Lexical Semantics and Combinatorial Profile: A Corpus-Based Approach

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Abstract
In this paper I discuss a corpus-based approach to the analysis of some phenomena of lexical semantics using empirical data drawn from a Russian-German parallel corpus of Dostoevskij’s “The Idiot” together with its German translations. This parallel corpus is part of the Austrian Academy Corpus (AAC) at the Austrian Academy of Sciences in Vienna. The subject of investigation is lexical co-occurrences which determine the combinatorial profile of a word. A corpus-based analysis of lexical co-occurrences contributes to both monolingual and bilingual lexicography by providing new and more detailed insights into the contextual behaviour of a word. From the diachronic perspective the semantic change comes about at the periphery of the combinatorial profile of a given word. Some of the peripheral co-occurrences can become so frequent that they drift from periphery to centre while others fall out of use and start to be perceived as norm violations. The comparison of combinatorial profiles of the same word in the 1860s and in present day Russian proves to be an efficient instrument for defining the combinatorial norms of a given word against the background of its near-synonyms. The comparison of a given word with all possible translation equivalents has a similar function.

1. Aims and data
The aim of this paper is to show how the methods and tools of corpus research can sharpen the lexicographic description of lexical items. Above all, it concerns words with a sophisticated combinatorial profile, i.e. words which strongly depend on their contextual partners, so that their textual behaviour cannot be entirely derived from their semantic structures.

As an example of such a lexical class I consider first of all Russian degree modifiers – words such as чрезвычайно (чрезвычайно), крайне (крайне), необычайно (необычайно) roughly meaning ‘extremely, utterly’ – and analyse their use in various contexts drawn from texts both of the 19th century and the present day. These words make up the core of my current project which has the aim to find more linguistic evidence of the relation between semantic and combinatorial properties of lexical items, as well as of the nature of cross-linguistic equivalence. Analysis along these lines helps to establish the usage norm of such words and to describe its dynamics. The result of this analysis is clear empirical evidence requiring serious modification of the lexicographic description of these words.

In the next step of analysis I compare the relevant Russian contexts with their German translations. This comparison makes it possible to gain evidence about the relationship of
cross-linguistic equivalence, which has turned out to be rather surprising. Very often a
given Russian word may not be translated with its fixed “standard equivalent” found in all
known bilingual dictionaries (such as чрезвычайно – außerordentlich, крайне – äußerst).
The reason for this is that the Russian and German degree modifiers while being very
similar with regard to their semantics have different combinatorial profiles.¹ The results of
this analysis are relevant for bilingual lexicography. Thus two major types of research
questions are raised:

1. What is the combinatorial profile (the total pattern of collocation in the sense of
Butler, 1985) of a given word? How can it be determined on the basis of corpus
evidence? Are the combinatorial properties of a given word epiphenomena of its
semantic structure or can they be semantically independent? What is the reason for
diachronic semantic change? Can investigations into combinatorial properties provide
new and more detailed insights into the mechanisms that have led to a restructuring of
meaning? What are the relevant lexicographic consequences?

2. If we have empirical evidence from text corpora that a given word in L1 has a
combinatorial profile different from its equivalent in L2 does it mean that both words
have different semantic structures? Or should they be regarded rather as semantic
equivalents? How can these combinatorial differences be presented in a lexicographic
format? Are there any systematic reasons from cross-linguistic differences of this kind
or must they be described in terms of usage conventions? To put it in another way,
which cross-linguistic asymmetries are rooted in the specifics of the system of every
single language, and which ones are due to accidental development?

The empirical data used here is drawn from a Russian-German parallel corpus of
Dostoevskij’s “The Idiot” together with its German translations. This parallel corpus is
part of the Austrian Academy Corpus (AAC) at the Austrian Academy of Sciences in
Vienna (see for details (Biber, Breiteneder and Dobrovol’skij, 2002)). In the parallel
corpus a digital version of the Russian source text is aligned at the sentence level with its
German translations; for details on alignment principles see (Mörth, 2003). For this study
I used the two most recent translations: that of Hartmut Herboth [HH 1986] and Swetlana
Geier [SG 1996]. These translations are comparable with each other because they address
the same generation of readers. The text of “The Idiot” contains a sufficient amount of
authentic linguistic material to allow us to test with confidence the hypothesis concerning
the semantic structure and combinatorial profile of certain words.

