

# SEARCH AND YOU WILL FIND. FROM STAND-ALONE LEXICOGRAPHIC TOOLS TO USER DRIVEN TASK AND PROBLEM- ORIENTED MULTIFUNCTIONAL LEXIMATS

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## Abstract

Regardless of their name (dictionary, glossary, encyclopaedia, or even ‘leximat’, in the case of a new generation of online, semi-automated lexicographic tools), subject-field, purpose, or medium (paper or cyber), lexicographic reference works should be regarded as functional information tools that are solely designed to cater to the information needs of their users in different usage situations and that consequently help them solve specific communication (reading, writing, translation) or knowledge problems (acquiring new knowledge or verifying existing knowledge, learning a language or a subject field). In this article, we briefly outline the evolution of lexicographic reference works from stand-alone to multifunctional lexicographic tools, and we describe the theoretical principles and innovative functionalities of a new task and problem-oriented lexical database, the *Base Lexicale du Français*. In line with Tarp (2006), a tool that should be truly regarded as a ‘leximat’.

## 1. Introduction – Search and you will find: lexicographic tools and balanced focus

In his review of 118 lexicographic dreams featuring the advent of the Dictionary of the Third Millennium, de Schryver (2003: 188, our underlining) mentions the word *theory* once, as a prerequisite to this development, and closely connected to a quotation by Atkins:

Firstly, *without a sound underlying theory* any ‘dictionary of the future [will] simply blip its little electronic way off into the sunset dazzling its readers

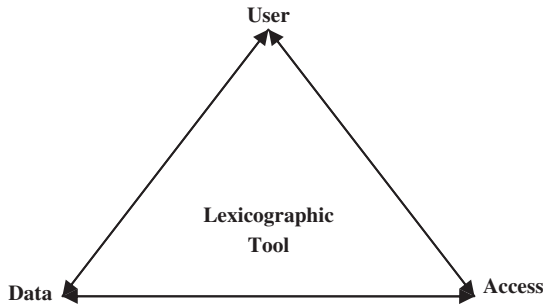
with the speed [with] which it dishes up the same old facts on a technicolor screen' (Atkins 1996: 515–516)

Unfortunately, twelve years later (Atkins and Rundell 2008: 4), the idea of lexicography as *theoretical lexicography* has been abandoned, and abstract lexicographic thinking has to a certain extent been replaced by a practice-oriented approach. Thus, lexicography has been reduced to a positivist, behaviourist *practical* enterprise, a mere job in which the skills and competences of the lexicographer coincide with those of the applied linguist:

This is not a book about 'theoretical lexicography' – for the very good reason that we do not believe that such a thing exists. But that is not to say that we pay no attention to theoretical issues. Far from it. There is an enormous body of linguistic theory which has the potential to help lexicographers to do their jobs more effectively and with greater confidence (Atkins and Rundell 2008: 4).

This is of course a strongly reductionist view, which is only valid if lexicography is defined in its narrow, etymological sense – the 'lexikos graphein' or writing down of lexical items – an activity which naturally requires sound linguistic competences as well as a constructive (and critical) appraisal of the vast body of linguistic theory, or at least part of it. But linguistic competence is by no means the only requirement for gaining greater confidence and doing a better job. The construction of dictionaries of mathematics, medicine, law, or technology on one hand, for instance, requires cognitive, conceptual competences in the fields of mathematical, medical, forensic and engineering sciences and bears little relation to linguistics as such, although a linguistically oriented terminographer would undoubtedly disagree. Similarly, internet dictionaries require specialized skills in the design of user-friendly interfaces, search facilities, and database programming and are unrelated to linguistics as such. Above all, the conception and construction of lexicographic products, regardless of their data types, medium or proposed user-environment (cf. e.g. Leroyer 2006 for the functional design of corporate lexicographic tools, and Leroyer 2008 for the functional design of references to external sources), require the ability to identify the specific information needs and problems of specific users in specific usage situations, to select the data types that may match those information needs, and to provide fast and easy access to these data, thereby developing effective solutions. The latter competence can be described as inherent in the functional approach (Bergenholtz and Tarp 2005, Tarp 1998, 2006).

