http://lexikos.journals.ac.za

Digitizing the Monolingual Lusoga Dictionary: Challenges and Prospects

Minah Nabirye, *Department of Languages and Cultures, Ghent University, Ghent, Belgium (minah.nabirye@UGent.be)*
and
Gilles-Maurice de Schryver, *KongoKing Research Group, Department of Languages and Cultures, Ghent University, Ghent, Belgium;* and *Department of African Languages, University of Pretoria, Pretoria, South Africa (gillesmaurice.deschryver@UGent.be)*

Abstract: This article recounts the genesis, growth and turbulent events that accompanied the compilation of the *Eiwanika ly'Olusoga*, that is, the Monolingual Lusoga Dictionary. Contrasting academia with the trade, legacy with state-of the-art dictionary compilation software, high praise and visibility with daily and down-to-earth drudgery, it recounts the events chronologically, from humble to grand, from paper to digital, from success to insignificance, and leads to a set of highly realistic proposals to be considered by all those involved in the compilation of explanatory dictionaries for the African languages.

Keywords: MONOLINGUAL LEXICOGRAPHY, DICTIONARY COMPILATION SOFTWARE, FUNDING, ACADEMIA, TRADE, DIGITIZATION, LUSOGA, UGANDA

Obufunze: Okuta Eiwanika ly'Olusoga mu mbeela y'omutegekowaziso ogusomwa ku kompyuta: Ebizibu n'ebiluubililwa. Olupapula luno lwandhula obuzibu obwekulungila mu kuwandiika *Eiwanika ly'Olusoga*. Ebizibu ebyalimu bigelaagelanhizibwa n'ebyo ebitela okwagwanibwa mu kweyunila ebyetaago by'emisomo, eby'obusuubuzi ni mu mitegeko egitela okukozesebwa mu kuwandiika amawanika. Ebyetaago ebili mu mitendela gino gyonsatule biweebwa okulaga nti, okutendelezebwa okwandibaile kugwaniile okuweebwa omulimu ogw'ekika kino tikufunibwa. Omutindo ogulowoozebwa nti guteebwawo abandi kwe bayinza okusinziila gubuusibwabuusibwa bw'ogugelaagelanhia n'ebizibu ebigwetooloile mu bulamu obwa buliidho. Olulapula luno lukulaga nti, okuwandiika kwa *Eiwanika ly'Olusoga* okw'atandiikila mu mbeela ennafu, kw'asobolwa okutumbulwa okutuusibwa ku mutindo gw'amawanika agandi mu nsi yoonayoona. Obuvumu bw'enkola eyo, bw'asobozesa eiwanika lino okuva mu mbeela y'ekitabo ekigemebwaku okwizibwa mu mbeela y'omutegekowaziso ogusomwa ku kompyuta. Ebyafaayo ebiweebwa mu lupapula luno bigendelela kuwa kyakubonelaku eli abo abandyenze okugelaagelanhia ebisoboka n'ebitasoboka mu kuwandiika amawanika mu nnimi dha Africa enzaalilanwa.

Ebigambo ebikulu: NAMAWIKA W'OLULIMI OLULALA, OMUTEGEKO GW'OKUWANDIIKA AMAWANIKA, OBUYAMBI MU BY'ENFUNA, EMISOMO, EBYOBUSUUBUZI, OMUTEGEKOWAZISO, LUSOGA, UGANDA

1. Monolingual Lusoga lexicography: spin vs. facts

The monolingual Lusoga dictionary has all the characteristics of a success story. Begun as a tiny addendum to an MA dissertation at Makerere University a decade ago, it gradually grew into a fully-fledged 700-page desktop dictionary which is currently available from every major bookshop in Uganda. Key funders included an Indian businessman from the Sugar Corporation of Uganda (who helped fund the fieldwork), His Excellency Muammar al-Gaddafi (who paid for the extended university studies), and the Chinese Embassy in Kampala (who provided a computer, printer and funded the entire print-run). Various family members also contributed amounts large and small. Conceived, researched, compiled, funded and printed in Africa, it was furthermore officially launched by Uganda's President, Y.K. Museveni, in October 2010.

In the process we also set up our own publishing company, *Menha Publishers* (which since then released a Festschrift for Patrick Hanks), made the data freely available as an online dictionary, and prepared a downloadable version of the dictionary for offline use on a PC. In addition to an MA and a dictionary in three media, this project introduced us to the world of computers, the Internet and web design, software such as MS Word, Shoebox, InDesign and TLex, but above all resulted in arguably the most advanced e-dictionary for any Bantu language currently available.

The monolingual Lusoga dictionary has all the characteristics of a long and painful struggle. With its roots in a mere MA study, it quickly outgrew the initial goal, requiring vast amounts of time and funding. Academically, the struggles with various university committees, who promised to upgrade the study but in the end failed to do so, were endless. It was a struggle to obtain the necessary hard- and software, a struggle to go fundraising while studying, a struggle to find the peace and quiet in order to compile a dictionary in a household averaging thirty people (parenting was out of necessity outsourced to family members), a daily struggle even to wait for electricity to come on, a struggle to find colleagues willing to contribute (to the fieldwork, the actual compilation, the proofreading), a struggle to confront the elders in the community (being a young, female, Muslim, in a male, Christian environment), a struggle to find a publisher (none was found), a struggle to set up a business in a country with very few formal businesses, a struggle to set up a company website, and a struggle to find a printing house (with trips all the way to India and South Africa in search of one). To date, less than 10% of the print-run has sold.

There are over two million Lusoga speakers, many of them in the diaspora. Only junk and F-words are being looked up in the online Lusoga dictionary, and exactly two copies of the e-dictionary were sold so far.

In a world in which novels, television series and even e-dictionaries provide different optional paths to their consumers (when it comes to story endings, actors being voted in or out, or layers of lexical information being presented), it seemed fitting to offer two paths to open this article with. Granted, they may seem one another's opposites, but they are in the end the two sides of the same coin. The left-hand column is the one typically adhered to in an academic register, but the right-hand column is the real world with which many lexicographers have to contend with. The story which follows will develop both columns, but without the clear division, as in reality each difficulty which leads to some kind of (academic) success provides for enough energy to keep on doing the right thing. What should be clear from the outset, however, is that from a purely business perspective, compiling a monolingual dictionary for what is and remains in the end a severely under-resourced language, even though spoken by over two million speakers (UBS 2006: 12), is often nothing but financial suicide. This is an important finding, one which should be kept in mind by all those who wish or have to compile monolingual dictionaries for minority languages, as is the case for several of the National Lexicography Units (NLUs) in South Africa. The NLUs are for example routinely disappointed with the local dictionary publishers when their products are not being considered for publication. Not even allowing for aspects such as inherent quality, one must remember that those publishers do have a point. A second premise which one can posit right away is that no amount of funding *on its own* will ever be enough in such a situation. One must be willing to devote one's own personal resources to the task at hand, in the conviction that future generations will end up appreciating the effort. Lip-service abounds, both from the community and the government, but in the end lexicographic activities in such an environment are a profoundly solitary undertaking. Realizing this is of paramount importance, and we again have the impression that not all NLUs in South Africa, for example, are fully aware of this. Being aware will help dissipate false expectations. Being a dictionary compiler in such an environment is not a job, it is a vocation, a calling.

The purpose of what follows, then, is two-fold. On the one hand it aims at describing the main steps that led to the monolingual Lusoga dictionary, in print, as a free online dictionary, and as a downloadable e-dictionary. Various levels of digitization have played a role throughout the gestation of these three different media. Although one could argue that a dictionary team beginning work today will (hopefully) do things differently — starting off with the very latest software within the very latest metalexicographical frameworks — the fact of the matter is that very many dictionary teams are still going through the convoluted processes described below. It is our hope that a brief description of such a "legacy approach" will convince all future dictionary compilers of the need to indeed do things differently from the start. On the other hand, important lessons may be drawn with regard to the "dream" that monolingual lexicography is a viable undertaking in any language under any circumstances.

