An Overview of Considerations in Adapting Cued Speech to the Amharic Language
Thomas Shull

In December 2014, Ben Lachman posted a request online asking cuers to record a sample of Amharic in cued English. That request eventually brought me into a project to adapt Cued Speech to Amharic, one of the many languages spoken in Ethiopia. The project included an introductory class held in Addis Ababa. This document will outline the steps and rationale in the adaptation of Cued Speech to the Amharic language. The International Phonetic Alphabet (IPA) is used to show pronunciation. However, cues and English examples are included where possible to assist those unfamiliar with the IPA.

Background

Written Amharic provides useful background for understanding spoken Amharic and the choices made for the adaption. Written Amharic uses a syllabary called the *Fidel.* In the Fidel, a single letter can represent both a consonant and a vowel. So, while English uses two characters to write the word *me* (/mi/), Amharic uses just one letter (ሚ) for the same syllable. This is important because Amharic consonants and vowels are generally not identified separately. Also, once Amharic speakers have learned to read, the written form can figure prominently in the way they analyze their language and its building blocks (i.e., phonology).

Each Amharic letter has seven variants that, in most cases, represent the same initial consonant phoneme with the seven different vowel sounds. Amharic vowels do not have precise English equivalents. This is especially true for the 1st and 6th orders. The 1st order vowel is sometimes characterized as being similar to the schwa (like the first syllable of *above*). It is also sometimes described as being similar to /ɛ/ as in *met*. In actuality, it is likely produced somewhere in between and changes as a result of the surrounding consonants. While English equivalents are not necessary to assign cues, approximates are provided here for ease of reference. Below is the letter ሙ shown as it appears in the Fidel with English approximates and English words below.

1st Order	2nd Order	3rd Order	4th Order	5th Order	6th Order	7th Order
ሙ	ሙ	ሚ	ማ	ሜ	ም	ሞ
/mɛ/	/mu/	/mi/	/mɑ/	/me/	/mɪ/	/mo/
(**me**t)	(**moo**)	(**me**)	(**mo**p)	(**may**)	(**mi**ll)	(**mow**)

General Principles for Adapting Cued Speech

In devising the Amharic adaptation, certain procedures and guiding principles were followed. Several were taken directly from Dr. Cornett's writing on the subject of adapting CS with a few additional considerations:

1. Study the phonetics and assemble a list of phonemes.
2. Group phonemes to ensure maximal visual contrast on the mouth.
3. Assign at least two phonemes to each cue.
4. Use a single cue for a single consonant phoneme.

5. Assign phonemes to cues with maximal consistency with previous CS adaptations.
6. Assign cues to facilitate learning and enhance fluency.

1. Study the phonetics and assemble a list of phonemes.
Spoken Amharic comprises 28 consonant phonemes (not including the glottal stop) and seven vowel phonemes. A glottal stop occurs before lone vowels but does not function as separate phoneme.

2. Group phonemes to ensure maximal visual contrast on the mouth.
Several drafts of cued Amharic were created prior to the current version. Many phonemes were grouped as they are in other cued languages and therefore were likely to be visually contrastive (e.g., /m/, /f/, and /t/). In general, aspects of place and manner of articulation that are available to deaf individuals were used to identify consonants that look alike when speechread (e.g., /t/, /d/, /n/, and /l/). Phonemes that differ only in the presence or absence of voicing required assignment to different handshapes. Additional consideration was given to subtle differences in production that alter the way phonemes appear to the deaf receiver (e.g., the Amharic [t] is produced with the tongue touching the bottom of the upper front teeth rather than the ridge behind the teeth as in English). The seven vowels were categorized as open, round, or flat according to the shape of the lips. Vowels with similarly appearing articulation in the mouth were distributed to different cues. Amharic syllables were speechread and cue read by three cuers (two deaf and one hearing) to evaluate visual clarity within groups of cues. Attention was given to co-articulation, which can reduce contrast even when cued (e.g., 'you' and 'chew' in English). One surprising finding was the absence of rounding for /ʃ/ and /tʃ/ followed by flat vowels (e.g., *she* /ʃi/). Cues that were judged to be ambiguous were reassigned to increase visual contrast.

3. Assign at least two phonemes to each cue.
Cued Speech systems generally represent several phonemes by a single cue (e.g., /h/, /s/, and /r/ are all represented by handshape 3 in American CS). This feature requires the deaf receiver to attend to information found on the hand and the mouth simultaneously. The goal is to enhance speechreading skills among deaf cuers. This procedure was achieved in cued Amharic in all cases except /e/ (resembling a shorter version of the vowel in the English word *say*). This vowel was visually indistinguishable from at least one vowel phoneme in each of the other groups. Therefore, it is the only vowel phoneme assigned to the cheekbone – a placement found in several other adaptations (e.g., cued French). While grouping multiple phonemes to each cue is an important goal, there are several adaptations in which exceptions are found (French, Tagalog, Hindi, Telugu, and others).

