

Shallow tone marking and literacy in Alaska Athabascan languages

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1. Introduction¹

In this paper I examine the representation of tone in Alaska Athabascan practical orthographies and the implications of such representations for literacy and language revitalization. I begin with some assumptions which I take to be uncontroversial. First, as has been argued by Bernard (1997), I assume that literacy has an important role to play in language revitalization and maintenance. While literacy by itself may do little to aid language revitalization—or may even hinder these efforts—we must acknowledge that literacy is a necessary part of language maintenance in today’s highly literate world.

Second, I assume that orthographic design should bear in mind the goal of literacy. While an orthography could be designed explicitly to serve the needs of language learners, such a limited scope is unlikely to serve the larger needs of language maintenance. Clearly, we can design phonetic alphabets to guide pronunciation—such alphabets are found in many world language reference materials—but I will not discuss such orthographies here, as they do not particularly serve the goal of literacy development.

In Alaska Athabascan orthographies tone has been represented in a variety of ways. In some orthographies tone is not marked at all. In others every surface pitch distinction is represented by a diacritic symbol. Still other orthographies mark some tones but not others. Yet in each case the establishment of tone orthographies has been divorced from considerations of literacy. Cross-linguistically this is not unusual. Writing about African tone languages Bird notes, “All too often, tone orthographies are established by fiat and defended by anecdote” (1999a). This certainly appears to be the case in Alaska, where tone orthographies are justified primarily on aesthetic or linguistic grounds, if at all. Aesthetics and linguistics are not unimportant in orthographic design; indeed, aesthetic and linguistic concerns may usefully constrain orthographic development. But the most relevant measure of an orthography is the relative success of that orthography in promoting literacy. In this sense there are no “bad” orthographies, just less effective ones.

In this paper I examine current and past approaches to writing tone in Alaska Athabascan languages, looking specifically at the degree to which tone marking has contributed to the development of literacy in particular orthographies. This investigation is motivated largely by my experiences participating in literacy workshops in Alaska and from observing the teaching, writing and reading of Athabascan languages in a variety settings. For a variety of reasons to be discussed below writing tone is both difficult to learn and difficult to teach. The crucial question then is whether this difficulty is outweighed by the potential benefits of tone marking in promoting literacy. If tone marking helps students to be more literate, then an orthography which

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marks tone will effectively contribute to the development of literacy. Ultimately, this is an empirical question. While the current paper does not take an entirely quantitative approach, it can be considered a first step toward a rational assessment of tone marking in Alaska Athabascan.

The remainder of this paper is organized as follows. Sections 2, 3 and 4 review the theoretical underpinnings of tone marking and orthography, noting especially the concepts of orthographic depth and functional load. Section 5 presents a survey of existing Alaska Athabascan tone orthographies. Section 6 discusses some experiences teaching literacy in tone orthographies. Finally, section 7 evaluates the evidence for tone marking and its implications for literacy and language revitalization.

2. Orthographic depth

Before addressing the larger questions of the role of tone marking in literacy and language revitalization, I address some theoretical considerations. A useful rubric for discussing various approaches to marking tone is the notion of *orthographic depth*, that is, the extent to which the written form mirrors spoken language, or the “relative remoteness [of the orthography] from the phonetic representation” (Lieberman et al. 1980: 146). With respect to tone systems and tone marking, the concept of orthographic depth refers to the degree to which tone marking reflects surface pitch distinctions. This is sometimes viewed as a binary distinction—either tone is marked or it is not—but it is better viewed as a continuum with these binary extremes located at the poles. A shallow tone orthography represents all surface pitch distinctions, while in a deep tone orthography tone is essentially zero-marked.

