Orthographic reform in Dinka: some general considerations and a proposal

D. Robert Ladd
University of Edinburgh

March 2012

1. Introduction

In this paper[1] I present a proposal for some modest reforms to Dinka spelling that I believe will address the most important shortcomings of the current orthography. A crucial feature of my proposal is that it is strongly conservative, involving no major respellings and relying almost exclusively on the addition of diacritical marks to some forms. The motivation for this conservatism is of course partly political, in the sense that limited reforms are likely to gain acceptance more easily than radical and far-reaching changes; those who already read Dinka fluently can continue to do so with the revised orthography proposed here.

However, a more fundamental motivation for the conservatism of my proposals is my belief that the case for radical change has been overstated. I now think that an important reason for the obvious difficulties that some Dinka speakers have with reading Dinka is simply that they don't get constant practice. It is not uncommon for literate Africans to be more comfortable reading a language of wider communication (English, French, Swahili, Arabic, etc.) than reading their own language (e.g. Mountford 1983: 32 on Bambara relative to French, Connell & Ladd 1990: 20 on Yoruba relative to English, Oliver Stegen (personal communication) on Rangi relative to Swahili). Proponents of major orthographic reform in Dinka, including my own earlier discussion notes, have not given enough attention to the possibility that simple lack of familiarity and practice may be as important a source of problems as the shortcomings of the orthography itself.

I should make clear that I am only an interested and moderately informed outsider. I hope that what I say here may prove useful to the community of people involved in Dinka language and literacy development (e.g. various ministries, DILDA, SIL), but I am aware that there is much about the language and about the social and educational situation in South Sudan that I don't know. All I provide here is ideas; actual decisions must be made by people who will be affected.

2. Basic principles

My proposal starts from three key principles, all of which have been articulated in some form before, notably by Duerksen (1994). **Principle 1** is the basic alphabetic principle that distinct symbols should be provided for the phonemic contrasts of the language. Current Dinka orthography clearly falls short in this respect, and it is widely agreed that it would be good to find an approach to providing more complete representation of suprasegmental distinctions than at present. **Principle 2** (which corresponds to Duerksen's point 2.1) embodies one conservative tenet: changes made to the orthography should have the smallest possible effect on the shape of words as they are written at present, because the present orthography is too well established to allow us to start over again and force people who are already literate to relearn everything they know. **Principle 3** (which covers Duerksen's points 2.6, 2.8, 2.10 and 3.6) is a separate conservative tenet, namely that it's important to try to avoid (a) inventing new symbols, (b) having multiple ('stacked') diacritical marks on a single letter, and (c) using existing symbols in extremely unconventional ways; any of these may create problems for printing or other computer applications (even just by making word processing inconvenient). In other words:

---

[1] This paper is based on two earlier discussion notes, one circulated in January 2010, the other in August 2011, as well as on more recent investigations of suprasegmental distinctions in Dinka morphology. This version takes account of the reactions I received to the earlier discussion notes from various people involved in Dinka literacy and language development and/or in basic linguistic research on Dinka.

- Principle 1: "represent linguistic distinctions to the greatest extent possible".
- Principle 2: "don't change more than necessary".
- Principle 3: "don't use symbols that may cause technical problems".

The successful recent addition of the dieresis (umlaut) for breathy voice quality in Dinka writing is a good example of all three principles at work. Principle 1 is what motivated the modification: the phonemic distinction between breathy and modal voice is such a basic part of Dinka phonology that it is essential to represent it – otherwise there are far too many ambiguous written forms (e.g. *roor* 'forest' and *roor* 'men'; *kiir* 'Nile' and *kiir* 'thorn tree'). Principle 2 was respected, because the written form of the words was not changed very much (e.g. *akOl* 'sun, day' changes to *akOál*). And Principle 3 was respected, because diereses are familiar from many well-established writing systems (German, French, etc.) and are therefore found in standard fonts, even though the symbol means different things in those languages.

In addition I should mention **Principle 4**, which is that it is both possible and desirable to create a unified orthography for the whole language, with necessary compromises to accommodate dialect differences (cf. Duerksen's point 2.4). My understanding is that there is general agreement on this principle, but it has implications for the other principles that are not necessarily obvious, and they will be discussed here and there in what follows.

2.1. Principle 1: "represent linguistic distinctions to the greatest extent possible"

This principle obviously interacts with Principle 4, because in any language the linguistic distinctions in one dialect are not identical to those in another. This issue is discussed briefly in section 2.4 and in more detail, with respect to tone, in section 3.2.1.

The most important thing to discuss further in connection with Principle 1 itself is the question of *which* linguistic distinctions to represent, and in particular *at which level*. Orthographies differ in whether they represent surface phonemic, morphophonological, or lexical/morphemic distinctions. In general, alphabetic systems aim to provide different letters for different surface phonemes, but many alphabetic systems make compromises of various sorts with deeper morphophonological identity. A good example is the treatment of final devoicing in the many European languages that have it. In some languages (such as German or Russian), morphophonological identity is reflected in writing, so that e.g. German *bunt* 'colourful' and *Bund* 'federation' are spelled differently to reflect the different underlying nature of the final consonant, even though the citation forms of the two words are pronounced the same. In other languages (notably Turkish and Catalan) the spelling of consonants in word-final position often reflects their surface pronunciation, not their morphophonological identity, so that e.g. Catalan masculine forms *sec* 'dry' and *grec* 'Greek' are both written with final -*c* reflecting the fact that both are pronounced with a voiceless final consonant, even though the corresponding feminine forms *seca* and *grega* show that the morphophonological identity of the stem-final consonant is voiceless in one case and voiced in the other. English orthography makes substantial compromises with morphophonological identity, so that e.g. the spelling of *democracy* is very similar to the spelling of *democrat*, reflecting the fact that they are closely related morphologically, even though the vowels and the stress pattern are quite different in the two different forms. Dinka provides several examples of the difficulty of achieving the right balance between surface phonemic and morphophonological spelling, which have been discussed in some detail by Leoma Gilley (2004). The most obvious problems are the extensive use of tonal distinctions in the morphology and the typologically unusual three-way vowel length distinction. These are discussed in detail in sections 3.2 and 3.3 respectively.

Surface phonemic and morphophonological spellings do not exhaust the possible range of linguistic levels that can be represented. Many alphabetic or semi-alphabetic systems also contain conventions that give direct cues to morphological or lexical identity even though there may be no difference in sound. Examples in English are the different spelling of homophones (e.g. *right, rite, write*); the capitalisation of proper names (e.g. *Baker* (proper name) vs. *baker* (common noun)); and the use of the apostrophe (e.g. *lions* vs. *lion's*). In Dinka, where many distinctions are conveyed non-segmentally and in quite different ways in different dialects, it is tempting to represent some morphological distinctions directly, as proposed by John Myhill (2011). For example, we might have a diacritic mark on all nouns to indicate plurality directly, regardless of how the meaning 'plural' is manifested phonetically; we might write *cin* and *cín* 'hand [sg./pl.]' or *joth* and *jóth* 'ring [sg./pl.]' and these written forms would be understood the same way by all readers even though their pronunciations might differ considerably. I have taken some inspiration from this approach in my suggestions for spelling modifications in verbs, but as I said in the introduction I do not think that a radical overhaul of the orthography is necessary, and I am unconvinced that Dinka's extensive use of suprasegmental distinctions demands such a departure from the alphabetic ideal.

2.2. Principle 2: "don't change more than necessary"

Despite what I just said, it does seem fairly clear that Dinka's extensive set of suprasegmental distinctions presents special problems for alphabetic writing. If one were setting out to design an orthography for the language based on what we know now, one would probably approach the problems of representing suprasegmental distinctions in a different way from the present system. However, Dinka *is* written, and many people have learned to read it. This fact needs to be taken into account when considering changes. In particular, it suggests that relatively simple and unobtrusive reforms (like the now widely accepted marking for breathy voice) have the best chance of succeeding. As I suggested in the introduction, my proposal here is conservative, in keeping with Principle 2. At several points below I have indicated more radical possibilities that one might consider, but I have not developed these.

