Cross-Referencing
as a Lexicographic Device

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Abstract: The mediostructure, that is the system of cross-referencing, is a lexicographic device that can be used to establish relations among different components of a dictionary. This paper focuses on different mediostructural strategies and their practical application in general synchronic dictionaries. The structure of dictionaries is discussed from a metalexicographic perspective in order to explain the system of cross-referencing. It is shown how textual cohesion, achieved by the interaction of the various structural components, is promoted by the use of a system of cross-referencing and improved by an innovative approach towards a mediostructure-orientated lexicography.

Keywords: CROSS-REFERENCING, MEDIOSTRUCTURE, LEXICOGRAPHY, DICTIONARY, METALEXICOGRAPHY, REFERENCE ENTRY, REFERENCE RELATION, REFERENCE ADDRESS, AFRICAN LANGUAGES

Opsomming: Kruisverwysing as 'n leksikografiese tegniek. Die mediostruktuur, d.w.s. die stelsel van kruisverwysing, is 'n leksikografiese tegniek wat gebruik kan word om verbande te lê tussen verskillende komponente van 'n woordeboek. In hierdie artikel word aandag gegee aan verskillende mediostrukturele strategieë en hul praktiese toepassing in algemene sinchroniese woordeboeke. Woordeboekstruktuur word vanuit 'n metaleksikografiese perspektief bespreek ten einde die kruisverwysingstelsel te verduidelik. Daar word aangetoon hoe tekskohesie, verkry deur die interaksie van die onderskeie struktuurkomponente, bevorder word deur die gebruik van 'n kruisverwysingstelsel en verbeter word deur 'n vernuwende benadering ten opsigte van mediostruktureel-georienteërde leksikografie.

Sleutelwoorde: KRUISVERWYSING, MEDIOSTRUKTUUR, LEKSIKOGRAFIE, WOORDEBOEK, METALEKSIKOGRAFIE, VERWYSINGSINSKRYWING, VERWYSINGSVERBAND, VERWYSINGSADRES, AFRIKATALE

Introduction

In spite of the fact that lexicography has been practised for centuries, metalexicography, that is the theory of lexicography, is a relative new subdiscipline within the broader field of linguistics. Dictionaries existed and functioned quite well long before theoreticians, critical analysis and theoretical frameworks. Today, however, it is widely accepted that there is a strong interplay between

metalexicography and the lexicographic practice. The metalexicographical influence has transformed lexicography into a scientific practice with a very definite purpose, viz. the production of dictionaries. The production of diction- aries as a result of the scientific practice of lexicography should lead to the establishment of the cultural practice of dictionary use. The user-perspective, so prevalent in modern-day metalexicography, compels lexicographers to compile their dictionaries according to the needs and research skills of well-defined target user groups. The dominant role of the user has had a definite effect on the compilation of dictionaries as well as on the evaluation of their quality. Good dictionaries do not only display a linguistically sound treatment of a spe- cific selection of lexical items. They are also products that can be used as lin- guistic instruments by their respective target user groups. The better they can be used, the better dictionaries they are.

The quality of dictionary use, that is the degree of success a user experi- ences when consulting a dictionary and employing the retrieved information, is determined by a variety of features, but one of the most important characteris- tics of a good dictionary is its accessibility. Accessibility leads to an unambigu- ous retrieval of the information presented on both the macro- and microstruc- tural levels. Any theory of lexicography should present strategies to improve the linguistic quality of dictionaries. However, this should be preceded by stra- tegies to enhance the way in which the target user can identify the data he/she is looking for in order to retrieve the necessary information and to utilise it for decoding or encoding purposes.

Dictionary research has lead to the establishment of different structures of printed dictionaries, e.g. in addition to the macrostructure, microstructure and access structure also the mediostructure. The mediostructure, that is the system of cross-referencing, is a lexicographic device that can be used to establish relations between different components of a dictionary. According to Wiegand (1996: 11) it interconnects the knowledge elements represented in different sectors of the dictionary on several levels of lexicographic description to form a network. Working with a dictionary as a carrier of texts, the mediostructural entries can guide the user between different texts, e.g. between the central text and any text in the front or back matter or between various articles functioning as subtexts in the central word-list. An article-internal mediostructural relation assists the user to relate various microstructural entries employed in the same article.

This paper focuses on different mediostructural strategies and their practi- cal application in general synchronic dictionaries. The structure of dictionaries is discussed from a metalexicographic perspective in order to explain the domain of application of a system of cross-referencing. It is shown how textual cohesion, achieved by the interaction of the various structural components, is promoted by the use of a system of cross-referencing and improved by an inno- vative approach towards a mediostructure-orientated lexicography. Although the mediostructure of dictionaries is a central topic of this paper, references to

the theory of mediostructures will only cover a small segment of this structural component. A detailed discussion can be found in Wiegand (1996).

Some basic terms relating to a theory of mediostructures

Wiegand (1996) gives an exposition of the fundamental terms employed in a theory of mediostructures. According to his theory, a lexicographer refers the dictionary user from a reference position to a reference address. This is usually done by means of a reference entry and gives the user access to additional relevant lexicographic data. A reference relation is established between the reference entry and the reference address. In *Webster's Ninth New Collegiate Dictionary* (W9) the article of the lemma sign *frog* contains the following entries:

> any of various smooth-skinned web-footed largely aquatic tailless agile leaping amphibians ... — compare TOAD

In this example the specific slot in the article of the lemma sign *frog* is the reference position, and the lemma sign *toad*, the separate macrostructural entry to which the user is referred, is the reference address. Here the reference entry consists of two separate text segments, i.e. the entry marking the reference relation (*compare*), henceforth referred to as the reference marker, and the entry indicating the reference address (*toad*).

A variety of reference markers is used in different dictionaries and often also in one dictionary, e.g. text segments like *see, compare*, →, ⇒, etc. In the English-Dutch translation dictionary *Van Dale Groot Woordenboek Engels-Nederlands* a single arrow is used as one of the reference markers. In the article of the lemma sign **track system** the reference entry "→ tracking" consists of the reference marker "→" and the entry *tracking*, indicating the reference address.

