

**Disambiguating Grammatical Tone in Gwere Orthography  
by Using Clarifying Words**

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## Abstract

In designing an orthography for a tone language, prescribing a satisfactory method of marking essential tone can be a challenge. The conventional methods of dealing with tone are zero marking, accent marks, or other diacritic symbols, and syntactic or spelling rules. This article, based on the author's experience in Gwere, suggests a novel way of signaling grammatical tone and meaning by using only "clarifying words" inserted before a tonally ambiguous word to give a clue to the surface tone of that word. This document also considers the advantages of clarifying words over conventional tone-marking schemes. Finally, some consideration is given to the limitations of using clarifying words to signal tone in other languages.

## 1. Brief history of Gwere orthography development

Gwere is a Bantu-speech community located in Eastern Uganda.<sup>1</sup> They number about half a million people, according to the 2002 Population Census results (Uganda Bureau of Statistics 2002). Over the course of a number of years, SIL International and the Lugwere Bible Translation and Literacy Association, together with various members of the Gwere community, worked to develop an orthography. The first preliminary version was based on a Bantu language-orthography template. A one-day workshop, involving over seventy participants, was conducted in 2004 to discuss issues, examine choices, and to make decisions for a tentative writing system. It is noteworthy to record that workshop participants were engaged only in discussion – they were not involved in writing or reading anything beyond blackboard notes. At this point, there were primarily two unresolved issues:

- (1) How to symbolize the Gwere sounds [tʃ] and [dʒ], which occur as the result of two sources (i.e. as distinct palatal affricate phonemes and as palatalized velar segments).
- (2) Whether tone should or should not be marked. By this time, Gwere had been analyzed with three contrastive tones (high, low, and falling), and a couple of lexical and grammatical tonal functions had been summarized. However, no thorough tone analysis had been done, and no tone-marking scheme options had been explored. The draft orthography gave only a surface tone-marking scheme where all the different tones as they existed in the language were marked using tone diacritics. This was near-unanimously rejected simply because the community detested the sight of 'marks' all over the paper, though they did not dislike the idea of marking tone in principle. After emphasizing the importance of tone in Gwere, the workshop participants reluctantly settled for marking tone only where omitting it caused textual ambiguities. Even then, such limited marking was neither further qualified nor quantified.

Given the deficiencies in the approach to the tone issue, lack of consensus on the symbolization of the palatalized velar segments, and that the proposals in the first draft Gwere orthography had been made with no evidence of a documented phonetic wordlist or a formal phonology report prior to the first draft orthography, the 2004 draft orthography was considered incomplete. So, later, further steps were taken to:

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- (1) Develop a decisive phonology statement to act as a backup to the available draft orthography.
- (2) Improve the draft orthography proposal so it is consistent with the phonological facts.
- (3) Organize another more thorough week-long orthography workshop in May 2005 to apply objective, measurable experiments and assessments, engaging the participants in both reading and writing besides discussion to inform the way forward. The accomplishments at this workshop were as follows:
  - Contentious segments were identified via tests and demonstrations. Then, using test results, firm recommendations for spelling these segments were obtained from workshop delegates, with hands-on testing in writing, spelling, reading, comprehension, and discussion. Decisions were then confirmed.
  - Marking options for three ambiguous grammatical situations (recent-distant past tense; contrast-relative; special-common relationship) were demonstrated. Finally, using the test results, a firm recommendation for indicating tone was obtained from the delegates. Again, the final decision was confirmed by hands-on testing in writing, spelling, reading, and comprehension, as well as community discussion.
  - Other recommendations that resulted from the phonological work were summarized and confirmed.

