

Compiling Modern Bilingual Dictionaries for Bantu Languages: Case studies for Northern Sotho and Zulu

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Abstract

A new project sponsored by a dictionary publisher in South Africa is presented. The aim is to compile fully-corpus-based bidirectional bilingual dictionaries, with in each case one of the nine official Bantu languages and South African English as treated language pairs. As a trial, two small sample dictionaries, one focussing on Northern Sotho, the other on Zulu, were produced through a team effort, catering for mother-tongue speaker input, a linguistics check, as well as an attempt at being lexicographically sound. Among the outcomes of the study is the notion that, in order to honour the reversibility principle, some complexity and especially ingenuity in the presentation of the equivalents is required wherever single- or multi-words in one language do not map on single- or multi-words in another language. In order to contain the paradigmatic explosion of possibilities in such cases, the use of ‘grammatical formulas’ in the microstructure is suggested.

1 The reversibility principle

Although dictionaries for Bantu languages have been compiled for several centuries already, the field of Bantu metalexigraphy is only around fifteen years old. According to De Schryver et al. (2004: 36-40), the research during those fifteen years has primarily focussed on (a) corpus-based lexicographical studies, (b) concepts and tools for lexicography in the electronic age, and (c) the lemmatisation of the Bantu languages proper. They also point out that two crucial aspects have received very little if any metalexigraphical attention so far, namely (d) the treatment of a Bantu language in the reverse side of a bilingual dictionary, and (e) the ‘paradigmatic lemmatisation’ of closed-class words in Bantu languages. They then proceed to analyse the latter (e); the focus in the present contribution is a variant of the former (d).

If one looks at the field of bilingual lexicography for the Bantu languages, one sees that the X-Y side of bidirectional bilingual dictionaries has so far always been compiled independently from the Y-X side. The *reversibility principle* – that is, the condition whereby all lexical items presented as lemma signs or translation equivalents in the X-Y section of a dictionary are respectively translation equivalents and lemma signs in the Y-X section of the dictionary (Tomaszczyk 1988: 290; Gouws 1989: 162; Gouws 1996: 80) – has thus remained an unapplied theoretical concept.

Already in Prinsloo & De Schryver (2002) it had been pointed out that problems peculiar to the Bantu languages would need to be ‘solved’ once one would attempt to reverse a Bantu-language dictionary. This prediction was borne out in a recent pilot study conducted in August 2005 for a dictionary publisher in South Africa. In an attempt to plan for the production of a new series of bidirectional bilingual dictionaries between all relevant language pairs in South Africa – which, with eleven official languages, is a daunting undertaking – two samples were prepared for a handful of lemmas. These samples, one for Northern Sotho, the other for Zulu, will now be presented, with particular attention to some of the problems that needed to be solved.

2 Pilot study: Basic translation problems

If the project as a whole materialises, the gist of the methodology will be to compile fully-corpus-based bidirectional bilingual school dictionaries, with in each case South African English as second language pair. Apart from top-frequency corpus data, curriculum words will need to be included as well, and the idea is further to honour the reversibility principle by making sure all microstructural material from each side is also covered in the macrostructures of the respective other sides. The professional dictionary compilation software *TshwaneLex* will be used to store all lexicographic data (Joffe & De Schryver 2004), while the Full Language Reversal and Linked View features of this program will be put to good use to first reverse the data and to then ensure continued reversibility (De Schryver & Joffe 2005a: 57-59).

Given the attention in this pilot study went to the lexicographic issues that revolve around the two Bantu languages, fourteen English lemma signs, together with definitions and examples, were selected and slightly adapted from existing resources at the publisher. In a first phase an attempt was made at simply ‘translating’ that material. The result, for Zulu, can be seen in Addendum A. In a second phase, *all* these data were reversed – including the example sentences, which is of course not how the envisaged bilinguals will be produced (as the Bantu examples will be drawn from Bantu-language corpora), this was only done to save time. The result of this reversal, for Northern Sotho, can be seen in Addendum B. One immediately notices that too many data were collected for any single dictionary (with for example definitions in the *two* languages and this for *all* lemmas), the reasoning being that one can easily extract what one needs with *TshwaneLex*. In this way the team was able to produce various types of sample dictionaries (super-hybrid, hybrid, semi-bilingual, bilingual, and pocket), which later helped them (through trials at schools) to discover what is really needed for the South African school market.

