‘Grammatical tone’ and orthography

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1. Introduction

Occasionally, I am asked for my opinion on how tone should be represented orthographically. Since orthographical concerns are often intertwined with emotions, I have tried to avoid the issue as much as possible. Recently, however, I decided to take a more active stance.


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When establishing an orthography, one ideal is orthographic representations based on the principle of one form, one meaning. By adopting this principle, a constant word-image (or sometimes morpheme-image) is maintained in which each word has a representation that is both unique and consistent. Tone systems offer a serious challenge to this ideal. The problems are not insurmountable, however, and I conclude that maintaining a constant word-image is both desirable and attainable.

2. Tone systems

It is generally agreed that tonal languages have certain characteristics. They have a limited set of tonal melodies associated with the underlying forms of morphemes (for example, H (high), L (low), HL, and LH). Which melody is associated with which morpheme is unpredictable. Consider the following examples from Chumberung, a Kwa language spoken in Ghana. Chumberung has two underlying pitch levels, H and L, and these combine to yield the four underlying tonal melodies below.

(1)
<table>
<thead>
<tr>
<th>Stem melody</th>
<th>Surface form</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>kpá ŋŋá</td>
<td>‘horse’</td>
</tr>
<tr>
<td>L</td>
<td>sànnì</td>
<td>‘sheep’</td>
</tr>
<tr>
<td>H L</td>
<td>câ ŋ</td>
<td>‘guinea fowl’</td>
</tr>
<tr>
<td>L H</td>
<td>k ónní</td>
<td>‘elephant’</td>
</tr>
</tbody>
</table>

Most often, a tone language has at least a few minimal pairs distinguished solely by tonal differences. In Chumberung, for instance, the first person singular and third person singular possessive forms are a minimal pair.

(2)

mí ká ‘my wife’  mì ká ‘his wife’

The use of pitch phenomena to distinguish meaning is not restricted to tone languages. In English, for instance, intonation plays a significant role in distinguishing meaning. The difference between a statement and a yes/no question is often only intonational. One way to make intonation languages, like English, more readily comparable to tone languages, like Chumburung, is to realize that both types of languages use contrasting tonal melodies. The main difference between the two typologies is the grammatical level spanned by the melody—morphemes in the case of tone languages, and phrases in the case of intonation languages. The difference between the two typologies becomes even less when one considers that many tonal languages also have "grammatical tone."

In languages with grammatical tone, certain grammatical constructions are distinguished solely by differences in tone. Sometimes, for instance, the difference between clauses with perfective aspect and those with imperfective aspect, or between those with recent past tense and those with distant past tense, is indicated solely by tonal differences. Viewed in this way, contrastive tonal melodies associated with certain grammatical constructions in tonal languages are not unlike contrastive tonal melodies associated with certain grammatical constructions in intonation languages. To better appreciate how grammatical tone works, consider how such a construction sometimes arises, historically.

It is well known that tones influence one another, giving rise to what is often called tone sandhi. At times, the presence of a single tone can cause extensive and sometimes far-reaching changes to its environment. In a given construction, the tone of a certain particle causes changes to occur to the tones surrounding it. In time, the tonal changes that occur to the surrounding tones are indicative of the grammatical distinction signified by the particle. The particle that originally caused the tonal change is then no longer needed to maintain the grammatical distinction. The particle drops out but leaves its tone behind in the form of a floating tone that continues to exert its influence on its environment. The semantic load is now borne solely by the changed tonal melody of the remainder of the construction.

We turn our attention at this point to a case of grammatical tone, the imperative construction in Chumburung. This construction is better understood when one has a grasp of the relevant facts of tone sandhi in the language.

Chumburung has a rule of H-spread in which a word-final H tone spreads across a word boundary to a following word that begins with an L tone. This results in the first tone-bearing unit (TBU) of the second word being pronounced with an H tone. In the following examples, word-level tones are indicated beneath their respective words in order to be able to represent phonetic pitch above.

(3)

\[
\begin{array}{ll}
\text{mı jono} & \text{"my dog"} \\
\text{H} & \text{L}
\end{array}
\]

Chumburung also has a rule of downstep, in which an L tone, whether floating or otherwise, lowers the tonal register for the remainder of the phrase. Consequently, an H tone that follows an L tone is realized at a lower pitch level than an H tone that precedes the L tone.

I analyze the imperative construction in Chumburung as being characterized by a floating L tone (circled in the examples) that precedes the verb. In the following examples, the imperative negative construction is distinguished from the imperfective negative construction solely by the effects of this floating L on its tonal environment. Examples (5) and (6) involve an H-toned verb. In (6) the presence of the floating L tone can be seen to have conditioned the occurrence of downstep.

(5)

[  ¯  ¯  ¯  ¯  ¯  ¯  ¯ ]
naatı ma yɔ mı kωdɔ-ro "(The) cow won’t go to my farm."
H H H H H L
cow neg.go my farm-loc.

