

# GFL



*German as a foreign language*

**German dictionaries for the PC.**  
**A survey from the perspective of the language learner**

Chris Hall, Leicester/Tampere

## German dictionaries for the PC.

### A survey from the perspective of the language learner<sup>1</sup>

Chris Hall

Twelve electronic German dictionaries (bilingual, multilingual and monolingual) are tested and compared for their performance under a number of headings: information content, on-screen presentation of material, incorporation of hypertext and multimedia features, search facilities, interactive features, use with other applications, use of dictionaries together, and price. There are enormous differences in approach and quality between the various dictionaries, but the best of them are extremely powerful linguistic tools which can be utilised by language learners in a variety of ways. Details of each dictionary's features and performance are included in an appendix.

#### 1. Introduction

Dictionaries have a long tradition. The oldest surviving German book, *Abrogans* (written in Freising in the second half of the 8th century), was a dictionary, or more accurately a list of Latin words with their translations into Old High German. The continuous dictionary tradition does not go back so far, but from the late Middle Ages a large number of dictionaries have been produced, including those by Dasypodius (1536), Adelung (1774-86), Jakob and Wilhelm Grimm (1852-1960) and Konrad Duden (first published in 1880). Dictionaries belong to the most heavily used and commonly purchased books, and nowadays most households own one.

Dictionaries can be used for different purposes. Bruton (1999:1) draws the principal distinction between “learning and communicative use”, but within these categories we can further distinguish between receptive and productive use, use for spoken or written language, and use in various special fields. This has led to different types of dictionaries for special purposes: learners’ dictionaries, pronouncing dictionaries, pocket dictionaries, etc., as well as general dictionaries, which try to cover as wide a set of circumstances as possible.

With paper dictionaries, the order of the material clearly has to be fixed. Ever since the earliest dictionaries, the entries have been placed in alphabetical order. There are exceptions to this, such as thesauri and dictionaries of synonyms, in which material is organised according to semantic

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<sup>1</sup> An earlier version of this paper was presented to EUROCALL 99, Besançon, France, September 1999. All the URLs quoted here were correct on 8.8.00.

criteria, but these have been a very small minority. Alphabetical order has the advantages of simplicity and familiarity, but it also has its disadvantages, as Rossner observes:

There is no doubt that the time-honoured recourse of arranging entries alphabetically has serious disadvantages for many users who are interested in the differences in meaning between related words. At present such users have to buy a second book and will presumably continue to be ill-served in this way until micro-computers come with large enough memories (and small enough price tags) to compete with multi-book (and costly-to-update) systems of reference. (Rossner 1985:96)

Just a few years after this was written, personal computers with the necessary power were widely available at affordable prices, and in the 1990s a large number of electronic dictionaries came onto the market. The flexibility of the computer has been used in different ways by different dictionary manufacturers, leading to a variety of products which offer far more than just freedom from a fixed alphabetical order. In the best cases they are highly versatile linguistic tools.

The purpose of this study is to compare the different solutions adopted in a number of existing products in order to come to a judgement on the best practice currently available and to see where improvements are still needed, paying particular attention to the needs of the language learner.

Three general points should be made before I proceed to the detailed analysis:

1) At present, electronic dictionaries are used almost exclusively in conjunction with written language, which is the classic domain of the computer. This situation is already changing, of course, and with the rapid development of speech recognition technology the computer is being used increasingly in conjunction with spoken language. This means that in the future the needs of users in spoken language will have to be taken more and more into account<sup>2</sup>.

2) Even within written language, different user groups have different needs, and a dictionary which is adequate for some purposes may not necessarily equally useful for others. One factor is the native language of the users, as Neth and Müller (1997:117) observe:

Für jedes Sprachenpaar sollte es genaugenommen zwei Sätze von Wörterbüchern geben. Ein deutsch-englisch/englisch-deutsches Wörterbuch für deutsche Muttersprachler soll helfen, bekannte deutsche Wörter in die Fremdsprache zu übersetzen und zum Verständnis eines fremden Textes beitragen. Für

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<sup>2</sup> Attention has already been given to dictionaries which better serve the purposes of spoken language, e.g. the 'phonetic-access dictionary' described by Sobkowiak (1994). This is an electronic dictionary in which learners can access words by pronunciation, using phonetic transcription. Speech recognition technology may soon allow access even more directly, via the spoken word. Hand-held dictionaries are also far more likely to be used with spoken language than dictionaries on desktop or laptop computers, see footnote 4 below.

Englischsprechende müssen jedoch mehr Informationen über die Verwendung der fremden deutschen Wörter enthalten sein: dafür müssen die englischen nicht so ausführlich erläutert werden.

In fact, large scale dictionaries have usually attempted to cater for speakers of both languages, e.g. by providing information on grammar and usage of both languages and information on the pronunciation of all, or all irregular, words. This is also encouraged by commercial considerations, as it gives the publishers access to both markets. Electronic dictionaries are potentially better suited to giving general coverage than paper dictionaries because of their capacity for filtering out unnecessary information (even though existing dictionaries do not make use of this capacity, see point 3(e) 'Interactive features' below). None of the bilingual dictionaries examined for this study was less adequate for the needs of English-speaking learners of German than for German-speaking learners of English.

3) I only looked at dictionaries on CD-ROM which run on PCs. Some of these dictionaries also have Mac versions, but others do not, and this seems to be one area in which developments for the Mac have lagged behind the PC.

## **2. Advantages and disadvantages of electronic dictionaries**

Electronic dictionaries have both advantages and disadvantages in comparison with paper dictionaries:

### **a) Advantages**

- Speed and convenience when working on a computer;
- Ease of cross references, both within one dictionary, e.g. the two halves of a bilingual dictionary, or between two dictionaries, e.g. a bilingual and a monolingual one;
- Different types of searches are available, e.g. browsing, full text search, fuzzy search;
- The potential to use the data in the dictionary for other purposes, e.g. vocabulary learning aids;
- Results of searches can be printed out or copied into a document on a word-processor;
- Entries can be modified (added to/corrected). A dictionary can thus be treated as a project rather than a finished product, which is not really possible with printed dictionaries.

- Multimedia features can be included, esp. sound, but also video for movement;
- They take up little space on bookshelves;
- Price (potential long-term price, with upgrades)<sup>3</sup>.

## b) Disadvantages

- A computer is needed to work with them (this rules out certain types of dictionaries, e.g. pocket dictionaries and phrase books for tourists<sup>4</sup>);
- Price (current, initial price);
- The uncertainty of the medium (how long will CD-ROM be the standard?)<sup>5</sup>;
- It is not possible to test them before purchase. This is a considerable disadvantage for the more expensive dictionaries, but none at all for the free products. It adds to the importance of reviews and comparative studies like the present one.

It will be seen that the list of advantages is considerably longer than the list of disadvantages. However, this does not necessarily mean that electronic dictionaries are superior, as the disadvantages, although small in number, may be serious for some users. Many of the points mentioned above will feature in the detailed comparison below.

## 3. Features of electronic dictionaries

In spite of the promise of the new medium, a number of electronic dictionaries have had a remarkably short life, including one of the early market leaders, *Harrap's Multilingual Dictionary*, which is no longer available. The *Collins Series 100 Multilingual Dictionary on CD-ROM* is still available, but although it worked satisfactorily for me in Windows 3.1, it did not run in Windows 95 or later versions. As these are now the most common platforms and the publisher has no plans

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<sup>3</sup> Encyclopaedias are already much cheaper on CD-ROM than in book form, see Schult (1999).

<sup>4</sup> For these purposes there are now separate hand-held dictionaries, which have not been included in this study, e.g. *Pocket Language Teacher* for palm-size PCs (website [www.languageteacher.com/](http://www.languageteacher.com/)) or Franklin's *Bookman* series (website [www.bookman.de/](http://www.bookman.de/)).

<sup>5</sup> Langenscheidt is preparing a new edition of the 4 volume 'Muret-Sanders' English-German, German-English Dictionary, which it intends to publish in book form and as a CD-ROM, "as long as CD-ROM is still the standard when the work is completed" (Vincent Docherty, personal communication).

to update this product or bring out a new one, I did not include the *Collins Dictionary* in the present study.

