

Panel 3. Language resources of Africa: a call for shared methodologies

M.E. Kropp Dakubu: Dictionary making and the public discourse: the University of Ghana experience

Abstract

The Linguistics Dept. of the University of Ghana has a long term project (funded for the past 10 years by NUFU) to build various kinds of dictionaries in several Ghanaian languages. The author has been team leader for two that have been published (Ga and Farefari). Important motivations behind all these dictionary projects have included: improving the prestige of each of the languages concerned, and with it the self-image of the speakers; raising the standard of public discourse in the languages; and raising the general standard of education, especially primary education. The paper will describe important features of the dictionaries themselves, and their public reception. These outcomes will be linked to extra- and socio-linguistic factors affecting the achievement of the original aims.

The Computational Lexicography project at the Linguistics Department of the University of Ghana is a subproject of a larger NUFU project, known locally as the Legon-Trondheim Linguistics project, that has also included work on typology of the languages spoken in the area and a literacy project in one of the more remote and deprived areas of the country. The project has run a long time, about 12 years all together, and ends finally this December. I have been closely associated with the project since its inception, including acting as co-coordinator for the project as a whole and as coordinator of the lexicography projects. The languages concerned have included three Kwa languages, namely Ga, Akan and Ewe, and two Gur languages, namely Farefari (Gurene) and Dagaare. When we say “computational lexicography”, what we really mean is that we have dictionary projects for individual languages, produced as an electronic database using the SIL product for the purpose called The Linguist’s Toolbox. The database or selected parts of it is then exported to Word, to make a printable dictionary of the sort everyone is used to. However the databases are also maintained, for research purposes and for updating towards later editions.

Ga and Farefari dictionaries have been published, and a second edition of the Ga is in press. The Farefari dictionary contains a little over 5,000 entries, while the second edition of the Ga has a little over 7,000. The Akan dictionary, which seeks to update Christaller’s monumental dictionary that was last reprinted in 1933, has so far published a pilot edition with 1,530 entries. A much fuller version is expected by the end of the year. The data base

for the Ewe dictionary project currently stands at about 5,000 entries, and a dictionary of health and medicine based on about 700 of those entries will be published shortly. The Dagaare project unfortunately got off to a slow start, and it is not likely that anything will be published from it before the end of the project. In this presentation I reflect on our aims, achievements and experience in general, with particular reference to the Ga, Akan and Farefari dictionaries, since those are the ones that have actually come to publication at this point.

I begin by considering the various kinds of information a dictionary is expected to impart. I then review the different types of dictionary users one may expect for an African language dictionary, and the different types of dictionary they may require, before making recommendations and examining a particular kind of problem in dictionary making.

Dictionaries are perhaps the device *par excellence* for sharing information. The information shared is not invariably, or not entirely, linguistic. Nowadays most of the people engaged in dictionary making are somehow or other linguists in the disciplinary sense of the term, but at least in my experience we quite often have to draw on other areas of expertise. This is because one of the important functions of a dictionary as far as many users are concerned is to supply information we may loosely call encyclopedic. For example, if I read in a novel written in English that a sparrow got into the attic of a house and built a nest, and I don't know the English word 'sparrow', I might use a dictionary to find out what kind of a thing it is – namely a flying animal, not a mammal (ie. not a bat) that is small and brownish. To be really clear about it we might want the dictionary to specify exactly which of the many kinds of small brown birds it is, and this may require the scientific name and/or a picture and perhaps even remarks on its nature and habits, for example that it tends to live around human habitations. All this may be desirable whether it is a monolingual dictionary for people who speak English well but happen not to know about sparrows, or a bilingual dictionary for people who may or may not know sparrows but don't know them in English.