Of particular interest to the current discussion is that the curriculum meanings in the sample, which were both hard to translate and hard to define, truly produced several headaches for all involved – mother-tongue speakers, linguists, and lexicographers – and in some cases new words had to be coined. The difficulties were also more severe for Northern Sotho than for Zulu, indicating that, from a terminological point of view, the Zulu language is more ‘developed’ than Northern Sotho is. Northern Sotho will therefore be used for all further examples, but recall that most claims are, *mutatis mutandis*, valid for the Bantu languages at large.

To give an idea of what was involved in producing the samples, Addendum C shows excerpts from an e-mail exchange between a Northern Sotho linguist at the University of South Africa (UNISA) and one at the University of Pretoria (UP) regarding some of the terms needed for the translations, the examples, and/or for defining. If one compares their suggestions with what the mother-tongue lexicographer eventually opted for (cf. Addendum B), one notices both similarities and differences. One cannot really say that one set is correct and the other wrong. These words and their concepts have never really been translated into Northern Sotho before, and there simply are different ways to approach the task. The ideal is to be consistent, however (cf. below).

A thread was also started regarding the ‘translation of curriculum terms’ on an e-mail discussion list for Northern Sotho, most members of which are mother-tongue speakers. A comment by one of the participants, who advocates the use of transliterations, is shown in Addendum D.

What this exercise revealed is that, in addition to corpus data and the material found in existing reference works, it will be *paramount* to also regularly consult with colleagues and mother-tongue speakers if one wants to produce sound and useful dictionaries for South Africa.

3 Pilot study: Advanced translation problems

As it turns out, pinpointing the best translations for new concepts is not the biggest issue. Far more challenging are the (sometimes related) grammatical issues with lexicographic implications. Since one decade ago it has been known from the metalexicographical literature that it is simply inescapable for bilingual Bantu-language dictionaries to bring in substantial amounts of grammar into the dictionary articles themselves, if one wants learners of those languages to truly benefit from the presented material. In 1996, for instance, Prinsloo & Gouws introduced the *..ga/sa/se..~* convention for Northern Sotho, with which to better retrieve verbal information. In De Schryver & Kabuta (1997: xiii) it was further pointed out that inserting grammatical paradigms into the microstructure of a dictionary often needs to be accompanied by a marker to indicate that the resulting ‘constructions’ have lemma-sign status, and thus actually belong in the macrostructure. Even in the small sample of just fourteen (to be reversed) articles under discussion here, there were already several cases where such grammatical constructions were needed.

As an example, consider the adjective “liquid”, and the phrase “liquid honey” which is used in the example under “liquid”. The short answer in the quest for a translation of “liquid” in Northern Sotho is: there is none! Of course, this is always impossible, and here one means: there is no single one-word nor multi-word equivalent, and one needs a grammatical construction. This is normally known to anyone who has *studied* Northern Sotho, but less so to mother-tongue speakers. From Addendum C it can be seen that one linguist suggested to either use a ‘relative description’ or else a ‘qualifying possessive’ for the adjectival use of “liquid”. The options were discussed, after which the mother-tongue lexicographer opted for what is known as a ‘verbal relative’.

This is not the whole story, however. Given that this grammatical construction is in fact non-problematic for mother-tongue speakers, but highly important to learners of Northern Sotho, one

actually needs to follow a different approach depending on the side of the dictionary. Indeed, in the Northern Sotho to English side, which is aimed at mother-tongue speakers of a Bantu language learning English, it is enough to indicate that the adjectival “liquid” is *êlago*. They will know – and cannot use it in any other way, since they speak the language – that one cannot use this word on its own, and that something must precede that word. (The implicit hint to them is the relative suffix *-go*.) But why can one not simply show what precedes? Because like all Bantu languages, Northern Sotho is characterised by a nominal class system and concordial agreement. Thus, what precedes changes depending on the noun, in this case *mamapô* “honey”. In more technical terms, what precedes depends on the gender (i.e. singular and plural class) of the noun.

In the sample the phrase “liquid honey” has been translated as *mamapô aô a êlago*, thus what precedes here is *aô a*. Unfortunately, very few untrained mother-tongue speakers will be able to explain what these words before *êlago* are, although they will know that if the noun had not been in class 6 (as *mamapô* “honey” is), but say in class 3 (for say *moêlakgapêtla* “glacier”), it would have been *wô o êlago* instead of *aô a êlago*. Or rather, that is true for a so-called ‘position I’ demonstrative, it would have been *wôla o êlago* for the so-called ‘position III’, etc.