Clearly, it is not. That doesn't mean one has to down tools right away. Several possibilities will be offered to capitalize on what is seemingly a lost undertaking. As it stands, the various monolingual Lusoga dictionaries plainly fail commercially, and the logs attached to the online version suggest that they also fail to satisfy the target user group. Conversely, the dictionaries and the metalexicographical underpinnings are an academic success, and they of course put the language itself on the map. For Busoga to be taken seriously, an important hurdle was cleared. In the words of the first editor of the *International Journal of Lexicography*, Busoga became "a truly enlightened nation":

> [...] almost as much as national flags, national anthems, and national armies, national dictionaries [a]re icons of national pride and prestige: a truly enlightened nation is not only numerate and literate but also dictionarate. (Ilson 2012: 382)

2. Background to the compilation of the *Eiwanika ly'Olusoga* (WSG)

The compilation of the first monolingual Lusoga dictionary — *Eiwanika ly'Olusoga* (Nabirye 2009), henceforth abbreviated to WSG — began as one of the requirements for attaining a Master's Degree at Makerere University, now a decade ago. For this study only a dummy dictionary of about 500 entries was envisaged. The MA dissertation itself (Nabirye 2008) was supposed to provide the metalexicographical background, with the actual compilation merely an illustration.

At the time, therefore, no dedicated dictionary compilation software was sought, as it was assumed that the 500 entries could simply be written out using a word processer. Also, the use of computers in general, and the Internet (and search engines) in particular, were in their infancy in Uganda. Using and especially possessing a computer was a true luxury at the time. Not much was known about software to compile dictionaries with, and truth be told, generic off-the-shelf dictionary compilation software was only starting to be produced internationally (cf. De Schryver 2011a). For all these reasons, the use of Microsoft Word was thought to be sufficient.

3. The Microsoft Word version of the WSG

The words defined were based on a minimal corpus which was developed for this project. A number of Lusoga texts were scanned and the small resulting corpus was used to generate a word list, from which the 500 entries were randomly selected.[1] Entries were organized according to the style guide developed for the MA study. Dictionary formatting was manually inserted in MS Word. The draft was rather basic with nothing fancy to warrant any further inquest into any other types of software. The pages were of a manageable extent and relatively easy to correct in the MS Word document. The timeframe for this

study was one year from September 2003 onwards. The first draft of the dummy dictionary was completed in about three months' time.

On submission of the draft, however, the supervisor argued that if the compilation process was stretched for a little while longer, a full dictionary could be realized by the end of the MA study. The supervisor's challenge was phrased as follows:

> Where do you think we are going to find another Musoga who will enrol for studies in linguistics, be able to pay all the university fees, pass all the necessary exams, specialize in lexicography, and complete the draft you have presented? (Kiingi 2004, pers. comm.)[2]

The guidance from then onwards was tilted from compiling just a dummy dictionary to a complete dictionary. This is how the undertaking to compile a fully-fledged monolingual Lusoga dictionary came about.

From an academic point of view, this research was not only aimed at producing the first-ever monolingual dictionary to be compiled in Lusoga, but also to lay down the metalexicographical foundations for Lusoga lexicography. At the time Lusoga did not have any official status and its documentation was absolutely minimal. The compilation of the dictionary envisaged would therefore help to document and preserve the language's most basic lexical information, an effort that could serve future studies of Lusoga. It would also aim at producing a complete product that could be readily accessed by the Busoga community.

In the second phase of the study, therefore, the compilation moved from aiming at only 500 dictionary entries, to a tenfold, namely 5 000 entries. The new demands led to a serious expansion of the research. The increase in the number of entries also forced us to seek a more professional piece of software to compile the dictionary with.

4. From Microsoft Word to Shoebox

A colleague at the department — Celestino Oriikiriza — who was also trying to compile a monolingual dictionary, in his case for Runyankore-Rukiga, managed to find a program for the manipulation of textual data: Shoebox version 5.0. He grappled with applying it to his research, knowledge of which he later shared with us. We also acquired a copy of the Shoebox software and started to manually transfer the draft of WSG from the MS Word document into Shoebox. The formatting specifications on how each entry should be organized were based on the same style guide used in the first draft. Although the transfer took some time, the advantage of the change of programs was that, this time, dictionary formatting was inbuilt. Unlike in MS Word where all formatting aspects were applied and checked manually, in Shoebox most of this was automated. Editing of the database from then on was more manageable. Although Shoebox is widely used by field linguists, who typically build a dic-

tionary as they analyse and interlinearise texts, we found that it was not well adjusted to catering for Bantu language features and some dictionary entry information had to be forced in unrelated fields to maintain the order of the entry as stipulated in the style guide.

At the time, no monolingual dictionaries for any of the Ugandan languages existed. All the projects that later gave rise to monolingual dictionaries, such as the ones for Luganda and Runyankore-Rukiga, were also in their infancy (cf. Kiingi et al. 2007 and Oriikiriza 2007). Of all the monolingual dictionary projects only the Lusoga dictionary project was undertaken with the aim of attaining an academic degree. The demands placed on the study were therefore exceptional because the focus had to be on meeting the goals of a scientific study within a specified timeframe.

5. Visits to dictionary centres in Africa

In the subsequent years a number of research visits were arranged to dictionary centres in Africa, in the hope of procuring references on dictionary compilation and additional assistance on the use of corpora in lexicography and the use of dictionary writing systems. The dictionary centres visited were the Institute of Kiswahili Research (IKR, abbreviated as TUKI in Swahili) at the University of Dar es Salaam, the corpus and dictionary units at the University of Pretoria, the Zulu NLU in Durban, and finally a private consultation with A.C. Nkabinde (the doyen of monolingual Zulu lexicography, cf. e.g. Nkabinde 1982 and 1985) in Pietermaritzburg. Unfortunately, TUKI dictionaries were not based on corpora and no dedicated dictionary compilation software was in use in Dar es Salaam. TUKI had however produced monolingual dictionaries for Swahili and these dictionaries informed the research. Quite surprisingly, no corpus query software or dictionary writing systems were introduced to us by our host at the University of Pretoria either.[3] Literature on Zulu and Shona lexicography was consulted at the library. Nothing forthcoming was found at the Zulu NLU either. The consultations with A.C. Nkabinde, on the other hand, were found to be very informative, especially for comparative Bantu lexicographical research. Exposure to other monolingual Bantu dictionaries richly informed the arguments raised in the MA itself (Nabirye 2008) as well as the final rendition of dictionary data in the WSG (Nabirye 2009). However, since none of the visits advanced the know-how regarding the corpus and dictionary writing systems beyond what the study had already secured, no further inquest was sought on these aspects. Instead, the WSG was labelled as a non-corpus-based dictionary and no further discussion or inquiry into any other use of software was undertaken.

At the end of the visits, the study had established a stand on how to deal with Lusoga lexicography based on the literature reviewed on the compilation of dictionaries in cognate Bantu languages. This was the basis for describing the findings arrived at in the MA study. Since the WSG was the first monolin-

gual dictionary of Lusoga, most of the data specified for the dictionary proper was new with the WSG as the only record for it.

6. Megastructure of the WSG

We also came to the conclusion that the WSG which was initially envisaged as a chapter within the MA dissertation had to be considered as an independent result, appended to the dissertation. A detailed description of how all the components in the compilation stage were arrived at and brought together served as the study itself. Issues dealt with in the MA study include the orthography used, with a justification of how the writing system in general was specified and how the Lusoga grammar in particular was addressed, with an indication of all the new grammatical terminology. The WSG was conceived as a general-purpose dictionary, meant for mother-tongue speakers, with at least a minimum of primary seven (P7) education. The language used for the recording of dictionary data had to be simplified to ease access to the dictionary for its intended audience. Summaries of the most essential Lusoga language information, specified for the very first time in WSG, were given independent consideration with special treatment in the dictionary. The explanation and justification of this data was given in Nabirye (2008).

Given that the WSG was now an independent entity, it had to appear with all the information required to make it fitting as a complete dictionary. Being the first and only existing monolingual Lusoga dictionary, the WSG anticipated a lot of demands from the target audience. The dictionary content was as a result conceived to cater for general user needs by specifying information such as (1) a summary of the history of Busoga, (2) a list of all the main abbreviations in general use in Uganda (English and otherwise), together with their Lusoga interpretations, (3) a language portrait detailing the language information specified in the dictionary, (4) pictures to enhance the definitions at about one hundred entries, and (5) an onomasiological section with different categories of things, such as birds, musical instruments, transportation mediums, gardening tools, etc. Lastly, since the morphology of Lusoga was found to be a challenge after testing pilot versions of the WSG (Nabirye 2008: 130), information considered to be of an irregular or unpredictable nature had to be prepared as "a list of sight words", to smoothen dictionary access. A section called "How to use your dictionary" was required to introduce the contents of the dictionary. This section was prepared in Lusoga and translated into English.

