

Ministry of Scientific Research and Innovation

**Testing and Revising a Tone Orthography
Proposal for Chrambo (Bambalang)**

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List of Abbreviations

1SG	first person singular
3SG	third person singular
COND	conditional
HORT	hortative
P1	first past tense (today)
P2	second past tense (before today)
PERF	perfect
PROG	progressive aspect
SS	same subject

List of IPA Diacritics

ˈ	H	High tone
ˋ	L	Low tone
ˊ	LH	Rising tone
ˋˊ	HL	Falling tone
ˊˋ	LHL	Rising-falling tone
↓		Downstep

List of diacritics used in the Chrambo tone orthography

ˈ	nouns that match mbí (High tone pattern)
ˋ	Nouns that match yùgi (Low tone pattern)
ˊ	Nouns that match ŋkǎi (Rising or Low-high tone pattern)
ˋˊ	Nouns that match shu (Falling or High-low tone pattern)
ˊ	Verbs that match tuo (“H” tone verbs)
ˋ	Verbs that match ghēe (“L” tone verbs)
ˆ	Hortative
ˆˆ	Conditional

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Testing and Revising a Tone Orthography Proposal for Chrambo (Bambalang)

by Jennifer Wright

1. Introduction

The purpose of this research was to test a proposal for marking tone in the Chrambo orthography, make modifications to it on the basis of the tests and to develop teaching methods suitable for teaching it. The author has worked together with the literacy supervisor for the Chrambo literacy programme, Tambakwi Emmanuel in order to carry out this research. He was the main teacher during all the test classes and will be referred to throughout this paper as “the teacher”. The author’s main role during the classes was to observe and make notes, however she did contribute to the teaching from time to time, especially towards the beginning of the test period and at occasional moments after that when she felt that something needed to be clarified. We have benefitted greatly from the advice and encouragement of Stephen Anderson, who is later referred to as “the consultant”. In this paper a summary is given of what took place in each of the test groups. More detailed notes on the classes and the teaching materials used are available from the author.

In order to test the proposed tone orthography, we have taught parts of it to four different test groups. The first test was done while we were in the process of developing the initial proposal. Subsequent tests were done in order to test and refine the proposal. These tests will be described chronologically so as to make clear their part in the development of the orthography proposal. The results are mostly in the form of qualitative observations. All of the test groups were small, ranging from three to eight participants, but in spite of small numbers, these test classes have helped us to develop a tone orthography and some teaching methods which we believe help people to learn successfully. We recommend that the tone orthography now continue to be tested more widely by including it in the primers and beginning to use it in all written material.

1.1 Language Classification and relation to neighbouring languages

Chrambo is an Eastern Grassfields Bantu language spoken by an estimated 29,000 speakers in the village of Bambalang, Ndop Subdivision, Ngoketunjia Division, North West Region, Cameroon. It is listed in the Ethnologue of World Languages as ‘Bambalang’ under the ISO code [bmo], classified as follows:

NIGER-CONGO: ATLANTIC-CONGO: VOLTA-CONGO: BENUE-CONGO, BANTOID, SOUTHERN, WIDE GRASSFIELDS, NARROW GRASSFIELDS, MBAM-NKAM, NUN: Bambalang (Lewis 2009).

The Bambalang people call their language ‘Chrambo’ and it will be referred to as Chrambo throughout this paper. Chrambo is closely related to the other Nun languages: Baba 1, Bafanji, Bamali, Bamenyam, Bamun, Bangolan and Mungaka. For more information about the village and people of Bambalang, see Wright 2009.

1.2 Background to previous linguistic research

The first linguistic research on the Bambalang language was a survey (Grant 1993) to investigate the linguistic relationship to the neighbouring languages and the potential need for development of the language. Since then two phonology papers have been written (Ayafor 2002 and Luider 2009), the provisional orthography statement was completed in 2007 (Grove 2007) and a study of the noun and verb phrase was done in 2009 (Wright 2009). The most recent research prior to the development of the current tone orthography was a study of tone in the verb phrase (Wright 2011) which investigated which grammatical constructions are differentiated only by tone and may need to be marked in the orthography. During the course of the current research, a tone orthography proposal has been developed, which is included as an appendix to this paper. The orthography guide from 2007 has just been updated to include this latest revision (Grove and Wright, 2012).

2. The role of a test class in developing the initial proposal

2.1 Test group 1: A first primer class

The first test class took place on Monday 10th October 2011, at Mbanting Baptist Church in Bambalang. There were three participants who were students in a first primer class held at that church. The three participants are not literate in English. At the time of the class, they had completed the preprimer and lessons 1 – 8 of the first primer. They knew eight letters of the Chrambo alphabet and were able to recognise a few words, but were not yet at the stage of being able to read and write much without help.

2.1.1 Background to test group 1:

As we were developing the tone orthography, there were various points at which we had to decide between more than one alternative. The first test class was done in order to help us

make two of these decisions. It is therefore necessary to understand the decisions we had to make in order to understand the significance of the test class.

Decision 1:

We realised that whereas there are large numbers of minimal pairs in the big lexical word categories of nouns and verbs, there are relatively few minimal pairs in other word categories. Therefore we were considering the possibility of marking lexical tone consistently on nouns and verbs, but only marking minimal pairs of other word categories, instead of marking tone consistently on all words of all categories. Because pronouns and grammatical markers are so frequent in normal Chrambo texts, only marking lexical tone consistently on nouns and verbs, reduces overall tone marking from about 37% to about 17% in our sample texts. We therefore felt that it would be a plausible marking system if we were sure that we would be able to teach people reasonably easily what a noun is and what a verb is. Therefore we decided to try teaching a first primer class who had had no previous formal education what a noun is, in order to see whether this is a reasonable thing to teach in a literacy class.

Decision 2:

We had to decide whether to think of tone in terms of individual syllables, or to think of tone in terms of the tone pattern of whole morphemes, or even whole words.¹ Traditionally, most tone orthographies in Cameroon have been based on syllables. However Keith Snider has found that it is easier to teach people to recognise tone patterns of whole words (Snider 2012). In addition, we realised that if we used a system which marked the tone pattern of whole words, then there would be a maximum of one lexical tone mark per word, which would result in significantly less tone marks than a system which marked the tone of each syllable. Therefore we wanted to find out if Bambalang people find it natural to think of tone in terms of the tone pattern of the whole word or whether it is more natural to them to think of it in terms of individual syllables. Before we tested this with the first primer class, I initially tested it very informally with the teacher by drawing some pictures of nouns of different tone patterns and different numbers of syllables and asking him to group them into groups which have the same ‘tune’, without telling

¹ In Chrambo noun roots can have four possible tone patterns (see Luider 2009). The majority of nouns have no syllabic prefix, therefore the majority of nouns have one of these four possible tone patterns for the whole word. In addition the majority of noun prefixes are fossilised and remain the same in singular and plural. We therefore decided to talk about the tone pattern of the whole word and treat the relatively small set of nouns that do have a syllabic prefix (several with the prefix [mí] and a very few with the prefixes [mì] and [pí]) as exceptions to the normal word tone patterns in the tone orthography proposal.

him how many groups he should make. It was clear that his natural instinct was to group the pictures according to the tone pattern of the whole word regardless of the number of syllables². Therefore we decided to test the first primer class to see if they could easily group nouns according to the tone pattern of the whole word.

2.1.2 Aims of test group 1:

In summary, the aim of this first test class was twofold:

1. To find out whether it is realistic in a literacy class to teach people with no previous formal education to identify nouns.
2. To find out whether they are able to easily group nouns into the four tone groups that we had identified, according to word pattern regardless of number of syllables.

2.1.3 Summary of test group 1

Part 1: What is a noun?

