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Novi Sad, 19 March 2011

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FOREWORD

The volume in front of you is a selection of papers presented at the first international conference *English Language and Anglophone Literatures Today* (ELALT), held at the University of Novi Sad on March 19, 2011. The papers published in this volume were chosen after a rigorous reviewing procedure. The contributions are divided into two thematic parts, the first of which is dedicated to the English language, covering three distinct areas — linguistic research, translation studies and teaching methodology. The second half is dedicated to topics in Anglophone literatures and literary theory, and has a wide geographical and chronological reach, from Elizabethan times to the present-day, from the post-World War Japan to the Native American Community of the White Earth Reservation, from the poetics of the killing fields of Nigeria to the dry outback of the Aborigines.

We are deeply indebted to the plenary speakers, Professor Svetozar Koljević and Professor Ranko Bugarski, who kindly accepted our invitation and submitted their most inspirational work. We thank the many presenters for their up-to-date ideas and contributions, and the participants for the insightful discussions which followed.

The conference would have been impossible without generous financial help from the Ministry of Education and Science of the Republic of Serbia, support we gratefully acknowledge here. We also express our appreciation to the Dean's Office of the Faculty of Philosophy, whose members warmly supported the efforts of the English Department from the moment the idea of ELALT was first conceived. We would like to thank Professor Vladislava Gordić-Petković, head of the English Department, for her initiative, encouragement and selfless commitment. Special thanks also go to the reviewers of the volume, Prof. Dr. Jasmina Grković-Major, Prof. Dr. Zoran Paunović, and Dr. Marija Grujić. Last — but certainly not least — we thank the Organizing Board, the Editorial Panel and our dedicated reviewers for handling many complex tasks with grace under pressure and enabling this volume to see the light of day.

Novi Sad, December 2011
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VERBS AND PROTOTYPE THEORY: STATE OF THE ART AND POSSIBILITIES[1]

Abstract This paper investigates some of the possibilities of applying Prototype Theory to the categorization of English verbs. Throughout its development, Prototype Theory has been mainly focused on nouns, adjectives and prepositions with very few excursions into the realms of the other parts of speech. The paper will include a short summary of the existing attempts to approach verbs from a prototypical perspective. Using verb frequency tests, it will try to find those semantic features of verbs that might be relevant to the process of categorization. This will be done by means of analysing two classes of verbs and finding their appropriate semantic features. The result of this analysis will be presented in two columns and graphs, showing how the verbs in question are graded within their categories.

Key words: prototype, verb, categorization, semantic features, word frequency.

1. Introduction – Aims and Methodology

The paper has two main aims – firstly, it should offer an overview of the attempts to approach verbs from the perspective of Prototype Theory and, secondly, it will try to present at least some possibilities for future studies of verbs in regard to this perspective. Prototype Theory has so far been mostly concerned with nouns, adjectives and prepositions, but there have also been attempts to apply Prototype Theory to a number of verb analyses and the paper will try to present some of them. The focus will be on the lexical aspects of verbs, whereas other verb-related features will be mentioned only if necessary. Verbs will be viewed in relation to their categories, two groups of verbs serving as a basis of semantic features which can be considered responsible for a higher or a lower degree of their prototypicality.

After a short historical overview of the development of Prototype Theory, the paper will present two major attempts to approach verbs using Prototype Theory.

[1] Prepared as a part of the project *Sustainability of the Identity of Serbs and National Minorities in the Border Municipalities of Eastern and Southeastern Serbia* (179013), conducted at the University of Niš – Faculty of Mechanical Engineering, and supported by the Ministry of Science and Technological Development of the Republic of Serbia.

Verbs related to motion around an axis and verbs of desire, selected in accordance with Levin's *English Verb Classes and Alternations* (1993), will serve as two exemplar groups. They will both undergo a word frequency test based on the data from the *Corpus of Contemporary American English* (Davies, 2011) and this may serve as a significant (though not very sensitive nor precise) indicator for verbs' prototypicality. According to the results obtained from the data, the verbs will be classified from the most to the least prototypical one within their categories, after which we will try to find a number of reasons for the achieved order.