There is now a large number of technical and specialist dictionaries on the market. For this study I have restricted myself to general dictionaries, as these are the most useful to language learners<sup>6</sup>:

### **1 Bilingual/multilingual dictionaries**

Langenscheidts Handwörterbuch Englisch (PC-Bibliothek)

Oxford Duden German Dictionary on CD-ROM

Bertelsmann's Euro-Wörterbuch

Euro Dictionary

Euroglot

WinDi

### **2 Monolingual dictionaries**

Duden Universalwörterbuch A-Z (PC-Bibliothek)

Wahrig Deutsches Wörterbuch

Duden Rechtschreibung (PC-Bibliothek)

### **3 Pop-up dictionaries**

Babylon

QuickDic

Langenscheidts Pop-up Wörterbuch XL

Some of these are computerised versions of existing dictionaries from established publishers such as Langenscheidt, Oxford University Press and the Bibliographisches Institut (Dudenverlag). In

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<sup>6</sup> For details of further electronic dictionaries of German see the reviews in *c't, Magazin für Computertechnik* (website: [www.heise.de/ct/](http://www.heise.de/ct/)): Leckebusch (1995), (1997) and (1998), Neth/ Müller (1997) and Neth/Swanson (1999).

these cases, an interesting question is to what extent they have simply fed their printed texts into the computer (resulting in a paper dictionary on the computer) or whether they have utilised the full potential of the computer in their electronic products. In cases where there is no experienced dictionary publisher behind a product, one important question concerns the quality of the lexicographical material.

I have included two dictionaries which are available free on the Internet in order to see how they compare with commercial products and whether they are worth using. Of course, many users may find a free dictionary useful even if it does not come up to the standards set by commercial publishers.

In what follows, information on various aspects of the dictionaries is presented under a number of headings. The treatment of individual dictionaries is deliberately selective here. A systematic description of the dictionaries examined is contained in summary form in Appendix A.

#### **a) Information content**

**Size of vocabulary:** Almost all the manufacturers give a figure for the number of entries or headwords contained in their dictionary, but these are difficult to compare, as they are expressed in rather vague terms, e.g. “rund 220 000 Stichwörter und Wendungen” (*Langenscheidts Handwörterbuch*) or “over 260,000 words and phrases” (*Oxford-Duden*). Presumably this means approximately half this number for each language, but exactly how words and phrases are counted is not made clear. E.g. is the word ‘term’ counted only once, even though the entry is divided into 14 sections in *Langenscheidts Handwörterbuch* and 11 in the *Oxford-Duden*?<sup>7</sup>

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<sup>7</sup> Most of the dictionaries aim for a broad coverage of vocabulary, but *WinDi* offers a bold justification for its very limited vocabulary:

The dictionaries contain more than 40,000 words [...] In fact, there are 29,000 ‘general’ words, and 11,000 ‘specialized’ words, belonging to several fields, namely finance, business, stock exchange, insurance, accounting, etc. [...] The ‘basic’ *WinDi* database cannot contain all the necessary words belonging to hundreds of possible specialist fields of activity! The database would be gigantic, and its price exorbitant. For your information, the French academy established that the French language contains 35,000 general words (technical words not included). This makes *WinDi* an excellent general dictionary, whose aim is to open communication gateways [...] (*WinDi* on-line Manual, Chapter 10: Frequently asked questions, 10.10) However, far from being “an excellent general dictionary”, *WinDi*’s limitation to the core vocabulary means that it is unusable in all but the most basic of situations. Unsurprisingly, it performed extremely poorly the word tests carried out for this survey (see Appendix A).

The most reliable way to gauge both the number and the quality of the entries is to subject each dictionary to a detailed word test. For this purpose I have used the well-thought-out general word test of 100 items in Neth/Swanson (1999:103), augmented by two tests of my own (see Appendix B below). The results of these tests are included in Appendix A. Neth and Swanson's test was only suitable for bilingual dictionaries, as it contained both German and English words. The best performers were *Langenscheidts Handwörterbuch* (91/100) and the *Oxford-Duden* (81/100), and *Langenscheidts Pop-up* dictionary (which is based on the *Handwörterbuch*) also performed well with 75/84.

**Detail of entries:** The number of entries alone does not give us a reliable indication of the coverage a dictionary provides. There is enormous variation in the amount of information given in each entry, from a single word to several pages of explanations including details of meaning, pronunciation, grammar, usage and idioms (see figures 1 -4 below).

**Use of examples:** In general, the larger dictionaries of established dictionary publishers like Langenscheidt, OUP and the Dudenverlag are the only ones able to provide a substantial number of examples. The very brief dictionaries (e.g. *Euro Dictionary*, *QuickDic*, *WinDi*) give no examples at all. There has been some recent discussion of the role of examples in dictionaries, and it may be that their usefulness varies with different linguistic tasks<sup>8</sup>, but I doubt that many language teachers or learners would like to do without them. It is not only the number, but also the choice of examples which is important. In her study of the *Longman Dictionary of Contemporary English*, for instance, Nesi (1996) shows that the dictionary does not always give sufficient or appropriate examples. I was not able to test the appropriateness of the examples in the German dictionaries under review, but clearly it is an aspect which all dictionary makers need to look at carefully in further developing their products.

**Current vocabulary:** In order to establish whether the vocabulary in the dictionaries been adapted and brought up to date for the new medium, or whether existing material from paper dictionaries has been used, I used two tests on neologisms (20 items) and computer terminology

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<sup>8</sup> Black (1991:149) concludes that examples are "the primary information for recognition tasks". On the other hand, Nesi (1996) found that examples in dictionary entries did not significantly affect the success of learners in using new words correctly. However, this is a relatively small-scale study, and the author herself admits the possibility that the research method used "did not accurately assess the part examples played in developing subjects' understanding of word meaning, as opposed to word use" (Nesi 1996:202).



(20 items), both fields which are not usually covered well in paper dictionaries and yet which will presumably be of special interest to users of electronic dictionaries. They expect an up-to-date product for a technologically advanced platform, and all users of these dictionaries are by definition computer users.

The best of the bilingual dictionaries was again *Langenscheidts Handwörterbuch* with 9/20 and 12/20. Among the monolingual dictionaries the *Duden Universalwörterbuch* achieved scores of 16/20 and 13/20, ahead of *Wahrig* (10/20 and 11/20) and *Duden Rechtschreibung* (13/20 and 10/20), although in the case of the latter it must be remembered that it is a spelling dictionary and sometimes the entry consists solely of the headword in question with no additional information at all. *Langenscheidts Pop-up* dictionary includes over 700 'Internet terms', so its good score of 15/20 on computer terminology was to be expected, but in fact it was outperformed in this respect by the free *Babylon* pop-up dictionary with 16/20.

**Availability of updates:** It is now common for multimedia encyclopaedias to offer not only Internet links but also downloadable monthly updates (*Encyclopaedia Britannica*, *Encarta*, etc., see Schult 1999). Even some general (i.e. non-IT) publishers provide upgrades on their websites, e.g. *Lonely Planet* guidebooks<sup>9</sup>. It is therefore disappointing to see that only two of the dictionaries examined (*Babylon* and *WinDi*) come with updates, which are an excellent way for them to keep up with the rapid developments in vocabulary<sup>10</sup>.