One thing that will help any proposal respect Principle 2 is to indicate two-way distinctions by marking only one member of the distinction, and to reserve overt marking for the *less* common members of three-way and four-way distinctions. The real point of Principle 1 is that we have to represent phonemic *distinctions*, not that we have to represent every phoneme. In the case of the Dinka voice quality distinction, the present orthography does indicate breathy voice and doesn't indicate non-breathy voice, but the distinction is indicated by the presence or absence of the dieresis. (In fact, the current orthography takes this idea a step further: even though /u/ only ever occurs as breathy, the vowel letter *u* is written *without* a dieresis, because the distinction is irrelevant in that context). These principles can be extended to tone and vowel quantity. In particular, we can take advantage of the fact that low tone is extremely common, and short vowels are relatively rare. In order to change the spelling of the fewest possible words, we should give no indication of low tone, and limit any explicit marking of tone to non-low tones. In the same way, to distinguish short and half-long vowels (which are currently both written with a single vowel letter), it makes sense to find a way of explicitly marking the *short* vowels, since there are fewer of them than of half-long vowels, and fewer words will change spelling as a result.

2.3. Principle 3: "don't use symbols that may cause technical problems"

My original discussion paper, in January 2010, suggested the use of word-internal punctuation marks, in particular period and colon, as diacritics for tone. This met with severe criticism from

Bev Cope (personal communication), on the grounds that these would make computer use difficult. For example, web browsers interpret a period as a divider in a domain name, and this would make it impossible to use any Dinka word written with an internal period in a web address. Various other punctuation marks have specific meanings in a range of computer applications and would cause similar problems if used in the spelling of Dinka words. The validity and importance of this criticism has been reaffirmed by my Edinburgh colleague Julian Bradfield in further discussion, and I have abandoned my earlier proposal as a result.

A related issue involves 'stacked' diacritic marks on letters. In my original proposal I suggested that these should be avoided because of the problems they cause for word-processing and printing. For example, in Dinka, if we retain the present use of the dieresis for breathy voice and propose the use of accent marks as tone diacritics, we would have to deal with the possibility of combining the dieresis with an accent (e.g. *cök* 'foot'). In fact, the motivation for my original proposal to use word-internal punctuation marks for tone was precisely to avoid such stacking of diacritics. Some people have suggested to me that with the spread of Unicode multiple diacritics do not pose a serious problem, and that they can be produced as easily as single diacritics, using Unicode 'combining diacritic' symbols. I still believe that multiple diacritics are not very desirable, for at least three reasons. First, they are inconvenient to produce, which may lead users to omit them[2]. Second, even if users take time to specify them, many fonts fail to align diacritics properly in print. Third, even if they are correctly produced, multiple diacritics may be difficult to distinguish in reading. In my proposal I have therefore avoided stacked diacritics altogether. I make limited use of multiple diacritics, but only where one diacritic is placed above the letter and the other below.

If (because of Principle 3) we wanted to avoid using diacritics altogether, it is worth mentioning that alternatives do exist. Specifically, we could indicate tone, voice quality and vowel quantity by modifying the *sequence* of letters, not by superimposing diacritics on the vowel letter. The original inspiration for this approach comes from a system of writing Chinese invented by the Chinese-American linguist Y. R. Chao in the 1920s. Chinese has four distinct tones and a relatively small number of vowel and consonant combinations in mostly monosyllabic words, so its syllable structure is actually quite similar to that of Dinka (most Chinese words are CV, CVC, CGV, or CGVC, where "G" means glide – plus tone, of course). Chao's idea was that, instead of using diacritics for tone, one could modify the spelling of the segmental sequence. So for example, the segmental sequence [pîiŋ] is spelled *ping* with high tone, *pyng* with rising tone, *piing* with low tone, and *pinq* with falling tone; the segmental sequence [tîa] is spelled *ta* with high tone, *tar* with rising tone, *taa* with low tone, and *tah* with falling tone. (See e.g. Chao and Yang 1962: xix-xxi for a fuller explanation.) The system is somewhat complex and takes longer for learners to acquire, so that when the People's Republic of China adopted the *pinyin* romanisation in the 1950s it was decided to write the tone phonemes by using four different diacritics on the vowel letters instead (i.e. *pīng, píng, pǐng, pìng*). However, Chao's basic idea – the idea of using different symbols *in sequence* rather than adding a mark above or below the vowel – could certainly be adapted for representing non-segmental distinctions in Dinka. For example, it would be straightforward to combine vowel letters with one of the ordinary roman letters not needed for Dinka consonants in order to indicate breathiness or length. For example, we could use *q* before a vowel to indicate breathiness (cf. the use of *q* for glottal stop in Maltese), and we could use *h* after the vowel to

---

[2] A striking example is provided by Romanian, which has an extremely regular (surface phonemic) standard orthography. There are five distinctions indicated only by diacritics (specifically, using the letters *â, î, ă, ş* and *ţ*). Since the widespread introduction of word processing technology after the fall of the Ceauşescu regime in 1989, it has become extremely common to omit all diacritics in word processing, even in relatively formal contexts. On an informal sampling of more than 20 Romanian university websites in November 2011, I found that roughly half omitted diacritics almost everywhere, and only a third used them consistently in accordance with the standard orthography.

indicate length (as in German and some romanisations of Japanese). We would thus write *rqoohr* instead of *röör, kqiihr* instead of *kïïr*. In my opinion, however, these possibilities involve too severe a violation of Principle 2, and I have not pursued them.

2.4. Principle 4: a unified orthography for all dialects

It may seem obvious, but it is still worth pointing out that a unified orthography does not mean that the pronunciation of one dialect must be chosen and that one dialect 'wins' over the others. A more satisfactory basis for compromise across dialects is to be sure that crucial phonemic distinctions are represented even if they are not maintained in some dialects. In English, for example, post-vocalic /r/ is found in some dialects (American, Irish) but not in others (Southern British, Australian). For Southern British or Australian speakers, *pour* and *paw* or *court* and *caught* are pronounced the same, whereas for Irish or American speakers they are very different. The spelling here reflects the phonemic distinctions of American and Irish dialects. By contrast, in American English most speakers do not distinguish the vowels of *hairy* and *Harry* or *very* and *vary*, whereas these vowels are very different in most British and Australian speech. Here it is the phonemic distinctions of British and Australian dialects that are represented in the spelling. So English spelling doesn't reflect one specific dialect, but reflects important phonemic distinctions even though these distinctions are not made by all dialects.

A good example of this kind of dialect difference in Dinka is the loss of the distinction between initial velar and palatal stops before high front vowels in Agar and Bor South. As a result of this loss, words that begin with different sounds in other dialects (e.g. *kiir* 'Nile' and *cïïn* 'intestines') begin with the same sound in Agar and Bor South. However, because the correspondence is regular, it is a relatively simple matter to make the distinction between *k-* and *c-* or between *g-* and *j-* in the orthography, and to have a rule that in Agar *ki-* is pronounced like *ci-*. This will mean that Agar speakers will have to learn to spell their palatal stops in two different ways, just as Southern English or Australian speakers now have to learn different spellings, with and without *r,* for the vowel of *court* and *caught*. It is likely that there are other cases of regular correspondences between dialects, and that the burden of such special rules may be fairly equally shared among speakers of all varieties; again, it is not necessary for one dialect to 'win' over the others in order to have a unified orthography for the whole language. A specific proposal for dealing with dialect differences in tone is presented in section 3.2.1 below.

3. Some detailed suggestions

3.1. Voice quality

Voice quality is a clear candidate for the application of Principle 2. The dieresis notation for breathy voice has finally found broad acceptance, and the range of dialect variation in the phonology of voice quality seems limited. There is apparently variation in the phonetic realisation of the distinction between breathy and non-breathy vowels (Edmondson and Esling 2006), but the lexical distribution seems to be fairly consistent across dialects. This therefore seems a clear case of successful orthographic reform, and radical changes of the sort suggested in section 2.3 are in my view quite unnecessary. However, my proposal does involve a way to combine the dieresis notation with a limited notation for tone. This is discussed further in section 3.2.3.

