'	* <i>moolii</i> 'oil, lamp'	<i>moli</i>	<i>moli</i>	<i>moli</i>
<i>fā</i> 'pandanus'	* <i>fara</i> 'pandanus'	<i>fā</i>	<i>fa</i>	–
<i>tū</i> 'stand'	* <i>tuqu</i> 'stand, be upright'	<i>tū</i>	<i>tu</i>	<i>tu</i>
<i>mo</i> 'for'	* <i>moqo</i> 'for'	<i>mo</i>	<i>mo</i>	<i>mo</i>
<i>meā</i> 'clean'	* <i>meqaa</i> 'clean'	<i>meā</i>	<i>meā</i>	<i>mea/meā</i>
<i>mooli</i> 'true'	* <i>maaqoli</i> 'true, right, genuine'	<i>mīōli</i>	<i>mōli</i>	<i>mooli</i>
<i>mōli</i> 'lamp'	* <i>moolii</i> 'oil, lamp'	<i>moli</i>	<i>moli</i>	<i>moli</i>
<i>maama</i> 'bright'	* <i>maa-rama</i> 'light, bright...'	<i>maama</i>	–	<i>maama</i>
<i>fānau</i> 'children'	* <i>faanau</i> 'offspring'	<i>fānau</i>	<i>fānau</i>	<i>fanau</i>
<i>aafu</i> 'sultry'	* <i>qafu</i> 'hot and humid'	<i>afu</i>	–	–
<i>aahi</i> 'visit'	* <i>qasi</i> , * <i>qaqasi</i> 'visit'	<i>āhi</i>	<i>ahi</i>	<i>ahi</i>
<i>nākai</i> 'not'	–	<i>nākai</i>	<i>nakai</i>	<i>nakai</i>
<i>foou</i> 'new'	* <i>foqou</i> 'new'	<i>fōu</i>	<i>fou</i>	<i>foou</i>
<i>kālagi</i> 'a bird'	–	<i>kālangi</i>	<i>kalagi</i>	–
<i>fēkouna</i> 'send'	–	<i>fēkouna</i>	<i>fēkouna</i>	–
<i>malolō</i> 'strong'	* <i>maaloo</i> , * <i>maalooloo</i> 'strong'	<i>malōlo</i>	<i>malōlo</i>	<i>malolo</i>
<i>malolo</i> 'fall'	* <i>malolo</i> 'fall'	<i>malolo</i>	<i>malōlō</i>	<i>malōlō</i>

2.4.3 More on word formation

Polynesian languages, with their relatively small quantity of root words (Krupa 1982:32), add to the lexicon with extraordinarily wide-ranging word formation (mainly derivational). Niuean is no exception, and indeed the Niuean Dictionary Project has adopted as its 'philosophical' basis for the dictionary a derivational approach, namely detailing under every lexical root (headword entry) the whole range of derived items.

With regard to our present investigation the question arises as to what exactly happens to long and word-internal re-articulated vowels in derivational processes, both in terms of their phonemic status and as graphemes (where the latter should reflect the former).

To address the question adequately we must first distinguish between historically underived and derived root words, both of which undergo synchronic derivation, but may differ in morphophonemic processes. Often a further difficulty is that a particular root word may be clearly derived historically (say, via partial reduplication), but the historical root is still present in other derivations (though never by itself). Consider the following examples (morphemes given in wavy brackets):

- (8)a. *fakafana* {*faka*, *fana*} 'warm up food' [PN **faka-fana* 'reheat food']
- b. *fanahi* {*fana*, *hi*} 'apply heat' [EP **fana* 'heat']
fanafanahi {*fana*, *fana*, *hi*} 'keep applying heat'

- c. *mafana* {*ma, fana*} 'warm' [PN **ma-fana* 'warm']
mafanafana {*ma, fana, fana*}
fakamafana {*faka, ma, fana*}
mafanatia {*ma, fana, tia*}
fakamafanatia {*faka, ma, fana, tia*}

It may look attractive to list all these words under the historical (and synchronically hypothetical) root *fana*. This approach was adopted by McEwen with the convention of placing a 'line' behind such non-existent root words and listing the 'derivations' under it. However, in order to adopt a rigorously historical approach to dictionary making one must have historical records, which for Niuean are simply not available. The above example is clear-cut enough, but there are many items where a perceived 'historical' derivation is merely speculation (POLLEX has information on a quarter of the 10,000 or so Niuean words so far listed in NDP (Biggs et al. 1993)). To be on the safe side, NDP has adopted the policy that derivations can only be detailed if all the constituent parts are extant, that is, occur either as lexical words by themselves or as productive or semi-productive derivational devices, such as affixes. There are quite a few cases where one constituent is extant, but not the other. All such words are entered as separate headwords, though sometimes flagged with a possible historical derivation suggestion.

Particularly difficult are those words which may arise from a partial reduplication of the first syllable of the type V(V). Such reduplication should first lead to a re-articulated vowel sequence V(V)#V(V) which in turn may undergo further phonemic processes (such as shortening, assimilation). If there is no extant unreduplicated lexical root, how can we then distinguish between a long vowel and a rearticulated vowel sequence? If speakers in their pronunciation vacillate between the two, we are well and truly lost.

