A Corpus Based Investigation of Collocations in Hungarian

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Abstract

The paper presents a corpus based pilot study of Hungarian collocations. The toolset to acquire the frequent word combinations is described briefly along with the analysed Historical Corpus of Hungarian. The collocations of the words *ad* 'give' – *kap* 'get' – *kér* 'ask for' – *vesz* 'buy' will be examined in detail, to model the study of semantic relationships through the analysis of collocates.

1 Definitions of Collocations

The past decades have witnessed the recognition of the significance of investigating corpus-based collocations. Since Sinclair's essential book [1991] many attempts have been devoted to the automatic collocation extraction from corpora. While Sinclair defined collocations simply as frequently co-occurring word sequences, most authors make an effort to define them more precisely, partly by a classification of phrase types. These are often categorized in the following major classes:"FREE COMBINATIONS are: Not preconstructed, and semantically literal (i.e. the words have retained their conventional literal meanings) COLLOCATIONS are: Preconstructed, and semantically literal (i.e. the words have retained their conventional literal meanings) IDIOMS are: Preconstructed, not semantically literal (i.e. the words, or at least one of them, have not retained their conventional literal meanings, or at least cannot be analysed as such)." [Van Der Meer, 1998:314]. Although collocation has been a hot topic in corpus linguistics for the past decade, there have hardly been any attempts to investigate them in Hungarian corpora so far. There are some undergoing projects with more or less similar aims: a dictionary of Hungarian collocations is under compilation, using the Historical corpus among its resources; two French-Hungarian dictionaries are also under compilation, one specialising in phrases while the other one in idioms. Still, there has not been an organised project for joining forces. As the revised plan for compiling the Historical Dictionary of Hungarian is aiming to focus more on collocations, there is a growing need for research in this field.

2 Collocation Investigation in the Hungarian Corpus

2.1 The Historical Corpus of Hungarian

For the project of the Historical Dictionary of Hungarian a representative corpus was collected (25 million running words). Most of the texts are different kinds of prosaic texts (prosaic fiction: 31%, other kinds of prose: 51%, poetry: 8,5%, drama: 5,7%), chosen from three centuries (1772-2000). A morphological analyser programme was successfully run on

the modern texts, but the analysis of the earlier texts was problematic. We have designed and applied a special programme to improve the recognition of historical texts. The method to convert and analyse archaic texts without losing the original word forms was described in Kiss & Pajzs [2001] and Kiss et al.[2001]. The result is an analysed corpus containing the original running word in the first field and the recognised, or presumed, analysis of the word in another field. If a running word has more than one analysis, each one is kept in the analysed field, separated by vertical bars. From this file the lemmas, the codes given by the analyser and the corresponding running words can be retrieved. For the compilers of the dictionary a retrieval interface was made to support the search in the concordances of the words in the order of their date of writing. (Currently two different text retrieval tools are being used for the same corpus: the search engine of the Open Text program is still in use, and we are testing the Corpus WorkBench corpus retrieval software, developed at the University of Stuttgart. Both are available through user-friendly interfaces. (The English version interface is available at the web site: www.nytud.hu/hhce.) While this retrieval mode is sufficient for words with a relatively low frequency (below 100 occurences), it does not support the recognition of recurrent word phrases, and it is hardly usable in the case of very frequent words (over 1000 occurrences).

2.2 Current Research Purpose

The aims of this research are manifold, including:
—   the development of a specialised software toolset to facilitate the recognition of recurrent word phrases,
—   the investigation of different kinds of frequent word phrases in Hungarian, based on corpus research and other resources (dictionaries, traditional archives, etc.),
—   the preparation of a Hungarian phrase database, retrievable by any of its key elements and properly classified according to different aspects: whether it is just a frequent free combination, or a semi-preconstructed and partially literal collocation, or a completely preconstructed and semantically non-literal idiom.
The database should also contain the definitions of each phrase, and additional fields where the compiler provides his/her suggestion whether the entry should be included in monolingual or bilingual dictionaries, also indicating the type (language, size etc.).