2. Basic Assumptions

My first assumption is that semantic change is due to the change of the combinatorial
profile of a given word. That is, if the word appears very frequently in certain contexts it
can lead to the profiling of those semantic features which are highlighted by this type of
context. As a result, these profiled semantic features (being originally peripheral) can
become central, so that the whole semantic structure of the word in question is
reorganised and a new meaning develops. This hypothesis can be tested with the Russian
adjective замечательный (zamečateľ’nyj), which has modified its meaning from ‘notable,
remarkable, noteworthy’ to ‘remarkable, outstanding, wonderful’; cf. (Dobrovol’skij, in
press).
The second assumption, which is even more central in this study and more relevant with regard to lexicographic problems, is that changes of combinatorial preferences take place on the periphery of the combinatorial profile. Some lexical co-occurrences of a given word are considered to be central. These remain stable over time and as a rule are fixed lexicographically. But there are a number of co-occurrences which are possible and encountered in corpora, but not that frequently and in many cases they contain (slight) deviations from the usage norm. In the course of language development these co-occurrences can either become more central or be ruled out by the usage norm. Co-occurrences of this kind are seldom taken into account by dictionaries which leads to discrepancies between real use and lexicographic description. My claim is that the combinatorial profile can only be accounted for in an adequate way if the use of a given word in peripheral contexts is taken into consideration, whereas the traditional approaches to lexical semantics concentrate on central contexts, ignoring peripheral ones.

My third assumption concerns cross-linguistic aspects of my research field. I assume that the combinatorial profiles of a given L1-word and its L2-equivalent coincide only in the core area, i.e. in the domain of central co-occurrences, and the combinatorial periphery reveals significant cross-linguistic differences. To put it in another way, I assume that the translation of a lexical unit into another language depends not only on its denotative and significative parameters, but also on factors such as the syntactic embedding of a given word, its lexical distribution, its function in the discourse structure, as well as its communicative-pragmatic usage conditions. The “classical” lexicographic equivalents refer only to cases in which all these combinatorial parameters meet the conditions of prototypicality. However, with large quantities of textual data we can also observe cases of non-prototypical use, where the behaviour of an individual word (slightly) violates the prototypical conditions. This leads in the main to the necessity to choose a translation equivalent different from the “classical” one.

3. Analysis
To test my assumptions, I considered the degree modifier чрезвычайно (чрезвычайно)\(^3\) that roughly means ‘extremely’ which is a frequent lexical item encountered in Dostoevskij’s prose. This degree modifier occurs 123 times in “The Idiot”.\(^4\) In the first step of analysis I focussed on the specific features of the contexts in this novel where the word чрезвычайно (the Target in the sense of Atkins, Fillmore and Johnson (2003)) occurs, and attempted to formulate hypotheses concerning the combinatorial profile of the Target.

In most contexts чрезвычайно (чрезвычайно) ‘extremely’ combines with adjectives such as интересный (интересный) ‘interesting’, важный (важный) ‘important’, and adverbs (corresponding with those adjectives in terms of semantic classes) such as внимательно (внимательно) ‘attentively’, любезно (любезно) ‘civilly, decently’, вежливо (вежливо) ‘politely, courteously’. Hence the first hypothesis concerns the part of speech category of the contextual partners of чрезвычайно: in a standard case, this degree modifier combines with adjectives and adverbs rather than with verbs. Compare contexts (1) to (3).

(1) — Да, конечно...— пробормотал князь почти с потерянным видом, — ваши записи были бы... чрезвычайно интересны [literally: extremely interesting].
'Yes, of course' murmured the prince, with an air almost of desperation. 'Your memoirs would be... extremely interesting.' [AM 1992]

(2) 

<...> факт, по моему убеждению, чрезвычайно важный [literally: extremely important] для нашего дела <...>.

<...> a fact of crucial importance in this case, in my opinion <...>. [AM 1992]

(3) 

– Вы князь Мышкин? – спросил он чрезвычайно любезно и вежливо [literally: extremely decently and politely].

