A Phonology of Ugare

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1. Introduction

Ugare is a Tivoid language spoken by about 6,000 people along the Cameroon-Nigeria border. Ugare speakers call themselves either the Ugare or Bihangeli people, but outsiders generally call them the Messaka people. Neighboring language groups include Tiv to the north and west, Esimbi to the east, Assaka to the southeast, and Oliti to the south. Ugare is closely related to all of these languages, and to other Tivoid languages, but more study needs to be done to determine just how close these relationships are. Probably 75-80% of Ugare speakers live on the Cameroon side of the border, in the Akwaya subdivision of Cameroon's Southwest Province. The Ugare speakers who live in Nigeria are primarily in the Benue and Taraba States. There is also a large settlement of Ugare speakers in the New Town Berumbe district of Kumba in Cameroon's Southwest Province.

We first came to the Ugare people in June of 1992, and we will soon leave for an extended furlough that is due to begin September, 1994. This paper will briefly summarize what we have learned about the Ugare sound system so far. While our knowledge is far from complete, we thought it would be best to record what we know at this point. We hope that we and/or others can build on this knowledge in the future.

2. Syllable Types

An Ugare syllable has the following components: (C)(C)V(C). The simplest Ugare syllables consist of a single vowel; most prefixes are of this form. CV syllables are the most common, and they occur regularly in stems. CVC is also quite common in stems, with the final consonant being either a nasal, liquid, or the voiced velar fricative ɠ.

Palatalized and labialized consonants are the only types of consonant clusters observed in syllable onset. A morphophonemic process in nouns yields the sequence ty, as in ítyá 'stone', making this sequence quite common. Due to a process of linguistic change whereby younger speakers are pronouncing the vowel ɔ as wa, Ugare is developing a set of labialized consonants. We do not treat these labialized consonants as separate phonemes at this point. Ugare also has a set of prenasalized stops: mb, nd, ñj, and ŋg. We treat these as units rather than sequences, and do not include them among the consonant clusters which occur in syllable onset. Treating prenasalized stops as units also removes the only instances of VC syllables in Ugare, since a word like índá 'he saw' is syllabified [í•ndá], not *[ín•dá].

Ugare has a low tone 1st person subject marker m- that can attach to any verb. This acts more like a vowel than a consonant, and is pronounced with the full length of a normal syllable. Interestingly, the m- does not assimilate to the point of articulation of the first stem consonant, so m-kyándé 'I returned' is pronounced [mkyándé], not *[ŋkyándé].

3. Vowels

Ugare has a very complex and messy vowel system. In analyzing Ugare, we have repeatedly found the vowel system to be the most troublesome aspect of its phonology. This situation stems from ongoing phonological change in Ugare. The Ugare vowel system is midway between that of Tiv, from which we assume Ugare has evolved, and Esimbi, a neighboring Tivoid language. On top of this, it has a few innovations of its own. While we have come a long way toward understanding the vowels of Ugare, some individual words are still troublesome to us. This section will describe what we know so far, and mention remaining problems.

3.1 Phones and Phonemes

The following 9 vowel phones are observed in Ugare:

		Front	Central	Back
High	Tense	i	ɨ	u
	Lax	ɪ		
Mid		e		o
Low		ɛ	a	ɔ

All but one of these vowels function as phonemes in Ugare:

	Front	Central	Back
High	i	ɨ	u
Mid	e		o
Low	ɛ	a	ɔ

3.2 Allophones

The phonemes i and e have lax allophones which occur in closed syllables that end with m or n. This is the only environment where ɪ is observed, e.g. [íꜛyîn] 'tooth'. Since ɛ is also observed in this environment, but e never is, we assume that a similar relationship exists between these two vowels. As will be discussed later, ɛ is presently a phoneme in its own right, but it may have been an allophone of e before it became a phoneme. The following rule describes this relationship:

$$i \rightarrow ɪ \ / \ \_\_m,n\$$$
$$e \rightarrow ɛ$$

As mentioned above, the phoneme e is never observed in a closed syllable that ends with m or n. Another restriction on its distribution is that it never occurs after labial, velar, or labiovelar consonants. Instead, the high central vowel ɨ occurs in this position as an allophone:

$$e \rightarrow ɨ \ / \ C[+Labial]\_\_ \ , \ \ C[+Velar]\_\_$$

Interestingly, this allophonic rule also occurs in Tiv, and we expect the former one might as well. Tiv has a six vowel system, where ɨ exists only as an allophone of e, and the lax front vowels, if they exist at all, are allophones of the tense ones. §2.3 will discuss a vowel process happening in Ugare which causes ɛ and ɨ to function as phonemes.

As with the phoneme e, it should be noted that the phoneme ɨ has a lower and more central quality when it follows a labial, velar, or labiovelar consonant, closer to ə. Following other consonants, it has a higher and more front quality, closer to ɪ. This is not a very significant difference, but it is enough to have caused us to mistakenly transcribe ɨ as ɪ for

quite some time until we analyzed the vowel system and sorted out the environments where each of these vowels occurs.