## b) On-screen presentation of material

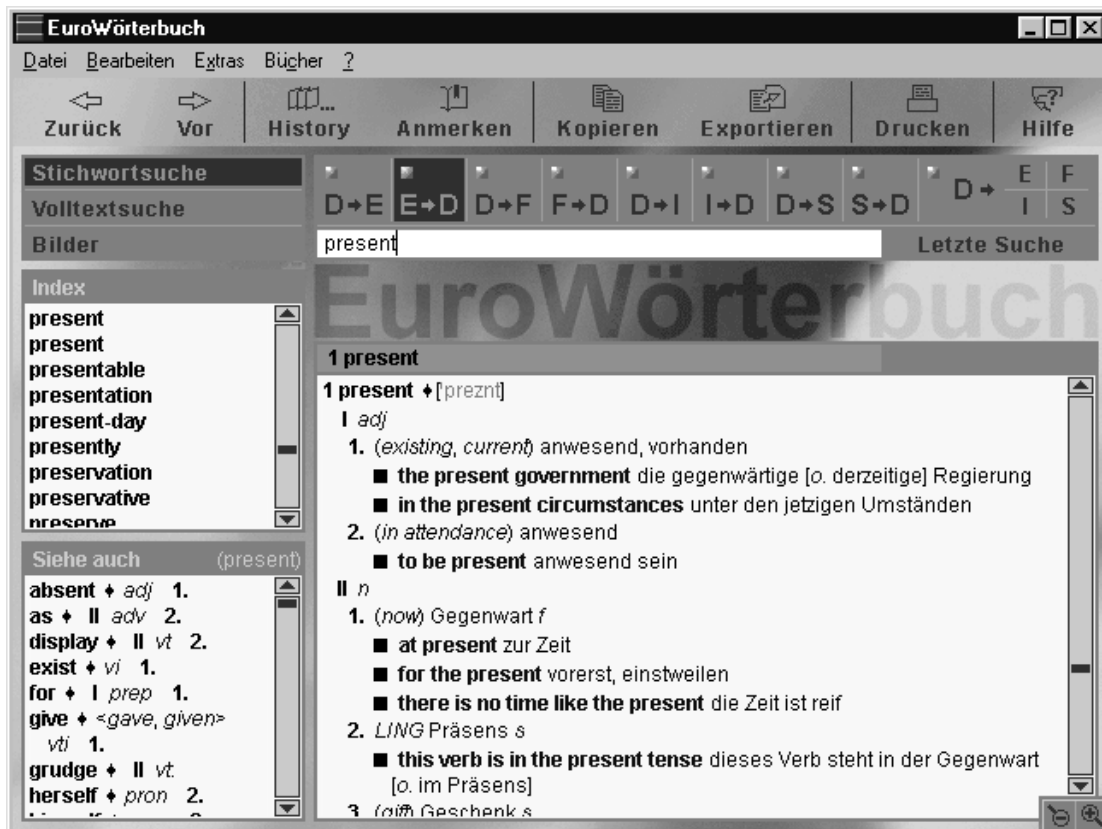
**Screen layout and readability:** In printed dictionaries, space is at a premium and readability almost invariably suffers. In electronic dictionaries there is no need for cramped presentation, yet some of the traditional dictionary publishers seem to carry over the layout of their printed dictionaries onto the screen. The screen layout of *Langenscheidts Handwörterbuch* is packed full of information (see Fig. 1), and is only saved by a good use of bold and italic fonts.

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<sup>9</sup> See [www.lonelyplanet.com/upgrades/index.htm](http://www.lonelyplanet.com/upgrades/index.htm).

<sup>10</sup> Storrer (1998:126) discusses the problems of utilising updates in conjunction with reference works on CD-ROM, in particular that updates are difficult to store as they cannot be written to the CD-ROM (at least at present). However, this is not a problem for the dictionaries discussed here, as they are all designed to be downloaded to the hard disk, and most advanced dictionaries allow for additions and alterations on the part of the user anyway.

The *Deutsches Universalwörterbuch* has similarly packed screens, but with a less structured screen (e.g. less use of bold typeface). The entries in *Bertelmanns Euro-Wörterbuch*, which is a smaller dictionary and contains less information, are better spaced-out, see Fig. 2:

Fig 1: Langenscheidts *Handwörterbuch* entry 'gehen' (part)Fig 2: Bertelmanns *Euro-Wörterbuch* entry 'present'

**Structure of entries:** Long entries need to be well-structured and to provide labels giving an indication of the subject fields in which words are used, register, connotations, etc. An example of good structure is the *Oxford-Duden* dictionary, see Fig. 3:



Fig 3: *Oxford-Duden* entry 'Ton' (part)

The most unusual of the dictionaries examined here is *Euroglot*, which is not so much a multilingual dictionary as a multilingual thesaurus, see Fig. 4.

**Use of abbreviations:** An important space-saving device in printed dictionaries is the use of abbreviations. With the enormous storage capacity of CD-ROMs, it is not necessary to use abbreviations at all in electronic dictionaries, which is the approach taken e.g. by the *PC-Bibliothek*. A different solution is adopted by *Bertelsmann Euro-Wörterbuch*, which does use abbreviations e.g. for grammatical information, but provides a full version and translation in a pop-up window at a click of the mouse. Abbreviations not only affect the readability of the text, they also affect the way in which searches can be done, see 'full text search' below.

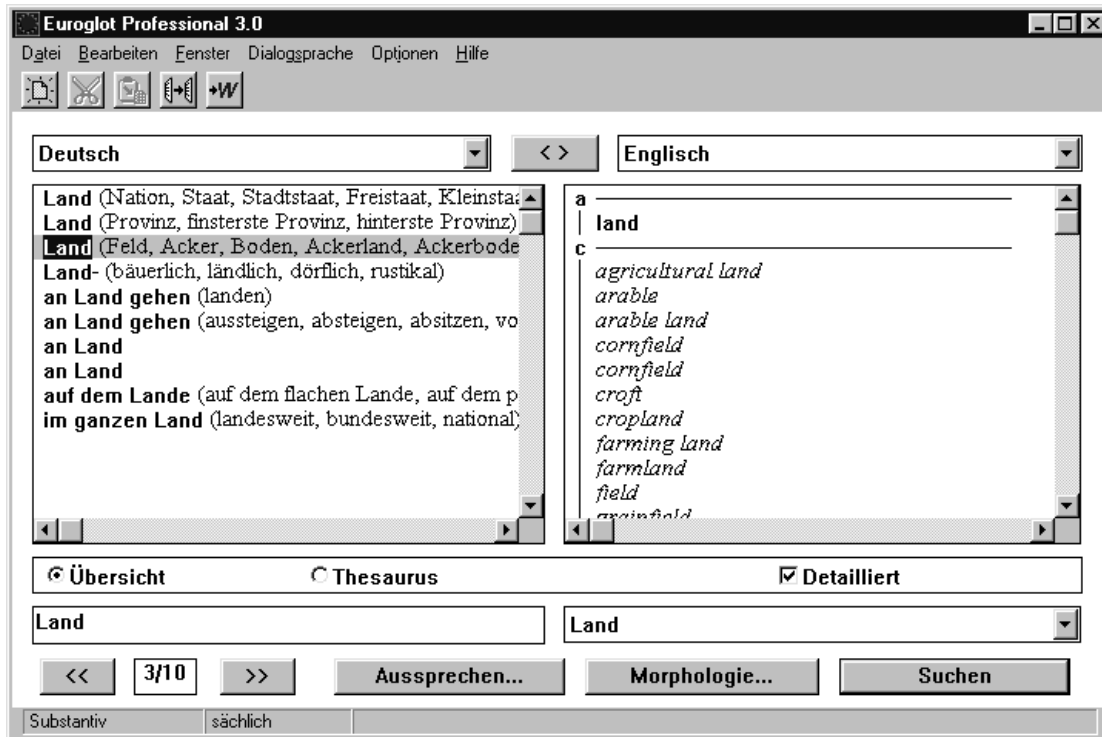


Fig 4: Euroglot entry 'Land' (part)

### c) Incorporation of hypertext and multimedia (hypermedia) features

**Hyperlinks:** It is the concept of hypertext which makes electronic dictionaries such powerful tools and gives them their real advantage over printed dictionaries. Texts, e.g. dictionary entries, are no longer restricted to a linear order, but can be connected via hyperlinks which enable the user to jump from one text to a precisely determined point in another. The best electronic dictionaries make superb use of this facility, e.g. the dictionaries in the *PC-Bibliothek*, in which a double click on any word in an entry will bring up the relevant headword. For example, from the entry 'Alter' in *Langenscheidts Handwörterbuch* a double-click on 'age' or 'seniority' will take the user to the entries for these words in the English section of the dictionary. *Bertelsmanns Euro-Wörterbuch* has the same facility, although in this case it tends to show just how many words are missing in the other half of this much smaller dictionary. The *Oxford-Duden* has a less convenient way of doing the same thing (highlighting the word and then clicking on a button). These hyperlinks are particularly important in bilingual dictionaries, as they enable users (a) to look up any unfamiliar words in the entry they have brought up on screen, and (b) to bring together the

information in both halves of dictionary, thus enabling them to check which of a number of possible translations is the most suitable. This is something which has always been regarded as desirable, but which is very time-consuming with printed dictionaries.