4. Use a single cue for a single consonant phoneme.
Amharic has two consonant phonemes that may be misperceived by American English speakers as two separate consonants. In Amharic, the consonants /ts/ (as in *ba<u>ts</u>*) and /ɲ/ (as in *o<u>ni</u>on* or *lasa<u>gn</u>a*) are single phonemes. Therefore, they were assigned to single cues. Specifically, /ts/ is cued with handshape 4 and /ɲ/ with handshape 2. These assignments align with cues for similar phonemes in other cued languages.

5. Assign phonemes to cues with maximal consistency with previous CS adaptations.
Ideally, every phoneme would be consistently assigned to a cue for every language in which it occurs. In some cases, this consistency exists. Currently, all cued languages comprising the phoneme/m/ represent it with handshape 5. However, inconsistencies also exist. The vowel /i/ (e.g., as in *see*) is cued at the corner of the mouth in many languages, but not all. In Spanish and Italian, /i/ is cued at the throat placement. Inconsistencies occur between adaptations used in the United States and England for similar English vowels.

If Cued Speech consistently represented the same phoneme across all adaptations, deaf cuers could simply learn additional cues for new phonemes when learning new languages. However, this is not the case. When deaf cuers with different language backgrounds interact, these inconsistencies can interfere with their ability to recognize phonemes they already know and lead them to misperceive foreign phonemes as ones existing in their native language. Unfortunately, previous adaptations do not take this into account. So, while maximal overlap is a goal, each adaptation is treated as closed system.

When striving for consistency between Amharic cues and other adaptations, two main considerations were taken into account. Cued Amharic should be consistent with other languages with which Ethiopian cuers are likely to come into contact. It should also be consistent with other spoken languages commonly taught in Ethiopian schools.

There are many other languages indigenous to Ethiopia, but Cued Speech has not yet been adapted to them. Other likely contact languages include English and Arabic. All Amharic consonants having English equivalents were consistently assigned to the same cues. Amharic vowels were also assigned to align with English vowel approximates except in the case of /ɑ/ (as in *hop*) and /o/ (similar but shorter than the vowel in the English word *no*). The assignment of /o/, however, is consistent with cued Arabic. The assignment of these vowel phonemes will be explained further in the next section.

It was previously mentioned that /ɲ/ (like *lasa<u>gn</u>a*) is assigned to handshape 2 in cued Amharic. This aligns with cued Spanish (e.g., *ba<u>ñ</u>o*). However, the same phoneme occurs in cued French represented by handshape 6. All previous adaptations were researched to see if a majority represented a phoneme with a particular cue. Ultimately, the goal of maximal visual contrast for the target phonology of cued Amharic took priority.

6. Assign cues to facilitate learning and enhance fluency.
Dr. Cornett recommended that phoneme frequency be taken into account. His goal was to assign the most frequently occurring phonemes to handshapes that are the easiest to make with the hand. He also aimed to distribute high frequency phonemes across different cues. This distribution of phoneme frequency would balance the repetition of handshape occurrence as the language is cued.

Statistics on the frequency of Amharic consonants were difficult to come by. An estimate was made by surveying entries in online lexicons and printed dictionaries. The consonants /v/ and /p/, used only for borrowed words, occur with significantly less frequency.

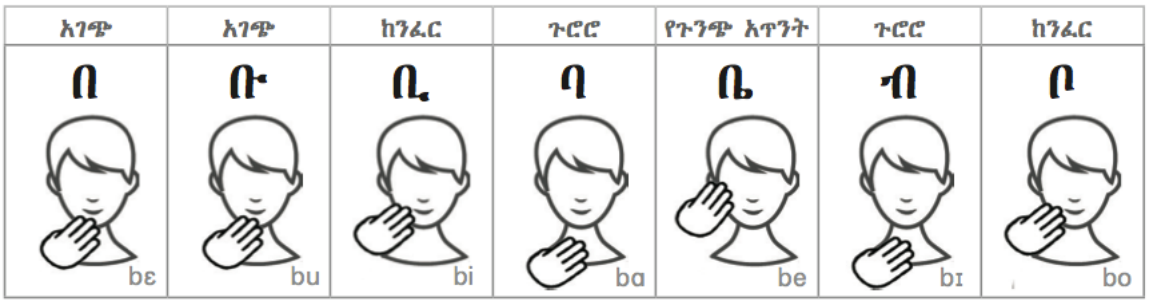
When devising a new adaptation maximizing visual contrast of single phonemes is an obvious priority (i.e., making an unambiguous Cued Speech system). Also important to this process is an investigation of the language delivered via cueing (i.e., the cued language). The production of a cued language is governed by phonological rules, morphology, syntax, etc. As a fluent cued language transliterator, I assessed drafts of the adaptation based on the ease of its delivery. Early drafts placed the vowels /ɑ/ (like *hop*) and /o/ (like no) as side movements (as found in cued American English). In the fluent delivery of this iteration of cued Amharic, flicks occurred with a frequency that was deemed excessive and disruptive to natural delivery.