## 2. Handling tone

### 2.1 Common conventions for dealing with tone in Bantu languages

Most Bantu languages (of which Gwere is one) have two tones, high (H) and low (L), and some also have falling (F) and rising (R) tones. Usually, tone differentiates both lexical items and grammatical information such as tense and aspect, singular and plural, or a possessive relationship between two nouns. Languages have a variety of conventions to choose from as to how to indicate their tonal functions, all of which can be summarized into two broad schemes, as in the following

#### 2.1.1 Zero tone marking

This leaves tone unmarked (due to low functional load, and/or not wanting to mark it with diacritics), living with the resulting under-differentiation, and hoping that non-tonal clues will sufficiently disambiguate meanings. Following is a sample of neighboring Bantu languages related to Gwere that handle tone in this way:

*Ganda* (Bantu J.10) Uganda: Three tone patterns exist (H, L, and F), with significant tone contrasts attested both in lexical items: e.g., *musanvu* [mùsánvú] ‘seven’ versus *musanvu* [mùsânvù] ‘twig’, and in grammatical situations where tone distinguishes main clauses from relative (subordinate) clauses: e.g., *alima* [ðlímá] ‘he is digging’ versus *alima* [ðlímâ] ‘s/he who digs’ (Katamba 1989). In the orthography however, Luganda (a language closely related to nearly all other Bantu languages in Uganda and now a language of wider communication) does not mark any tone in its orthography. Readers effectively rely on the context.

*Nyole* (Bantu J.30) Uganda: Two tone patterns exist (H and L), with tone contrasts attested in lexical items: e.g., *olusu* [òlúsú] ‘cloth line’ versus *olusu* [ólùsú] ‘odour’, and in grammatical situations where tone distinguishes tense/aspect forms e.g. *basoma* [βàsómá] ‘they are reading (now)’ versus *basoma* [βásòmá] ‘they read (long ago)’. Tone also signals the difference between plain statements and affirming of those statements, and signals relative clauses, etc. (Wandera 2006). The local language association and the Nyole community rejected any marking of tone

since most educated speakers can fluently read Ganda and find no difficulty reading Nyole without tone being marked. Investigation shows that Nyole tone has very low functional load and so does not warrant marking.

*Bwisi* (Bantu J.20) Uganda: Two tone patterns exist (H and L), with tone contrasts attested in both lexical and grammatical functions: e.g., *kukoma* [kùkómà] ‘to go up’ versus *kukoma* [kùkòmà] ‘to pick/choose’; and *naghenda* [náágèndà] ‘I went’ versus *naghenda* [náágèndá] ‘when he goes’ (Bahemuka Hannington, personal communication). However, in the orthography, owing to the appreciation that context can effectively distinguish meanings for readers, tone is not written.

### 2.1.2 Marking tone

Two major options are available here: to mark surface tone or to mark underlying tone, with a range of schemes to choose from. For example: (a) write all tone (in various ways, such as tone diacritics or accent marks, spelling rules: e.g., double letters, special symbols or characters or lexically); (b) omit the most frequent tone; (c) write only the most stable tone; (d) write tone only when it changes; (e) write only the first tone; (f) write tone only on minimal pairs; (g) write isolated tone; (h) write only the distinctive tones; (i) write grammatical tone at syllable, word, or sentence level. Following is a sample of languages that mark tone in ways such as these.

*Gungu* (Bantu J.10) Uganda: Three tone patterns exist (H, L, and F), with tone attested both in lexical and grammatical functions: e.g., *kwala* [kwàlá] ‘to swim’ versus *kwala* [kwàlà] ‘to make a bed’, and *yaagyendiŕi* [yáágyéndíŕi] ‘he went (recent past)’ versus *yaagyendiŕi* [yààgyèndíŕi] ‘he went (remote past)’ (Babyenda Moses, personal communication). In the orthography, however, only grammatical tone is marked, specifically only the recent past tense, using the + symbol preceding the recent past tense verb: i.e., +*yaagyendiŕi* ‘he went (recent past)’. The remote past and all the other tones are left unmarked, with the arguments that: (1) the relative frequency of lexical contrasts by tone is not major; and (2) in most cases, the context is enough to distinguish the correct meaning of a potentially tonally ambiguous word.

*Zinza* (Bantu J.20) Tanzania: Four tone patterns exist (H, L, F, and R), with tone contrasts attested in numerous minimal pairs: grammatical, mainly differentiating complex tense-aspect combinations in verbs; and lexical (often involving vowel length as well). Compelled by the high number of minimal pairs, tone is written in the orthography based primarily on a surface tone marking scheme following certain conventions,<sup>3</sup> except in a few cases where rules that predict tone can be clearly identified (Mathews 2001).