**Sound:** Multimedia involves a combination of text, sound, graphics or pictures and video. A combination of these elements with hypertext is referred to as hypermedia. After hypertext, the most important aspect of hypermedia for electronic dictionaries is sound, which is essential for an adequate treatment of pronunciation. Printed dictionaries use various transcription systems to indicate pronunciation, but these have always been problematical, either because the systems themselves are not very satisfactory (e.g. the ones used by many American dictionaries) or because many users were not familiar with them, as is the case with the IPA transcription. It is somewhat surprising that the electronic dictionaries do not show more enthusiasm for this aspect of multimedia. Full sound for all headwords is offered only by *Bertelsmann Euro-Wörterbuch* and *Euroglot* (the latter on extra CDs). *Wahrig* has sound for 8,000 “difficult loan words”, the *Euro Dictionary* has sound for all the phrases it contains, and there is a add-on sound component for *WinDi* (which was not available for testing). None of the other dictionaries, including the most comprehensive bilingual dictionaries, have any sound component at all.

**Graphics/pictures:** At present there is even less interest in graphics and pictures than in sound, which again is surprising as many printed dictionaries contain pictures and drawings. The only exception among the dictionaries examined is *Bertelsmann Euro-Wörterbuch*, which has a small, 40 screen, pictorial dictionary for all languages, see Fig. 5:



Fig 5: Bertelsmann *Euro-Wörterbuch* graphics screen

**Video** would be desirable for movement, e.g. dance steps, gymnastic exercises, sign language (cf. Storrer 1999:110). The *Longman Interactive English Dictionary*, an electronic learner's dictionary of English, contains eight short video sequences depicting scenes from everyday life, but none of the German dictionaries under scrutiny here include video.

#### d) Search facilities

Various types of search are possible in electronic dictionaries:

**Browsing** is the electronic equivalent of looking up a word in a paper dictionary, searching through a list of entries until the right one is located.

**Headword search:** The facility contained in electronic dictionaries which really speeds up searches is the ability to type in a headword and go straight to the entry. In fact, as the word is typed in, the dictionary searches through the list of entries and usually locates the right one before the word is complete, making the search even faster. All the dictionaries (except two of the pop-up dictionaries, see below) offer these two basic types of search. In the simpler ones these are the only two search types available.

**Full text search:** This is a very useful facility, because it quite frequently happens that a word which is not a headword in its own language is used in examples or in defining a word of the other language. E.g. ‘gridlock’ does not form a headword in the English section of *Langenscheidts Handwörterbuch*, but it does occur as the English translation of the German word ‘Verkehrsinfarkt’, and is successfully located in a full text search. A full text search cannot work properly if there are abbreviations in the entries, as is common practice in paper dictionaries. This is a further important reason for avoiding abbreviations.

**Fuzzy search:** A fuzzy search finds not only the exact word typed in, but also near misses. This is useful if the user is not completely sure about the spelling of a word, e.g. ‘decipher’. The spellings ‘desifer’ and ‘decypher’ produced 53 and 86 suggestions respectively in *Langenscheidts Handwörterbuch*, including the word I was looking for. The fuzzy search does not always work, of course, and sometimes comes up with bizarre results, e.g. a search for ‘Schaltfläche’ resulted in ‘Kältewelle’. Of the dictionaries examined here, fuzzy searches are only available in the *PC-Bibliothek* and the *Euro Dictionary*, although the *Babylon* pop-up dictionary has a similar facility, making suggestions if a work is incomplete or incorrect.

**Wildcards:** The most common wildcards are ‘?’ for one character and ‘\*’ for any number of characters (including zero). This is useful if one is unsure about spelling, e.g. ‘dec?pher’, but also when searching for a family of words. For instance, the search for ‘\*ciph\*’ in the *Oxford-Duden* came up with not only ‘cipher’ and ‘cypher’, but also ‘decipher’, ‘encipher’, ‘indecipherable’ and ‘undecipherable’, as well as some entries which contain the string ‘ciph’ such as ‘distinguishable’ and ‘interpret’.

**Inflected forms** such as ‘nimmt’ from ‘nehmen’ and ‘geschwommen’ from ‘schwimmen’ are always a problem for dictionary makers. The most common inflected forms have entries of their own in larger dictionaries, usually simply referring the reader to the main entry. Not surprisingly,



the monolingual dictionaries are much more successful at locating inflected forms than bilingual ones, but those dictionaries offering a full text search clearly have a much better chance of finding inflected forms, as they can search the complete text of the dictionary and are not limited to headwords. A particular strength of *Euroglot*, which was not among the top performers overall, is its impressive ‘morphology recognition and generation facility’ covering all the inflected forms of every single word in the dictionary.

**Combined search:** Searches for multi-word units and idioms like ‘trip the light fantastic’ can be time-consuming and frustrating in paper dictionaries. The more advanced electronic dictionaries include combined searches with the Boolean operators AND, OR and NOT. E.g. in *Langenscheidts Handwörterbuch*, a full text search for ‘trip AND light’ or ‘trip AND fantastic’ produces ‘ein Tänzchen aufs Parkett legen’ in the German entry ‘Parkett’, and ‘light AND fantastic’ leads to ‘das Tanzbein schwingen’ in the entry ‘Tanzbein’. In the *PC-Bibliothek*, a combined search can be used in conjunction with a fuzzy search, so that ‘vorzügliche AND Hochachtung’ also finds the adjective with a different ending in ‘mit vorzüglicher Hochachtung’.

**Search within entries:** It is often difficult to find information in long, complex entries in both paper and electronic dictionaries, e.g. the entries for common words like ‘to make’ or ‘geben’. The dictionaries in the *PC-Bibliothek*, the *Oxford-Duden* and *Wahrig* have good facilities for searching within entries, which makes it much easier to locate information than in their paper equivalents.

#### e) Interactive features

**Addition of material:** One of the most fundamental differences between electronic and paper dictionaries is the ability of the user to add material, either new entries or within entries, or to make corrections to any errors that are discovered. This can encourage users to adopt a new, more active way of working with dictionaries. The most basic form is the facility to create new entries, which is contained in the dictionaries in the *PC-Bibliothek*, the *Euro Dictionary* and *QuickDic*. Users can either compose their own entries, or enter material found elsewhere, e.g. on the WWW.

**Annotation of entries:** Most of the dictionaries examined here also allow the user to add material, e.g. additional meanings or examples, or their own comments to existing entries.

**Highlighting:** The dictionaries in the *PC-Bibliothek* allow the highlighting of material in entries in three colours. This is a very simple and effective way of individualising the dictionaries and marking material which is of particular relevance to users.

**Facility for filtering out information:** In the larger dictionaries, the sheer mass of information is sometimes a problem. As Sussex et al. (1994:142) observe, “excessive information can be a learning barrier”, especially for non-advanced students. Ideally, the user would be able to filter out unnecessary detail when searching through long and complex entries. Black (1991:164) suggests a modular dictionary in which definitions and examples are addressable independently of one another, and which could even include further options such as ‘brief definitions’ or ‘extended definitions’. None of the dictionaries examined here contain a facility for filtering out information, but it is technically feasible and would be desirable for longer entries. In fact, electronic dictionaries have less of a problem in this regard than paper dictionaries because space is not at a premium, which means that they should be able to structure their entries in a more user-friendly fashion, and also because searches within entries make information easier to locate. But the larger dictionaries could still be improved by allowing the user to decide how much information is presented on screen.