What is thus important to remember from this discussion is that showing *êlago* here for mother-tongue speakers of Northern Sotho (in the English to Northern Sotho side) is enough, but including a lemma sign for *elagô* on the reverse side would be very wrong. To begin with, there is no such word with a meaning on its own. One has added the relative suffix *-go* to the verb *êla* “flow”, and that is where the information on “liquid” also belongs, namely under the verb *êla*. In addition, for a learner it is imperative to also *show* or at least indicate how to use that *êlago*. Given there are too many possibilities to list them all, one is simply forced to resort to synthesise the ‘system’ in a ‘grammatical formula’, together with at least one example.

The construction in this case is: ‘demonstrative (DEM) of any kind, in concordial agreement with the noun’ plus ‘subject concord (SC), in concordial agreement with the noun’ plus ‘verb, followed by the attached relative suffix *-go*’. Thus, a lexicographically sound way to enter the translation equivalent “liquid” in the Northern Sotho to English side will be in the article for the verb *êla*, with an indication of the grammatical construction: [DEM + SC +] *~go* = “liquid”. What one actually says is “that which flows”. An example of a bilingual Bantu dictionary with a high concentration of such linguistically encoded grammatical paradigms throughout the central section is De Schryver & Kabuta’s (1998) *Beknopt woordenboek Cilubà – Nederlands*.

One can now enter into (often futile) debates on the best way to represent these grammatical formulas, but an advantage of TshwaneLex is that one does not need to ‘solve’ this right from the start and/or that one can simply change this for different types of dictionaries – *on the condition* that one conceived these patterns as ‘selectable attribute lists’ (De Schryver & Joffe 2005b). Selecting grammatical patterns from attribute lists during compilation also means that the same patterns can simply be reused. See in this regard, in Addendum B, how this very pattern was also selected for the adjectival use of “variable” in the article of the verb *fêtoga* “change”, or how a different pattern, namely

a straightforward possessive construction consisting of a ‘possessive concord (PC), in concordial agreement’ plus ‘noun’, was selected in the article for the noun *lebelô* “speed”.

Apart from being able to reuse patterns, another advantage of employing selectable attribute lists lies in the fact that, with a single instruction, one can change the *appearance* of those patterns throughout the entire dictionary. As such, in the export shown in Addendum B, instead of the set ‘[DEM + SC +]’, ‘[PC +]’, etc. the variant set ‘[yô o / sê se / tšê di / ... +]’, ‘[wa / sa / tša / ... +]’, etc. was selected – the idea behind the latter set being that one shows a few class prefixes, using overall corpus-derived occurrence frequencies to select those that one displays. Trials at various schools indicated that the use of prefixes was preferred over the more linguistically-oriented abbreviations. Furthermore, when using grammatical patterns which one selects from pre-prepared lists, one is forced to compile in a far more *consistent* way (cf. above).

Recall that to learners of Northern Sotho, all of this makes sense, as the nominal classes cum associated concordial agreement system is the first aspect of the language that they need to master, while all of this is of limited value to mother-tongue speakers of Northern Sotho who will primarily use the dictionary to decode English. Also observe that a non-typographical structural marker, namely a black square (■), was inserted to indicate that the various grammatical constructions actually have lemma-sign status. Comparing the use of this marker across Addenda A and B clearly indicates that it fulfils the same purpose.

4 Existing dictionaries

Currently, there are no school dictionaries in South Africa with any of the Bantu languages as treated language pair. Students have to make do with a few scattered and often dated general dictionaries, dictionaries which are known to be highly unfriendly, precisely as a result of the fact that no real efforts were made to deal with the issues discussed in §3. The treatment of “liquid” in the latest editions of the three desk dictionaries for Northern Sotho will serve as an example. All relevant articles in those reference works are reproduced in Figure 1 below.

