A New Orthography in Tera

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Africa has a population of 797 million, speaking 2,092 languages, across 53 different countries. A sixth of Africa's population live in Nigeria, approximately 130 million, and between them they speak about a quarter of those languages, 516 to be precise. Nigeria has the third largest number of languages within national borders in the world, following Papua New Guinea and Indonesia; India has 427 languages, and China 241 (Gordon & Grimes 2005). Of those 516 in Nigeria, 510 are indigenous; Hausa, Igbo and Yoruba are classified as major regional languages ('languages of wider communication'); Edo, Efik, Fulfulde, Ibibio, Idoma, Itsekiri, Izon, Kanuri, Tiv, Urhobo, among others, are classified as 'medium' languages, leaving about 490 as 'minority' languages, spoken by about half of Nigeria's population (see Igboanusi & Peter 2005: 6).

Minority languages are largely unwritten, largely ignored in education and government, but nevertheless provide an essential factor in local social cohesion and the means of maintaining the integrity of a local, distinctive, culture; in other words, although minority languages may not mean a great deal to outsiders, they provide the social bonding among their native speakers. Minority language speakers have their own pride and aspirations for themselves and their people, just as much as the speakers of medium, major and international languages have. Among the minority groups in Nigeria, none have greater pride and sense of ambition than the Tera people.

The Tera

The Tera are one of the ethnic groups that occupy territory between the eastern border of the Hausa and the western border of the Kanuri speaking people in Northeast Nigeria. They number over 100,000 and live mainly in the northern part of Gombe State and the eastern part of Borno. They are mainly agriculturalists, specializing in guinea corn, millet, maize, rice and wheat, and orchards; other major occupations include fishing and weaving. Their traditional dancing is well known in Nigeria. Their mother tongue is used in family and village life and in local markets; they use Hausa as their language for wider communication, but increasingly, English features in higher levels of education

and in new business evolving around computing. Hausa is generally used in their education and worship, and in the city life of Gombe. Although there is some population drift into Gombe, the majority of the Tera remain a rural population, whose area is fertile, but whose transport infrastructure is precarious.

The Tera call themselves Nyimatli /ɲimáɬi/; their language is Chadic like Hausa and the string of other languages that lie across the border between Hausa and Kanuri speakers. There was a brief period in the 1930s when literature appeared in the Tera language. The British and Foreign Bible Society published a 'tentative' translation of the Gospel of John in 1930 in an alphabet that included many letters with a subscript dot. A catechism and songbook followed shortly afterwards in stencilled form, but the typing omitted all subscript dots. A change in missionary organization policy downgraded the use of local languages like Tera in preference for developing Hausa as a lingua franca; this facilitated the mobility of personnel, not only in mission, but also in government. But this meant stunted development of Tera literature.

In the 1990s a partial revival of interest in Tera literature was promoted by a local inspector of education, Ayuba Nyagham, who introduced a number of changes to the letters of the Tera alphabet, matching it closer to the Hausa, which the whole educated population could read. His untimely death closed this potential development prematurely, until another local teacher took action. Jauro Maila broadcast news in Tera on the radio in the 2000s and issued a number of papers in an alphabet that resembled Nyagham's, although it was constructed quite independently. The urge to establish new

orthographies was fuelled by a new drive to assert the Tera people's distinctive culture and language, their separate identity as a people in the midst of political and religious conflicts, and their determination not to allow the domination of Hausa language and culture. They were afraid of losing their language and with it their sense of identity, heritage and dignity.

A remarkable young lady stepped on to the stage, a graduate student named Isioma Jideonwo who worked among the Tera on a placement in the national, postgraduate, Youth Corps programme. This enterprising young lady published a book in English, "Let's Develop Nyamatli Language", in 2004, the result of a good deal of research into the history, culture and language of the people. The alphabet she uses bears close resemblance to those of Nyagham and Maila.

The final actor in this tale of development is the Bishop of Gombe who sought to act as a catalyst for the production of Bible translations in the local languages of Gombe State, including Tera. His action eventually resulted in an orthography workshop held in 2004, at which Tera was represented by four men chosen by local communities. The objective of this workshop was the production of a 'working' orthography. The methodology used is described below, but first, the main principles of orthography are discussed.