#### **f) Use with other applications (word-processing/Internet)**

**Hot keys/Buttons:** All of the dictionaries examined allow access from within other applications, e.g. word-processors, via a hot key or a button. This works particularly well in the *PC-Bibliothek*: pressing a user-defined hot key in the word-processor causes the word under the cursor to be highlighted, after which the computer switches to the *PC-Bibliothek* and looks up the word automatically. In this way it takes only about 1 second to look up a word. Other dictionaries have similar, if slightly less convenient look-up procedures.

**Pop-up dictionaries:** This is the latest form of electronic dictionary, designed solely for use within other applications, especially for internet users. The dictionary runs in the background while an internet page or word-processor is on the screen. A mouse click on a word on the screen opens up a small coloured window with the translation of the word under the cursor (see fig. 6).

Two of the pop-up dictionaries tested, *Babylon* and *QuickDic*, are shareware products which can be downloaded free from the internet. The licence is valid for 100 days, but can be renewed for

further 100 day periods without restriction. *Babylon* is an impressive product, both in the size of its vocabulary and its user-friendliness<sup>11</sup>. Langenscheidt's commercial pop-up is also very easy to use, and unsurprisingly in view of its provenance, performed well in the vocabulary tests.

**Transfer of material between applications:** All of the dictionaries, with the exception of *Babylon*, allow material to be copied to the clipboard and pasted into other applications, e.g. word-processors. This can be a very useful facility for language learning activities, especially vocabulary learning.

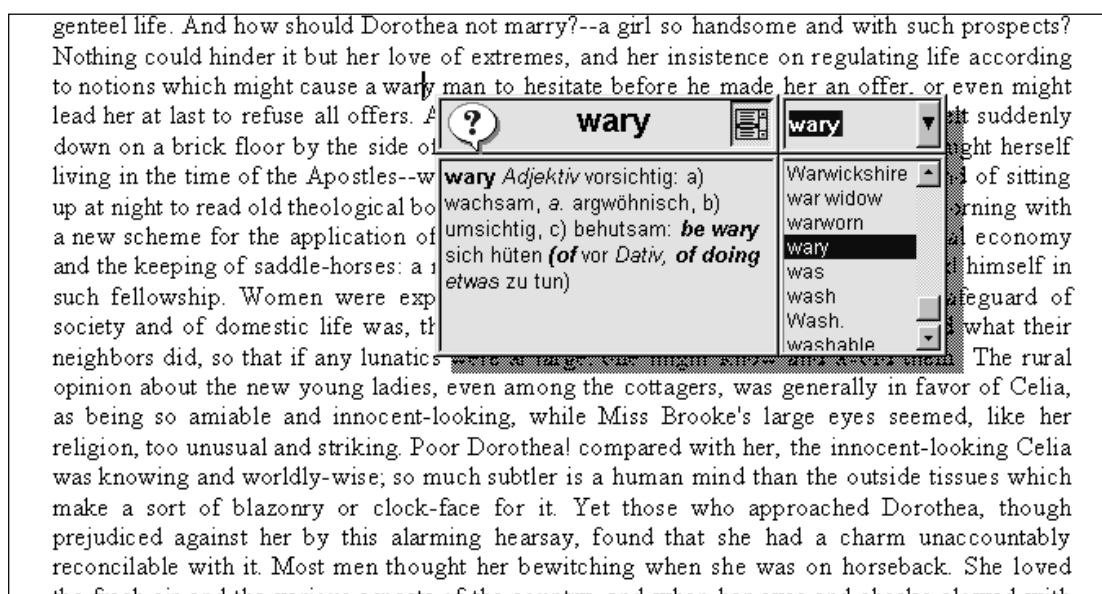


Fig. 6: Langenscheidt's *Pop-up Wörterbuch XL* entry 'wary' (list window)

### g) Use of dictionaries together

**Bilingual and monolingual dictionaries:** It has always been regarded as desirable practice for learners to check the information they find in a bilingual dictionary against the more detailed information contained in a good monolingual dictionary. With paper dictionaries this was extremely time-consuming and therefore rarely done. Electronic dictionaries have changed this situation completely: it is now a very simple matter to switch between bilingual and monolingual electronic dictionaries, especially if they are on a joint platform, as is the case with the dictionaries

<sup>11</sup> Since *Babylon* was tested for this article, substantial changes and additions have been made to the dictionary. See the *Babylon* website for details.

in the *PC-Bibliothek*. Bertelsmann's *Euro-Wörterbuch* and *Wahrig* are also on a joint platform, *BEEBOOK*, but it is not as quick and convenient to operate as the *PC-Bibliothek*.

**Multilingual dictionaries:** Bundles of dictionaries in several languages may be useful for less advanced learners, e.g. schoolchildren, many of whom will be learning more than one foreign language. At an advanced stage this advantage becomes less important in comparison with a comprehensive coverage of a single language or language pair. Several comprehensive dictionaries in different languages on a single CD-ROM would also push the price up, so the larger dictionaries are usually sold separately.

#### **h) Price**

**Current prices:** The variation in price between electronic dictionaries is as great as the variation in quality, and unfortunately there is no direct link between the two. The electronic dictionaries produced by the major dictionary publishers are generally more expensive than their paper equivalents. The most extreme example of this is *Langenscheidts Handwörterbuch*, the electronic version of which is over two and a half times the price of the printed work. On the basis of their performance, the higher prices of the electronic versions are justified, but on the basis of the relative production costs of CDs and books they are not. On the other hand, some of the shorter electronic dictionaries, which are clearly aimed at a wider market, are already very competitively priced, e.g. *Bertelsmanns Euro-Wörterbuch*.

**Outlook on prices:** Langenscheidt's pricing policy is exceptional, and there are indications that prices are starting to come down, as it the case with encyclopaedias (cf. footnote 3 above).

**Shareware and Internet dictionaries:** two of the pop-up dictionaries examined here are completely free of charge. There are also many other electronic dictionaries which can be accessed free of charge via the internet. These have not been included in this survey, but see Storrer/Freese (1997) and Breindl (1998).

#### **4. Electronic dictionaries as language learning tools**

From the point of view of language learners electronic dictionaries are superior to paper dictionaries in a number of ways:

**Improved searches** make it easier to find information in the dictionary, especially for learners, whose lack of knowledge and intuition about the language often make paper dictionaries difficult to use. Of particular importance are: the full text search, fuzzy search, search for inflected forms, search for multi-word units, and the search within longer entries.

**Vocabulary learning device:** Is it possible to bring together vocabulary from a certain field (e.g. computing terms) and transfer it to a word-processor or print it out for use in language learning. A full text search for 'computer' in the English-German half of *Langenscheidts Handwörterbuch* resulted in a list of 168 items, 308 in the German-English half. These searches can be used to compile vocabulary lists of word families (e.g. names of trees), but their success depends on how well the entries are labelled in the dictionary. All of the dictionaries could be improved in this respect. In the *Oxford-Duden*, for example, a full text search for 'tree' in the English-German half resulted in a list of 105 items, whereas a search for 'Baum' in the German-English half uncovered only 31 items, indicating an unevenness in the way the concepts are labelled in the different halves of the dictionary. However, even though they are yet far from perfect, electronic dictionaries are clearly far superior to paper dictionaries as vocabulary learning devices.

**Reading:** Perhaps the most exciting development recently has been the arrival of pop-up dictionaries, which offer an even more convenient format for learners reading foreign language texts than the conventional electronic dictionaries, providing them with glosses to unfamiliar words at a click of the mouse<sup>12</sup>.

**Writing:** More and more writing is being done on word-processors, and this applies to writing as part of the language learning process, certainly for advanced learners. All of the dictionaries are very easy to use from within word-processors and provide help with writing in the foreign language. Even the *Babylon* and *Langenscheidt Pop-up* dictionaries, which are designed to help native speakers of German read English texts, can be utilised for writing by learners of German: if they type an English word and click on it, the pop-up dictionary will show the German equivalent. In addition to search facilities for words in the foreign language, most learners will find help with grammar useful when writing.