7. Shoebox runs its course

All in all, there were as many as eleven different parts that had to be put together in the final draft of the dictionary. First there were the front and back cover pages (in colour, to be printed on heavier paper), followed by the title

and imprint pages (2 pp.) as second component. The "How to use your dictionary" section in Lusoga (22 pp.) constituted the rest of the front matter, while the English translation thereof (21 pp.) constituted the second part of the back matter. The first part of the back matter was reserved for the list of sight words (63 pp.). The sixth component was the actual A-to-Z section, to be interspersed with the five additional sections mentioned under Section 6. Those interspersed additional sections had to have logical placements near related entries in the dictionary. Information on the history of Busoga consisted of 7 pages and had to be placed near the entry *ebyafaayo* 'historical issues', abbreviations consisted of 14 pages and had to be placed near the entry *(e)kifunze* 'abbreviation', language information consisted of 15 pages and had to be placed near the entry *gulaama* 'grammar', while the picture plates consisting of 8 pages could have been placed near the entry *(e)kifaanani* 'picture', but this placement was very close to the abbreviation section with only one page in-between so another placement was decided on, namely *(o)ku.faanan.a* 'to look like'. Pictures intended for inclusion at *particular entries* failed to export properly into the Shoebox generated file, so that the attribute for pictures in Shoebox was abandoned. All entries that needed pictures were listed and a plan was envisaged to have them inserted manually.

The best that Shoebox could do at this point was to give a full dictionary copy of the A-to-Z section, exported as an MS Word document. Shoebox was also used to automatically generate a list of all the irregular and unpredictable entries to be appended to the dictionary. This is as far as Shoebox could go. Inserting the other parts of the dictionary required another type of software in which all parts would be brought together and numbered accordingly. The final product of the dictionary had already been specified in the MA dissertation and it had to appear that way in the appended copy. The desktop publishing software called InDesign was found fitting to put all the different parts of the dictionary into one document that would then constitute the WSG to be appended to the MA dissertation for submission.

8. From Shoebox to InDesign

Shoebox was relatively compatible with InDesign and most of the data could directly be imported into InDesign with few alterations.[4] Most of the inbuilt dictionary formats from Shoebox were maintained by InDesign. Information in the two programs was easy to correlate during the importation exercise. Among the problems that arose, however, was that InDesign did not have an automated application for headers and footers. This meant that all the headers on each page of the dictionary were lost in the process. We also lost the page numbering and the automated formatting of the dictionary which existed in Shoebox. We were back to something similar to the status of the draft generated in MS Word because most of the changes in the dictionary from here on were to be effected manually.

After setting the A-to-Z section, we moved on to place all the additional dictionary parts in the desired positions manually. Since the information in all the additional sections was independent, it was straightforward to intersperse those without affecting the formatting in the A-to-Z dictionary section.

The most trying part was to add to the InDesign file the pictures on selected entries. Since we were inserting them on entries already defined, the formatting of the respective pages changed with each insertion. Some pictures, such as the one for the skeleton, needed a full page immediately after the entry on which it was entered, here *(e)igumba* 'bone'. Other pictures, such as the one for measurements entered on *(e)kipimo* and bicycle entered on *(e)gaali*, needed half a page after the respective entries. We treated each problem as it came and did not really know the program well enough to anticipate future problems. The main advantage of InDesign was that, once the placements were made, it could hold the pictures in place while we re-arranged the altered formats.

It is only after grappling with the placement of all the parts of the dictionary that we had the opportunity to analyse the entire dictionary for the very first time. This is when final editing of the dictionary was begun. The alphabetical formatting inherited from Shoebox kept the majority of entries in their correct placements; however placement of all new and edited entries from here on was effected manually. And, as mentioned, all the new information added in the dictionary from here on also lacked the inbuilt automation of Shoebox. Changes made in the final draft thus only existed in the InDesign file and could not easily be tracked or automatically applied to related entries. Cross-checking updated information was difficult and of course inconsistencies were introduced.

As far as the demands of the study were concerned, the WSG had been compiled as specified in the dissertation chapters and evidence of this was given in the draft that was appended. The draft dictionary at this stage was an independent part of the research which was arguably a major contribution to the documentation of Lusoga. No prior standard record of this nature existed which is why the process to have it published was pursued. The dictionary which was originally envisaged to have only 500 entries, had by now grown to a massive 12 700 entries, equivalent to 552 printed pages just for the main text of the A-to-Z section.[5]

9. Setting up Menha Publishers

When the MA study was completed and submitted for examination at the end of 2007, we began the search for a publisher. We approached three publishing companies in Uganda. Both Longman and Macmillan were simply not interested in publishing our dictionary. Our contact person at Longman did send us to the liaison office of Oxford University Press in Kampala. At that office, we were informed that whatever is published in Uganda must be authorized by the Head Office in Nairobi, Kenya.[6]

The struggles to compile the dictionary and complete the MA study had served one lesson, in that we believed one must just keep searching for a way to obtain whatever needs to be done in the best way possible. We therefore went to buy books on publishing to get a clear picture of what a publishing company actually does once it receives a manuscript. Two of the books in particular proved informative enough and gave excellent guidance on how to set up one's own publishing company. After reading those books, we simply stopped looking for a publisher and boldly decided to set up our own publishing company rather.

In September 2007, we filed for setting up a publishing company and prepared the proper legal and financial requirements. Once the process was about three quarters underway, we set out looking for editors. These efforts to have native speakers edit the dictionary were unfortunately fruitless (Nabirye 2008: 148). The few 'specialists' who were approached all disqualified themselves. At the time, we could not find other speakers of Lusoga who had the necessary expertise to undertake this task. This was (and is) because the majority of Basoga have never learned to read or write Lusoga. Moreover, canvassing all the data and cross-checking their consistency was clearly too much a task to be completed manually.

Having been a single-handed study and compilation effort, all humanly possible resources had already been drawn and drained to bring both the study and the compilation to completion. For the published version of the dictionary, therefore, we decided to only address the major anomalies overlooked in the version appended to the MA. We reasoned that just like computer programs are often released with bugs that are only patched in subsequent updates, so could a dictionary be released with future editions to take care of the errors. This, of course, is in line with a move from an academic environment to the trade: whereas one can try to attain perfection in the first (spending endless amounts of time and money, when available), it is rarely a goal in the second.

Menha Publishers (U) Ltd. finally began official operations in June 2008. The project which had continuously been under financial constraints was salvaged by the Chinese Embassy in Uganda which offered substantial funds to finance the printing. We started hiring people to carry out tasks like designing the company logo. We paid for all the services as a company but the money was not sufficient to for example engage a professional website designer. A relative offered to help do what he could to have the website hosted and all the company did was to pay for the web hosting fees.[7]

To actually print their works, publishing companies join hands with printing houses. The search for one eventually led to visits to Kolkata and Bangalore in India, as well as Cape Town in South Africa. We settled for the latter, e-mailed the material for publication as a single PDF in March 2009, from where a few months later the dictionaries themselves were shipped to Mombasa, and then put on a train to Kampala. A sample page of the printed version of the WSG is shown in Addendum 1.

10. From InDesign to TLex

Following the submission of the MA, conference papers were presented about different aspects of the study and the compilation process. At those conferences we were able to meet with and talk to various dictionary publishers, to hear how they actualize their projects. We also had a chance to listen to presentations on the different software solutions available for dictionary compilation and that is how we ended up talking to the developers of TLex.

The initial interest at the time was to start work on a second edition of the WSG, using a better dictionary writing system than Shoebox. The developers of TLex indulged us in the advantages of their software and since the problems that arose in the compilation stage were still ripe in our minds, it was easy to ask relevant questions based on our compilation experience.

A lot has been written about TLex already in the scientific lexicographical literature, so we will limit ourselves to a single reference. The most concise overview of the various features of TLex can be found in De Schryver (2011a), which contains all the references to earlier publications for the reader who is interested in specific details of the software.[8]

We were quickly convinced and elected to have our data transferred to TLex. This in the understanding that TLex is primarily a powerful dictionary database which takes care of the A-to-Z section(s) of a dictionary, and that most extra-matter material is the domain of desktop publishing software, where a dictionary file exported from TLex may be joined to the extra texts that have been prepared in still other programs, like word processors and the like.

Although the WSG was initially rather well organised with explicit mark-up labels preceding each field as long as it resided in Shoebox, the move to InDesign, and the further compilation therein, meant that the programmers could only import the InDesign data into TLex. The InDesign data is inherently "flat" with the only remaining structure the formatting. The developers of TLex have developed in-house finite-state importers, which are able to analyse such features and differences like bold vs. italics. vs. small caps etc. in running text, and also take punctuation (, vs. ; vs. . vs. : etc. as well as various types of brackets) into account, in order to recreate or even simply to create a text that is properly structured. In simple terms, as the data is being transferred to TLex, a DTD (i.e. document type definition) needs to be built, which regulates the dictionary grammar. Such custom importers never import everything perfectly, mainly because the source files are rarely 100% consistent, especially those that involved a lot of manual intervention (as was the case for the WSG).

