

Morphophonemic Orthographies in Fusional Languages

The Cases of Dinka and Shilluk

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Abstract

Fusional languages present exceptional challenges to orthography development. This paper discusses the solutions proposed for writing Shilluk and Dinka. The issues of word structure, vowel qualities, vowel and consonant length, tone and consonant alternations are examined. The orthographic choices shown reflect a morphonemic solution as opposed to a phonemic one. The result is that the languages are easier for native speakers to read.

0. Introduction

Orthographies developed in the early and mid-twentieth century for Nilotic languages such as Dinka and Shilluk¹ have proven to be inadequate for the needs of the mother-tongue speakers of these languages. While the languages were easy to write, they are almost impossible to read fluently. When mother-tongue speakers of a language prefer to read in a foreign language (such as English or Arabic) because their own writing system is too difficult, then it is highly likely that there is a significant problem with their writing system.

A number of problems have contributed to this situation, and some of them are outlined in this paper. Shilluk and Dinka will be used as examples. Both are Nilo-Saharan languages in the North and Western subgroups. Shilluk is a Luoian language. These two languages are spoken throughout the northern regions of Southern Sudan. Dinka is spoken by approximately two million people and Shilluk by about 750,000.

Historically, tone was acknowledged as being important, as seen from this quote by Kohnen about Shilluk (1933:7): “Tones and accents in the same word...give an utterly different meaning to the word itself.” However, tone was not written, on the basis that it so complicated things that “such signs would only create a difficulty to the student without much assisting him” (p. 8). While this comment was made about foreigners learning Shilluk language, the idea was carried over into the literature that was written for the people themselves. Even Shilluks have complained that these extra marks would be confusing. With the background of English as the Roman script language most commonly seen, a prejudice against tone marking was unconsciously introduced. Even in recent years, tone was thought not to be so essential, as much of it was thought to be predictable from the context. In many cases, this assumption is correct. However, recent research has shown that not only tone, but also stress is very important for indicating grammatical information. The problem of inadequate orthographies was mainly due to the difficulty that outsiders find in hearing all of the nuances of sound. Torben Andersen’s (personal communication) and my own personal experience especially in hearing the tones confirm this assertion. In addition, we were unaware of the differences in meaning conveyed by these tonal and stress changes. This factor, combined with our meager vocabularies and communicative ability in the language, left the designers of the

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orthographies the incorrect assumption that these features are not required in the orthography.

Another heritage that has complicated the situation is the use of umlauts over most vowels in the orthographies. In Shilluk, the umlaut denotes [+ATR]² while in Dinka it denotes breathiness. The umlauts fill up the available space on top of the vowel and studies show that readers often do not see diacritics in the lower half of the word. Another problem with stacking one diacritic on top of another is that double diacritics interfere with descending consonants on the line above and are “messy” to write and read. Some languages, such as Sabaot, have marked tone using colons or slashes at the beginning of a word, usually to signal grammatical meaning, and thus clue the reader into the correct tone. However, the complexities in Shilluk and Dinka do not readily lend themselves to this solution.

One other complicating factor in developing orthographies for these languages is the desire for them to be able to produce materials independent of outside assistance. It is not easy to get fonts that include open “o” or open “e” and “eng” for the computer in both upper and lowercase. At present, these fonts have to be made by specialists, and there are not many Dinka or Shilluk people who specialize in this field. Therefore, in 1989, Shilluks decided to revise their alphabet in addition to their spelling and now have a system that fully complies with characters built into the computer, or at least they did until the tone and stress issue arose. Now they again have a problem of how to handle the extra layer of symbols. Fortunately, Unicode³ is on the way and may save us from further contortions.

1. Word structure

Both Shilluk and Dinka are highly fusional, with many words being monosyllabic. The structure of the root syllable is CVC, with the vowel carrying an inordinate load, particularly in the verbal system. In order to get a feel for the languages we will take a few examples from Dinka (Rek dialect is used in these examples, but is representative of all dialects: Rek, Bor, Agaar, and Padang).