A rather interesting example of cross-reference is found in *Dictionary of Lexicography* (DL) in its treatment of the entries **circular reference** and **reference circularity**. The first is referred to the second, and the second again to the first:

circular reference
    ⇒ REFERENCE CIRCULARITY

reference circularity
    ⇒ CIRCULAR REFERENCE

After having fallen victim to this cunning technique by which the user is put into an unending loop he/she will understand exactly what idea is conveyed by "circular reference"!

For the purpose of this article it is important to pay attention to one further

aspect of the theory of mediostructures, i.e. three important types of reference addresses. The first category is that of the internal reference address. With an internal reference address the mediostructural relation does not exceed the boundaries of the article. This type of cross-referencing is used to establish cohesion between different microstructural entries in one article. *Basiswoorde-boek van Afrikaans* contains the following article for the lemma sign *frats* (trick/freak):

(1)   **frats (fratse)** *nw.* ① Iemand haal fratse uit om mense te vermaak of te laat lag. 'n Mens moet soms vaardigheid hê om dit te kan doen; toertjie, kunsie. *Die kinders het baie gelag vir die fratse van die hanswors by die sirkus. Die aap haal baie fratse uit met die hoop dat die mense vir hom sal grondboontjies gee.* ... ② 'n Frats is iets wat baie ongewoon of onverwags is. *Fratse kan ook iets wees wat skielik afwyk van die gewone. 'n Man wat na die kinders kyk terwyl sy vrou werk, sal deur baie mense as 'n frats beskou word. Hier is laasweek 'n fratskalf gebore met twee koppe en vyf bene.* ... **fratsvlieër** (by 1); **fratsbrander, fratsgolf, fratsongeluk** (by 2)

The niched lemmata, included as run-on entries, consist of the unexplained compounds *fratsvlieër* (aerobat), *fratsbrander, fratsgolf* (freak wave) and *fratsongeluk* (freak accident), with the lexical item *frats-* as word initial stem. However, it is not the same sense of the lexical item *frats* that functions in these self-explanatory compounds. Two sense discriminations occur in the treatment of the lemma *frats*. To assist the user in achieving the correct semantic interpretation a relation has to be established between the different niched lemmata and the relevant sense discriminations. One of the ways in which this can be done, is by means of a mediostructural procedure that is aimed at an article-internal address. The lemma sign *fratsvlieënier* is followed by the entry *(by 1)* and the other compounds by the entry *(by 2)*. These are cross-references with the text segment *by* functioning as a reference marker, and the text segments 1 and 2 functioning as reference address indicators. These reference entries guide the user from the reference position to an address in the same article, i.e. the meaning paraphrases presented for the respective sense discriminations.

A second type of reference address is the external reference address. The cross-reference exceeds the boundaries of the article. Two search domains can be identified for external reference addresses. Dictionary articles are texts but they also function as subtexts of the central word-list which is the dominating lexicographic text. The external address can be located either elsewhere in the central word-list, e.g. another lemma sign or a specified microstructural element in another article, or in a separate text outside the central word-list. Compare the articles of *gyro* and *stow* in *Collins Dictionary of the English Language* (CED) and *Longman Dictionary of Contemporary English* (LDOCE) respectively.

(2)   **gy·ro** ('dʒaɪrəʊ) *n., pl.* **·ros. 1.** See **gyrocompass. 2.** See **gyroscope.**

(3)   stow /stəʊ/ *v* [X9 (AWAY)] **1** to put away or pack, esp. for some time: *to stow goods (away) in boxes* **2** **stow it!** *sl* Be quiet!

The lexical item *gyro* is polysemous and has two different senses. The article of this lemma sign displays no meaning paraphrase for either of the polysemous senses but cross-refers the user instead to the treatment presented for two other lemma signs, i.e. *gyrocompass* and *gyroscope*. These lemma signs are the external reference addresses located elsewhere in the central word-list. In the article of the lemma sign *stow* LDOCE includes the text segment "[X9(AWAY)]". The X9 refers the user to a text in the back matter of the dictionary which contains a table of codes indicating a variety of grammatical values. X9 is explained in this table as a verb with one object as well as an additional descriptive word or phrase, e.g. *put + it + in the box*. The text element *away* in the quoted text segment is the additional word to be used with the verb *stow*. In this example the text segment X9 is a reference entry indicating an external address located in another text of the dictionary.

Quite often a combination of external and internal reference addresses are given in one reference entry. In *The Concise Oxford Dictionary* the article of the lemma sign *ghosting* contains the following entries:

> the appearance of a 'ghost' (see GHOST *n.* 4) or secondary image in a television picture.

In this example the meaning paraphrase of the lemma sign *ghosting* is the reference position containing a triple address which consists, as the main address, of an external reference address located in the central word-list, i.e. the lemma sign *ghost*, as well as two additional internal addresses, i.e. a secondary address, the nominal function of this lexical item, and a tertiary address, the fourth polysemous sense of this item. The last two reference addresses identify text segments in the article of the lemma sign *ghost*.

The use of a mediostructural strategy of external reference addresses endeavours to enhance the functionality of a dictionary as a source reflecting aspects of the linguistic reality. One of the real problems experienced by the users of alphabetically ordered dictionaries is the decontextualisation of lexical items. Bolinger (1985: 69) maintains that lexicography is an unnatural occupation: "It consists in tearing words from their mother context and setting them in rows — carrots and onions and beetroot and salsify next to one another — with roots shorn like those of celery to make them fit side by side, in an order determined not by nature but by some obscure Phoenician sailors who traded with Greeks in the long ago." He continues this argument by saying that "half of the lexicographer's labor is spent repairing this damage to an infinitude of natural connections that every word in any language contracts with every other word, in a complex neural web knit densely at the center but ever more diffusely as it spreads outward". According to him "a bit of context, a synonym, a grammatical category, ... and a cross-reference or two" are "the additives that accomplish the repair".

From both a semantic and a pragmatic perspective the lexicon has to be regarded as an ordered set of lexical entries. However, the *alphabetical ordering* of a dictionary defies the network of semantic relations existing between this set of lexical entries. The mediostructure of a dictionary is a powerful mechanism to re-establish some of the lexical relations. Dictionaries employ the medio-structure to refer the user to external addresses which are linked with the lemma sign of the reference position article in relations such as synonymy, oppositeness of meaning, hyponomy, dialectal, stylistic, chronolectic and other forms of variation, etc. For the language learner as well as the seasoned native speaker of any given language these cross-references represent an added value which assists them in improving their communicative potential. South African dictionaries should employ external reference addresses in a more general and consistent way. However, it is of extreme importance that these strategies be explained comprehensively in the front matter of the dictionary.