‘You’re Prince Myshkin?’ he enquired with the utmost courtesy and grace. [AM 1992]

These contexts can be taken to be central for the combinatorial profile of the Target, in the sense that they are frequent and do not contradict the modern combinatorial norms. In some contexts the combination of the degree modifier чрезвычайно ‘extremely’ and an adjective sounds strange, at least from the point of view of modern usage. Compare (4) and (5).

(4) 

Он стал как-то вдруг чрезвычайно сален и запачкан [literally: extremely greasy and stained], галстук его сбивался на сторону, а воротник сюртука был надорван.

All of a sudden he had become extremely stained and grubby, his tie was askew and his coat collar was ripped. [AM 1992]

(5) 

– Благодарю вас, генерал, вы поступили со мной как чрезвычайно добрый человек [literally: as an extremely kind man] <...>.

I thank you, General, you have treated me extremely kindly <...>. [AM 1992]

Obviously, one reason is that the adjectival contextual partners of the Target belong to a different semantic class, i.e. it denotes physical features and not as in (1) to (3) attitudes, specifics of social behaviour or characteristics of general evaluation; compare сален (salen) 'greasy, dirty' and запачкан (zapadkan) 'soiled, stained' in (4). So the second hypothesis is that чрезвычайно modifies expressions denoting non-physical features rather than physical ones. In general, it seems to be obvious that the semantic class of the contextual partner must be a relevant parameter of the combinatorial profile of the Target.

Another reason for deciding a given lexical co-occurrence to be peripheral is that the adjective in question does not contain the semantic component ‘measurable according to a situational norm’ in its meaning structure; compare добрый (dobryj) ‘good, kind’ in (5). So the third hypothesis concerning the combinatorial profile of чрезвычайно is that this degree modifier more readily combines with words containing the idea of a norm-domain. Qualities like kindness cannot naturally be measured in terms of a domain within which kindness has to be considered normal, so that if we encounter a very kind person we are not able to say that this degree of kindness exceeds the norm. This seems to be an obstacle in the use of the co-occurrence чрезвычайно добрый (чрезусяйно добрый) ‘extremely kind’. Thus for the semantically and pragmatically appropriate use of чрезвычайно it is important that the modified contextual partner is related to the idea of a norm-domain (in contrast to the idea of a “norm-point” typical of most other degree modifiers; compare the word combination очень добрый (оchen' dobryj) ‘extremely kind’, which does not violate any combinatorial rules).
In "The Idiot" the Target combines not only with adjectives and adverbs but, though obviously less often, also with verbs. Compare (6) to (8).

(6) Он еще и прежде, в начале своего знакомства с Епанчиными, чрезвычайно заинтересовался [literally: became extremely interested], когда услышал от них о князе.

Even before this, at the beginning of his acquaintance with the Yepanchins, he had been most intrigued by what he had heard when they told him about the prince. [AM 1992]

(7) В это мгновение вдруг чрезвычайно искажается лицо [literally: suddenly the face extremely jumps], особенно взгляд.

In that one instant the face suddenly becomes horribly contorted, especially the eyes. [AM 1992]

(8) В крайних случаях генеральша обыкновенно чрезвычайно выкатывала глаза [literally: used to extremely roll out her eyes] и, несколько откинувшись назад корпусом, неопределенно смотрела перед собой, не говоря ни слова.

In moments of crisis Madame Yepanchina was wont to open her eyes very wide and lean her body back slightly, staring vaguely before her without uttering a word. [AM 1992]

Contexts such as (6) are perceived as acceptable from the point of view of modern usage norms while others (7-8) definitely violate these norms. The reason is that the verbs in (7) and (8) denote physical actions or changes of physical states. So the Target does not combine with verbs of these semantic classes and prefers verbs denoting mental states (compare my second hypothesis according to which чрезвычайно more readily combines with words denoting non-physical features). In fact, the co-occurrences of the Target with verbs are so seldom that maybe it would be more adequate to describe them as fixed collocations rather than in terms of semantic classes.