3.2. Tone

3.2.1. What needs to be marked?

The first question we encounter here involves Principle 2: does anything really need to be changed? It is perfectly true that in many languages tone diacritics are not used, or are used only sparingly, and one possibility would be to continue to write Dinka with no indication of tone at all. In my experience and that of Bert Remijsen, Dinka speakers are not very metalinguistically aware of tone (in contrast to their awareness of voice quality and to a lesser extent of vowel length); also, there are relatively few lexical minimal pairs distinguished by tone alone, and the important functions of tone are mostly grammatical. So it would probably be preferable not to try to incorporate an elaborately detailed representation of tone into the orthography (see Bird 1999a for a comparable conclusion concerning African tone languages in general, and Bird 1999b for experimental corroboration of this conclusion with respect to tone marking in Dschang). Gilley 2004 makes the same point with reference to Dinka and Shilluk; Myhill 2011 goes further, arguing that Dinka tone is so variable and the system so complex that it is pointless to try to represent it in writing.

I do not disagree with the idea that tone marking should be kept limited, but I think that it is possible to provide a tonal representation that is limited but still useful. First, as mentioned in section 2.2 above, it makes sense to leave low tone unmarked. Syllables with low tone constitute roughly half of all the syllables in running text (Ladd and Remijsen, forthcoming), so not marking low tone will immediately limit the extent to which tone marking affects the appearance of words. Furthermore, there is good reason to think that low-toned syllables in one dialect tend to correspond to low-toned syllables in another dialect (Remijsen 2010 and work in progress), which means that an orthography that does not mark low tone should be broadly applicable to all dialects. The question therefore becomes a matter of whether to represent non-low tones[3].

The idea of marking non-low tones immediately leads to problems based on Principle 1 and Principle 4. Which tonal distinctions need to be represented? The Remijsen and Ladd study of the Luanyjang (Rek) tone system (2008) shows pretty clearly that Luanyjang has three non-low tone phonemes, namely high (H), falling (HL) and rising (LH). However, some dialects appear to have only two, namely H and HL. For example, if we compare the Remijsen and Ladd description of Luanyjang to Andersen's work on Agar, we see that Agar words with H tone correspond to Luanyjang words with LH, while Agar HL corresponds to both HL and H in Luanyjang (Remijsen 2010). This might appear to suggest that a practical orthography could be based on making only a two-way distinction among non-low tones, with one diacritic for H and one for HL. However, further preliminary findings by Remijsen (personal communication) suggest that the cross-dialect correspondences in the distribution of these two non-low tonemes in three-toneme dialects are variable. Consequently, an orthography that worked for one dialect system would both fail to represent distinctions found in other dialects and at the same time would make distinctions that other dialects lack. It is doubtful that a usable dialect-neutral compromise can be based on representing two non-low tonal classes.

One possible response to this situation would be to represent the maximal set of contrasts found in dialects such as Luanyjang and the Bor dialects, using three distinct diacritics for all three non-low tonal classes, and providing an indication of all the possible tonal distinctions in the language. However, this would imply significant learning burdens for speakers of most other dialects, who

---

[3] There are also other syllables that do not require tone marking; for example, it seems likely that non-final syllables in disyllabic and polysyllabic nouns like *anyaar* 'buffalo' and *anyïköl* 'story' are best regarded as toneless, meaning that they can also be left unmarked.

would have to learn to distinguish phonemic classes that are not distinct in their own varieties. Moreover, it would significantly complicate the range of visual distinctions among diacritics that readers and writers would need to make, and it would raise a great many questions about cross-dialect variation and tone sandhi for which there are currently no answers. Another possible response is to conclude that it would be better not to represent tone at all. Instead, I want to argue for the remaining possibility: a system with only *one* diacritic that represents all *non-low* tones in the same way and does not attempt to make further distinctions. In 3-toneme dialects (like Agar), the diacritic would stand for both H and HL; in 4-toneme dialects (like Luanyjang), the diacritic would indicate all of H, HL and LH. This would naturally still leave some ambiguity, but it would resolve a surprisingly large number of cases that are currently potentially confusing.

3.2.2. Marking non-low tone

The fact that an orthography with only a single tonal indication for non-low tone may afford a substantial reduction in ambiguity arises from facts about Dinka morphology. I discuss first number marking in nouns, then basic aspects of verb inflection. This is not an exhaustive account of suprasegmental marking of morphology, but only an indication of how much can be done with limited modifications.

Nouns: Ambiguity between singular and plural in nouns is actually quite limited even under the current orthography. Nouns with different vowels in the singular and plural (e.g. *wut/wuɔt* 'cattle camp [sg./pl.]'), those with a long vowel in one form and a half-long vowel in the other (e.g. *bith/biith* 'fishing spear [sg./pl.]'), and those with a breathy vowel in one form and a non-breathy vowel in the other (e.g. *kit/kït* 'colour' [sg./pl]') are already distinguished. On the basis of the 400-noun sample discussed in Ladd et al. 2009, I estimate that only about 15% of written noun forms are currently ambiguous between singular and plural; almost all of these are nouns with half-long vowels in both forms or with a half-long vowel in one form and a short vowel in the other (e.g. *joth* 'ring', *lec* 'tooth'). Of these ambiguous nouns, more than 80% have a low tone in one form and a non-low tone in the other, and would therefore be distinguished by the tone diacritic proposed here. Examples include *löth* 'cowbell', *joth* 'ring' and *kët* 'shoulder', which have low tone in the singular and non-low in the plural, and *cin* 'hand', *yal* 'courtyard' and *cök* 'foot', which have low tone in the plural and non-low in the singular. If there were also a way of orthographically distinguishing short from half-long vowels (as proposed in section 3.3 below), nearly all currently ambiguous singular-plural pairs could be distinguished. There are almost no nouns whose singular and plural forms are distinguished only by the difference between one non-low tone and another.

Verbs: Unlike the situation with nouns, Dinka verbal morphology makes extensive use of suprasegmental distinctions that are not currently indicated in the orthography. For example, the spelling *kol* in a verb form is lexically ambiguous between the short stem meaning 'take out' and some forms of the long stem meaning 'adopt'; ignoring the lexical ambiguity and focusing only on the stem meaning 'take out', the spelling *kol* is grammatically ambiguous between at least four different finite forms (2nd person singular, 3rd person singular, and what Andersen 1993 calls the 'zero' form and the 'non-topical subject' (NTS) form) and at least two different non-finite forms (which Andersen calls passive and non-finite). Naturally, grammatical and semantic context often help eliminate certain possible interpretations of an ambiguous spelling, but the potential for confusion is nevertheless considerable. The ambiguity between the zero form and the NTS form is especially troublesome: a written sentence like *Bol agut Deŋ* could represent either an utterance with the zero form of the verb (with low tone and short vowel), which means 'Bol is beating Deng' or one with the NTS form of the verb (with non-low tone and half-long vowel), which means 'Deng is beating Bol'.

There is obviously room for improvement in any orthography that fails to be clear about who did what to whom, and it is noteworthy that discussions of the need for orthographic reform (especially Gilley 2004 and Myhill 2011) are based heavily on ambiguities involving verb forms. However, as with nouns, the grammatical functions of low and non-low tone in verbal paradigms are systematic enough that the limited representation of tone proposed here will clear up a remarkable amount of uncertainty. The ambiguity between zero and NTS, for example, can be completely eliminated under my proposal, because in many dialects the zero form of all regular verbs always has low tone and the NTS form always has non-low tone. Moreover, as with nouns, there are almost no cases in verb paradigms where forms are distinguished by the contrast between one non-low tone and another. There are other ambiguities, especially among lexically short verb stems, that can be resolved only through a better indication of vowel length; this is discussed in section 3.3. But it appears that even in the verbal morphology the case for radical reform may have been overstated.

3.2.3. Choice of diacritic

The foregoing section makes the case for a single tone diacritic to indicate non-low tone; I now turn to the issue of what that diacritic should be. The diacritics most commonly used for tones in Africa are the acute and grave accents. Since acute is most often used for high tone and grave most often for low, I propose to use the acute accent as the tone diacritic. Syllables with low tone and toneless syllables, as suggested above, would remain unmarked, as at present; syllables with any non-low tone would be marked with an acute accent over the vowel. Under this proposal we would therefore write *cín* for 'hand' and *cin* for 'hands'; *joth* for 'ring' and *jóth* for 'rings'. As with the introduction of the dieresis for breathy voice, the change could be made gradually, because spellings are otherwise unaffected.