Evidently, adequate classification of things in words is inseparable from classification, and languages paired in a bilingual dictionary do not always classify semantically in the same ways. Another valuable dimension of information therefore is the culturally salient ontologies related to the word – for example the kinds of zoological classification expressed or implied by the item in the African language and their possible mismatches with assumed classifications in English or French, or a classification that simply does not exist in the European language. For example, in Ga, the word *Kɔɔle* is the name of a lagoon, the name of a deity associated with the lagoon, and also *Kɔɔle* is considered to be the wife of another deity

associated with a different lagoon, *Sakumo*. Unfortunately this last kind of information was not usually included in the Ga dictionary, which I now realize was a mistake, because this sort of pairing based on a gender metaphor seems to be very pervasive. In traditional Ga culture kinds of fish are paired as husbands and wives, and these pairs are not necessarily considered to be kinds of the same more general kind of fish in English, in fact they usually are not. Kinds of fish or animals are similarly paired with plants. The days of the week are also classified by gender – Monday, Wednesday, Thursday, and Saturday are “female” days, the others are “male”, and the classification has implications for the timing of certain kinds of actions (Kilson 1974). In this case I am happy to say the information is included in the dictionary. In Farefari, as I realized too late, numbers are classified by gender, and the information was not included. This kind of ontology might conceivably be expressed in linguistic form—it probably explains why in Ga some plants and animals have the same name—but it more generally refers to cosmology and ideas about natural hierarchies and about what is auspicious and what is not, and so has a place in a dictionary that attempts to be encyclopedic. It also of course enhances the value of the dictionary as a repository of what these days is called ‘indigenous knowledge’. It might not seem to be immediately relevant to public discourse related to scientific knowledge, but on the other hand it might help to explain such things as the failure of an apparently scientifically sound medical prevention program.

Other kinds of information provided in a dictionary are more straightforwardly linguistic: principally pronunciation, grammar, usage, idiom, and etymology. Usage and idiom of course will also reflect ideas, and both of course are related to the “definition”, a rather complex element whose construction varies considerably according to what sort of word is being defined. Although it was not done consistently, if the headword was a key word in a proverb or saying, that proverb was often included as an example of usage in the Ga and the Farefari dictionaries, on the basis that association with a proverb that focussed it was likely to become an important feature of the meaning of a word, or at any rate of its connotations.

Etymology is often ignored in African language dictionaries, mainly perhaps because of lack of information, but I believe that it should be included whenever possible. Many people are interested in such information, and it also reflects other kinds of not strictly linguistic information, such as historical contacts with other peoples in the case of loanwords.

Apart from the information to be presented, perhaps the primary concern in dictionary making is the consumers, the audience or readers for which a dictionary it is intended. I am now thinking primarily of African language dictionaries, and primarily of bilingual

dictionaries, that create a bridge between the African language and a widely spoken language that has some kind of currency among the speakers of the African language, usually English or French or Portuguese. The potential users may be school children, academics, or non-academic adults who need a reference work on the language. They may be learners of one language or the other, or they may be speakers who need to check a spelling or an unexpected meaning. School children may be at various educational levels and hence require dictionaries of greater or less sophistication. Academics may be linguists wanting to compare or otherwise investigate particular features of the language, or they may be people who need a dictionary for practical purposes, for example anthropologists planning field work among the speakers, or students of oral literature in the language. Other educated adults may include local journalists and broadcasters who from time to time need to refer to the various kinds of information that a relatively comprehensive dictionary provides, and members of the general public who are simply interested in their language. The latter category of persons does exist in Ghana, as I have realized in the course of my own work, but given the state of literacy in many African societies its members are likely to be few in number. Another category of user is the technical user who needs accurate and detailed information on the vocabulary of some special register, perhaps to the exclusion of other parts of the language. All these users ideally should have different kinds of dictionaries, and with computational tools such as the Linguist's Toolbox it is possible to build a comprehensive data base from which selected material can be exported into a number of different types of dictionaries, or put on line to allow comprehensive access and search.

However, the reality of the situation in most of Africa is that we are lucky if we have one reasonably comprehensive dictionary (of say 5,000 words) for any given language. Many are much shorter, or mere wordlists. This is because the languages are very numerous, dictionary makers are few, and good dictionaries take a long time to build. I think today just about everybody uses a computer for the purpose, but knowledge of suitable programs and expertise in their use is not evenly distributed and can require considerable outlay in time, effort and finances. More important however are the demographics and economics of the speaker communities. Some language communities are extremely small, and cannot possibly provide an economic market for even one small dictionary. Other language communities are larger, some very large. However the book buying power, and the literacy rate, of some large communities are nevertheless rather low.