Finally, the phoneme ɔ is increasingly being pronounced as [wa] by Ugare speakers, especially younger ones. This seems to be a process of linguistic change which is presently underway in Ugare. As such, it is not very regular. Some words, such as [yɔ̀] 'snake', are prounounced with [ɔ] by virtually all Ugare speakers. Other words, such as [úkwàn] 'chair', are mostly pronounced with [wa] instead of [ɔ]. Still other words are pronounced with either [ɔ] or [wa] by different speakers, or even by the same speaker at different times. An example is [šɔ̀m ~ šwàm] 'machete'. At this point, we are not aware of any other Tivoid language where this ɔ/wa alternation occurs; it seems to be an Ugare innovation.

In a similar vein, there are two Ugare verbs where the sequence [ya] functions like a single vowel: [kyándé] 'return' and [fyàg] 'trap'. A morphophonemic process that will be described in the next section has the following effect on these verbs:

Word	Gloss	Word	Gloss
kyándè	Return!	á-kɨndɨ́	they (people) returned
fyâg	Trap!	á-fɨ̵g	they (people) trapped

Note how [ya] becomes [ɨ] in the second column. In this same environment, [ɔ ~ wa] would become [u], again functioning as a single vowel. Since we only know of two verbs where [ya] acts like a single vowel, more data is needed to determine whether this is a similar process to that of [ɔ] and [wa], or whether there is some other explanation. If it is functioning as a single vowel, then the vowel it imitates is [a] (this will become more clear below).

3.3 Morphophonemics

Ugare has an interesting morphophonemic vowel process which occurs whenever the prefix (C)a- is added to any type of stem. The vowel of the prefix changes to match the height, and sometimes also the place, of the first stem vowel. The stem vowels then all become high and take on the place of the first stem vowel. The following verb data illustrate this process:

/á-/

Verb	Gloss	Verb	Gloss
í-ší	they (animals) stayed	é-ší	they (people) stayed
í-kúndú	they (animals) jumped	é-kúndú	they (people) jumped
í-lé	they (animals) cried	ɛ́-lí	they (people) cried
í-vɛ́m	they (animals) accepted	ɛ́-vɨm	they (people) accepted
í-mɨg	they (animals) moved	ɛ́-mɨg	they (people) moved
í-tšó	they (animals) sold	ɛ́-tšú	they (people) sold
í-vá	they (animals) came	á-vɨ	they (people) came
í-kɔ́lɛ̂	they (animals) caught	á-kúlú	they (people) caught

The left column shows verb stems in their underlying forms. As shown in the right column, when the prefix á - is added, a number of changes occur. First, the prefix changes to agree with the height of the first stem vowel: before a high stem vowel it is e -, before a mid stem vowel, it is usually ɛ - (though some younger speakers are using o - before o -), and before a low stem vowel, it is a -. In addition to the prefix changing, all vowels in the stem become high and take on the place of the first stem vowel.

It is interesting to note the behavior of stems which contain e, ɛ, and ɨ in the above chart. As expected, e behaves like a mid front vowel; the prefix becomes ɛ and the stem vowel becomes the high front vowel i. However, while ɛ and ɨ could be considered allophones of e in the examples shown, they instead act like central vowels instead of front vowels: the prefix becomes ɛ as expected for a mid vowel, but the stem vowel becomes the high central vowel ɨ. This morphophonemic process, then, treats these allophones differently than it does e.

In fact, this process is really the basis of analyzing ɛ and ɨ as phonemes in their own right rather than simply as allophones of e, because it has broadened their distribution. Instead of being limited to syllables closed with m or n, ɛ is now found in prefixes, just as e is. And instead of being limited to following labial, velar, or labiovelar consonants, ɨ is now found after any consonant. While we have yet to find any minimal pairs between e / ɛ or e / ɨ, reasonably good contrast can be shown. For example, consider the right column of the following chart:

Verb	Gloss	Verb	Gloss
í-lé	they (animals) cried	ɛ́-lí	they (people) cried
í-lǐ	they (animals) locked	é-lǐ	they (people) locked

Apart from the tone difference, which is caused by these two verb stems belonging to different verb classes, the only other difference in the forms is the prefix. It should be possible to find two verbs in the same class which differ only in that one has a stem vowel of e and the other i. If such a pair were found, then adding the subject marker a - would yield a minimal pair differing only in that one has a prefix of e and the other a prefix of ɛ.