As expected, a number of problems arose during the importation stage of the WSG. The first basically revolved around the language barrier, given that the entire text (being a monolingual Lusoga dictionary) was literally foreign to the programmers. As a result, there were cases where some parts of the article information ended up being misplaced. The solution here was to continuously liaise with the programmers during the importation exercise, to check the draft

imports for any anomalies and to alert the programmers in time. This close cooperation enabled us to actually make substantial improvements to the internal structure of the dictionary articles, and to help design a solid DTD.

Another problem that arose during the importation was that we had added a new letter to the Lusoga alphabet — a velar nasal, ŋ, which is not commonly used. When the importation was carried out, the default sorting did not know where to place entries containing the velar nasal. The placements of entries with the letter ŋ were therefore found in all sorts of illogical positions. Examples of such entries include *(a)kakuŋŋunta*, *bbiliŋŋania*, *daŋa*, *ŋŋanziiza*. In TLex various sorting methods may be used and customised, and here it sufficed to add the velar nasal ŋ in-between n and o in the four-pass table-based sorting which is based on ISO 14651.

The most annoying problems were those which resulted from inconsistencies in the InDesign file, inconsistencies either inherited from the MS Word document, the Shoebox database or inserted in the InDesign file itself. Solving those was a trying job for both us and the programmers, but of course a much better dictionary database was the result. For example, the derivation category and the consideration of unpredictable plural forms were two of the last-minute additions to the dictionary entry parts whose proper placements were problematic because they were not given in the information on parts of the entry in Shoebox.

One of the more interesting "clean-ups" was that TLex forced us to make a clear separation between actual dictionary contents (which are unique to each dictionary article) and all metalanguage (such as part of speech assignments or cross-reference texts, which are repetitive). All the metalanguage became part of the Style System, so easily changeable at any stage without the need to actually touch the dictionary contents. In this context, conditional metalanguage was also introduced on various levels. For example, to introduce run-ons, TLex will now automatically precede a single run-on with the meta-text "*bgz:*", but multiple run-ons with the meta-text "*bbgz:*".

In a first phase, the data in the TLex file was meant to mimic the layout seen in the InDesign file as much as possible, down to the fonts and abbreviations used, as that is what we were familiar with having worked with the data for so many years. Needless to say, all errors spotted during the conversion were of course corrected, so the data in the TLex file is now "the latest version". A screenshot of the imported WSG data into TLex is shown in Addendum 2.

11. The online version of the WSG

With dictionary data in TLex, it has always been trivial to export the material to any of the commonly-used formats, with the aim to produce a paper dictionary, an online dictionary, any other type of electronic dictionary, or even to reuse any (parts of the) data in another application. The current version of TLex (7.1), for example, has all of the following data export options:

— Comma Separated Values
— HTML (Web Page)
— RTF (Rich Text Format) (MS Word, LibreOffice et al.)
— XML (Data / Structured)
— XML (Formatted / Publisher-friendly)
— TLex Online Publishing [Advanced]
— Text
— Lemma signs
— Index
— ODBC database

In order to place a dictionary on a website, thus as an online dictionary in searchable format, one would typically choose the "TLex Online Publishing" option. Although doing so and preparing the website only takes a good day's work — provided one has a domain name and web space already, with database software installed on the server — it took us another two years before we took this step. The reasons for waiting so long are many, but basically we first wished to give the sales of the printed copies a chance, yet when seeing that those were not doing that great, we reversed the argument, now assuming that the free online version would help the sales of the paper copies.

The exact same contents from the TLex file were eventually placed online in June 2012. These are thus the contents from the WSG without the cross-referenced material (i.e. without (1) to (5) mentioned in Section 6). A screenshot of the online version of the dictionary, baptized *e-Eiwanika ly'Olusoga*, is shown in Addendum 3.

Given that there are far fewer space constraints on the Internet, the textual condensation may be lessened, by for instance starting each sense on a new line. Also, and in contrast to printing, colour may be used royally in an online environment, which helps to quickly navigate dictionary articles. Both of these were implemented for the *e-Eiwanika ly'Olusoga*. To further improve the usefulness of the dictionary, the symbols shown in Table 1 were also introduced.

Table 1: "Quick-help" for the online *e-Eiwanika ly'Olusoga*.

Symbol	Functionality	Example
&	AND	itaka & eitaka
\| | OR | itaka \| eitaka |
"..." | Exact phrase | "kulondoola ensonga" |
_ | Single-character wildcard | _taka |
% | Multi-character wildcard | %soga |
/(1-9) | Within x words of one another, given order | "nga ni"/2 |
@(1-9) | Within x words of one another, any order | "ekigobelelwa ensonga"@4 |
| XOR (find one or the other, but not both) | ekigobelelwa # ensonga |
^ | None of ... | ^ekigobelelwa ensonga |

With the symbols seen in Table 1, the user has been handed an extremely powerful search tool with which a dictionary may be searched in a manner unlike anything available before. One of the early "electronic dreams" has been implemented (cf. De Schryver 2003), and in this respect the *e-Eiwanika ly'Olusoga* may very well be the most advanced online dictionary currently available — not just for the Bantu languages, but for any language.[9]

12. The offline version of the WSG

The makers of TLex also have a module called the "TLex Electronic Dictionary System", with which downloadable e-dictionaries may be produced for offline use on a computer. The same contents can also be burned to a disc (CD-ROM, DVD, etc.) or written to a USB flash drive. Assuming that there would be a market for this type of dictionary as well, such an e-version of the WSG was also prepared, a screenshot of which is shown in Addendum 4.

In this offline version of the *e-Eiwanika ly'Olusoga*, the search options include:

— Match any of the given search terms
— Match all of the given search terms
— Case sensitive
— Match whole words only
— Search the full text

This e-dictionary further allows for automated Web searches, either for text or images, and has an MS Word plugin, which can automatically display, in a pop-up window, the dictionary contents of the words one is typing in or clicking on.

13. Marketing of the WSG

The three major bookshops in Uganda — Uganda Bookshop, Aristock Booklex and Makerere University Bookshop — are also the only true bookshops in the whole of Uganda, other books being sold from supermarkets. All three are located in Kampala. For each, the normal procedure for publishers is to approach them with copies of a book, with payments only forthcoming once (and months after) the books deposited have been sold. Since the end of 2009, payments for three consignments from Uganda Bookshop, two from Makerere University Bookshop, and just recently the first from Aristock Booklex were received. In addition, a few hardcopies were acquired by once-off customers directly from our warehouse in Kampala or through our website. All of this amounts to about 200 copies sold so far, which is less than 10% of the print-run. The great majority of the sales were local. There may have been a small uptake in the interest in the dictionary following the official launch of the WSG by

Uganda's President, on the 8th of October 2010, when about five articles in the main Ugandan newspapers also reported on the publication (cf. e.g. Jaramogi 2010, De Schryver 2011).

The efforts to promote the electronic versions of the dictionary were as follows: We sent several messages to the two main mailing lists that unite the electronically connected Basoga, i.e. BuSoga Yaife and Busoga Bulletin. Members of these mailing lists mostly constitute Basoga in the diaspora, whom we assumed to be our main target audience for an electronic product dealing with their language and culture, in their language. We also wrote targeted e-mails to various other interest groups and individuals to announce the release of the *e-Eiwanika ly'Olusoga*. At the same time, the company website of Menha Publishers was updated to include detailed information on both the paper and electronic versions of the dictionary. The online version of the *e-Eiwanika ly'Olusoga* is freely accessible from our website, while a fully automated system takes care of the purchases of the downloadable version. The electronic version of the dictionary was envisaged to serve a wider market of users who could order and pay online from any part of the world. The offline dictionary can even be downloaded as a trial version first.

In spite of all these marketing efforts — which, lest it be forgotten, come on top of nearly a decade of detailed research, painstaking dictionary compilation and inventive fund-raising running into the tens of thousands of Euros —, during the first fifteen months of *e-Eiwanika ly'Olusoga* being available, exactly two copies of the downloadable version were sold: one to a private user in Uganda, and one to a library in the US.

14. Actual use of the WSG

No studies have so far been undertaken of the actual use of the hardcopy version of the monolingual Lusoga dictionary. It may or may not be used successfully, it may or may not fill a lookup need — we simply don't know. With regard to the online version, however, we are in a position to look at how this product is used, given that we can study the log files attached to this Internet dictionary. Sadly, the findings are unsatisfactory.