There is also a political problem: although most African countries claim to value their languages as part of their cultural heritage, there is not a strong political will to put them to

use in contexts of literacy, especially if it means spending money first to make it possible. I shall not go into detail over this because it has been quite thoroughly discussed elsewhere (see eg. Awedoba 2009). Speaking from the Ghana experience, I can say that although some individual schools in a language area are willing to buy bilingual Ghanaian-language dictionaries for the use of secondary-level students and teachers, the Ministry of Education has numerous excuses for not doing so, even for the largest language in the country (Akan), which I might add is spoken as first or second language by at least 12 million people, (extrapolated from the 2000 census report plus observation of 2<sup>nd</sup> language use). There would be very little market for simplified dictionaries aimed at primary schools, although a few illustrated primers are available and apparently in use. Ghanaian languages are simply very low on the Ministry's priority list, whatever it may claim, and although the official policy on the language of instruction highlights Ghanaian languages, they are not seriously supported. Nor could the size of the reading public provide a commercial market for a big dictionary, of say 20,000 words or more, if one existed. I go into all this because dictionaries of the languages of literacy in the First World are major money makers. No such industry is likely to develop in most of Africa in the foreseeable future. In Nigeria, where languages such as Yoruba and Hausa have far more speakers than many European languages let alone Akan, the situation is not much different.

Therefore, although the technical capacity may exist to make different designs of dictionary for different kinds of user, it is not often realistic to expect this to happen. In the past, many creators of African language dictionaries were European scholars, often in the employ of the colonial power, who implicitly aimed their work mainly at other European scholars. Dictionaries and grammars too were therefore designed to provide the information in a form fairly readily accessible to scholars, but perhaps not to other people, particularly the language's speakers. Good examples are earlier works on the Ghanaian languages Farefari (Rapp 1966) and Dagbani (Fisch 1913), which are interesting but written in German, a language that has never been spoken by more than a handful of the speakers, in the case of Farefari probably by none at all. Today this attitude is less prevalent: many of the people producing African language dictionaries are speakers themselves, and those of us who are not speakers are conscious of the need to make them accessible to and useful for speakers.

In my opinion, anyone working to produce a first dictionary or even a second generation dictionary of an African language should in the first place aim to satisfy as wide a range of users as possible. This means a) that a really small and simple school dictionary (or a lexicon for new literates) is not on the cards, except perhaps as an initial interim product,

and it certainly cannot have the colour and graphics that make children's books attractive to young readers in the richer parts of the world. Such a dictionary could continue being reprinted if desired and possible, but it should not be the major aim, which should be to produce something useful for scholars (both speakers and others), secondary school students, and the general populace with a senior secondary education. It also means b) that all the kinds of information I mentioned earlier should be included, at least as far as possible. In other words, I do not advocate glossaries consisting simply of a word and its translation equivalent in the other language – such “dictionaries” tend to be almost impossible to use and can be very misleading to learners of the “other” language, as well as to non-speaker scholars. Very importantly, it also means c) that the dictionary should be bilingual in the language of the education system. A monolingual dictionary is less useful for everybody, because one of the values of the bilingual dictionary is that it can be used to improve the user's command of both the African language and the other one. Not the least advantage of such an approach is that it maximizes the market, making it (we hope) more attractive to a publisher. Not everyone agrees with me on all counts, however, and I will return to some of them. Finally, maximum usability means that it must be printed on paper. Given the current realities of internet access and bandwidth costs in Africa, on-line publication without a print version is not a viable option, unless the dictionary is intended only for use by scholars who have what in the local context must be considered privileged access to the internet.

I now consider more a more technical matter, related to enhancing accessibility of information. The guiding principle of dictionaries, whatever their purpose, is that the information is presented as **lexical**, descriptive of a linguistic unit that is considered to be recognizable and meaningful in isolation, even though in fact it may never naturally occur in isolation from other linguistic forms, and even though in practice the principle is rarely applied consistently. This has implications for practical access to the information contained in the dictionary.

A dictionary is normally presented, and indeed conceptualized, as a list of lexical items, with information provided about each of them individually, although there may be cross-referencing, often quite extensive. There are minor disagreements about what constitutes a “lexical item” or qualifies as a “headword”—principally whether it must consist of just one word or can comprise two or possibly more—but I don't think this is a disagreement on principle, even though “lexical item” is not often clearly defined, and dictionaries sometimes include entries that are *not* lexical items, such as affixes.

