From the printed dictionary to the CD-ROM

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Reference books such as dictionaries have in common two characteristics that stand in sharp contrast to other printed books like novels or essays:

— There is a huge quantity of material (an average dictionary may contain the same volume of text as 50 or more medium-sized novels).
— The book is meant to be read by the same user repeatedly, but only for a very limited part of its content each time (while the traditional novel is generally read only once and from cover to cover).

As dictionaries are used in connection with the writing of texts and as texts are more and more written with the help of word processors, dictionary entries are therefore data which should be accessed electronically.

Until recently, the limitations of storage in microcomputers did not provide enough space to accommodate the entire text of such reference books. A floppy disk of 360 kilobytes was totally inadequate to cope with a 40-megabyte dictionary, and this even well exceeded the capacity of an average hard disk.

So the first so-called «electronic dictionaries» were in fact a mere list of headwords or word forms to be used as crude spelling checkers or as rudimentary dictionaries of synonyms.

With the development of CD-ROM technology offering storage capacity of nearly 600 megabytes, on-line access to an entire dictionary or even a whole range of dictionaries has now become a reality, and several monolingual and bilingual dictionaries are now sold on CD-ROM.

The search procedures of the electronic medium enable the computer user to get rid of the sequential order imposed by the alphabetical presentation on the printed page and to focus immediately on the desired entry. The order in which these entries appear on the screen is directed by the logical progress of the user’s thought processes and this makes the CD-ROM a very powerful and convenient tool.

But however useful they may be, such products may well fall short of users’ expectations.

Dictionary users think that each dictionary entry is a kind of short story in itself: the life and adventures of the headword told by the editor. In fact, the printed page contains elements of information about the headword which just happen to be placed side by side for the convenience of consultation but which bear no direct relation to each other. A user is hardly ever interested in all the components of the entry but will only look for one item of information at a time:

* Information about the spelling: How does one write the word? Are there alternative spellings? Is there a hyphen? Is there a feminine or a plural form?
* Information about grammar: What is the gender of this noun? Is it a transitive verb? What preposition is to be used?
* Information about pronunciation.
* Information about register: Is it archaic and/or colloquial?
* Information about synonyms, antonyms, derivatives.
* Information about meaning: Is it a polysemous word?

Beyond the isolated word, information about phrases and idioms which
are grouped under the headword for convenience but which may have no
direct semantic relation with it.

All information which is not relevant to the specific need of the user is parasitic
and causes a linguistic «noise». Yet all has to appear sequentially on the printed page
so as to give an exhaustive coverage of all aspects of the headword.

Let us take a practical example —at random—: the word CONFÉRENCE,
taken from the French monolingual dictionary: le GRAND ROBERT de la langue
française.

CONFÉRENCE [konferens] n. f. — 1464; lat. conferentia, «confrontation,
reunion», de conferre. = Conférer.

★ I. Vx. Action de rapprocher des objets pour les comparer. = Col-
laboration. La conference de plusieurs textes.

★ II. Mod. ★ 1. Conversation, discussion a caractère officiel ou
solenne. = Entretien; et (tam) palabre, parlote. Avoir une confé-
rence avec qqn. Tenir conference. = Conférer; négocier. Conference

Enfin, après plusieurs discours, voici où s'est réduit le résultat de notre conference.

MOLIÈRE, les Fourberies de Scapin, 115.

ils avaient avec le cuinier d'un petit restaurant réduit d'interminables conféren-
ces sur la composition du menu et la confection des plats.

PIERART. À l'ombre des jeunes filles en fleurs. PL. I. p. 682.

★ 2. Réunion de travail (dans une entreprise). Être en conference.
⇒ Réunion (en).

Quand je leur téléphone, ils sont en Conference ou ils reçoivent quelqu'un, et quand
ils me reçoivent ils ne cessent de téléphoner.

Pierre DANNIÈRES, Un certain Monsieur Blot. p. 21

(...) il me serait difficile de dire avec exactitude le nombre de conférences aux-
quelles j'ai été convoqué depuis mon entrée dans la maison. Six mille, approxima-
tivement. Ces six mille conférences, d'une durée moyenne d'une heure, n'ayant le
plus souvent pour résultat que d'inciter les participants a repousser la question, sous
une autre forme, lors d'une nouvelle conference à l'échelon supérieur, on peut éva-
luer le temps perdu à près de trois ans.