2. Theoretical background

The problem of categorization seems to be central to both the old (objectivist) and the new (experiential) view. In fact, we may isolate at least three groups of approaches to categories: atomistic, probabilistic and exemplar (Smith and Medin, 1981; Medin and Rips, 2005). The atomistic approach largely corresponds to the objectivist view, in which things belong to the same category in case they have certain (objective) properties in common – categories are thus verifiable and they correspond to the real world. Concepts within objective categories are compositional – they can be broken down into smaller components of meaning. The probabilistic approach is based on binary features, which can be either present or absent within a concept and configurations of these features determine whether a concept can be classified within a particular category or not. Properties within these two approaches are called necessary and sufficient conditions for defining a category. Categories based on necessary and sufficient conditions and/or binary features are usually clearly bounded and their members have equal status (Taylor, 1989: 23–24). In the exemplar approach, the best representatives of a category serve as 'role models' in the process of categorization and this view seems to be very close to what we call Prototype Theory (the dominant approach to categorization in the experiential view).

Although we may track the precursors of the 'new' type of categories in Kant's claims that concepts cannot be empirically delineated and that the synthesis of our knowledge is not arbitrary, but related to our experience (Kant, 1791: Einleitung, III, IV, according to Antović, 2009: 90), most contemporary semanticists designate Wittgenstein as being the forefather of Prototype Theory. While trying to define the term 'game', Wittgenstein (1953: 31–3) witnessed the fact that the boundaries of the category are fuzzy and that this does not make this category less valid than some which are less fuzzy. According to Wittgenstein, the category of games is not based on shared defining features, as there are no attributes common to all the games in the world, but on a "criss-crossing network of similarities" (Taylor, 1989: 38). In order to illustrate this network of similarities, Wittgenstein uses the famous metaphor of 'family resemblances' – the notion that entities thought to be connected by one essential common feature may actually be connected by a series of overlapping similarities, with no feature common to all of them. Wittgenstein's views on categories certainly influenced Zadeh's (1965) fuzzy set theory and Lakoff's (1972)

early claims that category membership is not a yes-or-no question, but rather a matter of degree. Early experiments, which confirmed these assumptions on categories and started making differences between prototypical, less prototypical and marginal concepts, were performed by William Labov, Willett Kempton, Eleanor Rosch, Brent Berlin, Paul Kay, and Chad McDaniel among others.

Labov's experiments (1973) were based on line drawings of various household receptacles, such as mugs, cups and bowls. The subjects in this experiment were to classify the presented drawing as one of these, with a constant shift of the ratio of width and depth. Another important aspect of their judgements were contents of various receptacles (and thus with their functions, which can be culture-dependent). Among other conclusions, the experiment proved that there was no clear dividing line between cups and bowls. In his analysis of this experiment, Taylor (1989: 41) stresses the fact that the attributes used in the study are not binary, as width and depth can be perceived as continuous variables. Also, he notes that no single attribute was "essential for distinguishing the one category from the other." Eleanor Rosch's frequently quoted experiments (1973, 1975a, 1975b) on categorization represent a real challenge for the classical view of categories, as she tackled very many apparently delineated categories and proved that they are far from being discrete in relation to reality. Her respondents were to grade memberships of concepts within certain categories, including birds, furniture, tools, sports, fruits, vegetables, toys, etc. Her experiments predominantly included 7-point membership scales or response time measurement. These experiments proved that neither natural categories (such as birds, fruits and vegetables) nor nominal kind terms (furniture, sports or toys) have clear boundaries. Moreover, the experiments showed that we can also talk about the degree of membership, including the notions of the centre and the periphery of a category (although we shall not question the fact that all the included entities had the status of being members of a certain category, be they more or less prototypical). This method introduced the notion of prototypicality in the sense in which it is used nowadays – prototypes or exemplars are those concepts which take central places within a category. However, it is very possible that Rosch, Labov, Berlin and others borrowed the very term of prototypicality from Wittgenstein's *Brown Book II* (Vidanović, forthcoming: 13). Nevertheless, we may not doubt that Rosch's work motivated other researchers to apply the study of prototypes to more abstract nouns, adjectives, prepositions, verbs and other parts of speech.

