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PRINCIPY LEXICOGRAFIE V SOUČASNÝCH ANGLICKÝCH JEDNOJAZYČNÝCH SLOVNÍCÍCH

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LEXICOGRAPHIC PRINCIPLES IN CONTEMPORARY MONOLINGUAL ENGLISH DICTIONARIES

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Tato stránka bude ve svázané práci Váš původní formulář *Zadáni bak. práce*

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                                                                    Jan Vysloužil

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ABSTRACT

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This work describes lexicographic principles used in contemporary monolingual English dictionaries and provides a comparison of four of the chief electronic dictionaries of this kind. The theoretical part describes the science of lexicography and the essence of computational lexicography along with other phenomena concerning dictionaries such as typology, the macrostructure and the microstructure of a dictionary. The principles described in this work apply to both print and electronic dictionaries and this foundation serves as the background for the subsequent analysis.

The practical part of this work concerns the analysis and comparison of the selected features and components of the four electronic dictionaries. It sets out to identify the electronic dictionary, which provides the most elaborate, extensive and comprehensible features and components along with the largest amount of dictionary content. The conclusion is that the dictionary which is closest to this ideal dictionary is the electronic counterpart of the *Longman Dictionary of Contemporary English fifth edition*.

Keywords: Lexicography, Dictionary, Electronic Dictionary, Macrostructure, Microstructure.

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INTRODUCTION

The aim of this work is in the first place to define the lexicographic principles which are present in contemporary monolingual English dictionaries; secondly, to analyse and compare the electronic counterparts of four of the chief contemporary English monolingual dictionaries; thirdly, to define which of the realisations of the compared features and components should be present in the electronic dictionary which is ideal for the defined user, and finally, to identify which of the compared electronic dictionaries is closest to this ideal dictionary.

The theoretical part of the thesis defines the background for the comparison of the individual electronic dictionaries and consists of seven chapters. The first one outlines the basic division of lexicography. Other chapters concern the definition of the term 'word', the term 'computational lexicography', the typology of dictionaries and the definition of the print and electronic dictionary. The sixth chapter studies the microstructure of a dictionary and contains twelve sub-chapters concerning the various entry features and components. The seventh chapter addresses the macrostructure of a dictionary and contains eight sub-chapters, which describe the components of a dictionary along with the various lexicographic principles.

The third part of the thesis defines the methods used in the analysis.

The practical part concerns the analysis and comparison of the selected electronic dictionaries. Its first chapter deals with the fundamental information about the compared dictionaries such as the definition of the expected user and the typological background of the compared dictionaries. The following chapters concern the comparison of the individual features and components of the respective dictionaries, the comparison of stored information, the comparison of the entries and results.

The fifth part of the thesis draws the conclusions from the analysis and introduces topics for the further research.

The final chapter is the summary of the whole thesis presented in the Czech language.

2 THEORETICAL BACKGROUND

First of all it is necessary to define the order and possible inclusion of dictionary related fields of study in the linguistic science. The correct sequence is: Linguistics>Lexicology>Lexicography>Making dictionaries. To describe this relationship of inclusion further, lexicography is a linguistic science; it is "the applied branch of lexicology and is concerned with the writing of dictionaries." (Cabre, 1999, p.37) Therefore both lexicology and lexicography are linguistic sciences whilst lexicography is subordinate to lexicology.

The relationship between lexicology and dictionaries is naturally very strong. According to Moon (1998, p.18), "the chief importance of dictionaries in relation to lexicology is that dictionaries set out to identify the lexical items of a language and the appropriate level-clause, group, structure, word, sense, morpheme--at which meanings are lexicalised." This is naturally an important lexicographic principle which dictionary makers have to have in mind whilst selecting what to put in a dictionary. This principle applies to the selection of words to be put in the most basic items of a dictionary – the headword and by the same token to all of the other parts such as the definition of a meaning following a headword.

2.1 Lexicography

Lexicography as a science can be divided in two main parts which is the theory and the praxis. Hartmann (2001) in his *Teaching and researching lexicography* uses a simple distinction agreeing with the above outlined scheme. He further specifies it when he uses the term practical branch which is dictionary making and for the one concerning theory the theoretical branch which focuses on the respective dictionary research. Therefore, in very simple terms, the praxis is creating dictionaries and the theory is studying dictionaries. Hartmann and James (1998, p.85) argue that "the former is often associated with commercial book publishing, the latter with scholarly studies in such disciplines as linguistics (especially lexicology), but strict boundaries are difficult to maintain." Therefore, between the theoretical and practical branch there very often occurs overlapping due to their complexity and occasions at which they are being used.

The term theoretical lexicography can be expanded even more. It is "a form of criticism of existing dictionaries... and the language needs of a specific user group are taken as the point of departure." (Bogaards/ van Sterkenburg, 2003, p.27) However, Hartmann and James (1998, p.93) consider theoretical lexicography to be a rather general discipline. They state that it is a "complex of activities concerned with the status of the field of lexicography" and its main purpose is to study the principles of lexicography. It is very clear that without the theory, the praxis could not exist and therefore the theory is the basis for the creation of lexicographic principles.

2.2 Word

A word is one of the elementary parts with which lexicographers work to produce dictionaries. Words belong to a system of signs formed in units and such system is called language. Monolingual dictionaries hold information about how words are used and provide definitions of them. According to Hartmann and James (1998) "the word can be considered an entity of phonology (speech sounds united by a stress/intonation pattern), orthography (letters united by a spelling/punctuation pattern), grammar (morphemes united by a phrase/sentence pattern) or semantics (senses united by a conceptual pattern)." The origin of words is the focus of etymology and while linguists can distinguish its "constituent structure (word formation, part of speech), stylistic associations (e.g. as archaisms, regionalisms and foreignisms) and uses (e.g. as technical terms)" (Hartmann and James, 1998, p.155) lexicographers record these features of words as components of dictionary entries. Therefore one of the lexicographic principles is an effort to record the most precise and up to date norms of word use (i.e. frequency) whilst producing dictionaries. For example, the MED2 has a feature of outlining a finite amount of words and marking them with stars. These markings determine how often a word is used and how important it is for a user to learn such marked word.

2.3 Computational lexicography

This thesis is on the one hand research on printed and electronic dictionaries and on the other a comparison of individual dictionaries. The process of preparing the modern dictionary (electronic and print) is based on the good knowledge of computational lexicography which is according to Hartmann and James (1998, p.26) the "complex of

activities concerned with the design, compilation, use and evaluation of electronic dictionaries." Van Sterkenburg (2003) states that: "as far as lexicography is concerned, we must acknowledge that the discipline has been changing from being a traditional manual skill into an electronic application." The discipline mentioned here is the actual making of dictionaries. Lexicographers used to be working more with paper (which represents the stated manual skill) whilst the trend set out for future is that they are gradually leaving this manual skill in order to work with computers instead.

The first interactions between computers and lexicography began in the 1960s. The significance of computers had been rising ever since and one of the breakthroughs in this field was the use of corpus, which is "a systematic collection of texts which documents the usage features of a language or language variety." Hartmann and James (1998, p.30) Such collections are then used as the input data for computer software tools which are being used by lexicographers, and the output data are then evaluated by them and used in their dictionaries. For example, such output data can be the statistical occurrence of certain lexical items, which allows lexicographers to determine whether or not to use them in lexical entries of dictionaries or to determine the order of meanings in such entries. In the 21st century all advanced dictionary making projects which aspire to gain a serious significance in the trade or academic field use corpus data. (Atkins & Rundell, 2008, p.3) To particularise, the CALD3 uses the "Cambridge International Corpus, a collection of over a billion words of written and spoken (transcribed) language from a huge variety of sources," whilst the MED2 is based on the World English Corpus which consists of more than 200 million words.

2.4 Typology of dictionaries

The outline of the following typology of dictionaries is based on the one formed by Atkins & Rundell (2008, p.24). Only minor modifications and adjustments took place. This typology, just as this thesis, does not focus on scholarly and historical dictionaries but rather on trade dictionaries which are also the subject matter of the practical part of the thesis.

Atkins & Rundell outlined the following properties of dictionaries.

1. the dictionary's language(s):

    a. monolingual

    b. bilingual

c. multilingual

2. the dictionary's coverage:

    a. general language

    b. encyclopaedic and cultural material

    c. terminology or sublanguages (e.g. a dictionary of legal terms, cricket, nursing)

    d. specific area of language (e.g. a dictionary of collocations, phrasal verbs, or idioms)

3. the dictionary's size:

    a. standard (or 'collegiate') edition

    b. concise edition

    c. pocket edition

4. the dictionary's medium:

    a. print

    b. electronic (e.g. CD, DVD or handheld)

    c. web-based

5. the dictionary's organization:

    a. word to meaning (the most common)

    b. word to meaning to word (where looking up one word leads to other semantically related words)

6. the users' language(s):

    a. a group of users who all speak the same language

    b. two specific groups of language-speakers

    c. learners worldwide of the dictionary's language

7. the users' skills are that of a:

    a. linguist or other language professional

    b. literate adult

    c. school student

    d. young child

    e. language learner

8. what users need the dictionary for:

    a. decoding, which is:

    – understanding the meaning of a word

    – translating from a foreign language text into their own language

    b. encoding, which is:

– using a word correctly

– translating a text in their own language into a foreign language

– language teaching

Atkins & Rundell (2008, p.27) state that the trade dictionary can meet either one or more of the above stated properties. Furthermore, they state that the first criterion is the number of languages. A monolingual dictionary operates with only one language whilst bilingual and monolingual dictionaries contain entries of more than one language. Another criterion is the coverage of a dictionary, which specifies what sort of topic (or selection of topics) is present in a reference work. The size of a dictionary is very closely related to its medium. According to Hartmann and James (1998, p.27), a concise edition is a one that is reduced in comparison with a larger version of it while pocket dictionary has just one version, that is of a considerably small size and portable. The medium itself can be either print or electronic. The latter is either a handheld device operating the dictionary itself or a software application which is used on personal computers.

In this typology, the medium is followed by the organisation of a dictionary which regards the reason why the user approaches such reference work. According to McArthur (1998, p.161-163), there are two approaches. In the first one the user has a word for which he/she needs to know the meaning. In this case the suitable organisation is from word to meaning which is also called the semasiological approach. The second case is that the user has the concept of the meaning and he/she seeks a proper word by which it can be expressed which is called the onomasiological approach.