For the first fifteen months that the dictionary has been online so far, just over 2 000 searches were made by about 1 000 different users. As a comparison, over the years, the *Online Swahili–English Dictionary* has attracted approximately 1 000 visitors a day, who perform about 2 000 searches every four and a half hours! As may be seen from Figure 1, the distribution of the number of searches per user in the *e-Eiwanika ly'Olusoga* is Zipfian, so most users actually only look up a single word and leave. There are a few return visitors, such as # 270, who looked up 59 words over a period of nearly 40 days, or # 62 who looked up 10 words over a period of nearly 9 days. Studying the actual searches for particular users (cf. De Schryver and Joffe 2004: 192) is not interesting, given the very large number of immaterial searches.

	Visitor ID			#
487.	2800d5f712aaa95d308651bc026ea554	2013-02-04 07:42:29 - 2013-02-04 09:22:05	0 01:39:36	83
270.	21784d61529933971050c4f45bd8175a	2012-10-24 06:16:11 - 2012-12-03 05:10:13	39 23:54:02	59
463.	23aa90b534f7a04d00ca05335522ccc1	2013-01-22 16:07:16 - 2013-01-22 16:29:29	0 00:22:13	25
857.	5c61b9d6f79d81d3994df2fb6d02a114	2013-08-04 01:04:12 - 2013-08-04 01:20:50	0 00:16:38	19
590.	44a86903a9280f52b807d05a1939f1a2	2013-03-30 04:39:00 - 2013-03-30 04:49:39	0 00:10:39	17
327.	ef8c7cde4889ebefc8859349e9830a06	2012-11-20 09:48:34 - 2012-11-20 09:59:09	0 00:10:35	14
12.	822edc6099eb8e7934e1c4df95605a2f	2012-06-11 12:17:43 - 2012-06-11 13:14:47	0 00:57:04	14
856.	8834baafa2f9a9d176e9d6fa3bb779eb	2013-08-02 19:25:09 - 2013-08-02 20:49:19	0 01:24:10	12
493.	3b9ab2616e571d68f56e9f0176ce75cb	2013-02-05 22:20:02 - 2013-02-05 22:21:21	0 00:01:19	12
424.	f1eeddaad62dd49be5414e92dae813ab	2013-01-06 17:40:41 - 2013-01-06 17:42:46	0 00:02:05	11
299.	106e28f4acf37200e8e1212eec0b52d1	2012-11-07 02:28:36 - 2012-11-07 02:32:29	0 00:03:53	11
16.	e3f4b4090978e69917f71c8e206c02e8	2012-06-12 00:34:51 - 2012-06-12 00:39:35	0 00:04:44	10
62.	5b769684cc2cdd605013f3b1281e38be	2012-07-02 04:23:37 - 2012-07-11 03:11:14	8 22:47:37	10
576.	0e372d50efa12522e46fb0ce6f1f9d06	2013-03-23 18:41:09 - 2013-03-23 18:52:07	0 00:10:58	9
383.	88255d325f3589c342b8c89cd2691358	2012-12-12 00:54:07 - 2012-12-12 01:04:48	0 00:10:41	9
543.	a4c5a57f9797b4ad62a179530ff3ba6b	2013-03-02 19:24:30 - 2013-03-02 19:26:03	0 00:01:33	9
859.	446c27a4d03d4ba3af52312336a26860	2013-08-04 17:55:51 - 2013-08-04 21:35:06	0 03:39:15	9
152.	453b1d075011ea8fa3a94bddb343a274	2012-08-18 23:55:02 - 2012-09-17 00:09:12	29 00:14:10	9
607.	f1aa5013908b478ed4abf3748cef4ce1	2013-04-06 21:17:03 - 2013-04-06 21:22:46	0 00:05:43	8
589.	0bdc46c7810ea285f6801a9c9c926c30	2013-03-30 00:07:51 - 2013-03-30 00:12:43	0 00:04:52	8
352.	b2f7bc0ddaec222da84ae57a3b7be3a6	2012-11-30 21:42:23 - 2012-11-30 21:42:48	0 00:00:25	8
322.	035e16219782cad36548710d1842c216	2012-11-18 04:01:04 - 2012-11-18 04:06:50	0 00:05:46	8
466.	60540f325380c653cb0cee919aab19a2	2013-01-23 06:57:05 - 2013-01-23 11:21:11	0 04:24:06	8

Figure 1: Number of searches per user of the *e-Eiwanika ly'Olusoga*.

Both the number of searches and the number of visitors has remained stable since the launch of the *e-Eiwanika ly'Olusoga*. This may be deduced from Figure 2, where the monthly number of searches and users are plotted.

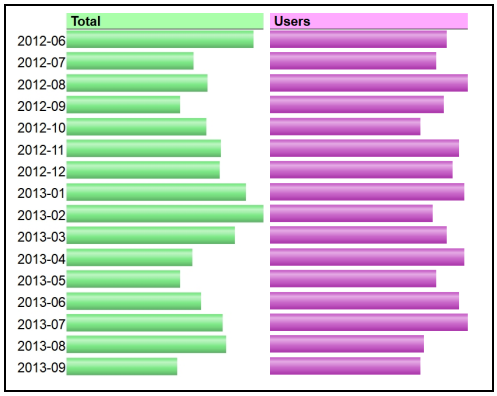


Figure 2: Monthly number of searches and users of the *e-Eiwanika ly'Olusoga*.

Most searches are immaterial because non-Lusoga words are being looked up in a monolingual Lusoga dictionary, and when Lusoga words are being looked up, they mostly belong to a limited number of registers. Just one quarter (25.02%) of the searches result in a "hit", meaning that the word or one of the words being looked up is/are found at least once in the full dictionary text. A massive three-quarter (74.98%) of the searches result in a "miss". The top-frequent "hits" and "misses" are reproduced in Tables 2 and 3 respectively.

Table 2: Most frequent "hits" in the *e-Eiwanika ly'Olusoga*.

Search	Freq.	Search	Freq.	Search	Freq.	Search	Freq.
hello	11	bi wanindi wan pod ...	4	bugisu	2	nze	2
kiswahili	10	olusoga	4	akasolo	2	embooli	2
itaka	10	kuma	3	embolo	2	amaloboozi	2
eiwanika	8	omunie	3	omukyala	2	itaka & eitaka	2
tomba	8	diamond	3	kalenda	2	katonda	2
go	7	microscope	3	bye	2	okutomba	2
father	7	k	3	me	2	be healthy	2
i love you	6	school	3	wanzi	2	kuba	2
a	6	house	3	ighe	2	nkutu#	2
baba	6	_	3	bugiri	2	mudindo	2
mama	5	doctor	3	mapenzi	2	muna	2
eitaka	5	%	3	baaba	2	ensonga	2
taka	5	o	3	embwa	2	okwenda	2
boy	5	omudindo	3	mkeka	2	jambo	2
lusoga	4	se	2	okuluma	2	kale	2
ekinazi	4	amadhi	2	iganga	2	bantu	2
car	4	emmana	2	e	2	tai	2
enfuli	4	ekinhazi	2	me too	2	(*hapaxes to follow*)	

Table 3: Most frequent "misses" in the *e-Eiwanika ly'Olusoga*.

Search	Freq.	Search	Freq.	Search	Freq.	Search	Freq.
man	20	happy	5	together	3	bird	3
love	20	thank you	5	ly	3	omunege	3
water	12	home	5	look for	3	and	3
emana	11	spirit	5	blood	3	old	3
dog	11	cow	4	person	3	sitiari	3
one	10	nyako	4	mana	3	tarihi	3
lion	8	god	4	how are you	3	moon	3
come	8	apple	4	omunye	3	genius	3
king	8	see	4	devil	3	tree	3
woman	8	atom	4	sun	3	yes	3
good morning	7	life	4	death	3	eat	3
fuck	7	child	4	install	3	my love	3
book	7	stone	4	girl	3	hand	3
mother	7	unite	4	stabalaize	3	sleep	3
table	6	fire	4	want	3	kodeyo	3
food	6	cat	4	building	3	hate	3
vagina	5	kikokotoo	4	snake	3	(*searches with freq. 2 and hapaxes to follow*)	
sex	5	omusadha	3	kuudhi	3		

A study of the most frequent "hits" in Table 2 reveals that 20% of the found material is actually English (typically mentioned in the etymology slots), that several of the Lusoga words are simply the words and symbols taken from the instructions to the dictionary (cf. Table 1, e.g. *itaka*, *eitaka*, *ensonga*, *taka*, _, %, ...), and that way too many of the other searches are F-words on the one hand: *tomba* 'fuck', *ekinazi* 'vagina', *enfuli* 'labia minora', *omunie* 'anus', *omudindo* 'anus', *emmana* 'vagina', *ekinhazi* 'vagina', *akasolo* 'penis', *embolo* 'penis', *okutomba* 'to fuck', *mudindo* 'anus', or basic vocabulary on the other: *baba* 'father', *mama* 'mother', *kuma* 'light', *omukyala* 'woman', *amadhi* 'water', ... Genuine searches include the words in the title of the dictionary, and words like *embooli* 'sweet potatoes', *amaloboozi* 'voices', ...