The most obvious problem with this proposal is that we need some way to combine the acute accent with the dieresis if we want to be able to indicate non-low tone on breathy vowels, and if we want to avoid stacked diacritics (Principle 3, and section 2.3 above). Fortunately, this specific problem has already been solved elsewhere. In Hungarian, the dieresis is used to indicate front rounded vowels, while the acute accent is used to indicate long vowels. Because all vowel phonemes can occur both short and long, it was necessary for Hungarian orthography to find a way to combine these two diacritic functions. The solution was what we might call a 'long umlaut', which is used to mark long front rounded vowels. Examples are given in Table 1.

front unrounded or back vowels		front rounded vowels	
short	long	short	long
hat 'six'	*hát* 'back'	*öl* 'cord'	*ősz* 'autumn'
toll 'feather'	*gróf* 'count'	*tör* '(s/he) breaks'	*tőr* 'dagger'
kutya 'dog'	*kút* 'well'	*fül* 'ear'	*bűn* 'crime'

Table 1. Combination of the functions of the dieresis and the acute accent in Hungarian, yielding the 'long umlaut' on letters for long front rounded vowels (rightmost column). The same solution could be adopted for Dinka to allow the use of the acute accent for non-low tone while still retaining the use of the dieresis for breathy voice.

As a result of its use in Hungarian, the long umlaut (officially a 'combining double acute accent') is available in Unicode (U030B), and it could easily be gradually introduced in Dinka. For example, we would write *cők* 'foot' (cf. *cök* 'feet') and *kẗt* 'shoulders' (cf. *kët* 'shoulder'). Because the long umlaut looks similar to the normal dieresis, it would clearly suggest breathy voice to the reader who is already experienced with the current orthography; at the same time, it is distinctive enough

to serve as part of the limited marking of tone proposed here. The Hungarian example shows that a viable orthography can be based on combining the two diacritics in this way.

3.2.4. Notes on the use of tone diacritics

Current practice with the dieresis is that the diacritic is applied to both vowel letters in a long vowel, e.g. *köör* 'lion', *miït* 'firefly'. It makes sense to extend this convention to the diacritics being proposed here, and in the illustration in the appendix I have written *tíím* 'trees', *bǎǎr* 'come here', etc.

The tone on many affixes, clitics, and other function words is uncertain or variable. It may therefore be difficult to decide whether to use a tone diacritic on a given item, but it may also make little difference in practice whether a diacritic is used or not. For example, the finite verb prefixes *a-* and *aa-* probably have a non-low tone, but in context they can probably be identified unambiguously, especially if they are separated from their host by a hyphen, as proposed in section 4.3 below. In the appendix I have not used a tone diacritic on these prefixes. Nevertheless, the issue of tone diacritics on all such items is a topic for closer consideration.

3.3. Quantity (vowel length)

3.3.1. The problem

At least in the phonology of nouns and verbs, Dinka has a rich and typologically unusual set of vowel length contrasts, which clearly poses challenges for any orthography. Strictly in terms of surface phonemic contrasts, there are three distinctive vowel quantities (Andersen 1987, 1993; Remijsen and Gilley 2008), which (following Andersen) I call short, half-long and long. In the morphophonology, however, the quantity system may better be seen as involving a 4-way (2 x 2) distinction (Gilley 2003, 2004). Lexically, there are short stems and long stems; grammatically, either type of stem can occur in the short grade (which Gilley originally called 'stressed' and for which she proposes the Dinka term *cony* 'beaten') or the long grade (which Gilley calls *miit* 'pulled'). Phonetically, the surface phonemic half-long vowel length serves to realise both the long grade of short stems (e.g. *cin* 'hand') and the short grade of long stems (e.g. *tim* 'tree') (Remijsen and Gilley 2008). The four morphophonological categories, and their relation to the three surface phonemic categories, are diagrammed and exemplified in Table 2.

lexically short stem		lexically long stem	
short grade (*cony*)	long grade (*miit*)	short grade (*cony*)	long grade (*miit*)
cin 'hands'	*cin* 'hand'	*tim* 'tree'	*tiim* 'trees'
yal 'courtyard'	*yal* 'courtyards'	*pal* 'knife'	*paal* 'knives'
akol 'you take out'	*akol* 's/he takes out'	*akol* 'you adopt'	*akool* 's/he adopts'
apïk 'you push'	*apïk* 's/he pushes'	*apïc* 'you twirl'	*apïïc* 's/he twirls'
phonemically short	*phonemically half-long*		*phonemically long*

Table 2. Dinka vowel length. The 2x2 phonological system distinguishes lexically short and long stems, which can occur in short and long grades depending largely on grammatical factors. In the system of surface phonemic contrasts, the short grade of long stems and the long grade of short stems are both half-long. The examples are given in the current orthography; as can be seen, only the long grade of long stems (phonemically long) is currently distinguished from the rest. For more detail see Andersen 1987 and Remijsen and Gilley 2008.

At first glance, Table 2 suggests that a straightforward choice needs to be made between basing the orthography on the three-way surface phonemic contrast and basing it on the 2 x 2 morphophonological system. This perspective makes the present orthography seem especially deficient, as it is based on neither of these two possibilities: the surface long vowels (long grade of long stem) are indicated with two vowel letters, and all other categories are collapsed, and indicated with one vowel letter. However, the situation is not so simple, as there also appear to be significant phonological differences between content words (noun and verb stems) and function words (affixes, clitics, auxiliaries, etc.). The 2x2 system applies consistently only in the verbal morphology, and somewhat less consistently in nouns; in several other contexts the system is less complex. In non-final syllables of disyllabic and polysyllabic nouns there may be no length distinctions at all. In noun and verb roots ending in /r/, there is only a two-way distinction, which is adequately indicated by the difference between CVr and CVVr (e.g. *kɔɔr* 'elbow' vs. *kɔr* 'elbows'). In many function words (clitics, affixes, auxiliaries, etc.) there is no evidence for any more than a two-way distinction, so that again the current orthography adequately reflects the distinctions that need to be made (e.g. the difference between singular finite verb marker *a-* and plural finite verb marker *aa-* or the past auxiliary *-ci* and the negative auxiliary *-cii*). Any proposal for modifying the current orthography must take these complications into account, and Principle 2 suggests that the distinction between CVC and CVVC should remain the primary basis of spelling vowel length in Dinka. However, Principle 1 leaves little doubt that this two-way distinction should be supplemented in some way, in order to represent the more complex set of distinctions found in nouns and verbs. This is where the choice between a surface phonemic approach and a morphophonological approach is relevant.

3.3.2. A surface phonemic approach

If the three-way surface phonemic distinction (short, half-long and long vowels) is to be used as the basis of an enriched representation of vowel length, then the weakness of the present orthography can be described as follows: it distinguishes long vowels (written CVVC) from both half-long and short vowels, but fails to distinguish between half-long vowels and short vowels, which are both written CVC. A radical modification would be to write short vowels with one vowel letter (CVC), half-long vowels with two vowel letters (CVVC), and long vowels with three vowel letters (CVVVC). However, this would mean changing the spellings of a substantial majority of words, because half-long vowels would change their spelling from CVC to CVVC, and long vowels would change their spelling from CVVC to CVVVC. It would also make it necessary to decide which spelling to use in cases where only two-way length distinctions are involved, as before /r/. Consequently, as already suggested in section 2.2, the least disruptive solution is to continue to write half-long vowels as CVC (e.g. *löth* 'cowbell', *joth* 'ring') and long vowels as CVVC (e.g. *kiir* 'Nile'), and to find a new way of indicating short vowels.

In keeping with Principle 3, one might try to do this by modifying the letter sequence rather than adding a diacritic. One possibility, based on several Germanic languages, is to indicate short vowels by doubling the following consonant letter (e.g. German *rote* /roːtə/ 'red (pl.)', *Rotte* /rotə/ '[military] detachment'; *Mal* /maːl/ 'time, occurrence', *Mall* /mal/ 'model, template'). Carrying this idea over to Dinka would yield forms like *cökk* 'feet' and *atiŋŋ* 'you see'. This respects Principle 1, because it permits us to express the quantity of every vowel unambiguously; it respects Principle 2 because short vowels are the least common, so that a large majority of words would not change their spelling; and it respects Principle 3, because it involves no new symbols at all and no diacritics. This is the solution I proposed in my earlier discussion papers.