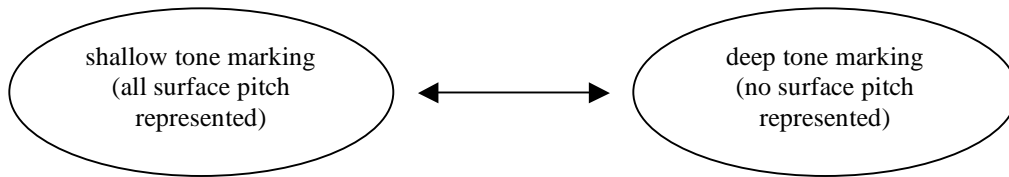


Figure 1: Orthographic depth

Shallow tone marking is currently favored by most linguists and linguistic publishers (in Alaska). An example from Tanacross is given in (1). In this orthography the tone diacritics directly reflect the pitch movements in the clause.

(1) Examples of shallow tone marking (Tanacross)

Ndéé de'?	When? (future)
Ndéé dé' tenhaa®?	When are you going?
J<iz nek-'eē □ □	I saw a camprober
J<iz ch'e nek-'êen	It's a camprober that I saw
Shos nek-'éē □ □ dé'...	If I saw a bear...

Given the notion of orthographic depth, we can phrase the question of tone marking as: How *deep* should tone orthographies be? While many extra-linguistic considerations impinge on this question, there are two important *linguistic* factors which should be considered. These are the functional load of tone and the phonemic depth of tone. I consider each in turn.

3. Functional load of tone

By the functional load of tone I mean the relative importance of tone in disambiguating word meaning.² Like orthographic depth, functional load is a scalar phenomenon. Tone can be said to have lower or higher functional load, depending on the relative number of word pairs differentiated by tone values, as diagramed in Figure 2.

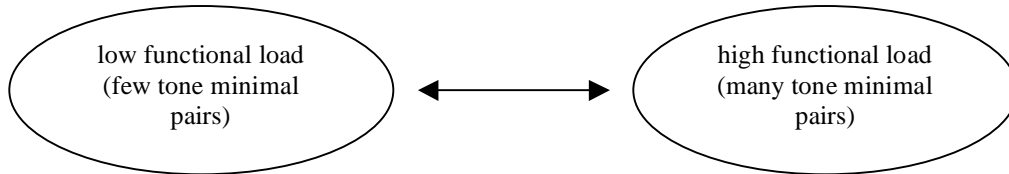


Figure 2: Functional load of tone

In most Athabascan tone languages tone has a very low functional load. The lack of minimal pairs can in part be explained by the existence of a complex system of verbal morphology which minimizes potential contrasts between root morphemes. However, Athabascan basic nouns, i.e., those which are not derived from verbs, are generally monosyllabic. Yet even within the noun system, most languages show relatively few minimal pairs. This is particularly true for languages which are historically more conservative with respect to the retention of syllable codas, such as Tanacross, as in (2).³

(2) near-minimal pairs in Tanacross

nén' [nénʔ] 'land'
nen [nèn] 'you'
shá' [šáʔ] 'louse'
shaa [šà] 'sky'
shí' [šíʔ] 'food, meat'
shii, shih [ši], [ših] 'I, me'

A larger number of minimal pairs can be found in languages which have lost or simplified coda consonants, such as Gwich'in.⁴

(3) minimal pairs in Gwich'in

shih [ših] 'bear'
shìh [ših] 'meat, food'
ch'izhin [tšʰižín] 'body'
ch'izhìn [tšʰižìn] 'eagle'
Han Gwich'in [hən kʷitšʰín] 'Han People'
han gwìch'in [hən kʷitšʰín] 'it seems to be a river'

² Note that this definition implicitly excludes phrase-level disambiguating functions, such as intonational pitch movements.

³ Athabascan forms are listed in a practical orthography, followed by a phonetic transcription in brackets. The Tanacross phone [š] is a lenis, or "semi-voiced", fricative.

⁴ Thanks to Kathy Sikorski and Jeff Leer for these examples.