- | | | |
|-----|-----------------|----------------------------------|
| (1) | bòl á'mòc | ‘You are shooting Bol.’ |
| (2) | bòl ámòc | ‘She/he is shooting Bol.’ |
| (3) | bòl ámóc | ‘Bol is being shot.’ |
| (4) | déŋ á'móc` bòl | ‘Deng is shooting Bol.’ |
| (5) | bòl àmòc` déŋ | ‘It is Bol Deng is shooting.’ |
| (6) | déŋ á'gòor` bòl | ‘Deng is looking for Bol.’ |
| (7) | bòl ágòor` déŋ | ‘It is Bol Deng is looking for.’ |

In these examples, the verb *amoc* is made up of two segmental morphemes. The *a-* prefix is a present tense marker while the root is the CVC *moc*. The grave mark after the verb in

² Abbreviations used in this paper are, ATR: advanced tongue root, E: Evidential, NE: Nonevidential, IMPF: Imperfective, BEN: Benefactive, IND: Indefinite, PF: Perfect, Pst: Past tense, F: Focus.

³ Unicode is a system for storing text that potentially allows symbols used by all languages around the world to be represented with the same coding system. Ideally, the system will be used by people in all countries on all computer platforms regardless of the language they speak or the languages they are storing.

examples (4) through (7) indicates the presence of a downstep, a Low tone without a segment. The result is that all tones after this downstep are lowered from their original level such that a High tone sounds Mid and a Low tone sounds lower. The dots under the vowel indicate breathiness. The stress mark found in example (1) means that the vowel is about half the length of the unstressed counterpart in example (2). Both vowels have Low tone. Therefore, we cannot say that Low tone is a morpheme distinguishing the person who is the Agent in and of itself. Low tone plus stress indicates 2ps Agent while Low tone without stress indicates 3ps Agent (who is known but unstated). There is a change of tone to High and no stress in example (3), and the implied meaning here is that the 3ps Agent is unknown. This is the “passive” construction (Andersen 1993). However, in example (4), the Agent is stated overtly as the first element of the clause. The tone remains High, but there is stress added. By contrast, in example (5), the word order is reversed so that the first element is now the focused Object of the verb and the Agent comes after the verb. The only difference is the absence of stress. Note the similarity between the forms of the verb in (3) and (5).

In example (6) and (7) we have sentences with underlying long vowel verbs. The underlying long vowel in (6) is written as a short vowel in the current orthography, and example (7) as a double vowel. In fact, it is important to note that the vowel in (6) sounds like a short vowel that has no stress. More explanation of this phenomenon is discussed in a separate paper (Miller and Gilley 2001). The same solution is not possible for the short vowel words (1–5) as one cannot write half a vowel to indicate shortness.

We turn now to some examples from Shilluk.

- (8) ānéy ùcwòttò kī dhánhò ‘Someone is calling a person for Aney.’
Aney NE:IMPF:BEN-call IND person
- (9) ānéy ú'cwòttò kī dhánhò ‘Someone called a person for Aney.’
NE:PF:BEN-call
- (10) ānéy úcwōttò kī dhánhò ‘Aney is calling a person.’ < ocwōddø >
- (11) ānéy ácwōtti kī dhánhò ‘Aney called a person.’ < acwōddi >
Aney E:Pst-call IND person
- (12) ānéy á'cwōtṭi kī dhánhò ‘Someone called a person for Aney’
(and I heard them do it).

Again, on the verb, we see a prefix. In Shilluk, this prefix indicates Evidentiality (whether you are an eyewitness to the event or it is only hearsay) as well as Aspect/Tense. The root *cwot* is essentially CVC (the labialization being a regular feature of root initial consonants). The *-ɔ* suffix is currently not fully understood, but is likely a transfix with the prefix. The doubling of the root final consonant is also a regular feature of the language and may indicate single versus repeated action, singular versus plural, or may just be a regular feature of the word as it is in these examples. Now, let us look at the morphology of this verb.

In example (8), we see that the *ù-* prefix indicates Nonevidential and Imperfective aspect. It also indicates that Aney is the Recipient of the action of calling. Comparing this with example (9) we see that the Perfect aspect is signaled by a change of tone on the prefix along with the addition of stress to the root. Aney continues to be the Recipient of

the action. In example (10), however, Aney becomes the Agent of the action. The changes in the verb that signal this difference are the absence of stress, a change of tone from Low on the root to Mid. Interestingly, however, the tone on the prefix that seemed to signal Perfect aspect (High), now indicates Imperfective. Furthermore, what may appear to be the Low tone on the root marking Benefactive fails to hold since in example (12) there is a Benefactive meaning with a Mid tone on the root. It is almost impossible to identify clearly what the morphemes for aspect, verb valency, and word order are in Shilluk.