Remarkably, among all the lexicographic dreams mentioned above, only a few are based on linguistic theory. All the others concern the optimization of data presentation and access, even though, admittedly, these 'search and you will find dreams' represent the lexicographer's perspective rather than the



**Figure 1:** The lexicographic triangle – three angles, balanced focus.

user's, and could be given a firmer basis, as far as functionality is concerned. In this line of reasoning, lexicography truly appears as an independent but interdisciplinary discipline. It is the lexicographer's task to ensure the lexicographic governance of a particular dictionary project. This will normally involve close cooperation with specialists in other disciplines, including linguists, but the project should always be driven by two essential objectives: What is the ultimate purpose (including the foreseen user-situations according to the needs and profile of the envisaged user-group) of the dictionary? And: Which functions can be derived from that purpose?

In order to avoid interference between a theory of lexicography and a theory of language, we will therefore avoid the term 'dictionary', preferring to use the term 'lexicographic tool', which was introduced by Wiegand (1987: 199) in a general theory of dictionaries as a category of 'Gebrauchgegenständen'. Lexicographic tools are functional reference works, which should therefore be balanced in order to ensure fast and easy access to the data that users need in specific types of usage situations. This definition has two implications. Firstly, lexicography should be seen as a discipline independent from the codes (language, images, etc.) and the ontologies (conceptual knowledge systems) that it lists and indexes. Secondly, lexicography should be regarded as an information science at the crossroads of three basic angles or dimensions. This can be illustrated by the *lexicographic triangle*, featuring the user-access-data balanced focus of lexicographic tools.<sup>1</sup>

The figure illustrates the triangulation of data, user and access as an ontological property of reference works (general dictionaries, specialised dictionaries, encyclopaedias, terminological databases, lexical databases, glossaries, registers, etc). It should not be seen as a representation of the epistemological status of lexicography, in which the data would relate to linguistics, the user to sociology, and the access to information science. Put more precisely, regarding the status of data, all reference works contain data encoded in natural language (as well as other kinds of multimodal data such as illustrations, videos and sound files), but only reference works with communicative functions (i.e. in which the genuine purpose is to help users to solve problems with the use of

language) can be said to contain language data and be relevant for linguistics. For instance, a dictionary of nuclear astrophysics is not a collection, nor a description of language data (and illustrations), but a tool for accessing knowledge of astrophysical phenomena.

In its symmetric configuration, the performance of the lexicographic tool is achieved by the balanced focus of its three angles – data, access and user – in other words, the *user-adapted access to data* which is the *raison d'être* of lexicography. If it is configured asymmetrically, the lexicographic tool's performance may be compromised by unbalanced focus, as is the case in the following situations:

- (1) *Focus on data*: lexicographers who focus exclusively on the presentation of data tend to confuse the tool with its empirical basis. This is true of (language) dictionaries in which data presentation is guided by the uncritical use and/or promotion of linguistic theories. An example of such a focus on data presentation can be found in the *DiCouèbe*, in which queries and access routes require expert knowledge of Meaning-Text Theory and lexical functions.
- (2) *Focus on user*: lexicographers who focus too strongly on users' demands run the risk of confusing user needs with market research findings. Such an approach, which reduces the tool to a product and its users to consumers, can be found in commercial lexicography, where it seems to be an established editorial policy to recycle existing data collections independently of anticipated user needs and user profiles.
- (3) *Focus on access*: lexicographers who focus on technology for the sake of technology are likely to reduce the tool to a gadget featuring a plethora of intricate, advanced search options. This is the case, for instance, with pocket translators and other information services combining database and mobile communication technologies, in which users are offered immediate access to lexicographically arranged data on their PDA or mobile phone through urban terminals, mobile eye technology or GPS-technologies. This is also the case with the *TLFi*, in which the use of the (admittedly powerful) search engine is definitely reserved for specialists.

Unbalanced focus may also result from excessive focus on two dimensions at the expense of the third: for instance, a tool may focus on both the user and the data while neglecting access. This tends to be the case in lexicographic tools aimed at learners. To be effective, such pedagogical tools should be based on a multifunctional configuration (Tarp 2004). This should include functions that support *communicative needs* (i.e. consulting the tool to solve problems encountered when reading, writing or translating a text), functions that support *cognitive needs* (i.e. acquiring knowledge independently of any textual activity), as well as functions supporting *operative needs* (i.e. understanding instructions

and recommendations required to perform certain tasks and operations, e.g. doing exercises, applying grammar rules, taking tests, and taking part in language training activities in some advanced learner's dictionaries).