The teacher began by giving a simple definition of what a noun is, using the most general Chrambo word for ‘thing’, **nnu**, for ‘noun’. He had come up with the idea of introducing a noun as something that we can see, feeling that this was the best way for Bambalang people to start thinking about nouns. He asked them to give examples of things that they have in their house, and then gave them some example sentences and asked them to identify the nouns in the sentence. All three students were able to give examples of ‘concrete’ nouns and had no problems with the simple example sentences. The teacher then expanded the definition to include things that you can possess, including abstract nouns, such as ‘anger’, ‘friendship’, etc. and gave more example sentences. The abstract nouns were more difficult at first, but once they were given some examples, they were able to think of more examples and identify them in sentences. The most common error was not finding all the nouns in a sentence, but when the teacher kept prompting “are there any more nouns?”, they would eventually find them. There was one instance of a verb being wrongly identified as a noun, but this was probably because the noun derived from that verb had already been correctly identified in a previous example.

² He put the majority of them into the four primary groups according to their tone patterns (H, L, HL and LH), but he struggled with a few exceptions that had unfortunately been included in the examples.

Part 2: 4 tone groups

The teacher drew pictures on the board of one noun from each of the four groups: **shíe** ‘corn’, **shô** ‘hoe’, **kwò** ‘leg’ and **pră** ‘paddle’. He then demonstrated with another noun (**lăi** ‘chair’) that it is possible to hum the tune of a word, and asked the students to hum the tune of the four nouns drawn on the board. All three of them did this correctly. He then drew several more pictures on the board and asked the students to hum them and say which of the first four pictures they matched. For the first picture there was some hesitation, but for the other examples all the participants answered without hesitation. For monosyllabic words, they did not need to hum the words in order to match them to the correct group. When the teacher moved on to disyllabic words, they did hum them at first to check but had no difficulty matching them to the monosyllabic words of the same group. There were no errors and one of the students commented that it was the easiest lesson they had had so far!

2.1.4 Discussion of test group 1:

Part 1: On the basis of this group, it did not seem to be very difficult for a previously illiterate person to grasp the concept of what a noun is. It is something which definitely needs to be taught – it did not come as naturally to them as the second part about tone patterns, however it seems to be something that they can understand when it is explained well. The method used to teach them was effective and at an appropriate level for them.

Part 2: It appears to be very easy and natural to people to group nouns according to the tone pattern of the whole word, with very little explanation needed. It also seems that they have no problem putting monosyllabic and disyllabic nouns in the same groups. The method used to teach this, using pictures instead of words was extremely effective, since it allows the learners to concentrate on the sounds rather than what the words look like.

Significance for the tone proposal: On the basis of this small test class, we went ahead with the proposal to:

1. mark lexical tone consistently for nouns and verbs, but only mark minimal pairs of other word categories
2. represent the tone patterns of whole words rather than the tone of every syllable.

3. Testing and refining the tone orthography proposal

After the first test, we wrote up an initial proposal for marking tone in the orthography of Chrambo. We then began to test it by teaching it to test classes. In this section we describe

those classes and the influence they had on the development of both the tone orthography itself and the teaching method. The revised tone orthography after testing is found in appendix A. The major differences between the revised and the initial proposals are noted in footnotes in appendix A.

3.1 Test group 2: The first “literate in English” group

The first test group that we taught the tone orthography to was a group of people who are literate in English and literate in the preliminary Chrambo orthography without tone marking. They met four times in October and November 2011. Most of the group have learnt to read Chrambo using the transition primer and one learnt to read during literacy workshops before the transition primer was available. The main reason for teaching our proposal first to a group who are literate in both English and Chrambo is that we wanted a group who were already reasonably comfortable with the Chrambo orthography without tone marks so that we could compare their reading and writing ability with and without tone marking. Since there are not yet any Bambalang people who have completed the second primer and finished learning to read Chrambo without being literate in English, it was necessary to test a group who are literate in English. A secondary reason was that we wanted to invite some of the literacy teachers to be part of this class so that we could ask for their feedback on it. We gave the class a reading and writing test at the beginning and the end of the testing period in order to assess whether including tone in the writing system improved their reading ability.

3.1.1 Aims of test group 2:

In summary, the aims of this class were:

1. To find out if we could successfully teach the proposed tone orthography to a transition primer level class (i.e. literate in English)
2. To get some feedback from them about how they feel about marking tone
3. To test their ability to read and write using the new tone orthography and compare this to their ability to read and write with no tone marking

3.1.2 Summary of test group 2

The class met four times and covered the following topics:

- Lesson 1: 1. Control reading and writing test with no tone marking
 2. Lexical tone in nouns
- Lesson 2: 1. Revision of nouns

- 2. Lexical tone in verbs – part 1
- Lesson 3:
 - 1. Revision of nouns and verbs
 - 2. Lexical tone in verbs – part 2
 - 3. Lexical tone on other minimal pairs
- Lesson 4:
 - 1. Revision of all lexical tone
 - 2. Grammatical tone
 - 3. Reading and writing test with tone marking

There were seven participants in lesson 1, only four of them came to lesson 2, and then in lesson 3 and 4 we had six participants, of which one had not been to the first two classes. The participant who joined the class in lesson 3 managed to catch on to the idea of the different tone groups for nouns and verbs well during the revision session but like the rest of the class had difficulty remembering the tone marks.

Lexical tone in nouns

All the seven participants seemed to have a good understanding of what a noun is already and were able to identify different types of nouns, including abstract nouns.

The teacher used a set of 40 pictures to introduce the four noun groups to them in a similar way to how he had taught the first test group. For the most part, this was not a difficult task for them. One of the participants seemed to have some difficulty at the start, but gradually improved. The others were able to put the nouns in the correct group without hesitation. The only nouns that caused some discussion and disagreement were three borrowed words: **lěmu** ‘orange’, **anyushi** ‘onion’ and **reshi** ‘rice’. Two of the participants thought that these did not match any of the groups. This may be because they do not follow normal Chrambo phonological structure - the phonemes /m/, /ŋ/ and /ʃ/ do not usually occur intervocalically³.

When we taught the tone marks, they understood that there were four different tone groups and that they would be marked differently but they found it very difficult to remember which tone mark was which. At the end of the first lesson we gave them a dictation exercise and they mostly got the H tone mark correct but confused the other marks. In the second lesson we revised the tone marks for the four noun groups and did dictation again and they did much better, but by the third lesson they had forgotten again which mark was which. In the test that we gave at the end all of them were still making a lot of mistakes with the tone marks.

³ Because the borrowed words seemed to be confusing, we decided to replace them with other Chrambo words before the next test class (see section 3.3).

Lexical tone in verbs:

In the first lesson on verbs we had only four participants. The teacher began by asking them to give some examples of verbs and they gave several examples correctly. There was some discussion over the fact that there are some words which are verbs in Chrambo that are not verbs in English (e.g. **pwà**⁴ ‘to be good’). One of the participants was rather sceptical about this but accepted it once we gave some examples.

We introduced the two verb groups using the progressive sentences:

A	ghài	nu.	A	kwài	nu.
he	go	PROG	he	return	PROG
<i>He is going.</i>			<i>He is returning.</i>		

In this context “L” tone verbs like **ghài** have L tone and “H” tone verbs like **kwài** have HL tone. For the nouns, L nouns are marked with the L tone diacritic ` and HL nouns are unmarked, so we explained that we will use the L tone mark for verbs that match **ghài** and leave verbs that match **kwài** unmarked. They were then given more example verbs in the context **a _____ nu** and asked if they match **a ghài nu** or **a kwài nu**. Three of the participants had no problem with this, but the fourth was hesitant to answer⁵.

They were then asked to read minimal pairs of verbs from the blackboard in the context **a _____ nu**.

e.g.

A	sha’a	nu.	A	shà’a	nu.
he	judge	PROG	he	cross	PROG
<i>He is judging.</i>			<i>He is crossing.</i>		

Two of the participants could do this well, one hesitated a lot but answered correctly, the fourth participant was still reluctant to answer.

At the end of the first session on verbs, we felt that they were beginning to feel comfortable with the two tone groups and how to mark them, although it seemed to be more challenging

⁴ Chrambo examples in this section are written according to the tone orthography that was in use at the time of the test. In the current orthography “L” tone verbs are marked with ` e.g. **pwā** to be good.