Orthography

Orthography represents words. This is clear from humanity's earliest forms of writing and from humanity's modern writing systems, whether we consider logographic systems

like Chinese characters, syllabaries or alphabets, or indeed mixtures of them. Writing is for meaning, and words and morphology are the basic linguistic units of meaning. Words represent our experience of all the things, actions, qualities and relationships that we perceive in the world around us and within us. That an alphabetic orthography represents words is clear from the observation that blank 'slots' either side of a string of letters are called 'word spaces'; they mark the beginning and end of words. Symbols in syllabaries are perceived as grouping together to represent words. Also modern icons on domestic articles, charts, mechanical or electronic equipment represent messages that can easily be expressed as single words, eg 'cloudy' on a weather map; 'non-iron' on a shirt label; 'print' on a computer, etc.

Orthography also represents grammar. Sentences and clauses can be marked, eg with capital letters and full stops or commas; relationships between clauses can be marked by other marks of punctuation, including dashes and brackets. Sequences of written words follow the same sequence as spoken. Cultures may also have idiosyncratic features for indicating some grammatical information; for example, in English, possessive <s> is marked with an apostrophe to distinguish it from plural <s> in nouns; and in German, an initial capital serves to identify nouns.

Orthography also represents discourse. Paragraphs, as significant sections of text, are marked by beginning them on a new line, often indented; chapters likewise, by beginning them on new pages. Question marks and quotation marks indicate discourse functions; exclamation marks and typefaces often provide paralinguistic information.

In short, orthography represents language, whether dynamically, i.e. in actual use, or statically, as in dictionaries, telephone directories, etc.

Whereas orthography represents language – its words, grammar and discourses – an alphabet reflects phonology. It reflects phonology at the level of word; phonological resources for representing words include consonantal and vowel systems and their distributional criteria, phonotactic and syllable structures, prosodic features and syllable counts. An alphabet also may contain the means for indicating rhythm patterns in sequences of words, eg the use of hyphens to distinguish compounds from a sequence of separate words, and the use of apostrophes to indicate missing syllables in informal colloquial speech. Intonation can also be marked in an alphabetic writing system, through punctuation marks, underlining or changes in typeface.

The Roman alphabet has 26 letters at its disposal in both upper and lower case and a range of punctuation marks. Each letter is distinguished by distinctive features of its shape, but varies considerably in type (fonts) and handwriting. Some cultures allow additional letters like German <β>; others do not employ the full range, eg Welsh does not use <j, k, q, v, x, z>. Punctuation marks likewise have distinctive features, and likewise vary considerably in print and handwriting. Cultural variation is more widespread in the case of punctuation marks: consider the shape of quotation marks in English, German and French culture, and inverted question and exclamation marks in Spanish.

The efficiency of the alphabet to reflect the phonological structure of words varies enormously, eg those used for Welsh and Spanish are a good deal more efficient in this respect than those for English and French. Scheerer (1986) and Coulmas (1989) distinguish between 'shallow', 'intermediate' and 'deep' orthographies. A 'shallow orthography' reflects closely the phonemic distinctions of the language, as the Welsh and Spanish do; their orthographies are a reasonably good guide to pronunciation. An 'intermediate orthography' reflects the phonemic distinctions of the language by and large, but also incorporate some lexical and morphological information, like Dutch and German. A 'deep orthography' contains "a significant amount" of lexical and morphological information (Coulmas 1989: 169), like English and French. It is not relevant here to justify a 'deep orthography' beyond the observation that they tend to be long established and unrevised and thus do not reflect historical changes in pronunciation (like the Great Vowel Shift in English) and the importation of loan words. (A less 'metaphorical' set of terms might be more transparent: I would suggest a 'shallow' orthography is highly *phonemic*; an 'intermediate' orthography is typically *morphophonemic*; and a 'deep' orthography can be said to typically *lexicophonemic*.)