The third category of reference address is the dictionary external reference address. This mediostructural procedure links a text segment in a dictionary to a source outside the dictionary. In *A Dictionary of Language Planning Terms* Cluver (1993) puts the strategy of dictionary external reference to good use. The back matter of the dictionary contains a bibliography of sources in which more information regarding the terminology treated in the dictionary can be found. Many articles contain condensed bibliographical references which leads the user to the bibliography in the back matter. This is the reference position from where the user is guided by means of a complete reference to the specific source. The condensed bibliographical references in the articles are clearly indicated by the reference marker "**Bibl.**". In the article of the lemma sign *primary language* the following text segment is found: "**Bibl.** Mühlhäusler 1986: 9". The bibliography gives the full reference, i.e. "Mühlhäusler, P. 1986. *Pidgin and creole linguistics.* Oxford: Basil Blackwell." By means of the dictionary external reference address the lemma sign is linked to this external source. A variety of other reference addresses can also be identified but they are not relevant for the present discussion.

For the African languages, apart from the disruption of semantic relations, *alphabetical ordering* has serious detrimental consequences for *grammatical relations.* Many traditional compilers, although following an alphabetical ordering in principle, regard the importance of combined semantic and grammatical cohesion as too important to break.

This view implies that in the case of African languages the mediostructure is incapable of re-establishing the most relevant lexical relations. In most dictionaries this results in a hybrid approach where different derivations, sometimes a hundred or more, of a single word are treated within the article of a nominal or especially verbal stem in a complex article with numerous sublemmas and sublemmatic addresses, in addition to being entered as separate lemmas in their appropriate alphabetical positions.

(4)   **RÉKA** (–rêka, –rêkilê, –rêkwa, –rêkilwê)
koop, aankoop, ruil // buy, purchase,
barter; ~ *polasa* in weelde lewe // live in
comfort/luxury; ~ *o lebêlêtše godimo* kat
in die sak koop // buy a pig in a poke;
nku e rêkwa mosela 'n mooi geboude dame
is 'n aantrekkingskrag vir jongmans //
a lady with a good figure easily attracts
young men; **dirékárekáne** (dirêkarêkane)
verskeidenheid gekoopte goedere // variety
of things bought; **leréko, ma–** (lerêkô)
gewoonte/neiging om te koop // habit of
buying, *inclination to buy*; **morékI, ba–**
(morêkI) pers. dev.; koper // buyer, pur-
chaser; **seréki, di–** (serêki) pers. dev.; lustige
koper // keen buyer; **seréko, di–** (serêkô)
impers. dev.; wat gekoop word, aankope
// purchase(s); **théko, (n–)/di–** (thêkô)
man. dev.; koopwyse, prys // manner
of buying, price; *RÉKÁNA* (–rêkana,
–rêkane, –rêkanwa, –rêkanwe) rec.;
ruil met mekaar // exchange with one
another; *a re rêkanê, wêna o mphê hêmpê
êla, nna ke go fê dlêta tšê* laat ons met
mekaar ruil, jy gee my daardie hemp en ek
gee jou hierdie skoene // let us exchange.
you give me that shirt, I will give you these
shoes; **barékáni** (barêkani) pers. dev.;
thékáno, (n–)/di– (thêkanô) man. dev.;
RÉKÁNTŠHA (–rêkantšha, –rêkantšhitšê,
–rêkantšhwa, –rêkantšhitšwê) caus. < *RÉ-
KÁNA*; (om)ruil, wissel (geld), inruil //
exchange, barter, trade in, swop; **morékán-
tšhi, ba–** (morêkantšhi) pers. dev.; **seré-
kántšhwá, di–** (serêkantšhwa) impers. pass.
dev.; **thékántšho, (n–)/di–** (thêkantšhô) man.
dev.; omruiling, inruiling, wisseling // ex-
change, bartering, swopping; *RÉKÁNYA*
(–rêkanya, –rêkantšê, –rêkanywa, –rêka-
ntšwê) caus. < *RÉKÁNA*; (om)ruil, wissel
(geld) // exchange, barter, swop; **morékányi,
ba–** (morêkanyi) pers. dev.; **serékanywá,
di–** (serêkanywa) impers. pass. dev.; **thé-
kányo, (n–)/di–** (thêkanyô) man. dev.; v.
thékántšho; *RÉKÉGA* (–rêkêga, –rêkêgilê)
neutr.; koopbaar w. // b. purchasable;
RÉKÉLA (–rêkêla, –rêkêtše, –rêkêlwa, –rê-
kêtšwe) appl.; koop vir // buy for; ~ *kolobê
kgetsing* (< Afr.) kat in die sak koop //
buy a pig in a poke; **borékélo** (borêkêlô)
lo. dev.; koopplek // place where things are
bought; **morékédi, ba–** (morêkêdi) pers. dev.;
morékelwá, ba– (morêkêlwa) pers. pass. dev.;
serékélo, di– (serêkêlô) dev.; iets
waarin jy koop // that into which one buys;
thékélo, (n–)/di– (thêkêlô) man. dev.; maat,
skaal (waarin bv. bier gekoop word) //
measurement, bowl (one used for buying
beer); *RÉKÉLANA* (–rêkêlana, –rêkêlane,
–rêkêlanwa, –rêkêlanwe) appl. rec.; baréké-
lani (barêkêlani) pers. dev.; thékélano, (n–)/
di– (thêkêlanô) man. dev.; *RÉKÍSA* (–rê-
kiša, –rêkišitšê, –rêkišwa, –rêkišitšwê) caus.;
laat/help koop, verkoop, van die hand sit //
cause/help buy, sell; ~ *ka leleme* kul,
mislei, verdraai // deceive, mislead, pervert;