2.3 The Collocations and Other Frequent Word Phrases in the Historical Dictionary of Hungarian

The project for *the Historical Dictionary of Hungarian* has been going on for several years now. At the end of 2000 a committee, set up to revise the original concept of the dictionary, decided to redesign the whole project to make it more realistic. The updated concept outlines the compilation of an eight-volume dictionary, to cover the vocabulary of Hungarian from 1772 up to 2000. The number of main entries will be around 100,0000 (the largest available dictionary on Hungarian contains 52,0000 entries). Each defined sense will be illustrated by at least one citation from the corpus, supplied with exact bibliographic reference. The first occurrence of each sense in the given period will be illustrated either with a citation or with the date of its writing and the bibliographic reference. In the electronic version more citations are to be included, with some additional possibilities in this version as well, e.g. direct retrieval of synonyms, hyponyms, the availability of the full bibliographic database, frequency information etc.

One of the major novelties of this work compared to the earlier Hungarian monolingual dictionaries is the special treatment of collocations and frequent word phrases. While idioms and proverbs will be excluded, this will be the very first Hungarian dictionary to handle collocations in a systematic way: a special section of the entries will contain collocations that are, at least partially, preconstructed, their meaning being not completely transparent from the meaning of the elements. The arrangement of collocations is strictly defined:

- the ADJECTIVE+NOUN phrases are included in the entry of the adjectival element,
- NOUN+VERB phrases are included in the entry of the nominal element. If there are more than one noun in the phrase it is either included in each place, or a cross reference is given,
- PRONOUN+VERB phrases are included in the entry of the verbal element,
- NOUN+NOUN or NOUN+PRONOUN phrases are included in the entry of the nominal element [Ittzés 2002].

Apart from collocations it is possible and· advised to give frequently occurring free word combinations in the citation section as additional examples, supplied with bibliographic reference.