In the *Comprehensive Northern Sotho Dictionary* (Ziervogel & Mokgokong 1975), a massive Northern Sotho to Afrikaans/English dictionary with over 1,500 pages, there is no equivalent for the adjectival “liquid” anywhere. The same is true for the *Pukuntšu woordeboek* (Kriel et al. 1989), where *vloeibaar* “liquid” simply has not been lemmatised in the Afrikaans to Northern Sotho side, while the adjectival “liquid” is missing from the Northern Sotho to Afrikaans side. In the English to Northern Sotho side of *The New English – Northern Sotho Dictionary* (Kriel 1976), finally, one reads “adj., seelago” in the article “liquid”. This, unfortunately, is very wrong. Firstly, it should have been *se elago*. Secondly, only part of the ‘formula’ (if that was the purpose!) is shown, as it should have been *se se elago*. Thirdly, this is only valid for nouns in class 7, and only for ‘position I’. In the reverse side of this dictionary, one once again cannot find the adjectival “liquid” in the article of *êla*; instead, one finds “seela go” (note the spelling!) under the article of the noun *seela* “liquid”. It is thus clear that a learner

simply *cannot* use any of these dictionaries successfully on this level, while all mother-tongue speakers consulted were unable to reanalyse or decode the information given in Kriel’s thirty-year old dictionary.

Comprehensive Northern Sotho Dictionary, NS → A/E (Ziervogel & Mokgokong 1975)	Pukuntšū woordeboek, NS → A, A → NS (Kriel et al. 1989)	The New English – Northern Sotho Dictionary, E → NS, NS → E (Kriel 1976)
<p>ELA (2) (-êla, -êdilê, -êlwa, -êdilwê) vloei, stroom // flow, stream; ~ <i>maswi le dinôse</i> baie kos hê // have plenty of food; -<i>êlwa ke phokô</i> berug raak // become notorious; moedi, me- (moêdi) vallei, glooiing, helling // valley, slope, incline; <i>ga go ~ mohloka-semenya</i> elke mens het sy tekortkominge // every person has his shortcomings; moela, me- (moêla) rivierbedding, vloei, †waterloop, †watervoor // river bed, flow, †watercourse, †water furrow; seela, di- (seêla) vloeistof // liquid, fluid; EDIŠA (-êdiša, -êdišitšê, -êdišwa, -êdišitšwê) caus.; lei, natlei // lead (water), irrigate; ~ <i>moêla</i> huil // cry; kedišo, (n-)/di- (kêdišô) man. dev.; (nat)leiry, irrigasie // leading (of water), irrigation; moediši, ba- (moêdiši) pers. dev.; natleier // irrigator; EDIŠETŠA (-êdišetša, -êdišetšitšê, -êdišetšwa, -êdišetšitšwê) appl.; kedišetšo, (n-)/di- (kêdišetšô) man. dev.; moedišetši, ba- (moêdišetši) pers. dev.; ELELA (-êlêla, -êlêlšê, -êlêlwa, -êlêlšwê) appl.; vloei na, stroom na // flow towards, stream towards; boelelo (boêlêlô) lo. dev.; plek waarheen iets vloei // place towards which something flows; keledi, (n-)/di- (kêlêdi) trane // tears; <i>dikêledi di mmoa dimpêng</i> hy het bitterlik gehuil // he cried bitterly; kelelo, (n-)/di- (kêlêlô) man. dev.</p>	<ul style="list-style-type: none"> • Afrikaans → Northern Sotho • vloeibaar [not in dictionary] • Northern Sotho → Afrikaans <p>êla¹, ww. LL (kous. êdiša; perf. êdilê): vloei, stroom; <i>go êla dikudumêla</i>, om fluks te werk, uitgeput te wees; <i>go êla hlôkô</i>, om ag te slaan op; <i>go êla maswi le dinôse</i>, om vrede en oorvloed te beleef; <i>go êlwa ke phokô</i>, om berug te wees vanweë jou slegte dade; <i>go êdiša mahlô</i>, om opgewonde of hoopvol aan te kyk; <i>go êdiša moêla</i>, om te huil; <i>go êdiša seêdišefahlôgô</i>, om bly, opgewonde te wees; <i>mma, di êdilê dišela; bôfa sehlakô o kgwahlišê</i>, waar daar 'n wil is, is daar 'n weg.</p>	<ul style="list-style-type: none"> • English → Northern Sotho • liquid, n., seela; —s, diela; adj., seelago. • Northern Sotho → English <p>'ela, v.i., pft., etše, flow, go for; go-sa ruri, leave for good; elega, flow towards, drop down, go on behalf of; sa elego, stagnant; go ikela, to leave; moikedi, one who leaves, one who goes away; moelana, small quantity of people or animals.</p> <p>seela, n., se êla, liquid; — go, adj., liquid.</p>

Figure 1. The (non-)treatment of “liquid” in the three existing Northern Sotho dictionaries.