While such lists are sometimes touted as evidence of tonal contrast, the number of minimal pairs is actually quite small. More significantly, their meanings are readily distinguished by syntactic and semantic context. Of course, these observations about the functional load of tone in Athabascan are rather subjective. Additional evidence is provided below.

3.1 Other evidence for low functional load

Functional load is a notoriously difficult notion to quantify and measure (cf. Bird 1999b). I know of no direct experimental evidence regarding the functional load of tone in Athabascan, however, there is some noteworthy circumstantial evidence derived both from existing orthographies and observations of the modern tone writing process.

3.1.1 Tukudh (Gwich'in) orthography

One source of evidence for low functional load derives from the historical success of deep orthographies. One of the oldest Athabascan writing system is the so-called Tukudh orthography developed by Archdeacon McDonald in the 1870's for the purpose of translating religious materials into Gwich'in. By the end of the 19th century the entire bible had been translated and published in the Tukudh orthography, and most Gwich'in adults were literate in the Tukudh orthography (Ritter 1986). For many Gwich'in speakers living today, their first exposure to literacy in their Native language was in the Tukudh orthography, and literacy in Tukudh is still perhaps more widespread than in any other Athabascan orthography. And yet this orthography does not mark tone.⁵ The success of this orthography in spite of the lack of tone marking rests on several factors, but certainly a necessary condition for this success is the relatively low functional load which tone plays in Gwich'in. This is not to say that zero-marking is the best approach to the representation of tone in Gwich'in, but it is difficult to imagine that a zero-marking approach would even be possible if tone had a high functional load.

3.1.2 Modern tone writing process

Additional circumstantial evidence for the low functional load of tone can be found in the process of writing tone. Tone is almost without exception treated by writers as a secondary orthographic feature (see section 6.1 below). In the process of writing or transcribing, segmental information is written first, then tone is written afterward. In many published materials, segmental and tonal information are written separately—often by separate writers. That is, one author or transcriber writes the segmental information, then passes the manuscript to an editor, who writes the appropriate tonal information. This approach is followed both by specialists and non-specialists alike, so that while language training would be expected to increase one's awareness of tone as an integral component of the language, training does not seem to alter this disjointed approach to writing tone. This is at least in part due to the secondary, diacritic nature of the tone marking itself. But it may also be indicative of the lesser perceived importance of tone within the phonological system.

3.2 Significance of the low functional load

To observe that tone has a low functional load in Athabascan is not to downplay the importance of tone. The importance of tone in Athabascan languages has long been noted (e.g., Sapir 1922).

⁵ The Tukudh orthography also under-differentiates in many other ways. For example, it does not distinguish between aspirated, unaspirated and ejective stops.

For example, in Tanacross, a language with few tone minimal pairs, speakers are acutely aware of pitch contours on lexical and phrasal items and are quick to correct tone disfluencies. But a speaker's awareness of pitch distinctions does not necessarily imply the necessity of a shallow orthography. The significance of the low functional load of Athabascan tone is that it makes possible orthographies which do not indicate every surface pitch distinction. If every pitch distinction in a language carries a high functional load, then a successful orthography must of necessity be *shallow* in order to avoid excessive semantic ambiguity. It is only for those languages, like Athabascan, in which tone has a relatively low functional load, for which the question arises as to how shallow or deep the tone marking should be.

4. Tone system depth

A second theoretical consideration is the phonological abstractness of the tone system. The concept of tone system depth can be used to refer to the relative remoteness of the morpho-phonological representation of tone from the surface pitch values (cf. Bird 1999b). While analogous to orthographic depth, the concept of tone system depth is of course wholly independent.