~ *leleme* praatsiek w., skinder // gossip, b.
loquacious, b. garrulous; ~ *motho a sa
phela* iemand kul // deceive someone; ~
motho lebake iemand kul, 'n tevergeefse
belofte maak, iemand verag weens sy slegte
gedrag // deceive someone, give a vain pro-
mise, despise someone because of his bad
conduct; ~ *segaê* iets aan iemand so ver-
koop dat hy 'n goeie slag slaan omdat jy sy
vriend of familielid is, afslag gee // sell to
someone at bargain price because he is your
friend/relative, give discount; **morékIšI, ba–**
(morêkiši) pers. dev.; verkoper, verkoops-
man, winkelier // seller, salesman, store-
keeper; **serékiišwá, di–** (serêkišwa) impers.
pass. dev.; **thékIšo, (n–)/di–** (thêkišô) man.
dev.; verkoping, uitverkoping, afset, be-
marking // sale, selling, market, marketing;
RÉKÍSANA (–rêkišana, –rêkišane, –rêkiša-
nwa, –rêkišanwe) caus. rec.; ruil met mekaar
// exchange with one another; **barékiiši
(barêkišani) pers. dev.; **thékísano, (n–)/di–**
(thêkišanô) man. dev.; *RÉKÍŠEGA* (–rêki-
šêga, –rêkišêgilê) neutr. < *RÉKÍSA*: ver-
koopbaar w. // b. sellable; *RÉKÍŠETSA*
(–rêkišêtša, –rêkišêdItšê, –rêkišêtšwa, –rêki-
šêdItšwê) caus. appl.; verkoop vir // sell for;
**borékišetšo (borêkišêtšô) lo. dev.; verkoop-
plek // selling place; **morékišetši, ba–** (morê-
kišêtši) pers. dev.; †agent // †(business)
agent; **thékišetšo, (n–)/di–** (thêkišêtšô) man.
dev.; *RÉKÍSETSANA* (–rêkišêtšana, –rêkišê-
tšane, –rêkišêtšanwa, –rêkišêtšanwe) caus.
appl. rec.; sake verrig // transact business;
**barékišetšani (barêkišêtšani) pers. dev.; thé-
kišetšano, (n–)/di–** (thêkišêtšanô) man. dev.;
besigheidstransaksie // business transaction;
RÉKÓLLA (–rêkolla, –rêkolotše, –rêkollwa,
–rêkolotšwe) rev. tr.; terugkoop, terugruil,
geld terugvra, los // buy back, exchange back,
ask for a refund, redeem; **morékóllI, ba–**
(morêkolli) pers. dev.; **serékóllwá, di–** (serê-
kollwa) impers. pass. dev.; 'n ding wat terug-
gekoop word // that which is bought back;
thékóllo, (n–)/di– (thêkollô) man. dev.;
(Bl.) lossing // (Bl.) redemption; *RÉKÓ-
LLANA* (–rêkollana, –rêkollane, –rêkollanwa,
–rêkollanwe) rev. rec.; **barékóllani** (barêko-
llani) pers. dev.; **thékóllano, (n–)/di–** (thê-
kollanô) man. dev.; *RÉKÓLLELA* (–rêko-
llêla, –rêkollêtše, –rêkollêlwa, –rêkollêtšwe)
rev. appl.; **morékólledi, ba–** (morêkollêdi)
pers. dev.; **thékóllelo, (n–)/di–** (thêkollêlô)
man. dev.; *RÉKÓLLELANA* (–rêkollêlana,
–rêkollêlane, –rêkollêlanwa, –rêkollêlanwe)
rev. appl. rec.; **barékóllelani** (barêkollêlani)
pers. dev.; **thékóllelano, (n–)/di–** (thêkollê-
lanô) man. dev.; *RÉKÓLLIŠA* (–rêkolliša,
–rêkollišitšê, –rêkollišwa, –rêkollišitšwê) rev.
caus.; **morékóllišI, ba–** (morêkollIšI) pers.
dev.; **thékóllišo, (n–)/di–** (thêkollišô) man.
dev.; *RÉKÓLLIŠANA* (–rêkollišana, –rêko-
llišane, –rêkollišanwa, –rêkollišanwe) rev.
caus. rec.; **barékólliišani (barêkollišani) pers.
dev.; **thékóllišano, (n–)/di–** (thêkollišanô)
man. dev.

Thus in dictionaries such as *Groot Noord-Sotho Woordeboek* (GN) word stems and their derivations are clustered together in one huge entry with the noun or verbal root as the lemma often containing up to eighteen levels of sublemmas. Compare example (4). Where derivations are entered separately in their appropriate alphabetical positions in GN, only minimal grammatical information is given and a reference back to the cluster.

(5)   **thékóllano,** (n–)/di– v. **RÉKA**
       thékóllelano, (n–)/di– v. **RÉKA**
       thékóllelo, (n–)/di– v. **RÉKA**
       thékóllišano, (n –)/di– v. **RÉKA**
       thékóllišo, (n–)/di– v. **RÉKA**
       thékóllo, (n–)/di– v. **RÉKA**

In this way mediostructure is exhausted/overused for the sole purpose of maintaining structural links. Little or no realization of mediostructure as a powerful access structure is achieved. Once referred back to the main cluster (4), it is unlikely that the user will be able to work out the meaning, especially for those cases which lie relatively deep in the modular structure as in the case of **dithekollišano.** The user has to look up this word under the singular **thekollišano** in (5) and is then referred to **reka** in (4) and eventually, after having struggled through this lengthy article, he finds **thekollišano** at the end of (4) with no translation equivalents given. (Compare Prinsloo (1994) for similar examples and a detailed discussion on problematic aspects of the lemmatization of verbs.)

This obsession with keeping together what in their view semantically and grammatically "belong together" thus results in extremely user-unfriendly entries in which successful retrieval of information virtually becomes impossible. It could be argued that the utilization of cross-references simply for the sake of grammatical binding is nonfunctional.

It was stated in the introduction that one factor in the evaluation of a dictionary is the extent to which it is useful to the user. Dictionaries such as these fail in this main criterion. Students consequently opt for less sophisticated dictionaries with less information categories and less exhaustively treated lemmas, i.e. a lower density of information.

Cross-referencing has not been employed to its full potential in dictionaries for most African languages. Typical errors and shortcomings will be briefly outlined below.

Consider the treatment of **molelo** versus **mollo** in *New English Northern Sotho Dictionary* (NEN):

(6)   (a) **mo'lelo,** see: **mollo.**
       (b) **'mol'lo,** n., fire, witch-weed, principal wife; ...
       (c) **mol'lo,** n., cry, (manner of) crying.