Given the list of items, they must then be presented in some kind of order. (Theoretically, an on-line or electronic dictionary can ignore order and rely on a search function, but there still has to be a way putting words in a determined order for inspection and comparison. Toolbox of course does this.) Of course, in the European tradition the ordering principle is alphabetic. I don't particularly disagree with this, and a good alternative is hard to imagine, but it does raise some problems. It is to these problems, and how they differ according to the language, that I wish to turn now, in the light of my experience of dictionary making in Ghanaian languages.

The crux of the problem is that the user needs to be able to find the word in question, and should not have to be a linguist to be able to do so. If the dictionary is to be inserted into the public discourse of the country in which the language is spoken, its searchability is a first major factor. In most dictionaries I am familiar with, alphabetical order means that the lexical items are listed in order working from left to right (because in Europe we spell from left to right) through the entire word as it is spelled in the standard (or perhaps a brand new) orthography – that is, how you expect users will see it written and how they will write it themselves.<sup>1</sup> Toolbox can do this automatically. However it cannot be quite taken for granted, because all Ghanaian languages use at least two non-ASCII letters, and these must be written into the sort order specifications. They also require an external font manager – the usual one is Tavultesoft Keyman, which must be customized for the project, and this is difficult for linguists who are not computer geeks. If the orthography uses diacritics, you must also write in how you want letters with and without the various diacritics to be ordered. Most Ghanaian orthographies use them very little or not at all, which is not necessarily a good thing from the point of view of reading but at least makes the ordering simpler.

This kind of ordering has been taken over from the European tradition, where it works fairly well because the first syllable of most words in most languages is constant. Words derived with a prefix are normally counted as separate lexical items and get their own entry, with an invariant first syllable – thus an English dictionary will have pages and pages of headwords beginning with **in-**. Inflectional prefixes, like the German perfect participle **ge-**, are handled in a table of inflections, or/ and a word containing it is given its own entry that is cross-referenced to the entry for the infinitive, particularly if it has other meanings and so can

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<sup>1</sup> This may seem banal, but given that most speakers of Ghanaian languages rarely read or write their language, it has to be expected that many users will have difficulty finding a word, although one hopes that they can at least narrow it down to the first two letters. You will of course explain the orthography and alphabetical ordering in the introduction to the dictionary, but how many people will read it?

also be regarded as derivational. I have had the good luck to work mainly with suffixing languages, but even there, problems of what to list in alphabetical order have arisen.

For a linguist working with a predominantly prefixing language, I think there is a strong temptation to alphabetize by the stem. Christaller's Twi-Fante (Akan) dictionary of 1881 was alphabetized in this way, although the word itself was given in full. In Akan as in Bantu languages, nouns show singular and plural by alternating prefixes, or sometimes with no prefix in the singular but a prefix in the plural. Some nouns moreover have invariant prefixes. Christaller lists all nouns alphabetized by the first consonant of the stem, but if it has alternating prefixes the singular prefix is separated from the stem by a hyphen (at least in the 1933 edition, which is the most recent), and the plural prefix is given elsewhere in the entry. Personally, I find this convenient. It means most people will need some training to use the dictionary, but this is not an insuperable objection – training in use of the dictionary is a useful school exercise and needed anyway, and since a prefix consists of a single CV or V syllable it is rarely difficult to determine the stem consonant, although it is conceivable that the fact that some nouns in this language have no prefix could cause a problem. However, it has not been popular with most users, whether scholarly or other. The new Akan dictionary being developed at the Linguistics department of the University of Ghana (Akan Dictionary Pilot Project) alphabetizes by the singular prefix, and spells out the plural form in full following the part of speech. This seems to be the preferred format for speakers of prefixing languages – I note that at least two lexica of Bantu languages produced by speakers of the languages are ordered similarly (Mbuagbaw 1998; Nsondé 1999). So on the principle that you want the dictionary to be actually used, this seems to be the way to go. Since the number of noun prefixes in a language is limited, a result is that in some letter sections of the dictionary there are no nouns, and no adjectives if the adjectives also take concurring prefixes. This is a drawback to the linguistic scholar who wants to investigate phonological patterning, but handy if s/he wants to look at the constitution of noun classes. Another drawback is that if only the plural is known to the user, but only singulars are listed as headwords, the user will have to know the possible singular prefixes in order to find it. A stem-ordered dictionary would of course be valuable for phonological and perhaps semantic purposes, and plurals would not present the same problem, but it would have to be a special purpose product.