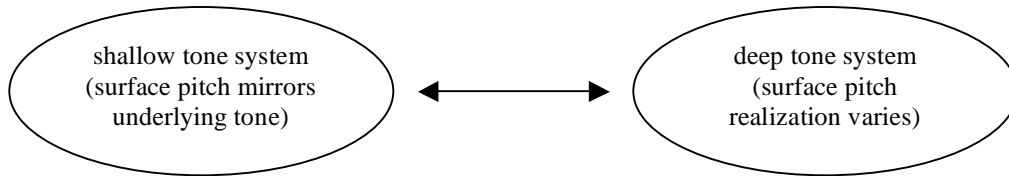


Figure 3: Tone system depth

In languages with deep tone systems tone is dynamic, in the sense that words and morphemes can occur with different pitch values in different contexts. Many Athabascan languages have relatively deep tone systems deriving from a variety of phonological sources, a point which has been well noted in Athabascan linguistic studies (cf. Sapir ca. 1932).

4.1 Tonology

Once source of tone system depth is tonal phonology, or tonology. Synchronic morpho-phonological processes may lead to the modification of surface tone values. For example, the application of the possessive suffix *-ʔ* in Tanacross changes preceding stem tone from low to rising (4a); while application of the possessive suffix *-àʔ* in Lower Tanana changes preceding high tone to low (4b).

(4) Tone association from (marked) possessive suffix

- | | | | |
|-----------------|----------|-------------|-------------------|
| a. Tanacross | tʃ'uul | [tʃ'ùʃ] | 'rope' |
| | tʃ'ũul' | [-tʃ'úrʃʔ] | 'rope [POSSESSED] |
| b. Lower Tanana | tʃ'uł | [tʃ'úʃ] | 'rope' |
| | tʃ'ùlàè' | [-tʃ'ùlàèʔ] | 'rope [POSSESSED] |

The realization of tone may vary within an inflectional paradigm. For example, stem variation patterns may exhibit different pitch values on different forms of a stem. In Tanacross (5) the

imperfective-stative form of the stem ‘sg. sleep, lie’ carries low tone while the perfective-stative form carries high tone.

(5) Stem variation

dhihtɛɛ [ðih^hɛ̃] ‘I am sleeping’
gihhté [ɣih^hɛ̃ʔ] ‘I was sleeping’

The realization of tone on a particular word or tone-bearing unit may be affected by the presence or absence of tone on neighboring words. For example, in Tanacross high tone spreads rightward to a following prefix syllable unless that syllable is immediately followed by a high tone stem.

Thus, the first syllable of nek-’ɛh ‘I see’ in (6) occurs with low tone following a low tone word and with high tone following a high tone word.

(6) Tone spread

seeɣ nek-’ɛh [sèɣ nèkʔɛ̃h] ‘I see the knives’
łóx nék-’ɛh [łóx nékʔɛ̃h] ‘I see the fishhooks’

Because of the tone spread process in Tanacross, prefix syllables have no fixed sight image, that is the, the tone marks move around. Their tonal realization is always determined by context.

4.2 Intonation and boundary tones

Another source of tone system depth is intonational phonology. Strictly speaking, intonation should be distinguished from tone in that intonation conveys pragmatic meaning which is not localized to particular lexemes. However, to the extent that tone and intonation interact, intonation may contribute to increased phonological abstractness of the tone system (Holton, to appear). The presence of boundary tones may affect the realization of surface pitch, in some cases seeming to override the underlying lexical tone, as shown in the Tanacross examples in (7).

(7) Pitch from intonation countours

[ɣih^hɛ̃ʔ] ‘I was sleeping’
H* L% final fall

[^hdé ɣih^hɛ̃ʔ] ‘where was I sleeping’
H+L* L% final rise low-fall

[ɣih^hɛ̃ʔ teʔ] ‘if I were sleeping’
H* L% final fall

[ɣih^hɛ̃ʔ] ‘was I sleeping?’
H* H% final high-rise

The depth of the tone system has interesting implications for orthographic development. The choice of a shallow tone orthography to represent a deep tone system leads to the existence of multiple forms of words (Bird 1999b:103). That is, individual words will be spelled differently depending on the context. This is the case with most modern Alaska Athabascan orthographies, as noted in (1). have deep tone systems. From a reader’s point of view, shallow orthographies of deep tone systems lack a fixed sight-image. Thus readers and writers must be aware of multiple possible spellings of words and morphemes, each with different tone markings.