Finally, the property of user's language defines the kind of a language learner that the dictionary is suitable for and the user's skill defines how advanced the end user should be to be able to use the dictionary properly. The last criterion (what users need the dictionary for) represents what is the intended purpose of the dictionary from the point of view of the user.

2.5 Print and electronic dictionary

The most apparent difference between the print and electronic dictionary regards the medium of the dictionary. The simple definition of a dictionary is that it is a device designed to store knowledge about words. The amount of information in print dictionaries is restricted according to the limited size of them. The content of a print dictionary is

stored on paper and occupies a final amount of pages. The content of an electronic dictionary exists in form of computer data and occupies a final amount of space on its medium. However, if lexicographers want to increase the amount of knowledge stored in a paper dictionary they also have to consider how much the physical volume of such dictionary will increase in size. Because of this issue, there was introduced the clustering which decreases the amount of space needed on paper. The introduction of electronic dictionaries however, solved the problem of limited print space and shifted the attention towards data storage capacity. The shift from paper to electronic displays allows dictionary makers to become less worried about the space that the content of their work occupies. (Atkins & Rundell, 2008) The reason for that is that "in electronic media of all types (from PCs to iPods to mobile phones) data-storage capacity has become so cheap that it has ceased to be an issue." (Atkins & Rundell, 2008, p.23) Due to this fact, while creating electronic versions of dictionaries, their makers have the freedom to use as much space (on a screen) as is available according to the type of the dictionary and the amount of data used as a source of the content (i.e. definitions of headwords) is only limited by the medium of such dictionary.

The abbreviated form of the phrase 'electronic dictionary' is 'ED'. But the question is whether the term dictionary is even plausible to use when describing EDs because the term dictionary represents a printed book and the form of an ED is substantially different from a printed dictionary whilst it holds similar kind of information (but rather more extensive in the EDs). An answer is that the term dictionary refers to both EDs and printed dictionaries, but for the former the term does not completely suit the voluminous features of them.

According to Müller-Spitzer (2009, p.3) in print lexicographic works "data and form merge into one another; they are inextricably linked with one other" and as such they cannot be changed until the next edition. The same principal applies to the ED, because it also has a finite form (a collection of data to be displayed upon request by the user) which is produced on a medium, although it is not bound to a static form as in a print version of it. These are the features which both the forms (print and electronic) have in common and the only form which has the potential to be updated regularly within a single edition (version) is the web-based dictionary. They can be either free to use or the access to them can be monetized.

Electronic dictionaries are principally similar to traditional reference works (with some benefits) in their microstructure. However, the information conventionally presented

in the front matter of their print versions is to be found elsewhere when dealing with their electronic versions, usually in a component exclusively designated to this purpose (i.e. the user guide, or help section). On the other hand, the use of electronic dictionary provides a set of benefits among which is their capacity concerning the amount of information which they can hold. They hold the possibility to search for lexical items by typing in the search engine of each dictionary and they also have the capability to hold larger amount of lexical items than printed dictionaries. (Müller-Spitzer, 2009, p.1-4)

2.6 Microstructure of a dictionary

It is vital to comprehend what the microstructure represents for the understanding of both print dictionaries and their electronic forms. According to Hartmann and James (1998) the microstructure of a reference work refers to the format of a dictionary entry; consequently, the microstructure denotes "how information about the headword is provided and presented, and the appropriateness of the discourse structure of the entry for the benefit of the anticipated user." Therefore in an English monolingual dictionary, the microstructure is the general design of each individual entry placed in the central word list. However, not all entries within one dictionary follow the same pattern due to the variety of lexical items (single words, multi word expressions, etc.) that occur in modern English.

2.6.1 Entry

Hartmann and James (1998, p.50) define the entry as a "basic reference unit in a dictionary or other reference system such as a library catalogue." Furthermore, they speak about a structure of a dictionary entry. It consists of a lemma (cf. chapter 2.6.3, p.9), formal comment on the phenomenon which is listed in the word list under the lemma and the semantic comment which contains the definition of the phenomenon itself. Subsequently, "every dictionary entry has its own 'syntax' which controls where the various components may be inserted." (Atkins & Rundell, 2008, p.203) To complement the definition of the entry, it is sometimes referred to as 'article'. The term article has two meanings regarding lexicography. According to Hartmann and James (1998, p.8), the first of them is the grammatical meaning which in English refers to an article of a noun. The second one refers to a reference unit of a reference work. However, there is a minor difference in the type of a reference work in which they are used. The term article is being

used when referring to encyclopaedic dictionaries whereas entry is more often associated with general dictionaries.

2.6.2 Headword

The headword functions as the component of the entry which all the other components address and is conveniently called the address. It represents the topic of the whole entry. (Hartmann and James, 1998, p.3) The headword is also the first item of the entry and it is the device that allows user to locate the sought information. Hartmann and James (1998, p.67) define headword as "the form of a word or phrase which is chosen for the lemma, the position in the dictionary structure where the entry starts." They also state that headwords are usually marked by bold print and are listed in their canonical form.

2.6.3 Lexeme and lemma

Traditionally, lexemes are being understood as a blend of form and meaning in a relevant grammatical context. (Hartmann and James, 1998, p.83-84) Lexemes occur as "simple words (e.g. face), complex words (preface), phrasal and compound words (face up to, face-lift), 'multi-word expressions' (fly-by-night, face the music), and shortened forms which can stand by themselves (prefab)." (Hartmann and James, 1998, p.83-84) Therefore, lexemes are regarded as abstract forms and headwords are their concrete representations enlisted in dictionaries.

To contrast, the term lemma (plural is lemmata) denotes "a group of word forms that are related by being inflectional forms of the same base word." (McEnery & Hardie, 2012, p.245) The term lemma can be approached from two directions. First of them is the one regarding the overall macrostructure. It represents the place where the lexicographer places the content within the entry while the user can withdraw the sought information. The second direction regards microstructure and it presents lemma as the subject matter of the overall content of the entry. However, lexicographers differ in their approaches to this terminology. Some even use the term lemma as synonymous to the term headword or to entry. (Hartmann and James, 1998, p.83) Subsequently, to determine how the lemma is created it is plausible to introduce the process of lemmatization. According to Burkhanov (1998, p.122), it is the process of "reduction of inflectional word forms to their lemmata, i.e. basic forms." Consequently, as he also states, it means that "lemmatization involves the

assignment of a uniform heading under which elements of the corpora containing the word forms of same lexeme are presented."

2.6.4 Canonical form

According to Burkhanov (1998, p.33-34), the canonical form is the morphological word form that represents the lexeme of that particular word. Furthermore, the canonical form is "the base form under which several variants of a word or phrase can be cited as a headword" whereas "compilers and users of dictionaries follow standard conventions about which affixes may have to be removed from a word stem to determine the form under which the word can be cited or looked up." (Hartmann and James, 1998, p.18) In addition, different varieties of English can have different canonical forms for the same word. (McArthur, 1998, p.45) For instance, the word form 'colour' belongs to the British variety of English whereas in the American variety the word is spelled as 'color'.

2.6.5 Types of entries

This chapter defines the types of entries used in contemporary monolingual dictionaries. Atkins & Rundell (2008) distinguish between four main entry types which are described later in the chapter. They are the standard lexical entry, the abbreviation entry, the grammatical word entry and the encyclopaedic entry. The difference between them is in types of lexical items which they contain.

First of them is the standard lexical entry. According to Atkins & Rundell (2008, p.193-196) it is an entry which has a lexical word as its lemma (entry head). These include nouns, verbs, adjectives, adverbs and interjections. Nonetheless, there are abbreviations which are more often treated as lexical words rather than abbreviations. These are called acronyms, which Jackson (2002, p.13-14) defines as words that are created by using the first letters of a phrase to create a whole new word.

The second type of an entry is the abbreviation entry. It has an abbreviation or an acronym in the entry head. However, it has to be explained what the abbreviation stand for at least once within the bounds of the reference work. Multiple references to one single abbreviation can all lead to one entry in order to save space in the print dictionary. (Atkins & Rundell, 2008, p.196)

The third type is the grammatical word entry. According to McArthur (1998, p.46), the syntactic function of a grammatical word is to link lexical words and they do not hold a lexical meaning. For that reason, there are no strict and stable rules how to handle such entries and dictionary-makers use many ways to explain how to use such word according to the reason why the user approached the dictionary. (Atkins & Rundell, 2008, p.196-198) Grammatical words take form of conjunctions, determiners, interjections, particles, auxiliary verbs and pronouns.

The fourth type is the encyclopaedic entry. Atkins & Rundell (2008, p.196) state that such entry is used for including proper names in the central word list but the amount of information stated for individual names in various publications varies greatly. However, the list of proper names can be realized as an individual component of a macrostructure in either the front of the back matter or as an individual component of the ED.

In addition, other relevant sorts of entries are the direct and inverted entries which regard the treatment of multiword expressions. According to Hartmann and James (1998, p.44), a direct entry has "the listing of a multi-word expression under its first (rather than last) constituent" while the inverted entry has the listing under the last component (constituent) of the multiword expression.

2.6.6 Elementary entry components

As the types of entries have been introduced above; this chapter introduces the basic components which can appear in an entry of the English monolingual dictionary. Each entry type can be constructed by specific selection of entry components. Therefore, various entry types can have different amount of entry components in each of their applications.

The above mentioned basic components are: "headword, section/subsection, section/subsection marker" and the headword-oriented components are "pronunciation, variant form, frequency marker, inflected form, and etymology." (Atkins & Rundell, 2008, p.205) An entry can also consist of a main entry and a subentry. The main entry is according to Burkhanov (1998, p.147) an equivalent to the term lemma. Thus it represents the topic of the whole entry while the subentry represents the individual divisions of such entry. The grammatical information that is selected for each entry is very closely related to the manner of structuring of the entry which can have subentries differentiated according to the word class of the possible meanings of the headword. Main entries are supplemented

by subentries in case that a particular lexical item can function as more than one part of speech. Also, subentries are used to list information about words which are derived from the headword and to list related multi word lexical items. (Burkhanov, 1998, p.226-227) An example of visual outline of the entry in the MED2 (Atkins & Rundell, 2008, p.205) is to be found in the Appendix as Figure no. 1.