Such problems do not totally disappear with a suffixing language. Ga, a language I have worked on for many years, is almost entirely suffixing as far as the nominals are concerned, but there is at least one nominalizing prefix, *é-*. Thus from the adjective **díŋ**



'black', itself derived from the verb **dí** 'be black', we get the noun **édíŋ** 'blackness'. It is not a productive affix and there are relatively few such words, and so they are conveniently listed in the dictionary under the **es**. There are of course separate entries for both **di** and **din**. In a root dictionary all three words would be parts of a single entry.

A more interesting case is Farefari, more popularly known as Frafra. I directed a dictionary of the Gurene dialect of this language that was published in 2007. Farefari is a typical Central Gur language, relatively conservative, with about nine nominal classes that form singular/plural pairs. The classes are expressed by suffixes, but due to phonological processes and attrition towards the end of the word it is rarely possible to put a hyphen between stem and suffix. For the non-linguist and especially the non-speaker the plural form is often difficult if not impossible to predict from the singular form, and vice versa. In addition, there are a number of cases where the plural is more frequently heard than the singular, yet the normal convention is to list the singular and give the plural as part of the information contained in the entry. For these reasons, the plural form has in several cases been given an entry in addition to the singular and cross-referenced, especially when it happens that one does not immediately follow the other in alphabetical order. However the information on the word is given only once, usually in the entry headed by the singular.

A greater problem was that although the open class lexical forms – nouns, adjectives and also verbs, take suffixes, a number of other word classes such as numbers and demonstratives show agreement with the head noun in a phrase by means of prefixes. On the general principle that one should not have to be a linguist to use the dictionary, all prefixed versions were given their own entry, and cross-referenced. However we also listed the stem, preceded by a hyphen in place of a prefix, followed by a list of its various prefixed forms. This was done for the benefit of scholars, and also in case a user was puzzled by the range of forms apparently meaning "the same thing", and is less redundant than it seems, because not all demonstrative stems, for example, occur with the full range of prefixes. Nevertheless there is indeed redundancy, but redundancy we know helps ensure successful communication. It would not be practical to do this with nouns in a Bantu language or Akan unless size was not a consideration, but since the stems taking prefixes in Farefari are limited in number, it seemed the best thing to do.

Something must also be said about verbs, because here the lexical entry in fact usually consists of a stem, not a word. In both Ga and Akan, even if a verb looks bare it is always accompanied by an aspect marker, usually a prefix, and sometimes a particle which however is written together with the stem as a single word. However the phonological realization of a

prefix may often be null – in Ga for example the simple past, or aorist, has a prefix consisting of a downstepping of high tone, but this can only be realized if what precedes the verb stem has high tone and the first syllable of the verb stem itself has high tone. Since in this language high tone is notably less frequent than low tone, the aorist marker is rarely overt. The form of a verb entry for Ga is in fact the form it has in the aorist when preceded by a low tone. In Farefari, on the other hand, verbs take no prefixes – they may have an imperfective aspect suffix, and they are frequently preceded by particles of various kinds but these are not prefixed or cliticized to the stem. They also have no lexical tone – tone on the verb stem is entirely determined by the tone of what precedes and follows, and by tonal aspect markers (see Dakubu 2007). In this language the default or unmarked form of the verb seems to correspond to the singular direct imperative form, which takes a default low tone, and that is what is given as the dictionary entry, without tone marking. However as with the nouns, the morphophonemic complications are such that an unsophisticated user might have trouble finding the verb if only the perfective or non-imperfective, ie. the simpler, unsuffixed form, were listed. With each entry for a perfective the imperfective is given, together with the gerundive form and the agentive, but in cases where the phonetic relationship seems particularly opaque the imperfective has been given an entry and cross-referenced to the perfective. In both Ga and Farefari this has also been done for gerundives, particularly when this nominalized form has developed meanings and uses not obviously predictable from the verb stem. Nevertheless, it is true that some acquaintance with the grammar of the language makes it much easier to use the dictionary, and I don't see how this can be avoided without introducing a huge amount of redundancy that would double the length of the book. In both languages it would be of no value to list an “infinitive”, since a verb is either finite and hence inflected, if only covertly, or a derived nominal.