These were the hits; the picture for the misses is even more depressing. As many as 85% of the misses in Table 3 are simply English words, several of them again from the F-field: *fuck*, *vagina*, *sex*, or baby words: *man*, *love*, *water*, *dog*, *one*, *lion*, ... The few Lusoga misses include more (misspelled) F-words: *emana* 'vagina', *mana* 'vagina', *omunye* 'anus', *omunege* 'penis', misspellings of basic words: *omusadha* 'man', *kodeyo* 'hello', ... and foreign words: *nyako*, *sitiari*, *tarihi*, ...

Clearly, then, the use of Internet dictionaries remains biased towards prurient content and some high-frequency words (cf. De Schryver and Joffe 2004: 190). The type of words being looked up, as seen from both the hits and the misses, moreover indicates that the *e-Eiwanika ly'Olusoga* cannot be said to be used for any serious purposes. If ever there was a noble use for the expression cast pearls before swine, then this is it. This project is not only the adaptation of an academic study being fully misused by the community, it is also philanthropy gone very wrong.

15. What we can learn from all this

Wearing an academic hat, it is possible to explain away quite a number of the depressing findings. Some of the arguments could then go as follows. If we compare Lusoga to the neighbouring Luganda, for instance, one can state that Luganda has a longer tradition as a written language, dating back to at least a century ago (Meeuwis 1999). It has been a medium of instruction in Uganda for about half that time (Ladefoged et al. 1972: 87-99). To this date, Luganda is the language of the church and the media, both in Buganda and Busoga. When the monolingual Luganda dictionary was published in 2007 (Kiingi et al. 2007) all copies were sold within a year and they had to reprint soon after. For Lusoga, in contrast, a language that only received its first official recognition in Uganda and Busoga in 2005 (NCDC 2006: 5), it is still too early for a monolingual Lusoga dictionary to attract enough attention.

Also, Lusoga is not yet stable as a written language. One could hypothesize that most users will find it problematic to decide on the right spelling of the lemmas to be looked up, and after a few trials they may give up. That doesn't necessarily mean that such users do not want a monolingual Lusoga

dictionary per se; failure to figure out how the words of interest are written and listed in the dictionary simply drives away such potential users. Comparing Table 2 with Table 3 — where one notices that the same type of words and even the same words — are searched for in both correct and wrong spellings, actually gives weight to this argument.

Because Lusoga is only just beginning to have a presence in the written genre and in scholarly works, the majority of the academic papers written so far have been on problems that could help advance the description of Lusoga. Very few reference works exist on Lusoga, and fewer even have been written *in* Lusoga, which implies that the interest and need to use Lusoga in an advanced setting or in a way which requires one to check the proper form or the exact meaning(s) of a word in a dictionary, has not yet arisen.

Lastly, the WSG project was started and developed as an academic study. It was therefore designed and aimed to fulfil scholarly demands, not market-oriented demands. The need to market the dictionary arose after the project was passed by the academic bodies and therefore the way it is taken to the market and presented to this very niche market needs to be adjusted if it is to receive the attention we think it deserves.

Conversely, and wearing a business hat, one simply has to admit, based on the evidence seen in Tables 2 and 3, that what the Busoga community needs first is a bilingual English–Lusoga dictionary. At a push, one could wish to conclude that they need a bilingualised dictionary, thus a monolingual Lusoga dictionary where English glosses are provided at each sense of each dictionary article.

Additionally, the material could have been made far more user-friendly in a digital environment. For one, the entire metalanguage could easily have been expanded: writing the parts of speech in full rather than use the current obscure abbreviations, or "in Luganda" rather than "Lg.", "example" rather than "gez.", and even "this word is a singular noun in class 7, with its plural in class 8" rather than "7/8", etc. One could also have decided to do away with orthographic conventions in the pronunciation field, such as those that regulate the compensatory lengthening of vowels. Using full words throughout rather than morphemes, could also have been considered. And so on.

Yet deep down the actual tension is actually one between a product that is needed to make a society dictionarate, versus a product that is needed to make money, and must, by definition, be sellable and thus user-friendly. Monolingual dictionaries in a non-dictionarate environment must therefore be facilitated by a deus ex machina. Even then, the battle remains an uphill one. The heavily government-funded and over-trained Northern Sotho NLU, for instance, has had their monolingual dictionary online for a number of years now, known as the *Pukuntšutlhaloši ya Sesotho sa Leboa ka Inthanete*. Several teams of lexicographers worked on the dictionary for well over a decade, a dictionary which potentially serves a community of over 4.6 million speakers in digitally advanced and well-connected South Africa. For the past 15 months,

about 1 400 visitors made use of this online monolingual Northern Sotho dictionary, searching for roughly 6 300 items, with a hit rate of 35%. While these figures are all higher than those for the monolingual Lusoga dictionary, the difference is clearly not as big as one would have hoped. Therefore, even though there may be little need for it in the present communities, monolingual dictionaries ought to be funded and the process guided by competent government bodies. Bringing it back to South Africa, the NLUs simply *must* focus on the production of monolingual dictionaries, as no one else will.

Endnotes

1. The first author would like to thank Brian Mugabi who helped scan the Lusoga texts, back in 2003, which served as the basis for the corpus of the MA study.
2. The first author would like to acknowledge the help and support of her supervisor, Dr. K.B. Kiingi, who ensured that both a worthy MA and a fully-fledged monolingual dictionary of Lusoga were eventually produced.
3. Ironically, back in October 2003 already, the first author of this article was in e-mail contact with the second author — then at the University of Pretoria. Both WordSmith Tools (for corpus querying) and TshwaneLex (for dictionary compilation) were discussed. The first author deemed both software programs too advanced or otherwise not suitable at the time. When the first author was at the University of Pretoria from August to November 2005, the second author had just left — about to relocate and be affiliated to the University of the Western Cape for a number of years. Both authors finally met in person at the Afrilex 2008 conference in Stellenbosch (and got married a year later). WordSmith Tools and TLex were taken up soon after, for all future work on Lusoga (cf. e.g. De Schryver and Nabirye 2010).
4. The first author would like to thank Hassan Wasswa Matovu who helped import the dictionary draft into InDesign and who was also responsible for the final dictionary typesetting.
5. The total number of printed pages is 704 (= 2 + 22 for the front matter, + 552 for the A-to-Z text, + 7 + 14 + 15 + 8 for the interspersed sections, + 63 + 21 for the back matter), which is exactly 22 quires of 32 pages each, the standard in bookbinding. Trying to fit one's contents into an exact multiple of 32 pages is always the cheapest option for printing. Some of the data that had been prepared was deleted to attain this multiple.
6. At the time, this very much felt like we were just being sent away. When, in early 2009, we checked with Oxford University Press Southern Africa, however, they also felt they could not take on a dictionary like ours. That said, OUPSA did help us find an excellent printing house in Cape Town.
7. When Menha Publishers worked on their next book, a Festschrift for Patrick Hanks (De Schryver 2010), new moneys were invested into the company and the website was updated.
8. All of these publications are also available from the company website of TshwaneDJe Human Language Technology, see the References for the URL.
9. The number of results shown per search has been limited to 5, however, this to make sure that the online dictionary contents cannot just be "stolen" in one go.

References

Busoga Bulletin. Available online at: http://groups.yahoo.com/neo/groups/Busoga-Bulletin/info [last accessed on 30 September 2013].

BuSoga Yaife. Available online at: http://groups.yahoo.com/neo/groups/Busogayaife/info [last accessed on 30 September 2013].

De Schryver, G.-M. 2003. Lexicographers' Dreams in the Electronic-Dictionary Age. *International Journal of Lexicography* 16(2): 143-199.

De Schryver, G.-M. (Ed.). 2010. *A Way with Words: Recent Advances in Lexical Theory and Analysis. A Festschrift for Patrick Hanks*. Kampala: Menha Publishers.