2.6.7 Frequency highlighting

According to Li (Granger, 2010, p. 217-226), the most frequent words used in spoken and written English are the most useful words to be learned by language learners. There are two approaches to determine the most frequent words. First of them is the raw frequency approach which is the less ideal one, because it uses only the statistical occurrence of words and does not take into consideration the occurrence of words in different text genres. The second of the approaches uses the frequency distributed across different genres and is according to Li much more accurate and precise.

2.6.8 Spelling and Syllabification

Another feature of an entry is the spelling and syllabification. According to Jackson (2002, p.101), spelling is one of the main reasons why users even consult a dictionary. There are words which have more than one correct spelling within the same language variety and therefore dictionaries can offer more variants of the spelling and leave the choice of a particular variant on the user according to his/her personal preference. In dictionaries in general, there is often a feature marking the distinct syllables in words. In electronic dictionaries syllabification is dealt with easily because the software is advanced enough to recognize where to put the marks between the distinct syllables. There are several types of marks such as centred period or vertical line between two syllables. However, since this feature can be helpful to some, to others it can be distracting. (Atkins & Rundell, 2008, p.191)

2.6.9 Pronunciation and the grammatical information

Pronunciation is usually placed next to the headword. According to Johan de Caluwe and Ariane van Santen (van Sterkenburg, 2003, p.72), "The International Phonetic Alphabet (IPA) or a variety of it is usually used to represent pronunciation." Burkhanov (1998, p.192-193) states that it is a graphic representation of how a particular word is pronounced. Entries usually also include the phonemic quality, duration and stress but the presentation of intonation is according to Burkhanov usually not incorporated in the part of the entry dedicated to pronunciation in general dictionaries as it is a feature of pedagogical dictionaries.

The grammatical information is usually placed in between the headword and the definition, however in a general dictionary the grammatical information is usually abbreviated; the guidelines about what the lexical item collocates with, what kind of clause pattern member it can represent, which word class it belongs to and other grammatical information is demonstrated by examples in various forms such as example sentences. (Hartmann and James, 1998, p.64)

2.6.10 Ordering of meanings within an entry

Words which have more than one possible meaning obey the following principles of ordering within an entry. Primary ordering of dictionary senses concerns an entry which offers a definition of a lexical unit. This unit can be i.e. a single word, set expression or free word group. Such unit can have several meanings (a polysemous word) and it is plausible to offer an amount of definitions of them that will concord with the planned size of a dictionary and the depth of detail which is based on the user profile. Various definitions of a particular lexical item listed under one headword are therefore handled as structures divided by means selected by the maker, for example by numbering of each item. (Atkins & Rundell, 2008, p. 246-253)

Lexicographic principles also constitute the clustering and listing. Hartmann and James define clustering as a principle of presenting a finite amount of derivatives of one word in bounds of one entry. This principle can be used by dictionary makers to save space in print dictionaries. To contrast, in electronic dictionaries there is usually enough space which makes the other principle called listing more plausible to use. Listing therefore represents creating a new headword for each derivative. (Hartmann and James, 1998, p.21)

To particularise, this principle is used in the MED2 (2007) the words *believe* and *believer* are listed as separate headwords.

2.6.11 Flat and tiered structure

Atkins and Rundell divide the ordering of meanings (definitions) in an entry on two levels. First of them is called the flat structure and the second one is the tiered structure. A flat structure is used in the case which concerns a lexical item which has more than one possible meaning and at the same time the meanings are considered similarly important assuming there is no need to imply a connection or relation between the individual meanings. (Atkins & Rundell, 2008, p.249) Tiered structure is similar in the way that it also concerns a word with several meanings but in this case they are related and arranged hierarchically. It is "a structure which recognizes – and tries to reflect – the variations in 'semantic distance' between a word's various uses. A tiered structure allows us to tuck subsenses into 'main' senses, and number them accordingly, e.g. 1a, 1b, 2, 3a, 3b, 3c, 4, and so on." (Atkins & Rundell, 2008, p.249)

2.6.12 Secondary ordering of dictionary senses

The secondary ordering includes the historical order, the frequency order and the semantic order. The first of them represents the ordering which favours the sequence in which the meaning of a lexical item found its way to the lexicon of a language. To use the historical order, lexicographers need to know additional information about the word's origin and also how it developed over time in the language which it entered. (Atkins & Rundell, 2008, p.250)

The frequency order of listed meanings is more complicated. First of all, it has to be established which of the meanings are the most frequent for individual words in the corpus which was selected as the basis for a dictionary. However, it is a tricky issue because "determining the relative frequencies of the meanings of a polysemous word can never be an exact science because word senses are not objectively stable entities." (Atkins & Rundell, 2008, p.250) Lexicographers therefore have to count appearances of individual meanings for each word in the corpus to determine a frequency of a particular meaning. Consequently, the list of meanings is sorted from the most frequent item to the least frequent one. Although as Atkins & Rundell state, this approach fits better beginners who

are prone to look for the most obvious meanings. Native speakers would most likely benefit more from a list with a reversed order, since they are familiar with the most frequent meanings and therefore they tend to look for the less obvious meanings. The parameter of the most frequent meaning is for them not convenient.

To conclude, the semantic ordering is a way to sort meanings that functions on a basis of presenting a core meaning first, accompanied by meanings semantically close to this one and then followed by all other meanings. A core meaning is a one that a human being is most likely to know due to the nature of the meaning. These are, for example, meanings of words which people learn in early age and therefore strongly associate with their basic needs. (Atkins & Rundell, 2008, p.251)

2.7 Macrostructure of a dictionary

The most essential difference between the two equally important components of a dictionary – the macrostructure and the microstructure - is that macrostructure represents the overall design of a reference work while the content of entries and, more precisely, the way they are structured represents the microstructure of a reference work. (Hartmann, 2001) Correspondingly, macrostructure therefore constitutes as the overall structure from which the user as well as the compiler (dictionary maker) withdraws the desired information. The most common of these structures in Western dictionaries is the alphabetical word list which is also the central component of it. Nonetheless, there are more approaches to structuring the headwords such as thematically, chronologically or by frequency. (Hartmann and James, 1998, p.91)

2.7.1 Arrangement of entries

A vital aspect concerning macrostructure of a dictionary is the manner in which all the items listed in the word list are arranged. Burkhanov (1998) distinguishes three main types of ordering of these items (entries): alphabetical, which represents structuring of the word list according to the arrangement of letters within its lexical items, ideographic, which regards structuring according to the semantic value of its items and analogical, which is the combination of both of the above mentioned types.

2.7.2 Alphabetical ordering

The subject matter of alphabetical ordering of lemmata seems to be of a very simple nature at the first glance and if there only were single word lexical items in English, it would have been so. However, since English contains multi-word expressions, the word lists of dictionaries contain single and multi-word expressions at the same time. Lexicographers have to decide how they want to manage ordering of them in their word lists and the principles of their mutual arrangement in the list have to be decided in the planning stage of a dictionary making process. (Burkhanov ,1998)

Alphabetisation involves two main principles. First of them is the word by word principle. In this manner of ordering "the space between words takes precedence, hyphens normally come next, and letters come last. The result of this is that set piece will come before set-up and they both precede setback." (Atkins & Rundell, 2008, p.191)

The second principle is called letter by letter. According to Atkins & Rundell (2008, p.191), the position of a multi-word or single-word lexical item in the word list is not influenced by the presence of spaces and hyphens in them. Therefore, expressions which do not contain them come in the word list before them.

Jackson (2002) states that even though the alphabetical structure is the most expected one it also has certain disadvantages. First of all, words which are created by derivation with a prefix are usually far from the root word in the wordlist, although morphologically they belong together. For words created using the suffixation is the issue not as relevant, because they naturally belong near the root headword as they are close alphabetically.

2.7.3 Ideographic ordering

An ideographic ordering essentially means that: "lemmata are organised according to semantic affinities of whatever sort." (Burkhanov, 1998, p.146) While Burkhanov uses the term idiographic ordering, the concept has been also known as onomasiological or thematic ordering. McArthur gives examples of formats of ideographic ordering when he describes thematic manner of ordering. Ideographic ordering involves "formats which present information of any kind via themes, classes, topics, contents list, menus, etc." (McArthur, 1998, p.151) To particularise, the principle of ideographic ordering is present in the ED of the LDOCE5 as it includes the content-wise side menu (see figure 10, p.44)

McArthur (1998, p.153) argues that: "a thematic layout promotes a compiler's eccentricity while an alphabetic layout inhibits it." Since the alphabetization of the ordering of headwords has its given rules there is not a great potential for further developing of this way of structuring. To contrast, the thematic ordering allows the lexicographer to be more inventive. It gives him/her an opportunity to make the final layout according to the need of the user, i.e. easy to use, or thoroughly detailed. "It could therefore be said that a thematic format has the virtue of being more patently limited than an equally but covertly limited alphabetic format." (McArthur, 1998, p.153) According to this concept, the limitations in ideographic ordering are therefore imposed mainly by the individual lexicographers and their approaches rather than by a nature of the selected way of structuring.

To contrast, Jackson (2002, p.159) also mentions a potential disadvantage of ideographic ordering as he states that definitions of distinct meanings of words may be scattered all around the reference work.

2.7.4 Analogical ordering

Analogical ordering represents a "mixture of both alphabetical and ideographic types of lemmata arrangement." (Burkhanov, 1998, p.147) However, as he also states, when the principles of ideographic and alphabetical arrangement are equally present in the reference work, the analogical arrangement is closer to the ideographic since due to its nature it cannot be regarded as an alphabetical one. (Burkhanov, 1998, p.146)

Burkhanov (1998, p.104) sees the difference between ideographic and analogical arrangement in the manner of how the two approaches handle the subdivisions of each entry. He further addresses this subject matter by stating that "the subdivisions in an analogical dictionary are arranged according to graphemic composition of the headwords, whereas in an ideographic dictionary the subdivision are conceptually related and organised in a way so as to form an overall classificatory framework which is intended to represent the conceptualised knowledge of the world." (Burkhanov, 1998, p.104) The difference between the two aforementioned arrangements is therefore not as crucial as the one between the alphabetical and the ideographic ordering of lemmata.