Amharic allows doubled consonants (geminates) in words. This phenomenon occurs in English only at word boundaries (e.g., bad dog, fish shop). In Amharic, however, this phenomenon meaningfully distinguishes words like *wana* (*swimming*) and *wanna* (*important*). However, the spelling of these words in Amharic is identical: **ዋና**. The difference lies in their pronunciation. Although, aided by context, the difference in pronunciation must be represented as clearly in the cued form as it is in the spoken form. To avoid the excessive occurrence of flicks, the decision was made to assign /ɑ/ and /o/ to placements on the face. According to the current system, *wana* is cued as 6t4t and *wanna* is cued as 6t 4s 4t. The presence of the doubled or longer /n/ in the second example is clearly visible at the side placement to the receiver and can be easily, naturally cued by the sender. While flicks do occur in cued Amharic, they are relatively infrequent and do not interfere with the natural flow of fluent cueing.

Representation of Cues in Printed Materials

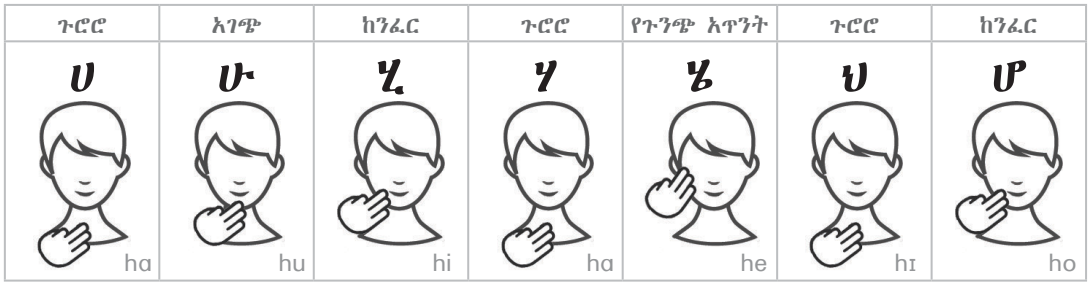
Traditional Cued Speech charts depict handshapes and placements as separate consonant and vowel cues to be combined. This presents a challenge for Amharic because letters generally represent both consonants and vowels together. This section explains how Amharic Cued Speech is displayed in printed materials.

In an introductory cued Amharic class, vowel cues need not be taught in the same way that they are in an introductory cued English workshop. Instead, vowel cues are simply acquired by new cuers while learning consonant cues. This is an instructional advantage. The vowels of cued Amharic are taught in the same order that the Fidel presents them. This order is extremely familiar to Ethiopians as it is how children learn to read and write. In general, this order is /ɛ u i ɑ e ɪ o/ (similar to the vowels in *l<u>e</u>t, L<u>ou</u>, L<u>ee</u>, l<u>o</u>t, l<u>a</u>te, l<u>i</u>t, l<u>oa</u>f*). So the letter ቨ /bɛ/ can be shown with its seven variations and accompanying cues (see figure below).

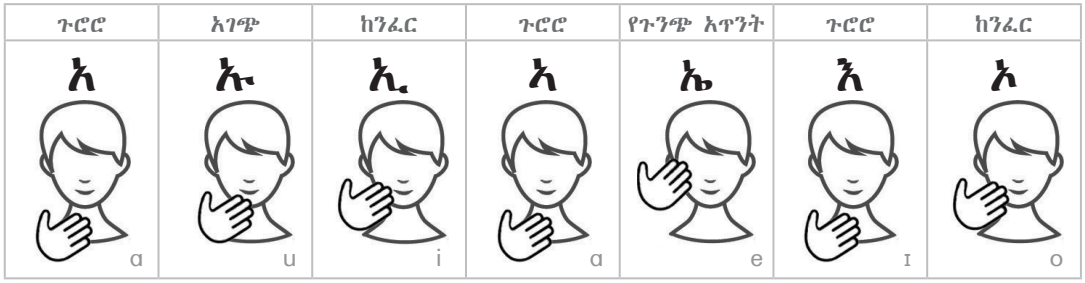


In general, nearly all of the letters of the Amharic Fidel follow this pattern (mɛ mu mi ma me mɪ mo [watch Elsa], fɛ fu fi fɑ fe fɪ fo [watch Samrawit], and so forth).