A fourth dimension should be added to the lexicographic tool's three-dimensional configuration of user-data-access.<sup>2</sup> This dimension is truly dynamic. It lies in the fulfilment of the function itself, and coincides with the user <> tool interaction. In this sense, it should be noted that all lexicographic tools are essentially interactive, and that interactivity is by no means the prerogative of advanced, online lexicographic tools. Each lexicographic tool should contain logical access points and search routes, leaving no room for random access, dead ends, lucky guesses or *heureux hasards*, no room in other words for serendipity, at least in the framework of the functions outlined above.<sup>3</sup>

Relevant data should be retrieved and processed according to the external situation that motivated consultation in the first place, and the information needed to change a state of affairs in the outside world should be operationalized.

## 2. Stand alone lexicographic tools

According to de Schryver (2003: 144), the advent of electronic lexicography dates back to the end of the 1960s, when paper dictionaries were computerized. The first human-readable electronic dictionaries became available to the general public at the end of the 1980s. They became really successful during the 1990s thanks to the articles' better readability and, above all, the improved retrieval system (Nesi 2000: 839, quoted by de Schryver 2003: 146), which allows the use of hypertext, wildcards, pronunciation-based and full text searches or searches in both word lists and lists of multiword expressions (Verlinde, Selva and Binon forthcoming).

Besides these improvements, commercial lexicography increasingly tends to provide a range of lexicographic and other didactic resources (e.g. a pronunciation recorder, a wordfinder function) on the same medium, as on the *Compass* CD-ROM. Up to 100 different resources can even be included in a single pocket PC (Tono 2009).

A similar trend can be observed in the field of institutional lexicography, as illustrated by the web portal of the *Centre National des Ressources Textuelles et Lexicales (CNRTL)*, which integrates different lexical resources (general language dictionaries, dictionaries of synonyms, of morphology and etymology) and which allows crossover consultation.

As far as the *data* dimension is concerned, there is a similar tendency of accumulating various resources (e.g. by adding data extracted from the corpus or even by combining a dictionary with a grammar).

From the user's point of view, as research on dictionary use does not provide us with convincing results (Welker 2006), the market is organized by the editors, who publish dictionaries designed for different age groups, learner categories or levels (cf. the English learner's dictionaries for intermediate or advanced learners or the *Robert Benjamin* (aimed at children aged 6-8 years), *Junior* (8-11 years) and *Collège* (11-15 years)).

De Schryver (2003: 146) rightly emphasizes that:

without actually doing something about the contents [...] (through the addition of more and new types of information), and without truly implementing fully integrated hypermedia access structures, EDs aren't really very different from their paper counterparts.

In order to become truly interactive, task and problem-oriented lexicographic tools, existing dictionaries need to be revisited. More particularly, dictionaries and their various search routes and access paths should be reconceptualised on the basis of a thorough analysis of potential users' real needs and expected contexts of use.

### 3. Ways of improvement

Since existing paper dictionaries have only limited functionalities, how can electronic dictionaries be conceived afresh for optimal performance in an electronic environment (Cerquiglini, quoted by Pruvost 2000: 188)?

Interestingly, the vast majority of de Schryver's 118 lexicographic dreams (2003) concern the problem of data access. This may seem surprising, considering that this is precisely electronic dictionaries' main asset. But, as Pruvost (2003) rightly states, many electronic dictionaries have problems answering users' most common questions, for example those relating to the spelling of words.

Access problems also occur when a user needs the right word in a given context (e.g. collocations) or when he hopes to discover an unknown word by looking up a familiar one, without using a translation dictionary (e.g. the Wordfinder tool on the *Compass* CD-ROM).

All these challenges present avenues to be (further) explored in order to optimize lexicographic tools as such. Thus, one could investigate tool use frequency as well as the precise interaction between the user and the tool. Certain applications, such as spelling checkers, show how information contained in a lexical database can be contextualized. Applications such as *Alexandria*, *Check My Words* or the *Oxford Genie* (on the *Compass* CD-ROM) serve as reading or writing aids, reducing the distance between the user and his 'dictionary'. As such, the lexicographic tool is fully integrated into the user's working environment.