5 Conclusion

In this paper two pilot studies for a new series of bilingual bidirectional dictionaries, involving a South African Bantu language and South African English as treated language pairs in each case, were presented. It was first pointed out that numerous words for new (curriculum) concepts will need to be coined, and that a team of mother-tongue speakers as well as linguists should be involved to steer the process in the right direction. The second finding indicated that it will be imperative to introduce so-called ‘grammatical formulas’ into the central sections of the dictionaries, a feature existing South African dictionaries lack, but which could easily be realised using professional dictionary compilation software such as *TshwaneLex*.

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Addendum A: Pilot study of an English – Zulu dictionary (“super-hybrid”)

compare *verb* [compares, comparing, compared] think about or look at people or things together so that you can see how they are different • *cabanga nga, noma bheka abantu noma okuthize ndawonye ubone ukuthi kwehluke kanjani* ► **qhathanisa** Compare your answers with a partner's and discuss any problems. • *Qhathanisa izimpendulo zakho nomlingani nixoxisane nganoma yiziphi izinkinga.*

describe *verb* [describes, describing, described] say what somebody or something is like or what happened • *yisho ngendlela othile noma okuthile kungayo noma ukuthi kwenzekeni* ► **chaza** Can you describe the result of the experiment? • *Ungachaza umphumela walolu cubungulo?* || Describe the boy's feelings after he was chosen for the team. • *Chaza imizwa yomfana ngemuva kokukhethelwa eqenjini.*

diameter *noun* a straight line across a circle, through the centre of the circle • *umugqa oqondile onquma isiyingi kabili, onqamula isiyingi phakathi nendawo* ► **ububanzi** Measure the diameter of the circle. • *Linganisa ububanzi besiyingi.*

kilometre *noun* a measure of length. There are 1 000 metres in a kilometre. The short way of writing "kilometre" is **km** • *isilinganiso sobude. Kukhona amamitha angu-1000 kwi-kilometre. Indlela yokubhala "ukilometre" ngokufinyeza ngu-km* ► **i-kilometre** They live 100 km from Durban. • *Bahlala ebangeni elingama-100 km ukusuka eThekwini.*

liquid *noun* anything that is not a solid or a gas. Water, oil and milk are all liquids. Liquids flow and take the shape of their container • *noma ngabe yini okungaqinile noma okungemoya. Amanzi, uwoyela kanye nobisi konke kuwuketshezi. Uketshezi luyagobhoza kanti luthatha isimo salokho okuluqukethe* ► **uketshezi** Pour the liquid into a bowl and stir it with a spoon. • *Thela uketshezi esitsheni bese ulugovuzwa ngokhezo.*

■ **liquid** *adjective* ► **-manzi** We put the liquid honey into the fridge where it became solid because of the cold. • *Sifaka uju olungamanzi kwisiqandisi bese luyaqina ngenxa yokubanda.*

midnight *noun* [No plural] twelve o'clock at night • *ngehora leshumi nambili ebusuku* ► **kwamabili** My parents don't allow me to stay up later than midnight. • *Abazali bami abangivumeli ngihlale isikhathi esingale kwamabili.*

minus *preposition* 1 when you take away • *uma ususa noma ukhipha* ► **susa, khipha** Six minus two is four ($6 - 2 = 4$). • *Ususa okubili koku yisithupha kusale okune ($6 - 2 = 4$).* 2 below zero • *ngaphansi kwezininga leqhwa* ► **ngaphansi** In Sutherland tonight the temperature will fall to minus ten degrees. • *ESutherland kusihlwa amazinga okushisa azokwehla abe ngaphansi kwama-degree alishumi.*

mouse *noun* [plural mice] 1 a small animal with a long tail • *isilwanyana esincane esinomsila omude* ► **igundane** Our cat caught a mouse. • *Ikati lakithi libambe igundane.* 2 (Computing) a thing that you move with your hand to tell a computer what to do • *okuthile okuhambisa ngesandla okutshela ikhompyutha ukuthi yenzeni* ► **i-mouse** Move the cursor to the top of the e-mail with the mouse. • *Hambisa isikhombisi nge-mouse siye ekuqaleni kwe-e-mail.*

photosynthesis (Biology) *noun* the way in which plants make food in their leaves • *indlela izitshalo ezenza ngayo ukudla kumacabunga azo* ► **i-photosynthesis** Describe how carbon dioxide and sunlight are used to make food in photosynthesis. • *Chaza indlela i-carbon dioxide kanye nokukhanya kwelanga okusetshenziswa ngakhona ukwenza ukudla ku-photosynthesis.*

predict *verb* [predicts, predicting, predicted] say what you think will happen • *yisho ukuthi kuzokwenzekani* ► **bikezela** She correctly predicted that the class would improve their marks if they worked together. • *Ubikezele ngokuyikho ukuthi ikilasi lizokwenza ngcono amamaki alo uma lisebenza ndawonye.*