Using experimental data, as well as various previous attempts to weaken the position of the classical view of categories, George Lakoff, in *Women, Fire and Dangerous Things* (1987), framed a comprehensive overview of the new view on categories and provided the philosophical background and possible implications of the experientialist view. When we come to prototypicality, we encounter a number of topics including family resemblances, centrality, polysemy as categorization, generativity as a prototype phenomenon, membership and centrality gradience, conceptual and functional embodiment, basic-level categorization and primacy, reference-point, or "metonymic," reasoning and other phenomena. Another broad

summary of the experientialist view of categories can be found in John Taylor's *Linguistic Categorization* (1989) – besides providing an overview, Taylor applied Prototype Theory to various aspects of language including polysemy, grammatical categories, syntactic structures, phonology and language acquisition. Among other things, this book includes one of the most important applications of this theory to the analysis of verbs.

3. Verbs and prototypes

Before we analyse Taylor's approach to verbs, we shall mention an earlier attempt to view verbs as prototypical categories. Namely, in *Word Meaning and Belief*, S.G. Pulman (1983: 107–136) performed a very comprehensive 'test' so as to prove that there are aspects of verbal meaning that can be studied by means of prototypes. He found graded membership, or more precisely prototypicality in the categories denoted by verbs such as *kill, walk, speak, look*. Before doing so, he tried to examine whether prototypical studies of verbs can fully mirror those of nouns. Pulman set out proposing a taxonomy starting with a unique beginner and ending with a specific verb:

Level 1 – Unique beginners – DO/MAKE

Level 2 – Life form – CAUSE/MAKE/BECOME/ACT/MOVE/SAY/…

Level 3 – Generic – KILL/LOOK/SPEAK/WALK/DECEIVE/HOLD/BURN/RUB…

Level 4 – Specific – (for KILL) MURDER/ASSASSINATE/EXECUTE/MASSACRE…

(based on Pulman 1983: 108)

He, however, realized that difficulties beset the unique beginners, as well as the life form level. For instance, it is quite difficult to decided whether DO or BE can be considered to be hypernyms of 'close' in *"John closed the door"* and *"The door was closed."* Therefore, he focused his study on the generic and the specific level, investigating only those verbs which seemed to be organized in "hyponymy sets reminiscent of the distinction between basic and subordinate level categories" (Pulman, 1983: 109). Firstly, Pulman wanted to check whether the prototype effect can be obtained for verbs and in order to do so he replicated Rosch's original work – Pulman's subjects were asked to decide which members of a given category were more representative of the category in question, using a 7-point scale. He selected eight hyponymy sets: *kill, speak, look, walk, deceive, rub, hold* and *burn* and, for each of them, he selected a range of six hyponyms to cover the largest part of the generic verbs' meanings. Some of the results that emerged from this experiment were the following (the lower the figure, the more prototypical the verb):

kill: murder (1.10), assassinate (2.05), execute (2.82), massacre (3.28), sacrifice (5.22), commit suicide (5.33)

speak: recite (2.57), mumble (3.46), shout (3.51), whisper (3.64), drone (3.98), stutter (5.35)

walk: stride (1.86), pace (2.05), saunter (2.41), march (3.01), stumble (5.31), limp (5.37)

(based on Pulman 1983: 113)