2.7.5 Amount of word lists

In both electronic and print dictionaries the central part of a dictionary is called the word list. It contains headwords which represent units of information.

The subject matter of whether lexicographers should use all the headwords of a dictionary in the main body of it or whether to create more word lists is addressed by Atkins & Rundell (2008). There exist two approaches. The first one conveys the idea that lexicographers may decide that for a better clarity and simplicity of the prepared list of headwords, it would be plausible to make not one list but two or even more with one being positioned in the main body of the dictionary and the other one in the back matter or possibly in the front matter. In the main word list would be enlisted all the lexical items and in other components of a dictionary (i.e. the back matter) all other lists, for example a list with proper names only. This way it can be ensured that the search of a proper name would be easier and faster than to look for that particular item in the main body.

To address the second approach, when it is used, the main body of a reference work contains the headword list with all of the lexical items selected for the dictionary. However, such word list gains in size and it lacks all of the benefits of having separated word lists.

To particularise, the electronic version of LDOCE5 has two kinds of word lists. One is the general one and second is the one called the Cultural Dictionary which is just as the general one alphabetically ordered, but has a smaller amount of headwords. These are present there in order to provide contexts for the phenomena regarding the words in the general word list.

2.7.6 Amount of macrostructures

According to the amount of word lists which a particular dictionary has, such reference work can have more than one macrostructure. Burkhanov (1998) speaks about dictionaries which have two macrostructures. This phenomena occurs in two-way bilingual dictionaries concerning an L1 (Language 1) to L2 and L2 to L1 (i.e. German to English, English to German) structure. However, multiple macrostructures in reference works are not exclusively present in bilingual dictionaries. Monolingual dictionaries can have two macrostructures as well. *The Collins Paperback Dictionary and Thesaurus* (1994) "contains an alphabetical monolingual dictionary in which lemmata are provided with definitions and an analogical dictionary of the English language in which synonyms lists

are presented." (Burkhanov, 1998, p.146) Therefore, it is a macrostuctural decision to either use all the lexical information in one central word list, or to provide the publication with more lists which are complex, resulting in more than one macrostructure.

2.7.7 Front Matter

The information presented in the front and the back matter are common for both print and electronic dictionaries; however, according to the different kind of medium on which they are presented, they are located in different place of each medium (front and back matter concerning the print dictionary and the user guide, study pages etc. concerning the ED). Moreover, the choice to provide this information using the frame suitable for a print dictionary presents an ideal manner of structuring of the whole subject matter in this thesis.

The part of a reference work of an English monolingual dictionary that precedes the main body which contains the central headword list is called the front matter. (Hartmann and James, 1998, p.60) It usually has different numbering than the rest of the reference work in order to diversify the structure of it. The common practice is to use Arabic numerals in the part containing the headword list whereas in the front matter to use some other kind of pagination e.g. gradual adding of the letter i, or Roman numerals.

2.7.7.1 Foreword

The foreword is a place where publishers state what they are trying to accomplish and what intentions they have with their publication. (Hartmann and James, 1998) It can contain reasons for creation of the dictionary, what changes had been done since the publication of the possible previous versions of them and much more information relevant to the reader. In this part of their work, authors manifest their specific style of writing influenced by their personality on one hand and reflect the style that is suitable to be presented to their readership on the other. (Atkins & Rundell, 2008, p.176-177) One of the most famous prefaces was done by Samuel Johnson in his *Dictionary of the English Language*, published in 1775. His preface is quoted in many lexicographic publications as he had several revolutionary ideas.

2.7.7.2 List of contributors, dedication and acknowledgements

In a reference work with more than one contributor whose involvement was significant but not as important to be listed as author, there is a space designed to enlist all of those who were engaged in the process. Optionally, a dictionary can contain a dedication. Nonetheless, most authors use this feature for purposes varying from the most rational motives to ones which can be considered amusing. Dedications have only little value in contrast to their contribution to advancement of human knowledge; however, they can serve as a minor satisfaction for the author's efforts. Similarly, it is rare when an elaborate work of art concerning academic writing is created by one author exclusively without any influence of other works or ideas of other people. Therefore most authors feel the need to thank to people who either influenced them or contributed to the work in any way. For that reason they include a short paragraph expressing their gratitude either in the front matter called the acknowledgements or into the user guide of an ED. (Atkins & Rundell, 2008, p.176-177)

2.7.7.3 User guide

Most of the monolingual English dictionaries have in their front matter a section containing information about the proper manner of using the dictionary. This section presents the design and arrangement of the dictionary. The main purpose of it is to help the user to be successful in obtaining the desired information and to do so in reasonable amount of time. Proper understanding of how to use the reference work is vital. Some lexicographers even consider guiding of the user so important, that they place the user guide next to the word list to promote it instead of situating it in other part of the front matter. (Burkhanov, 1998, p.258) Rarely, there is a separate publication that contains the guiding information (e.g. a workbook). (Hartmann and James, 1998) In the EDs the user guide is a component incorporated into the program's structure and provides the guidelines for the program's usage along with information which is equivalent to the information presented in the front and back matter of a print dictionary.

2.7.7.4 Abbreviations

An abbreviation can be characterised as "a shortened form of a word, phrase or term which represents its full form." (Hartmann and James, 1998, p.1) The general purpose of using abbreviated word forms is due to the constant need to save space in entries to deliver sufficient amount of notions to readers. As Jackson (2002, p.178) argues, it is better to decrease the amount of abbreviations to a minimum to embrace accessibility.

However, this principle applies mainly to the print versions of dictionaries. In the electronic forms of them, the need of saving space is less significant due to the nature of the layout of electronic applications. The users can scroll the wordlist up and down according to their choice and the screen changes accordingly allowing them to use full forms of lexical items.

2.7.7.5 Appendices

An appendix is used as additional information to complement the content of entries. (Atkins & Rundell, 2008, p.39) During the planning process of a reference work authors decide whether to place them in the front matter, the back matter or as a component inserted in the central list. In case of the ED the component is often inserted in a convenient place on the screen regarding an entry or as a completely individual component of the ED. Such insertion serves as a context-wise help designed to simplify the user's search. Appendices are either lexical or non-lexical and may have the form of: "abbreviations, foreign words and phrases, ranks in the armed forces, counties of the UK and states of the US, weights and measures, musical notation, Greek and Cyrillic alphabets, punctuation, works of Shakespeare" etc. (Jackson, 2002, p.25)

Concerning appendices, the front matter may also contain rather very brief essays themed according to the author's choice, list of illustrations or thematically clustered pages with illustrations in the word list and pronunciation key which is "an explanation of the transcription system used for indicating pronunciation." (Jackson, 2002, p.25)

2.7.8 Back matter

The back matter is the part of a reference work containing a similar kind of information as front matter, but with minor differences. In the overall macrostructure of a dictionary the back matter is placed after the main list of headwords. According to

Hartmann and James (1998, p.12) it usually contains "personal and place names; weights and measures; military ranks; chemical elements; alphabetic and numerical symbols; musical notation; quotations and proverbs" and it is entirely up to the lexicographer to decide in what order to enlist these items. The back matter can also include lists of "Roman numerals..., maps, diagrams, and other material geared to the needs of the target user." (Atkins & Rundell, 2008, p.177) However, some of these components do not have specific guidelines about whether to place them in the front or back matter (such as the pronunciation guide) and some of the components are more prone to be found in the back matter (such as the complementing CD or DVD) rather than in the front matter.

In conclusion, the theoretical part of the thesis indicates that the microstructure and the macrostructure of a dictionary are equally important in order to understand the way dictionaries are constructed and what they consist of. They describe various terms, principles and phenomena and together constitute the necessary foundation for the consequent analysis.

3 METHODS

The focus of this chapter is to describe the methods which were used to analyse and compare the selected electronic dictionaries.

The comparison of the amount of stored information was carried out by withdrawing information about the content presented in the print and electronic versions of the dictionaries from a variety of sources. The method for the comparison of the start-up processes was to start all four of the EDs and analyse them according to their usefulness. The method for the comparison of features and components which were chosen as the most important was to study how they work, what they consist of and consequently to select the EDs which have the most elaborate ones. The comparison of the way the individual EDs present the content of their entries and how their definitions are structured is the final part of the analysis. The method of comparing of the entries is presenting the way they appear, defining how the lexicographic principles outlined in the theoretical part of the thesis apply in them and how the presence of these principles along with the quantity of the respective entry features influence the comprehensibility of the presented entries.

4 ANALYSIS

The aim of the analysis is to examine and compare features, components and other characteristics of the selected electronic dictionaries (such as the amount of presented content etc.) as well as determining which of the compared dictionaries therefore presents the best choice for the defined user. The electronic dictionaries are further referred to as EDs.

4.1 The compared dictionaries

This chapter introduces the dictionaries which were selected in order to be compared and provides information about the year of their release and who released them. They were released in a span of four years. In this thesis, they are referred to by the abbreviations of their full names.

The dictionaries were selected for the comparison according to the fact that they are notable works which are easy to acquire and available for most people in libraries. All four of them are single volume dictionaries with their single ED counterparts.

The first dictionary, the Macmillan English Dictionary for Advanced Learners 2nd Edition (MED2, print and CD-ROM), was produced by Macmillan Publishers Limited in 2007. The second dictionary is the Cambridge Advanced Learner's Dictionary Third Edition (CALD3, print and CD-ROM) and it was produced by Cambridge University Press in 2008. The third dictionary, the Longman Dictionary of Contemporary English fifth edition (LDOCE5, print and DVD-ROM), was produced by Pearson Education Limited in 2009. And finally the fourth dictionary is the Oxford Advanced Learner's Dictionary 8th edition (OALD8, print and CD-ROM). It was produced by Oxford University Press in 2010. All four dictionaries are learner's dictionaries containing British English. However all of them contain a selection of words with both British and American spelling.

4.1.1 Typology of the analysed dictionaries

In the following section the properties of the selected dictionaries are described according to their typology (cf. chapter 2.4, p.4) outlined in the theoretical part of the thesis. All the analysed reference works are monolingual English dictionaries and their

coverage is general language. The size of them is the standard edition and the medium is both print and electronic. Organisation is 'word to meaning' and 'word to meaning to word' (where looking up one word leads to other semantically related words).