⁵ This participant’s reluctance to answer may have been due to his normal role in relation to the other participants.

than the nouns. However, at the next session, we gave them examples in other tenses and aspects (not just the progressive construction) and asked them to mark tone on the verbs. They argued that in these sentences the verbs had a different tone and so they could no longer use the L tone mark for the “L” tone verbs. We explained to them that they should always use the L tone mark for the “L” tone verbs because it is important for words to always be written in the same way, but this did not seem to make sense to them. They accepted it, but very reluctantly, and they continued to have difficulty marking tone on verbs. This was reflected in the test at the end.

Other minimal pairs

We introduced the following words as sight words:

n̈́ - 1SG prefix	n - same subject prefix
gha – when	ghà – habitual aspect
gḁ – you	gḁ - who
fũoŋ – first	fúoŋ – eight

They already knew these tone marks from the nouns, so this was not difficult to teach. However they were still having difficulty remembering which tone mark is which. They were happy with the concept of marking nouns and verbs consistently and only marking minimal pairs of other word categories.

Grammatical tone

Since the class were still having great difficulty remembering which tone mark was which for the nouns and knowing which verbs to mark for the verbs, we did not want to confuse them even more by adding too many new tone marks. Therefore we decided not to teach them all of the grammatical tone marks yet, but just to introduce two at this stage that they would need to know for the test.

We first introduced how to mark the difference between today’s past tense (p1) and the general past tense (p2): use the diacritic [^] over the p1 tense marker in both positive and negative sentences⁶. They had no problem with this.

⁶ We have since decided to add the p1 and p2 markers to the list of other minimal pairs and spell them: **nī** (p1) and **nì** (p2). This is because the diacritic is also used for hortative and we wanted to avoid using the same mark to have more than one meaning.

We then introduced using the diacritic " over the first letter of the subject noun or pronoun in a certain type of conditional sentence to mean "if". Again, they had no problem with this concept.

In the test, all the participants used these two grammatical tone marks correctly in both reading and writing, whereas most of them made a lot of mistakes with all the lexical tone marks. It has also been found in other languages that grammatical tone marks are easier to teach than lexical tone marks, so we were not too surprised that the class was more successful in learning the grammatical marks (Stephen Anderson, personal communication).

3.1.3 Results of the reading and writing test taken by test group 2

Description of the test format:

Two similar tests were given, one at the beginning before we had taught them anything about tone and the other at the end. Each test consisted of four parts as follows:

1. Translation of sentences from Chrambo to English (including words which are ambiguous if unmarked for tone)
2. Translation of sentences from English to Chrambo
3. Sentences with comprehension questions to answer in Chrambo (including words which are ambiguous if unmarked for tone)
4. Text to read aloud to the teacher

All the participants took the same test for parts 1 to 3, but for part 4 we had two similar texts (text A and text B). Half of the participants read text A and the other half read text B without tone marking at the beginning, then at the end the same two texts were used with tone marking added, and the participants read whichever one they had not read in the first test.

Summary of Results:

In the control test with no tone marking, the results showed that in the written part of the test (when they had time to read through the sentences as many times as they needed) all of them were able to interpret the ambiguous words correctly from the context if there was something in the context that indicated which word was intended, but in sentences that were genuinely ambiguous, the participants gave a mixture of different answers. In the part where they had to read an unfamiliar text aloud to the teacher, the results were somewhat different. For example, all seven participants who took this test read the tone wrong on the first part of a conditional sentence at the first attempt and then went back and repeated it – in this type of sentence, the second half of the sentence gives the context that could have told them it was a conditional sentence. Likewise, two out of the four who read text A misread the word **gha** (*when*) as though

it was **ghà** (habitual marker) at the first attempt, even though they could have guessed from the context. In places where tone was genuinely ambiguous, there were a lot of mistakes, for example all seven participants misread the first person singular prefix **ñ-** as the same subject prefix **n-**, and many of them made mistakes with other ambiguous words such as **fũoŋ** (*first*) and **mũuŋ** (*mother*) because they were not marked for tone. When we looked at all the words which were misread by the participants we found that in 40% of them the tone was pronounced wrong. Two of the participants were noticeably less fluent in reading than the others. If their results are not counted, then tone accounts for 62% of misread words for the other five participants, indicating that tone is responsible for a significant proportion of mistakes made by mature readers. It is interesting to note that most of the participants mispronounced the tone of some words that were not actually ambiguous, causing them not to understand the word at the first attempt. Only 66% of tone mistakes were on words that were actually ambiguous.

In the second test with tone marked, the results in the written part of the test were very similar to the first test and seemed to indicate that most of the participants had paid little or no attention to the lexical tone marks when answering the questions. Given that their performance in class showed that most of them were still confused about which tone mark was which, this was not very surprising. In contrast, all six of the participants got most of the sentences involving grammatical tone correct⁷. A similar result was seen in the reading part of the test: most of the participants did not appear to make use of lexical tone marking to be able to read ambiguous words correctly, however the grammatical tone mark for the conditional construction seemed to be helpful to all the participants who took this test. One of them hesitated before reading a conditional sentence, but all of them read the conditional mark correctly.

3.1.4 Discussion of test group 2

In conclusion, the concept of marking only nouns and verbs consistently did not seem to cause the participants any problems as they already had a good understanding of what nouns and verbs are. They also had no major problems identifying the four tone groups for nouns, and two tone groups for verbs. However they were not successful in learning how to mark those groups for either nouns or verbs. Their performance both during the classes and in the test at the end showed that they did not remember the meaning of the different lexical tone marks. On the

⁷ Out of five such sentences, three of them were translated correctly by all participants, one sentence was understood correctly by five out of six participants, but in one sentence, four out of six participants forgot to use the diacritic **ˆ** on **nî** to mark today's past tense

other hand all of them were successful in learning the grammatical tone marks and used them well in the test in both reading and writing.

Implications for the tone orthography

1. The results of this test have shown that although people are able to categorise nouns and verbs according to tone groups easily, it is difficult for them to remember which tone marks are which. The fact that the testing period was very brief and they did not have a lot of time to practice probably contributed to this problem. Nevertheless we saw a need to find a better way of teaching the tone marks to stop them from being quite so arbitrary.
2. Teaching verbs using the progressive construction was not successful because they could not transfer it to other verb constructions. Therefore we needed a better way of teaching the two verb groups.
3. We also found that people are not happy using the same tone mark for “L” tone verbs that they are using for L tone nouns, because the “L” tone verbs only have surface L tone in certain contexts. Therefore we needed to consider changing the way we marked tone in verbs.

3.2 Changes to the tone orthography and teaching method as a result of test 2

At first glance, the results of this test class looked rather disappointing because at the end of it, only one person demonstrated in the test that he understood and could use the tone orthography reasonably successfully. None of the others seemed to have grasped lexical tone marking at all, although they all did well with the grammatical tone marks. However, as we discussed it together with the teacher and the consultant, we realised that we were testing two different things – the tone orthography itself, and our teaching methods: the fact that we had failed to teach the tone orthography did not necessarily mean it was all bad, it may be partly our teaching methods that had failed. Therefore we tried to identify what the real problems were (summarised in section 3.1.4 above) and what had actually worked well.

What worked well:

1. The teacher was very convinced that when we taught the different tone groups for nouns, they understood and that the only problem was remembering which mark was which.
2. They were able to identify two tone groups for verbs, and they were in fact completely logical in their argument that it did not make sense to use the same diacritic for one of the verb groups that we were using for one of the noun groups because they were completely correct in saying that the tone on verbs changed depending on the context to an extent that does not happen to nouns.

- Using pictures and keywords for the nouns worked very well. We did not use pictures at all and did not use keywords to the same extent with the verbs and this may be partly what made the verbs more difficult.

3.2.1 Changes to the tone orthography on the basis of these results:

- We only made one major change to the tone orthography at this point, which was to use a different mark for L tone verbs which was not being used for nouns. We decided to use the mid tone mark $\bar{\text{~}}$ for L tone verbs, since this diacritic had not yet been used for any specific function.
- There was one other change to the tone orthography in the marking of the p1 tense, before we taught it to the next test group, however this change was not as a result of this test group so it will not be described here in detail (see appendix A for details).