In examples (11) and (12) we have another interesting problem. The *á-* prefix indicates evidentiality in addition to the Past tense. It is unclear exactly the role of the *-i* suffix, but as with the *-ɔ* it is probably a transfix with the prefix. The only phonetic difference between example (11) and example (12) is the addition of a stress to the root in (12). That presence of stress signals a change of the roles within the clause such that Aney, who was the Agent in (11), becomes the Benefactive in (12).

It should now be clear that the role of the vowel in both Shilluk and Dinka carries a very heavy load. We will turn briefly to the vowel systems of these languages to see what further problems await us there.

2. Vowel systems

2.1 ATR and Breathy/Creaky

The vowel systems of each of these languages are very complex. We will look at the vowels, [ATR] or breathy features, lowering in Dinka, as well as vowel length and tone to see how some of the features can affect the overall meaning of a word.

(13)	Dinka vowels		Shilluk vowels			
	i	u	ɪ	ʊ	i	u
	e	o	ɛ	ɔ	e	o
	ɛ	ɔ	a		ə	
	a		[-ATR]		[+ATR]	

Here we see that Dinka has a seven-vowel system while Shilluk has a basic five-vowel system with a full set of [±ATR] vowels. In Shilluk, all [+ATR] vowels are also breathy. Thus, [ATR] and breathy function as a unit. However, the same is not true for Dinka. I am assuming that Dinka has a basic seven-vowel system with only two [+ATR] vowels: /i/ and /u/. It seems that the /e/ and /o/ are probably functioning as the [-ATR] /ɛ/ and /ɔ/. In Dinka, any vowel may be breathy or creaky except /u/ which is always breathy. As for the transcription used in this paper, all [+ATR] Shilluk vowels and all Dinka breathy vowels will be transcribed with double dots under the vowel in order to leave the top clear for tone. We will look first at examples from Dinka in examples (14) to (19).

	Breathy	English	Creaky	English	Orthographic	
(14)	r̥ɛc	‘fish’	réc	‘spoil’	rēc	rɛc
(15)	b̥ək	‘go’	bák	‘always’	bäk	bak
(16)	p̥ɪc	‘stirring stick’	píc	‘prevent’	pïc	pic
(17)	k̥ɔc	‘soft’	kóc	‘people’	köc	kɔc
(18)	d̥ɔt	‘look’	dót	‘noise’	döt	dot
(19)	k̥èt	‘singer’	kèt	‘to carry on one’s shoulder’	kèt	ket

The words in the two far right columns are the current orthographic representations.

In Shilluk, [ATR] also distinguishes words as seen in examples (20) to (24).

	[-ATR]	English	[+ATR]	English	Orthographic	
(20)	pal	‘spoon’	pəl	‘forest’	pal	päl
(21)	dɔk [ML]	‘to knot’	dɔ̣k	‘tar’	dok	dök
(22)	lɔ̣t	‘club’	lɔ̣̄t	‘kind of fish’	lodh	ludh
(23)	wij	‘to leave alone’	w̄ij	‘father’	wiy	wiy
(24)	kēfi	‘alone’	k̄ēfí	‘again’	keti	kēfi

2.2 Length

Now we come to the feature of length. In both languages vowels may be either long or short. At first, it appears to be a simple length distinction, but as we will see, it is far from simple. Some contrastive examples from Shilluk are shown in (25) to (28).

(25)	dāák	‘Daag, a name’	dàk	‘pipe’
(26)	pààr	‘hippo’	pār	‘equal’
(27)	pūūk	‘tortoise’	pūk	‘pot’
(28)	kīir	‘River Nile’	kir	‘to put in line’

In words with long vowels, the spelling reflects the vowel length by doubling the vowels. However, length can be deceptive in Shilluk, as it comes from several sources, not all of which are equally distinctive. Often, phonetic length is derived from open versus closed syllables. Open syllables are longer than closed ones. In the presence of underlyingly doubled consonants, these long vowels become short because the vowel is in a closed syllable.