The respondents were asked to compare the hyponyms to the hyperordinate term rather than to each other. Secondly, Pulman wanted to obtain more data related to the prototype effect by performing a test which would give him some sort of a 'family resemblance' measure. He wanted to rate the hyponyms of the selected sets in accordance with the number of features they share (or do not share) with other hyponyms, i.e. other category members. The results he received were very difficult to assess, because the responses could be classified into roughly five quite diverse categories – when asked to provide features of certain verbs, people tended to list their synonyms (or near synonyms), attempted to give definitions, gave the category name itself, provided connotations and, finally, offered a number of attributes which were parallel to what Rosch used in her studies. Thirdly, Pulman edited some of the data so as to reach better consistency in the analysis, i.e. he deleted a number of attributes which seemed to be totally unrelated to certain verbs and added those which seemed to be almost synonymous with the verbs in question, in the same way Rosch removed or added a small number of unrelated features in her experiments. The results were analysed in both their edited and unedited form and summarized in the following way:

kill	murder	assassinate	execute	massacre	sacrifice	commit suicide
Ranked by:						
1 Prototypicality	1	2	3	4	5	6
2 All attributes	1	4	6	2	5	3
3 Shared attributes	2	3	5	4	6	1
4 Edited attributes	2	1	5	4	6	3

Table 1: Pulman's result survey for 'kill' (based on Pulman 1983: 119)

Pulman concludes that family resemblance is not positively correlated with prototypicality, which might lead one toward thinking that family resemblance is not a causal factor in the formation of prototypes when it comes to verbs. However, Pulman resists such a conclusion on several grounds: he explains that the number of selected category members in his study was too low, which led the statistical methods he used to unreliable results. Moreover, the number of subjects was much lower than in Rosch's experiments (20 as compared to 400) and, lastly, verbs proved to be quite delicate when it comes to listing attributes and required a more comprehensive experimental design. On the whole, Pulman arrives at the conclusion that verbs, just like nouns, can be regarded as more or less prominent, prototypical or representative members of their semantic categories, but we cannot claim that 'to murder' belongs to the category of 'killing' more than 'to execute' does (which

seems to be the case when we analyse colour adjectives). Pulman's experiments, though mainly aimed to be pilot studies or 'probes', showed us that there are aspects of verb meaning that can be approached by means of Prototype Theory. Besides this, we may assume that improved experimental procedures may provide more relevant data in the future, meaning that Pulman opened a whole range of possibilities, which seem to have not been properly explored since 1989.

The year 1989 saw another of the rare prototypical approaches to verbs. Taylor (1989: 105–109) studied prototypicality as related to the polysemy of the verb *climb* in order to explain the contrast between the family resemblance approach and the core meaning approach. The main problem of the core meaning approach stems from the fact that it is close to the classical approach to categories, as it implicitly demands that there is a set of necessary and sufficient conditions which govern the existence or stability of a category. Various senses of climb prove that there is no possibility to subsume them all under a general core sense. Taylor follows Fillmore's (1982) characterization of the process in terms of the attributes 'ascend' (as in 'The plane climbed to 30,000 feet)' and 'clamber' (as in 'The boy climbed down the tree and over the wall'). The clambering sense of this verb cannot be applied to entities without limbs. Therefore, although some of the uses of the clambering sense may seem to be close to 'the core meaning' there are some others connected to the ascending sense (to some of which the former sense cannot be applied), which depart from this kind of centre. Taylor notes that these "different senses cannot be unified on the basis of a common semantic denominator [...] the different meanings are related through 'meaning chains'" (Taylor, 1989: 108). In this way any "node in a meaning chain can be the source of any number of meaning extensions" (Taylor, 1989: 109). In both Pulman's and Taylor's studies we may say that we are encountering an 'internal' approach to verb prototypicality. They both isolate specific verbs and discuss their polysemy in relation to their senses, hyponyms or troponyms, with regard to various features of both generic 'parent' verbs and their specific 'subtypes'. We may say that this approach can be basically linked to semasiology. However, one can also approach these verbs onomasiologically as well, providing the answer to the question "how do you express *X*?", *X* being any sort of meaning that verbs can denote, so it may include vision, auditory perception, emotions, motion, various actions, etc. This approach may be named external, as we look at the category (denoted by *X*) from the outside, which sheds another sort of light onto the issue of verb categorization.