In addition, the function of the dictionary within the learning process should also be considered more closely. Indeed, collecting a few exercises on a CD-ROM hardly supports systematic language learning.

#### 4. Towards a model of a multi-purpose, task and problem-oriented leximat

Tarp (2008: 124) suggests that

lexicography now stands at a crossroads: it must abandon previous paradigms (including their conceptual framework) if it wishes to progress from here and reconstitute itself on an entirely new basis.

and favours the design of new lexicographic tools, which he calls leximats (Tarp 2008: 123):

A leximat is a lexicographical tool consisting of a search engine with access to a database and/or the internet, enabling users with a specific type of communicative or cognitive need to gain access via active or passive searching to lexicographical data, from which they can extract the type of information required to cover their specific needs.

In this section, we will illustrate how such a leximat could be developed by reviewing the three angles of the lexicographic triangle: access (4.1.), data (4.2.) and users (4.3.) and by focusing on the way in which communicative, cognitive and operative needs could be supported. Finally, we will deal with the additional dimension that could be added to a lexicographic tool by creating new user <> tool interactions (4.4.).

We use the *Base lexicale du français* (BLF) as an example of such a leximat. The *BLF* is a single-access website offering various online resources designed for learners of French: these include our *Dictionnaire d'apprentissage du français langue étrangère ou seconde* (DAFLES) as well as the *OPUS* parallel corpus website for translation, a synonym dictionary, etc. Within this framework, expansion to other languages (English, Dutch) is perfectly conceivable and should be realized shortly. The lexicographic breeding ground, so to say, is firmly based on a functional approach. This means that user needs and didactic challenges are carefully considered, leading to the development of appropriate pedagogical solutions to a range of problems that users may encounter: such solutions will need to address communicative problems (by providing help with reading, writing, and translating), cognitive problems (by providing structured help with different aspects of the systematic learning process) and operative problems (by providing adequate instructional help with mental operations such as launching and practising exercises). Such customized assistance can be provided by task-specific paths and search routes.

#### 4.1. Better accessibility: 'less is more' from a user-driven perspective

The multiple access structures of the *BLF* are quite different from the paper-based lexicographic structures that are conventionally referred to as outer and inner access structures (see for example Bergenholtz and al. 1997 for a definition of those). The *BLF*'s access structures are truly task and problem oriented and based on the idea that the dictionary user has various extra-lexicographic needs, which can lead to a limited number of occasional or more systematic consultation or usage situations. We define six different user-driven situations, which correspond to six different types of extra-lexicographic needs:

- (1) The user wants *information* on a single word/multiword expression in the *target language* (box on the *BLF* homepage: 'Get information on...').
- (2) The user wants the *translation* of a single word/multiword expression in his mother tongue to a target language (Get the translation of...).
- (3) The user wants to *check* the use of an expression/word combination or a translation (Verify).
- (4) The user wants to *learn/acquire* the vocabulary of a foreign language (Learn).
- (5) The user wants to *practice* (Do (a lot of) exercises).
- (6) The user wants the system to *help* him with general text reception, translation and production problems (Help).

These six needs match the *communicative* (1, 2, 3 and 6), *cognitive* (4 and 5) and *operative needs* (5 (partly) and 6) described above.

We argue that the dictionary interface should reflect these consultation contexts, rather than reducing access to a small text box where the user may enter a word (or, less frequently, a multiword expression), which is the access structure common to almost all electronic dictionaries available on CD-ROM or on the web and which has clearly been inherited from paper dictionaries. In this traditional structure, the user's query generally results in a whole article being displayed. It is then up to the user to search for an answer to his question either by scanning the text or by using the dictionaries' or the browsers' 'find' function. More sophisticated query tools, based on various fields in the article, such as in the *TLFi*, do not seem to be very successful (Dendien and Pierrel 2003: 27). Clearly, an electronic dictionary could be, and should be, more flexible and user-friendly.

For this reason, the *BLF*'s homepage contains six boxes representing six possible reasons for consulting the dictionary. Sometimes these are split into smaller parts (e.g. because different information may be needed for single words (gender, morphology, meaning, etc.) than for multiword expressions, mainly their meaning).