5. Existing orthographies of Athabascan tone languages

While there is no received standard for writing tone in Alaska Athabascan languages, several distinct traditions can be discerned. Perhaps the most common strategy in terms of sheer number of documents is the deep, zero-marked strategy, in which tone is not represented orthographically. This tradition harks back to the earliest materials and continues into the Alaska Native language renaissance in the 1970's. An example from Tanacross is given below.

Xeennɗlaa ts'ěe' t'iyy nndi taaxill'ok di
ts'ěe' naxtidek gha tl'aann. Dzinn wudeex t'iyy
esheg' taaxill'uk di. Xisaat'eenn'ăa ts'ěe' xunitelh

Figure 4: Deep (zero-marked) tone marking (Charlie & McRoy 1972)

This tradition is maintained more recently in orthographies which are otherwise quite shallow. Thus for example the orthography employed in a book of Upper Tanana texts by Mary Tyone (see Figure 5).

Ihtsuul ɗa' hi'agnnayh.
I remember when I was small.
Shta' dinänn' k'enihoł eeł tah,
My father broke his back while trapping;

Figure 5: Deep (zero-marked) tone marking (Tyone 1996)

This orthography makes shallow distinctions in vowel quality, vowel length and consonant length, but does not mark tone

A second distinct tradition evolved in the 1970's in parallel with a growing recognition of the significance of tone in Alaska Athabascan languages (cf. Krauss, to appear). This tradition embraces a moderately deep tone orthography, for example, marking tone distinctions on stems but not necessarily on prefix syllables. These orthographies also tend to mark only level tones, not the secondary complex tones which arise from (synchronic or diachronic) coalescence of level tone bearing units. An example is shown below.

ts'í' mbá' chih nɗláann déxédlaah ts'í'
aih áł ts'inkeiy inn
ndaax'ée tág' dandiig xáah ndaaxdetdéel

Figure 6: Moderately deep (hybrid) tone marking (Paul 1980)

The Paul orthography in Figure 6 represents a hybrid tone marking system. It is shallow in some respects, deep in others. For example, this orthography is shallow in that it directly represents progressive tone spread processes. The surface tone pattern on the word *déxédlaah* above is the result of tone spread from the first to second syllable. However, the Paul orthography is deep in that it does not represent falling tone. In the above example, several words with final high-tone syllable and final voiced consonants are actually pronounced with falling tone. These include

*ndláann, dandíig, ndaaxdetdéel.*⁶ Because the occurrence of this falling tone is in many cases predictable, the falling tone can be omitted with no loss of tone information.

The third and most recent orthographic tradition involves a move toward much shallower writing systems which strive to represent nearly all surface pitch movements. The most recently developed writing systems for Tanacross, Upper Tanana, and Han employ at least four tone diacritics to represent marked (high or low) tone, falling tone, rising tone, and extra-high tone. Examples from Tanacross are given in (1) above. These systems essentially blur any putative distinction between tone and intonation. Instead, tone marking in these systems represents surface pitch. Such orthographies appear to be motivated by Pike, who cautions that “Tonemes substituted in morphology or syntax or sandhi should be written as pronounced. Failure to observe this principle ... imposes unnecessary burdens upon the *foreign student*” (Pike 1948, emphasis added).⁷

Determining the literacy status or acceptance of each of these three orthographic traditions is a difficult task. One approach is to take use of particular written materials as a proxy for literacy status. Using this method I surveyed several Alaska Athabascan orthographic traditions, evaluating them for both orthographic depth and literacy status. The results are summarized in Table 1 below.