Vachek (1964) formulated the two main requirements of an alphabet as *transparency* and *learnability*. Transparency means that the written form should be easily processed as a word or a string of words in their appropriate morphological shape: "the path from the graphemic form of the text to its meaning should be straightforward" (Sgall, 1987: 15). Learnability refers to the simplicity and regularity of the rules for spelling and

pronunciation. (It is well known, for instance, that Welsh orthography is more learnable than English.)

However, when a new orthography is created for a language, there are other considerations to be taken into account. (The metaphor of "reducing" a language to writing is no longer appropriate, with the current meaning of *reduce*. Rather, a language is "reproduced" in writing, on the understanding that a current spoken form is being matched with an appropriate written form.)

Creating a new orthography

Smalley (1963) proposed five major criteria for the development of an optimal writing system, which he listed in order of importance (p 30) as follows:

1 maximum motivation for the learner

2 maximum representation of speech

3 maximum ease of learning

4 maximum transfer

5 maximum ease of reproduction

Criteria 2 and 3 match Vachek's 'transparency' and 'learnability' respectively, and represent core applied linguistic concerns. However, it is sociolinguistic concerns that lie at the heart of criteria 1 and 4, and technology that is the basis of criterion 5.

1 *Maximum motivation for the learner*

What Smalley means by ‘learner’ is the native-speaker community who will be ‘learning’ to use the new writing system. It is *their* language; the new orthography is for *their* use. Their acceptance of it is crucial for the success or failure of an entire project. An experienced linguist may well be engaged in the project but their perspectives are likely to be quite different from the perspectives of the native-speaker lay person. A linguist may well wish to promote an as explicit orthography as possible, accurate in detail, elegant in practicals, but the local community might have other priorities. They may wish to align their orthography as much as possible to another language, or for political reasons may wish, on the other hand, to distance their orthography from a neighbour as much as possible.

2 *Maximum representation of speech*

Smalley’s second criterion corresponds to Vachek’s principle of transparency. What Smalley advocated was a basically phonemic orthography that displays ‘bi-uniqueness’, ie each phoneme to be represented by a single letter, and each letter to represent that single phoneme only. However, other linguistic considerations might be relevant since orthography represents words rather than phonemes; there is, therefore, some justification for morpho- and lexicophonemic orthographies. Thus many languages tolerate letters in word-final position that conventionally reflect voiced values, even though the final phoneme is voiceless. For example, German *Bild* is pronounced /bɪlt/, but when the “final” <d> is followed by inflections, it ‘regains’ its /d/ value, as in *Bilder, Bildes, bilden,* etc. Thus the word keeps a single graphemic shape despite its phonemic variations. Also, there might be some advantage in spelling homophones differently to

distinguish one lexical item from another; consider the convenience of distinguishing *borne* from born in English. That may well be perceived as a gain over a purely phonemic 'transcription'.

3 *Maximum ease of learning*

To ensure maximum ease of learning, Vachek's 'learnability', an orthography should be as simple and as consistent ('bi-unique') as possible. This generally means that a phonemic ('shallow') or a morphophonemic ('intermediate') orthography is easier to learn. This also means, generally, that an alphabet is easier to learn than a syllabary, since the latter contains many more symbols than the former. However, phonologies do often contain plurisegmental features like nasalization, pharyngealization, breathy quality, etc that affect whole syllables, and suprasegmental/prosodic features that also affect whole syllables. Alphabet makers have various adaptation possibilities at their disposal.

Adaptations might take the form of

1 new letters (e.g. IPA symbols)

2 letter combinations

3 new values for otherwise superfluous letters

4 letters with diacritics

5 alternative typefaces and sizes

6 combinations of the above

The adaptation of an alphabet is the direct application of the criterion of maximum representation of speech and maximum ease of learning.

4 *Maximum transfer*

The desire for a language to be 'reproduced' in writing might grow from many different concerns. There might be a concern to assert a people's distinct identity and their pride in a distinctive culture; or to enhance a people's sense of respect, dignity and worth; or perhaps, to capture an endangered source of oral tradition and literature. Often there is a desire to promote primary education in the mother tongue, either for its own sake, or as a bridge to literacy in the written form of a language of wider communication. Bible translation has been a major motivation, as has the availability of translated documents of a political nature.