Furthermore, the analysis of the relevant contexts shows that the contexts in which the Target modifies a word denoting a negatively evaluated entity are perceived as (slightly) deviating from the usage norm. So the fourth hypothesis is that the semantic prosody (see for this notion Louw, 1993; Stubbs, 1996: 173; Atkins, Fillmore and Johnson, 2003: 272) is a relevant parameter of the combinatorial profile of the Target: чрезвычайно more readily combines with positively or neutrally evaluating expressions. Compare examples (4), (7) and (8), on the one hand, and (1), (2), (3) and (6), on the other.

Finally, the fifth hypothesis (which correlates, to a certain extent, with the hypothesis about the preference of the contextual partners denoting non-physical features) concerns the required pragmatic properties of contextual partners of the Target. The utterance under consideration must be bound to a certain discourse type which can be labelled "not ordinary discourse" (in contrast to everyday language). This is a parameter which is not identical with the style register, though there are obvious correlations between discourse type and style register. So in present day Russian one can say Это был чрезвычайно короткий доклад "This was an extremely short presentation" whereas У него чрезвычайно короткие волосы "He has extremely short hair" would sound odd. It is obvious that the difference between these two sentences lies not the style register (formal vs. informal), but in the type of discourse represented by these sentences. In other cases
the relevant differences in the discourse type have clear correlations with the stylistic markedness of the modified word. So one would not use чрезвычайно in combination with, say, тупой (tupoj) ‘stupid’, but (having the same idea in mind) rather in combination with недалекий (nedalekij) ≈ ‘not bright’ or неразвитый (nerazvityj) ≈ ‘uncultivated’.

To sum up, analysing the contexts in which the word чрезвычайно (črezvyçaîno) occurs allows us to formulate the conditions of its usage in present day Russian. In a prototypical case this degree modifier combines (i) with adjectives and adverbs (ii) denoting traits, mental and emotional states, social attitudes, specifics of social behaviour or characteristics of general evaluation, i.e. with words having “non-physical semantics”, (iii) being related to the idea of a norm-domain, (iv) denoting positively or neutrally evaluated entities, and (v) belonging to the “not ordinary” discourse type. These conditions seem to have a certain hierarchy which is a topic for further investigation. In principle the co-occurrence with verbs is less central that with adjectives and adverbs, and in many cases quite outside of the norm. So the condition (i) seems to have the highest rank in the hierarchy. It strongly violates the usage norm if the verb in question denotes physical states and actions rather than mental ones, especially if these states or actions are negatively evaluated, and/or if the verb is marked as an ordinary expression; compare, above all, context (8).

Thus, there are five basic prerequisites which must be fulfilled in order to guarantee that the use of the Target is perceived as correct from the point of view of the current combinatorial norm. If one (or sometimes even two) of these prerequisites are violated the use of чрезвычайно is still perceived as acceptable, though not prototypical. The degree of acceptability also depends on the rank of a given condition in the hierarchy. If most prerequisites are violated this word cannot be used in present day Russian. Surprisingly, in “The Idiot” one can find all possible types of deviations from current usage. It means that the usage norms of the word чрезвычайно have changed in the course of language development. These changes are too subtle to be described in terms of semantic derivation. In other words, it would be counter-intuitive and obviously unacceptable to speak here about polysemy, i.e. to postulate a “new” meaning of this word, it having a different semantic structure that influences its combinatorial profile. Rather, we are dealing here with a change of the status of peripheral contexts. Whereas the core of the combinatorial profile of the Target remains stable, its peripheral contexts gained a different status on the scale of acceptability. The modern usage norm seems to be here more rigid, ruling out more peripheral cases.

These five prerequisites have to be taken into account when presenting the degree modifier чрезвычайно in a lexicographic format. The explicit description of relevant usage restriction is the only way to clearly distinguish this word from the other degree modifiers roughly meaning ‘extremely’. The uniqueness of the combinatorial profile of every word is the reason why it cannot be replaced by its near-synonym or its L2-equivalent in every possible context. These unique features can be captured lexicographically only if traditional definitions or translation equivalents are completed by commentaries containing information about potential contextual partners of the Target and its usage restrictions, which cannot be simply entailed from its meaning.
From the theoretical point of view, three points have to be emphasised.

