

Current Research in the Semantics/Pragmatics Interface:
Volume 8

PRAGMATICS AND THE FLEXIBILITY OF WORD MEANING

Enikő Németh T. & Károly Bibok



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Pragmatics and the Flexibility of Word Meaning

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Enikő Németh T. & Károly Bibok
University of Szeged, Hungary



2001
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First edition 2001

Library of Congress Cataloging in Publication Data

A catalog record from the Library of Congress has been applied for.

British Library Cataloguing in Publication Data

A catalogue record from the British Library has been applied for.

ISBN: 0-08-043971-3



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K. Turner, University of Brighton, UK

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The aim of this series is to focus upon the relationship between semantic and pragmatic theories for a variety of natural language constructions. The boundary between semantics and pragmatics can be drawn in many various ways and the relative benefits of each have given rise to a vivid theoretical dispute in the literature in the last two decades. As a side-effect, this variety has given rise to a certain amount of confusion and lack of purpose in the extant publications on this topic.

This series will provide a forum where the confusion within existing literature can be removed and the issues raised by different positions can be discussed with a renewed sense of purpose. The editors intend contributions to this series to take further strides towards clarity and cautious consensus.

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ACKNOWLEDGEMENTS

The present volume contains an Introduction and 11 papers, all related to a new field of investigation in linguistics which can be labeled lexical pragmatics. Eight contributions to this book (by R. Blutner and T. Solstad, S. A. Cote, T. Fretheim, P. Pelyvás, T. Prčić, R. Rozina, I. Vaskó as well as K. Bibok and E. Németh T.) were originally presented at the 7th International Pragmatics Conference (Budapest, Hungary, July 9–14, 2000) in the panel “Pragmatics and the flexibility of word meaning”. Two other papers (by Y. Maschler and Y. Matsumoto) also presented in the Budapest panel have been published elsewhere. Three authors, namely I. Boguslavsky, A. Kertész and G. Pethő were invited by the editors to contribute to this volume after the book proposal submitted to the Elsevier Publishers had been accepted. It is worth noting that these three latter authors were also present among the audience in the panel in Budapest. All in all, this collection of papers grew out of the above mentioned panel. Thus, we thank, on the one hand, all the members of the panel for accepting our invitation to participate in it and, on the other hand, Ferenc Kiefer (Research Institute for Linguistics, Budapest, Hungary) general discussant as well as the audience whose questions, comments helped to clarify some issues to the panelists.

All contributions to the present collection of papers were peer-refereed. We wish to thank the reviewers for their willingness to read papers in a month. So, we are grateful to Wolfgang U. Dressler (University of Wien, Austria), Anna Fenyvesi (University of Szeged, Hungary), László Hunyadi (University of Debrecen, Hungary), László Kálmán (Research Institute for Linguistics, Budapest, Hungary), István Kenesei (University of Szeged, Hungary), Tibor Laczkó (University of Debrecen, Hungary), Mária Ladányi (Eötvös Loránd University, Budapest, Hungary), Ana Pásztor (Florida International University, USA), Tamás Szende (Pázmány

Péter Catholic University, Piliscsaba, Hungary), and Jef Verschueren (University of Antwerp, Belgium) for their detailed and conscientious evaluations.

Of course, our greatest thanks are due to the authors of this book for their exemplary, ready cooperation and willingness to observe our deadlines and to comply with the reviewers' and editors' requests for necessary revisions regarding both the content and the format of their contributions. For many kinds of assistance with the preparation of the camera-ready manuscript we thank our colleague Tibor Szécsényi.

We are also grateful for the assistance we got from the linguistics team of the Elsevier Publishers. We thank CRiSPI series editors Katarzyna Jaszczołt and Ken Turner, administrative editor Debbie Raven, senior publishing editor for linguistics Chris Pringle, and editorial assistant Leighton Chipperfield for providing all the necessary technical information for putting a book together.

Finally, we would like to say a big thank you to our little daughters Ágnes (9) and Rita (5, who cannot read yet) for their patience, kind support and their willingness to go to bed on time to let their parents work.