Because access to a relevant language of wider communication is a major factor in orthography projects, reference to the linguistic characteristics of that language should figure prominently in detailed decisions in the creation of the new orthography. This affects the choice of script, and in the case of alphabets, the choice of values assigned to letters. At times, this will raise problems where the language of wider communication is either English or French with their lexicophonemic ('deep') orthographies, but linguists apply IPA values to letters to resolve some of those problems. Languages of wider communication with phonemic or morphophonemic orthographies like Spanish, Portuguese and Bahasa Indonesian, provide much greater accessibility.

Many who speak minority languages become polyglots through education, trading and travel. Although they may be illiterate in their mother tongue, they may well be literate in the language of wider communication. Maximum transfer, therefore, is a most relevant criterion in such situations.

5 *Maximum ease of reproduction*

This was an important criterion in 1963 (Smalley) before the invention of computers. The typewriter did place a constraint on the development of an orthography as they were designed and manufactured primarily for European languages with established orthographies. Unconventional letters and diacritics were cumbersome and were therefore often ignored, as in the case of early Tera literature. The typewriter placed a constraint on the freedom of pen and paper.

Computers have certainly freed alphabet makers from such constraints where computers are available – their availability is thus now the only major constraint. Ease of typing/keyboarding, however, does remain a relevant criterion in terms of economy of effort

Maximum ease of reproduction for the compositor is relevant in ensuring also the maximum comfort of the consumer.

6 *Balancing the criteria*

Final decisions on a new orthography require a careful balancing of these criteria, some of which may be perceived as conflicting. It might be, for instance, the case that a community wishes to be as distinct from a dominant culture as possible and yet feel the value of maximum transfer. The very complexity of a phonological system might conflict with maximum ease of reproduction. Each criterion is important and relevant – the socially and technologically oriented ones as much as the linguistic ones. Barnwell (2004) summarizes the five criteria as follows, listing the linguistic principles first, as the general basis, then the technical for practical purposes, and finally the social obligations, as the source of final decisions. Barnwell's list follows the procedure in which a new orthography is created:

Accuracy: The writing system should reflect the sound system of the language, so that all the important sound differences are recognized and written in a distinctive way.

Consistency: The same sound should always be written in the same way. The same symbol always represents the same sound. There should be no 'silent' letters (unless they have a clearly defined function.)

Convenience: Any special symbols used should be easy to type and keyboard on a typewriter or computer.

Conformity: As much as possible, follow the writing system of the language of wider communication in the area. This will make it easier for people who can already read in that language to read this language also. Also consider how other languages of the same language family or spoken in the same

region are written.

Acceptability and Agreement:

It is important that the proposals are presented to interested leaders and others in the area for discussion so that agreement can be reached on how to write the language. It will take time and discussion to achieve consensus.

Finally, here is Coulmas's succinct summary of the requirements of a new orthography. It should be:

(1) based on a variety of the language which is acceptable to the majority of the speech community;
(2) easy to learn;
(3) easy to write;
(4) easy to read;
(5) founded on a phonemic analysis of the language while affording access to the morpho-phonemic and lexical levels;
(6) transcending the limitations of the sign inventory of the orthography of the respective major contact language as little as possible; and
(7) in as much agreement with the available printing technology as the internal consistency of the system and the requirement of indicating the basic repertoire of phonemes will permit.

(Coulmas 1989: 238)

Orthography in the mind of Tera speakers

The Tera speakers involved in the 2004 workshop were four men, two older retired men (a former male nurse, and a town elder) and two younger men (one a teacher, the other a private secretary). They represented not only two generations, but also three dialects, but were also confident in being able to represent other dialect areas too. (In a subsequent workshop, three other men were involved, widening the dialect representation.) All the men were literate in Hausa and English; their experience of orthography reflected these two languages, which are both relevant languages of wider communication.