3.2.2 Changes to the teaching method:

- The most significant change to our teaching method was an attempt to stop tone marks from being arbitrary: we decided to introduce hand actions that looked like the tone marks and link them to the keywords. Since we already knew what the tone marks were, we came up with the hand actions that looked like them first and then had to change the keywords so that they would fit the hand actions. We came up with the following hand actions and keywords:

Tone group	Tone mark	Description of hand action	Keyword	Link from keyword to hand action
HL nouns	(unmarked)	hands behind the back	shu ‘fish’	fish have no hands
LH nouns	˘	hands in V shape	ŋkǎi ‘bell’	hands in shape of double clapper traditional bell
L nouns	˙	right hand diagonally in front of body	yùgi ‘duck’	use your right (eating) hand because you can eat duck
H nouns	ˆ	left hand diagonally in front of body	mbí ‘mosquito’	use your left hand because you cannot eat mosquito
LHL verbs	ˉ	hand flat on top of your head	ghēe ‘to carry on the head’	hand is like a headpad
HL verbs	(unmarked)	hands by your sides	tuo ‘to hold’	no need of a headpad

			in the hands'	
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2. Since the pictures were so helpful for teaching nouns, we made a set of pictures to teach verbs also.

3. We decided to teach the two verb groups simply as ‘verbs which match **ghēe**’ and ‘verbs which match **tuō**’ and no longer use the progressive construction or any reference to underlying H or L tone.

3.3 Test group 3: A second primer class

After making the changes to the tone orthography proposal and the teaching method described in section 3.2 above, we then tested it on a second primer class. We did this because we felt that if the orthography is to be accepted and widely used, we need to be able to teach it to people who are not literate in English and who have had no previous formal education. We chose to test it on a second primer class, rather than a first primer class, because the second primer class is already familiar with much of the alphabet so we were not too limited in the letters we could use in examples.

3.3.1 Aims of test group 3

1. Overall aim: To see if we could successfully teach the proposed tone orthography to people at second primer level who are not literate in English and have had no previous formal education.
2. To specifically test the use of hand actions as a method for teaching tone marks.
3. To test the use of pictures and key words as a method for teaching the two lexical tone groups of verbs.
4. To test whether using a mark for lexical tone in verbs which is not used at all for nouns is easier to teach than the initial proposal of using the L tone mark ` for both lexically L tone nouns and lexically L tone verbs.

3.3.2 Summary of test group 3:

The 2nd primer class was made up of three students, none of whom are literate in English. We taught the tone orthography to them gradually over the course of three months. During the three months, they had six lessons on tone when new content was introduced and in between

these they had some revision lessons on tone and also continued working through the lessons in the second primer. Once we had started to teach them about tone, we gave them revised versions of the stories in the second primer lessons which had tone marked according to the tone orthography proposal, because we did not want to contradict what they were learning about tone by letting them read Chrambo stories written in the original orthography with no tone marking. Therefore even when the lessons were not focused on tone, they were still seeing the tone orthography in use in the stories.

As with all the test groups, one of the biggest challenges was that it was unusual for all three students to be present at the same time. Therefore when we had planned to have a class on tone, we went ahead and taught it to the ones that were present and if somebody was absent, either they caught up during a revision class, or in some cases the teacher met with them separately at another time to allow them to catch up.

The six main tone lessons covered the following topics:

1. Lexical tone in nouns 1:
 - a. What is a noun?
 - b. Recognising four tone groups for nouns
 - c. Hand actions for HL and LH nouns
 - d. How to mark tone for HL and LH nouns
2. Lexical tone in nouns 2:
 - a. Revision of lesson 1
 - b. Hand actions for H and L nouns
 - c. How to mark tone for H and L nouns
3. Lexical tone in verbs:
 - a. Revision of nouns
 - b. What is a verb?
 - c. Recognising two tone groups for verbs
 - d. Hand actions for two verb groups
 - e. How to mark tone for two verb groups
4. Other types of words:
 - a. Revision of all tone marks learnt so far
 - b. Usually tone is not marked on words that are not nouns or verbs
 - c. Four exceptions to this rule!
5. Grammatical tone 1:
 - a. Revision of all tone learnt so far
 - b. How to mark conditional sentences

6. Grammatical tone 2:
 - a. Revision
 - b. How to mark hortative sentences

Lexical tone in nouns

At the first class on nouns which I observed and took notes on, only one student was present. Unfortunately I was not present when the teacher repeated this lesson with the other two students, and only received oral feedback from the teacher afterwards, therefore, the following summary is mostly based on a class with only one student. All three students were present at the second lesson on H and L tone nouns.

1. What is a noun?

The teacher used the same method to teach this that was used during the first test class (see section 2 above). As with the first class, the student was able to give examples of concrete nouns very easily. She needed some help to begin with to think of abstract nouns, but once she was given some examples she was able to correctly identify abstract nouns such as **pigitua** ‘anger’ and **gu** ‘death’ in the example sentences. She showed remarkable intuition about the difference between nouns and verbs when given the following example sentence:

A **fa’o** **pigitua** **ŋa** **ndaon** **vi** **khwa** **la’o** **ŋga’a.**
 she have anger that husband her love palm wine be too much
She is angry that her husband loves palm wine too much.

In this sentence she correctly identified **pigitua** ‘anger’ as a noun first, then she mentioned **khwā** ‘love’ which is a verb. This is probably because **khwā** ‘love’ had been given as an example noun earlier in the lesson. Then to our surprise, without the teacher saying or doing anything, she corrected herself and said that actually **khwā** ‘love’ is not a thing in this sentence because the person loves something. She correctly identified **ndaon** ‘husband’ and **la’o** ‘palm wine’ as nouns after being reminded to look for things that you can see.

The teacher reported that when he taught the other two students what a noun is, one of them did not have much difficulty in learning it, but the other one found it difficult to identify nouns in the example sentences. This student is now able to identify nouns correctly, so it appears that she just needed more time to learn the new concept.

2. Recognising 4 noun groups

This was taught in the same way that had been done with the second test group, using the set of 40 pictures, except that the keywords were changed to **shu** ‘fish’, **ɲkǎi** ‘bell’, **mbí** ‘mosquito’ and **yùgi** ‘duck’ to go with the hand actions (see section 3.2.2 above) and we had replaced the borrowed words with non-borrowed words to avoid confusion. The student was asked to hum the tune of the nouns in the pictures and sort them into four groups. She had no problems at all with this exercise, and the teacher reported that the other students also found this exercise easy.

3. Hand actions for HL and LH groups.

After demonstrating that there are four groups of nouns, the teacher removed two of the keyword pictures from the blackboard and left only **shu** ‘fish’ and **ɲkǎi** ‘bell’. He then introduced the hand actions for these words to the student. She liked the hand actions. He then shuffled the pictures for these two groups of nouns and went through them again. This time the student had to make the appropriate hand action without humming: for nouns that match **shu** ‘fish’ she had to make the fish sign with her hands behind her back and for nouns that match **ɲkǎi** ‘bell’ she had to make the bell sign with her hands in a V. She did this exercise almost perfectly. She made one mistake on **lan** ‘lamp’ but corrected it herself almost immediately. The teacher reported that the other students also had no difficulty with this exercise and liked the hand actions.

4. Introducing tone marking for HL and LH noun groups.

The teacher then wrote up the keywords for the HL and LH noun groups, **shu** ‘fish’ and **ɲkǎi** ‘bell’ on the blackboard. He said that for any word that matches **ɲkǎi** ‘bell’, she should draw a small bell over the first vowel that is the same shape as her hands in the hand action, and for any word that matches **shu** ‘fish’ she does not have to draw anything over it because she cannot see her hands in the hand action. He then gave her five example sentences with HL and LH nouns in them and she had to identify the nouns and if necessary draw the bell symbol on top of them. In this exercise it was clear that the most difficult thing was finding all the nouns - she had to be reminded at some points about the different types of nouns before she found all of them. Having identified the nouns, she had no problem knowing which ones to mark. The teacher reported that he had a similar experience with the other two students, and that one of the students was having difficulty knowing which letters were vowels and therefore sometimes wrote the tone mark over the wrong letter. Now that the students have been using this system for three months, they are much more confident both in identifying nouns and in knowing where to write the tone mark than they were at the beginning.