An alternative, which favours Principle 2 over Principle 3, would be to indicate short vowels with a diacritic. This is the option I have chosen for the present proposal, using the underdot under a single vowel letter to indicate that the vowel is short (e.g. *cǫk* 'feet'; *atị̈ŋ* 'you see'). The advantage of the double-consonant alternative would be that learners could associate double letters with quantity distinctions – words with half-long vowels would have single vowel and consonant letters (CVC), long vowel words would have double vowel letters (CVVC), and short vowel words would have double consonant letters (CVCC). The advantage of the underdot alternative is that existing word shapes are changed only minimally, and that the change could be introduced gradually, as happened with the breathy vowel diacritic. Perhaps more importantly, the use of a diacritic also makes it easier to incorporate a more thoroughgoing morphophonological representation of vowel length into the spelling of verbs, as I show in the next section.

3.3.3. *A morphophonological approach*

If the 2x2 system of intersecting lexical and grammatical vowel length is to be used as the basis of the orthography, then it will be necessary to provide distinct orthographic representations for all four categories shown in the four columns of Table 2. Principle 2 argues that CVVC should be kept as the representation of long stems in the long grade, and CVC should be used for one of the other three categories. The simplest way to achieve this is to spell lexically long stems consistently with CVVC and lexically short stems consistently with CVC, and to use a diacritic to indicate the short grade of both types of stems. If that choice is adopted, and if the underdot proposed in the previous subsection is used as the diacritic, then CVC and CVVC would represent the long (*miit*) grade of short and long stems, while CṾC and CṾṾC would represent the short (*cony*) grade.

Under this system, surface phonemic short vowels would always be written CṾC and long vowels would always be written CVVC, exactly as in the surface phonemic approach. However, half-long vowels could potentially be spelled either CVC or CṾṾC. Correct spelling would require writers to be aware of whether a phonemically half-long vowel represents a lexically long or short stem. For example, 'ring' would be written *joth* because the vowel is the long grade of a lexically short vowel, whereas 'tree' would be written *tị̈im* because it contains the short grade of a lexically long vowel. On the whole I feel this is undesirable, partly because of the additional learning burden, but more importantly because of the fact that the 2x2 system does not apply uniformly throughout the language. As already mentioned, many function words, and content words with stems ending in /r/, appear to involve only a two-way distinction between shorter and longer. Even among nouns, there are many stems that cannot be clearly identified as lexically long or short; some are phonemically half-long in both singular and plural, while others are phonemically short in one form and phonemically long in the other[4]. In all of these cases it would be difficult to apply an orthography based strictly on the morphophonological 2x2 system of vowel length.

In the verb morphology, however, the 2x2 system is applied consistently. As discussed extensively by Andersen (1993), verbs are unambiguously long or short lexically, and the distribution of short grade and long grade forms is completely regular morphologically. For example, the passive, the

---

[4] Nouns with these irregularities seem to be quite variable from dialect to dialect. The Ladd et al. (2009) database of Luanyjang nouns includes several with half-long vowels in both singular and plural (e.g. *löth* 'cowbell', *töny* 'pot', *lec* 'tooth'); in the Agar data given in Andersen 2002, *löth* and *töny* behave as in Luanyjang, but *lec* has the more expected alternation between half-long in the singular and short in the plural. Similarly, in our Luanyjang data *kal* 'town, fence' has a phonemically short vowel in the singular and a phonemically long vowel in the plural, but shows a regular short/half-long alternation in Andersen's Agar data; conversely, in Agar *ɣöt* 'place, room' has a phonemically short singular and a phonemically long plural, but in our Luanyjang data the same word has a regular alternation between half-long in the singular and long in the plural.

second singular, and the plural forms always have the short (*cony*) grade of the stem vowel (short if the vowel is lexically short and half-long if the vowel is lexically long), while the first and third singular, the non-finite, and the non-topical subject forms always have the long (*miit*) grade (half-long if the vowel is lexically short and long if the vowel is lexically long). This suggests that in the verb morphology it would indeed be possible to distinguish fairly consistently between spelling half-long vowels as CVC (long grade of short stem) and spelling them as CVVC (short grade of long stem). Moreover, by consistently using the underdot in verb forms to mark the short grade of both short and long stem vowels, the system would incorporate some morphemic associations of the sort that John Myhill proposes. In the lexicon, any given verb stem would always have either one or two vowel letters, depending on its *lexical* vowel length. In the grammar, forms that involve the short grade of the stem (e.g. zero, 2ⁿᵈ person singular) would consistently have the underdot; forms that involve the long grade (e.g. NTS, 3ʳᵈ person singular) would consistently lack it.

By combining this simple representation of vowel length with the marking of non-low tone proposed in section 3.2, my proposal would dramatically reduce the ambiguity of written verb forms that motivates some calls for radical orthographic reform. Consider first the problem of who is doing what to whom in the sentence *Bol agut Deŋ*. If Bol is beating Deng, the verb is in the zero form, with the short grade of the vowel and low tone, and would therefore be written *agṵt*; if Deng is beating Bol, the verb is in the NTS form, with the long grade of the vowel and non-low tone, and would be written *agút*. Or consider a three-way ambiguity discussed by Gilley 2004: in the current orthography, *Bol agut* is ambiguous between 'you are beating Bol', 's/he is beating Bol', and 'Bol is being beaten'. This is clearly a problem, as these are all distinct in speech: the 2ⁿᵈ person singular form has low tone and the short grade of the vowel; the 3ʳᵈ person singular form has low tone and the long grade of the vowel; and the passive has non-low tone and the short grade of the vowel. Under the proposal presented here, these three would all be written differently. The same will apply to lexically long verbs if we base our spelling on the 2x2 system and consistently write lexically long verb stems with two vowel letters: the same combinations of diacritics will generally be used for the same forms in the verb paradigm, and lexically long verb stems will consequently undergo the same set of diacritic modifications as short stems. All this is illustrated in Table 3.

	lexically short (*gut* 'beat')		lexically long (*cɔɔl* 'call')	
	orthography	gloss	orthography	gloss
zero (*cony*)	*Bol agṵt Déŋ*	B. is beating D.	*Bol ac̭ɔɔl Déŋ*	B. is calling D.
NTS (*miit*)	*Bol agút Déŋ*	D. is beating B.	*Bol acɔ́ɔl Déŋ*	D. is calling B.
2ⁿᵈ sg. (*cony*)	*Bol agṵt*	you are beating B.	*Bol ac̭ɔɔl*	you are calling B.
3ʳᵈ sg. (*miit*)	*Bol agut*	s/he is beating B.	*Bol acɔɔl*	s/he is calling B.
passive (*cony*)	*Bol agṵ́t*	B. is being beaten	*Bol acɔ̭́ɔl*	B. is being called

Table 3. Orthographic disambiguation of verb morphology using the limited system of diacritics proposed here. In the current orthography, all five forms shown are written identically in lexically short verbs; in lexically long verbs three of the forms are spelled with one vowel letter (zero, 2ⁿᵈ sg., passive) and two are spelled with two (NTS, 3ʳᵈ sg.). In the proposed modification of the orthography, the lexically long verbs are always written with two vowel letters, but the patterns of diacritics that represent the different morphological categories are the same for both lexically short and lexically long verbs. Note: the fact that the 2ⁿᵈ sg. and zero forms are written identically reflects the pronunciation, as these forms are homophonous; grammatically, they are unlikely to be confused, because the zero form must be accompanied by two arguments (a subject and an object) while the 2ⁿᵈ sg. form can only be accompanied by one (the object).

3.3.4. Summary

My proposal for representing vowel length retains the current orthographic distinction between single vowel letters and double vowel letters as the core of the system. In parts of the lexicon where only a two-way quantity distinction is made, this orthography is adequate and (by Principle 2) should not be changed. However, Principle 1 demands additional provisions for spelling quantity in content words. In nouns I propose to use the underdot as a diacritic for phonemically short vowels. This provides a representation of the surface phonemic distinction between short vowels (single vowel letter with underdot) and half-long vowels (single vowel letter without underdot). It also sets up an association between the underdot diacritic and the grammatically conditioned choice of the short (*cony*) grade of the stem, which could be exploited more extensively in verbs. In verb stems only, the underdot could be used in conjunction with double vowel letters to indicate the short grade of lexically long stems. This would allow for consistent representation of lexically short (CVC) and long (CVVC) verb stems, with the underdot taking on a semi-morphemic role.