Hausa has a relatively phonemic alphabet. Its consonants can be represented by letters of the alphabet in a phonemic chart, based on Schuh & Yalwa (1999):

	bilabial	alveolar	post-alveolar	palatal	palatalized velar	velar	labialized velar	glottal
Plosive & affricate	b	t d	c j		k g	k g	kw gw	’
Implosive & ejective	ɓ	ts ɗ		’y	ƙ	ƙ	ƙw	
Nasal	m	n						
Fricative	f	s z	sh					h
Tap Trill		r						
Approximant	w			y				
Lateral approximant		l						

It should be noted that Hausa orthography employs special ‘hooked’ letters for implosive and ejective consonants, that the apostrophe <’> is used for the glottal stop, that <k, g> have double functions, as does <r> for both a tap and a trill, and that a letter combination

<sh> represents /ʃ/. The five vowel letters <a, e, i, o, u> represent five vowel qualities roughly equivalent to their IPA values, but do not differentiate between long and short phonemic contrasts. None of the tones (low, high and falling) are represented in any way.

English, on the other hand, has a 'deep' orthography, with a wide range of phonemic values for each letter and a wide range of letters for each phoneme. Letters from the 'English' alphabet that are relevant for Tera are <p, v, q>.

The two older men could recall the alphabet used for the 1930 Tera Gospel of John, and all four were aware that revisions to the alphabet had been proposed since the early 1990s. The four participants brought all their phonological competence to bear, including their orthographic experience of Hausa and English.

Methodology

A short story was recorded on audio cassette; this provides a stable basis for analysis and avoids arguments about what could and should have been said. The story was played back to ensure that all were happy with the content and then played back phrase by phrase, with the intention that each participant should independently attempt to write the words as best as they could, relying on their phonological competence in Tera and their current orthographical experience. One man was requested to write his version on a blackboard; others commented, agreed or disagreed and tentative decisions were taken. My role, as the 'facilitator', at this point was to keep a running record of the letters deployed with their phonetic values, and attempt to ensure consistency in representing

sounds. My weakness was that I did not have the phonological knowledge that the participants had, and so had to check and double check on phonetic distinctions that I observed but that were ignored by them. For instance, I heard quite distinct vowel qualities [a, æ ə] for which they used only one letter <a>; later, of course, I realized that these are allophonic variations of the same vowel phoneme in Tera.

The first story comprising over 400 consecutive words yielded a mass of information. I drew up tentative vowel and consonant charts, explaining their design in terms of tongue position, place and manner of articulation, and voicing. Seeing the scheme of things and observing a certain degree of symmetry was indeed an astonishing and thrilling eye-opener for them, which added to their enormous appetite and enthusiasm for the task.

The next task was to draw on their phonological competence and solicit more words with the consonants discovered, in initial and final positions, and lists were drawn up. Words that began with a consonant plus [w, j] led to a search for other consonant cluster possibilities, which actually proved fruitless, as did the search for words beginning with vowels, apart from a couple of loan words from Hausa.

A second story was negotiated in the same way. Writing became ever easier as agreement was established on the letters to be used, but more consonants kept appearing until, of course, the complete inventory was reached. Their orthographic experience naturally was expanded.

One constant uncertainty was the determination of ends of words with what might become seen as inflections. This meant that attention had to be given to noun and verb morphology. What eventually emerged was that items representing number and definite and possessive reference in nouns were best regarded as inflections as they never stood alone and always followed the noun closely; nothing else ever inserted itself between the noun stem and these morphemes. Verbs fell into classes depending on the form of their gerundive inflection, but personal pronouns were treated as separate words. Tenses were indicated also by separate words. As we drew up more and more lists of nouns and verbs with their morphological variations, confidence increased in the determination of word boundaries.

Another contentious issue was contrasting length in vowels. Some cases were relatively easy to determine, but others, particularly in final open syllables were very difficult. Another issue was very short vowels: were these shorter than normal short close vowels part of a separate vowel system, or realizations of open transition? These very short vowels seemed to be in contrast to normal short vowels, and were marked by the IPA stress symbol (ˈ) being placed before the following syllable.