Enikő Németh T. and
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Szeged, June 25, 2001

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INTRODUCTION: TOWARDS THE NEW LINGUISTIC DISCIPLINE OF LEXICAL PRAGMATICS

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1. A GENERAL OVERVIEW OF THE BOOK

Recently, the investigation of word meaning in utterances has connected lexical semantics and pragmatics, two fields of linguistics which until now were only loosely related, if at all (Blutner, 1998; see also Fischer, 2000). A particular kind of accounts for the division of labor between lexical semantics and pragmatics has been developed in this research area. Determining whether various meanings of a word in various contexts are properly represented lexically or pragmatically is not a simple task. Different researchers adopt different criteria in this respect, which, to some extent, is inevitable, given their different assumptions about the role of the lexicon and the expressive power of the lexical component and pragmatics. But there is no doubt that **lexical semantics has to interact with pragmatics** to explain various word meanings in utterances. Thus, a new linguistic discipline, namely **lexical pragmatics** is emerging.

The present book is a collection of eleven papers. They constitute a unit in the sense that they are all concentrated on one and the same problem: their common main aim is to explore the interaction between lexical semantics and pragmatics. The contributors discuss the meaning flexibility of simple and complex lexemes, functional words, constructions, and even metalinguistic, theoretical terms by means of several – both semantically and pragmatically – relevant explanations. The authors examine phenomena such as productive sense extension, regular polysemy, multifunctionality, implicit arguments and predicates, non-typical anaphoric pronouns, and diachronic change, on the basis of linguistic data from several languages, e.g. English, Norwegian, Russian, and Hungarian, as well as using a great variety of methods and frameworks.

Instead of meaning extension patterns, Bierwisch's (1983, 1996) two-level conceptual semantics has proposed to account for the flexibility of meaning that the different meanings of a word evoked by the context can be derived from an underspecified core meaning. In the theory of generative lexicon (Pustejovsky, 1995), a set of generative operations connects the different levels of lexical representation, providing for the compositional interpretations of words in contexts. Among the frameworks adopted for the treatment of meaning flexibility there are also database of Russian verbs "Lexicographer" (Kustova and Paducheva, 1994), Jackendoff's (1990) conceptual semantics, prototype theory (Kleiber, 1993), the cognitive theory of metaphor (Lakoff and Johnson, 1980), Langacker's (1987) cognitive grammar, Gricean pragmatics (Grice, 1975), and relevance theory (Sperber and Wilson, 1995). Although the two types of knowledge, linguistic and general conceptual (commonsense) knowledge, are not separated definitely in several accounts, the idea of underspecified meaning figures not only in two-level conceptual semantics but is also present in the theory of generative lexicon and in relevance theory. Nevertheless, the contributors to this book share at least the opinion that commonsense assumptions about the surrounding world play a crucial role in the process of utterance production and interpretation. The interaction between the two types of knowledge, the pragmatic strengthening of underdetermined meaning, and the dependence on the interlocutors' world-views can be conceived of as part of the realm of pragmatics, including lexical pragmatics. In addition to these, the sociolect patterns of meaning extension, which encode norms of different subcultures, are also considered by one of the papers. Furthermore, some particular pragmatic and discourse approaches are taken into account in the treatment of linguistic phenomena investigated in the contributions to this volume. A Gricean framework understood in a bidirectional optimality framework which integrates production and comprehension optimization handles the contextual meaning through pragmatic strengthening based on conversational implicatures. The inferable entities of another type are described in a discourse model. Finally, in accordance with relevance theory, some contributors rely on (i) the distinction between conceptual and procedural information, (ii) the possibilities of context extension, and (iii) a concept of an addressee who uses his/her ability to draw inferences about the speaker's communicative intention not only in the computation of implicatures intended by the speaker but also for recovering the explicitly communicated part of the utterance.

2. **AN OVERVIEW OF THE INDIVIDUAL PAPERS**

As emphasized above, all contributions in the present volume deal with topics which can be situated in the lexical semantics/pragmatics interface. To provide some more details in this section, we try to give a brief synopsis of each study of this volume following the order in which they appear in the volume.