As with all languages, there are exceptions. There are three letters that represent /h/ with vowels. For these letters, the vowels differ slightly from the previous pattern. One of these letters is shown below:



Notice that the 1st order vowels in two previous figures are different, /bɛ/ and /hɑ/. Also, in the second figure, the pronunciation for **ሀ** (1st order) is identical to **ሃ** (4th order), both /hɑ/. The syllable /hɛ/ does not occur. A similar phenomenon happens for letters that represent lone vowels. There are two of them and they are pronounced identically. One is shown below:



Again, you see that the 1st order vowel, /ɑ/, is identical to the 4th order. There is no lone /ɛ/ vowel. Because these differences occur, materials cannot reliably connect the vowel order with specific Cued Speech placements. Also, lone vowels cannot be represented in print because one Amharic vowel never occurs on its own. Therefore, it was decided to show three sets of letters on the Amharic Cued Speech chart. These encompass the three patterns of cued Amharic vowels. Additionally, the 1st order versions of all letters were grouped to show their assignment to handshape cues. A complete syllabary (with cues) was provided in the back of the student workbook.

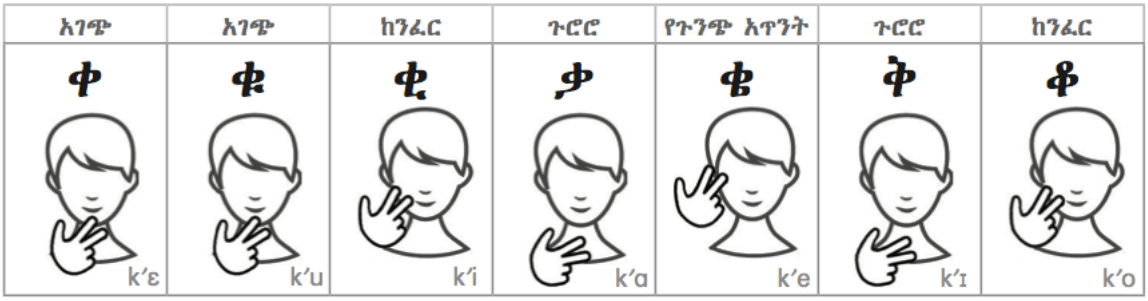
Terminology

Dr. Telahun Gebrehiwot is professor of the Amharic language at Boston University and Yale University. He provided a great deal of assistance both with background on the language and its pronunciation. His advice was invaluable to this adaptation. After thorough discussion with Dr. Gebrehiwot, the name **አማርኛ እይታ** /ɑmɑrɪnjɑ ɪjɪtɑ/ (*Visual Amharic)* was chosen. Amharic translations of established naming conventions (like Cued Speech, supplemented language,

complemented spoken language, etc.) posed challenges in translation, were not available, or were not sufficiently different from existing Amharic terms associated with Ethiopian Sign Language. Additional cueing terms were also worked out in advance. The mouth placement was re-named **ከንፈር** /kɛnfɛr/ (lips) because the Amharic words for *mouth* and *chin* begin with the same letter. By renaming the *mouth placement* to *lips placement*, cue notation can be used more easily during instruction. The Amharic term for *flick* was chosen by our students, who named it **መርገብገብ** /mɛrgɛbgɛb/, which means *blink*.

Handshape 9

In other adaptations of Cued Speech, the greatest number of phonemes represented by a single cue is five with the average being three. The total number of Amharic consonants along with requirements for their distribution warranted the inclusion of a ninth handshape. In most of the adaptations by Dr. Cornett, the ninth handshape is a loose fist with the thumb extended (e.g., as in cued Arabic and cued Polish, or Fonogesty). Cued Farsi, which was adapted more recently, uses an extended pinky with the other fingers retracted. In cued Amharic, the ninth handshape has the thumb up and index and middle fingers extended and spread – handshape 8 with the addition of the thumb (see figure below).