It is not possible to find a minimal pair between e and ɨ in Ugare at this point. Word initially, only e is found, simply because Ugare only has prefixes of the form (C)i -, (C)a -, and (C)u -. Within a stem, there is no contrast after labial, velar, or labiovelar consonants, as discussed above in §2.2. While both e and ɨ can be found after the same stem consonants, there will never be the same prefix on this stem; e is found when the prefix is o -, i -, or u -, and ɨ is found when the prefix is a -. So the closest thing to a minimal pair at this point is something like the following:

    úté   'tree'
    átɨ   'stones'

Nevertheless, it would be strange to consider ɨ an allophone of e in the Ugare word for 'stones', since it has a very different environment and origin than the high central vowels which are allophones of e. For this reason, we have chosen to treat ɨ as a phoneme in its own right when it is produced by this morphophonemic process.

It should be noted that this vowel process is not yet complete in Ugare. For example, it is much more regular in verbs than in nouns. In some nouns, the prefix adapts to the height

of the stem vowel, but the stem vowels have not yet begun to go high. Also, as noted above, some younger speakers are using o ˉ before a stem vowel of o ˉ, while most older speakers still use ɛ ˉ in this context. In Esimbi, a closely related Tivoid language, this vowel process has become very complete and regular, giving an indication of where Ugare may be headed. The Esimbi vowel system has been described by Hyman (1980).

3.4 Vowel Length

A number of words in Ugare have vowels that are pronounced with a long duration. Since sequences of dissimilar vowels are not observed in Ugare unless there's an intervening consonant, it seems like these prolonged vowels should be analyzed in terms of vowel length rather than sequences of identical vowels. In some words, the long vowels have a single tone (either high or low), while in others they have a rising or falling tone. Rising or falling tones on long vowels can simply be explained by the morpheme having a high-low or low-high tone pattern which spreads over the long vowel. Here are a few examples of words with long vowels:

ítɛɛ́lí	'they greeted'
góólù	'Take!'
ùkúúlú	'fingernail'
vàpùúlù	'mushrooms'

3.5 Residue

Younger Ugare speakers are showing a great tendency to drop the final vowel of words if the preceding consonant is a nasal or liquid. This tendency is greatly reduced when the final vowel has a high tone, but some speakers even drop it in this situation. As a result, it can be difficult to evaluate which vowel was really present in such words, even with older speakers. It usually has the quality of e, ɛ, ɨ, or sometimes even u. Interestingly, the vowel often shows up clearly when a different prefix is added. For example, consider the following forms of the word 'water':

O-mɔl(ɛ̀)	'water/stream',
í-mɔlɛ́	'streams'
á-mùlú	'in water'

In some words, the final vowel seems to have been lost completely; no speakers pronounce it at all. In other words, only the older speakers pronounce the vowel. Our suspicion is that the vowel used to be there in all words, as it presently is in Esimbi. However, further research needs to be done to identify the final vowels in these cases, and decide whether they should be written in an orthographic representation.

Another perplexing question is how to represent e, ɛ, and ɨ in an orthography. It is certainly necessary to write e, and the contrast between e and ɛ in prefixes seems to indicate that ɛ should be written in prefixes. But should ɛ be written in syllables closed with m or n, in which case it could be analyzed as an allophone of e? It also seems wise to write ɨ in stems where it has resulted from the addition of the prefix a ˉ. But should it also be written in environments where it could be analyzed as an allophone of e?

Finally, it would be interesting to consider whether the concept of advanced/retracted tongue root would help the analysis of Ugare vowels. While we haven't really checked into this, it seems like stems with more than one syllable contain limited combinations of vowels. It might be possible to explain these combinations by categorizing Ugare vowels as either advanced or retracted tongue root and seeing whether the vowels of at least some types of stems are limited to all advanced or all retracted tongue root. Here's a possible categorization:

Advanced	Retracted
i, e, a, u, o	ı, ɛ, ɨ, ɔ

4. Consonants

Ugare's consonants are the most straightforward part of its sound system. There are a few curious points, which will be noted, but very little that presents problems for analysis.

4.1 Phones and Phonemes

The following consonant phones are observed in Ugare:

	Bilabial	Labiovelar	Labiodental	Alveolar	Alveopalatal	Palatal	Velar
Vl. Stop	p	kp		t			k
Vd. Stop	b	gb		d			g
Prenasal. Stop	mb			nd	ñdž		ŋg
Implosive	ɓ						
Vl. Affricate				ts	tš		
Vd. Affricate				dz	dž		
Vl. Fricative			f	s	š		
Vd. Fricative			v		ž		ǥ
Nasal	m			n	ñ		ŋ
Liquid				r,l			
Semivowel	w					y	h

A set of labialized and palatalized consonants is also observed in Ugare. While these will be discussed in following sections, they have been omitted from the chart in order to keep it simpler.