Once the user has identified his specific consultation situation, he can move the cursor over the appropriate link in order to show a pop-up screen.



Leuven Language Institute

## Lexical Database for French (Base lexicale du français - BLF) - new site

(Almost) everything you always wanted to know about... French words

Interface

- [↻ In English](#)
- [↻ Coming soon](#)
- [↻ en français](#)
- [↻ in het Nederlands](#)

Get information on

a word

Get the translation of

a word to

**Get information on...**

this word/form:

Is it **le** or **la**?

Is it **spelled correctly**?

Is it **-als** or **-aux**?

Which **verb form** is it?

**Verb tenses and forms.**

Its **meaning**?

Other words with the **same meaning**?

Other words meaning the **opposite**?

A translation to ?

**Help us to improve this tool**

Did you find the information you needed?

**Did you find the information you needed?**

- \* use % as a wildcard
- = for more than 1 word > look for word combination/expression below
- = for words starting with a **capital** like Belgium, iPod, Toyota, Mandelb, fill in the word and click [here](#)
- gender of nouns
- le or la problème? -> fill in: problème

perso%nalité or perso%nalité -> fill in: perso% or perso%lité

plural or feminine noun and adjective forms

finals or finaux? -> fill in: final

coura or courai? -> fill in: cour%ai

puissions: which verb? which tense? -> fill in: puissions

all verb forms for a given infinitive: devoir, boire, faire, ...

§ appeler -> fill in: appeler

(near) synonyms: augmenter, croître, progresser, ...

antonyms: grand > < petit

**Figure 2:** Consultation situation 1 (cognitive needs). This figure appears in colour in the online version of the *International Journal of Lexicography*.

(Figure 2). On this screen, the user is asked to perform one of the following actions:

- to enter a word or multiword expression in the text box and to match his question with one suggested by the interface: is it *le* or *la*? (gender), what is the meaning of the word?, what is its translation?, how is it pronounced?, how to avoid errors on the use of synonyms?, etc. This list of questions has been inspired by Tarp (2008: 146ff) and Hausmann (1977: 144) among others and covers all items or fields which should be retrievable in a (learner's) dictionary. - (consultation situation 1, 2 and 4);
- to enter a word or multiword expression he wants to check the usage of. The inclusion of data from the *OPUS* parallel corpus website makes it possible to check translations not only to and from French, but also between other pairs of languages, which shows that one single framework could easily be used for several languages. - (consultation situation 3);
- to click on a link in order to extract structured data from the lexical database (e.g. a list of all adjectives placed before the noun). This application is useful for learners as well as for teachers developing course materials on a certain topic. - (consultation situation 4);
- to click on a link to launch an exercise on inflection morphology, word formation, word combinations, etc. - (consultation situation 5);
- to enter a whole text. - (consultation situation 6).

The last two applications are not limited to data accessibility but represent new modes of interactivity that will be elaborated in section 4.4.

In answer to each user query, the dictionary provides a limited amount of individually tailored information. Illustrating the 'less is more' principle, this approach reduces the need for dictionary skills, which most users do not really possess, to a minimum. Nevertheless, it is also possible to explore the dictionary in greater depth by opening a screen displaying the whole article or more specific information, thus creating multiple access paths.

#### 4.2. *Better data*

As users' needs may vary considerably, the *BLF* has to present a maximum of information on the target language, providing breadth as well as depth.

As far as breadth is concerned, the tool is designed to address quite simple queries (e.g. relating to the gender or plural forms of nouns) as well as more sophisticated questions such as the differentiation of synonyms by comparing their lexical profile (for comparable applications, see the Sketch Engine or Blumenthal 2006), the selection of the right word in a given context, or even questions at the crossroads of lexicography and grammar (e.g. adjective position).

As far as possible, the information contains a minimum of meta-language: the concept of *gender*, for instance, is illustrated by adding articles to the nouns: {*le, un, du, au*} *problème* and {*la, une, de la, à la*} *voiture*.

As far as depth is concerned, adding raw data from corpus analysis (e.g. the lexical profile of almost 13,000 words) and sentences with collocations extracted from a newspaper corpus of 25 million words allows us to offer a much richer description than what is contained in the electronic version of a paper dictionary.