4. Standardisation

As I noted in the introduction, I now believe that the shortcomings of Dinka orthography may have been exaggerated, and that the difficulty many literate Dinkas have with reading Dinka is that they simply don't have enough opportunities to develop real fluency as they do with reading English or Arabic. In the foregoing sections, I have proposed a minimal set of changes to the way tone and quantity are represented that could nevertheless eliminate a lot of ambiguity from written Dinka. However, there is a largely unrelated problem that affects the development of fluent reading skills, which has so far not received much attention, namely the variability of spelling practice. In my opinion, standardisation of a number of segmental spelling conventions will be at least as important for promoting Dinka literacy as changes to the basic set of grapheme-phoneme correspondences.

It is well known that spelling was extremely variable during the early stages of written European vernaculars. As one example among many, there are at least six commonly found spellings of Shakespeare's name in 17th century books and documents (Wikipedia, consulted 21 February 2012). Despite the apparent simplicity of the alphabetic principle, there are actually many decisions that need to be reached on how best to spell, and in the natural emergence of vernacular writing in Europe it took several centuries to reach agreement on these matters. For Dinka it will be helpful if the process moves a little more quickly! I have only one specific proposal in this area, because the number of factors involved goes well beyond the clearly limited set of considerations involved in providing an adequate representation of specific suprasegmental distinctions, and because I know too little about Dinka grammar and dialect variation to make useful suggestions. Nevertheless, I think it will be useful to discuss some of the factors that lead to variability and the considerations that may be relevant to the development of standard spelling conventions.

There are at least four distinct kinds of problems that give rise to variability and the need for standardisation. These include: (1) neutralisation and other cases where the phonemic analysis is ambiguous; (2) the writing of conventional connected speech reductions and elisions; (3) the use of spaces and hyphens in the writing of compounds, prefixes, clitics, and other morphologically or syntactically complex strings; and (4) the question of lexical differences between mutually intelligible dialects. These topics are discussed here in turn.

4.1. Neutralisation and phonemic ambiguity

There are several obvious cases that come under this heading in Dinka. Perhaps the clearest is the absence of contrast between /ɛ/ and /a/ at the shortest degree of vowel length. Because there is no contrast, it is entirely arbitrary whether to write the low front short vowel with *ɛ* or *a*. Some Dinka speakers seem to have an intuition that the vowel in question should be identified with half-long or long /ɛ/ rather than /a/, and for a few words a convention already seems to have emerged that distinctive vowel length can be indicated by the choice of letter. The commonest example seems to be the written distinction between *bëny* and *bäny*, which tend to be used to spell the singular (short vowel) and plural (half-long vowel) forms, respectively, of the word for 'chief'. Given this emerging convention, it may be useful to settle on *ɛ* as the spelling of the low front short vowel. However, the larger points are that (a) the choice is completely arbitrary, but (b) readers will be helped by having a single standard.

Other cases of this sort include the spelling of vowels after palatal consonants (*c, j* and *ny*) and after labial consonants (*p, b* and *m*). In both cases it is difficult to determine whether or not the vowel begins with a palatal or labial glide. For example, should the 'construct state' form of *moc* 'man' be written *mɔny* or *muɔny*? Here it is possible that the choice is not completely arbitrary, unlike the case of low front short vowels. That is, there may be linguistic arguments for distinguishing between a spelling *ciɛ-* and *cɛ-* or *muɔ-* and *mɔ-*. Once again, though, the most important point is to arrive at a standard spelling that can be learned by all.

Related to this issue is the spelling of phonetically indeterminate or dialectally variable forms in weak positions such as grammatical suffixes. For example, it appears that the 2nd person plural imperative suffix varies (or perhaps is simply indeterminate) between *-kë* and *-kë*. Similar issues arise for negative auxiliary verb forms, variably written *cië, ciï, cëë* and undoubtedly in other ways as well. Whether these differences in spelling reflect actual differences between grammatically distinct forms, different pronunciations of the same grammatical form, or simply different intuitions about the phonemic identity of weakly pronounced grammatical items is not always clear, but in any case it should not be difficult to settle on standard spellings for such cases. There are not very many of them, but they occur very frequently in running text, and having a standard should help readers.

4.2. Conventional reductions and connected speech forms

It seems probable that all languages have conventionalised reduced versions of more deliberately pronounced forms, such as *gonna* from *going to* in English. Some of these conventional reductions find their way into standard spellings, while others do not. For example, in almost all contexts English *and* is normally pronounced [ən] or [n̩], yet it is almost invariably spelled *and*; spellings like *fish'n'chips* are occasionally used for advertising impact or other special effects but cannot be regarded as standard. The variation between *them* and *'em* or between *-ing* and *-in'* is more often recorded in writing, but the use of the reduced spellings still generally conveys an attempt to express in writing that a speaker has non-standard or non-prestige pronunciation (so-called 'eye-dialect'). Much more standard are written forms like *I'd* for *I would* or *I had*, or *didn't* and *couldn't* for *did not* and *could not*; here the alternative spellings reflect genuinely distinct forms in the grammar of the present-day language, and the forms that originally counted as phonetic reductions now count as separate stylistically marked variants. Finally we might mention spellings like *Mrs.* for [mɪsɪz], which reflects the fact that the form is historically a reduction of *mistress* even though many speakers may be unaware of the historical connection.

From these examples it can be seen that phonetic reduction and the status of reduced forms in the language is a matter of degree, and historically changeable. Speakers are therefore likely to have variable intuitions about how (or whether) they should be written, and this is a further source of variability in written Dinka. A particular case in point here is the phonetic running-together of the final vowel of words like *ku* and *go* with the initial vowel of the finite verb prefixes (e.g. *ka cï* for *ku acï*) or simply linking such words to grammatical words beginning even if they begin with a consonant (e.g. *Gokë* for *Go kë* 'And they' in the Dinka New Testament, e.g. Luke 2:9). In general I think it would be best to avoid such forms in writing (just as it is not normal to spell English *and* as *an'* or *'n'*) in order to provide readers with an invariant visual representation of each word (i.e. write *ku acï* or *Go kë* regardless of the degree of phonetic elision or reduction in pronunciation). However, some such forms are almost certain to become conventional. Some attention might usefully be directed to standardising any such forms that are used, but this is clearly a matter for native speaker intuition.

A conspicuous case of this type of variation in Dinka is that between *ë* and *kë* and between the presence and absence of *ë* (see Roettger and Roettger 1989: 11f.) The grammatical, phonetic, and sociolinguistic facts are extremely complex and clearly require expert native speaker attention. I have no doubt that in the illustration in the appendix there are occurrences of *ë* that some writers would prefer to omit, and cases in which *ë* is absent where some writers would prefer to include it.

4.3. Writing of morphologically and syntactically complex strings

The discussion of forms like *Gokë* and *ë* brings up the issue of conventions for indicating the boundaries between separate words or morphemes in tightly bound strings such as compounds or combinations of stem+affix and host+clitic. Many languages have such conventions: blank space is, of course, universally used as a signal of word boundary in alphabetic writing systems, at least in the Roman alphabet, but boundaries come in many different 'strengths', and it is not always clear whether a given boundary is to be regarded as a word boundary or something weaker. These weaker boundaries are often marked by hyphens or apostrophes, or by nothing at all.