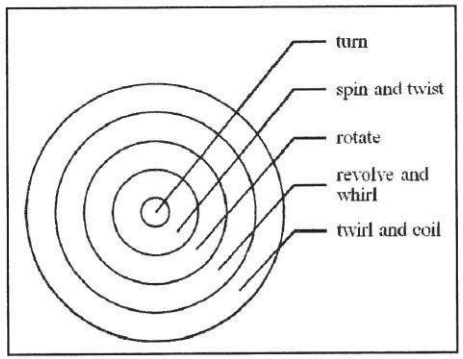
4. An analysis based on verb frequency

This part of the paper will try to examine whether we can discuss prototypical features based on the external, onomasiological approach, using verb frequency. Expression *X* is going to be represented by one of the verb classes or subclasses, as categorized by Beth Levin in *English Verb Classes and Alternations* (1993). It is quite obvious that word frequency is unlikely to serve as the only parameter in the process of exploring prototypicality – there are various problems stemming from homonymy, homography, polysemy, phrasal verbs, idiomatic expressions, different registers, word economy and etymology. In a corpus study it may be very difficult to isolate idioms, homonyms and homographs, and prevent them from interfering with word frequency results. On the other hand, the problems that might be related to polysemy, different registers, phrasal verbs, the same etymological background and word economy are partly mitigated by the fact that more 'prototypical' verbs have greater chances of being transferred into other domains. The very fact that the study is based on word frequency partially limits us to 'the core meaning approach', but it is very important to stress that a study based on 'the meaning chains approach' is more than necessary. For instance, a study of polysemy in verbs might prove that polysemy (linked with the fact that they get transferred into another category) can sometimes make certain verbs move towards the periphery of a category, as they are no longer 'felt' as firmly belonging to their original class by the subjects. When we come to verbs, their transitive and intransitive uses may sometimes allow us to isolate different meanings of certain verbs, but this seems to be restricted to a number of verbs. From this, we may conclude that in any study of prototypes, additional experiments involving respondents are highly required in order to support any claims drawn from a corpus.

We may take a look at two classes in order to explore the ranges and capabilities of a corpus-based study. They will be selected against the criterion of size and in accordance with Beth Levin's classification. The first group will be the one dubbed 'Verbs of motion around an axis' (a subtype of 'Verbs of motion'). This group includes the following verbs: *to coil*, *to revolve*, *to rotate*, *to spin*, *to turn*, *to twirl*, *to twist*, *to whirl* and *to wind* (Levin, 1993: 264–5). The used corpus and data frequency list made no difference between homographs, homonyms and polysemous verbs and for that reason *to wind /waɪnd/* will be excluded from the grading procedure due to the fact that there is no way to isolate it from *to wind /wɪnd/*. As for the remaining eight verbs of motion around an axis, the word frequency statistics based on "Word frequency data from the Corpus of Contemporary American English (COCA)" (Davies, 2011) shows the following results:

Rank	*Verb*	*Frequency*	*Share (%)*
1	to turn	230,916	88.70
2	to spin	9,399	3.61
3	to twist	8,198	3.15
4	to rotate	4,412	1.69
5	to revolve	2,560	0.98
6	to whirl	2,444	0.94
7	to twirl	1,430	0.55
8	to coil	964	0.37
	Total	260,323	100.00