*Fuliiru* (Bantu J.50) D.R. Congo: Three tone patterns, (H, L, and F), exist with tone contrasts attested in few lexical but several grammatical situations: e.g., (1) tense in three cases (marked), (2) relative clauses (marked), (3) distinguishing 3rd singular and 2nd plural object prefixes. Speakers rejected much tone marking, but settled for marking essential grammatical tone in minimal pairs where certain prefixes differ only by tone, marking this tone with the use of an acute accent or an apostrophe. The rest is unmarked.

## 2.2 Common tone patterns in Gwere

In Gwere (Bantu J.10) words, all vowels, whether short, long, or a clustered sequence and regardless of how many syllables there are, bear tone in a one-tone-per-vowel mapping, and the

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<sup>2</sup> Marking options include zero marking and accent marks.

tone may be high, low, or falling. All three tones contrast. Thus, adjusting a single tone value on an individual syllable may change the meaning of the entire word, both in lexical items and grammatical categories. Following is a brief description of the three functions of Gwere tone.

### 2.2.1 Lexemes

Tone contrast can be seen in the following example sets:

- |        |          |                          |          |                   |
|--------|----------|--------------------------|----------|-------------------|
| (1) a. | [kádí]   | ‘not at all’             | [mwà·lá] | ‘girl-child’      |
|        | [kàdí]   | ‘the other (little) one’ | [mwá·là] | ‘stream of water’ |
|        | [mùwólò] | ‘tree species’           | [βùkùlú] | ‘old age’         |
|        | [múwólò] | ‘type of knife’          | [βúkùlù] | ‘tadpoles’        |
| b.     | [ìsùβí]  | ‘grass’                  |          |                   |
|        | [ìsù·βí] | ‘hope’                   |          |                   |
|        | [ṃbâ·rè] | ‘xylophones’             |          |                   |
|        | [ṃbá·rè] | ‘I just have been’       |          |                   |

### 2.2.2 Grammar

Tone distinguishes some tenses and other morphological categories in verbal phrases, e.g., differentiating the Hesternal and Remote past tenses as seen in the verb [kù·sòm-á] ‘to read’, as in the following:

- |     |                |                                    |
|-----|----------------|------------------------------------|
| (2) | [y-á-kìsòméré] | ‘He read it (yesterday).’          |
|     | [y-à-kìsòmèré] | ‘He read it (prior to yesterday).’ |

Tone distinguishes declarative statements from yes/no questions in such a way that all declarative statements end with a Low tone, whereas all questions end with a Rising tone, as in the following:

- |     |              |                      |
|-----|--------------|----------------------|
| (3) | [bákìtwáirè] | ‘It has been taken.’ |
|     | [bákìtwáirě] | ‘Has it been taken?’ |

### 2.2.3 Contrastive focus and relationships

Tone disambiguates declarative clauses from contrastive focus for singular present verbs,<sup>3</sup> as in the following:

- |     |         |                          |
|-----|---------|--------------------------|
| (4) | [álimà] | ‘the one who is digging’ |
|     | [àlimà] | ‘he/she is digging’      |

Tone indicates heightened significant relationship in affections and relations, as in:

- |        |                            |                                    |
|--------|----------------------------|------------------------------------|
| (5) a. | [mùntù wàngé]              | ‘my relative by blood’             |
|        | [múntù wàngé]              | ‘my buddy/crony’                   |
| b.     | [kǎità kàngé] <sup>4</sup> | ‘my little millet bread’           |
|        | [káità kàngé]              | ‘my cherished little millet bread’ |

<sup>3</sup> Contrastive focus verbs for singular present have the same form as relative clauses.

<sup>4</sup> Unlike the first example, this particular one is a rather archaic phenomenon heard mostly among the older generation.

### 3. The way Gwere handled tone

As described earlier, Gwere tone decisions were made at two orthography workshops. At the first one, September 2004, we obtained consensus on lexical tone and only a few grammatical tone cases (decisions are detailed below).