For example, the internal boundaries in compounds – of which Dinka has many – are intuitively subordinate to the boundaries between independent words, and this leads to conflicting conventions for writing compounds. In English, many short compounds, especially those involving monosyllabic components, are usually written with no boundary indication (e.g. *matchbox, policeman, lighthouse*); most long compounds are written with spaces as boundary markers (e.g. *data processing, copyright lawyer, tattoo artist*); but some compounds may be written with a hyphen to mark the boundary (e.g. *fly-leaf, twenty-eight, church-tower*). In German, by contrast, much longer compounds are written without any boundary indication (e.g. *Autobahnkreuz* (*Auto+Bahn+Kreuz*) 'motorway junction', *Bahnhofsvorstand (Bahn+Hof+s+Vor+Stand*) 'station supervisor'). Examples of Dinka compounds that I have seen written without boundary indication are *monyjäŋ* and *Gäräŋdït*. These are perfectly defensible spellings, but so too are *mony jäŋ* and *Gäräŋ dït*; the alphabetic principle gives no real basis for choosing between these alternatives. In any case I believe that the attention of DILDA and other interested groups could usefully be directed to considering these cases.

Sequences of stem+affix and host+clitic make for similar dilemmas. These are clearly variable in Dinka, and we find a great variety of ways to deal with these in other languages as well. For example, in most Romance languages, pronominal clitics preceding verb forms are written as separate words if they have their own vowel letter but are joined to their verbal host, separated by an apostrophe or a hyphen, if the vowel is elided: e.g. French *je te vois* 'I see you [lit. I you see]'

but *je t'aime* 'I love you'; Romanian, *îl deschid* 'I open it [lit. it I-open]' but *l-am deschis* 'I opened it [lit. it I-have opened]'. Romance pronominal clitics that follow the host verb are often joined to the verb form with no boundary indication in some languages (e.g. Italian *prendilo* 'take it') but with a hyphen in others (e.g. French *prends-le* 'take it'). Once again, the alphabetic principle itself provides little or no guidance here, but the value of a standard seems clear.

There are several cases that need to be considered in Dinka, including the possessive affixes (*-da, -kuɔ̈n,* etc.), the plural verb person suffixes *-ku, -kä, -kë,* the finite verb prefixes (or proclitics) *a-* and *aa-,* and auxiliary verb forms such as *cï, bï,* etc. Current practice on these is variable. Roettger and Roettger (1989: 11) say that dialect differences are involved in whether the possessive suffixes are written together with their host word or separately. On the basis of my limited observations, there may also be a difference between singular and plural, with the singular suffixes more often written together (e.g. *nyandië*), and the plural suffixes more often written as separate words (e.g. *mïth kïë*). Something similar is true of the finite verb prefixes: the singular form *a-* seems to be normally attached to the following verb form, but the plural *aa-* is sometimes written separately.

This is an issue that should definitely be taken up by any group making recommendations for standard spellings. My only concrete proposal here is to separate the finite verb prefixes from the host verb with a hyphen (e.g. *a-cɔɔl, aa-cï*). The advantage of this is that the hyphen makes verb forms like *a-cɔɔl* visually quite distinct from the very common two- and three-syllable nouns beginning with /a/ like *acuuk* 'biting ant'.[5] Hyphenation could also be used with the possessive suffixes (e.g. *nyan-dië , mïth-kïë*), but this would not have such an immediate effect on visual distinctiveness as hyphenating the finite verb prefixes, because there are few if any polysyllabic words or compounds that are confusable with combinations of a monosyllabic word and a possessive suffix. The same applies to the plural verb person suffixes *-ku, -kä, -kë*.

Finally, there are several essentially grammatical strings that are sometimes written as one word and sometimes as two, such as *nala (na la),* and *yeŋö (ye ŋö).* It would be helpful to standardise these, but native speaker intuition is clearly required to decide on individual cases.

4.4. Cross-dialect spelling and cross-dialect lexis

If some standards can be developed to deal with the issues raised in the foregoing sections, I believe that literacy will be facilitated, because readers from all dialects will be more likely to recognise strings of words written in a consistent form and can then pronounce them in their own way. This is clearly the case in English, where wide variations in pronunciation can all be referred to a single written standard. However, it is worth mentioning that spelling and lexis are very different issues. Different varieties of English exhibit literally thousands of vocabulary differences, and the use of dialect-specific vocabulary in written English normally has no effect at all on spelling. A good example is provided by the vocabulary dealing with cars and road travel. It is possible to construct a normal sentence of British English (e.g. *The petrol station forecourt was so crowded that people were parked on the slip road*) that would be difficult for most speakers of North American English to understand fully, even though all the words are spelled according to the common English standard. There are a few spelling differences between the British and American written standards, but they are unrelated to pronunciation, e.g. the difference between American *honor, color* and British *honour, colour*.

---

[5] Note that in Kiir and Duerksen's textbook for foreign learners of Dinka (2000) the finite verb prefix is spelled with a grave accent, e.g. *àcɔɔl, ààcï.* This has the same effect of visually distinguishing finite verb forms from polysyllabic nouns beginning with *a,* and could be considered an alternative to my proposal here.

This is clearly an issue for Dinka, with many individual lexical items being familiar only in some parts of the Dinka-speaking territory. It seems likely that greater inter-communication will lead to greater convergence on common vocabulary, but the continued existence of regional differences does not need to affect the development of a common orthography – exactly as in English. My proposal here is limited to issues of spelling.

5. Overview of proposals

The detailed proposals made in this paper are summarised here and are illustrated in the appendix.

Voice quality: the use of the dieresis (umlaut) for breathy voice should be retained. The only innovation suggested here is that the dieresis can be combined with the acute accent (the proposed tone diacritic), by using the 'long umlaut' (double acute accent) symbol (U030B).

Tone: substantial reduction of ambiguity can be achieved by using the acute accent to indicate any non-low tone. This does not permit a complete representation of all the tonal distinctions of any dialect, but is easy to incorporate into a compromise orthography suitable for all dialects, and it makes it possible to represent most grammatically relevant distinctions in both noun and verb morphology, many of which go unwritten in the current orthography. As just noted, the acute accent for non-low tone can be combined with the dieresis notation for breathy voice by using the 'long umlaut' (double acute accent) symbol.

Quantity: improved representation of vowel length can be achieved through the use of the underdot to indicate shortening of vowels. There are three subparts to the proposal. First, in contexts where there is only a two-way contrast between long and short (function words, non-final syllables of polysyllabic nouns, stem vowels followed by /r/, and probably other contexts as well), the present convention of writing V for short and VV for long remains unchanged. In contexts where there is a three-way surface phonemic distinction of short, half-long, and long, my basic proposal is to spell short vowels with an underdotted single vowel letter; half-long vowels should continue to be spelled with plain single vowel letters, and long vowels with double vowel letters. In verb forms, however, where the 2x2 morphophonological system is most consistent, I propose that the underdot could also be used in combination with double vowel letters to spell the short grade of lexically long stem vowels (which are half-long in surface phonemic terms).

Boundary marking: the use of hyphens to separate affixes and clitics from their hosts is a topic that requires further consideration. The only specific proposal I have made here (and implemented in the appendix) is to use a hyphen to separate the finite verb prefixes *a-* and *aa-* from their hosts. This will make verb forms visually distinct from disyllabic and polysyllabic nouns beginning with /a/.

Acknowledgements

References

Andersen, Torben (1987). The phonemic system of Agar Dinka. *Journal of African Languages and Linguistics* 9: 1-27.

Andersen, Torben (1993). Vowel quality alternation in Dinka verb inflection. *Phonology* 10: 1-42.

Andersen, Torben (2002). Case inflection and nominal head marking in Dinka. *Journal of African Languages and Linguistics* 23: 1-30.

Bird, Steven (1999a). Strategies for representing tone in African writing systems. *Written Language and Literacy* 2: 1-44.

Bird, Steven (1999b). When marking tone reduces fluency: An orthography experiment in Cameroon. *Language and Speech* 42: 83-115.

Chao, Yuen Ren, and Yang, Lien Sheng (1962). *Concise Dictionary of Spoken Chinese*. Harvard University Press.

Connell, Bruce, and Ladd, D. Robert (1990). Aspects of pitch realisation in Yoruba. *Phonology* 7: 1-29.

Duerksen, John (1994). A review of Dinka orthography. Unpublished manuscript, SIL.

Edmondson, Jerold, and Esling, John (2006). The valves of the throat and their functioning in tone, vocal register and stress: laryngoscopic case studies. *Phonology* 23: 157-191.

Gilley, Leoma (2003). The feature of stress in Nilotic. In R.-J. Anyanwu (ed.), *Frankfurter Afrikanistische Blätter*, Vol. 15, pp. 99–120.