Firstly, here we are dealing with tendencies which influence the degree of usualisation of a given co-occurrence rather than with strict rules. The combinatorial profile can be described in terms of “correct vs. wrong” only in part, i.e. in cases concerning the core of the combinatorial profile. In peripheral cases we are dealing with a kind of gradual opposition. Counter-examples can be found for every parameter. Obvious deviations from the combinatorial norm are encountered in cases where more than one relevant prerequisite of correct co-occurrences is violated. Compare contexts such as (7) or (8).

Secondly, every prerequisite as described above has to be tested against further empirical data, first of all against large corpora of both texts of the 19th century and texts of present day Russian. That is why I am speaking of hypotheses here rather than of rules or combinatorial restrictions. It is quite possible that the presentation of the combinatorial profile of чрезвычайно will be modified as the result of further research.

Thirdly, it is obvious that the basic combinatorial conditions of a given word (such as described in form of contextual prerequisites (i) to (v)) cannot cover and explain all individual cases of the real use. There are co-occurrences which can be explained on the basis of accidental development only, or which are due to individual preferences of speakers. The accidental character of certain usage conventions becomes apparent not only in the fact that the violation of one of the proposed principles of combinatorial norms does not necessarily result in deviating co-occurrences, but also in the fact that fulfilling all these conditions does not guarantee a perfectly acceptable co-occurrence licensed by the current usage. Compare context (9) where the conditions 1 to 5 seem to be fulfilled but the result sounds odd from the point of view of present day norms.

(9) Настасья Филипповна, впрочем, держит себя чрезвычайно порядочно [literally: extremely decently], одевается не пышно, но с необыкновенным вкусом, и все дамы ее “вкусу, красоте и экипажу завидуют”.

Nastasya Filipovna, however, conducted herself with the utmost propriety, dressing modestly but with impeccable taste, and all the ladies were ‘envious of her taste, her beauty, and her carriage’. [AM 1992]

Perhaps the reason is that the adverb порядочно (порядочно) with the relevant meaning of ‘decently, honestly, respectably’ is today perceived as denoting a feature which cannot be graduated according to a certain scale, i.e. one behaves either порядочно or not. It is clear that чрезвычайно (just the same as all other degree modifiers) combines only with words denoting features that can be graduated; cf. very bright, very ugly, but *very iron, *very wooden.

Moving on to the next step of analysis and briefly comparing the relevant Russian contexts with their German translations.

The contrastive perspective (possible with a parallel corpus) allows us to test another hypothesis, namely the assumption that the choice of translation equivalents in contexts of various types may reflect the relevant differences between them. In a standard case, the word чрезвычайно (чрезвычайно) is translated by the German word außerordentlich, which seems to have not only a semantic structure very similar to чрезвычайно, but also a similar (though not quite identical) combinatorial profile. Occasionally other quasi synonyms of außerordentlich are used as German translation equivalents, such as äußerst...
'utterly, extremely' or höchst 'highly, extremely'. On the other hand, peripheral contexts show much more diversity. Besides außerordentlich, äußerst and höchst the Russian word чрезвычайно is translated into German by sehr, überaus, übermäßig, zutiefst, auffallend, ungemein, ausnehmend, durch und durch, durchaus, ungewöhnlich, ausgesprochen, über die Maßen, aufs äußerste, aufs höchste, hoch-, ganz und gar. In cases where the use of the Target deviates especially strongly from the present day norm it remains untranslated. The translators resort to periphrases which do not contain semantically commensurable degree modifiers. Compare (10) and (11).

(10) (a) Генеральша несколько времени, молча и с некоторым оттенком пренебрежения, рассматривала портрет Настасьи Филипповны, который она держала пред собой в протянутой руке, чрезвычайно и эффективно отдалив от глаз [literally: extremely and showy holding it away from her eyes]. Madame Yepanchina studied Nastasya Filippovna's picture for some time in silence, evincing a certain disparagement as she held it at arm's length in showy affectation, as far from her eyes as she could. [AM 1992]
(b) Die Generalin betrachtete eine Zeitlang schweigend und mit leicht geringschätzer Miene Nastassja Filippownas Bild, indem sie es sich des Effektes wegen übertrieben weit in der ausgestreckten Hand vor Augen hielt. [SG 1996]
(c) Schweigend und mit einem Anflug von Geringschätzung betrachtete die Generalin eine Zeitlang Nastassja Filippownas Portrait, das sie betont und sehr wirkungsvoll auf Armeslänge vor sich hielt. [Fffl 1986]