Language	Orthography	Orthographic Depth	Literacy Status	Source
Gwich'in	Tukudh	deep	widespread	(McDonald 1873)
Gwich'in	Mueller	deep	moderate	(Mueller 1970)
Gwich'in	Mueller	shallow	low	(Mishler 2001)
Gwich'in	ANLC	deep	low	(Peter 1979)
Gwich'in	ANLC	shallow	low	(Peter 1992)
L Tanana	ANLC	deep	low	(Kari et al. 1991)
Tanacross	Charlie	deep	low	(Charlie 1972)
Tanacross	Scollon	moderate	low	(Paul 1980)
Tanacross	YNLC	shallow	low	(Solomon 1994)
Tanacross	ANLC	moderate	low	(Solomon et al. 2003)
U Tanana	ANLC	deep	low	(Tyone 1996)
U Tanana	YNLC	shallow	low	(Sam 1999)
U Tanana	Bessie John	moderate	low	(John 1997)
Han	YNLC	shallow	low	(Juneby 1994)

Table 1: Tone marking in Alaska Athabascan orthographies

The name given to the orthography is not authoritative but merely intended to serve as a reference. The reference in the source column is representative of the particular orthographic tradition; in most cases a particular tradition is exemplified in many publications by the same author or organization. Furthermore, published materials represent only a small portion of the total number of manuscripts. Thousands of unpublished manuscripts can be found in the Alaska Native Language Center archive. However, in almost all cases unpublished manuscripts follow a tradition which is also represented by a published work (the 1972 Mary Charlie texts are an exception).

⁶ The word *inn* in this example is mistranscribed with high tone.

⁷ It should be noted that Pike later retracted this statement (see Voorhoeve 1963, fn. 7).

The evaluation of literacy status is admittedly somewhat subjective. Other than the Tukudh and Mueller Gwich'in orthographies, I am unaware of any significant reading and writing tradition. That is, the other systems may be employed sporadically in pedagogical systems but are not generally used for communication. As indicated in the table, there is a general preference for shallower orthographies in more recent materials. This tendency is not without exception, however, as even the 1996 publication of Mary Tyone texts (Tyone 1996) is zero-marked. Furthermore, it is interesting to note that the orthography with the most widespread literacy status—Tukudh—happens to be zero-marked.

6. Experiences from teaching shallow tone marking

The received orthographies for Alaska Athabascan tone languages (with the possible exception of Lower Tanana) are all shallow. Hence, today's literacy, publication and revitalization efforts rely crucially on teaching people to use shallow orthographies. In this section I share some experiences accumulated while teaching literacy in shallow tone systems at the university, community and individual level. While much could be said about these experiences, I limit my remarks to five general observations.

6.1 Secondary nature of tone writing

The first observation is that within the context of literacy education, tone is invariably treated as a secondary, advanced feature. This may in part be due to the diacritic nature of tone representation in the orthography, but it nevertheless makes writing (and teaching) tone a much different process than writing segmental information. In general, segmental information is written first, then tone is added as a second step. In this way, everything is written twice: first for segments, then for tone. The second step is sometimes referred to colloquially as “toning”.

It should be noted that this approach to tone is maintained by both students and instructors. In writing, students generally transcribe segmental information prior to marking tones. Furthermore, students invariably become proficient at transcribing segmental information prior to gaining proficiency in tone marking. Indeed, full proficiency in tone marking is often elusive.

The secondary nature of tone is reinforced by instructors, who teach tone as a secondary writing task, rather than a holistic feature of words and morphemes. This seems to be the case even for words and morphemes which have a fairly fixed tone sight-image. For example, the Tanacross conjunction *ts'ε□* almost invariably occurs with high tone, yet instructors do not teach this word as an inherently high tone word. Rather, tone is added later as a secondary feature.

This approach may possibly mirror speakers' perceptions of tone as a melody through which the segments flow, rather than an intrinsic property of words and morphemes. Whether or not this is the case, writing tone is clearly treated as a different process than writing segmental information.