Tone was a fourth contentious issue as a few otherwise identical words were distinguished solely by tone; tone appeared to be involved also with the issue of vowel length in final open syllables. We took a disyllabic word with what appeared to be the same tone on each syllable, and used that as a test mechanism for comparing the tone patterns of other words. A few words had a matching tone pattern, but many others did

not. A second test word with a different pattern was taken for comparisons; some matched, others did not. Then a third, and a fourth, etc were taken until we were confident that all disyllabic words were accounted for. This procedure produced four pitch levels which were expressed as high, half high, half low, and low; this was reduced to three levels on phonological grounds, since half high could be reinterpreted as a mid level assimilating to a preceding or following high tone, and half low as mid assimilating similarly to low. This three level system was confirmed by establishing that only three levels were necessary for monosyllabic words. This analysis also resolved the case of possible long vowels in final open syllables; the relevant factor was discovered to be tone, rather than length, which meant that the contrast between long and short vowels was valid in closed syllables but was neutralized in word-final open syllables.

The final inventory of consonants proved to be a highly complex system of 31 phonemes, with four cases of pre-nasalization, three of palatalization, and five of labialization. The vowel system was relatively simple, consisting of six vowels, four of which had long equivalents in contrast, and four diphthongs. Stress was only relevant in the case of the so called very short vowels; three lexical tones were identified: high, mid, low. Word divisions were also tentatively established.

Orthography decisions

The final recommendations from the workshop on the spelling of the consonants are represented in the following ‘phoneme’ chart, with the chosen letters in place of IPA symbols:

	Bilabial	Labiodental	Alveolar	Postalveolar/ palatal	Velar	Labialvelar	Glottal
Plosive	p b		t d		k g		
Affricate				ch j			
Implosive	ɓ		ɗ		Q		
Prenasalized	mb		nd	nj	ngg		
Nasal	m		n	ny	ng		
Trill			r				
Fricative		f v	s z	sh zh	kh gh		h
Lateral fricative			tl dl				
Lateral approximant			l				
Approximant				y		w	
Glottalized approximant				ƴ			

Palatalization was simply represented by consonant clusters with <y>: *ɓy*, *my*, *vy*; and labialization with <w>: *kw*, *gw*, *ngw*, *khy*, *ghy*. For the vowels, the letter inventory was as follows:

i ii u u uu
e ee o oo
a aa

eu oi
ai,au

Only decisions beyond the letter values of Hausa and English need be discussed. Among the vowels, the spelling of long vowels was recommended as simply double letters; the participants decided to apply the criteria of accuracy and consistency to a level higher than that of the Hausa alphabet, which does not distinguish them. The values accorded to the letters otherwise follow Hausa more or less accurately; English values were understandably totally ignored! The letter chosen for the close central vowel was <u>, probably for two reasons: the first is historical, since the original 1930 alphabet used

<ụ>, and secondly, the vowel is not distributed like front vowels. Subscript dots were abandoned in favour of underlining, as underlining was much easier to type (consider Barnwell's principle of convenience, and Smalley's criterion of maximum ease of reproduction).

In respect of the consonants, several decisions were automatic: <b, ɓ, d, ɗ, f, g, h, j, k, l, m, n, r, s, sh, t, w, y, z> derive directly from the Hausa alphabet, and <p, v> from the English. <ch> also derives from English, but the decision was by no means automatic, since Hausa uses a simple <c>; to use <ch> involves a redundant letter <h>. It seems that when the participants had the opportunity of distancing their alphabet from Hausa, they took it, as a stand against a dominating culture; also, English was perceived, rightly or wrongly, as a 'progressive' language, associated with business and computing, and less of a threat to their separate identity.

Other decisions were uncontentious, if not automatic: <ny, ng> for /ɲ, ŋ/ respectively, and <mb, nd, nj> for prenasalized plosives. However, great debate ensued over the distinction between /ŋ/ and /ŋg/. It was clear that <ng> could be ambiguous, but a careful explanation of <ng> as a letter combination for a single sound, and of <mb, nd, nj> as sequences representing prenasalization led to the decision to recommend <ngg> to represent prenasalized <ng>. This was declared to be the answer to what had been perceived as a very major problem. It is also a fine instance of the development of phonological awareness.