Pierre DANNIÈRES, Un certain Monsieur Blot. p 30

★ 3. Assemblée de hautes personnalités discutant d'un sujet impor-
tant. ⇒ Réunion, congrès, conseil. Conference politique, diplomatique,
internationale. = Pourparler. Conference pour la paix
(⇒ Apposer, cit. 2). Conference à quatre. — Conference au som-
met. ⇒ Sommet. Participants à une conference internationale.
⇒ Conférent.

(...) on rêve d'une Conference où les cinq grandes puissances maritimes et pacifi-
ques (...) ne se préoccupaient que de définir les forces navales nécessaires pour
sauvegarder l'ordre, la tranquillité et la justice dans le monde. Malheureusement
ce n'est pas ce que nous suppose la Conference de Londres.


Réunion de personnes discutant un sujet en commun. Conference
religieuse, théologique. = Conference de médecins. = Consulta-
tion. Conference d'étudiants, sous la direction d'un maître de confé-
Conference d'une société savante, conference scientifique. = Collo-
que, congrès, table (ronde).

Conférences de Saint-Vincent-de-Paul, société pieuse de bienfai-
sance.
CONFÉRENCE

The entry contains:
* the headword;
* the phonetics;
* the part of speech (n.f. = nom féminin);
* the etymology (the word appeared in 1464);
* the definitions of the various senses;
* phrases;
* synonyms;
* citations from French authors;
* a derivative at the end.

The whole entry contains some 72 lines, i.e. three times what a normal 24-line screen can accommodate. This would inevitably result in a clumsy unsightly piece of text being scrolled up and down, lacking the elegance of the layout on the printed page. Most of the typographical distinctions which help structuring the printed entry would be poorly rendered. The cluttered screen would soon get unmanageable.

How can all this information be sorted out and made usable?

This paper purports to illustrate all these points by showing practical examples taken from the actual creation of an electronic dictionary on CD-ROM. The experiment was carried out by a team of lexicographers, phoneticians and computer scientists using the typesetting tape of le GRAND ROBERT.

The basic assumption behind the work has been that merely putting the printed text on the screen was a very poor way of exploiting the power of the computer. The lexicographic material has been used as raw material. It had both to be kept unaltered for content but heavily processed in its form. The exhaustive coverage of the French language described in the nine volumes of the dictionary was so far reserved for language experts, writers and educated readers. The aim has been to enable the most unsophisticated user (i.e. the majority of the public) to find the answer to his or her questions quickly and efficiently.

The following screen printouts will illustrate the treatment of our example: CONFÉRENCE through the various phases of the search procedures.
At the start of the search, users are placed in front of a screen which contains the beginning of the headword list:

By hitting the ENTER key, users are placed before an abridged version of the entry, which shows the main semantic divisions together with their principal definition. It is usually contained within a single screen, which permits a quick overview of the essential constituents:
CONFÉRENCE [kofeRâs] n. f.

I. Vx. Action de rapprocher des objets pour les comparer.

II. Mod

1. Conversation, discussion à caractère officiel ou solennel.

2. Réunion de travail (dans une entreprise).

3. Assemblée de hautes personnalités discutant d'un sujet important.

4. (1680. Théol.). Discours, causerie (où l'on traite en public une question littéraire, artistique, scientifique, politique).


6. CONFÉRENCE DE PRESSE : réunion où une ou plusieurs personnalités s'adressent aux journalistes et répondent à leurs questions.

The bottom line shows a menu. By pressing the corresponding keys, further information can be accessed in windows which open and can be closed by the ESCAPE key. The etymology can thus be looked up:

CONFÉRENCE [kofeRâs] n. f.

I. Vx. Action de rapprocher des objets pour les comparer.

II. Mod

1. Conversation, discussion à caractère officiel ou solennel.

1464; lat. conferentia «confrontation, réunion», de conferre. - Conférer.

s'adressent aux journalistes et répondent à leurs questions.

The synonyms, which are scattered throughout the entry on the printed page have here been grouped in one window. These synonyms and related words make up an analogical database containing over one million words:
CONFÉRENCE [kôferas] n. f.