6.2 Preference for segmental cues

Students of literacy are quick to recognize that tonal changes are often accompanied by segmental changes, the latter of which are often more salient for writers. For example, in Tanacross nominalized verbs are formed by voicing the final consonant and changing high tone

verb stems to falling tone. The associated orthographic change (8) from <th> to <dh> is easy for students to recognize and learn.

- (8) Nominalization in Tanacross
sh'ëeg' delchúuth [šʔëgʔ tɛlč^húθ] 'my coat is lying there'
dei ch'e delchûudh [tɪ' č'ə tɛlč^hûð] 'what is it lying there?'

In contrast, the associated change in tone marking is much more difficult for students. There are several possible reasons for this. First, the diacritics are difficult to use. Second, the distinction between high and falling tone is difficult to hear. And third, the effect of nominalization on tone does not apply universally (for example, low tone stems do not change). These difficulties are by no means insurmountable, but they are much more difficult to teach and to learn than is the segmental change associated with final consonant voicing.

6.3 Lack of standardization among writers

Perhaps because writers treat tone as a secondary feature, there is little consistency in the writing of tone. Words occur with different tone markings in different publication, even in different version or editions of the same publication. Here I refer not to differences which can be attributed to tone system depth but to differences in writers perception of which tone should be written. Writers do not internalize a word as having a certain tone associated with it; rather, tone is deduced on-line during the writing process. Thus, few publications are consistent regarding tone marking, and among those few writers who become literate in tone marking, there is little consistency. In the best case writers develop a personal style of tone marking. In the worst case writers employ a "pepperbox" approach where tone marks serve more as decoration.

6.4 Technical difficulties

In an era of personal computers and electronic communication teaching literacy also means teaching keyboarding. It is not sufficient to merely teach students how to write with pen and paper; students must learn how to use computers to keyboard using specialized fonts. Entering tone diacritics using a computer keyboard is a notoriously difficult task. However, the greatest barrier to effective keyboard literacy is the lack of standardization.

Most shallow tone orthographies of Athabascan languages rely on specialized, proprietary fonts. Generally, the fonts used by language workers and literacy teachers are not freely distributable, so students must purchase the font at significant cost. Moreover, legal distribution of materials produced with these fonts is possible only with the purchase of an additional publication license.

Because each font uses different character mappings, materials produced using one font are generally not readable using another font, and Macintosh and PC versions of the same font are not interoperable. In any case, the requirement for special diacritics imposes an additional burden on electronic communication, such as email and internet publishing. Again, these hurdles are not insurmountable, but they clearly create an additional barrier to the acquisition of literacy.

6.5 Impediment to learning

My final observation regarding the teaching of shallow tone marking is also a somewhat subjective one. There appears to be little evidence that shallow tone marking actually aids language learning. While students who focus on shallow tone marking may become more

proficient at hearing pitch, they do not seem to develop a functional grasp of the tone system. Previous research supports this observation. Shallow orthographies rely on phonology and may thus impede development of mental lexicon (cf. Katz & Frost 1992 on the Orthographic Depth Hypothesis). Said another way, “A shallower orthography may reduce the reader’s opportunities for learning more about his language” (Liberman et al. 1980).

7. Outlook

In spite of the observed difficulties teaching, learning and using shallow tone orthographies, several justifications have been offered in their defense. Specifically, shallow orthographies are often assumed to be required for observational accuracy; as a guide to correct pronunciation; and to promote literacy. None of these assumptions stands up to much questioning.

Regarding observational adequacy it must be emphasized that practical orthographies are by their very nature not intended to replace linguistic documentation tools. It is largely the lack of the this documentary requirement which differentiates the burdens placed on practical orthographies from those placed on scientific, or linguistic orthographies. In any case, it is not at all clear that existing shallow practical orthographies actually do serve the goal of observational adequacy. In practice, inconsistencies in tone marking decrease the potential value of tone-marking as a documentation tool. Even in shallow tone orthographies, depth varies greatly, so there is no consistency as to what level of intonational pitch phenomena should be represented with tone marks.