Gilley, Leoma (2004). Morphophonemic orthographies in fusional languages: The cases of Dinka and Shilluk. SIL Electronic Working Papers. Available from http://www.pnglanguages.org/silewp/2004/silewp2004-003.pdf

Kiir Kuony, Lino, and Duerksen, John (2000). *Language learning Dinka*. Dinka Literature Production Team, Khartoum.

Ladd, D. Robert, and Remijsen, Bert (forthcoming). Singing in a tone language: Evidence from Dinka. To be submitted for publication in summer 2012.

Ladd, D. Robert; Remijsen, Bert; and Manyang, Caguor Adong (2009). On the distinction between regular and irregular inflectional morphology: evidence from Dinka. *Language* 85: 659-670.

Mountford, Keith (1983). *Bambara declarative sentence intonation.* PhD dissertation, Indiana University.

Myhill, John (2011). Presentations to Dinka Orthography Development Workshop sponsored by Dinka Language Development Association (DILDA). Juba, South Sudan, 18-19 October.

Remijsen, Bert (2010). Tone systems of Dinka dialects. Paper presented at the Fourth European Conference on Tone and Intonation (TIE4), Stockholm.

Remijsen, Bert, and Gilley, Leoma (2008). Why are three-level vowel length systems rare? Insights from Dinka (Luanyjang dialect). *Journal of Phonetics* 36: 318-344.

Remijsen, Bert, and Ladd, D. Robert (2008). The tone system of the Luanyjang dialect of Dinka. *Journal of African Languages and Linguistics* 29: 173-213.

Roettger, Larry, and Roettger, Lisa (1989). A Dinka dialect study. *Occasional papers in the study of Sudanese languages* 6, pp. 1-65.

Appendix

The following text is intended as an extended illustration of the proposal presented in this paper. It is a transcription of the story of the Lion, the Hyena and the Fox, as recorded by Elizabeth Achol Ajuet Deng and transcribed phonemically by Bert Remijsen. I have no doubt that there are errors of various sorts in the text, possibly including errors in transcription and certainly including failures to treat accurate transcriptions in accordance with the suggestions put forward in section 4.2 above. More generally, there are undoubtedly ways in which the ideas here could be more effectively applied, particularly in the use of hyphens. Nevertheless, this should give some idea of what is achievable with the addition of only a few diacritics to the present orthography.

Köör, Aŋuï, ku Awán

Wääthɛɛr, Aŋuï ku Köör aa-ké rɛ́ɛ́r thɪ̈́n. Kek aa-ké mëc ë wṵn tök. Köör a-dẹk wéŋde. Wéŋde é thɔn, ku wéŋ Anuï yen é ŋṵ̈ot. Ku wéŋ Aŋuï é liac. Jɔkë ɣët ëthɛ́n, nala wéŋ thiṳ̈k ë dhiẹth. Ku kőlkɛ́n Aŋuï é liu – é cï̈ la aɣeer. Ku Köör é rɛ́ɛ́r thɪ̈́n ë tëdïtë. É rɛ́ɛ́r kä búth wéŋ Aŋuï te bï̈ yen dhiẹth thɪ̈́n. Nalá wéŋ Aŋuï kől-ë kạc yic, ku la thɪ̈́n ku cï̈-yen ke manh wéŋ Aŋuï nyɛ̢ɛi. Aŋuï é liu, é cï̈ la aɣeer. Nyɛ̢ɛi manh ë wéŋ ku thɛ̋ɛ̋u wéŋde lɔ̈ɔ̈m (thɔnden ë wẹ̈n lɔ̈ɔ̈m). Ku jel a-lëk kɔ́c alɛ̋: "Wéŋdiɛ a-cï̈ dhiẹth."

Ethɛ̋n Aŋuï a-cǐ jǎl bɛ̋n. Nalá Aŋuï bën kë jël thiëc ku luęęl: "Manh ë wéŋdiɛ kou?" Go Köör luęęl: "Yen kɛ́dɛ́? É wéŋdiɛ yen a-cǐ dhię̈th. Thɔndiɛ yen a-cǐ dhię̈th, wéŋdu a-kíc dhię̈th. Ku go luęęl ku na yen dęk muɔɔr cǐ kaŋ dhię̈th? Ku luęęl yen é tǫ̈k a-cǐ diɛl dhię̈th. Wët aa-cǐk jal tɛɛr thɛ̋n.

Läi kɔ̋k kek rɛ̋ɛ̋r thį̈n áya. Aa-ŋíckë lɔnë wët Aŋuï yen yic, ke kek aa-ké riɔ̈ɔ̈c ë Köör. A-cïn raan cï rɔt thääu thį̈n. Nalá Aŋuï tïŋ, ku luęęl "Aŋuëɛ̋n buk jǎl, buk la lúk yic." Jäl kë la tim cǫk. Aŋuï a-cǐ wët jǎl bɛ̋ɛ̋i nhiál tɛ̋n bę̈ny. Jël luęęl, "Bę̈ny, kënë bǐ ɣen tën. Köör a-cǐ manh ë wéŋdiɛ nyaai, ku luęęl ke thɔndiɛ a-cǐ dhię̈th. Ɣɛn a-dęk ŋuɔ̋t, ku Köör yen dęk thɔn. Ke ɣen á-cǐ la aɣéér. Nala bɛ̋n, ke yäk manh wéŋdiɛ ke a-cǐ Köör lök nyaai, ku tɛ̋ɛ̋u thɔnde lɔ̈ɔ̈m, ku luęęl ke thɔnde yen cǐ-e dhiɛ̋th."

Bę̈ny a-cië thok jäl wę̈ęl Köör, ku jël thiɛ̋ɛ̋c: "Köör, wëtkɛ́n é yic?" Go luęęl: "Ɛ, ke é yic. Wéŋdiɛ yen cǐ dhię̈th. Thɔndiɛ cǐ dhię̈th, ke ɣen a-gam-e." Wët a-cǐ jäl tɛ̋ɛ̋t, tɛ́ɛ́r apɛi. Ku kɔc aa-cǐ riɔ̈ɔ̈c, na benë tɛ́ɛ́r apɛi, ke cít Köör bǐ kɔc cuet. Lúk a-cǐ jäl miɛɛn.

Tɛ̋n Awán é rɛ́ɛ́r kek kɔ́c ë lúk yic. Awán wën tïŋ yin, yen tɛ̋n rot kuɛ̋l bei amɛ̋ɛ̋th, ku jël la aɣéér. Le róór thok të thiɔ̈k yic, ku le ku cǐ yen ke-tiim kuɛny kek, duut kek. Ku duut ye yǎɔt ë kɔ̈t aláth, ku jël rot a-gɔ̋ɔt ë tim cɔ̈k. Tɛ̋n ke tįŋ ë Köör ku jäl Aŋuï – Awán aa-cǐk tǐŋ. Ku kek Awán aa-yekä cɔl ke manh ë nyankën-den. "Awán manh ë nyankai, bɛ̋ɛ̋r! Bɛ̋ɛ̋r kǫny kɔ́c ë lúk! Lúk a-cǐ kɔ́c gɔ̋ɔ̋k tën."

Go Awán go bɛ̋ɛ̋r, luęęl "Wek, ke a-cin te bǐ ɣɛn wek kony. Cak ɣɛn e tǐŋ ëmën te bɛn ɣɛn a-köu thį̈n. Tíím yaka tǐŋ ka ɣɛ̋ɛ̋c a-nhom kä? Wǎ a-cǐ dhię̈th wɛ̋n-aköu, ku ɣɛn a-wiëc ku ba wǎ bën la nyop." Tɛ̋n Köör a-cǐ rot gua jɔt ku luęęl: "Dęk muony ë dhię̈th?" Kɔ́c aa-cǐ ke-thook jäl gua wël – yen läi awę̈n te thį̈n – ku luęęl "Nawɛ̋n yin yé luęęl muɔɔrdu a-cǐ dhię̈th?"

Tën kɛ̋n, Awán a-cǐ lúk jäl gua téém. Manh ë wéŋ a-cǐ duɔ̋ɔ̋k Aŋuï. Wët a-cǐ jäl gua téém nyín yic tën. Yen a-kan.