In (6) the exact reference address to which the user is referred from (6)(a) is uncertain. The second entry for **mollo**, (6)(c), has no relation to **molelo** whatsoever. To make things worse, the reference in (6)(a) is to **mollo** instead of **'mollo**. The convention " ' " is also not explained in the dictionary. Since **mollo** in (6)(b) and **mollo** in (6)(c) represent a fairly rare situation where two words in Sepedi can neither be distinguished phonetically (both **mollô**) and having an identical *tonal pattern* (low-low-low), the compiler should therefore distinguish by means of homonym numbers, i.e. **mollo¹** and **mollo²**. The decision of the compiler to refer the user who looks up **molelo** to **mollo** without treating **molelo**, is however acceptable in terms of frequency-of-use criteria since **mollo** is frequently used and **molelo** not. Thus no cross-reference from **mollo** to the less frequently used **molelo** is necessary or appropriate because the target user of this dictionary is looking for translation equivalents in the target language and is not interested in (more) information in the source language. However, within the article of **mollo¹**, reference should be made to **molelo** but then labeled as *dialectical* or treated by means of *inserted text*. Compare the additional information given by means of inserted text in *Reader's Digest English–Afrikaans Dictionary* (RD) in the case of **rekenaar** versus **komper**:

(7)   **kom'per** =s computer; *vid*. **rekenaar, rekenoutomaat.**

> WORDS IN ACTION
> *komper, rekenaar, rekenoutomaat*
>
> *Komper* (computer) is the word used by some speakers and writers in the Western Cape. Other people there and most people elsewhere in South Africa use *rekenaar*. *Rekenaar* is also the word preferred by people in the computer profession. ...

The treatment of **bracket** versus **brackets** in *Northern Sotho Terminology and Orthography* (NTO) can now be considered:

(8)   (a) bracket (symbol) (see: hakie   lešakana
            brackets)
        (b) brackets   vierkantige hakies   mašakanakhutlwana

In (8)(a) translation equivalents in Afrikaans and Sepedi are given for **bracket**. The cross-reference to **brackets** is quite appropriate since the latter is more frequently used. Also, due to considerations regarding frequency of use, no reference from **brackets** to **bracket** is necessary. However, in looking up **brackets**, the user does not get any additional information, e.g. in respect of types and use of brackets. On the contrary, he/she is misguided by the additional information given at the reference address namely that the lemma **brackets** is

translated in Afrikaans and Sepedi as necessarily *square*. Thus, in contrast to the singular **bracket**, the plural form excludes other types of brackets.

It is important that the user should find more information at the reference address, otherwise the value of cross-referencing is devalued. Cross-reference, or more specifically, the position of a cross-reference entry, indicates to the user that this is the starting-point in the process of information retrieval. The usage frequency of the item which stands in the cross-reference position, is lower than the reference address. The lexicographer may never utilize the system of cross-referencing simply because he/she does not want to give proper treatment to the items in question. If it is in the interest of the target user, a specific lemma should be entered and treated. Cross-references such as those attempted in (6) and (8), will have a negative effect on the target user. Once disappointed, it will discourage him/her from following up cross-references since it is impossible to distinguish between functional and nonfunctional references in the dictionary.

Consider also NTO's treatment of **complainant** versus **plaintiff**:

(9) (a) complainant (see: klaer   mmelaedi, molli, mmegi
         plaintiff)
     (b) plaintiff   eiser, klaer   mmelaedi, molli, mmegi,
                        .   motlalei

It is unclear why no cross-reference from **plaintiff** to **complainant** is given. Such a reference is necessary because equivalents in both target languages are given under **complainant**. The addition of the translation equivalents **eiser** in the Afrikaans column and **motlalei** in the Sepedi column also raise a few questions. Firstly, it implies that **eiser** and **motlalei** are suitable equivalents for **plaintiff** but not for **complainant**. Secondly, to give **eiser** as the first translation equivalent for **plaintiff** suggests that it is the best option. However, although it is added in the case of **motlalei** to the translation equivalent paradigm in (9)(b) for the sake of **eiser**, it is given at the end. Thus the entire relationship between **complainant** and **plaintiff** becomes unclear. The user cannot determine in which relation they stand to each other. Central text-internal reference should strengthen the cohesion, as is correctly done in the case of **molelo** versus **mollo** in (6) above. In the case of (9) this cohesion is actually broken off. The user who wants to find translation equivalents in Afrikaans and Sepedi is referred to another word where the same treatment is given for no reason.

An even more confusing example of cross-reference in NTO is its treatment of **Brave West Wind** versus **anti-trade wind**:

(10) (a) Brave West Wind (see: Antipassaatwind   Phefomadibakgwebo
         Anti-trade wind)
     (b) anti-trade wind   antipassaatwind   phefomadibakgwebo,
                                                        diphefo tša bodikela

Cross-reference is given from (10)(a) to (10)(b) but not vice versa. The compilers are not consistent in the use of capital versus lower case letters in Anti-/anti- and Phefo-/phefo. Ironically reference to the "West" in Sepedi, namely, **tša bodikela**, is added to the translation equivalent paradigm of (10)(b) instead of (10)(a).

In addition to implicit cross-referencing, two types of explicit cross-referencing are used in *Thanodi ya Setswana* (TS) namely:

¦ what follows differs from the explained.
BÔNA ("SEE") the following is related to the explained

Compare the entries for **kgarebê** and **lekgarebê** in TS and *Thanodi ya Setswana ya Dikole* (TSD).