The following chart lists only the Ugare consonants which we have analyzed as phonemes:

	Bilabial	Labiovelar	Labiodental	Alveolar	Alveopalatal	Palatal	Velar
Vl. Stop	p	kp		t			k
Vd. Stop	b	gb		d			g
Prenasal Stop	mb			nd	ñdž		ŋg
Vl. Affricate				ts	tš		
Vd. Affricate				dz	dž		
Vl. Fricative			f	s	š		
Vd. Fricative			v				g̱
Nasal	m			n	ñ		ŋ
Liquid				l			
Semivowel	w					y	h

4.2 Allophones

The voiceless labiovelar is optionally, but quite commonly, pronounced [kɓ] word medially, or [ɓ] word initially, as in the following words:

[úkpὲ ~ úkɓὲ]	'fufu'
[ὲkpɨlὲ ~ ὲkɓɨlέ]	'tomorrow'
[kpàtémâ ~ ɓàtémâ]	'cat'

Although Ugare has a voiced alveolar affricate [dz], it lacks the voiced alveolar fricative [z]. Ugare speakers seem quite unaware that this is an affricate rather than a fricative; they regard their [dz] just as though it were a [z], and are naturally inclined to write this sound with the symbol ' z '.

The alveopalatal fricative [ž] is an allophone of [y] that occurs after the high front vowel [i]. This vowel has a tendency to optionally palatalize just about any consonant, and the optional "palatalization" effect on [y] seems to be a slight raising of the tongue so that the air flow is somewhat restricted and a fricative effect occurs.

The voiced velar fricative [g̱] is pronounced clearly and distinctly in some cases, but in other cases it is quite faint and may only be realized as a lengthening of the previous vowel. Interestingly, in some such cases Esimbi cognates have lost the [g̱] in favor of a long vowel. While these two strengths of pronunciation may be a result of language change, this change does not seem to be as systematic as other changes occurring in Ugare. Younger speakers are more likely to pronounce the [g̱] than older speakers in some words, e.g. [ákpɨndé(g̱)], 'scorpion'. But in certain other words, the older speakers are more apt to pronounce the [g̱].

The Ugare liquid is somewhat problematic. It functions as a single phoneme, but its phonetic quality is rather like a lateral flap. Stem initially, the lateral component is stronger, but in stem medial or final position, the flap component is stronger. Nothing resembling a minimal pair or even good contrast between [l] and [r] can be found in Ugare. Another interesting observation is that Ugare monolinguals can't distinguish [l] and [r] in English; they pronounce both as [l]. This can be seen when older speakers or young children just learning English try to pronounce words like 'room' or 'rice'. We have chosen [l] for the phoneme chart because the lateral component is strongest in syllable, stem, and word initial

positions. The problematic aspect of this phoneme is convincing Ugare speakers who have been exposed to English or Tiv spelling that they don't need to write 'r'. While they agree that their language has no contrast between [l] and [r], some want to use 'r' stem medially or finally, simply because they've seen it done in Tiv. (Tiv has the same allophonic relationship between [l] and [r] as Ugare, but both allophones are written in the Tiv orthography.)

4.3 Morphophonemics

Ugare nouns undergo a process whereby the first stem consonant is sometimes palatalized when the prefix (C) i - is added. This is obligatory when the stem begins with t, but it is optional and less common with other consonants. The following singular/plural pairs illustrate this process:

Singular		Plural	
úté	stick	(v) ítyé	sticks
ítyá	stone	átɨ́	stones

We have found a couple of nouns whose stems begin with vɛ and which undergo a similar palatalization process:

Singular		Plural	
íꜛvyɛ́ndè	breast	éꜛvíndì	breasts
ívyɛ̀mbɨ́n	palm beetle grub	évìmbín	palm beetle grubs

More research is needed to see if palatalization is as regular for stems which begin with v (or perhaps vɛ) as it is for those which begin with t.

Finally, as mentioned in §3.2, two Ugare verbs whose stems begin with ya lose this y when the prefix a - is added (see chart below). This is probably a vowel process, but it is possible that more research will show it to be a consonant palatalization process.

Word	Gloss	Word	Gloss
kyándè	Return!	á-kɨndɨ́	they (people) returned
fyâg	Trap!	á-fɨg	they (people) trapped

4.4 Syllable Distribution

Ugare consonants fall into three categories, according to their distribution within syllables. Most consonants only occur syllable-initially. Nasals, liquids, and the voiced velar fricative [g] can also occur syllable finally; and the semivowels [w] and [y] can also occur in the second position of a syllable-initial consonant cluster. Note that an alternative analysis is to recognize a set of labialized and palatalized consonants, and then conclude that Ugare has no syllable-initial consonant clusters. This is a reasonable analysis, and it may be preferable to treating labialized and palatalized consonants as sequences. Such an analysis reduces the number of consonant categories from 3 to 2, and seems to make sense in light of the ongoing process whereby [ɔ] is changing to [wa], creating a whole set of labialized consonants.