<table>
<thead>
<tr>
<th>MOT</th>
<th>Abrégé</th>
<th>Détailé</th>
<th>Étymologie</th>
<th>Citations</th>
<th>Syn./Ana.</th>
<th>Hom./Dér.</th>
</tr>
</thead>
</table>

The citations are grouped in another window. The rest of the text can be scrolled up with the arrow key.

CONFÉRENCE [kôferas] n. f.

I. Vx. Action de rapprocher des objets pour les comparer.

II. Mod

I

1. Enfin, après plusieurs discours, voici où s'est réduit le résultat de notre conférence.
MOLIÈRE, les Fourberies de Scapin, II, 5.

1.1 Ils avaient avec le cuisinier d'un petit restaurant réputé d'ininterminables conférences sur la composition du menu et la confection des plats.

1.2 Quand je leur téléphone, ils sont en conférence ou ils reçoivent quelqu'un, et quand ils me reçoivent ils ne cessent de téléphoner.
Pierre DANINOS, Un certain Monsieur Blot, p. 21.

The search can be made on the whole entry or on each semantic division in order to get the corresponding subset of information. It is also possible to access the full (detailed) version of each semantic division. Here is the detailed version of meaning number 3:
CONFÉRENCE [kɔfeʁã] n. f.

1


2


In this instance, the citation which was present in the printed version has only been indicated by its reference number [2] so as not to make the screen look too complex. By hitting a key, the full text of it can of course be called up immediately. By hitting another key, the detailed version of the whole entry can appear and be scrolled up. At every step of the search, the program lets the users choose the degree of complexity they want. This creates a dynamic interactive look-up. Users have only to blame themselves if what they are getting is too much for what they can cope with!

As the text is being read, further investigations can be carried out by placing the cursor on any letter of a word in a definition, a citation or a set of synonyms and by pressing the ENTER key. The abridged version of the chosen word immediately appears on the screen. The operation can be repeated indefinitely. Users are therefore free to wander through the tens of thousands of entries of the dictionary without reverting to the headword list search.

Other modules have been implemented. They provide new means of accessing the information, which were unthinkable in the printed version.

The classical problem of finding words whose spelling is not known has been dealt with thanks to the development of a phonetic tool. It automatically converts the string of letters which is entered at the keyboard into its phonetic transcriptions. This phonetic transcription is then matched against the phonetic transcriptions of all the dictionary entries which have been stored in a file. When one match is found (or several matches in cases of homophony), the correct spelling is displayed:
Other searches can be made on the headword list using the usual wild cards (where ? stands for one unknown letter and * stands for any string of unknown letters). The following screen displays in a split second the thirteen French entries ending in «FÉRENCE», thus performing the function of a dictionary of rhymes and of a dictionary of suffixes:

The following screen performs the function of a crossword search on the set of ten-letter words following the pattern «CONF???????E»:
Each French verb takes roughly fifty forms when it is conjugated. This makes a list of some 450,000 forms which can never be mentioned in a printed dictionary. Thanks to an automatic conjugation tool, the entire conjugation of every verb can be displayed in successive windows:

All this information is accessed directly from within any word processor by hitting the relevant keys. Pieces of a definition or citation can be stored, correct spellings checked and synonyms or conjugated forms chosen to be immediately pasted into the document which is in the process of being written.

Another module has been created to offer users the possibility of searching through the 160,000 citations which are scattered in the text. They have been grouped in a separate file, with the indication of the author and of the title of the work. Thanks to logical operators: **ET - OU - SANS** (AND - OR - WITHOUT) several levels of selection can be made on authors and titles, and restrictions imposed on combinations
of words. Here is one of the 39 instances of the word CONFÉRENCE found in the citations. The truth of it is left to everyone’s appreciation:

Après ma conférence, je mangeai du homard entre deux messieurs amidonnés et c’est si fatigant de s’ennuyer qu’en rentrant à l’hôtel je montai directement me coucher.
S. DE BEAUVIRI, les Mandarins, p. 302.

As a concluding remark, may I suggest one of the 1,307 citations by Jean-Paul SARTRE, taken from 35 excerpts from LA NAUSÉE, which I hope won’t be considered as the logical outcome of this presentation:

Tout existant naît sans raison, se prolonge par faiblesse et meurt par rencontre.
SARTRE, la Nausée, p. 169.