	Sing.	English	Plural	English	Orthographic sg/pl	
(29)	lép	‘tongue’	lēèp	‘tongues’	leb	lebb
(30)	wī̄ɲó	‘bird’	wī̄ɲ	‘birds’	winyø	winy

In these examples, we see that both the tone and the vowel length change to signal a singular/plural contrast. In example (29), the word with the short vowel is in the singular while in (30), the word with the short vowel is in the plural. In fact, both of these CVC forms with short vowels are basic and the opposite forms are the marked ones. In the case of (29), the older plural suffix “consonant+*-i*” has metathesized into the root vowel resulting in a long vowel in the surface form (CVVC). So, here we see another way in which long vowels are formed. Shilluk and Dinka are progressively becoming monosyllabic and the process being employed is to incorporate suffixes into the root. If these words are modified by the possessive pronoun 'my', which is an *-a* suffix, then the vowel and consonant length changes become apparent as in (31).

(31) léébā ‘my tongue’ lēppá ‘my tongues, languages’ leba - lebba

In the singular form in (31), we can see that the vowel length is controlled by the open syllable created by the vowel of the possessive pronoun. The double consonants appear in the plural version, creating a closed syllable in the root, and thus a short vowel. In order to capture the generalization, in the orthographic version, it has been agreed to always write a short vowel for this word, but to mark the plural version by the double consonant as in (29). In this case, the double consonant word finally means, “say this with a long vowel.” When the double consonant comes in the middle of the word as in (31), they know that it devoices plosives. Thus, there is no need to continually change between voiced and voiceless plosives in these forms or vowel length. The standardization of the spelling has significantly helped in reading and writing.

(32) wīṅṅā ‘my bird’ wīṅṅá ‘my birds’ winya - winyya

In examples (30) and (32), we see a similar situation. In this case, the unmarked form is the plural because birds tend to come in numbers greater than one. This semantic concept is reflected in the grammar. The open syllable in the singulative form lengthens the vowel phonetically, and the absence of the suffix in the plural form shortens the vowel. However, underlyingly in the plural there is a double consonant which appears in the modified form as shown in (32). The singulative modified form also phonetically contains a double consonant, I believe because of the loss of the *-ɔ* suffix (see Gilley 1992). As a result of the double consonant, the vowel length is shortened. Thus, the only phonetic difference between the two forms is the presence of a High tone on the plural possessive suffix and the tone on the root. There is a regular rule such that when a possessive suffix is added to a singular word it has a Mid tone, and to a plural word it has a High tone. The orthographic representation is to write the singular form with one root final consonant and the plural form with two. In the case of digraphs, only the second letter is doubled to keep the word from looking “too long.”

Shilluk verbs provide another interesting look at length. Consider the following forms of the verb ‘eat’. The orthographic versions of the verb are on the far right.

- (33) Col ácamà rij. ‘Col ate the fish (instead of something else).’ acam-a
Col E:Pst-eat-F fish
- (34) Rij ácaàamá. ‘I ate the fish.’ acaama
- (35) Rij ácamáá. ‘We ate the fish.’ acam’a
- (36) Rij á’cámmáá. ‘We repeatedly ate the fish.’ a’camm’a
- (37) Rij ácámmà yīn. ‘Someone ate the fish for you.’ acāmm-a
- (38) Rij ácaámà ɔd. ‘Fish was taken to the house and eaten.’ acaam-a
- (39) Rij ácāmmà ɔd. ‘Fish was in the house and was eaten there.’ acamm-a
- (40) Rij ácāámáá pàl. ‘Fish was eaten with a spoon.’ acaama’

In (33) we see a focused construction which emphasizes that Col ate fish instead of something else. There has been considerable opposition to writing tone in the orthography, and so other strategies have been employed to avoid tone markings. Thus, focus which comes after the verb is marked with a hyphen plus *a* and in this case, the <-*a*> is the focus marker.

In (34) we see the Agent has been incorporated into the verb, again as an *-a* suffix and also a lengthening of the root vowel. Note the difference in tone on the suffix. The orthographic distinction is to write the 1ps Agent marker without the hyphen, thus distinguishing the two. In (35) we see a different kind of problem. This particular version is a reduced form of *acam wa*. Since the /w/ of *wa* is omitted in speech, the apostrophe serves to indicate that it is a contraction, as the apostrophe is used in English. Similarly, in (36) the same contraction happens with the Agent, but there is the additional information that the action happened repeatedly. This repetition is signaled by the doubling of the root final consonant, in this case the /m/ and the addition of stress on the root syllable. Stress is marked in the orthography by a straight (or possibly a grave accent) before the syllable that will be stressed.

In (37) we see that the focus marker is again employed (using the *-a*). In addition, there is now an [+ATR] vowel in the root signaling that the clausal constituents have now changed to include the Benefactive. The focus is on the Benefactive *yīn* ‘2ps’.