The definition of the user for the selected dictionaries is that he/she is an advanced language learner. The LDOCE5 and the CALD3 are intended to be used by users with upper-intermediate to advanced level of English and the MED2 and OALD8 are for advanced learners. The user's native language can be either English, or he/she can be a learner of the English language.

To address the user's language skill, a very important aspect of preparing an entry is to determine how the user is skilled in using the language. The comprehensibility of the entry must be adjusted to this aspect. If the part of the entry which holds the definition of meaning contains a word which exceeds the expected vocabulary of the user, the word should be explained in the bounds of the reference work because if the user does not know such word, the easiest thing to do is to look for such word in the same dictionary.

The ideal user's language skills of the analysed dictionaries are that of a school student, a literate adult and a language learner. To conclude, the essence of what users need the dictionary for is decoding, specifically to understand the meaning of a word, and for encoding, which represents using a word correctly.

4.2 Comparison of the amount of the stored information
4.2.1 Amount of content

The comparison includes the amount of content presented in each dictionary. The sources for obtaining the information about the content include the print dictionaries, the information stated in their electronic counterparts, the official web presentations of their respective publishers and the information provided to me by the publishers themselves. All four of the EDs contain the content published in their print versions; however, they also provide additional content which differs with each particular ED. The following table presents the amount of content which each ED contains.

Table 1

Amount of content in each ED

	headwords	examples	encyclopaedic entries	collocations	synonyms, antonyms	corpus
MED2	over 45,000 headwords	over 90,000 examples	unspecified	over 30,000 collocations	thousands of synonyms and antonyms	over 200 million words
LDOCE5	over 230,000 words, meanings, and phrases	over 165,000 examples in print, 1million corpus examples on DVD	over 9,000 encyclopaedic entries	over 147,000 collocations	over 48,000 synonyms, antonyms and related words	over 390 million words
OALD8	unspecified	over 85000 examples in print	unspecified	unspecified	unspecified	over 100,106,008 words
CALD3	unspecified	unspecified	unspecified	unspecified	unspecified	corpus has several billion words

The publishers of all four dictionaries differ in approach to clarify the exact amount of content such as the number of entries, words, phrases explanatory sentences etc. In fact, only the ED of the LDOCE5 openly states the approximate numbers but the exact numbers remain unclear. They state that the ED has "over 230,000 words, meanings, and phrases" but it is not very clear how many of each it contains and the same it is with collocations, synonyms, antonyms and related words.

To compare objectively the exact amount of content, all of the entries, words, meanings etc. would have to be individually counted and then the comparison of the dictionaries according to the criterion of the volume of content would be absolutely precise. With the above stated approach of the dictionary publishers (which is rather restrained) the result of comparing the dictionaries under the criterion of the amount of content is that the dictionary which has the largest content in terms of quantity is the LDOCE5.

4.2.2 Defining vocabulary

In order to understand the definitions, the user has to understand words which are used to construct them. These words are the most basic words used in the English language and were selected in order to make the definitions understandable. A stable amount of words then form a collection which is called the defining vocabulary. (Hartmann & James, 1998, p. 35)

The next comparison concerns the amount of words of which the individual defining vocabularies consist.

Table 2

Amount of words in the defining vocabularies

MED2	less than 2500 words
LDOCE5	2000 words
OALD8	3000 words
CALD3	unspecified

The table indicates that the MED2 has a defining vocabulary consisting of less than 2500 words (exact amount is not available) and similarly, the LDOCE5 has "clear definitions written using only 2,000 common words" and it is called the Longman Defining Vocabulary (LDV). Similarly, the OALD8 uses approximately 3000 words. The user is more likely to understand entry definitions which are constructed by the words he/she already knows. Therefore lower is the amount of words used in the definitions, more likely will the user understand the meaning of the definition on the first try. With the defining vocabulary of the CALD3 being unspecified, the lowest amount of words in the defining vocabulary has the LDOCE5.

4.3 Components and features of the electronic dictionaries

The aim of this chapter is to carry out the analysis and comparison of the selected components and features.

4.3.1 Start-up processes of the electronic dictionaries

In this chapter it is explained what is shown to the user after the electronic application is started because it is part of the user's experience.

The dictionary which stands out the most is the LDOCE5. It is the only one of the dictionaries which does not show the list of entries immediately after the start-up. Furthermore, it displays a table of tiles representing each distinctive component of the application. The total number of the components is 12 (see Appendix, Figure 2). In addition, it has a feature called the 'word of the day' which displays randomly chosen entry which consists only of one headword and its definition. However, all the components are accessible via the buttons in the main window of the application even after selecting one of them at the start-up.

To contrast, the CALD3, the MED2 and the OALD8 do not have any such feature. After the loading of the program they plainly show the default screen of the application.

4.3.2 User guide

In each of the dictionaries there is a component that provides the user with guidance and the comparison of them is the focus of this chapter. In addition, the pictures of user guides were taken in the position in which they appear implicitly.

The user guide of the MED2 (see Appendix, Figure 3) consists of three main components which are the 'contents', the 'index' and the 'search'. The 'contents' component provides a variety of topics and functions as an expanding list. After selecting each topic, the list either expands to display subordinate topics or consequently displays the main information of the topic in the large section on the right side of the window. Next component is the 'index'. It presents the alphabetical list of topics and introduces browsing by section. Nonetheless, the feature that none of the rest of the analysed user guides have is the presence of the 'back' and 'forward' buttons that help the user navigate in bounds of the guide. Furthermore, the highlight of this user guide is the fact that authors of it even go as far as to explain basic principles of using a computer program. In particular, they explain how to use key combinations i.e. that "Alt+F4 indicates that you must hold down the Alt key and press the F4 key." (MED2, 2007)

The user guide in the LDOCE5 (see Appendix, Figure 4) is called the 'help' and it is divided into a structured list of topics which can be clicked or further expanded. The guide provides information about the proper use of the dictionary and about its distinctive

components and also has a filtering feature which allows the user to search for a particular topic. The feature of the guide that stands out is the animation which is provided while the structure of the list of topics is adjusting but it does not affect the overall quality of the user guide.

The next user guide is the one of the CALD3 (see Appendix, Figure 5) and it is called the 'help viewer'. It "provides a navigation panel which includes a table of contents, index and word search." (CALD3, 2008) The table of contents functions similarly as the 'contents' list of the user guide in the MED2. It functions as a tool to view the content of the topics and expands according to the list structure (i.e. to display subordinate topics). Correspondingly, the same functionality is provided by the index list with the only difference from the 'table of contents' that the list is arranged alphabetically. And finally the 'search' component allows the user to search the 'help viewer' by word or by phrase.

The user guide (see Appendix, Figure 6) in the OALD8 is very simple. It is placed in a pop-up window and consists of a plain text divided into nine chapters. The means of navigation in this guide are limited to the nine links placed in the beginning of the file which navigate the user within the file. The 'Back to Help contents' link is placed at the end of each chapter which allows the user to return to the beginning of the guide. The overall comprehensibility is therefore limited because the guide functions as a text file with only several navigation links and in comparison with the rest of the analysed user guides the efficiency of working with this guide is inferior.

To conclude, all of the analysed user guides are aiming to describe the features and components of the respective dictionaries and the information presented under their topics is comprehensible. Nonetheless, the quality of the visual form and the means of using the guide differ significantly. The user guides of the MED2 and the CALD3 are the most sophisticated ones. They follow one similar pattern of the user guide layout which is effective. However, there are features which separate them. The CALD3 provides a welcome page with pictures whereas MED2 contains the 'follow' and 'back' features concerning navigation in the guide. The second most elaborate user guide offers the LDOCE5 which is simpler than the two, yet very effective as well. In contrast to the above mentioned guides stands the user guide of the OALD8. It is the least elaborate one of them and it only presents a simple text file complemented by few navigation links.

4.3.3 Options of the electronic dictionaries

The MED2 provides the user with the possibility to access options directly from the main application window and correspondingly in each of its windows. However, it is rather confusingly called 'My MED". A similar situation concerns the LDOCE5. It has the options feature named 'my dictionary' instead of 'options' which is rather confusing. Both mentioned EDs have the same amount of possibilities concerning the choice to change the behaviour of the ED itself. They include the text size and the sound options. The only difference is that the MED2 has a feature to change the automatic transfer from the feature called the 'Quick view', which is a smaller version of a dictionary, to the full version of the program.

The CALD3 has the option to change the font size, to play the UK or the US pronunciation of a word automatically and to turn off the sound of the program completely. The user guide is accessed by clicking a question mark button which is located on the main window.

Similarly, in the OALD8 user can change the text size, access the sound options (the automatic sound can be either British, American or turned off) and the option to turn on and off the separate pop-up window (small version of a dictionary – the Genie). However, the options feature (here called settings) is located in a way that is very clearly recognisable - above the main dictionary menu.

All four EDs have almost the same options capabilities. Therefore the chief difference between the EDs is the way they are accessed. The most convenient one occurs in the OALD8 followed by the CALD3. The MED2 and LDOCE5 are less convenient due to the confusing manner of their access path.

4.3.4 Frequency highlighting

All four EDs have the feature of highlighting the most frequent words used in spoken and written English; the subject matter is covered in chapter 2.6.7 (p.12).

The LDOCE5 and the CALD3 use the frequency distributed across different genres and therefore are more accurate in the frequency than the MED2 and OALD8 which use the raw frequency. In terms of presenting the frequency information, the compared EDs use different approaches. The LDOCE5 has ranged markers which indicate whether the frequency originates in spoken (S1, S2, S3) and written (W1, W2, W3) language with each of the marks indicating which part of the 3000 words it represents (S1 = first one thousand

most frequent words). The situation with the MED2 is similar. The collection of high-frequency words in the MED2 is called the core vocabulary and it includes 7500 words. Furthermore, the MED2 differentiates between the most and least frequent words by introducing a star evaluation system. Each marked word has one, two or three stars showing how frequent they are. The CALD3 has three types of markings showing a label (either essential, improver or advanced) hinting the importance of a word. The least elaborate approach has the OALD8 with only having a marker implying the fact that a word is among the most frequent 3000 words.

To summarise, the most elaborate frequency highlighting feature is in the LDOCE5, followed by the CALD3 due to their use of frequency distributed across different text genres. They are followed by the MED2 and OALD8 which use the raw frequency. However, the MED2 has upper hand due to the more precise means of rating.