3. Collection of collocations from the corpus

3.1 Tools for Extracting the Frequent Word Phrases

In the first step the full concordance of the keyword is retrieved by the Open Text programme (see Figure 1 for an example). This format is unreadable for human users, because it contains both the running words and their analysed versions and the necessary XML tags between them. In Open Text the length of the concordance can only be specified by the number of characters to be outputted to the right and left of the keyword.

```
1772..mert[MN]||mer[IGE][Me3]</a></w>
 <w><t>akkor</t><a>az[NM][TEM]</a></w>
<w><t>leg</t><a>leg[NE]</a></w> -
<w><t>ko2rmo2sbben</t><a>NIN</a></w>
<w><o>faggattya</o><t>faggatja</t><a>faggat[IGE][Te3]</a></w>
<w><t>o2tet</t><a>o2tet[NE]</a></w> :
<w><t>Elejbe</t><a>elejbe[HA]</a></w>
<w><o>adgya</o><t>adja</t><a>ad[IGE][TPe3]||ad[IGE][Te3]</a><t>agya</t><a>agy[FN][PSe3]
</a></w>,
 <w><o>melly</o><t>mely</t><a>mely[NM]</a></w> <w><t>nehe1z</t><a>nehe1z[MN]</a></w>
<w><t>le1gyen</t><a>le1gy[FN][SUP]||le1gyen[FN]</a></w>
<w><t>igaza1n</t><a>igaza1n[HA]||igaz[MN][PSe3][SUP]</a></w>
<w><t>meg</t><a>meg[KOT]||meg[IK]</a></w> -
<w><t>te1rni</t><a>te1r[IGE][INF]</a></w> ;
<w><t>az</t><a>az[DET]||az[NM]</a></w>..
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Figure 1: An analysed concordance line after Open Text retrieval

A PERL programme then converts the concordance to a more transparent format for further processing. The output contains three words before and after the keyword, each of the fields are kept and tabs, as well as the XML tags, placed between the different fields of the original lemmatised file, separate them. This converted file can then be imported to any database or spreadsheet programme to be further processed with that. The XML tags are kept to produce

an output in XML format when required. The result is imported into ACCESS. From the table several different kind of retrievals can be generated. The table can be easily sorted by any of the fields or their combinations (e.g., the first preceding or following word/suffix to the keyword). In each case it is possible to display the running words only, while sorts and selections can be made on the hidden fields as well.

Wdate	tok-3	tok-2	tok-1	tok	tok+1	tok+2	tok+3
1936	pamlagot	vagy	*ágyat*	adtak	tetűm	most	nem
1935	imádságos	magyar	*áhítattal*	adhatunk	Áldja	meg	az
1882	szemeit	nagy	*ájtatosan*	Adj	el	azonnal	száz
1923	Viharodnak	palástját	*áldva*	add	rám	S	villámodat
1900	Kar	Adjon	*áldást*	adjon	áldást	Szeressétek	holtig
1869	kegyelet	adóját	*áldást*	adva	a	szent	hantokra
1846	hogy	az	*áldást*	adják	gyermekökre	És	ha
1857	Végre	befejezésül	*áldást*	ad	a	bérmáltakra	mondvan
1980	megint	csak	*áldásunkat*	adjuk	a	frigyhez	Ha
1866	Az	ég	*áldását*	adja	rád	Bármit	keress
1989	tolmácsoljuk	és	*áldásunkat*	adjuk	szervezetüknek	és	az

Figure 2: A sample from the concordance of the word *ad* 'give' sorted on the preceding lemma.

While trying to study the most frequent collocations in the tables described above, I realised that many frequent collocates can occur in either of the right or the left hand side of the keyword, and in many cases one or two words can be inserted in between them (articles, adjectives, modifiers, conjunctions etc.). Therefore, I collected all the words occurring in the three-word proximity of the keyword into an array, and made a frequency list of them sorted by their frequency. When trying to collect the collocation candidates, we can first examine this sorted frequency list and select the first guesses for the possible collocations. The actual collocation list can be compiled using the sorted tables exemplified in Figure 2.

When one further combines the ordering possibilities, the typical syntactic constructions along with the most frequent collocates and their semantic content will become transparent simultaneously. Figure 3 exhibits several typical examples of the phrase *kifejezést ad vminek* 'express sg', arrived at when sorting the concordance by the suffix of the first word to the right, then the suffix of the first word to the left of the keyword.