For the remaining grammatical tone cases, a second workshop was convened and, once again, Gwere tonal functions were demonstrated to participants. This was at a five-day May 2005 orthography workshop conducted with Gwere speaking stakeholders. At this time, all unresolved grammatical tone-ambiguous situations were empirically tested and the results analyzed. After this, there was a general appreciation of the need for some tone marking.

Keeping in mind specific orthography development principles, tone-marking options – namely, zero-marking, using diacritics (accent marks), and/or special symbols (e.g., +, /) were suggested, demonstrated, and trialed with writing and reading exercises. After these exercises, test results were analyzed and discussed.

It was during the ensuing discussions that participants, having found none of the previously proposed options satisfactory, realized that there were a variety of word forms, such as pronouns and adverbs in the language itself, which, when inserted before the tone-ambiguous word in syntactic collocation, lose their obvious natural meanings and function as signals to the reader as to what tone needs to be articulated on the following word. Participants then unanimously decided on disambiguating the remaining three grammatical tone areas by using the language itself, i.e., what we called '*clarifying words*'. They went ahead to generate their own *clarifying words*, such as relative pronouns, demonstratives, and time-words.

A detailed description of how Gwere handles tone is given in the following.

#### 3.1 Lexical tone

General agreement (from the 2004 orthography workshop) is that lexical tone shall not be marked at all. This position was based on a number of reasons, the primary one being that no tonal minimal pairs occur in the same syntactic environment, so ambiguity will almost always be clarified in context.

#### 3.2 Grammatical tone

The first orthography workshop decided that the question mark shall indicate polar interrogative tone.

For the remaining three tone situations: i.e., tense, relative clause (contrastive focus), and significant relationship, rather than utilizing any of the other common conventional methods, the speakers unanimously chose to add *clarifying words* to the context to signal the correct tone pronunciation. Reasons for this choice were as follows:

- (1) Gwere has words, that when added, disambiguate all the tone-ambiguous grammatical situations. The community preferred to draw on the richness of the language rather than bring in extra matter, such as diacritics. This option would evade the issue of resistance to diacritics and ease writing, reading, and comprehension. Also, it was felt that substituting signs or symbols for pure Gwere words may lead to loss of these words.
- (2) Other literature: e.g., Scripture portions, published among the Gwere people, don't have tone-marks.

- (3) Gwere should be written with a system that enables neighboring language groups to read our literature; so far, no neighboring language is marking tone with diacritics or special symbols.
- (4) The literature which the Gwere people are used to reading does not use tone marks, so adding marks into texts will crowd the page, make it confusing, and appear more complicated than necessary.
- (5) The task of adding tone marks while writing will be too much additional work for the writer.

Thus, no special symbols shall be used in Gwere texts. Instead, the tonal function is marked by adding clarifying/disambiguating Gwere words: e.g., time words for tense, relative pronouns for relative phrases (contrastive focus), and explicit/definite relation words for significant relationship. Writers must help readers by adding clarifying words, such as in the following examples (shown with *italics*).

### 3.2.1 Hesternal past versus remote past tenses

For these tenses, add time words like *izo* ‘yesterday’, *izuuli* ‘day before yesterday’, *ira* ‘in the remote past’, and *lumo* ‘one day, as in the following:

- |     |                                     |   |
|-----|-------------------------------------|---|
| (6) | ombwa <i>eizo</i> yalumire omwana   | ‘Yesterday a dog bit a child.’                |
|     | ombwa <i>izuuli</i> yalumire omwana | ‘The day before yesterday a dog bit a child.’ |
|     | ombwa <i>eira</i> yalumire omwana   | ‘In the far past a dog bit a child.’          |
|     | ombwa <i>lumo</i> yalumire omwana   | ‘One day a dog bit a child.’                  |

### 3.2.2 Contrastive focus

For contrastive focus, add relative pronouns like *niiye* ‘s/he is the one who’, *oonu* ‘this one’, *ooyo* ‘that one’, *oodi* ‘the other one’, etc., to introduce the cleft clause in focus, as in the following:

- |        |                                     |   |
|--------|-------------------------------------|---|
| (7) a. | omama a-lima                        | ‘Mother digs <u>or</u> is the one who digs.’ [ambiguous]                      |
|        | omama <i>niiye</i> alima            | ‘Mother <i>is the one who</i> does the digging.’                              |
| b.     | omwana abitire w’e waiswe           | ‘The child passed <u>or</u> who passed is from our home area.’<br>[ambiguous] |
|        | omwana <i>ooyo</i> abita w’e waiswe | ‘That child <i>who is</i> passing by is from our home area.’                  |
| c.     | omukali aiza mmaite                 | ‘The woman is coming <u>or</u> who is coming. I know her.<br>[ambiguous]      |
|        | omukali <i>oodi</i> aiza mmaite     | ‘I know the other woman <i>who is</i> coming.’                                |

### 3.2.3 Significant relationship

For this, two solutions were offered, one for each of the two categories of this kind of tone use, the common one and the rare one.

For the common case, the solution is to use definite relationship words instead of the tone-ambiguous relationship word, or at least add an explicitly relationship pointer (and at times an emphatic pronoun) that removes or at least reduces the ambiguity in meaning. Compare the following sets of examples:

- (8) a. omuntu wange yafiisiryе omwana ‘My (blood) relative or loyal comrade lost a child.’ [ambiguous]  
       okoiza yafiisiryе omwana ‘Uncle lost a child’
- b. ayabire kucaalira bantube ‘He’s gone to visit his/her (blood) relative or loyal comrade.’ [ambiguous]  
       ayabire kucaalira bantube *ab’olulyo* ‘He’s gone to visit his/her (blood) relatives.’
- c. oNaikesa *muntu* wange ‘Naikesa is my (blood) relative **or** loyal comrade.’ [ambiguous]  
       oNaikesa *mwala wa mwonyoko* wange ‘Naikesa is a daughter to my sister.’  
       oNaikesa *mwiwa* wange ‘Naikesa is my niece.’
- d. ooyo mukaire wange ‘That one is my mother or my (any) maternal woman.’ [ambiguous]  
       ooyo (*niiye o*) mukaire wange *onyerenyeere* ‘That one is my real (biological) mother.’

For the rare (archaic) case, as in (5b), the solution was to consider this kind of expressing heightened relationship a non-standard (or informal) use of language, which should be avoided in writing. If one must use it, then readers will have to depend on the context to get the meaning, as they do with lexical tone.

#### 4. Do Gwere clarifying words really mark tone or do they signal meaning?

In tonal languages, spoken tone signals meaning, but one may ask the question, which comes first and, therefore, which is more fundamental: tone or meaning?

Analytically speaking, clarifying words seem to function at the deeper meaning level – indicating the meaning of tone-ambiguous words. This viewpoint is based on the following arguments:

- (1) Going by the conventional schemes, a clarifying word functions as a deep level structure to offer a clue about the meaning of the following word – as opposed to a surface level structure whereby it would depict the surface pitch on the word, as diacritics do. Since there are no diacritics or other orthographic symbols used to mark tone, this looks like a zero tone-marking scheme.
- (2) From a writer’s perspective, meaning comes first, which meaning is then encoded in symbols using such things as letters, words, punctuation, and where the symbols might be ambiguous for the reader, inserting tone markers, which in this case are the clarifying words.

Looked at this way, it is plausible to see the clarifying word inserted before the tone-ambiguous word as signaling the correct meaning of the following word, not the tone itself.

Intuitively speaking, however, from a mother-tongue speaker’s perspective, clarifying words seem to function solely as a signal for the reader to know what tone to pronounce on the word, and, thereafter, to get the correct meaning. This viewpoint is based on the following arguments:

- (1) Once a clarifying word is inserted before the tone-ambiguous word, the reader, driven to meaningfully and naturally harmonize collocation in the phrase, is subconsciously induced to articulate the subsequent word in a situationally distinctive (and aesthetic) style, which includes uttering the correctly spoken tone. When all the right sounds are uttered correctly, then comes the correct meaning.