This handshape was chosen for its ease of production and because it was deemed visually contrastive with both handshapes 7 and 8. It was chosen over a fist-handshape so that extended fingers could provide a familiar point of contact with placements. The phonemes assigned to this handshape share a common feature in speech production. The Amharic ejective consonants, also called emphatic consonants, /pʼ/, /tʼ/, /kʼ/, and /tʃʼ/ differ from their non-ejective counterparts in that they are accompanied by a release of air at the level of the glottis. They are often written with an apostrophe (as above) or with a dot under the letter (e.g., ḳ). These are contrastive segments and therefore are separate phonemes from /p/, /t/, /k/, and /tʃ/ (e.g., as in the English words p̲ea, t̲ea, k̲ey, and ch̲ew).

The inventory of handshapes was shown early on to several native Ethiopians to ensure none resembled established gestures, had other culture significance, or had negative connotations.

Advantages of Cued Amharic

As discussed, the written form of Amharic relies on a consonant-vowel syllabary. The written form is generally highly regular. However, there are cases of irregularity. As previously mentioned, doubled consonants that occur in pronunciation are not represented in spelling. Also while all letters represent CV syllables, lone consonants do occur in spoken Amharic. All lone consonants are represented by 6th order letters (i.e., a consonant followed by the vowel

/ɪ/ like *fit*). So, the word ሱፍ (*sunflower*) is spelled with the letters ሱ/su/ and ፍ/fɪ/. However, it is pronounced /suf/. The second vowel, embedded in the written symbol, is not pronounced. So, the reader must rely on an internalized knowledge of words and their pronunciation to know whether any 6th order letter is pronounced as the full consonant-vowel syllable or simply as a lone consonant. This fact was relevant for instruction of cued Amharic. First, lone consonant sounds cannot be reliably depicted with written letters. Secondly, learning to recognize and cue lone consonant phonemes was challenging for hearing participants due to the influence of spelling. It was also surprising to many deaf participants that words could be pronounced differently than they were spelled. Exposure to cued Amharic quickly aided many of the deaf students in a better understanding of Amharic and improved their speech production. Cued Amharic, therefore, provided an immediate benefit obvious to both teachers and students. Future native deaf Amharic cuers, however, will experience a different process as they will acquire this knowledge passively and naturally before learning to read.

The students primarily communicated via Ethiopian Sign Language, which has historical connections to American Sign Language (ASL). Ethiopian fingerspelling, however, represents Amharic consonant-vowel written letters. The regularity of the written form means that fingerspelling, to some degree, aligns with the pronunciation of Amharic words. An early question arose whether Cued Speech was necessary since the manual alphabet already represents syllables visually. There are several advantages of Cued Speech over the Ethiopian manual alphabet:

1. There are irregularities between spelling and pronunciation in Amharic. Fingerspelling does not show doubled consonants. Likewise, it cannot show the pronunciation of lone consonant phonemes, which occur with great frequency.

2. The manual Fidel represents each letter with a handshape and an accompanying movement to indicate the following vowel. Representation of Amharic is generally limited to the word-level. It would be unlikely (and cumbersome) to fingerspell sentences or conversation. Cued Speech allows natural, fluent delivery of Amharic for interaction while reliably representing its phonological form. Cued Amharic provides access for natural language acquisition in its primary form through a visual channel.

3. Fingerspelling does not require deaf signers to attend to information on the mouth. While fingerspelling could be delivered simultaneously with information on the mouth, it does not rely on it. Therefore, there is little incentive for the deaf receiver to attend to anything other than the hand. Cued Speech provides clear advantages for language acquisition, speech production, and speechreading.

Acknowledgments
The students, families, and teachers of the VICKtory School for the Deaf left a lasting impression. They were warm, curious, bright, eager, and loving. We could not ask for a better extension of our cueing community. I want to thank the National Cued Speech Association for assisting to make this project possible and for enabling me to take part.

Dr. Miriam Redleaf had the vision to adapt Cued Speech to Amharic. Without her, cued Amharic would not exist. She provided guidance and funding to make this project happen. Her daughter, Zenebesh Redleaf, was also vital to this project. She assisted closely with its creation, interpreted between Amharic and English, and contributed in countless ways before, during, and after the introductory class.

Ben Lachman offered excellent leadership throughout this project. He was the perfect ambassador for our community. It was a pleasure to co-teach with him and to share this adventure with him.

Many others assisted by providing access to resources, sharing their specialized skills, or contributing their expertise. Great thanks to Dr. Brad Buran, Dr. Polly Earl, Dr. Gregory Lof, Dr. Daryush Mehta, Dr. Abera Nega, Hossana Nega, Hilary Franklin, and Suhad Keblawi.

Resources

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