5. Hand actions for H and L nouns

This was taught during the second lesson when all three students were present.

The teacher taught this in a similar way to the hand actions for HL and LH nouns. The hand actions for H and L nouns are a diagonal action with the right ‘eating hand’ for nouns that match **yùgi** ‘duck’ (because you can eat duck) and a diagonal action with the left (non-eating) hand for nouns that match **mbí** ‘mosquito’ because you cannot eat mosquito. The students learnt the hand actions very easily. When the teacher showed them the set of pictures for these two groups all three students were able to immediately do the correct hand action without looking at each other.

6. Introducing tone marking for H and L nouns

The teacher wrote the key words **yùgi** ‘duck’ and **mbí** ‘mosquito’ on the board and showed them how the symbols above the words match the hand actions for them. He then wrote some example sentences on the board with H and L nouns and asked the students to find the nouns in the sentence and mark whether they match **yùgi** ‘duck’ or **mbí** ‘mosquito’. All the students were already more confident in identifying nouns than they had been in the first lesson. One of the students was immediately able to mark the nouns correctly. The other two showed some confusion at first. At this point I intervened to show them again how the symbols match the hand actions and the teacher explained it again. Then the other two students were able to mark tone correctly. It appears that they did not understand at first the connection between the hand action and the symbol but once they understood this, they had no problems.

Lexical tone in verbs

Two students were present in the class which I observed, the third one was taught by the teacher separately.

1. What is a verb?

The teacher asked the students the question, “What do you do when you go to the farm?” As they answered he wrote up all the verbs in their answers on the blackboard including verbs such as: **luoŋ** ‘pray’, **fa’a** ‘work’, **phi** ‘plant’, **kuŋ** ‘weed’, etc. He showed them that you can use any of these words to complete the sentence **a kwo** ___ ‘he has already ___’ and asked them to think of more words that can complete this sentence. They gave the following words (with no assistance): **ghəi** ‘go’, **lɔŋɔ** ‘take’, **ta’o** ‘fetch’, **nyia** ‘cook’, **tɔŋɔ** ‘pass’, **pɔ** ‘be’, **thɔ** ‘come’.

Nobody gave any wrong answers. Then he told them that these kinds of words are called **vebi** ‘verb’.

2. Recognising two tone groups for verbs

The teacher showed them pictures for the two key words: **ghēe** ‘to carry on the head’ and **tuo** ‘to hold in the hands’. He asked them to hum these two words, which they did without any problem and then he told them that all verbs in Chrambo match either **ghēe** or **tuo**. He then showed them the set of pictures for verbs and asked them to match them with either **ghēe** or **tuo**. They hesitated more with these pictures than they had with the nouns, however the difficulty seemed to be in interpreting the pictures rather than in knowing which group to put them in. In some cases they would say a whole sentence to describe the picture. When this happened the teacher asked them the question: **A kwo chwīe neīŋ?** “What has he/she already done?” When he asked this question, they were able to identify the verb correctly and match it to the correct group.

3. Hand actions for the two groups

The teacher taught them the hand actions for the two key words: one hand flat on top of your head for **ghēe** ‘to carry on the head’ and hands by your sides for **tuo** ‘to hold in the hands’. He then went through the pictures again and the students had to do the corresponding hand actions. They still hesitated at a few of the pictures, but answered all of them correctly. It seemed that the problem was still in interpreting the pictures, rather than knowing which group to put them in.

4. Marking tone on the two verb groups

Once the students were confident using the hand actions, the teacher showed them how to write the two keywords **ghēe** and **tuo** and showed them that **ghēe** is written with a ‘headpad’ over the first vowel. He then gave them some example sentences and asked them to underline the verbs and mark them if necessary. They were able to identify the verbs when he helped them by asking the question: **A kwo chwīe neīŋ?** “What has he/she already done?” They were also able to correctly mark the verbs that match **ghēe**. He then gave them a small test – a handout with five more sentences in which they had to underline the verbs and mark them if necessary. Both students marked eight out of nine verbs correctly. They both made the same mistake, even though they were sitting at opposite sides of the room, which was to write **pā’o** for both **pā’o** ‘to make holes’ and **pa’o** ‘to play an instrument’. This may be because they look the same without tone marking so possibly when they saw it the second time they did not think about it again. Finally they were given dictation of six verbs. One student scored 6/6 and the other student 5/6.

Other types of words

Two students were present in this class.

After revising the tone marks that had been learnt so far, the teacher told them that usually they should not mark tone on any word unless it is a noun or a verb, but that there are some exceptions to this rule that we have to learn. He then introduced the four minimal pairs which are exceptions, one at a time.⁸ The four minimal pairs are:

fũoŋ <i>first</i>	fúoŋ <i>eight/eighth</i>
gǔ <i>who</i>	gò <i>you (emph)</i>
gha <i>when</i>	gha <i>habitual marker</i>
̀n / ̀m / ̀ŋ 1SG I	n / m / ŋ <i>same subject</i>

He gave them some example sentences for each minimal pair and asked them to write the correct tone on them. They did not have difficulty with the first three pairs but they seemed to find the last one (the difference between ̀N- ‘I’ and N- ‘same subject’) difficult. We gave them a dictation test at the end in which one of the students got full marks, and correctly marked the distinction between ̀N- ‘I’ and N- ‘same subject’ and the other one got everything correct except the three words with these prefixes in them. The words that she made errors in were the following:

Correct answer:	Incorrect answer:
1. ̀njuoŋ - <i>I buy</i>	njúoŋ
2. ̀nta’a - <i>I sew</i>	ntà’a
3. ̀ntā’a - <i>I want</i>	nta’a

I suspect that part of the problem with this prefix was that we had previously explicitly taught them to only write tone marks above vowels and she was the student who had taken a bit longer to learn this and we did not explicitly teach in this lesson that the first person singular subject prefix ̀N- is an exception to that rule. In addition it was not explicitly taught that in verbs starting with the prefix ̀N- ‘I’ it is possible to have two tone marks on one word (if it is a verb that matches **ghēe**). One of the students seemed to pick up on these things without it being explicitly taught, but the other one was confused.

Grammatical tone

1. Conditional:

To introduce this topic, the teacher wrote the following sentence on the board, which could be read either as perfect or conditional if not marked for grammatical tone:

⁸ A fifth pair has now been added to this list: the past tense markers **ni** (p1) and **ni** (p2) (see Appendix A for more details)

Mǔuŋ a nyia kuoŋ, ñtho ni yichəi mfe ve.
mother my cook beans I.come with some ss.give you

1. My mother has cooked beans, I have come with some for you.

OR

2. If my mother cooks beans, I will come with some for you.

The teacher asked the class to read this sentence. They took a long time to work out what it said, because they still have a lot of difficulty reading some of the letters, however they eventually read it as the perfect sentence (meaning 1 above). He then demonstrated that it is possible to read it a different way (meaning 2 above), and then showed them how to mark the conditional sentence with the diacritic X over the first letter of person that does the action (i.e. the subject):

Mǔuŋ a nyia kuoŋ, ñtho ni yichəi, mfe ve.

If my mother cooks beans, I will come with some for you.

He said that the meaning of the diacritic is that it is possible that the thing might happen and it is possible that it might not happen. He then gave them some more example conditional sentences and asked them to read them. The second sentences was:

Jinwi ŋgəi, a lōgo mikuu, ŋkwəi no gho.

Jinwi cond.go she pick up basket ss.return with it

If Jinwi goes, she will pick up the basket and bring it back.