■ **prediction** *noun* ► **isibikezelo** His predictions for the result of the soccer match were not correct. • *Isibikezelo sakhe ngomphumela webhola lezinyawo wawungelona iqiniso.*

quick *adjective* [quicker, quickest] fast; that takes little time • *shesha; lokho kuthatha isikhathi esincane* ► **-shesha, -phuthuma** It's quicker to travel by bicycle than to walk. • *Kuyashesha ukuhamba ngebhayisikili kunokuhamba ngezinyawo.* || Can I make a quick telephone call? • *Ngingashaya ucingo oluphuthumayo?*

■ **quickly** *adverb* ► **ngokushesha** Come as quickly as you can! • *Woza ngokushesha ongaphumelela ngakho!*

table *noun* 1 a piece of furniture with a flat top on legs • *isiqhephu sempahla yasendlini esinengaphezulu eliyisicaba eliphezu kwemilenze* ► **itafula** The book is on

the table. • *Ibhuku liphezu kwetafula.*

◇ **set / lay the table** put knives, forks, plates and other things on the table before you eat • *beka imimese, izimfologo, amapuleti kanye nokunye ngaphambi kokuba udle* ► **endlala / deka itafula** We quickly set the table, then started eating. • *Sendlale / Sideke itafula ngokushesha, sase siyadla.*

2 a list of facts or numbers • *uhlu lamaqiniso noma lwezombolo* ► **ithebula** There is a table of irregular verbs at the back of this dictionary. • *Kukhona ithebula lwe zenzo eziwugweje ekugcineni kwalesi sichazamazwi.*

variable (*Mathematics*) *noun* something that varies or changes • *okuthile okuphendukayo noma okuguquguqukayo* ► **okuguquguqukayo, okuphendukayo** In this experiment, it is important to

control the variables. • *Kulolu cubungulo, kubalulekile ukulawula okuguquguqukayo.*

■ **variable** *adjective* ► **-guquguquka** In spring, the weather is very variable in Cape Town: sometimes it is hot, sometimes it is cold. • *ENtwasahlobo, isimo sezulu siyaguquguquka eKapa: kwesinye isikhathi kuyashisa, kwesinye isikhathi kuyabanda.*

vertebrate *noun* an animal that has a backbone • *isilwane esinomhlandla* ► **isilwane esinomhlandla** Fish, birds, mammals and reptiles are all vertebrates, but snails are invertebrates – they do not have a backbone. • *Inhlanzi, izinyoni, izilwane ezincelisayo kanye nezilwane ezihuzelayo zonke zingezinomhlandla, kodwa iminenke ayinamhlandla.*

Addendum B: Pilot study of a Northern Sotho – English dictionary (“super-hybrid”)

bapêtsa *lediri* go gopola ka, goba go lebêlêla batho goba dilô mmôgô, go bôna gore ba / di fapana bjang • *think about or look at people or things together so that you can see how they are different* ► **compare** Bapêtsa dikarabô tša gago le tša modirišani le wêna gomme le bolêdišanê ka mathata aô le nago nawô. • *Compare your answers with a partner's and discuss any problems.*

bjakô *leina bo-* ► **speed**

■ **ka bjakô** *lehlathi* ► **quickly** Etlâ ka bjakô ka mô o ka kgônago! • *Come as quickly as you can!*

bošegogare *leina bo-* iri ya lesomepêdi bošego • *twelve o'clock at night* ► **midnight** Batswadi ba ka ga ba ntumêlêle go êtiša go fihla bošegogare. • *My parents don't allow me to stay up later than midnight.*