- (2) A Gwere reader cannot tell the meaning of the word that follows a clarifying word until he actually reads it, which would have been possible if clarifying words were actually meaning markers. In reality, a reader gets to comprehend the meaning of the following word only after reading it, that is, reading it correctly with its correctly-spoken tone.
- (3) All the clarifying words previously mentioned are not visual representations of abstraction. Each of them is a real Gwere lexeme, which, when occurring in other areas of application, signifies a specific lexical sense, and has nothing to do with the meaning of a certain specified tone. Moreover, even in the context of using a word as a further clarifying clue, it retains its individual meaning, except that it is kept out of focus. For example, when reading, all the clarifying word is functioning to do is signal what sort of pitch needs to be articulated on the word that follows. Whether it is pronounced or skipped does not affect comprehension so long as the reader takes note of what it is signaling and acts accordingly. Even two of the time-words that would be expected to signify meaning are themselves ambiguous, except in context – namely /izo/ ‘yesterday/tomorrow’, and /izuuli/ ‘day before yesterday/day after tomorrow’. Besides, when occurring in places other than preceding grammatically tone-ambiguous words, these words are not ‘clarifying words’ as such – rather they denote their individual meanings. Thus, the idea that these words could be doing their obvious natural function of indicating meaning, and are therefore deep-level (tone meaning) signifiers, seems unlikely.
- (4) Gwere is a highly agglutinating language and the tone carried by a word is an essential feature of the meaning of that word. Speaking from mother-tongue speaker intuition, the process of decoding word meaning has more to it than a non-mother-tongue analyst may at first construe. It requires getting both the derivational and inflectional affixes right and articulating the tone correctly before comprehension of meaning is possible. (This is especially true for new or non-fluent readers, who look at words more linearly and in more detail than an experienced or fluent reader would, who tends to see the context more globally as he reads and is thereby able to pick up other clues toward the correct meaning.)

Accordingly, in the comprehension process of Gwere, tone must come first and, thereafter, the meaning, not vice-versa. This is because tone (being an unavoidable lexical property of the semantic representation) plays an indispensable role in discriminating between probable meanings. Even during silent reading, at least to new and inexperienced readers, the tone on each word has to be said/thought out correctly in the brain before one can discriminate between the possible meanings of a tone-ambiguous word. Once you miss the tone, you have missed the intended meaning. (Of course, this may not be true for experienced readers who can ably interpret meaning by just looking at patterns, not individual symbols.)

From this perspective, clarifying words can be thought of as a kind of tone marking.

From the previous argumentation, it is clear that either viewpoint may be plausible. Which one is deemed stronger largely depends on the perspective from which one is looking. For the encoder-writer, it could be perceived that the meaning comes first and then the tone is written with all its necessary clues. But from the perspective of the decoder-reader, the tone must first be ascertained (this is done utilizing all the clues, including clarifying words) before correct meaning can be understood.

Regardless of which side is judged to be more suitable,, it remains that the Gwere people have found the technique of disambiguating grammatical tone by using clarifying words that are the most acceptable and helpful.

## 5. Testing and acceptability

Since May 2005, the Gwere-language team has published multiple titles, including a spelling/orthography guide, literacy primers, Scripture portions, shell books, and Scripture-use books using this grammatical tone disambiguation method. They have been widely accepted.

All the instructional books published so far (Transition Primer and Spelling Guide), which are the primary resource books used in the transition literacy classes and writer's workshops, each have a section on writing tone, offering explanations and the rules to guide new users. In the many transitional literacy classes that have been running for the last two years, we have not registered any complaints regarding the treatment of tone, nor observed misunderstanding in the way tone is signaled, nor in how the tone clarifying words are used. This, in essence, has allayed all earlier fears from some experts that it might make writing clumsy, or stylistically inelegant.

Furthermore, investigations into how this technique works in practice have been ongoing, especially through writers' workshops, writing contests, publishing books, literacy classes, etc.; no serious difficulties have been observed so far. Even so, the monitoring continues.

## 6. Limitations, application to other languages, and conclusion

The applicability of this method certainly varies with the language in question. One obvious limitation is the fact that it does not work for signaling lexical tone function and perhaps not all the grammatical tone situations.

It is hoped that, with the presentation of the Gwere solution to signaling grammatical tone with clarifying words, the arsenal of creative-thinking possibilities for developing orthographies in other tone languages will be expanded.

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