A variation of the theme is when words with more than two syllables reduplicate only the last two syllables. For Tokelauan, Hooper (1986:xvi) stated that:

When a word has more than two syllables, it is usually the case that historically the extra syllable or syllables were an affix. This part of the word is not reduplicated: *havili*, *hāvilivili*, *poloaki*, *polopoloaki*. Vowel lengthening in the first syllable of a word is often associated with reduplication.

In Niuean, to distinguish between historically partially reduplicated and unreduplicated is often conjecture. Consider these two words:

- (9)a. *aafu* 'sultry' ... **qafu* 'hot and humid'
afuafu 'hot'
- b. *aahi* 'visit' ... **qasi*, **qaqasi* 'visit'
ahiahi 'visit frequently'

From this information it would be reasonable to infer that *aahi* is a historically partially reduplicated form, while *aafu* is less likely so. McEwen's solution, in view of the protoforms (which were not available to him), is most unlikely, at least for his *āhi* (asserting that the initial vowel is long). Before inquiring into the respective initial vowel qualities, let us look at a synchronically reduplicated example:

- (10) *ene* 'poke' ... **gene* 'tickle'
eene 'poke slowly'
eneene 'poke frequently'
fakaeneene 'wary'
maeneene 'ticklish' ... **ma-gene* 'tickle'

It appears quite clear to me that *eene* is a partially reduplicated form of *ene*, and *eneene* is fully reduplicated. The morpheme boundaries of all derived forms of *ene* can be given thus:

- (11) *eene* {*e*, *ene*}
 eneene {*ene*, *ene*}
 fakaeneene {*faka*, *ene*, *ene*}
 maeneene {*ma*, *ene*, *ene*}

Given our dictionary rule that all morphemes must be synchronically attested, the best we can do for the examples in (9) is:

- (12)a. *afuafu* {*afu*, *afu*} but not {*a*, *afu*}
 b. *ahiahi* {*ahi*, *ahi*} but not {*a*, *ahi*} even though there is good historical evidence for it.

The vowel quality in *eene* (*e*, *ene*) is quite clearly ‘rearticulated’ across a morpheme boundary, and only if one can invoke a further morphophonological rule (such as vowel assimilation) can this status change. I believe that no such synchronic rule exists for this word, hence the *ee* sequence is rearticulated, as is in fact born out by the common pronunciation of this word, with stress on the second *e*. The same can be said of *aāfu* and *aāhi*.

But really only for *eene* or *eneene* can we assert that these words could never be written with a long vowel **_ne* or **en_ne* because that would violate the rule that same vowel sequences across morpheme boundaries are rearticulated (regardless of what the vowel qualities may be – the question as to what happens to long vowels in such instances is another question altogether, addressed below).

So what does happen to long and rearticulated double vowels when they end up, via derivation, in a word of more than two syllables preceding the penultimate syllable?

- (13) *aaki* ‘take out’
 akiaki ‘take out frequently’ {*aaki*, *aaki*}
 maaki ‘faded’ {*ma*, *aaki*} {Prefix, take out}
 taaki ‘uproot’ {*ta*, *aaki*} {Prefix, take out}
- (14) *atā* ‘free’ ... **qataa* ‘free’
 fakaatāaga ‘permission’ {*faka*, *atā*, *aga*} {Prefix, free, Suffix}
- (15) *mā* ‘shy’ ... **maa* ‘ashamed’
 femāaki ‘to be shy of each other’ {*fe*, *mā*, *aki*} {Prefix, shy, Suffix}
- (16) *maā* ‘in-law’
 femaāaki ‘to marry {between children of in-laws}’ {*fe*, *maā*, *aki*} {Prefix, in-law, Suffix}
- (17) *ō* ‘go’
 omai ‘come {subject plural}’
- (18) *peehi* ‘wreck’
 pēhia ‘to be squashed’
 pepeehi ‘to press continuously’

- (19)a. *femaāaki* 'to intermarry' {*fe, maā, aki*} {Prefix, in-law, Suffix}
 b. *fakafehagaaoki* 'to face one another' {*faka, fe, haga, ao, aki*}
 {Prefix, Prefix, turn, front, Suffix}

As can be seen in examples (14) to (16), the long vowel remains in many cases. In (13) the rearticulated double vowel reduces to one, the reason presumably being that words like *aaki*, *aafu*, *aahi* are historically derived as partially reduplicated, hence in other word formations the original unreduplicated form is used, such as in *akiaki*. In (17) we see the long vowel shortened, and in (18) we see a reduplicated double vowel changed to a long vowel. Examples in (19) demonstrate the (rare) occurrence of multiple rearticulation.

Sound changes in derivations are dealt with on a case by case basis. No rules have been established so far. Further study is required.

3 Conclusion

After some two years of intense preoccupation with the Niuean spelling system we arrived at what at this stage appears to be the best possible outcome. In the course of this very steep learning curve we took some wrong roads, but eventually returned to the main highway. Niuean lexicography is still in its infancy and one should not expect 'final solutions'. It remains to be seen if the Niuean public will be happy with the outcome. The question of vowel quality and how to handle it orthographically will surely occupy the minds of many in the future. A case in point is Tokelau: while the *Tokelau dictionary* (1986) took pains to distinguish long vowels with a macron, a later work (Hovdhaugen et al. 1989:20) reports that a Tokelau teachers' workshop has decided not to use the macron (i.e. not mark long vowels at all) for school books in Tokelauan.

Fakaauē! Thank you! – spelling variations (misspelling?): *fakaue*, (*fakaouē*, as in McEwen 1970).

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