4.5 Residue

Unlike most aspects of Ugare, the consonants are straightforward enough that we don't have much residue to report. The main area where more thought needs to be given is the labialized and palatalized consonants. There are some advantages to analyzing these as unit phonemes rather than sequences of Cw or Cy, and perhaps this is the preferable analysis. More data needs to be examined to see what the best approach would be. Also, Tiv has a fairly widespread process of consonant palatalization after i, but this seems to have become much more limited in Ugare. It would be good to take a look at other Tivoid languages to see whether any patterns can be observed that would help in the analysis of Ugare.

Finally, while the analysis of the Ugare liquids seems pretty straightforward, more research is needed to see whether it would be preferable for the orthography to use 'r' in addition to 'l'.

5. Tone

Ugare is a tonal language, and we've found it impossible to really understand any aspect of its grammar without first getting a handle on the tone system. Tone is used not only to distinguish lexical morphemes, but also to make grammatical distinctions such as tense in the verb phrase and association (ownership, etc.) between two nouns.

Assuming Ugare has descended from Tiv, it is worthwhile to briefly mention the Tiv tone system before examining that of Ugare. Tiv has a two tone system, with low tones causing automatic downstep. Upstep isn't attested in the papers we've read on Tiv, though it is common in Tivoid languages, so it would be interesting to see whether researchers missed upstep or whether the other Tivoid languages have added upstep as an innovation. Also fairly common in Tiv are floating low tones at morpheme boundaries, which cause downstep. The Tiv orthography represents three level tones, with a downstepped high being treated as a mid. For more information on the Tiv tonal system see Arnott (1964) and Abraham (1940).

5.1 Tones

Ugare has two tones, high and low. These sometimes end up on the same syllable, producing a rising or falling tone. A two-way contrast is quite easily observed in Ugare, as in the following pair of words:

| Low tone | ìgò | pig |
| High tone | ígò | pigs |

Such a two-way contrast is evident throughout Ugare. For example, the entire noun class system may be divided into a set of classes with low tone concord and another with high tone concord. Many agreement markers have only two variants: one for classes with low tone concord, and another for classes with high tone concord. Similarly, Ugare has two classes of verbs, which differ in their tonal morphology. One class has a low tone somewhere on the stem in every form, and the other class has a high tone somewhere on the stem in every form.

5.2 Tone Processes

Two tone processes are observed in Ugare: downstep and upstep. Both are quite common. Downstep occurs in all types of Ugare words. Upstep occurs in both nouns and verbs, but we aren't sure yet whether it occurs in other classes of words.

Ugare has an automatic downstep caused by low tones. This occurs both within a word and across word boundaries. As a result, the sequence high-low-high always comes out as high-low-downstepped high:

Utterance	Tone Pattern	Gloss
(v)ínùnú	⁻ _ ⁻	birds
úkìhí	⁻ _ ⁻	worm
úfò úsɔ́hɔ́	⁻ _ ---	animal's hair

Like Tiv, Ugare has some words which seem to contain floating low tones at morpheme boundaries, yielding a downstep. This is not very common in Ugare, but we have found two nouns which show this phenomenon:

Word	Gloss
á↓kpɨ́m	chiefs
(v)á↓nɛ́lɛ́	women

Upstep stems from morphophonemic processes in Ugare; the clearest cases all involve upstep of high tones. We assume floating low tones are the cause, but more analysis is needed before we'll be sure. Several verb forms show upstep in Ugare. The simplest example is the upstep of high tone subject markers in the perfect tense:

	Utterance	Tone Pattern	Gloss
Past Tense	ísɔ́hɔ́ íkúndú	--- ---	The animals jumped.
Perfect Tense	ísɔ́hɔ́ ↑íkúndù	--- ⁻⁻_	The animals have jumped.

Note the upstep before the subject marker in the perfect tense; following high tones are upstepped until a low tone occurs to cancel the upstep. In nouns, upstep is observed whenever a high tone prefix is added to a noun whose stem has a high low tone pattern:

Singular		Plural	
níñà	horse	á↑níñà	horses
ú↑nêm	tongue	í↑nêm	tongues

5.3 Tone in Nouns

Monosyllabic and disyllabic noun stems in Ugare show four basic tone patterns: high, low, high-low, and low-high. The following chart gives examples of each of these tone patterns (note that prefixes are separated from stems by a dash '-'):

	Monosyllabic		Disyllabic	
	Word	Gloss	Word	Gloss
High	ú-té	tree	ú-gɛ́gɛ́	calabash
Low	ú-fò	hair	ù-tùtù	spiders
High Low	à-nû	salt	O-níñà	horse
Low High	í-fǐ	rats	ú-nɛ̀mbɨ́n	bat

Noun stems which have more than two syllables can exhibit quite a variety of tone patterns, though the first two syllables generally have only the four patterns shown above. We assume these longer stems were generated by compounding, so that the wider variety of tone patterns is a result of combining stems that originally had only the basic four patterns shown above.