4.3.5 Distinctively unique components

As a distinctively unique component of an ED is in this analysis considered a component which is not present in any form in all the other compared dictionaries. The feature which is present only in the LDOCE5 is called the "word of the day". It presents a daily changed word along with its definition in the main windows of the program. Another feature that is exclusively in the LDOCE5 is the cultural wordlist called the Cultural dictionary which provides the alphabetical list of culturally specific headwords. To add, the OALD8 also has a unique feature called the iWriter offering an environment for easy and convenient writing.

4.4 Comparison of entries
4.4.1 Non-canonical word forms as headwords

The canonical word form is the common form of a headword (cf. chapter 2.6.4, p.10). However, in some circumstances the presence of a non-canonical form in the headword is also possible. Users may try to search for a word while not realising that such word form is non-canonical. To define whether or not the selected dictionaries list non-canonical forms is the focus of this section of the chapter. The method here is to search non-canonical word forms in all four dictionaries and see whether they enlist non-canonical forms in their word lists. The resultant tables which present the results of the

individual searches also include a column presenting definitions of the headwords. The additional information which the entry presents (pronunciation, examples etc.) is omitted.

4.4.1.1 Nouns

The noun 'thesis' has one non-canonical word form: plural form: 'theses'. The following table shows what results were shown after searching the non-canonical word form 'theses'.

Table 3

Search results of the presence of the word form 'theses'

MED2	thesis	a long piece of writing that is the final part of an advanced university degree
LDOCE5	thesis	a long piece of writing about a particular subject that you do as part of an advanced university degree such as an MA or a PhD
OALD8	thesis	a long piece of writing completed by a student as a part of a university degree, based on their own research
CALD3	thesis	a long piece of writing on a particular subject, especially one that is done for a higher college or university degree

The results of the search offer in all four cases only the canonical word form of the lexeme 'thesis' and the non-canonical word form 'theses' was found in none of the dictionary word-lists. However, the MED2 provides additional information about the inflectional variants within the entry (in the pop-up window) and to see the information is optional. The rest of the dictionaries provide the information about the non-canonical form 'theses' visibly within the grammatical information of the entry. To summarise, none of the dictionaries presents the non-canonical word form 'theses' in their word list.

4.4.1.2 Adjectives

The adjective 'much' has the following non-canonical word forms: the comparative form: 'more' and the superlative form: 'most'.

Table 4

Search results of the presence of the word form 'more'

MED2	more	having more of a particular quality
LDOCE5	more	having a particular quality to a greater degree
OALD8	more	used to form the comparative of adjectives and adverbs with two or more syllables
CALD3	more	a larger or extra number or amount

Table 5

Search results of the presence of the word form 'most'

MED2	most	used for comparing people, places, things etc
LDOCE5	most	having the greatest amount of a particular quality
OALD8	most	the largest in number or amount
CALD3	most	a larger or extra number or amount

The tables 4 and 5 indicate that the EDs present the non-canonical word forms 'more' and 'most' in their word lists as separate headwords.

4.4.1.3 Pronouns

The pronoun 'it' has the following non-canonical word form: the possessive form: 'its'.

Table 6

Search results of the presence of the word form 'its'

MED2	its	longing or relating to a thing, idea, place, animal etc. when it has already been mentioned or when it is obvious which one you are referring to
LDOCE5	its	used to refer to something that belongs to or is connected with a thing, animal, baby etc. that has already been mentioned
OALD8	its	belonging to or connected with a thing, an animal or a baby
CALD3	its	belonging to or relating to something that has already been mentioned

According to the resultant table all four EDs list the non-canonical word form 'its' in their word lists.

4.4.1.4 Verbs

The subject for the search concerning verbs is the non-canonical word form 'fought'.

Table 7

Search results of the presence of the word form 'fought'

MED2	fought	the past tense and past participle of fight
LDOCE5	fought	the past tense and past participle of fight
OALD8	fought	past tense, past part. of fight
CALD3	fought	past simple and past participle of fight

The appearance of the non-canonical word form concerning the irregular verb 'fight' is limited to its past tense form and the past participle. All four dictionaries list the non-canonical word form 'fought' in their word lists.

4.4.2 Comparison of definitions

A verb which has one meaning was used for the comparison between realisations of definitions in the individual sample entries. The method of comparing consists of revealing how much information is given by the definition of an entry introduced by a headword. The definition of a dictionary entry is outlined in chapter 2.6.1 (p.8).

Table 8
Search results of the presence of the word form 'fought'

MED2	google	to search for something on the Internet using the Google™ SEARCH ENGINE
LDOCE5	google	to put a word or words into a search engine , especially Google™, in order to search for information on the Internet
OALD8	google	to type words into the search engine Google® in order to find information about sb/sth
CALD3	google	to search for something on the Internet using the Google search engine (= computer program that finds information)

The example headword 'google' shows the differences concerning how individual dictionaries define a verb with only one possible meaning. The MED2 states twelve words, the LDOCE5 twenty one words, OALD8 sixteen words and the CALD3 seventeen words. All four definitions contain the phrase 'search engine' but they differ in the way of explaining of the phrase. In the CALD3 the whole phrase is defined within the definition while the MED2, the LDOCE5 and the OALD8 offer the link to another entry which explains the phrase 'search engine.' Therefore, when the definition contains a word or phrase which is considered unfamiliar to the expected user, the definition is provided in bounds of the dictionary either in the same entry or the entry contains a link to the entry which explains such word or phrase.

4.4.3 Comparison of entry structure

The comparison of entries and the analysis of the way they reflect lexicographic principles was made on a lexical category of verbs. The reason is that they present an ideal subject for showing the differences between entries of individual EDs and also because they conform to the lexicographic principles described in the theoretical part of the thesis. For the comparison of the entry structure in the sample entries of the individual EDs I chose the verb 'perform'.

All four sample entries of the compared EDs are lexical entries and their headwords are lexical items. In the OALD8, the CALD3 and the LDOCE5 the entries have abbreviations and therefore constitute as abbreviation entries while the sample entry of the MED2 contains no abbreviations. The sample entries also contain grammatical information and as such they constitute as grammatical entries.

Syllabification is used in the headword section of the sample entry in the LDOCE5 and the OALD8 (per • form) but in the MED2 and the CALD3 (perform) it is completely missing, leaving the user unaware of the syllabification of the headword. The grammatical information about the part of speech, stating whether the verb is transitive or intransitive and what it collocates with is present in all of the sample entries.

Pronunciation is present in all four sample entries as well. However, the EDs differ in the offering of the detailed information about the variety of language concerning the pronunciation within the entry itself (although such information is naturally addressed by their user guides). The LDOCE and the MED2 present the two varieties of pronunciations next to each other without stating which one belongs to which variety of English. The

CALD3 differs from them because it uses a colour distinction agreeing with the pronunciation buttons which show the variety of the language. The clearest manner of the four sample entries offers the OALD8. It shows the information about the variety on separate lines in a very simple and easily understandable manner.

The principle of listing is present in all the compared entries as all four EDs list the derivatives of their headwords in their alphabetical word lists as separate headwords. However, the presence of clustering is limited to the entries of the CALD3 and LDOCE5 which both have additional information about the headword's derivatives within the bounds of their entries (CALD3 - word building, LDOCE5 - word family).

All of the sample entries offer the same amount of numbered meanings, however not within the same entry. As the MED2, LDOCE5 and OALD8 present the three meanings of 'perform' in the frequency order, the CALD3 uses the combination of frequency and semantic order. The CALD3 offers one entry showing first two meanings using the frequency order and a second entry containing the remaining third meaning. This way the CALD3 differs from the other EDs which use a word concerning one particular part of speech under one headword, listing all the meanings of it within one entry.

The figures displaying example entries in the compared dictionaries are to be found in the Appendix as Figures 7, 8, 9, 10 and 11.

4.4.3.1 Criterion of extensiveness

The analysis includes two criterions for the comparison of entries which are the criterion of extensiveness and the criterion of comprehensibility. The comparison of the sample entries carried out under the criterion of extensiveness is based on comparing of the amounts of features which the sample entries representing the individual EDs contain. The sample entries offer the extent of entry features indicated by the table 9 and 10.

Table 9

Amount of features in the sample entries

	verb forms	derivatives	thesaurus	collocations	examples	synonyms	abbreviations	syllabification
MED2	yes	no	yes	yes	yes	no	no	no
LDOCE5	yes	yes	yes	yes	yes	yes	yes	yes
OALD8	yes	no	yes	yes	yes	yes	yes	yes
CALD3	yes	yes	yes	yes	yes	no	yes	no

Table 10

Continuation of the table 9

	phrase bank	frequency highlighting	grammatical information	register	directives to the word's use
MED2	no	yes	yes	no	no
LDOCE5	yes	yes	yes	yes	yes
OALD8	no	yes	yes	no	no
CALD3	no	yes	yes	no	no

According to the amount of individual features the most extensive entry layout is in the LDOCE5. It offers in total thirteen entry features which is by far the largest amount of features from the compared entry layouts. The features which are exclusive to the LDOCE5 comprise the feature showing a register of a word, directives to the word's use and the phrase bank. Furthermore, underneath the entry there is an extra box with collocations, followed by a box with thesaurus. With the side menu it offers a dual pathway to reach the collocations and thesaurus information. Under the headword it has a link to information about the derivatives, word origin and verb forms. To contrast, the phrase bank and example bank offer quite similar content. The presence of the phrase bank affects the speed at which the user finds the desired information due to its sorting feature.

The second most extensive entry layout is in the OADL8 with nine entry features. The features which are missing are the derivatives (only present as an alternative search result placed in the word list), the phrase bank, the information about the register and the directives to the word's use.

The last but one most extensive layout is presented in the CALD3 with eight features. Unlike the OALD8 it offers the derivatives within the entry; however, it does not include the synonyms and syllabification within the entry.

The least extensive layout presenting six features is in the MED2. In comparison with the rest of the dictionaries it delivers the lowest amount of features in its entry.