Reinhard Blutner and Torgim Solstad present two case studies in lexical pragmatics. Lexical pragmatics combines the idea of (radical) semantic underspecification in the lexicon with a theory of pragmatic strengthening (based on conversational implicatures). In the core of this approach is a precise treatment of Atlas and Levinson's (1981) Q- and I-principles and the formalization of the balance between informativeness and efficiency in natural language processing (Horn's (1984) division of pragmatic labor). To implement the above mechanisms, Blutner and Solstad propose a bidirectional version of optimality theory which aims to integrate expressive and interpretive optimization. The theory is applied (i) to give a new analysis of the phenomenon of negative strengthening and (ii) to resolve some puzzles of dimensional specification of spatial objects. Considering the basic approach of lexical pragmatics that the idea of lexical underspecification has to be combined with a theory of pragmatic strengthening, Blutner and Solstad point out that situated meanings of many words and simple phrases are combinations of their lexical meanings proper and some superimposed conversational implicatures. Formulating pragmatic strengthening in terms of the proposed bidirectional optimality theory formalizes Grice's theory of conversational implicatures. In the authors' opinion, the main advantage of such a theory is that it puts in concrete terms what requisites are for explaining the particular properties of negative strengthening, dimensional designation and other related phenomena.

Igor Boguslavsky concentrates on some unusual phenomena related to the behavior of *even*, mostly in Russian. He presents data concerning both the existential and the scalar implicatures, widely used to describe the meaning of *even* and other focus particles that traditional approaches fail to explain adequately. Boguslavsky argues that in the modeling of human understanding processes, one has to pay utmost attention to the interplay between the different sources of semantic knowledge. In the present paper he introduces two types of interpretation of *even* utterances – *diminuendo* and *crescendo* types – that come into conflict with the scalar implicature generally acknowledged in the characterization of *even* given by traditional lexical semantics frameworks. It has been demonstrated that utterances of these two types have the same linguistic structure and can be served by the same semantic definition of *even*. The difference in their interpretation is accounted for by different strategies applied by the addressee. One of the strategies is used by default and is responsible for the generation of the scalar implicature. The second one – the “best-alternative-excluded” strategy – is applied in the *crescendo* context. Boguslavsky concludes that, on the one hand, the scalar implicature has to be downgraded from the rank of a conventional implicature to a much lower rank of a conversational implicature that is calculated in the context on the basis of the literal meaning, knowledge of the context of utterance, and background (or encyclopedic) knowledge. On the other hand, scalar implicatures are obviously language-specific in the sense that various languages apply them in different degrees, and they belong exactly to the intersection of linguistic semantics and pragmatics.

Sharon A. Cote discusses a corpus study of a variety of discourse “triggers” in English that inferentially increase the activation status of certain entities not yet directly introduced into the discourse context. While one examines the subsequent overt introduction of these inferable entities into discourse, it becomes clear that some triggers do not provide enough information for a hearer to disambiguate the reference of an inferable entity. This seemingly unusual observation about inferable entities is then shown to be similar to observations made in previous work on null subjects and implicit objects, as well as to certain anecdotal observations about event reference. In her paper, Cote therefore argues that discourse participants determine the reference of a referring expression (null or overt) not by fundamentally requiring the identification of a unique co-referent but rather by relying on an “interpretability” constraint. While the interpretability constraint can be met with a linguistic context that provides a unique co-referent, it can be met in other ways as well. More generally, Cote argues that an interpretability constraint on various types of discourse entity inferences, including some inferable entities, correctly represents the real inferential expectation that speakers attempt to fulfill for hearers. She claims that the other supposedly absolute constraints are actually common means for adhering to the interpretability constraint, but certainly not the only means. This seemingly small change in perspective can have significant impacts on the understanding of anaphoric references and of the structuring of local discourse.