wdate	tok-2	tok-1	tok	tok+1
1989	elkeseredésüknek	Megrökönyödésüknek	adtak	Kifejezést
1978	s	Reményüknek	adnak	Kifejezést
1883	iránti	Aggodalmuknak	adtak	Kifejezést
1882	azon	Véleményöknek	adnak	Kifejezést
1880	kivánságnak	Is	ad	Kifejezést
1885	azon	Hitemnek	adok	Kifejezést
1914	a	Reményének	ad	Kifejezést
1872	azon	Meggyőződésnek	adtam	Kifejezést
1895	sokszor	Sokképpen	adtak	Kifejezést
1872	azon	Ohajtásnak	adván	Kifejezést
1900	szép	Türelmességnek	ad	Kifejezést
1905	hogy	kézszorítással	adhassanak	Kifejezést
1883	újév	napján	adhatunk	Kifejezést
1891	hogy	tiszteletemnek	adjak	Kifejezést
1882	ténynek	akart	adni	Kifejezést
1887	nézetüknek	korántsem	adhattak	Kifejezést
1881	képzelődésének	regékben	ad	Kifejezést
1885	azon	hozzáadással	adtam	Kifejezést
1899	ama	reményüknek	adtak	Kifejezést
1898	iránti	méltánylásának	adva	Kifejezést
1880	azon	nézetének	ad	Kifejezést
1880	azon	reményének	ad	Kifejezést
1883	mély	fájdalmának	adjon	Kifejezést

Figure 3: Concordance sorted by the suffix of the following and the preceding word

3.2 Investigation of the Collocations of Four Semantically Related Words: *ad* 'Give' - *kap* ' – *kér* 'Ask for' – *vesz* 'Buy'.

Each of the four words were examined focusing on their collocates (see Figure 4). Among their several different meanings, just like in English, some are in antonym relation to one or more meanings of the other words. As all of these words are much too frequent for a traditional entry compilation (their absolute frequencies: *ad* 25,221, *kap* 9,491, *kér* 12,482, *vesz* 23,919, they are all within the range of the top most frequent 300 words), it would be a hopeless task to read every citation simply in the order of their date of writing, and then decide on the semantic groups to be identified and exemplified. I have tried to collect the most recurrent collocations for each of the words, and then compared the results. The first questions included: which collocate occurs with each of those words (except for the articles, conjunctions etc., of course), and among them, in which cases they produce collocations with the corresponding meaning. For example: *kéz* 'hand' is the topmost frequent collocate of *ad* 'give', partially because there are several collocations and idiomatic expressions where both *ad* and *kéz* occurs: *kezet ad* 'shake hands with sb'; *kezét adja* 'woman agrees to marry'; *kézre ad* 'give up sb to the police or jury'; *kézről kézre ad* 'pass sg from hand to hand', *sorsát kezedbe adja* 'put his/her fate into your hands' *szabad kezet ad* 'give sb full power'. Let me emphasize that none of this phrases has a word-for-word translation in English, so their inclusion is crucial in bilingual dictionaries. Among the existing Hungarian-

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English/English-Hungarian dictionaries the still very best unabridged bilingual dictionary [Országh et al., 1998], unfortunately, hardly supports the search for these collocations, since the entries *ad* and *kéz* are, of course, rather long and complicated. Nearly each of these collocations are included, some of them in both entries (in these cases with different equivalents). Traditional Hungarian lexicography follows the routine of sorting the phrases by the order of the suffix of the collocate. Under each sense, the first ones are always the nominal collocates, then follows everything in the accusative, then the dative, etc. Inside this grammatical ordering there is also an alphabetic ordering. Although this thoroughly methodological way of presenting the collocates can be especially useful for the expert user, a more novice user is not likely to realise the logic of the ordering at all without a special instruction for use (and the lexicographers are all aware that everyday users never read the preface of any dictionary). One of the collocations, *sorsát kezébe adja* was absent from the entries. This experience further emphasizes the necessity of a complete and well-organized collocation database in Hungarian, which could then serve as the basis for the new or thoroughly revised dictionaries.