Example (38) was an unexpected distinction that I happened to stumble upon. The root vowel lengthens and has a High tone when the action involves motion. There is a regular focus marker as a suffix indicating the direction of the motion. The orthography codes this information by using the long vowel in conjunction with the hyphen plus *-a*. A similar variant involves not the motion, but the location of the object acted upon; see (39). I have termed this a Location marker and it is signaled by a Mid tone and doubling of the root final consonant. The vowel is [-ATR] and so should not be confused with the Benefactive form.

Finally, the Instrumental form is shown in (40). Here the instrument is post-verbal signaled by a long *-aa*. In fact, this is again a reduced form, the full form being *Rij acaama ki pal*. The *ki* is contracted, and so the apostrophe is again used at the end of the word to indicate this omission. Life would be a lot simpler if we could just write the tones! Fortunately, there may now be a move toward that decision based on findings in the sentences shown in (8) to (12). We ran out of orthographic options, and they began to see the serious need they had to represent tone and stress in the orthography.

We turn now to Dinka. Again, it is not clear what vowels are really long and short. Appearances are deceiving. We will begin by looking at the nominal system and later move on to verbs. In examples (41)–(43) we see some singular/plural noun pairs. Again, the orthographic version is shown on the right.

	Singular	Plural	English	Orthographic	
(41)	tím	tìim	‘tree/s’	tim	tiim
(42)	c̣ìin	c̣ìn	‘intestine/s’	c̣iin	c̣in
(43)	ṛíc	ṛic or rièc	‘generation/s’	ṛic	ṛic/rièc

In examples (41) and (42) we see that there is a difference in length between the singular and plural forms. However, in my analysis, that length is the result of one of the words being stressed while the other is unstressed. Stressed words in Dinka shorten the vowel to about half its original length. Thus, the shorter of the vowels is said to be stressed. In example (43), the underlying vowel is short, and as such cannot lengthen. The singular, in this case, is “extra short” while the plural is “just short” or is lowered. “Lowered vowels” is a special term used by Duerksen (1989) to describe the process of diphthong creation or lowering to the next value of openness on the phonetic chart. In the current orthography, the length distinction was written for the long vowels, but there was no distinction possible between extra short and short. Thus, the orthographic versions of the singular and plural of (43) are potentially identical. If they were distinguished by stress, they would be written as shown in (44) to (46). In exploring ways to write the stress, it seems that the **unstressed** syllable is actually the marked feature, and so the speakers of the language have preferred to mark the unstressed syllable with an apostrophe at the end of the word. This unexpected marking follows the Shilluk pattern of lengthening the plural due to infixation of the suffix.

(44)	tiim	tiim’
(45)	c̣iin’	c̣iin
(46)	ṛic	ṛic’ or rièc’

Let us look at a few examples where “length” occurs in verbs. Andersen (1993) has clearly outlined that there are two classes of verbs based on underlying root vowel length. He proposes three degrees of length, a concept totally rejected by the Dinka themselves. They do acknowledge the phonetic differences, but see it as a two-way distinction only. The term “stress” has been used to distinguish the length variations between extra short and short and between short and long. We return to the examples from the beginning of the paper which are repeated here for convenience in numbers (47) to (53). The orthographic version of the verb is written on the right showing the unstressed words with an apostrophe.

(47)	bòl á'mòc.	‘You are shooting Bol.’	amoc
(48)	bòl á'mòc	‘She/he is shooting Bol.’	amoc’
(49)	bòl á'móc.	‘Bol is being shot.’	amóc’
(50)	déŋ á'móc` bòl	‘Deng is shooting Bol.’	amóc

- (51) bòl á móc` déŋ ‘It is Bol Deng is shooting.’ móc’
 (52) déŋ á'góör` bòl ‘Deng is looking for Bol.’ agöör
 (53) bòl á'góör` déŋ ‘It is Bol Deng is looking for.’ agöör’

With a minimum number of extra symbols, we are able to distinguish all of these forms. The problem with the current orthography is that while they can write short and long vowels when the underlying vowel is long, they cannot do the same when the underlying vowel is short. Thus, with no “length,” stress, or tone distinctions available, (47)–(49) all appear to be identical so that the Agent is either “you” or “someone you know” or “someone you don't know.” Likewise, (50)–(53) are identical. If stress and tone are written, then it is clear what is intended by the writer.