Their reading of this sentence was interesting because at first they were just struggling to figure out what the words said, still having difficulty with some of the letters. They at first read **Jinwi ghəi** *Jinwi has gone* instead of **Jinwi ŋgəi** *if Jinwi goes* and the teacher tried to correct them by pointing out the **ŋ** at the start of **ŋgəi** but they were unable to pronounce it **ŋgəi** because they were not reading it with conditional tone. I then told him to allow them to continue with the rest of the sentence, which they did. Once they had read the whole sentence as though it was perfect, we then pointed out the conditional mark to them and reminded them what it meant and immediately they read the sentence again completely correctly and pronounced **ŋgəi** correctly. This indicated that once they learn the meaning of the diacritic well, it should be very helpful to them in reading conditional sentences. It may be that it is not even necessary to write the nasal prefix on the verb in this context. The teacher then gave them two more examples which they read with the correct conditional tone at the first attempt. He then gave them a

small test where they had to mark the conditional diacritic on conditional sentences in the correct place. They were both able to do this even when the subject of the conditional clause was not the first word in the sentence. Finally they did a small dictation test. The only problem that came up in the dictation was that one of the students began to mark all tone marks on the first letter of the word and had to be reminded that all the other marks we had learned so far were marked on the first vowel and this new one was an exception. We explained to them the reason why this one is marked on the first letter (so that it will not clash with lexical tone marks) and they seemed to understand the explanation well.

2. Hortative

The teacher gave the class the following two sentences to read:

Ä **ηgāi** **táj,** **ñti'i** **ηgāi** **ni** **ηwanj.**
 3SG COND.go market 1SG.stay behind ss.go with myself
If he goes to the market, then I will leave.

A **ghāi** **táj,** **ñti'i** **ηgāi** **ni** **ηwanj.**
 3SG go market 1SG.stay behind ss.go with myself
He has gone to the market, so I left.

After they read the first conditional sentence correctly, he asked them to read the second sentence. They first read it as a hortative sentence meaning “He should go to the market, and I will leave”. They did not think of the alternative way to read it until he pointed it out to them. He then showed them how to mark the difference between these two sentences, by writing the hortative one on the board:

Â **ghāi** **táj,** **ñti'i** **ηgāi** **ni** **ηwanj.**
 3SG HORT.go market 1SG.stay behind ss.go with myself
He should go to the market, and I will leave.

He then explained that this mark means that the person/people in the sentence have not yet done the thing, but they should do it now. He also showed them that this mark is written on the first letter of the subject noun or pronoun (the person doing the verb), the same as the conditional mark which they had already learnt. He gave them three more example hortative sentences on the board and asked them where to write the tone mark. They were all sentences where the hortative clause was not the first thing in the sentence. In the first sentence they at first said that the mark should go on the first word of the sentence and they had to be reminded what the mark means (that the thing has not already happened but it should happen now).

Once they were given this explanation again, they were able to identify the correct word to mark it on. For the other two sentences they found the correct place without help.

They were then given three more examples to read which already had the hortative mark. For the first one they had to be reminded of the meaning of the mark, but the other two they were able to read correctly.

They were then given a small test where they had to mark hortative tone on three sentences and then do dictation. Two of the participants marked the hortative tone correctly, one of them marked it on the first letter of the hortative verb instead of the first letter of the subject. She also wrote the lexical marks on the first letter of the words instead of the first vowel. She was the same person who had done this in the previous class on the conditional mark. Once she was reminded of where to write the various marks she was able to correct it herself.

We forgot to teach them that for the first person singular subject prefix Ñ- they will not write the normal tone mark on it if it needs to have the hortative mark (e.g. ṅgāi *I have gone* and ṅgāi *I should go*), until they came across it in the test. Two of the participants got this right in the test even though they had not been taught it. One of them wrote the normal L tone mark ` on the 1SG prefix instead of the hortative mark. After they had done the test, we then taught this rule to them and all three seemed to understand it without any problem.

3.3.3 Discussion of test 3

General conclusions:

On the basis of observations of the classes, and the small tests that we gave them, it is clear that the students have successfully learnt the rules of the proposed tone orthography and are able to use them correctly in writing. The most difficult part of it is learning to recognise nouns and verbs, but this is something that all the students have been able to learn, some faster than others. Learning the tone marks was relatively easy for them, thanks to the better teaching methods. The teacher commented that he thinks that they have learnt the tone marks more quickly and easily than they learn new letters. He said that usually it takes a long time for them to be able to remember a new letter and read it correctly in context, whereas with the tone marks, once he had taught them a tone mark once they would know it and still be able to remember it at the next class. It was also noticeable in the dictation exercises that the students made more mistakes with letters than they did with tone marks. Since the class are now more comfortable using the tone marks than they are with some of the letters, we conclude that it is very possible to teach this system of tone marking to a second primer level class.

Changes to the teaching method:

The use of hand actions as a teaching method was extremely helpful and made it very easy for the students to learn to use the tone marks correctly. The pictures were also helpful; even though the students found it harder to interpret the verb pictures than the noun pictures, we still felt that they were helpful for introducing the two verb groups.

Change in marking of lexical verb tone:

We cannot make a direct comparison with the second test group who had difficulty with the way tone was marked in the initial proposal. Firstly, the teaching method used was completely different, and secondly the group of students were very different. However we can say that the students were able to learn the two verb groups successfully and successfully learnt to mark tone on verbs. This was a big improvement on the second test class. Therefore we conclude that the current proposal for marking tone on verbs is an improvement on the initial proposal, even though we acknowledge that the improved results were largely due to the changes in teaching method.

Areas that could be adjusted:

We realised that our teaching and testing was very biased towards writing, rather than reading the tone marks. Towards the end of the testing period we tried to correct this and introduce reading exercises such as reading ambiguous words in isolation and in context. This seemed to be more difficult for them than writing, however they were still having a lot of difficulty reading the letters and tended to whisper because they were not confident of their ability to read the letters so it was very hard to assess their reading of the tone marks! We realised that in the future it will be important to have a good balance of reading and writing exercises in the lessons on tone. We also noticed that there were points at which we forgot to teach something which was significant. For example, we did not realise that we may need to teach them what a vowel is until we noticed that one of the students did not know. We also did not give as much explanation and examples as were needed for the first singular subject prefix Ñ- 'I'. We had not expected this to be difficult for them, but in fact it was difficult because it breaks some of the rules that we had already taught them about how to mark tone. Therefore it seems to be necessary to spend more time on this prefix than we had expected. The teaching of grammatical tone went well in that they did not have a problem understanding the meaning of the marks, however it was confusing for them at first that these marks are written over the first letter of the subject, while all the lexical marks they had previously learnt are written over the first vowel. Two of the participants were able to handle this distinction well but the third one

started to mark everything on the first letter of the word. We do not feel that this is a big problem but it is something that will take some practice so that they remember the rules well.

3.4 Test group 4: a second literate in English group

This group was started three weeks before we finished testing with the third group, and although we had expected the third test group to stay ahead of them, due to classes being cancelled, the fourth test group finished first and therefore covered grammatical tone before the third test group did. The group met three times. All the participants are literate in English and literate in the original Chrambo orthography (with no tone marking). The group included the three Bible translators. At the first class there were eight participants (including the translation team), at the second class there were six and at the third class only the three translators were available, so the teacher later repeated the class with the other three students.

3.4.1 Aims of test 4:

1. To test how appropriate our new teaching methods (key words with hand actions and pictures) are for teaching a class who are well educated and literate in English to use the proposed tone orthography
2. To test the use of reading exercises in teaching the tone orthography
3. To test how well the group responds to the change in the marking of lexical verb tone, compared with the second test group who were of a similar educational level. (We had actually hoped to have some of the same people in the class, but due to the fact that several of them were sitting exams we did not have any of the same group).
4. To allow the translation team to participate in a tone class in order to not only learn the system themselves, but also observe how other people are learning and responding to it, so that we can get their feedback on it.