(11) (a) Это был молодой человек <...> с чрезвычайно угреватым лицом [literally: with a face extremely covered with blackheads] <...>. <...> his face was generously pimpled. [AM 1992]
(b) Er war <...> junger Mensch mit <...> pickelübersätem Gesicht <...>. [SG 1996]
(c) Dieser junge Mann <...> hatte <...> ein von Mitessern übersätes Gesicht <...>. [HH 1986]

Of course, this is only a tendency and not a strict rule. Exceptions are not only possible in principle, but can be readily found in the analysed corpus, especially in those cases where the translators were aiming at literal equivalence for reasons of maintaining the individual style of the author. It can still be stated that there is a fundamental correlation between the position of a given co-occurrence in the combinatorial profile and the diversity of cross-linguistic equivalents: the more diversity they show the more peripheral is a given context from the point of view of the combinatorial norms. This means that translations in general, and parallel corpora in particular, can be used as an instrument of verifying judgements of acceptability.

4. Concluding Remarks

This discussion shows that the traditional presentation of degree modifiers in monolingual and bilingual dictionaries has been far from adequate. Returning to the discussion of both чрезвычайно and außerordentlich, if their meaning is explained via other degree modifiers such as sehr, überaus 'very, utterly' or очень 'very', the relevant differences in their use remain hidden. The same is true for the cross-linguistic perspective: if the relations of equivalence are postulated only on the basis of the core
meaning (in this case something like 'intensifier of a very high degree'), and not on the basis of comparison of the combinatorial profiles of the near-equivalent words, the mutual untranslatability of these words in many authentic contexts remains unexplained.

On the one hand, relevant differences between a given L1-word and its quasi synonyms in L1 can be uncovered and adequately described (this is especially important for monolingual dictionaries) only if the combinatorial profile, and not only the semantics proper, is taken into account. On the other hand, the combinatorial profiles of a given L1-word and its L2-equivalent coincide only in the core area, i.e. in the domain of central co-occurrences, and the combinatorial periphery reveals significant cross-linguistic differences. So combinatorial restrictions such as described above as conditions (i) to (v) have to be included in the lexicographic format of bilingual dictionaries because it is not always possible to find perfect cross-linguistic equivalents which would coincide in all their co-occurrences.

Furthermore, analysing relevant combinatorial properties helps to explain diachronic linguistic change. Whereas the core of the combinatorial profile of lexical units remains stable over time, its peripheral parts gain a different status on the scale of acceptability. Non-prototypical contexts can either become more central or be ruled out by the usage norm. In extreme cases, this leads to semantic change, when new meanings arise and the old ones become obsolete.

Acknowledgements

I would like to thank Svetlana Poljakova (Frankfurt am Main) and Carita Paradis (Lund) for comments on early drafts.

Endnotes

1. In my opinion, the combinatorial profile is an essential part of the plane of content in a wide sense, though not a part of lexical meaning proper. "The defining feature of a lexical item, by which such an item is recognized, is its pattern of co-occurrence with other items, that is its COLLOCATIONAL behaviour. A lexical item is recognized as different from other lexical items because its total pattern of collocation is unique." (Butler, 1985: 130)

2. Thus, the combinatorial profile of a word can be described in terms of Prototype Theory.

3. For reasons of space I restrict myself to analysing this degree modifier only, leaving aside its near-synonyms краине (krajne), необычайно (neobyčajno) and the like.

4. Both the degree modifier чрезвычайно (črezvyčajno) 'extremely' in its quasi adverbial function and the corresponding adjective чрезвычайный (črezvyčajnyj) 'extreme' taken together occur in "The Idiot" 238 times.

5. Compare similar principles of semantic analysis in (Fillmore, 1978). The specifics of my approach is that the idea of prototypicality degree based on a combination of various types of deviation from the prototype is applied not to the semantic structure itself but to combinatorial properties.

Abbreviations

[HH 1986] = Translation of "The Idiot" by Hartmut Herboth.
Sources


References