Other decisions also required the development of phonological awareness. The very first sound of the first word of the first story was [ɣ], a sound that does not figure in either Hausa or English. <x> was suggested, but it was remembered that this letter represented a different though related sound in the old Tera spelling system; <gh> was also suggested, from Jauro Maila's proposals and from the as yet unpublished Jideonwo (2004). [ɣ] had been spelt as <x̣> in the Tera Gospel of John (1930), but the participants showed an antipathy towards subscript dots and other diacritics, mainly because neither Hausa nor English uses them and because they were relatively cumbersome to type. Preference was given to letter combinations on the criteria of maximum transfer and maximum ease of reproduction (Barnwell's principles of conformity and convenience). The younger participants pressed for <gh>, and the older men relented. Jauro Maila later explained how he came to propose <gh>. He had noted the similar place of articulation for [g] and [ɣ] and the use that was made of <h> as a 'modifier' of a sound, particularly for a similar manner of articulation. Without knowing the technical terminology of phonetics, his phonetic awareness was the basis of an orthography decision. The use of <h> for fricative modification explains the decisions to use <kh, zh> likewise for [x, ʒ], parallel to <sh> and eventually, <ch>. This use of <h> fulfils the criterion of maximum ease of learning (Barnwell: consistency).

Tera has two lateral fricatives, in addition to its lateral approximant. Interestingly, they were both spelt in 1930 as <ll> reflecting Welsh orthography, but without distinguishing

them. Both Nyagham and Maila had suggested <tl, dl>, and the younger participants pressed for these. These choices display keen phonetic awareness: <l> is retained to express laterality; <t> is used to indicate voicelessness at the same place of articulation, <d> parallel voicing. There are no consonant sequences /t + l/ or /d + l/, even in medial position in Tera words, and so these combinations cannot be misread. These choices indicate a superb development of phonetic awareness.

The glottalized approximant [ʔj] was written variously as <dy, ɗy>, which puzzled me as an outsider, since there was clearly no alveolar contact implied by <d>. Hausa has a similar consonant, which is spelt as <'y>. The participants never considered this as an alternative, because there is no other need for <'> as there is in Hausa (for /ʔ/); perhaps also because this provided another opportunity to distance the spelling of their language from Hausa. But what lies behind the choice of some kind of <d>? The old Tera alphabet used <ḍy>. It seems that a historical development from a palatalized alveolar implosive [ɗʲ] to [ʔj] in Tera - losing the alveolar contact, but retaining some glottal (but 'ejective') action and a palatal tongue position – matches an identical development in Hausa (Schuh & Yalwa 1999: 92). Whereas Hausa uses <'> because it needs that letter elsewhere in the spelling system, the Tera participants looked elsewhere in their own alphabet and decided to use either <d> or <ɗ> with <y>. We experimented with <dy> as the simpler option, but <ɗy> eventually prevailed, since the <ɗ> preserved the representation of the manner of articulation.

Finally, the current implosive consonants in the language. Decisions on <ɓ, ɗ> were uncontentious as these exist in the Hausa alphabet, and local typewriters are adapted to include them. However, the representation of [ɠ] was the most contentious decision of all. Hausa does not have this implosive; its nearest equivalent, with an identical place of articulation but a different kind of glottal action ('ejective') is /ƙ/, and it is written as such. Nyagham and Maila favoured this, on the criteria of maximum transfer and maximum ease of reproduction, since Hausa typewriters are adapted for this letter too. The old Tera *Gospel of John* had used <q> and Jideonwa used it too. Religion entered in to the argument too, as some felt that <q> was somehow an Arabic and, therefore, an Islamic letter. However, it was pointed out that <q> was, in fact, an 'English' letter, and had appeared in the (Christian) *Gospel of John*. In favour of <ƙ> were the criteria of transfer and ease of reproduction, but against it was the phonetic 'inaccuracy' of it. In favour of <q> was tradition and the opportunity to be different from Hausa, while recognizing that the Tera <q> value would not be equivalent to that of English <q>, nor even to that of Arabic <q> in transliteration. After much debating in the workshop and many debates in the community, <q> prevailed, on the strength of tradition, the issue of separate cultural identity, the 'inaccuracy' of <ƙ>, and, curiously, the design of the letter itself: a 'hook' seemed to be important to indicate implosivity, the letter <q> shared visual features with <g>, which represented the place of articulation, and the combination with a right-turning 'hook', albeit in low position, satisfied consideration of both place and manner of articulation!