The issue that has been raised with writing stress for the short vowels is: should long vowels always be written long so as to keep the system consistent. Words would look the same and be easily identifiable. However, the cost would be to change what is familiar to a lot of people. There will be a lot of resistance. They are still debating the issue and writing lessons to demonstrate the problem in order to discuss it with the leaders of their various speech communities.

2.3 Tone

The last issue in this section discusses tone as an independent feature. Dinka has two level tones and the contour tones High fall, Low fall, and Rise. Much work is still needed on this topic. Shilluk has three level tones as well as most possible combinations of those three levels on short vowels. Tone has been written on all examples and as such, many of the problems are readily identifiable. In the verbal systems of both languages, tone plays a crucial role in determining clause structure and verb valency. There are also minimal pairs for tone that distinguish singular/plural pairs in both languages. A few examples are presented in (54)–(59).

- Shilluk
- (54) líŋ Ìŋ ‘war/wars’ liny :liny
 (55) pūṭ pùṭ ‘crippled person/people’ pudh :pudh
 (56) ŋér ŋèr ‘antelope/s’ nger :nger

- Dinka
- (57) rák ràk ‘Lulu tree’ (kind of tree)
 (58) gém gèm ‘cheek/s’
 (59) kít kît ‘letter/s of the alphabet or colour/s’

In Shilluk, the colon in front of the orthographic word indicates the Low tone, and thus the plural form of the word. It may be that they will move to writing a tone mark over the vowel in the future. Currently in the orthography, there is no way to distinguish the Dinka words shown in (57)–(59), but as people consider using tone marks elsewhere, it seems likely that a Low tone mark would be helpful in identifying plurals in Dinka.

3. Consonant alternations

The final topic deals with various predictable consonant alternations. Root final consonants sometimes vary and have typically been written “as they are spoken” with the result being that the same word is spelled in several different ways, depending on the context. We will look at some of the issues with plosives. In both languages, plosives are devoiced word finally. In Shilluk, the voiced plosives are written in almost all cases. In Dinka, the plosives are written as they sound. The examples below show both the phonetic and orthographic words. Examples (60)–(65) are from Shilluk and (66)–(68) are Dinka.

Shilluk

	Phonetic	Orthographic	English
(60)	māk	mag	‘catch (Ergative)’
(61)	mækki	mäggi	‘catch (Antipassive)’
(62)	ḡedò	ngedø	‘rib’
(63)	ḡedā	ngeda	‘my rib’
(64)	ʔḡet	nget	‘ribs’
(65)	ʔḡettä	ngetta	‘my ribs’

Dinka

(66)	màc	mac	‘fire’
(67)	mèḡ	meth	‘child’
(68)	nòk	nök	‘to kill’

Notice that the root of the orthographic word is spelled the same in all cases. This consistency is in Dinka also because there are not so many suffixes that can change the root final plosives into intervocalic position. In former times, Shilluk changed the plosive according to the sound which meant spelling the word differently in each context. Since 1990, they have used a spelling which is much more morphophonemic. The result of this morphophonemic spelling in Shilluk is that people recognize the word and when all of the important grammatical marking is present, they are able to quickly recognize the correct root and thus accurately read the word.

4. Conclusion

In conclusion, we have outlined some of the complexities involved in writing Shilluk and Dinka. It is clear that orthographies that do not distinguish vowel qualities as well as tonal and stress contrasts are not adequate for the language communities. Working with four dialects of Dinka and two dialects of Shilluk over the past several years, we have sought to gain order and predictability to make the orthographies more adequate. This order is based on a more morphophonemic approach to spelling. The changes have affected the root final plosive consonants in Shilluk and the vowels in both

Shilluk and Dinka. These changes have been more extensively tested in Shilluk and have met with significant success. Using a morphophonemic approach to writing has come at the cost of simplicity of spelling. Reading has been made easier, though the writing is more difficult. It has taken considerable time for the community at large to accept these changes, but when they finally understand the advantages, they embrace them wholeheartedly.

It can be concluded that identifying an adequate spelling system is important for languages spoken by people who want to use the language in education and development. If a language is to survive in the world of today, with so many pressures from languages of wider communication such as English and Arabic, it is imperative that they accurately and adequately represent the meaning carried in the spoken language. Also, it is vital that the languages be easy to read even at the cost of increased difficulty in spelling; otherwise, the language speakers will opt for a language that is easier to read at the expense of their mother tongue.

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