(11)   **kgarebê** TTT ¦**lekgarebê** *ln./9*. ma-. mosetsana yo o godileng mme a ise a nyalwe
lek·garebê   TTTT *ln./5*. ma-. 1. mosetsana yo o lekaneng go nyalwa 2. mosetsana yo o itlhôkômêlang a apara sentlê

The examples under (11) from TS, explicitly referring the user from **kgarebê** to **lekgarebê** is sensible since apart from the meaning "girl who can be married" which is similar to that given in sense 1 of **lekgarebê**, an *extended* meaning "a neatly, well-dressed girl" is given as sense 2. The fact that no explicit reference from **lekgarebê** to **kgarebê** is given, is also quite acceptable since the user who looks up **lekgarebê** will not find any new information under **kgarebê**. However **kgarebê** must be given as a synonym directly following the sense 1 definition. TS's treatment of **kgarebê** can also be improved in respect of the *position* allocated to the reference entry. The explicit cross-reference ¦**lekgarebê** should not be given in the focus position of the article. It can be regarded as an unnecessary or even nonfunctional cross-reference interfering with the user's information retrieval process. Formulated differently, the information primarily needed by the user who looks up **kgarebê** is that given in the *definition*. Once given the definition, he/she might be interested to consult the reference address for additional information. It can also be argued that the wrong reference symbol is used in the case of **kgarebê** versus **lekgarebê**. The relation is one of relatedness rather than difference — thus in terms of TS's conventions "BÔNA" rather than "¦".

(12)   **kgarebê(ma)** mosetsana yo o godileng mme a ise a tsewe (nyalwe).
lekgarebê(ma) kgarebê; mosetsana yo o ka tšewang.

TSD's treatment of the same words are shown under (12). In the case of **kgarebê** only a definition is offered, while a synonym as well as a definition is given for **lekgarebê**. Since no cross-reference is made from **kgarebê** to **lekgarebê**, it

suggests that **kgarebê** is the entry with the higher usage frequency. However, the user gets more information from **lekgarebê**, namely a synonym as well as a definition, than from **kgarebê**. This is confusing. In terms of cross-reference it can be said that the article of the lemma sign **lekgarebê** is a reference position of the reference entry **kgarebê**. Normally, for economical reasons, the same definition is not given in two places. Two definitions and the lack of cross-reference has a negative effect on cohesion. Here the user cannot establish which one is the more frequently used. The more frequently used word is the one likely to be treated. This in itself is an indication of higher frequency of use. It would thus be better to enter **kgarebê** with a definition, adding **lekgarebê** as a synonym. It is normal practice to give a list of synonyms after the definition since they meet the criteria to be lemmatized themselves. Such synonyms can be listed in order of frequency of use if such criteria is available or otherwise alphabetically. Thus, since all synonyms have to be entered as lemmas, **lekgarebê** will be entered as a lemma sign but only with a cross-reference to **kgarebê**.

It is also not clear why in both TS and TSD the definitions differ in respect of the concept "grown up". In the case of **lekgarebê** "a girl who can be married" and in the case of **kgarebê** "a grown-up girl, one who is not yet taken/married". When comparing the two, the user can get the wrong impression that **kgarebê** implies an adult and **lekgarebê** not.

Cross-references from the front matter, especially from the user's guidelines to the central text are crucial to the user for successful or optimal retrieval of information. *Dead references*, especially in the *guidelines* of a dictionary are defects which undermine the trust of the user in the dictionary as a reliable source of information, and in the value of the cross-referencing system as a whole. Such dead references often do not effect only one reference address, a key to a whole section can be lost. Consider the following example: In the guidelines to *A Learner's Chichewa and English Dictionary* (LCE), the compilers explain the policy not to lemmatize derived forms when the meaning is readily ascertainable from the root plus suffix combination. In support of this far-reaching decision for lemmatization of an African language, they include cross-references in the central text: "Thus, both -mva 'hear, understand' and its derived form -mvana 'get along together' are listed". However, the *very examples* that they quote to illustrate their policy, are not treated as such: -mva is listed but not -mvana. This dead reference to -mvana can cause the user to doubt the treatment policy not only in respect of a single entry but a whole category of entries. A similar dead reference occurs in the next sentence: "the derived verb -mverana 'listen to each other' is not listed because its meaning is readily determined from the root -mvera 'listen to' plus an affix". However, again the root -mvera is not listed, clearly violating the claim "verbs are entered according to their root forms".

The treatment of cross-references in the *Dictionary of Northern Sotho Grammatical Terms* (NGT) can now be considered. This dictionary is a pioneering first for Sepedi and very popular among its target users.

(13)   **tone** *(segalô, toon)*
Tone can be defined as *pitch variations* which affect the meaning and function of words. *Tone* is one of the distinctive features of the Bantu language family (see *Bantu languages*), and in these languages differences in *tone* between words which have exactly the same shape, result in a difference in meaning. Two basic tones (also called *tonemes*) are usually distinguished, namely a *high tone* and a *low tone*, although more detailed distinctions are often drawn between, for example *rising* and *falling* tones, *mid*, *mid-high* and *mid-low* tones, etc. A *tone* (or *toneme*) is always associated with a particular *syllable*, i.e. there are as many *tones* in a word as there are syllables since *tones* realise on *vowels*. This is one of the reasons why vowels are often referred to as *syllable nuclei*. (See: *nucleus*.) ...

In this article of **tone** explicit reference is made to **Bantu languages** and **nucleus**. At the reference address, **Bantu languages**, the user finds more useful information on tone in the African languages. Likewise, the user who consults the entry **Bantu languages** first will find, in addition to other useful information given there, "tone plays a distinctive role. See **tone**". This is good lexicographical practice since for the user who consults the entry **Bantu languages**, as well as for the user who looks up **tone**, the cross-references are useful. Both contain more information at the respective reference addresses with regard to two important and closely related issues such as **African languages** and **tone**. The same holds true for the explicit reference made to *tone* in the article of **syllabic nasal**. The treatment of **syllable** and **tonal pattern** as reference positions of explicit reference to the addresses **nucleus** and **tone** respectively, can however be improved.

(14)   **syllable** *(noko, sillabe/lettergreep)*
See *nucleus*.
(15)   **tonal pattern** *(*patrone ya segalô, toonpatroon)*
See *tone*

Firstly, **syllable** in (14) deserves full treatment, especially in a dictionary of grammatical terms. Apart from translation equivalents in Sepedi and Afrikaans, no definition is given, only an explicit reference to **nucleus**. In the article of **nucleus**, many references are once again made to **syllable**, such as "[a nucleus] is used to characterize the nature of a *syllable*". As for **syllable**, it is maintained that "vowels form the nuclei of syllables", etc. However, **syllable** itself remains undefined. Thus **syllable** deserves a definition and treatment as for example in (16) from *South African Student's Dictionary* (SSD) and in (17) from *New Student's Dictionary* (NSD):

(16)   **syllable** ... *noun*: **syllables**
A **syllable** is any of the parts, consisting of one or more sounds and
usually including a vowel or a consonant acting like a vowel, that a
spoken word can be divided into: *The word 'telephone' has three syllables,*
'te', 'le', and 'phone', and 'tiger' has two, 'ti' and 'ger'.