A number of morphophonemic tone changes can be observed in Ugare noun stems as various prefixes are added. As mentioned in §5.2, noun stems that have a high-low tone pattern upstep when a high-tone prefix is added. This seems to be the case for all nouns, regardless of class.

Some noun stems have a low tone when there's no prefix attached, but a low-high pattern with a high tone prefix. This could be analyzed in one of two ways: either the prefix is causing the stem to change from low to low-high, or the lack of prefix is causing a low-high stem to become low (i.e. the final high tone isn't realized). At this point, we prefer the latter analysis, because cognates in Esimbi have a low-high tone pattern in isolation. Here are a few examples of this phenomenon:

Singular		Plural	
nɛ̀lɛ̀	man/person	(v)ɛ́nɛ̀lɛ́	men/people
nùnù	bird	(v)ínùnú	birds
fǐ	rat	ífǐ	rats
zɔ̀hɔ̀	ground	ízɔ̀hɔ́	grounds
mɔ̀lɛ̀	water	ímɔ̀lɛ́	waters/streams

In a similar vein, some noun stems have a low tone in isolation, but a high-low tone pattern with a high tone prefix. All the examples we've seen so far come from the 5/6 gender pair, so this phenomenon might be specific to this gender. Here are some examples:

Singular		Plural	
bɨ̀hà	wound	í↑bɨ́hà	wounds
šàlɛ̀	gizzard	í↑šálɛ̀	gizzards
tsòlɛ̀	rat mole	í↑tsólɛ̀	rat moles
tsò	boat	í↑tsô	boats
yɔ̀	snake	í↑yɔ̂	snakes
zɛ̀	road	í↑zɛ̂	roads

Finally, some noun stems appear to be toneless. In isolation they have a low tone by default, but when a high tone prefix is added, the stems become high:

Singular		Plural	
sù	fish	ísú	fishes
šɔ̌m	machete	íšɔ́m	machetes

For further information on the Ugare Noun Class system, see *The Ugare Noun Class System*, which was written about the same time as this paper.

5.4 Tone in Verbs

As mentioned in §5.1, Ugare verbs can be divided into two classes, according to their tonal morphology. We are tentatively calling these high tone verbs and low tone verbs, though these names may need revision at some point after we do more research. Whatever the name, this classification is quite significant because each tense/aspect form has a characteristic tone pattern that differs for verbs of the two classes. To illustrate, consider the following verb forms:

	High Tone Verb		
	Verb	Tone Pattern	Gloss
Past Tense	í-kúndú	‾ ‾ ‾	they (animals) jumped
Perfect Tense	↑í-kúndù	↑‾ ‾ _	they (animals) have jumped
Infinitive	ù-kúndù	_↓‾_	to jump

	Low Tone Verb		
	Verb	Tone Pattern	Gloss
Past Tense	í-sàndé	‾_↓‾	they (animals) ran
Perfect Tense	↑í-sàndè	↑‾ _ _	they (animals) have run
Infinitive	ù-sàndè	_ _ _	to run

The tone patterns shown are used by all members of these classes. So, any other high tone verb has identical tone patterns to those shown for the verb 'to jump', and any other low tone verb has the patterns shown for 'to run'.

There is quite a bit to the Ugare verb phrase. Upstep and downstep are common, and there are many different tense/aspect forms. We still have a lot of research and analysis to do in this area, but we've written up what we know so far in *The Ugare Verb System*.

5.5 Residue

Overall, we feel pretty comfortable with tone in Ugare. The main area of residue is to identify the floating tone morphemes underlying both noun morphophonemics and the various tense/aspect forms in the verbs. If floating low tones are responsible for the upsteps we have observed, it would be good to discover when floating lows cause upstep vs. downstep.

6. Tentative Orthography

We have not yet finalized an Ugare orthography, nor have we written an orthography statement for Ugare. Nevertheless, we have been writing Ugare informally for some time, as well as discussing orthography issues with the Ugare Language Development Association, a group of Ugare speakers responsible for overseeing development of their language. This section will describe the progress we've made so far toward an orthography, and highlight areas where more work is needed.

6.1 Vowels

We are presently using the following symbols to represent Ugare vowels:

	Front	Central	Back
High	I , i	ɨ , ɨ	U , u
Mid	E , e		O , o
Low	Ɛ , ɛ	A , a	Ɔ , ɔ

For most vowels, the phonetic, phonemic, and orthographic representations are identical. However, ' I , i ' is used for both allophones [i] and [ɪ]. By far the most problematic is / e / and its allophones. Whenever [e] occurs, it is written with ' E , e '. This seems to be the right approach, and shouldn't need any revision. The other allophones, which are also phonemes in their own right, are more difficult.