Table 2: Verbs of motion around an axis stats



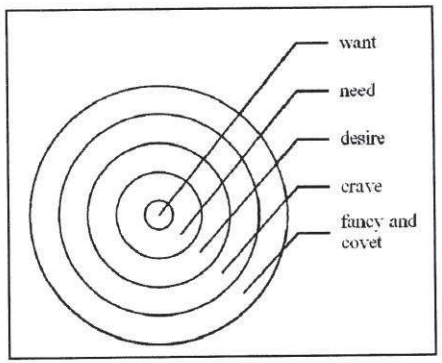
Graph 1: Verbs of motion around an axis (A Possible Prototypicality chart)

Even this scale, which represents a result achieved by what we may call a 'temporary' method, shows some tendencies which links verbs' frequencies and meaning components. Although extracting meaning components or semantic features may seem to be atomistic to some degree, it is nevertheless interesting to see how features change from the centre to the periphery of a verb class or category. If frequencies reflect at least some aspects of prototypicality, then we may conclude that moving in this direction: *to turn* → *to twist* → *to rotate* → *to revolve* → *to twirl*, may cause a very likely increase in both degree and intensity of rotation towards the periphery of the category of verbs of motion around an axis. Another tendency is that the inherent length and/or complexity of action denoted by these verbs seem to act in the same way – they increase on the way from *to turn* towards *to twirl*.

The second verb class to be analysed shows similar tendencies. Verbs of desire, more precisely the subclass named 'want verbs' (Levin, 1993: 194), include the following verbs: *to covet*, *to crave*, *to desire*, *to fancy*, *to need* and *to want*. The data extracted from the Corpus of Contemporary American English lead us towards the following conclusion in regard to prototypicality 'levels':

Rank	*Verb*	*Frequency*	*Share (%)*
1	to want	538,882	64.29
2	to need	286,620	34.20
3	to desire	7,851	0.94
4	to crave	2,631	0.31
5	to fancy	1,214	0.14
6	to covet	983	0.12
	Total	838,181	100.00

Table 3: Verbs of desire



Graph 2: Verbs of desire (A Possible Prototypicality chart)

Once again, there are some conclusions that might be drawn from the progression based on verb distribution. If we take a look at the following sequence: *to want/to need* → *to desire* → *to crave/to covet*, we may once again say that both intensity and complexity of emotions seem to increase as we move towards the periphery. One may say that the number of semantic features added to 'the core meaning' increases on the way from the centre to the periphery. On the whole, both verb classes seem to show the same meaning shifts when we move from the more frequently used verbs towards those with scarcer distribution. Verbs seem to act in a way similar to those of nouns and adjectives – unmarked terms seem to have a higher frequency of usage than the marked ones and this pattern reflects itself onto the potential prototypicality of verbs. This paper is far from being able to predict the universality of these claims related to prototypes or to match Greenberg's (1966) idea that frequency may be considered to be the primary determining factor of markedness or that this phenomenon has cross-linguistic implications. This is just one small step towards studying verb prototypicality and we need much more evidence in order to make new assumptions.

5. Conclusions

All things considered, we may conclude that there are meaning and prototypicality-related patterns that can be tracked in the distribution-based classification of various classes of verbs and that this study may be carried further on. The most general idea is that 'generic verbs' are closer to the centre, whereas specific verbs tend to move towards the periphery – this is accompanied by an increasing number of distinctive features as we move away from the centre. Verbs limited in terms of use in specific contexts are on the periphery. This is probably due to the fact that their 'specificity' actually limits them to certain contexts, but we may

also claim that it makes them less prototypical. When we look at some other verb classes, we may also see that obsolete or derogatory or insulting verbs are always on the periphery, once again due to their usage limitations. Another reason for the results we achieved might be found in the notion that the distribution of synonymous or partly synonymous verbs tends to be dispersed. Once again, this might not be the consequence of their being less prototypical, but the reason for their 'loss' of prototypicality. If all this can be replicated in other languages as well, then this study may bring us to more important conclusions. Furthermore, the study showed that verb frequency is an insufficient factor in studying verb prototypicality, which means that contrastive experimental procedures involving subjects should be performed in order to provide more details on the connection between semantic features of verbs and their prototypicality across languages.

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