(17)   **syllable** ... **syllables**. N-C A **syllable** is a part of a word that contains a
single vowel-sound and that is pronounced as a unit. For example,
'book' has one syllable, and 'reading' has two syllables.

(18)   **toneme** (**segalwana, toneem/toonfoneem*)
See *tone*.

An important statement in the article of **tone** in (13) reads: "Tone is always
associated with a particular *syllable*." The user of NGT consulting **tone** could
easily perceive the italicized word *syllable* as an implicit reference entry but find
it to be nonfunctional since in looking up **syllable** in (14), he/she is referred to
another address namely **nucleus**. Furthermore, although **tone** is one of the key
issues discussed in the article of **nucleus**, no *explicit* reference is given to **tone**.
    In the case of **tonal pattern**, the user is referred to **tone** but the distinction
between **tone** and **tonal pattern** is unclear. From phrases such as "depending
on its tone or tonal pattern", it is not clear whether *or* means "equal to" or "in
contrast to". The user who wishes to know the meaning of **tonal pattern** is
referred to **tone** but will not know for sure after having studied the treatment of
tone whether **tone** and **tonal pattern** is synonymic or not. In the case of **tone**
versus **toneme** in (13) and (18), *or* in the phrase "a tone or toneme" means tone
is equal to **toneme**. It should rather be clearly stated that **tonal pattern** is a
series of tones/tonemes. This could be explained by using **mosadi** as an exam-
ple, where **mo-** has a low tone, **-sa-** a high tone and **-di** again a low tone. The
tonal pattern of these three tones/tonemes is therefore low-high-low, often
indicated as LHL. This suggests that **tonal pattern** deserves to be treated on its
own. In Wiegand's (1996) terms, it means that if the user is referred from **tonal**
pattern, which is the reference position, to the article of the lemma sign **tone**,
the reference address, more information on/a fuller treatment of **tonal pattern**
must be given. Thus the cross-reference from **tonal pattern** to **tone** is not
observed in the sense that **tonal pattern** is not really treated within the article of
tone. The purpose and value of the cross-reference is lost.
    Finally, key terms used in the treatment of the lemma **tone** which are itali-
cized such as *pitch variations*, *tonemes*, and especially *syllable* are not treated in
the dictionary. The user expects a clearer distinction between *implicit reference* to
a different reference address, on the one hand, and mere instances of *emphasis*
on the other.
    This does not mean that the lexicographer should solely utilize explicit
references to distinguish between emphasis and cross-referencing, since there is

no fundamental value difference between explicit and implicit reference systems. The former is only more obvious than the latter. Thus it is suggested that the lexicographer should utilize both as long as implicit references can be clearly distinguished from mere emphasis. The implicit cross-reference strategy must however be clearly apparent. This means that terms used within the articles of entries which are themselves lemmatized and treated elsewhere in the dictionary, must stand out and be treated consistently.

The mediostructure has not in all instances been employed to its full potential. In a dictionary of grammatical terms, the mediostructure could be employed as a powerful access structure by ensuring that *at least all keywords used within the treatment of a specific lemma which are themselves entered as lemmas in the same dictionary*, are marked for cross-reference. *Dictionary of Lexicography* (DL) can serve as an excellent example in this regard:

(19)   lexicography
The professional activity and academic field concerned with DICTION-ARIES and other REFERENCE WORKS. It has two basic divisions: lexicographic practice, or DICTIONARY-MAKING, and lexicographic theory, or DICTIONARY RESEARCH. ...

It can rightfully be argued that the lexicographer should guard against excessive text condensation. However, opportunities should be utilized to strengthen the cohesion of the dictionary by optimal organization of the mediostructure as an access structure.

An excellent example in African language lexicography where mediostructure has been employed as a powerful access structure is the *Lexicon Cilubà–Nederlands* (LCN) compiled by De Schryver and Kabuta. This dictionary is highly successful in interconnecting the knowledge elements represented in different sectors of the dictionary on several levels of lexicographic description to form a network.

In contrast to GN, for example, the compilers of LCN are aware of the benefits of "keeping together what semantically and grammatically belong together" but also of the need (a) to avoid extremely long entries and (b) to ensure proper treatment of each derivation in terms of grammatical, tonal and lexical information. Compare the entries in LCN for -**funda** and its derivations:

(20)   -fùnda I [tww] 1 schrijven; aantekenen; 2 aanklagen; II [adj ◄ I] 't geschrevene; *mwakù mu~ 't geschreven woord*
▶ -dìfùndisha; -fùndangana; -fùndangeena; -fùndiibwa; -fùndika; -fùndila; -fùndilangana; -fùndisha; -fùndishangana; -fùndishiibwa; -fùndishila; -fùndishilangana; -fùndishisha; -fùndulula; kafùndìlà
(21)   -fùndangana [tww, ass -fùnda] 1 elkaar schrijven; 2 elkaar, iemand aanklagen
-fùndangeena [tww, ass app -fùnda] elkaar aanklagen ... < + plaatsbepaling>

-fùndiibwa [tww, pas **-fùnda**] geschreven z/w
-fùndika [tww, imp **-fùnda**] schrijfbaar z
-fùndila [tww, app **-fùnda**] schrijven voor, op, aan, om, naar; toeschrijven
-fùndilangana [tww, app ass **-fùnda**] aan elkaar schrijven
-fùndisha [tww, cau **-fùnda**] doen schrijven; inschrijven

In contrast to cases such as **dithekollišano** above, the user can find even complicated derived words such as **fundilangana** firstly lemmatised separately in its proper alphabetical position and secondly fully treated. The user does not have to refer back to the stem entry **funda** to find the necessary information. An implicit cross-reference is nevertheless given to the root **-funda** where all the relevant derivations are listed. The compilers of LCN thus succeeded in harmonising lumping and splitting, capturing the advantages of both these approaches. It can, of course, be argued that the listing of the different derivations occupies precious space in the dictionary. However, by substantially reducing the font size, this redundancy is diminished.