The word *kéz* 'hand' is among the most frequent collocates of each of the other three words *kap-kér-vesz* (in the range of the first sixty), but in none of the collocations can each word be replaced with the other one with a corresponding meaning. The results are presented in Figure 4. For example: the phrase *kezét adja* 'she agrees to marry' has a corresponding collocate with the opposite meaning *kéri a kezét* 'asks her to marry', but this is more often used by an additional verbal prefix *meg-* (*megkéri a kezét*), while *kezét adja* tends to be prefixed by a different verbal prefix *oda-* (*odaadja a kezét*). The word *kap* 'get' is also supplied with a verbal prefix in the corresponding collocation *meg-* (*megkapja a kezét* 'get her and her parents' consent'). With the word *vesz* a completely different expression is used: *elveszi*, or *elveszi feleségül* 'marry her'. The latter is one of the rare cases, when all of the four alternative collocations exist with a corresponding meaning: *feleségül kér* 'asks her to marry him'; *feleségül ad* 'gives his/her consent to his/her daughter's marriage'; *feleségül kap* 'may marry her'; *feleségül vesz* 'marry her'. The other collocation in which both *kéz* and *ad* occurs is *kézbe ad* 'give sg to his/her hand'; there exists *kézbe kap*, 'gets sg into his/her hand' *kézbe vesz* 'takes it into his/her hand'; but there is no **kézbe kér*. The most frequent actor of the verb *ad* is *Isten* 'God' (or its synonyms), while the most frequent recipient of the word *kap* is *ember* 'man'. Naturally enough, all concrete objects can be a collocate of each of the examined verbs. In the case of *kap* the topmost frequent collocate is *levelet* 'letter' (the 12[th] on the sorted list, and the very first content word). In the case of *ad* 'give' the sense of *ad* would mainly fall into the one defined as first sense in LDOCE3: 'PROVIDE/SUPPLY', while *kap* means 'RECEIVE', *kér* means 'ASK FOR HELP ETC', *vesz* means 'TAKE OR BUY'. Among their collocates the topmost frequent one is *pénz* 'money', which occurs with the highest rank next to *ad* and with the lowest next to *vesz*.

KÉR	KAP	AD	VESZ
kéri a kezét 'ask her to marry sb'	megkapja a kezét 'get her and her parents consent'	(oda)adja a kezét 'she agrees to marry'	
	kézbe kap 'get sg into his hand'	kezébe ad 'give sg to sb's hand'	kézbe vesz 'take sg into sb's hand'
kéri az Istent /Jóistent/Teremtőt/a magyarok Istenét/ Mindahatót/Urat 'ask God'	Istentől kap 'receive sg from God'	Isten adja 'God gives'	Istentől vette 'taken from God'
Pénzt kér 'ask for money'	pénzt kap 'receive money'	pénzt ad 'give money'	pénzért/pénzen/ pénzzel vesz 'buy sg for money'
Feleségül kér 'ask her to marry sb'	feleségül kap 'may marry her'	feleségül ad 'give his consent to his daughter's marriage '	feleségül vesz 'marry her'
	erőre kap 'regain strength'	erőt ad 'strengthen, fortify'	erőt vesz (magán) 'keep one's temper'
Szót kér 'demand the floor'	szót kap 'get the floor, is allowed to speak'	szót ad 'allow to speak'	
kéri a szavát 'ask for sb's promise'	megkapja a szavát 'get sb's promise'	szavát adja 'give one's word for it'	szavát veszi 'take sb's word' 'make sb speak'
Számon kér 'call sb to account for'		számot ad 'give account of sg'	számba vesz 'take sg into account'
Kölcsön kér 'ask for a loan/borrow'	kölcsön kap 'sg is lent to sb'	kölcsön ad 'loan'	kölcsön vesz 'borrow sg from sb'
Kegyelmet kér 'apply for mercy/pardon'	kegyelmet kap 'be pardoned'	kegyelmet ad 'give pardon'	
Kihallgatást kér valakitől 'claim an audience'	kihallgatást kap 'be received by sb in audience'	kihallgatást ad 'give sb an audience'	
Felmentést kér vkitől 'asked to be exempted'	felmentést kap 'be granted an exemption'	felmentést ad 'grant an exemption'	