At this point, we are writing [ɛ] as ' Ɛ , ɛ ' wherever it occurs. It seems clear that this is the right approach when [ɛ] occurs as a morphophonemic variant of the prefix a -. In this position it contrasts with [e], and ambiguity would result if we didn't write it differently. However, [ɛ] seems to have been working its way up to phoneme status for some time, and it now shows contrast with [e] in just about every position except in a closed syllable (where only [ɛ] is found). For example, consider the word [ɛtɛkɛ] 'stool'. In this word, [ɛ] occurs in the prefix, in the stem, in open syllables, and after both alveolar and velar consonants. As mentioned, the occurence of [ɛ] in the prefix here contrasts with [e] in the prefix of other words. After the alveolar, [ɛ] contrast with [e] as seen in words like [úté] 'stick' or [ùtè] 'to carry'. After the velar, [ɛ] contrasts with the allophone [ɨ], as in the word [ùkɨŋ] 'to trap/corner'. The only remaining question is whether to write [e] or [ɛ] in a closed syllable, where contrast is neutralized. Our leaning is to always write [ɛ], simply because this is what is observed phonetically. We do not yet know how native speakers will react to this though. For example, consider the singular and plural imperatives of the verb 'to carry':

	Word	Gloss
Singular Imp.	tê	Carry!
Plural Imp.	tên	Carry!

Would it confuse native speakers to see the vowel change when the suffix - n is added? We need to check this out further.

The high central vowel is more perplexing. At this point, we are writing it only when it results from the morphophonemic process of adding the prefix a -. When it occurs as an allophone of [e], we are writing 'E, e'. So we are writing a word such as [únɛmbɨn] 'bat' as 'únɛmbén', but [ámbɨlɨ] 'they (people) passed by' as 'ámbɨlɨ'. This seems a bit inconsistent, since the [mbɨ] is written as 'mbé' in the first case, but 'mbɨ' in the second. It would be good to briefly discuss the other two alternatives.

First, we could write [ɨ] as 'E, e' everywhere that it occurs. Actually, native speakers seem rather inclined toward this approach. Apparently the morphophonemic process which has produced the high central vowel is recent enough that they still seem to view it as an allophone of [e] and aren't terribly aware of its phonemic status. This seems a bit messy to us, because words where an obvious pronounciation change has occurred would then be written identically, as in the following:

Phonetic	Orthographic 1	Orthographic 2	Gloss
[ísàndé]	ísandé	ísandé	they (animals) ran
[ásɨndɨ]	ásɨndɨ	ásendé	they (people) ran

In this chart, the column labeled 'Orthographic 1' shows how we are presently writing this word, and 'Orthographic 2' shows how it would be written if the high central vowel is represented by 'E, e' everywhere. Note that this second approach uses the same symbol 'e' for writing the final vowel in the word, even though its pronunciation changes quite noticeably when the subject marker a - is added.

At the other extreme, we could write [ɨ] as 'Ɨ, ɨ' everywhere it occurs. It is doubtful that native speakers would accept this approach, because they simply don't notice the difference between [e] and [ɨ] when they occur in their respective environments ([ɨ] after a labial, velar, or labiovelar consonant, and [e] everywhere else).

To find the best way to write [ɨ], we need to further test the preferences of native speakers, and see which approach seems most natural to them and easiest for them to learn.

6.2 Consonants

We are presently using the following symbols to represent Ugare consonants:

	Bilabial	Labiovelar	Labiodental	Alveolar	Alveopalatal	Palatal	Velar
Vl. Stop	P,p	Kp,kp		T,t			K,k
Vd. Stop	B,b	Gb,gb		D,d			G,g
Prenasal. Stop	Mb,mb			Nd,nd	Nj,nj		Ŋg,ŋg
Vl. Affricate				Ts,ts	C,c		
Vd. Affricate				Z,z	J,j		
Vl. Fricative			F,f	S,s	Sh,sh		
Vd. Fricative			V,v				Gh,gh
Nasal	M,m			N,n	Ny,ny		Ŋ,ŋ
Liquid				L,l			
Semivowel	W,w					Y,y	H,h

There isn't a whole lot to comment on with the consonants; they are mostly pretty straightforward. The one thing that has led to some disagreement among Ugare speakers is whether to write both allophones of /l/. At present, we just write 'l' whenever either [l] or [r] occurs, but some speakers want to write 'r' when this allophone occurs. As noted in §4.2, these speakers are ones who have been exposed to Tiv and English. While English has both of these sounds as phonemes, Tiv has them in the same allophonic relationship seen in Ugare. We expect that speakers who haven't learned to read Tiv or English might be better served by an alphabet that uses only 'l'. Nevertheless, it would be worth checking to see which approach is more natural and easier for people to learn to read.