De Schryver, G.-M. 2011. *AFRILEX President's Annual Report: 2010–2011*. Presented at the AGM of the AFRILEX 2011 Conference, 6 July 2011. Available online at: http://afrilex. africanlanguages. com/presreport1011_text.pdf (text), http://afrilex.africanlanguages.com/presreport1011_ slides. pdf (photos) [last accessed on 30 September 2013].

De Schryver, G.-M. 2011a. Why Opting for a Dedicated, Professional, Off-the-shelf Dictionary Writing System Matters. Akasu, K. and S. Uchida (Eds.). 2011. *ASIALEX 2011 Proceedings. LEXICOGRAPHY: Theoretical and Practical Perspectives. Papers Submitted to the Seventh ASIALEX Biennial International Conference, Kyoto Terrsa, Kyoto, Japan, August 22–24, 2011*: 647-656. Kyoto: The Asian Association for Lexicography.

De Schryver, G.-M. and D. Joffe. 2004. On How Electronic Dictionaries are Really Used. Williams, G. and S. Vessier (Eds.). 2004. *Proceedings of the Eleventh EURALEX International Congress, EURALEX 2004, Lorient, France, July 6–10, 2004*: 187-196. Lorient: Faculté des Lettres et des Sciences Humaines, Université de Bretagne Sud.

De Schryver, G.-M. and M. Nabirye. 2010. A Quantitative Analysis of the Morphology, Morphophonology and Semantic Import of the Lusoga Noun. *Africana Linguistica* 16: 97-153.

e-Eiwanika ly'Olusoga. Available online at: http://menhapublishers.com/dictionary/ [last accessed 30 September 2013].

Ilson, R. 2012. IJL: The First Ten Years — and Beyond. *International Journal of Lexicography* 25(4): 381-385.

InDesign. Available online at: http://www.adobe.com/products/indesign.html [last accessed on 30 September 2013].

Jaramogi, P. 2010. *President Museveni Launches Lusoga Dictionary*. Available online at: http://www. mediacentre.go.ug/details.php?catId=4&item=1036 [last accessed on 30 September 2013].

Kiingi, K.B. (Chief Compiler) et al. 2007. *Enkuluze y'Oluganda ey'e Makerere*. Kampala: Fountain Publishers.

Ladefoged, P., R. Glick and C. Criper (with an introduction by C.H. Prator and additional material by L. Walusimbi). 1972. *Language in Uganda*. Ford Foundation Language Surveys 1. London: Oxford University Press.

Meeuwis, M. 1999. The White Fathers and Luganda: To the Origins of French Missionary Linguistics in the Lake Victoria Region. *Annales Aequatoria* 20: 413-443.

Menha Publishers. Available online at: http://menhapublishers.com/ [last accessed 30 September 2013].

Microsoft Word. Available online at: http://office.microsoft.com/en-gb/word/ [last accessed 30 September 2013].

Nabirye, M. 2008. *Compilation of the Monolingual Lusoga Dictionary*. Unpublished M.A. Dissertation. Kampala: Makerere University.

Nabirye, M. 2009. *Eiwanika ly'Olusoga. Eiwanika ly'aboogezi b'Olusoga n'abo abenda okwega Olusoga*. Kampala: Menha Publishers.

NCDC. 2006. *THEMA. The Newsletter of the Thematic Primary Curriculum. Issue 1. August 2006*. Kampala: National Curriculum Development Centre.

Nkabinde, A.C. 1982. *Isichazamazwi 1*. Pietermaritzburg: Shuter and Shooter.

Nkabinde, A.C. 1985. *Isichazamazwi 2*. Cape Town: Oxford University Press Southern Africa.

Online Swahili–English Dictionary. Available online at: http://africanlanguages.com/swahili/ [last accessed 30 September 2013].

Oriikiriza, C. 2007. *Kashoboorozi y'Orunyankore-Rukiga*. Kampala: Fountain Publishers.

Pukuntšutlhaloši ya Sesotho sa Leboa ka Inthanete. Available online at: http://africanlanguages.com/psl/ [last accessed 30 September 2013].

Shoebox. Available online at: http://www-01.sil.org/computing/shoebox/ [last accessed 30 September 2013].

TLex (aka TshwaneLex). Available online at: http://tshwanedje.com/tshwanelex/ [last accessed 30 September 2013].

TshwaneDJe Human Language Technology — Publications. Available online at: http://tshwanedje.com/publications/ [last accessed 30 September 2013].

UBS. 2006. *The 2002 Uganda Population and Housing Census, Analytical Report, Population Composition*. Kampala: Uganda Bureau of Statistics.

WordSmith Tools. Available online at: http://www.lexically.net/wordsmith/ [last accessed 30 September 2013].

Addendum 1: Sample page from the *Eiwanika ly'Olusoga* (WSG, Nabirye 2009: 238)

(o)ku.bunil.a

gez: Omunaku abunga mu nsi muno!
3) Okulambuula ebifo kamaala. *gez: Oyo abunze ensi eno okugimalaku.*
bbgz: Okubungila, Okubunza.

(o)ku.bunil.a [(o)kúbúnílá] *kt.* **[T]** *[-buniile]* [mbuniile] **bl: [Lg: okubunila]** 1) Okubwika omunhwa. *gez: Silika ela obunile mangu.* 2) ***(stl, ygl)*** Okusilika. *gez: Abaali baawakania baabawa sente baabunila.*
bgz: Okubuniza.

(o)ku.butik.a [(o)kúbutíká] *kt.* **[L]** *[-butiike]* [mbutiike] **bl: [Lg: okubutika]** Okuteleka ekintu ng'emmele mu kanhwa yaamalamu ekiseela nga toginhaanha oba kugimila. *gez: Abutiike embafu mu matama.*
bbgz: Okubutikila, Okubutisa, Okwebutika.

(o)ku.butuk.a [(o)kúbutúká] *kt.* **[T]** *[-butwike]* [mbutwike] **bl: [Lg: okubutuka]** Okufuna obusundosundo ku mubili. *gez:Oluwusu lumbutwike lwonalwona.*
bbgz: Okubutukila, Okubutusa.

(o)ku.butul.a [(o)kúbutúlá] *kt.* **[L]** *[-butwile]* [mbutwile] **bl: [Lg: okubutula]** Okuleetela okufuna obusundosundo ku luwusu. *gez: Ebizigo ebyo bimbutula.*
bbgz: Okubutulibwa, Okubutulila.

(o)ku.buudhaal.a [(o)kúbúúdháálá] **tbk: (o)kú.búndáál.á** *kt.* **[T]** *[-buudhaile]* [mbuudhaile] **bl: [Lg: okubundaala] 1)** Okutyama weesiila ku magulu nga weefuniemu. 2) Okusiliikilila oba okuwuubaala. *gez: Oidhie waatukyamula tubaile tubuudhaaliile waka twenka.*
bbgz: Okubuudhaalila, Okubuudhaaza.

(o)ku.buusabuus.a

(o)ku.buuguuk.a [(o)kúbúúgúúká] *kt.* **[T]** *[-buugwike]* [mbuugwike]

1	Okuwulila
2	Okubuguutana
3	Okuyiisa
4	Okutumbuka
5	Okwongela
6	Okuwaba
7	Okudobana

1) Okuwulila okwokelela. *gez: Ku mwoyo kuli kumbuuguuka.* 2) Okubuguutana. 3) Okuyiisa einho ekintu ky'obaile ofumba. 4) Okutumbuka. *gez: Omulilo gubuugwike omulundi mulala gwagema ensiisila dhaakoleela.* 5) Okweyongela. 6) Okuwaba. 7) Okudobana.
bbgz: Okubuuguukila, Okubuuguusa,