Segélyt kér 'ask for aid'	segélyt kap 'get aid'	segélyt ad 'give aid'	
segítséget kér 'ask for help'	segítséget kap 'get help'	segítséget ad 'give help'	
tanácsot kér 'ask for advice'	tanácsot kap 'receive advice'	tanácsot ad 'give advice'	
találkozót kér 'ask for an appointment'		találkozót ad 'make an appointment'	
szakvéleményt kér 'ask for professional advice'	szakvéleményt kap 'take professional advice'	szakvéleményt ad 'give an expert appraisal'	

Figure 4: Frequent collocations of *kér-kap-ad-vesz*

In Figure 5. the comparison of the relative frequency of the frequent collocates of the antonym verbs *ad – kap* is summarised. When comparing the relative frequency[1] of the collocate of *ad* (0,0146) – *kap* (0,0158), we may realise that money is about as often given as it is actually received, which is not the case for most of the collocates of any of these word pairs. There are many things that you can give and receive theoretically, but the corpus suggests that you usually rather receive them (for example *ösztöndíj* 'scholarship' is only received and nobody gives them, you get *segély* 'help', *munka* 'work', *pofon* 'slap', and plenty of other things that are rarely given by somebody else). On the other hand *példa* 'good example' is much more often given than received. In the figure bold italicised fonts mean which element of the pair has a higher relative frequency.

állást ad (0,0005)	'gives job'	*Állást kap (0,0044)*	'gets job'
kosarat ad (0,0007)	'turn sb down'	*Kosarat kap (0,0016)*	'gets sb's refusal'
lakást ad (0,0009)	'gives an appartment'	*Lakást kap (0,0026)*	'receives an appartment'
munkát ad (0,0055)	'gives work'	*Munkát kap (0,0076)*	'gets work'
ösztöndíjat ad (0,0000)	'gives a scholarship'	*Ösztöndíjat kap (0,0009)*	'gets a scholarship'
pénzt ad(0,0146)	'gives money'	pénzt kap(0,0158)	'gets money'
példát ad (0,0051)	'gives good example'	Példát kap (0,0009)	'gets good example'
pofont ad (0,0006)	'gives a slap'	*Pofont kap (0,0020)*	'gets a slap'
segélyt ad (0,0004)	'gives help'	*Segélyt kap (0,0012)*	'gets help'
szobát ad (0,0011)	'lets a room'	*Szobát kap (0,0023)*	'rents a room'

Figure 5: Comparison of the relative frequency of antonym collocations[1]

The comparison of the frequencies of semantically related, commonly ·occurring words' collocates is an interesting topic to study in itself. One of the envisaged tasks is to test distribution differences among these collocates.

The *szó* 'word' is another collocate that occurs frequently next to each of the keywords. The collocation *szavát adja* 'give one's word for it' has the corresponding versions *kéri a szavát* 'asks for his/her promise'; *(meg)kapja a szavát*; 'gets his/her promise' *szavát veszi* 'take his/her word'. Among these *(meg)kapja a szavát* hardly ever occurs in the corpus, and *szavát veszi* has a completely different meaning as well: 'make sb speak'. Another collocation containing both *szó* and *ad* is *szót ad* 'allow to speak', which has corresponding collocations with *kap* and *kér*. There are several collocates which are shared by these three words *ad-kap-kér*. Many of them belong to the category described in LDOCE3 as: 'TELL SB STH/PROVIDE INFORMATION or DO STH'. Similarly to English, advice, information, help, explanation, etc. can be given, received, or taken.

Conclusion

When examining semantically related words (synonyms, antonyms, hyponyms) studying their common and uncommon collocates can help the identification of the different semantic features of each word.

The aim of this pilot study was to draw the attention to the importance of the collection and investigation of collocations in Hungarian. Only a handful directions have been touched upon, further research will include:
-   a further improvement of the collocation collecting program. More sophisticated statistical methods are to be tested and built in later on. The final version should have a user friendly interface, which should be a module of the corpus retrieval program being used.