Thorstein Fretheim accounts for the polyfunctionality of some English and Norwegian lexical entries of the ‘function word’ type, namely the English markers *after all* and *at least* as well as two Norwegian markers (*af*)*likevel* and *med en gang* / *med det samme*. These function words serve as blueprints designed to engage the hearer in a specific kind of inferential activity. Fretheim assigns sparse monosemous linguistic meanings to these words and invokes the relevance-theoretic underdeterminacy thesis, which implies that the gap between linguistically encoded lexical meaning and utterance meaning is bridged by context-driven inferences. Fretheim also demonstrates by his analyses that a univocal underdetermined lexical meaning can be established as a semantic input for the pragmatic inferential processes. These inferential procedures operate on linguistically encoded semantic representations to reach the context-dependent meanings in all presented occurrences of all four function words. It is also argued in each case that an alternative account in terms of lexical polysemy is inadequate, as that would be an attempt to formulate in terms of grammar what is really the result of extensive inferential processing aided by (i) the procedural, as opposed to conceptual, lexical meaning of the function words examined, (ii) the procedural meaning which is due to their position in the sentence, and, in some cases, (iii) the procedural meaning of the intonation imposed on the utterance.

András Kertész focuses on the following questions in his article: (i) What is the structure of theoretical terms in generative linguistics? (ii) How does the structure of theoretical terms influence the structure of scientific explanations in generative linguistics? And (iii) to what extent are the answers to the first two questions related to semantic and pragmatic factors?

Kertész's paper exemplifies the applicability of cognitive approaches to the investigation of concept formation in generative linguistics by comparing a holistic and a modular solution to these problems. The holistic approach centers around the hypothesis according to which the theoretical terms of generative linguistics are governed by conceptual metaphors in the sense of Lakoff and Johnson (1980). As contrasted with this, the modularity hypothesis along the lines of Bierwisch and Lang's (1989) two-level approach yields the assumption that theoretical terms in generative linguistics rest on operations like conceptual shift, conceptual specification and conceptual selection. Kertész demonstrates that the similarities and the differences between the two solutions to the above three questions boil down to important generalizations concerning the applicability of cognitive approaches in the analysis of scientific concept formation. Of course, it is not necessarily the case that the two approaches should be applied to the same problems, but rather, it is quite probable that the problems to which they can be applied most successfully will not be identical. It is the task of future research to spell out their potential in this respect.

Péter Pelyvás studies some of the factors that led to the emergence of the grounding predication within the framework of Langacker's (1987) holistic cognitive grammar. After a brief examination of how epistemic grounding is treated by Langacker (*ibid.*: 489) and how Langacker's original notion can be extended to include cognitive predicates as well, Pelyvás discusses the general tendencies in the development of the epistemic senses of the modals from their root meanings, analyzing the changes in the image schemas of the modals that mark the development. He pays special attention to changes within immediate scope responsible for the presence vs. absence of relations like permission or obligation, to the reference-point construction, and to subjectification (essentially a special case of change in overall scope), the decisive step in the development of the grounding predication. Pelyvás demonstrates that the root and epistemic schemas developed for the modals can be applied to modal predicates (with deontic meanings, e.g. *permit*, *allow*, *compel*, *oblige*, *forbid*), and to cognitive predicates (with epistemic meanings, e.g. *seem*, *appear*, *think*, *believe*, *assume*, *know* or *possible*, *probable*, *likely*) as well. Development from root to epistemic senses is also possible, e.g. in *expect*. This is regarded as semantic evidence that cognitive predicates are also grounding predications. Pelyvás also outlines a largely unexplored aspect of grounding: apart from marking the degree of the speaker's certainty of a situation (epistemic commitment), some cognitive predicates and grammatical structures can give indication of the correctness of the cognitive model formed by the speaker (on a previous occasion), or by some other subject.

Gergely Pethő tries to provide a general and comprehensive overview of the various positions on the nature of one of the central issues of present day research in word meaning (both in semantics and in pragmatics), namely polysemy. He concentrates especially on those approaches that were actively propagated in the past fifteen years and that discuss the theoretical question of what polysemy itself is in general. His point of departure is Deane's (1987)

dissertation, which also includes a survey of the literature on polysemy up to that date, mostly representatives of the structural semantics strand. Pethő characterizes the latest major positions on the nature of polysemy: that of several holistic cognitive linguists, Nunberg's pragmatic theory of polysemy, different versions of two-level semantics, the knowledge representation approach in computational linguistics, and the generative lexicon theory. Several other less central positions are discussed as well. Recent findings of pragmatic approaches receive special attention and a need for further research in this line is emphasized. With providing this general overview, Pethő fulfills his first main aim. His second and – in some respect – more important goal is to compare the ideas of the presented trends and to show how these independent branches of research can be considered to be parts of a whole. Pethő concludes that despite the apparent incoherence of the different approaches to polysemy, if these are confronted with each other, a surprisingly coherent picture of the phenomena that constitute polysemy may be gained.