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<sup>12</sup> The role of electronic dictionaries and glossing in reading comprehension and vocabulary learning has been examined in a number of recent studies, cf. Krantz (1991), Lomicka (1998) and further literature cited there.

**Grammar:** Many printed dictionaries offer a brief grammatical outline of the language(s) in question as well as grammatical information in the individual entries. Most of the electronic dictionaries tested here provide little or no specific information on grammar, although some of them do provide information indirectly through examples. The best grammar sections are in *Wahrig*, which shows grammatical information in a small yellow window at a double-click on a grammatical code in an entry, and the *Oxford-Duden*, which has separate short grammar sections on English and German, but does not provide any links from the dictionary. *Euroglot* contains an impressive ‘morphology recognition and generation facility’ which gives the full list of inflected forms of nouns, verbs and adjectives, and *WinDi* contains a conjugation module, which gives all the inflected forms of verbs. Overall, however, this is an area in which there is room for improvement.

**Translating:** Translating is first and foremost a professional activity, of course, but it is usually seen as relevant in language learning, too, especially at an advanced level. This view is justified by the fact that translating and interpreting are activities which people with a command of a second language are frequently required to do, and it therefore makes sense to practise them in language learning. The help that electronic dictionaries can offer when translations are done on a word-processor is quite obvious, in my experience they have an enormous impact on both the speed and the ease with which translations can be done.

**Pronunciation:** Most of the dictionaries examined in this study do not include sound, which is regrettable, as the ability to give examples of pronunciation in its original medium is potentially one of the greatest advantages electronic dictionaries have over paper dictionaries. Some of the dictionaries include details of pronunciation in phonetic transcription, but although this was the best books could do, it is unnecessary on CD-ROMs and is less than satisfactory, not least because many English-speaking learners of German are not familiar with IPA<sup>13</sup>.

**Use of dictionaries together:** Advanced learners have always been encouraged to use bilingual and monolingual dictionaries together, as bilingual dictionaries do not usually contain as much detail or as many examples of use as monolingual dictionaries. Now this is easy to do, especially with *Langenscheidts Handwörterbuch* and the *Duden Universalwörterbuch* in the *PC-Bibliothek*.

Some of the dictionaries include more than just one pair of languages, but from a language learning point of view it is far more important to be able to use a bilingual dictionary and a monolingual dictionary together than to be able to use several different languages at the same time.

## 5. Conclusion

The perfect electronic dictionary does not exist yet, and presumably never will. As with printed dictionaries, there will continue to be different electronic dictionaries for different user groups and different purposes. However, the detailed study undertaken here shows that the best of the current electronic dictionaries are already very good indeed, and as with other aspects of the computer, the development is continuing at a very fast pace.

On the whole the best products come from established dictionary makers, who have not simply relied on their top class lexicographical material, but have also invested in the development of efficient and user-friendly software to make the material accessible on the computer. Among the bilingual dictionaries, *Langenscheidts Handwörterbuch* not only came out top in the word tests, but is also a user-friendly product with excellent search facilities and interactive features. Its main drawback is its high price. The *Oxford-Duden* not far behind the *Handwörterbuch* in its lexicographical material, but it is not quite so convenient to use. *Bertelsmanns Euro-Wörterbuch* has a much smaller vocabulary, but the on screen presentation is excellent and it scores well in its use of multimedia features, with sound for all headwords and some illustrations. It is excellent value for money and is suitable for beginners and intermediate learners, whereas advanced learners need the broader vocabulary and greater detail which the larger dictionaries provide.

Among the monolingual dictionaries, the *Duden Universalwörterbuch A-Z* performed well and is very easy to use together with *Langenscheidts Handwörterbuch* in the *PC-Bibliothek*.

Of the dictionaries from non-established dictionary makers, *Euroglot* is an imaginative product with some impressive features (sound for all headwords, morphology recognition and generation facility), but I suspect that most language learners will find a multilingual thesaurus less useful than

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<sup>13</sup> German-speaking learners of English tend to have a better knowledge of the IPA (International Phonetic Association) transcription system, which is taught and quite heavily used because of the irregularity of

a traditional dictionary, which is bound to affect its sales potential. It also has quite a limited vocabulary.

The most recent development are pop-up dictionaries, which make superb use of the technology and represent a real leap forward in the reading of foreign language texts on-line. *Langenscheidts Pop-up Wörterbuch XL* performed extremely well, but the free *Babylon* dictionary was not far behind, and is one of only two dictionaries so far to offer updates via the Internet. As yet, both these dictionaries are still only available in one direction (English into German), but Langenscheidt is preparing a German-English pop-up which should be available in the near future.

A few years ago, Willem Meijs spoke of “the imminent demise of the dictionary as a book” and predicted: “In a decade or so, on-line dictionaries on disk or CD-ROM will no doubt be the norm rather than the exception” (1992:152). There is no indication yet that this prediction is about to come true, but for those learners who have access to a computer, electronic dictionaries undoubtedly have many advantages over paper dictionaries for language learning purposes.



## Appendix A: Summary of findings on individual dictionaries

### 1. Bilingual and Multilingual Dictionaries

Product	<b>Handwörterbuch Englisch</b> (PC-Bibliothek)	<b>Oxford-Duden German</b> <b>Dictionary on CD-ROM</b>	<b>Euro-Wörterbuch</b>
Supplier	Langenscheidt	OUP	Bertelsmann Electronic Publishing
Website	<a href="http://www.langenscheidt.de">www.langenscheidt.de</a>	<a href="http://www.oup.co.uk">www.oup.co.uk</a>	<a href="http://www.bep.de">www.bep.de</a>
Version tested	2.0, 1998	1.0, 1996	1998
PC System requirements	386 or above; 8 Mb RAM; 15 Mb space on hard disk; Windows 3.1/95/98/NT	486 or above; 4Mb (recommended 8Mb) RAM, Windows 3.1 or higher	486 (recommended Pentium); 4Mb RAM (8Mb Windows 95); Windows 3.1/95/98
Mac version	68040 or above; System 7.5 or later; 12Mb RAM	68040 or above; System 7.5 or later; 6Mb RAM (rec. 12Mb)	No
Languages	English, German	English, German	English, French, German, Italian, Spanish
Help facilities	booklet and on-line help	booklet and on-line help	on-line help
<b>a) Vocabulary</b>	full text of <i>Langenscheidts Handwörterbuch</i>	full text of <i>Oxford Duden German Dictionary</i>	Satisfactory
Number of entries	"220,000 headwords and expressions"	"over 260,000 words and phrases, over 450,000 translations"	"over 220,000 headwords and expressions"
Detail of entries	detailed entries with examples, idioms, grammar	detailed entries with examples, idioms, short grammar	mostly brief entries with examples, idioms
General word test	91/100	81/100	54/100
Neologisms	9/20	9/20	2/20
Computer vocab	12/20	8/20	11/20
<b>b) Presentation</b>	cramped, but good use of bold and italic fonts	well spaced out entries, good use of colour and fonts	well structured entries
<b>c) Hypertext and multimedia</b>	hyperlinks; no sound	hyperlinks; no sound (IPA for English and foreign words in German)	hyperlinks; sound for all headwords
<b>d) Searches</b>	headword search, browse, full text search, fuzzy search, wildcards, Boolean operators, search within entries	headword search, browse, full text search, wildcards, Boolean operators, search within entries	headword search, browse, full text search, wildcards, Boolean operators
Finds inflected forms?	no	yes	Some

<b>e) Interactive features</b>	possible to modify entries (annotation, highlighting) and to create links and new entries	possible to modify entries (annotation), but not to create new entries	possible to modify entries (annotation), but not to create new entries
<b>f) Use from within other applications</b>	hot key from standard Windows word processing packages.	button from WinWord	button from WinWord
<b>g) Use with other dictionaries</b>	All titles in the <i>PC-Bibliothek</i> can be used simultaneously .	Can be linked to <i>Oxford Hachette Dictionary</i> and <i>Oxford Spanish Dictionary</i> .	Common platform with <i>Wahrig Deutsches Wörterbuch</i>
<b>h) Price</b>	DM 249	£49.99	DM 49.90
Comments	Other language combinations available in the <i>PC-Bibliothek</i> : German and French, German and Russian,	Contains sections on German and English correspondence. Sold in Germany as <i>Duden Oxford Großwörterbuch</i> .	40 screens pictorial dictionary for all languages.