4.4.3.2   Criterion of comprehensibility

The MED2 and the LDOCE5 use tiered structure (cf. chapter 2.6.11, p.14) to present the multiple meanings of the headword in their entries and they present marked sections (1-3) and subsections (1a, 3a, 3b) as means of division of the entry. The CALD3 also uses a tiered structure but instead of subsections it divides the entry in two parts introducing two headwords. The flat structure is only present in the entry of the OALD8. The question is how the use of either flat or tiered structure influences the comprehensibility of the entry.

Upon comparing of the sample entry layouts of the four dictionaries, it is apparent that the most comprehensible manner of presenting of the entry content offers the CALD3. The reason is that the additional information (verb endings, word building, extra examples and thesaurus) is not revealed in the entry layout itself. The possibility to view such content is offered rather as a choice. The amount of information presented after a successful search is therefore lower than in the other EDs and the layout is easier to comprehend. Also, the placement of the definitions is not directly to the left side as in the LDOCE5 but similarly as in the MED2 and the OALD8 it is slightly shifted to the right side creating a space which helps to orientate in the entry.

The second most comprehensible entry layout is in the OALD8. It uses simple bullet points and all of the definitions are visually aligned starting on a mutual vertical line. It shares this feature with the MED2 but it gains an advantage due to the more extensive colour differentiation and space management. The OALD8 differs from the rest of the EDs by presenting the pronunciation information under the respective headword rather than next to it as in the LDOCE5. Similarly to the CALD3, the OALD8 has the definitions slightly moved to the right side creating a visual clarity.

The last but one most comprehensible entry layout is in the MED2. Each numbered section of its entry presents a continuous flow of information. Due to this attribute it is harder to orientate within the entry in comparison with the CALD3 and the OALD8.

The least comprehensible is the entry layout of the LDOCE5. This is so because it offers the largest amount of entry features. The more information is presented in the entry, the less comprehensible it appears to be.

According to the order of the sample entries under the criterion of comprehensibility of their layout, the presence of the flat structure in the entry has only minor effect on the comprehensibility, as the only entry with the flat structure is the OALD8 which is the second most comprehensible entry layout.

4.5 Results

The result of the comparison of the amount of stored information is that out of the EDs whose publishers openly state the amount of content the most information holds the LDOCE5 followed by the MED2. The result of the comparison of the amount of words used in the defining vocabulary is that the lowest one has the LDOCE5 with 2000 words, followed by the MED2 with 2500 words and the OALD8 with 3000 words.

The next part of the analysis is the comparison of the chief components. The result concerning the start-up processes of the compared EDs is that the one which stands out the most is the one of the LDOCE5. The comparison of user guides indicates that the CALD3 and the MED2 have equally elaborate user guides. They are followed by the user guide of the LDOCE5 and the least elaborate one has the OALD8. Subsequently, the analysis of the options of the EDs indicates that the most satisfactory options component has the OALD8 followed by the CALD3; the MED2 and the LDOCE5 both offer less satisfactory options. The result of the analysis of the feature of frequency highlighting indicates that the most elaborate one offers the LDOCE5, followed by the CALD3 and the least elaborate ones have the MED2 and the OALD8.

The last chapter of the analysis is the comparison of entries. Its first part concerns the presence of the non-canonical word forms in headwords. The result of the search of the sample noun was that none of the EDs lists it as a headword. To contrast, all four EDs list the non-canonical word form of the sample adjective, pronoun and verb as a headword.

The second part concerns the comparison of the definitions of headwords. The result is that the four dictionaries provide the user with similar definitions of headwords.

The last part of the chapter presents the analysis and the comparison of entry structures under two criterions. The first one of them is the criterion of extensiveness. The result is that the most extensive entry layout has the LDOCE5 followed by the OALD8, the

CALD3 and the least extensive entry layout has the MED2. Conversely, under the criterion of comprehensibility the order is different. The most comprehensible entry layout has the CALD3 followed by the OALD8, the MED2 and the least comprehensible entry layout offers the LDOCE5.

5 CONCLUSIONS

The results of the analysis define the most elaborate components and features the ideal dictionary should contain. To determine the dictionary which is closest to the ideal dictionary for the defined user, I choose the LDOCE5. The first reason for this conclusion is the amount of overall content presented in the LDOCE5. It is by far the ED accompanied by most content and it is also the only one of the EDs which is produced on a DVD rather than on a CD. Another result of the analysis shows that the LDOCE5 constructs its definitions with using of the lowest amount of words making the definitions more likely to be fully understood. Moreover, the start-up process of the LDOCE5 is the one standing out the most; however, the differences among the individual EDs concerning the start-up process are rather minor. The frequency highlighting feature of the LDOCE5 was selected the most elaborate among the compared EDs and to complete the enumeration, the comparison of entry structure under the criterion of extensiveness suggests that the LDOCE5 provides the most elaborate one.

To contrast, the LDOCE5 does not happen to constitute as the most outstanding ED in every category of the analysis. In terms of the quality of the user guide, both MED2 and the CALD3 precede the LDOCE5 and similarly, concerning the options of the application, the OALD8 precedes the LDOCE5. The entry structure of the CALD3 is superior to the one of the LDOCE5 under the criterion of comprehensibility. The expected user has an advanced level of English but that should not stand in the way of the comfortable manner of accessing the entry content, especially when it is excessive.

Nonetheless, despite the fact that the LDOCE5 has lower comprehensibility of the entry than the electronic dictionaries that I compared it with, its comprehensibility is still quite sufficient and the value of the other components and features at which the LDOCE5 is superior to the rest of the compared EDs is compelling.

To conclude, according to the research of the selected electronic dictionaries, the LDOCE5 is closest to the ideal electronic dictionary.

The possible further research agreeing with the outlined subject matter of the thesis could be done on the web-based medium of a dictionary. Macmillan Publishers Limited decided to discontinue the printing of the MED2 due to the plummeting sales and they only continue developing the web version of the MED, the Macmillan Dictionary Online. The arrival of electronic dictionaries changed the nature of how users work with a dictionary

and consequently, printed dictionaries might disappear in the future. However, the need to consult a dictionary has the potential to stay and therefore the web-based dictionary presents an ideal medium for the further research.

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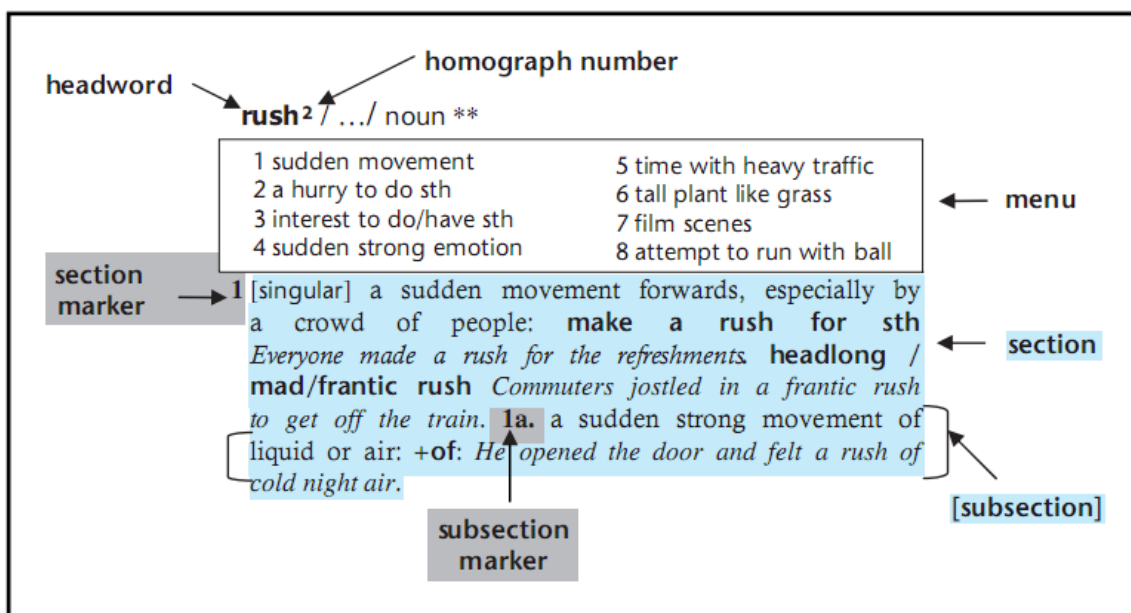
Figure 1. The visual outline of the entry in the MED2 (Atkins & Rundell, 2008, p.205)
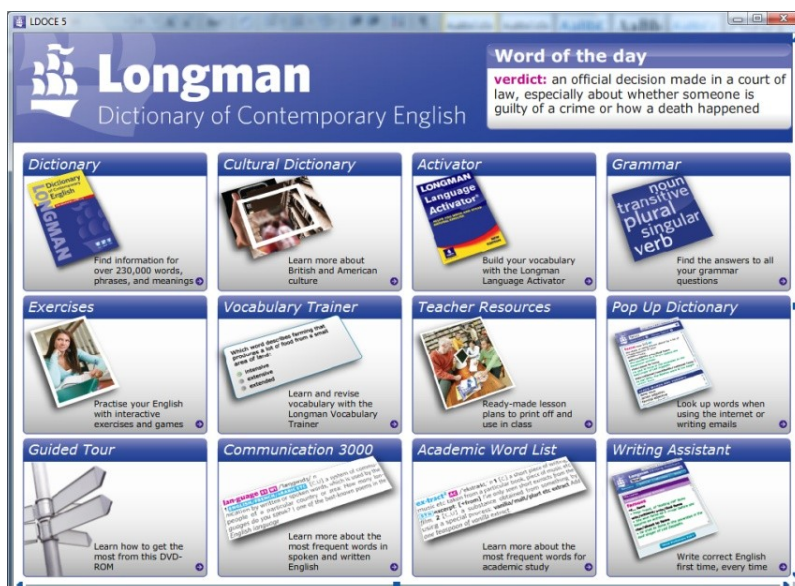
Figure 2. The start menu of the LDOCE5
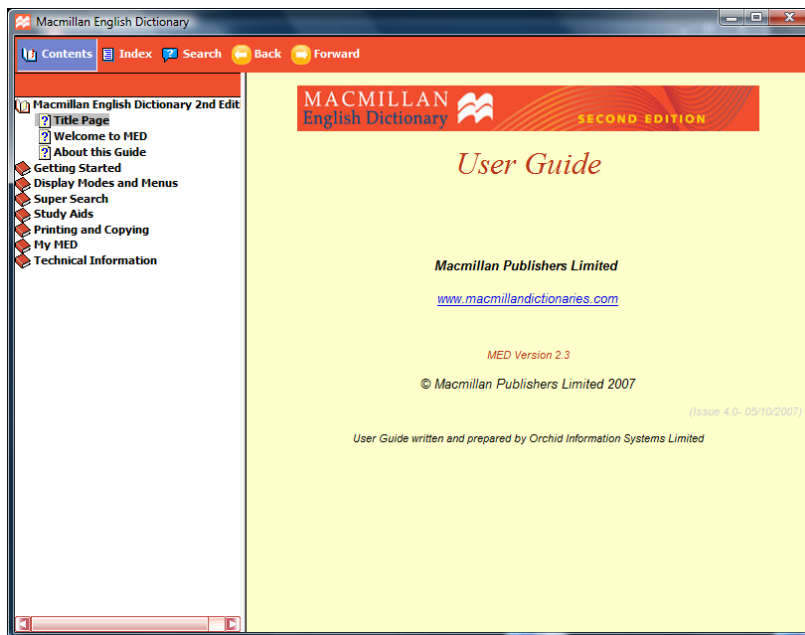
Figure 3. The user guide of the MED2
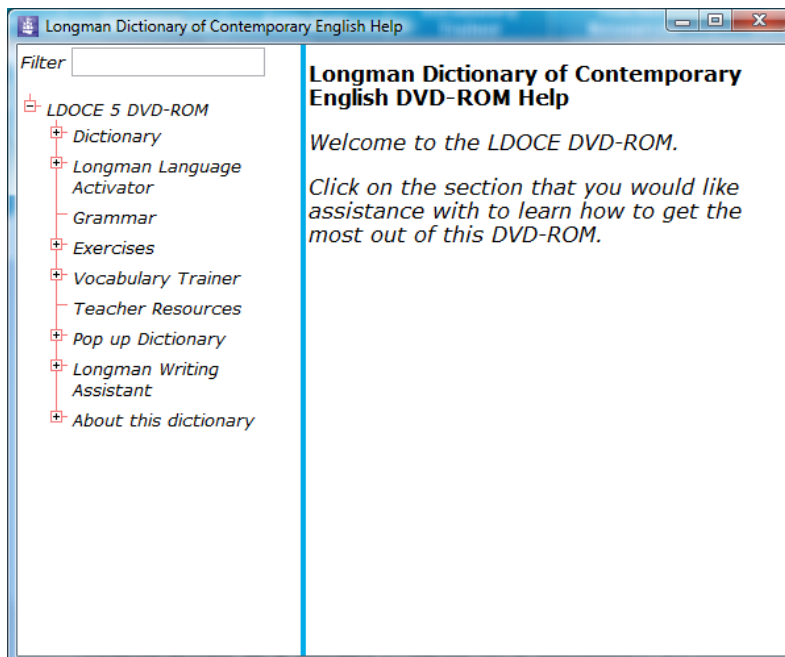
Figure 4. The user guide of the LDOCE5