(6)

[  ¯  ¯  ¯  ¯  _ _ _ _ _ ]
naatı ma yɔ mı kωdɔ-ro "Cow, don’t go to my farm."
H H L H H H L
cow neg. imp.go my farm-loc.

Examples (7) and (8) involve an L-toned verb. In (7) the presence of the L tone associated with ba ‘to come’ conditions the occurrence of downstep with respect to the phrases that follow it. In addition, the word ba itself undergoes H-spread since it is pronounced at the same pitch as the preceding H-toned word.

(7)

[ _ _ _ _ _ _ _ _ _ ]
naatı ma ba mı kωdɔ-ro "(The) cow won’t come to my farm."
H H L H H L
cow neg. come my farm-loc.

(8)

[ _ _ _ _ _ _ _ _ ]
naatı ma ba mı kωdɔ-ro "Cow, don’t come to my farm."
H H L L H H L
cow neg. imp. come my farm-loc.

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Notice in (8) that H-spread does not occur across word boundaries when the L tone is preceded by a floating L tone.

3. The problem

The problem of how to orthographically represent the grammatical differences discussed immediately above is that the tonal distinctions that identify a particular construction differ from context to context. The presence of the imperative, for example, is marked by the downstepping of an H-toned verb in one context, and by the failure of an L-toned verb to undergo H-spread in another context. I have observed that in practical orthographies, the principle of *one form, one meaning* is often abandoned in favor of a surface representation. Consequently, the tones of words and morphemes are represented differently from one construction to the next, and the reader is forced to sound out each construction to ascertain its meaning.

Obviously, any orthography that employs a surface representation for grammatical constructions identified solely by tonal distinctions confronts the ideal of *one form, one meaning* in two ways. First, identical words would receive different representations in constructions that tonally form minimal pairs. In examples (5) and (6) above, the verb *yɔ* ‘to go’ would be represented by an H tone in the first construction and by a downstepped H tone in the second. Similarly, in examples (7) and (8), the verb *ba* ‘to come’ would be represented by an H tone in the first construction and by an L tone in the second. Second, identical grammatical constructions would receive different representations in environments that differ tonally. As pointed out above, the imperative construction would be represented by the downstepping of the tonal register in the case of H-toned verbs, and by the failure of H-spread to occur in the case of L-toned verbs. The reason many turn to a surface representation at this point is that if each word in these constructions receives a consistent orthographic representation, representing the grammatical constructions in a consistent manner is difficult.

I believe that abandoning the principle of maintaining a constant word-image for the orthographic representation of tone does a great disservice to both readers and writers of the languages involved. For the beginning reader, the visual medium stimulates the oral medium, and this conveys meaning. For the mature reader, however, the visual medium conveys the meaning directly, and one reads by sight rather than by sounding out each utterance. In other words, the mature reader skips a step and therefore can read much faster. A good orthography does not deny the mature reader this privilege.

Imagine the disservice to English readers if we were forced to sound out the intonation melody of an utterance by means of a string of numbers, or some such device to determine whether the utterance is a statement or a question. Fortunately for us, those who developed our English orthography were more practical and came up with punctuation marks and uppercase and lowercase letters to represent information conveyed suprasegmentally. When reading what would otherwise be ambiguously a statement or a question, a question mark at the end of a sentence conveys to the reader that this is a question, and when reading it orally he gives the utterance the proper intonation. Use of the question mark skips the oral medium and directly conveys meaning to the reader. Any hindrance to the beginning reader is minimal and the help to the mature reader is maximal.

4. A solution

For languages that have grammatical constructions indicated solely by tone, why not mark those constructions in a unique way, much the same as a question mark signifies a question sentence in English? If there are only tonal differences between, say, perfective aspect and imperfective aspect, one could mark the verb of one in a unique manner. Assuming it were decided to represent lexical tone with conventional tone marks in Chumburung, the imperative construction could be indicated in another way. In (9), the verb of the imperative construction is preceded by a single quotation mark. Alternatively, another mark could be used before or after the verb, or the verb itself could be underlined. The point is not which mark is better or worse, but rather that there be some indicator that consistently represents a given construction early enough in the sentence to convey the correct meaning.

(9)
Naat ṭ ma y ṝ m ṭ k ṝ d ṝ ρ ṭ . ‘(The) cow won’t go to my farm.’

Naat ṭ ma ’ y ṝ m ṭ k ṝ d ṝ ρ ṭ . ‘Cow, don’t go to my farm.’

Naat ṭ ma bà m ṭ k ṝ d ṝ ρ ṭ . ‘(The) cow won’t come to my farm.’

Naat ṭ ma ’ bà m ṭ k ṝ d ṝ ρ ṭ . ‘Cow, don’t come to my farm.’

By adopting a **double system** of orthographic representation, both lexical words and grammatical constructions can have unique and consistent representation, and the needs of both beginning and mature readers can be met.