## 1. Bilingual and Multilingual Dictionaries (cont.)

Product	Euro Dictionary	Euroglot Professional	WinDi
Supplier	Language Publications Interactive Inc./Rossipaul Munich	Linguistic Systems B.V.	Language Dynamics
Website	<a href="http://www.languagepub.com">www.languagepub.com</a>	<a href="http://www.euroglot.com">www.euroglot.com</a>	<a href="http://www.windi7.com">www.windi7.com</a>
Version tested	4.5g, 1996	3, 1997	24 hour demo version (no date)
PC System requirements	Windows 3.1/95/98	386 or above, 1.5 Mb on hard disk for each lang.; Windows 3.11/95/98/NT	PC 386 (Pentium rec.), 16 Mb RAM (32 MB rec.); Windows (3.1x)/95/98/NT/2000
Mac version	no	System 6 or above	No
Languages	English, French, German, Italian, Spanish	Dutch, English, French, German, Italian, Spanish	Dutch, English, French, German, Italian, Portuguese, Spanish
Help facilities	manual and on-line help	on-line help (in English only)	downloadable manual and on-line help
<b>a) Vocabulary</b>	very limited vocabulary	satisfactory general vocabulary	very limited vocabulary
No. of entries	"150,000 key words, 520,000 translations"	"300,000 key words"	40,000 words per language
Detail of entries	mostly very short entries, no examples, some idioms, no grammar	no explanations, no examples, some idioms, some grammar (morphology recognition and generation facility for nouns, verbs and adjectives)	very short entries, no examples, some idioms. 'WinDi Conjugation' module gives all inflected forms of verbs.
General word test	16/100	59/100	23/100
Neologisms	2/20	2/20	3/20
Computer vocab	4/20	6/20	7/20
<b>b) Presentation</b>	lack of structure in longer entries	clearly structured entries	very simple structure
<b>c) Hypertext and multimedia</b>	no hyperlinks within entries; recordings of the phrases in all five languages	hyperlinks; extra CDs with sound for all headwords in Dutch, Engl., Fr. and Ger.	add-on sound component available
<b>d) Searches</b>	headword search, browse, fuzzy search	headword search, browse	headword search, browse, wildcard (*)
Finds inflected forms?	no	yes (via morphology recognition and generation facility)	no
<b>e) Interactive features</b>	possible to modify entries and create new entries (in user-created dictionaries)	possible to create new entries (in user-dictionaries), but not to modify entries	possible to modify entries and create new entries
<b>f) Use from within other applications</b>	macro from WinWord and WordPro	button from WinWord	all standard Windows applications

<b>g) Use with other dictionaries</b>	no	no	no
<b>h) Price</b>	US\$39.95	HFL495 for two langs, HFL395 for each extra lang. Sound module HFL195	2 langs US\$99 + VAT 7 langs US\$199 + VAT
Comments	Contains Euro-Dictionary, Phrases dictionary, European Community dictionary.	Not a dictionary in the traditional sense, but a multi-lingual thesaurus. Demo version and downloads from <a href="http://www.heisoft.de/web/download.htm">www.heisoft.de/web/download.htm</a>	24 hour demo version downloadable free of charge. Part of 'WinDi Translation Help'. Updates available from website.

## 2. Monolingual German Dictionaries

Product	<b>Deutsches Universalwörterbuch A-Z</b> (PC-Bibliothek)	<b>Wahrig Deutsches Wörterbuch</b>	<b>Duden: Die deutsche Rechtschreibung</b> (PC-Bibliothek)
Supplier	Bibliographisches Institut & Brockhaus	Bertelsmann Electronic Publishing	Bibliographisches Institut & Brockhaus
Website	<a href="http://www.duden.de">www.duden.de</a>	<a href="http://www.bep.de">www.bep.de</a>	<a href="http://www.duden.de">www.duden.de</a>
Version tested	2.0, 1997	1997	2.0, 1997
PC System requirements	386 or above, 8 Mb RAM, 15 Mb space on hard disk; Windows 3.1/95/98/NT	486 or above, 4 Mb RAM (8 Mb recommended); Windows 3.1/95/98	386 or above, 8 Mb RAM, 15 Mb space on hard disk; Windows 3.1/95/98/NT
Mac version	68040 or above; System 7.5 or later; 12Mb RAM	no	68040 or above; System 7.5 or later; 12Mb RAM
Languages	German	German	German
Help facilities	booklet and on-line help	on-line help	booklet and on-line help
<b>a) Vocabulary</b>	full text of 3 <sup>rd</sup> edition (1997) with new spelling	full text of 6 <sup>th</sup> edition (1997) with new spelling	full text of 20 <sup>th</sup> and 21 <sup>st</sup> eds. of <i>Die deutsche Rechtschreibung</i>
No. of entries	“120,000 headwords”	“over 250,000 headwords”	“115,000 headwords and over 500,000 definitions”
Detail of entries	examples, idioms, separate grammar (no links from within the dictionary)	examples, idioms, detailed grammar with hyperlinks from entries	some examples, idioms, no grammar
General word test	n/a*	n/a*	n/a*
Neologisms	16/20	10/20	13/20
Computer vocab	13/20	11/20	10/20
<b>b) Presentation</b>	longer entries have very full screens with little structure	excellent presentation, longer entries very clearly structured	very brief entries; red used to highlight new spellings
<b>c) Hypertext and multimedia</b>	hyperlinks; no sound (IPA for some loan words)	hyperlinks; sound for 8,000 loan words (IPA for some further words)	hyperlinks; no sound (IPA for some loan words)
<b>d) Searches</b>	headword search, browse, full text search, fuzzy search, wildcards, Boolean operators, search within entries	headword search, browse, searches within definitions, examples, etymologies, grammar	headword search, browse, full text search, fuzzy search, wildcards, Boolean operators, search within entries
Finds inflected forms?	some	yes	some
<b>e) Interactive features</b>	possible to modify entries (annotation, highlighting) and to create links and new entries	possible to modify entries (annotation), but not to create new entries	possible to modify entries (annotation, highlighting) and to create links and new entries

<b>f) Use from within other applications</b>	hot key from standard Windows word processing packages	button from WinWord	hot key from standard Windows word processing packages
<b>g) Use with other dictionaries</b>	All titles in the <i>PC-Bibliothek</i> can be used simultaneously.	Common platform with <i>Bertelsmanns Euro-Wörterbuch</i>	All titles in the <i>PC-Bibliothek</i> can be used simultaneously.
<b>h) Price</b>	DM 78	DM 98	DM 78
Comments	150,000 examples of use, and 500,000 details of spelling, hyphenation, pronunciation, etymology, grammar and style.	Grammatical information appears in a yellow box at a double click on a grammar code. Can deal with homographs: <i>führe</i> comes up with Stichwörter <i>fahren, Führe, führen</i>	Contains two versions with the old and the new spelling.

\* The general word test was devised for bilingual dictionaries and is not a suitable test of monolingual dictionaries.