Figure 5. The user guide of the CALD3
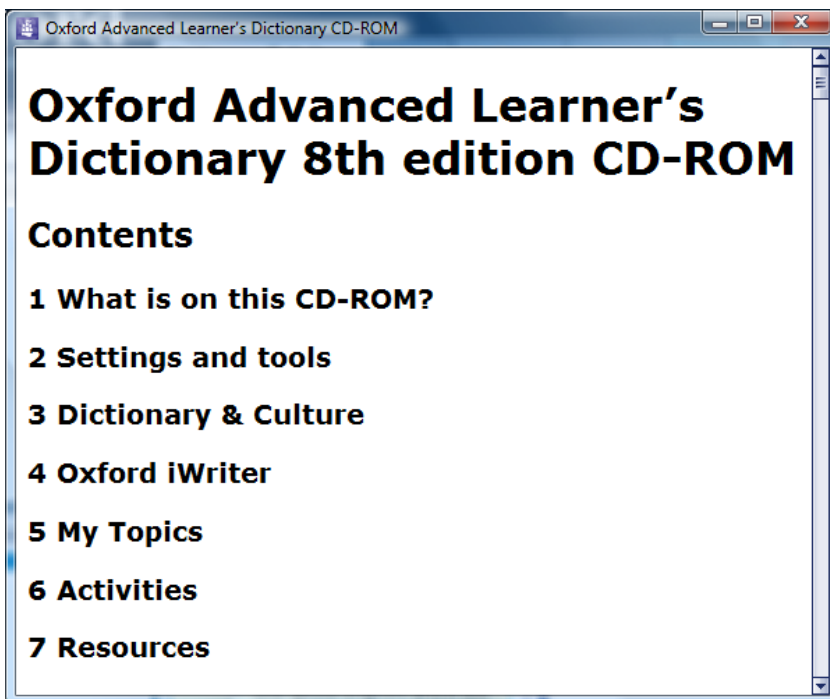
Figure 6. The user guide of the OALD8

perform / 🔊 pə(r)ˈfɔː(r)m 🔊 pərˈfɔrm / *verb* ⓘ ★★★

1 *[transitive]* to complete an action or activity, especially a complicated one
perform a task/duty/service: *Machines are capable of performing many routine tasks.*
perform an experiment/check/test: *Two experiments were performed to test this hypothesis.*
perform a ceremony/rite/ritual: *The Queen will perform the opening ceremony on Saturday.*
perform miracles *(=do things that seem almost impossible)*: *an interior designer who can perform miracles with your home*

1a. *[intransitive]* to have a particular job or purpose
perform a function/role: *The front teeth perform a cutting function.*
Often a grandparent could perform the role of main carer.

2 *[intransitive/transitive]* to do something in front of an audience in order to entertain them, for example by acting in a play or singing
Akram went on to perform on stage in England and India.
The opera was first performed in 1992.

3 *[intransitive]* to do something with a particular amount of success
Stress at home affects how you perform at work.
perform well/poorly/satisfactorily: *The tyres perform well in wet or snowy conditions.*
The party had performed poorly in the elections.

Figure 7. Expanded entry in the MED2

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per·form S3 W2 /pəˈfɔːm $ pərˈfɔːrm/ ◀)) ◀)) *verb*

Word family   Word origin   Verb form

1 [*intransitive and transitive*] to do something to entertain people, for example by acting a play or playing a piece of music:

◀)) *Chenier and the band are performing at the Silver Palace tomorrow.*

◀)) *The children perform two plays each school year.*

▶ *Do not use* **perform** *to say what person an actor pretends to be in a play, film etc. Use* **play**: *John Wayne played (NOT performed) a Roman soldier in the film.*

2 [*transitive*] to do something, especially something difficult or useful **SYN carry out**:

◀)) *Surgeons performed an emergency operation.*

◀)) *The official opening ceremony was performed by Princess Margaret.*

perform a study/experiment/analysis etc

◀)) *An analysis of the survey data was performed.*

perform a task/job/duty

◀)) *She was fired for not performing the duties outlined in her contract.*

perform a function/role

◀)) *software that performs a specific function*

◀)) *The leadership cannot be expected to* **perform miracles** *(=improve a situation in a way that seems impossible).*

> **REGISTER**
> In everyday English, people usually say that someone **carries out** an operation, a study etc rather than use **perform**:
> The operation was **carried out** by a team of surgeons.

3 perform well/badly etc

a) to work or do something well, badly etc → **underperform**:

◀)) *Many religious schools perform well academically.*

◀)) *The team performed poorly on Saturday.*

b) if a product, business etc performs well or badly, it makes a lot of money or very little money:

◀)) *The economy is performing well.*

Figure 8. Entry in the LDOCE5

Figure 9. Side menu presenting additional information in the LDOCE5

ⓣ per·form

BrE /pə 'fɔːm/ ◔

NAmE /pər 'fɔːrm/ ◔

> **verb**

> ⬤ **VERB FORMS**
> ⬤ **WORD ORIGIN**
> ⬤ **THESAURUS**
> ⬤ **EXAMPLE BANK**

⚷ **1** [transitive] ~ sth to do sth, such as a piece of work, task or duty

SYN carry out

◆ *to perform an experiment/a miracle/a ceremony*
◆ *She performs an important role in our organization.*
◆ *This operation has never been performed in this country.*
◆ *A computer can perform many tasks at once.*

⚷ **2** [transitive, intransitive] ~ (sth) to entertain an audience by playing a piece of music, acting in a play, etc

◆ *to perform somersaults/magic tricks*
◆ *The play was first performed in 2007.*
◆ *I'd like to hear it performed live.*
◆ *to perform on the flute*
◆ *I'm looking forward to seeing you perform.*

⚷ **3** [intransitive] ~ (well/badly/poorly) to work or function well or badly

◆ *The engine seems to be performing well.*
◆ *The company has been performing poorly over the past year.*
◆ *If Rooney performs (= performs well) then I believe England can win.*
◆ *She performed less well in the second test.*

IDM see **work/perform miracles** at **miracle**

Figure 10. Entry in the OALD8

Figure 11. Entry in the CALD3

SUMMARY IN CZECH

Tato práce popisuje lexikografické principy, které se používají v současných anglických jednojazyčných slovnících, a dále se zabývá srovnáním takovýchto čtyř významných elektronických slovníků. Teoretická část popisuje jazykovou disciplínu lexikografie a počítačové lexikografie a zároveň další jevy, které se týkají typologie slovníků, jejich makrostruktury a mikrostruktury. Principy popisované v této práci jsou aplikovatelné jak na tištěné, tak na elektronické referenční práce a teoretická část této teze tedy popisuje jak tištěné, tak i elektronické slovníky. Tento teoretický fundament slouží jako základ pro následnou analýzu.

Praktická část této práce se zabývá analýzou a srovnáváním vybraných vlastností a komponent čtyř vybraných elektronických slovníků. Dává si za úkol identifikovat elektronický slovník, který nabízí nejvíce propracované, obsáhlé a srozumitelné vlastnosti a komponenty a zároveň nabízí největší množství obsahu. Ze závěru práce vyplývá, že nejvíce se k popsanému ideálnímu slovníku blíží elektronická verze slovníku *Longman Dictionary of Contemporary English fifth edition*.