3.4.2 Summary of test 4

The test class met three times covering the following topics:

1. Lexical tone in nouns
2. Lexical tone in verbs
3. Other sight words and grammatical tone

Lexical tone in nouns

There were eight participants in the class. The method of teaching was the same as that used for the second primer class (described in section 3.4 above), except that the section on “what is a noun” was covered a lot faster because the group was well educated and we thought that they already had a good understanding of what a noun is. Therefore we were able to cover all the four noun groups in one session. As well as the writing exercises that we had used with the second primer class we also gave them sentences with noun tone marked for them to read. We deliberately gave them sentences with nouns that are ambiguous if not marked for tone and they enjoyed this exercise a lot, and laughed a lot if somebody read a sentence wrong. This also served as a good demonstration of the usefulness of marking tone.

The participants had no difficulties recognising the four tone groups for nouns and learning the hand actions to go with them. Most of them had no problem transitioning from the hand actions to writing tone marks, with two exceptions. One of the participants appeared to be very confused between the H and the L groups until we realised that he had misunderstood the hand actions, and instead of using his right (eating) hand for nouns that match **yùgi** ‘duck’ and using his left hand for nouns that match **mbí** ‘mosquito’, he was just using his right hand for all edible nouns and his left hand for all non-edible nouns. Once we explained this again and he understood, he had no more problems. There was one other participant who made a lot of mistakes when we gave them the test. He did not find all the nouns in the example sentences and he seemed to be confused about which tone marks to use for the ones that he did find. It may be that the class moved too fast for him. The teacher and I agreed afterwards that even with a group who is literate in English, it may be necessary to take two lessons to teach lexical tone in nouns, unless all of the group are catching on very fast. And it is probably necessary to teach the students what a noun is, even if they have secondary school education, because they are not used to thinking about the grammar of their own language.

Lexical tone in verbs

Six students came to this class. We used the same method to teach this as was used with the second primer class, with the addition of a reading exercise. The students had no problem recognising the two tone groups for verbs or learning the hand actions. They had less difficulty than the second primer class in interpreting the pictures. The same student who had had difficulty with the tone marks on nouns, also made several mistakes in the test for verbs, although interestingly he did much better in the dictation exercise (where he scored 5/6) than he did marking tone on verbs in a sentence. It is possible that he is getting confused by the changes in surface tone that happen in context. The other five students had no significant

problems. This was a huge improvement on our attempt at teaching verb tone to the second test class which was also a literate group (see section 3.1).

Other sight words

Only three students were at this class. The sight words were taught in the same way that they were taught to the second primer class, except that more examples were given of the difference between \dot{N} - (*I*) and N- (*same subject*) and we explicitly stated that this is an exception to the rule that tone is marked on the first vowel and showed them that it can result in two tone marks on one word. One of the students had no problems at all learning the sight words and got 100% in the test. The other two seemed to be confused. This was very surprising because they were getting close to 100% in the tests for lexical tone on nouns and verbs, and these sight words were using the same tone marks that they had already learnt. When I talked to them about it later, it turned out that they had not fully understood that the tone marks were still being used to stand for the same tone patterns that they stood for in the nouns. Once they understood this, they had no further problems. It seems that we could still improve on the way that these sight words are taught.

Grammatical tone

The teacher introduced first conditional and then hortative sentences by writing up a sentence on the board that was ambiguous when unmarked for tone and then asking different people to read it in different ways. He then showed them how to mark the sentences so that there would only be one correct way to read it. Two of the participants found this extremely easy and got 100% in the test. The third participant had no problems with the conditional tone, but seemed to have some confusion with hortative tone. It is likely that the problem was in the explanation that was given – possibly he had not understood well which kind of grammatical construction the mark was representing. I later explained it to them by giving them the English equivalent and that helped them to understand what the mark was representing in Chrambo. This method of teaching clearly will not work with a class that is not educated in English, therefore we need to develop an explanation in Chrambo for these grammatical categories that is clear to native Chrambo speakers. This was done with more success in the second primer class (test group 3) than with this group. Interestingly, the two participants who found it easy, seemed to understand what type of grammatical construction it represented just from looking at the examples, without needing very much explanation, whereas the third one who took longer to understand wanted more explanation. This shows the importance of having both adequate examples and adequate explanation to cater for differences in learning styles of the students.

3.4.3 Discussion of test 4

In general the teaching methods used for the second primer class seemed to be helpful and appropriate for this literate group. In fact, in the places where we summarised because we thought the literate group would need less explanation, it turned out that more examples and explanation would have been helpful. The addition of reading exercises went well and seemed to be helpful. The use of the mid tone mark $\bar{\hspace{0.5em}}$ for verbs which match **ghēe** (lexically L tone verbs) was much more successful with this group than the initial proposal of using the L tone mark $\`{\hspace{0.5em}}$ was with the first literate group that we tested. It would have been better to teach them over four or five classes, instead of trying to cover the material in only three lessons. Because we had a limited time period in which to complete the test classes, we covered the material very fast and they did not have a lot of time for each new subject before moving on to the next part – this probably contributed to their difficulty with the grammatical tone which was covered particularly fast. Once tone is introduced to normal literacy classes, it should all be covered more slowly and thoroughly than what we have been able to do in the tests.

The response of the translation team:

The translators have made various comments during and after these classes which can be summarised as follows:

1. The teaching method makes it very easy to learn – it is simpler than they had expected
2. It will take some time to practice before they get used to it
3. It will help to solve some problems that they are having in reading and writing Chrambo
4. One of them is not convinced that it is necessary to mark lexical tone in verbs
5. They are ready to try it out in their translation work and see how it goes

4. Conclusion

During this series of four test classes, we have gradually refined the tone orthography proposal and developed a teaching method for it that we have successfully used to teach a second primer class and a class who are literate in English. We have found the use of key words with hand actions and pictures to be extremely useful in teaching both the second primer and the literate groups to use the tone marks correctly for lexical tone. The methods used for teaching what a noun and a verb are were adequate for the second primer class, but could still be improved on as this was the most difficult part for them. We have put less effort into developing strategies for teaching grammatical tone, mainly because this was the part that was most successful in the first group that we taught the whole system to (test group 2). As a result, this has ended up as our weakest area, so the teaching method for grammatical tone could still be worked on. It

seems to be an area which is easy and helpful for people once they understand it, but it is important that it is taught well to make sure that they have really grasped the meaning of the marks. It will be helpful to develop a good explanation of the conditional and hortative constructions using only Chrambo, and also a memory aid to remember the correct tone marks for them.

There were a lot of limitations to the testing described in this research – the test groups were small, classes met sporadically with several classes cancelled and we only tested one version of the tone proposal at a time, we at no point attempted to compare two different proposals. Also, the author had very limited time which caused us to push the classes to move very fast through the material. Nevertheless, in spite of these limitations, the test classes have enabled us to improve on the initial tone orthography proposal and improve our teaching methods. We have shown that the revised tone orthography proposal is simple and for the most part easy to teach to people of different educational levels. Therefore we recommend that the current tone orthography proposal be adopted by the translation team and incorporated into the primers so as to be more thoroughly tested by a wider range of people.

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Appendix A: The revised tone orthography proposal (May 2012)

Note: Chrambo words written in the proposed orthography are written in bold; words in square brackets are written without bolding in the existing orthography but with all surface tone marked with IPA pitch diacritics– this is for reference only.

1. Lexical tone marking of nouns:

Noun roots in Chrambo can have four possible tone patterns in isolation: H, L, HL and LH (see Luider 2009). This applies to mono-, di- and tri-syllabic nouns. The majority of nouns do not have a syllabic prefix, therefore for the majority of nouns these are the tone patterns of the whole word. Exceptions to this include nouns with the high tone prefix [mí], a very small group of nouns with the low tone prefix [m̀] (there are only two of these in the current database) and compound nouns. It can therefore be taught that there are four main groups of nouns, and a few exceptions. Minimal pairs exist between all four patterns although there are most contrasts between H and L and between HL and LH.

The following system is proposed for marking tone patterns on nouns:

- H nouns: ´ on the first vowel
- L nouns: ` on the first vowel
- LH nouns: ˘ on the first vowel
- HL nouns: unmarked
- Exceptions: unmarked

It is proposed that this system should be used consistently for all nouns, because there is a large number of minimal pairs (54 pairs of nouns in the current database), and it has been observed in literacy classes that when there is no tone marking, readers sometimes struggle to recognise a word because they are reading it with the wrong tone.