êla *lediri* ► **flow**

■ **[yô o / sê se / tšê di / ... +] êlago** *ledirikamanyi* ► **liquid** Re bea mamapô aô a êlago ka setšidifatšing faô a ilêgo a kgahla ka baka la go tônia. • *We put the liquid honey into the fridge where it became solid because of the cold.*

fêtoga *lediri* ► **change**

■ **[yô o / sê se / tšê di / ... +] fêtogago** *ledirikamanyi* ► **variable** Seruthwane maêmô a bosô ke aô a fêtogago Kapa, ka nakô yê nngwê go a fiša môla yê nngwê go tônia. • *In spring, the weather is very variable in Cape Town: sometimes it is hot, sometimes it is cold.*

fôtôsintêses (*Thutaphedi*) *leina N-/di-* tsela yê ka yôna dibjalô di itirêlagô dijô matlakalêng a tšôna • *the way in which plants make food in their leaves* ►

photosynthesis Hlaloša / laodiša ka mokgwa wô khapontaoksaete le mahlasêdi a letšatši di šomišwago go dira dijô ka go fôtôsintêses. • *Describe how carbon dioxide and sunlight are used to make food in photosynthesis.*

hlaloša *lediri* go bolêla ka faô motho goba selô se lego ka gôna, goba sêd se hlagilêgo • *say what somebody or something is like or what happened* ► **describe** Hlaloša diêma tšê ka mantšu a gago. • *Describe these idioms in your own words.*

kêlôkgatlhô *leina N-/di-* ka tlase ga lefêla • *below zero* ► **minus** Bošego bja lehôno thêmphêrêitšha e tla ba digrata tše 10 ka tlase ga kêlôkgatlhô kua Sutherland. • *In Sutherland tonight the temperature will fall to minus ten degrees.*

kilômetara *leina N-/di-* tekanyêšô ya botêlêlê. Go na le dimetara tše 1 000 ka go kilômetara. Khutsôfatšô ya go ngwala "kilômetara" ke km • *a measure of length. There are 1 000 metres in a kilometre. The short way of writing "kilometre" is km* ► **kilometre** Ba dula dikilômetara tše 100 go tloga Polokwane. • *They live 100 km from Polokwane.*

laodiša *lediri* go bolêla ka faô motho goba selô se lego ka gôna, goba sêd se hlagilêgo • *say what somebody or*

- something is like or what happened ► **describe** Fanyana o ilê a laodiša botse bja Sarena ka tsela yê. • *Fanyana described Sarena's beauty in this way.*
- laolêla pele** *lediri* go bolêla sêo o gopolago gore se tlô hloga • *say what you think will happen* ► **predict** O kgonnê go laolêla pele gore baithuti ba ka kaonafatša dipoêlô tša bôna ge ba ka šoma mmôgô. • *She correctly predicted that the class would improve their marks if they worked together.*
- lebelô** *leina le-/ma-* ► **speed**
■ [wa / sa / tša / ... +] lebelô *thuô* phakiša; sêo se tšeago nakô e nnyane • *fast; that takes little time* ► **quick, fast** phôôfôlô ya lebelô • *quick animal* || mmôtôrô wa lebelô • *fast car*
- legôtlô** *leina le-/ma-* phôôfôlô ê nnyane ya mosela o motêlêlê • *a small animal with a long tail* ► **mouse** Legôtlô le tšhaba katse. • *A mouse is afraid of a cat.*
- lenanêo** *leina le-/ma-* lenanêo la dintlha goba dinômôrô • *a list of facts or numbers* ► **table** Go na le lenanêo la madiri ao e sego a tlwaêlô ka morago ga pukuntšu yê. • *There is a table of irregular verbs at the back of this dictionary.*
- maose** (*Thutakhômphuthara*) *leina N-/di-* sedirišwa sêo se šutišwago ka letsôgô go botša khômputha gore e dirê eng • *a thing that you move with your hand to tell a computer what to do* ► **mouse** Diriša maose go šutišêtša mosêbjana bogôdimông bja i-mêile. • *Move the cursor to the top of the e-mail with the mouse.*
- molagare** *leina mo-/me-* mothalô wa go loka thwii, wô o putlagô bogarêng bja sedikô • *a straight line across a circle, through the centre of the circle* ► **diameter** Êla bogolo bja molagare wa sedikô. • *Measure the diameter of the circle.*
- ntšha** *lediri* go tloša selô sê se itšego go sê sengwê • *when you take away* ► **minus** Tshela ntšha pêdi go šala nnê. • *Six minus two is four (6 – 2 = 4).*
- pêba** *leina N-/di-* ► **mouse** Pêba e dula ka moletêng. • *A mouse stays in a hole.*
- pela** *leina N-/di-* ► **quick**
■ **ka pela** *lehlathi* ► **quickly** Etlâ ka pela ka mô o ka kgônago! • *Come as quickly as you can!*
- phakiša** *lediri* ► **do quickly** Go a phakiša go sepela ka paesekela go ena le go sepela ka maoto. • *It's quicker to*
- travel by bicycle than to walk.* || Naa nka phakiša ka letša mogala? • *Can I make a quick telephone call?*
- seêla** *leina se-/di-* sengwê le sengwê sêo e sego sê sethata goba gase. Mêêtse, ôli le maswi ke diêla. Diêla di a êla gomme di kgôna go tšea sebopegô sa setšhêlô sêo di lego ka gare ga sôna • *anything that is not a solid or a gas. Water, oil and milk are all liquids. Liquids flow and take the shape of their container* ► **liquid** Tšhêla seêla ka gare ga sebjana gomme o huduê ka lehwana. • *Pour the liquid into a bowl and stir it with a spoon.*
- sefêtogî** (*Thutadipalô*) *leina se-/di-* selô sêo se fêtogago • *something that varies or changes* ► **variable** Mo boitekêlong bjo, go bohlôkwa go laola difêtogî. • *In this experiment, it is important to control the variables.*
- semokôkôtlô** *leina se-/di-* phôôfôlô ya semokôkôtlô • *an animal that has a backbone* ► **vertebrate** Dihlapi, dinônyana, diamuši le digagabi ke diphôôfôlô tša semokôkôtlô, eupša dikgopa ga se diphôôfôlô tša semokôkôtlô. • *Fish, birds, mammals and reptiles are all vertebrates, but snails are invertebrates – they do not have a backbone.*
- tafola** *leina N-/di-* fênišara ya bogôdimô bja go alêga gôdimô ga maoto • *a piece of furniture with a flat top on legs* ► **table** Puku e gôdimô ga tafola. • *The book is on the table.*
◇ **têka tafola** *lediri* go bea dithipa, difôrôkô, diplêiti le tšê dingwê tafolêng pele o e ja • *put knives, forks, plates and other things on the table before you eat* ► **set / lay the table** Ka go pônia ga leihlô ke gê re têka tafola gomme re thoma go ja. • *We quickly set the table, then started eating.*
- taolêlô pele** *leina N-/di-* ► **prediction** Taolêlô pele ya gagwê ka ga dipoêlô tša papadi ya kgwele ya maoto e bilê yêo e fošagêšego • *His predictions for the result of the soccer match were not correct.*