Stress only featured in any significant way in the case of the ‘very short’ vowels. We proposed the use of the IPA accent <ˈ> with the following ‘normal’ syllable; it meant that in such a case, the preceding vowel had to be read as ‘very short’. However, the functional load associated with these ‘very short’ vowels is very low, and so it is entirely possible that this extra orthographical mark would eventually be discarded.

Finally, in the case of tones, we decided that although tone played a significant role in the phonology of the word in Tera, there were not enough minimal pairs, and no minimal trios, to justify marking tone. Thus a native speaker of Tera would know how to read a written word aloud in context and, in most cases, in isolation too. Marking tone would establish maximum representation of speech but at the expense of maximum ease of learning and maximum ease of reproduction; it would have added, in most cases, an additional, but superfluous, set of symbols to process. However, in one particular context, tone is recommended to be marked: to distinguish the verbal particle <á> (with high tone, ‘present progressive’) from <a> (with low tone, ‘past tense’).

Acceptability and agreement

All the recommendations were presented to two language committees, one set up by the local *Tera Forum* of Tera chiefs and their officials, and the other by local churches. Both committees were in broad agreement with the proposals, although as people have begun to write in Tera, it has become clear that one recommendation has been ignored: the

diacritic <ˈ> to indicate that the preceding vowel is ‘very short’ has obviously been considered superfluous for reading as well as writing.

One member of the team has produced a mini wallchart of the Tera alphabet for use in homes and has published two booklets of Bible stories in the new alphabet and two simple readers for children. The beginnings of a dictionary have appeared, as has a manual for helping teachers to recognize and use the new orthography, with Hausa as the basis. A proposal has been submitted to a local government to introduce the development of literacy in primary schools. A hymnbook is under preparation and also a translation of the Gospel of Luke. It is also planned to revise the old 1930 ‘tentative’ Gospel of John.

There is great enthusiasm in the local communities for the new orthography and a great desire to have more elementary literature published to enable not only the children but adults too to acquire literacy in their mother tongue. The project has raised the hopes of the people for a status of dignity within the wider political region and has begun to fulfil their aspirations for a recognized separate social and cultural identity.

The project has demonstrated the worth of Smalley’s criteria and Barnwell’s principles. The new orthography enjoys maximum motivation for the community (= ‘acceptability’ and ‘agreement’) and a judicious balance of maximum representation of speech (= ‘accuracy’), maximum ease of learning (= ‘consistency’), maximum transfer (= ‘conformity’) and maximum ease of reproduction (= ‘convenience’). It has been created with a methodology that

1 exploits native speaker phonological competence, particularly in word phonology for the development of the alphabet, and the phonology of grammar for punctuation;

2 develops phonetic awareness;

3 exploits native speaker orthographical experience of languages of wider communication and develops it;

4 engages the native speaker community in a determinative role; and

5 engages the services of a phonologically aware facilitator.

In sum, the new Tera orthography has proved to be

(1) based on a variety of the language which is acceptable to the majority of the speech community;

(2) easy to learn;

(3) easy to write;

(4) easy to read;

(5) founded on a phonemic analysis of the language while affording access to the morpho-phonemic and lexical levels;

(6) transcending the limitations of the sign inventory of the orthography of the respective major contact language as little as possible; and

(7) in as much agreement with the available printing technology as the internal consistency of the system and the requirement of indicating the basic repertoire of phonemes will permit.

(Coulmas 1989: 238)

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