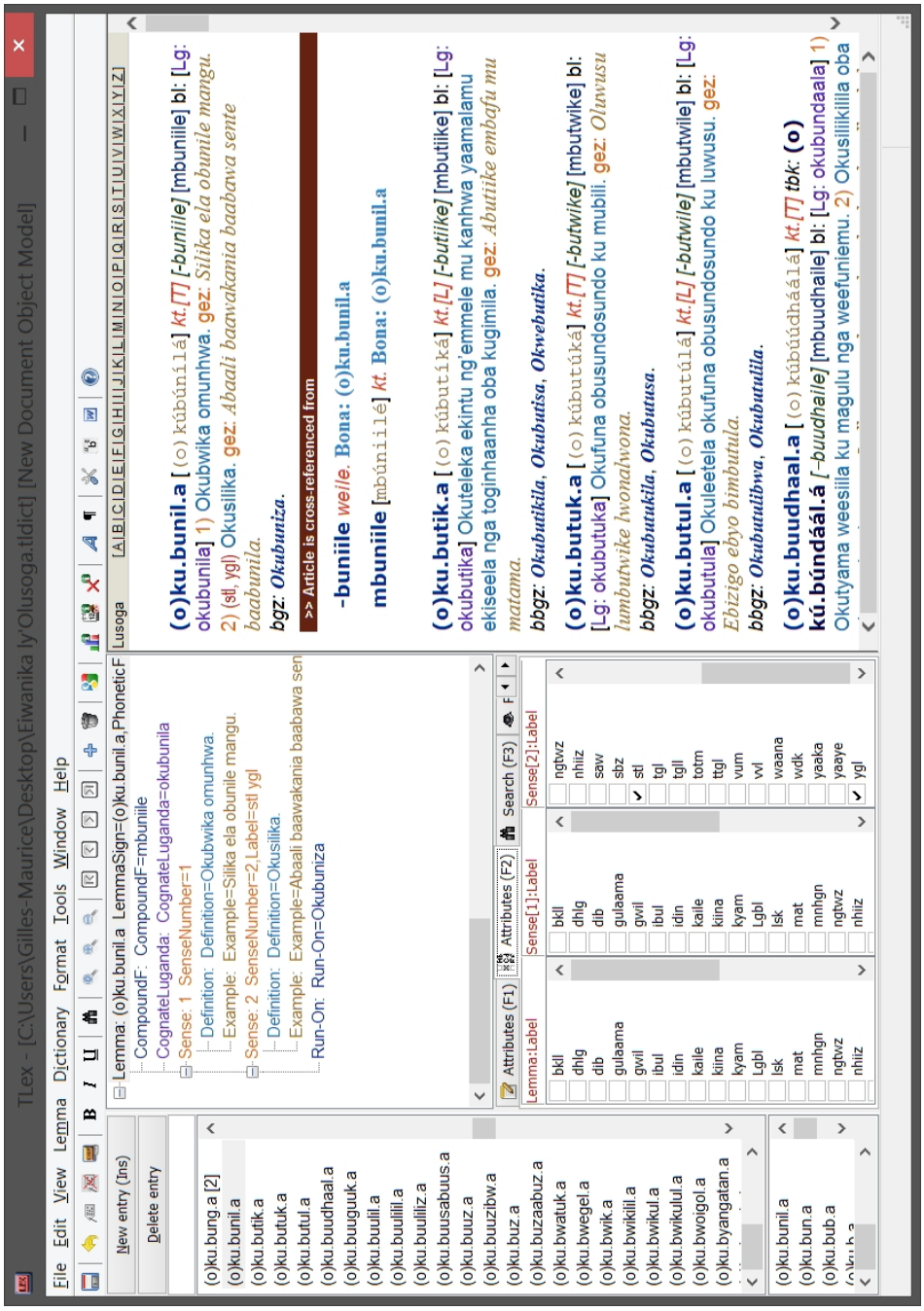
(o)ku.buulil.a [(o)kúbuulílá] *kt.* **[L]** *[-buuliile]* [mbuliile] **bl: [Lg: okubuulila]** Okusomesa eidiini. *gez: Leelo babuuliliile ku kusonhiwagana.*
bbgz: Okubuulilwa, Okubuulilila, Okubuuliza, Okwebuulila.

(o)ku.buulilil.a [(o)kúbuulílílá] *kt.* **[L]** *[-buuliliile]* [mbuliliile] **bl: [Lg: okubuulilila]** 1) Okukobela omuwala ku by'obufumbo n'empisa ng'agya kufumbilwa. *gez: Basenga bo balina okukubuulilila ng'ogya kufumbilwa.* 2) Okuwabula omuntu abaile akoze ensobi aleke kugiilamu. 3) Okusomesa empisa.
bbgz: Okubuulililwa, Okubuulilika, Okubuuliliza, Okwebuulilila.

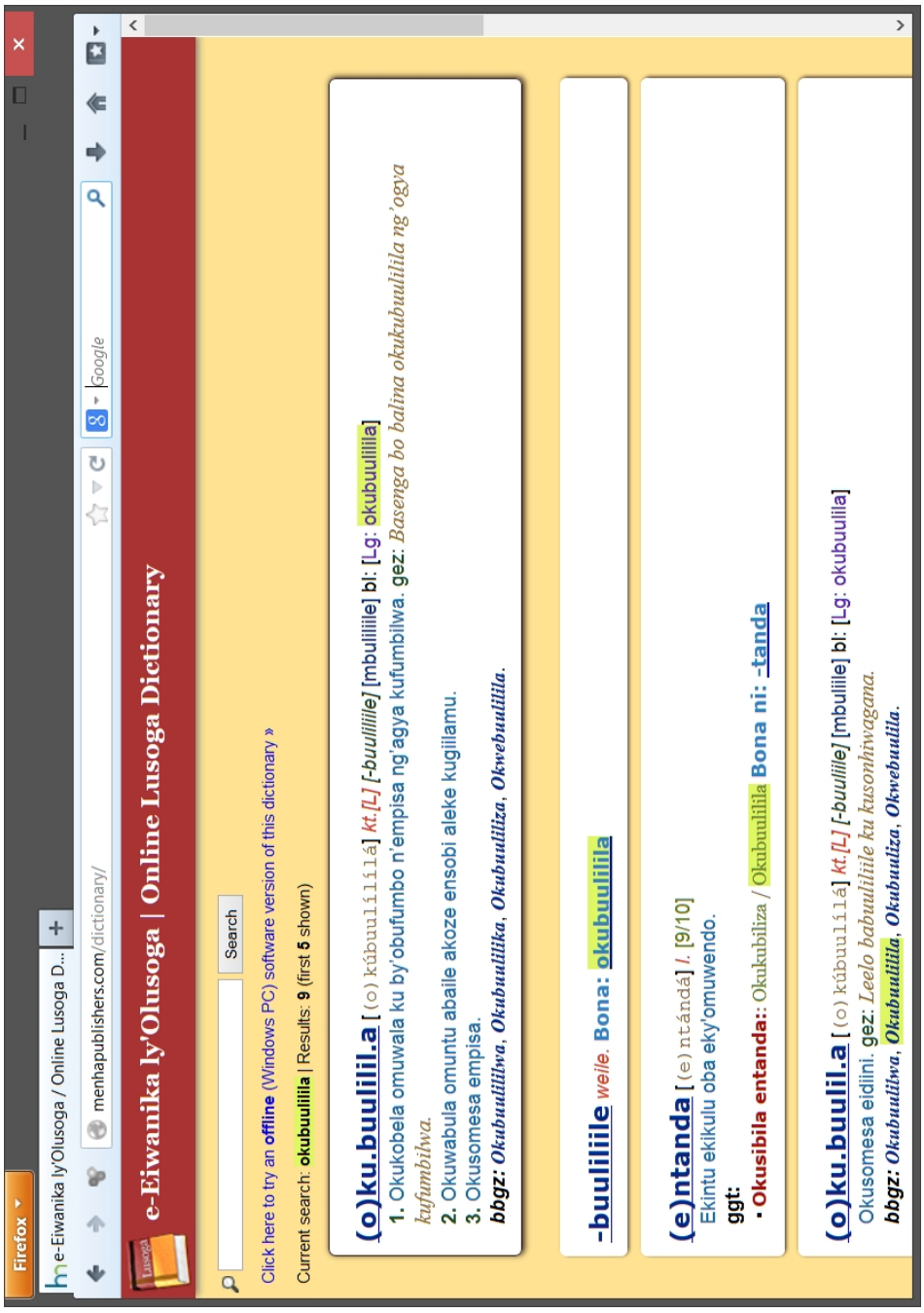
(o)ku.buuliliz.a [(o)kúbuulílízá] *kt.* **[L]** *[-buuliliiza]* [mbuliliiza] **bl: [Lg: okubuuliliza]** Okunoonheleza ku musango. *gez: Tulina okumaliliza okubuuliliza me tulyoke tuwawabe omusango.*

(o)ku.buusabuus.a [(o)kúbúúsábúúsá] *kt.* **[L]** *[-buusabuusiiza]* [mbuusabuusiiza] **bl: [Lg: okubuus-**

Addendum 2: Screenshot of the *Eiwanika ly'Olusoga* A-to-Z data in TLex (© Minah Nabirye 2003-2010)



Addendum 3: Screenshot of the online *e-Eiwanika ly'Olusoga* (© Minah Nabirye 2003-2012)



Addendum 4: Screenshot of the offline *e-Eiwanika ly'Olusoga* (© Minah Nabirye 2003-2012)