Thus the compilers not only succeeded in linking stems and derivations and treating both stems and derivations satisfactorily, but they also employed a complex system of cross-referencing:

> De klassieke opdeling macro- vs. micro-structuur wordt helemaal opengebroken door een doorgedreven netwerk van verwijzingen. Inderdaad, zowel vanuit een slot tussen **rechte haken,** als vanuit een slot van **vertalingen/omschrijvingen,** als vanuit een slot van **commentaar,** als vanuit een slot van **voorbeelden,** als vanuit het slot van een **samenstelling met lemmastatus,** als vanuit een slot van **versteende uitdrukkingen met lemmastatus,** als vanuit het slot van de **staart,** kan men verwijzingen vinden naar of elementen uit de **macro-,** of elementen uit de **micro-**structuur van een ander artikel! De meeste van deze verwijzingen werden ofwel reeds impliciet behandeld, of zijn zo evident dat ze geen verdere uitweiding vereisen. Het zij voldoende te vermelden dat hiervoor de volgende "SYMBOLEN & VERWIJZINGEN" worden gebruikt: ~, ◀, ▶, □, ○, afk X, ant X, cf X, syn X, var X, vgl X; en ook Romeinse en/of Arabische cijfers. Op enkele details na, zijn AL deze verwijzingen ook **kruisverwijzingen!**

Cross-references, whether explicit or implicit, text-internal or text-external, are given from all possible slots of an article. See the following *seven* typical reference positions:

(22) (a)   A [...] slot
            Compare **-fùnda** in the article of **-fùndisha** in (21) above.
    (b)   A translation/description slot
            Compare **nswà** in the article of **ciswà (-munène)**:
            ciswà (-munène) ... **2** maanmaand gedurende dewelke **nswà** uitvliegen ...

(c) A comment slot
Compare lupòse in the article of **kabangu**:
kabangu ... < ... de larve v deze kever heet **lupòse**>.

(d) An example slot
Compare **-dìngisha** in the article of **-enza**:
-enza ... ~ bu [ud; syn **-dìngisha**] ...

(e) A "compound with lemma-status" slot
Compare **-kàjì** in the article of **bakàjì**:
bakàjì ... □ cn ~ [cn adj; var **-kàjì**] ...

(f) A "fossilised expression with lemma-status" slot
Compare **à.n.** in the article of **ànu**:
ànu ... ◊ 1 ~ nànku [ud; afk **à.n.**] enzovoort; ...

(g) A tail slot
Compare ▶ -dìfùndisha; ... in (20) above.

The endeavour to achieve an optimal transfer of information

Dictionaries are containers of knowledge (cf. McArthur 1986). Although lexi-cographers have to take this into account, they should also be alert to the fact that a dictionary has to be compiled in such a way that the intended target user can employ it as a practical linguistic instrument. One of the components of a dictionary aimed at a better retrieval of information by the target user is the access structure. The access structure can be regarded as the search route of the user on his way to the lexicographic data needed. The internal access structure, that is the search route followed within the article, can display a variety of so-called structural markers. These markers signpost various microstructural data categories. Because reference markers indicate the reference entry, it can be argued that they are also part of the access structure, functioning as nontypo-graphical structural markers. A reference marker does not only indicate the fact that a specific text segment relates to another text segment but it sometimes also explicates the type of relation that holds between the two segments. In the W9 different strategies, elucidated in the explanatory notes in the front matter, are used to accomplish successful cross-referencing. One kind of cross-reference used is the reference to a variant of the lemma. The reference position in this mediostructural category accommodates the marker *var. of*. In the article of the lemma-sign *inclose* a cross-reference "*var. of* ENCLOSE, ENCLOSURE" explicates the kind of mediostructural relation between the lemma-sign and the reference address. This lexicographic procedure does not only constitute a valuable type of cross-referencing but it also assists in presenting the lexicon as a structured collection characterised by a network of internal relations.

Within a multilingual and multicultural society dictionaries have an im-portant role to play as instruments to promote mutual understanding and com-municative competence. South African lexicographers should employ all avail-able strategies to create a dictionary culture and to enhance the dictionary-

using skills of their intended target users. This approach compels lexicographers to structure their dictionaries in such a way that the retrieval of information exceeds the traditional domains. It will always be important to find comments on specific lexical items in a dictionary and it will always be important to find information linking a specific lemma or a microstructural entry like a sense discrimination, to other text segments in the dictionary. However, dictionaries compiled for the South African linguistic environment should go further than this. Besides information regarding a specific lemma or article component as treatment unit, it is of vital importance that dictionaries should expose the underlying system by focusing on a lexical item as part of an overall linguistic or grammatical pattern.

According to Jackson (1985: 53) grammar and dictionary are complementary parts of the overall description of language. However, the average member of a speech community uses a dictionary much more than a grammar. One of the assignments of the lexicographer in a multilingual society is to make his/ her target user aware of aspects regarding both the lexicon and the grammar of the specific language. The first step to achieve this goal is to include a mini-grammar as a separate text in the front or back matter of the dictionary (cf. Gouws 1989). The fact that the average dictionary user focuses his attention exclusively on the data presented in the central word-list, compels the lexicographer to employ innovative strategies to ensure a successful utilisation of the grammar as one of the other texts in the dictionary. The most obvious strategy would be the establishment of text-external mediostructural relations between the central list and the mini-grammar. Dictionaries compiled for use in South Africa should be text carriers that include, among others, separate texts in which the grammatical system of the treated language is explained. Lexicographers have to employ an extended mediostructural application to guide their users from a variety of reference positions in the central list to specific reference addresses in the mini-grammar.

The front matter texts should also include a systematic exposition of other language-specific characteristics and these texts have to be addressed from the central list by means of a well-developed mediostructural network.

In conclusion

There is nothing as practical as a good theory. Therefore the success of a dictionary as a practical instrument depends on its theoretical basis. If a lexicographer cannot base his practical applications on sound theoretical principles, the dictionary is bound to be of a lesser quality. Knowledge of the structural components of a dictionary as a carrier of texts equips the lexicographer with the expertise to produce a better dictionary. Understanding the importance of cross-referencing as a functional lexicographic device enables the lexicographer to compile a dictionary which offers the target user friendly access to participa-

tion in the language game. This is desperately needed in the multilingual and multicultural South Africa.

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