### 3. Pop-up Dictionaries

Product	<b>Langenscheidt Pop-up Wörterbuch XL</b>	<b>Babylon</b>	<b>QuickDic</b>
Supplier	Langenscheidt	Babylon Ltd	Brall
Website	<a href="http://www.langenscheidt.de">www.langenscheidt.de</a>	<a href="http://www.babylon.com">www.babylon.com</a>	<a href="http://www.brall.com">www.brall.com</a>
Version tested	2.0, 1999	2.1, 1999	Shareware version 1.05c
PC System requirements	486 or above; 8Mb RAM; 8Mb space on hard disk; Windows 95/98/NT	486 or above; 8Mb RAM; Windows 95/98	16Mb RAM; Windows 95/98/NT4.0
Mac version	no	no	no
Languages	English into German only (German-English in prep.)	English into German only	English, German (further languages in the full version)
Help facilities	on-line help and rtf-file	on-line help	on-line help
<b>a) Vocabulary</b>	based on Langenscheidt's <i>Handwörterbuch</i>	good	limited
No. of entries	"100,000 headwords and expressions"	no information provided	"100,000 headwords, full version 550,000"
Detail of entries	examples, idioms, no grammar	no examples, some idioms ('phrase detection'), no grammar	no examples, no idioms, no grammar
General word test	75/84**	60/84**	39/100
Neologisms	10/20	6/20	0/20
Computer vocab	15/20	16/20	10/20
<b>b) Presentation</b>	clear structure	short entries, clear structure	short entries, clear structure
<b>c) Hypertext and multimedia</b>	no hyperlinks between entries; no sound	no hyperlinks between entries; no sound	no hyperlinks between entries; no sound
Finds inflected forms?	yes	yes	yes
<b>d) Searches</b>	headword search, browse	headword search; makes suggestions if word is incomplete or incorrect	headword search
<b>e) Interactive features</b>	not possible to modify entries or to create new entries	not possible to modify entries or to create new entries	possible to modify and create new entries
<b>f) Use within other applications</b>	all standard Windows applications, including Internet	all standard Windows applications, including Internet	all standard Windows applications, including Internet
<b>g) Use with other dictionaries</b>	no	no	no
<b>h) Price</b>	DM 99	free (100 day test version, renewable)	free (100 day test version, renewable); full version DM 49

Comments	Intended for users of English Windows applications who are not native speakers of English. Contains “over 700 Internet terms”.	Intended for users of English Windows applications who are not native speakers of English. Automatic updates available from website. 11 languages available.	Additional dictionary modules available in the full version, e.g. computer terminology. QuickDic includes a currency calculator (Euro and DM only) and functions for collecting e-mail addresses and URLs.
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\*\* The maximum score for dictionaries translating from English into German only was 84.



## Appendix B: Word tests

### a) General word test (Total 100 items) (from Neth/Swanson 1999)<sup>14</sup>

**Individual words (20):** acrimony (Bitterkeit), aficionado (Liebhaber), alumnus (Absolvent), calumny (Verleumdung), cleavage (Dekolleté), denizen (Einwohner), guffaw (scallend lachen), impish (schelmisch), level-headed (besonnen), lint (Fusseln), miscreant (schurkisch), phony (unecht), taciturn (wortkarg), tiff (Kabbelei), variegate (bunt machen), yahoo (Saukerl), wangle (deichseln), Slipelinge (panty liner), Trennkost (compatible eating), Zeilenumbruch (word wrap).

**Multiple meanings (20):** faculty (Vermögen, Gabe, Lehrkörper), natural (natürlich, [~child] unehelich, [Mus.] Auflösungszeichen, Naturtalent), joint (Gelenk, Fuge, Bude, Marihuanazigarette, Mit-), vanity (Eitelkeit, Nichtigkeit, Toilettentisch), slug (Nacktschnecke, Faulpelz, Rohmetallstück, Reglette, [ugs.] schlagen).

**Idioms (10):** to go Dutch ((die Zeche) getrennt bezahlen), to be in cahoots with someone (mit jemandem unter einer Decke stecken), to be on one's last legs (aus dem letzten Loch pfeifen), to beat around the bush (um den heißen Brei herumreden), to fob something off on someone (jemanden mit etwas abspeisen), till the cows come home (bis in alle Ewigkeit), to be pleased as Punch (sich wie ein Schneekönig freuen), auf etwas pfeifen (not to give a damn about something), mit ihm ist nicht gut Kirschen essen (he's not easy to get along with), wie die Made im Speck (to be sitting in clover).

**Colloquial language (10):** brown-noser ([vulg.] Schleimer), nifty (schick), shrink (Seelenklempner), smarmy (kriecherisch), snafu (Schlamassel), to get the axe (entlassen werden), wacky (irre), willy-nilly (wohl oder übel), ätzend (grotty), klitzeklein (teensy-weensy).

**False friends (10):** actual (eigentlich), censure (Tadel), character (Buchstabe), delicate (zart), hose (Schlauch), rest (Ruhe), sensible (vernünftig), sympathy (Mitleid), Handy (cell[ular] phone/mobile [phone]), Isolierung (insulation).

**Business (5):** assets (Vermögensstand), escrow (hinterlegter Vertrag), invoice (Lieferschein), Rendite (yield), Schuldverschreibung (debenture bond).

**Computer terms (5):** AC-adaptor (Wechselstromadapter), hard disk (Festplatte), screen saver (Bildschirmschoner), Speicher (memory), Treiber (driver).

**Obsolete words (5):** cur (Köter), damsel (Maid), hoyden (Wildfang), raiment (Gewand), Büttel (beadle).

**Neologisms (5):** ageism (Altersdiskriminierung), fanzine (Fanzeitschrift), televangelist (Fern-sehprediger), walkathon (Marathongehen), Kunstrasen (astro turf).

**British/American English (5):** bloody (blutig/verdammt), Benzin (petrol/gas), Hose (trousers/ pants), LKW (lorry/truck), Pommes frites (chips/French fries).

**Abbreviations (5):** GOP (Grand Old Party: Republikanische Partei der USA), Xmas (Christmas: Weihnachten), VCR (video cassette recorder: Videorecorder), ATM (automated teller machine: Geldautomat), yuppie (young urban professional: Yuppie).

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<sup>14</sup> Reproduced by kind permission of *c't, Magazin für Computertechnik*, Heise Verlag, Hanover, from *c't* 2/99, p.103.

**b) Neologisms (20)****English-German (10)**

BSE (Rinderwahnsinn), camcorder (Videokamera), downside (Nachteil), downsize (verkleinern), gridlock (Verkehrsinfarkt), hands-on (zupackend), laid-back (gelassen), mountain bike (Mountainbike, Geländefahrrad), photo-opportunity/-call (Fototermin), user-friendly (benutzerfreundlich).

**For dictionaries with English-German word list only (a further 10 words in addition to the above)**

catalytic converter (Katalysator), cruise missile (Marschflugkörper), cutting edge (führend, innovativ), homophobia (Homophobie), inline skate (Inliner), jacuzzi (Whirlpool), mobile phone (Handy), pilot project (Pilotprojekt), postmodernism (Postmoderne), risk/venture capital (Risikokapital).

**German-English (10)**

Designerdroge (designer drug), Elefantenhochzeit (jumbo/giant merger), Euro (euro), Handy (mobile phone), HIV (HIV), Homophobie (homophobia), Inliner (inline skate), Katalysator (catalytic converter), Postmoderne (postmodernism), Risikokapital (risk/venture capital).

**For monolingual German dictionaries (a further 10 words in addition to the above)**

benutzerfreundlich, Fototermin, Lohnnebenkosten, Marschflugkörper, Pilotprojekt, Quotenfrau, Rinderwahn-sinn, Sparpaket, Verkehrsinfarkt, Wirtschaftsstandort.

**c) Computer vocabulary (20)**

arrow key (Pfeiltaste), buffer (Zwischenspeicher, Pufferspeicher), button (Schaltfläche), central processing unit (Zentraleinheit), database (Datenbank), e-mail (E-mail), format (formatieren), file (Datei), font (Schriftzeichen-satz, Schriftart), disk drive (Diskettenlaufwerk, Laufwerk), download (herunterladen), floppy disk (Diskette), laser printer (Laserdrucker), paper jam (Papierstau), RAM (Hauptspeicher, Arbeitsspeicher), to reboot (hochfahren, neu booten), to surf (surfen), system requirements (Systemvoraussetzungen), wildcard (Platzhalter), word processing (Textverarbeitung).

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## **Biodata**

Dr. Chris Hall lectures in German at the University of Leicester and is a visiting professor at the University of Tampere in Finland. His research interests are in the fields of German linguistics and phonetics, language teaching and testing, computer-assisted language learning, and intercultural communication.