Some Examples of minimal tone pairs in nouns:

H	L	LH	HL
lói [lói] <i>loincloth</i>		lǎi [lǎi] <i>chair</i>	lǎi [lǎi] <i>pillar</i>
shíe [shíe] <i>corn</i>		shǐe [shǐe] <i>type of tree</i>	shie [shíe] <i>tail</i>
		lǎ'i [lǎ'í] <i>sweet yam</i>	lǎ'i [lǎ'í] <i>calabash</i>
		mǔuŋ [mǔuŋ] <i>mother</i>	muuŋ [mǔuŋ] <i>child</i>
mbína [mbíná] <i>abcess</i>		mbǐna [mbìnǎ] <i>enemy</i>	
ŋíe [ŋíe] <i>scorpion</i>	ŋìe [ŋìe] <i>centipede</i>		
	lìŋ [lìŋ] <i>sign</i>	lǐŋ [lǐŋ] <i>relatives</i>	
	ŋgrào [ŋgrào] <i>mat</i>		ŋgrao [ŋgrào] <i>handle</i>

2. Lexical tone marking of main verbs

Verbs in Chrambo can have two possible tone patterns which are referred to in the literature as “H” and “L”. In isolation these are actually realised as HL and LHL, however in context there are many different possible surface tone patterns depending on the tense, aspect, mood, etc. because of “grammatical tone” (i.e. because of “floating” grammatical tonal morphemes that have tones but no consonants or vowels that therefore influence the tone of words they are next to). There are 94 minimal pairs currently recorded in the database between 476 H and L verbs⁹. This indicates that the “functional load” of tone for identifying verbs is relatively high, therefore we propose marking lexical verb tone in a way that is consistent for all verbs.

The following system is proposed for marking tone on verbs:

“L” verbs: ̄ on the first vowel¹⁰

“H” verbs: unmarked

Lexical tone marks should always be written on the L tone verbs regardless of tense, aspect, mood, etc (i.e. regardless of the surface tone in the context) because it is important for mature readers that the word image remains constant so that they gradually learn to recognise the words by sight and not by sounding out the various elements.

⁹ This list of minimal pairs includes pairs between monosyllabic H verbs with a short vowel and L verbs with a long vowel because the data suggests that vowel length is conditioned by tone in monosyllabic verbs. e.g. **ka** *pick* and **kāa** *try*

¹⁰ The only significant difference between this proposal and the initial tone orthography proposal that was tested with test group 2 is that in the initial proposal “L” verbs were marked by the L tone mark ̀ on the first vowel. e.g. **ghài** *go*. After this initial test, we changed to using the mid tone mark ̄ for “L” verbs, as described here.

Note on reduplicated verbs:

In some contexts verbs are reduplicated. When reduplicated, they should still be marked for tone according to the above system.

Some Examples of minimal tone pairs in verbs:

H	L
tuon [túòŋ] <i>support</i>	tūon [tùòŋ] <i>burn/roast</i>
ta'a [tá'à] <i>sew</i>	tā'aŋ [tà'à] <i>want/ look for</i>
pi'i [pí'ì] <i>remain</i>	pī'i [pì'î] <i>think</i>
fhi [fhî] <i>resemble</i>	fhī [fhî] <i>thatch</i>
lere [lérè] <i>be quiet</i>	lēre [lêrê] <i>hide</i>

Example sentences:

A tuon ya'o.

he support plantain

He supports a plantain tree.

A tūon ya'o.

he roast plantain

He roasts a plantain.

A ta'a ndwí yi.

he sew clothes his

He sews his clothes.

A tā'a ndwí yi.

he looks for clothes his

He looks for his clothes.

3. Lexical tone marking on other words (i.e. apart from nouns and main verbs)

The number of minimal pairs in other categories is much more limited. Therefore to reduce the overall tone marking, it is proposed that only nouns and main verbs should be consistently marked for tone. Other (non-noun/main verb) minimal pairs which need to be marked should be taught as sight words, and they should follow the tone marking system already taught for nouns. The following sight words are proposed:

n̄- /**m̄-** /**ŋ̄-** [n̄- /m̄- /ŋ̄-] - 1SG prefix

fūon [fúon] – first

gǔ [gǔ] – who

gha [ghâ] – when

ni [ní¹] – p1 today past tense marker¹¹

n- /**m-** /**ŋ-** [ń- /m̄- /ŋ̄-] - same subject prefix

fúon [fúon] – eight/eighth

gò [gò] – you (emphatic)

ghà [ghà] habitual marker

nì [nì] p2 before today past tense marker

¹¹ In the initial tone orthography proposal which was taught to test group 2, we were marking the p1 (today's past tense) marker with the diacritic ^ˆnî. We later changed this proposal, partly because this

If in the future more minimal pairs are found which are ambiguous in context they could be added to this list and marked using the lexical tone marks used for nouns.

4. Grammatical tone marking

There are two cases of grammatical tone which need to be marked and a third which may need to be marked. They are hortative, one of the conditional constructions and perfect. It is proposed that these should be marked on the subject pronoun or noun, because if the reader knows at the start of the clause which type of grammatical construction they are reading, they will be able to read the tone correctly throughout (this system is being used successfully in other Cameroonian languages). Please note that since in grammatical tone marking, the diacritic stands for the grammatical meaning, rather than the tone, which diacritic is chosen to be used is somewhat arbitrary, although in the case of hortative it has been chosen to fit with the surface tone of the singular pronouns.

- A. Hortative: the hortative will be marked by the diacritic $\hat{\text{}}$ over the first letter of the subject noun or pronoun¹². In the case of the 1SG prefix this replaces the lexical tone mark.

e.g.

Khwiṃaṅgaṅ chu ṅa â thɔ.
tortoise say that he come.HORT
Tortoise said that he should come.

Khwiṃaṅgaṅ chu ṅa a thɔ.
tortoise say that he come.PERF
Tortoise said that he (another person) has come.

diacritic is also used for hortative, and partly because we realised it was simpler to add them to the list of sight words and use the system already taught for nouns so that the p1 (today's past tense) marker is unmarked and the p2 (before today's past tense) marker is marked for L tone.

¹² Marking grammatical tone on the first letter of the subject noun or pronoun rather than on the first vowel has the advantage of keeping a consistent word image (i.e. the lexical tone marking will remain consistent in all contexts), however it is unusual amongst Cameroonian languages to mark diacritics over non nasal consonants. It would be more normal to mark them on the first vowel, but this means either replacing the lexical tone mark with the grammatical tone mark and therefore not always maintaining the same word image, or stacking the diacritics which would be difficult to read. We therefore decided to test putting grammatical marks on the first letter, and so far nobody has objected to it.

Khwimaŋgaŋ chu ŋa, “Miŋkunya tho”.
 tortoise say that pig come.HORT
Tortoise said, “Pig should come”.

Khwimaŋgaŋ chu ŋa, “Miŋkunya tho”.
 tortoise say that pig come.PERF
Tortoise said, “Pig has come”.

B. Conditional: there are two possible conditional constructions, one uses the auxiliary verb **ka** and does not need to have any additional marking, the other is marked by the tone on the subject noun or pronoun and a homorganic nasal prefix on the main verb. This second one often causes readers to stumble and therefore should be marked. It will be marked by the diacritic **ˆ** over the first letter of the subject noun or pronoun.

e.g.

M̃ũuŋ a nyia kuoŋ, ñtho ni yichəi, mfe ve.
 COND.mother my cook beans I.come with some ss.give you
If my mother cooks beans, I will come and give some to you.

Mũuŋ a nyia kuoŋ, ñtho ni yichəi, mfe ve.
 mother my cook beans I.come with some ss.give you
My mother has cooked beans and I have come to give some to you.

C. Perfect: for the moment, the perfect construction will not be marked, because we think that it will usually be clear from the context whether the verb form is perfect or present. If at some point in the future it is found that perfect tense is in fact ambiguous even in context, then it could be marked by the diacritic **˜** over the first letter of the subject noun or pronoun.