#### 4.3. *What do we know about the user?*

An electronic dictionary should be customizable and flexible in terms of presentation language, level of information, modularity and interactivity (de Schryver 2003: 182-185). As indicated above, we have tried to adapt the *BLF* interface to what we believe to be the user's needs. But, in fact, do we really know how a user interacts with a dictionary outside well defined and restrictive research settings (Welker 2006)?

A number of studies have already been carried out on queries submitted to electronic dictionaries (de Schryver et al. 2006 and Měchura 2008), but more advanced tracing and logging systems should provide a clearer picture of the behaviour of dictionary users. Such a tracing and logging system has been implemented in the *BLF*, registering every query and click on the website in a database and thus recording complete look-up sessions for many users. We plan to make a synthesis of this data available on the web.

#### 4.4. *New interactivities*

One of the conclusions of de Schryver's article (2003: 189) on lexicographic dreams is that

If there is one single feature likely to be applicable to all EDs of the future, it is that they will stop functioning as stand-alone products.

The *BLF* does not only provide links to a large number of external websites in order to create a searchable network of lexicographic data, as was shown in 4.1., but it also illustrates new kinds of interaction between the user and the lexicographic tool by integrating the dictionary in the learning process through automatically generated exercises (4.4.1.) and by providing immediate context-sensitive help (4.4.2.)

**4.4.1 *Automatically generated exercises.*** One may question the usefulness of the lexical exercises added to the CD-ROM version of some learner's dictionaries.

In order to be really effective in the language acquisition process, such exercises should be much more systematic and should also offer sufficient feedback.

Verlinde, Selva and Binon (2005) show how an exercise module (*ALFALEX*) can be linked to a lexicographic tool in three steps. First, the relevant data are selected from the *DAFLES* (e.g. all collocations with a particular support verb (*poser une question*) or all nouns followed by a fixed preposition (*un abonnement à une publication*). Then, a fixed number of sentences containing these verbs or prepositions are selected and displayed as a gap-fill exercise.<sup>4</sup> Finally, the system corrects the user's answers and provides additional feedback, for example on other possible collocations with the verb (e.g. *poser sa candidature*) and the noun (e.g. *une question (restée) sans réponse*). Users can also save specific items in a personal dictionary or ask the system to present the same item in a new exercise. The intranet version of the learning platform also compares individual user scores on particular exercises to average scores.

**4.4.2 Context-sensitive help.** A major advantage of the WordGenie tool (*Compass CD-ROM*) or even the spell checker of a text processor is that it provides immediate help to anybody reading or writing a text, thus eliminating the need to open an application or to take a dictionary from a shelf. This represents the future for dictionaries and, more in general, for any reference tool: to offer immediate access to relevant information when this is requested. In the *BLF*, such tools are provided to assist reading and translation, and, in a 'beta' version, for writing.

The reading and translation aids allow users to submit texts which are then enriched with links to *DAFLES* web pages or any other web resource that may facilitate the decoding or translation process, as is illustrated in Figure 3. Any relevant information can be added to the pop-up window appearing when the user moves his cursor over one of the words in the text. Similar context-sensitive help is provided to assist translation.

A genuine writing assistant should allow the user to check his text on a number of items not covered by a regular text processor's spelling and grammar checkers. This application scans the text in order to identify and group all occurrences of a given linguistic problem (e.g. gender agreement, use of prepositions (see Figure 4), the 'subjunctif,' or the choice between the 'imparfait' and the 'passé composé' for French) and to match this information with information extracted from the lexicographic database or with grammatical information which could be provided for instance in a separate box to the right of the user's text. The following example shows the kind of information which could be taken from the lexical database (*attaque + contre*) when matched with the user's text (*\*attaque + sur*).

Contrary to spelling and grammar checkers, this application is a didactic tool, which is not designed to automatically correct mistakes. It only provides the user with the necessary tools to check (and edit) a text systematically.

## ReadAID - aide à la lecture

127 mots

Reprise des festivités du Nouvel\_an, soulagement des touristes, et réouverture des grands magasins, Bang put doucement à la normale, durant l' après-midi du 14 avril, après une nuit de troubles qui m...  
 reprene  
 -> sens  
 Encerl -> synonymes  
 Goverl ->  
 quarti  
 jourm  
 les "chemises rouges ", les manifestants antigouvernementaux retranchés à lège du gouvernement, ont mis un terme, en\_début\_d' après midi, à l' occupation du t par des barricades depuis trois semaines. Accompagnés par leurs partisans et des du mouvement se sont rendus eux-mêmes au siège de la police métropolitaine .