-   the preparation of a Hungarian phrase database containing not only the collocations but the frequent word combinations, idioms, proverbs as well, together with a specific encoding and supplied with a flexible retrieval interface. The database is to be continuously updated both with data coming from the corpus of current Hungarian, and with multilingual equivalents as well.

Acknowledgements

Endnotes

1. The number within the bracket is the relative frequency of the collocate vs. base.

References

[Biber et al. 1998] Biber, D. & S. Conrad & R. Reppen, 1998. *Corpus Linguistics.* Cambridge University Press, Cambridge.

[Bragina 1996] Bragina, N., 1996. Restricted collocations: Cultural boundness. *EURALEX '96 Proceedings*, University of Göteborg, Göteborg. p. 199-207.

[Čermak 1994] Čermak, F., 1994. Idiomatics. *The Prague School of Structural and Functional Linguistics.* John Benjamins, Amsterdam/Philadelphia. p. 185–195.

[Cignoni & Coffey 1998] Cignoni L. & Coffey S., 1998. A corpus based study of Italian idiomatic phrases: from citation forms to 'real-life' occurrences. *EURALEX ' 98 Proceedings*, University of Liège, Liège. p. 291-300.

[Clear 1994] Clear, J., 1994. I can't see the sense in a large corpus. *COMPLEX '94 Proceedings.* Research Institute for Linguistics, HAS, Budapest. p. 33–48.

[Dormeyer et al. 1998] Dormeyer, R. & I. Fischer & M. Keil, 1998. A database for verbal idioms. *EURALEX ' 98 Proceedings*, University of Liège, Liège. p. 99-108.

[Grefenstette et al. 1996] Grefenstette, G. & U. Heid & B. M. Schulze & T. Fontenelle & C. Gerardy, 1996. The DECIDE project: Multilingual collocation extraction. *EURALEX '96 Proceedings*, University of Göteborg, Göteborg. p. 93-107.

[Heid 1998] Heid, U., 1998. Towards a corpus-based dictionary of German noun-verb collocations. *EURALEX ' 98 Proceedings*, University of Liège, Liège. p. 301-312.

[Ittzés 2002] Ittzés, N., 2002. Az Akadémiai nagyszótár szerkesztési szabályzata 'The Style Book of The Historical Dictionary of Hungarian'. (To be published in June 2002.) Research Institute for Linguistics, HAS, Budapest.

[Kiss et al.2001] Kiss G. & Kiss M. & Pajzs J., 2001. Normalisation of Hungarian archaic texts. *COMPLEX 2001 proceedings* University of Birmingham, Birmingham. p. 83-93.

[Kjellmer 1998] Kjellmer, G., 1998. A Dictionary of English Collocations, Based on the Brown Corpus. Review. *International Journal of Corpus Linguistics* John Benjamins, Amsderdam/Philadelphia. p. 338-348.

[Moon 1996] Moon, R., 1996. Data, description, and idioms in corpus lexicography boundness. *EURALEX '96 Proceedings.* University of Göteborg, Göteborg. p. 245-256.

[Nimb 1996] Nimb, S., 1996. Collocations of nouns: How to present verb-noun collocations in a monolingual dictionary boundness. *EURALEX '96 Proceedings.* University of Göteborg, Göteborg. p. 265-271.

[Országh et al. 1998] Országh L. & Futász D. & Kövecses Z. 1998. *Magyar-angol nagyszótár.* Akadémiai Kiadó, Budapest.

[Kiss & Pajzs 2001] Pajzs J. & Kiss G. 2001. An attempt to develop a lemmatiser for the Historical Corpus of Hungarian. *Proceedings of CL 2001.* University of Lancaster, 2001.

[Sandormirskaya & Oparina 1996] Sandormirskaya, I. & E. Oparina, 1996. Russian restricted collocations. An attempt of frame approach boundness. *EURALEX '96 Proceedings*. University of Göteborg, Göteborg. p. 273-282.

[Sinclair 1991] Sinclair, J., 1991. *Corpus, Concordance, Collocation.* OUP, Oxford.

[Sinclair 1997]Sinclair, J., 1997. *The Lexical Item.* The Tuscan Word Centre.

[Summers 1993] Summers, D. (ed.) 1993. *Longman Language Activator.* Longman, London. *(Activator)*

[Summers 1995] Summers, D. (ed.) 1995. *Longman Dictionary of Contemporary English.* Longman, London. *(LDOCE3)*

[Van Der Meer 1998] Van der Meer, G., 1998. Collocations as one particular type of conventional word combination. Their definition and character. *EURALEX ' 98 Proceedings*. University of Liège, Liège. p. 313-322.