Addendum C: Excerpts from an e-mail exchange between two Northern Sotho linguists

- cursor
 - Ek stel *sešupo* maar miskien eerder *sešupetši* of selfs beter nog *tšhupêtši* voor.
 - Of wat van *tšhupane* wat 'wysvinger' beteken? Kyk bv. in Kriel & Van Wyk.
- liquid
 - Vir vloeistof sou ek *seêla* gebruik en vir omskrywings soos 'vloeibare ...' moet mens maar van die relatiewe omskrywing gebruik maak, bv. ... *sê se êlago*, of van die kwalifikatiewe possessief ... *sa go êla*.
- variable
 - Werk hier met *-fetoga(go)*.
 - Ek sou byvoorbeeld 'variable number' vertaal met iets soos *palôphetogi* in plaas van die meer omslagtige *palô ye e fetogago*.
- vertebrate
 - Hier sal mens nie anders kan as om met die kernbegrip 'rug(-string)' (*mokôlô; mokôkôtlô*) en 'rugwerwels' (*mašapô a mokôlô; mokôkôtlô*) te werk nie.
 - Die Terminologie en Spelreëls gee vir vertebra (d.w.s werwelbeen) *mokôlô* aan, en vir vertebral column (ruggraat) *mašapo a mokôkôtlô*.
 - Gewerwelde diere sal dus kwalik iets anders kan wees as (*diphôôfôlô; diphedi*) *tša mokôkôtlô/mokôlô*.

Addendum D: Excerpt from an e-mail discussion list for Northern Sotho

... we should be less hostile to the use of transliterations. Even in English the word vertebrate comes from the Latin "*vertebratus*" which means "jointed". So why not just coin appropriate transliterations for prediction (*pheredikhišene*), vertebrate (*betebreite*), and variable (*beribele*). The obvious alternative for variable would be "*sefetogago*" – something which is changing. The opposite, a constant, could be "*sesafetogago*", but how acceptable would it be and to what degree would the "se" be interpreted as a negative? ...