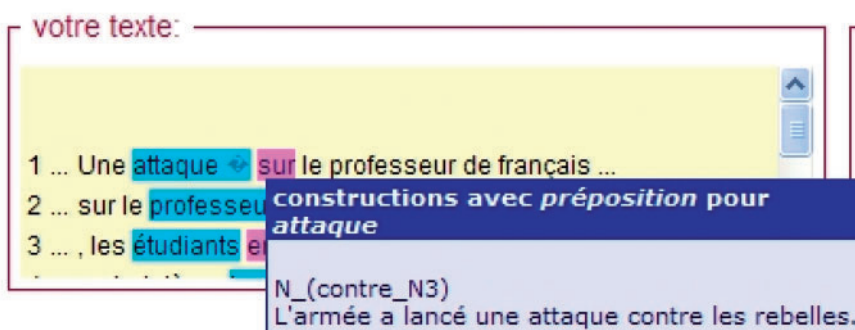
Analyt...  
 texte réalisés en 1.61 secondes

-> prononciation



**Figure 3:** Context-sensitive help – information to enable decoding of the word *reprise*. This figure appears in colour in the online version of the *International Journal of Lexicography*.

## nom/substantif, adjectif + préposition fixe



**Figure 4:** Context-sensitive help – encoding – fixed prepositions. This figure appears in colour in the online version of the *International Journal of Lexicography*.

## 5. Conclusions

We endorse de Schryver's view (2003: 188) that the Dictionary of the Third Millennium needs a sound theoretical basis. The theory we have used and developed in the practical applications presented here is based on the recognition of the dictionary as a reference tool providing needs-adapted access to lexicographic data. The *BLF*, as an example of a lexicographic tool or *leximat* or *adaptive hypermedia ED* (de Schryver 2003: 189), is firmly embedded in theoretical reflection on user needs (Selva and Verlinde 2002). This focus, combined with user-friendly access to well-structured data informs the *BLF*'s completely new interface, which differs considerably from the paper-based interfaces still used by almost all electronic dictionaries. While heeding Zaenen's caution (2002: 239, also quoted by de Schryver 2003: 190) that 'since dictionaries are seen as a kind of Bible, a change of their format might jeopardize this status', we hope that the lexicographer's dreams of 'more content, more flexibility and customization, more user-friendliness, better access and more connectivity with other sources of knowledge' (Sobkowiak 1999: 275) will meet the user's needs. This hope is well grounded. Rather than a lexicographic truism, the satisfaction of user needs is the theoretical core and the practical framework of the sound theory mentioned in our introduction. It is necessarily guided by the underlying recognition of lexicography as an independent discipline in the field of information and social sciences.

## Notes

<sup>1</sup> Alain Rey (2005: 53) defends a *toolified* theory of lexicography in which dictionaries are narrowly viewed as ‘linguistic instruments’, but he also recognizes the predominance of user-needs adaptation: ‘le dictionnaire [...] justifié seulement par les besoins auxquels il tente de répondre’ (‘the dictionary [...] which is only justified by the needs it is trying to meet’). The lexicographic triangle should not in any case be mistaken for the three-part approach to lexicography advocated by Pruvost (2006: 5-8), as the transformation of lexicographic tools should be exclusively user-oriented.

<sup>2</sup> Adding a fourth dimension, one could be tempted to refer to the notion of a ‘lexicographic lozenge’ or ‘diamond’.

<sup>3</sup> It is worth noticing that lexicographic serendipity was somehow foreseen by Rey-Debove (1971: 39): un dictionnaire où ‘l’on trouve ce qu’on ne cherche pas et où l’on ne trouve pas ce que l’on cherche’ (‘a dictionary that offers us information we are not looking for but does not provide us with the information we are really looking for’).

<sup>4</sup> In order to speed up the application, relevant sentences have been extracted from a newspaper corpus (25 million words) and stored in separated tables in the database, one for every topic with contextual exercises.

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