Dictionaries are things that combine the functions of practical tool and with those of a cultural monument, and I now want to consider the latter. I mentioned that on the whole I am not particularly in favour of monolingual dictionaries, especially when no good bilingual dictionary is readily available – it is not that they are bad in themselves, but I don't think they make best use of limited resources in this context. However, our Akan dictionary project chose to create a primarily monolingual dictionary. An English gloss is provided, and illustrative example sentences are translated, but the full explanation of the meaning is in Akan only. Although it is not quite made explicit, the Introduction to the Pilot Project publication of July 2006 indicates that the dictionary is aimed mainly at Ghanaians with a modicum of education. Christaller's dictionary has not been reprinted since 1933, and in any

case its orthography is limited to the Akuapem dialect, which is one of the smaller ones, and there have been changes made since. The language is spoken by more people than any other Ghanaian language, probably well over 60% including second language speakers. There is thus ample justification for a new dictionary. The team chose to use the new unified orthography for the headwords, followed in each entry by the pronunciation in each of the three written variants (Fante, Asante and Akuapem).

Akan has a much longer history of documentation than most African languages. Christaller's works of the late nineteenth century, excellent by any standards, were preceded by those of Andreas Riis. Bible and other translations have been available and in use for well over a century, and the language, especially its Akuapem dialect form, has been taught in schools over the same period. Most publications in the language are for didactic purposes, but there have been many over the years. As mentioned, it has several million speakers, and there are several very competent Akan-speaking academic linguists. Therefore if any Ghanaian language was a candidate for monolingual treatment it was this one. However I suggest that it was also felt that a monolingual dictionary was fitting, that it was due to the language, as a symbol of its cultural and intellectual autonomy. There is nothing wrong with this, but it brings special problems. The team soon found that writing definitions in the language was more difficult than writing them in English, so that the process has taken longer than expected. I believe it is mainly a problem of register – the register proper for writing a dictionary, which of course did not previously exist, had to be developed. From what I have seen, and this language is not a speciality of mine, the definitions are aimed at the understanding of the 'man on the street', hence they are rather long, colloquially phrased, and I would judge not always entirely accurate, not for lack of knowledge on the part of the definition writers but for lack of an established definition style. Only a 1500-word pilot dictionary has so far been published. It was enthusiastically received when it was launched, but it is not yet clear how actively it is being used. We look forward to a fuller version.

The Ga dictionary was published within the same project, although development involved fewer people. Ga also has a relatively long written history, even longer than that of Akan if we count the translations by pre-colonial Danish officers. However the speaker community is much smaller, only about one million, and it has a different attitude towards its language. Ga is the traditional language of Accra, the capital of the country, which has expanded vastly due to immigration from other parts of the country and especially by Akans. One frequently hears complaints by Ga people that their language is dying, crowded out by Akan. However they make rather few attempts to seriously maintain it, apart from speaking it

with each other, and there is a long history of use of other languages for external communication. A few years ago a great fuss was made about the spelling of Ga place names on public signs and in public speech, but this was about the form the names were to take in the context of English, not in Ga itself (Dakubu 1997). The first edition of the dictionary was published in 2000, and no systematic study of its reception has been made. Not much attempt was made to publicize it, although the publisher has sold many copies to schools in the area. On anecdotal evidence it seems to be of some importance to Ga people living outside Ghana, who need cultural monuments both to bolster their self-confidence and for teaching their children who they are.

The case of the Farefari dictionary is quite different. The speakers live in one of the poorer regions of the country. It is a majority language in its region (Upper East) and the language of the regional capital (Bolgatanga), but it is the only language of a regional capital that to this day has no official status in the education system or written form recognized by the Ministry of Education, although various missionary groups have done religious translations.<sup>2</sup> There was certainly no dictionary. Furthermore, until very recently people from this community living in the south were stigmatized as poor and a source of casual labour and servants, in earlier times of slaves. The home region was and still is relatively undeveloped, and education came to the region relatively recently. In this case, it is clear that for the speakers the dictionary constitutes a major affirmation of their cultural identity, for those in the language area, but especially, as so often seems to be the case, for those living in other parts of the country, particularly Accra. It was enthusiastically received both in Accra and in Bolgatanga, and it was bought by a relatively large number. What difference it actually makes to the quality of language education in the region remains to be determined.

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<sup>2</sup> A team from GILLBT, the Ghanaian branch of SIL, devised a systematic orthography and published a New Testament translation, but there are real problems with the orthography and many speakers do not like it.

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