6.3 Tone

We are presently writing tone by placing the following diacritics over vowels:

´	High
(unmarked)	Low
^	Falling
ˇ	Rising

At this point, we do not write downstep or upstep at all; a high tone is always written with an acute diacritic, whether it is a normal, downstepped, or upstepped high. This actually seems to be working quite well, simply because whenever downstep or upstep occurs in Ugare, there is almost always other information in the context that can help to disambiguate the word. For example, consider the past and perfect tenses of the following verbs:

Phonetic	Orthographic	Gloss
ísáɠ	íságh	they quarreled
↑ísâɠ	ísâgh	they have quarreled
ísǎɠ	ísǎgh	they untied
↑ísàɠ	ísagh	they have untied

Although there's an upstep before the subject marker in the perfect tense, there are enough other tonal clues to distinguish these four verb forms without writing the upstep. In fact, this holds for all cases of upstep in the verb phrase. Where upstep occurs in nouns, it is totally predictable; stems with a high low tone pattern upstep whenever a high tone prefix is added. The one case where upstep is important is in distinguish certain pairs of nouns and verbs. For example, consider the following pair:

Phonetic	Orthographic	Gloss
í↑vâ	ívâ	broom
↑ívâ	ívâ	they have come

Note that in the noun, upstep precedes the stem, while in the verb, upstep precedes the subject marker. In the orthography, however, both have an identical representation. To differentiate such pairs orthographically, we'd need to represent three tonal levels, with an upstepped high

tone written differently from a normal high tone. But we prefer to avoid doing this if possible. Since nouns and verbs have very different distributions syntactically, it is likely that such pairs of words will not be confused in the context of a sentence.

Automatic downstep in Ugare should need no representation in the orthography since it is totally predictable, and the low tones which cause it are visible to the reader in the preceding syllable. As noted in §5.2, we have found two nouns with floating low tones at the beginning of their stems, causing a non-automatic downstep. Since this appears to be very uncommon in Ugare, we expect to be able to get away without writing it. To represent this downstep orthographically, we'd again need to write three levels of tone, and it doesn't seem necessary at this point to complicate the orthography for these few oddball nouns.

6.4 Alphabetical Order

We have not yet discussed alphabetical order with the Ugare Language Development Association, but our working approach will be mentioned here. So far, we are alphabetizing in this order:

```
Aa Bb Cc Dd Ee Ɛɛ Ff Gg Hh Ii Ɨɨ Jj Kk Ll Mm
Nn Ŋŋ Oo Ɔɔ Pp Ss Tt Uu Vv Ww Yy Zz
```

To alphabetize vowels with various tone marks, we propose the following order:

```
a á â ǎ
```

6.5 Word Breaks

We need to do more thinking on the topic of word breaks, but three situations will be discussed here because we have done some thinking about them.

At this point, we are writing subject markers as part of the verb or auxiliary they precede. The main reason for this is that the subject marker causes morphophonemic changes in the verb stem, which are also caused by other prefixes (such as the â - prefix that indicates habitual aspect). Since many Cameroon orthographies keep the subject marker separate from the verb, perhaps this approach should be considered as well. However, the morphophonemic vowel process of Tivoid languages is rather unique, and it may justify writing the subject marker and verb as one word.

Similarly, there is a preposition á in Ugare which means 'in'. If the following noun has a null prefix, this preposition causes the same morphophonemic changes to the noun as a prefix does. As a result, we are considering whether this should be written together with the noun as one word. The following chart shows these possibilities:

'water'	'in water'	
	with a space	without a space
mɔ̀lɛ̀	á mùlù	ámùlù

The issue here is whether stems that undergo morphophonemic changes should be written together with the element that causes the changes, or whether it is acceptable to have a space between them. We don't yet know the answer to this.

Finally, the associative marker seems to be written separately from the two nouns in the orthographies we're familiar with. However, Ugare has a very abbreviated associative marker. It is null for noun classes with low tone concord, and a floating high tone for noun classes with high tone concord. For the high tone case, it will be written as a high tone on the first syllable of the second noun (this is only visible if the second noun had a low tone on its first syllable). But when the second noun belongs to a class that uses a null noun prefix, and the stem begins with a consonant, Ugare seems to add a vowel prefix to the noun. While it is always u-, i-, or a-, we need to do more research to see what governs the choice of vowel. Anyway, it seems sensible to write this epenthetical vowel as though it were a prefix on the second noun, giving it a high tone if the head noun belongs to a class with high tone concord, and a low tone otherwise. The following chart shows examples of this proposal:

Word	Gloss	Phrase	Gloss
nɛlɛ	man	yoyo unɛlɛ	the man's bee
		íyó únɛlɛ	the man's bees
fi	rat	yoyo ifi	the rat's bee
		íyó ífi	the rat's bees

6.6 Residue

The next step will be to read other orthography statements, and begin to write one for Ugare. This will involve discussing issues such as alphabetization and word breaks with Ugare speakers and checking to see how other orthographies have handled these things. More research is also needed to determine the best way to represent the vowels [e], [ɛ], and [ɨ] and the consonants [l] and [r]. Beyond this, the orthography will need to be used and taught to see where other improvements may be needed.

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