Shallow tone marking is often touted as a guide to correct pronunciation for the benefit of language learners. In this regard it is interesting to recall the quote from Pike, noted earlier, that shallow tone marking benefits the foreign student. As many people have pointed out, the problem with this reasoning is that the so-called “foreign student” very quickly becomes the native student, in that she quickly learns the necessary phonological rules which the shallow tone marking is intended to convey. For example, it is relatively easy to learn in Tanacross when to pronounce a falling tone rather than a high tone. And the rules of phrase-level intonation are no more complicated than those in English (which employs a deep orthography which does not mark intonational pitch). Shallow tone marking is probably only helpful to learners at the very beginning stage of language learning.

On a more practical level it may be important to recognize that modeling by a Native speaker serves as a better guide to pronunciation than does orthography. Modeling can be better achieved with a recording than a writing system. This raises the more general (and perhaps more controversial) issue of whether the written language need serve as a model for the spoken, and vice versa. But that issue is beyond the scope of the present paper.

As to whether shallow tone marking promotes literacy, there appears to be little concrete evidence for this. As noted in the previous section, my own experiences teaching literacy do not support this claim. And based on my survey of Alaskan orthographies, there is no evidence that shallow orthographies have led to widespread literacy. So while the two most common arguments in favor of shallow orthographies are somewhat moot, it is difficult to make any argument that shallow orthographies promote literacy.

By way of conclusion I offer three general remarks. First, I reiterate that the decision about whether or not to write tone should ideally be an empirical question. Bird (1999b) suggests some directions for experimental work, however, this approach is difficult with a small

population base. What may be possible for an African language with one million speakers could be counter-productive in a small Athabascan speech community. In any case, experimentation will only delay the development of literacy. Time spent experimenting may be time we cannot afford to spend. In the end, experiential evidence may turn out to be most critical. And recent experience—at least from the current writer’s perspective—does not favor shallow tone marking.

A second remark is that too much orthographic change can be difficult. Shallow tone orthographies are notorious for their constant flux. Indeed, that flux appears to be inherent in the received approach to shallow tone marking. This point was driven home at a recent Tanacross language workshop. A group of linguists and Native speakers were discussing how to write tone on a particular form. One speaker was repeating a word over and over while the linguists and the other speaker debated the pitch value on the form. During a break in the session one frustrated participant remarked:

“I’m never going to learn how to write this language; you [linguists] can’t even decide [how to write it].” (participant in Feb 2003 Tanacross Language Workshop)

So long as linguists cannot agree on how to write tone, it is unlikely that students of literacy will be able to learn how to write. Thus, to the extent that an insistence on shallow tone orthographies delays the adoption of a stable practical orthography, shallow tone marking will serve as an impediment to literacy.

On the other hand, deeper tone orthographies may offer more stability and perhaps reduce some of the frustration felt by teachers and students of shallow orthographies. Orthographies may be deepened in a number of ways, including the following: reducing the number of diacritics; hybridizing to represent “grammatical” tone or intonation via alternate methods; and striving to maintain fixed sight-images. Indeed, advocacy of deep orthographies is not new, as evidenced by this 50-year old quote from Nida (1953).

“Advocating the omission of diacritics to mark tone ... may seem like linguistic heresy to some persons. Actually it is not. We simply need to recognize that for the speaker of a language it is not necessary to mark everything which is meaningful.”

The received wisdom has been that Nida’s remark applies only to fluent speakers and not to language learners. My own experience teaching literacy leads me to believe otherwise. However, I should emphasize that my experience is quite limited in this regard. I welcome comments and suggestions from those who have experience working with shallow tone orthographies in other languages. There may well be better approaches to teaching tone in Alaskan languages. And of course, shallow tone marking may be learned more readily in languages for which tone has a greater functional load or in which the tone system is shallower.

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