In his paper **Tvrtko Prčić** aims at offering an integrated outline of the process of interpretation of morphologically complex lexemes, at (re)assessing the roles of semantics and pragmatics in that process, and at (re)assessing the relationship between semantics and pragmatics in general, and in lexical analysis in particular. Exemplifying the points being discussed with agentive nouns in English, formed from verbal bases by the addition of one of the six competing agentive suffixes, Prčić deals in some detail with the following topics: (i) semantic underspecification, (ii) inferable features contained in morphologically complex lexemes, (iii) the transparency/opacity cline, (iv) the distinction between explicit, implicit and implied information conveyed in/by these lexemes, (v) pragmatic specialization, and (vi) the treatment of compositionality and idiomatization in dictionaries. Prčić concludes, on the one hand, that a decontextualized interpretation of morphologically complex lexemes is based on binary processing and results in an underspecified reading, which leaves the sense insufficiently determined and calls for the missing information to be filled in during the process of pragmatic specialization. On the other hand, the contextualized, pragmatically enriched interpretation of morphologically complex lexemes consists of relevance assignment, morphosemantic analysis and local completion, and results in a reading characterized by all information required for a successful interpretation appropriately supplied.

Raissa Rozina addresses the issues of the difference between regular patterns of one type of semantic derivation, i.e. meaning extension, resulting in standard and slang meanings in Russian. In her paper she uses the term *slang* to refer to the Russian general slang, which is understood as a part of modern Russian slang not restricted to any social or age group. First of all, Rozina concentrates on the patterns of meaning extension of Russian verbs. Relying on the presented analyses of the derivational relations between actions and happenings, she argues that in Russian their relationship is bidirectional. The main direction of derivation in standard language is from actions to happenings, whereas the derivation of actions from happenings usually yields slang meanings. Derived happenings in standard language have the component

of damage in their meanings that infers the component of negative evaluation. Derived actions in slang inherit the component of damage from happenings but do not inherit the negative evaluation. Rozina comes to the conclusions that, on the one hand, all this suggests that meaning extension patterns encode norms of different subcultures. And, on the other hand, general slang reflects and imposes on its users social norms different from those reflected and dictated by using the standard language.

Ildikó Vaskó offers a pragmatic account of the Hungarian adverbial marker *majd* 'later on, some time' with respect to utterances referring to the future. She discusses its communicative role in a relevance theoretical framework. Within this framework, the main question concerning *majd* is whether it encodes conceptual or procedural information. Vaskó demonstrates that this adverb not only signals the postponement of an event in the flow of time (conceptual meaning) but also gives an indication of the speaker's attitude, thus conveying procedural information to be used in utterance interpretation. *Majd* conveys procedural information in utterance interpretation by instructing the hearer to constrain the temporal reference to a time that is later than the time of the utterance. Furthermore, *majd* implies overtly or by inferential process that, for the successful realization of the events that *majd* is associated with, certain conditions have to be fulfilled. These conditions are either explicitly communicated or can be recovered from the context in the course of utterance interpretation.

Károly Bibok and Enikő Németh T. examine in a unified way three types of Hungarian utterances, namely ones with implicit arguments and predicates as well as ones in which the predicates and their arguments are connected by means of a more sophisticated way than simple composition. They demonstrate that the meaning construction of these three types of utterances can only be described by assuming an intensive interaction between the lexicon and the context. On the basis of the analyses provided in their article, the authors conclude that the same three manners of meaning composition can be applied to each type of utterances: (i) considering the conceptual semantic representation of verbs (first type of utterances), nouns (second type of utterances) or both (third type of utterances), (ii) considering the immediate contexts of verbs, nouns or both, and (iii) extending contexts of utterances with information from the preceding discourse, physical environment or encyclopedic knowledge. Bibok and Németh T. argue that these three possibilities of utterance meaning construction as well as their hierarchy are regulated by the cognitive principle of relevance. This rational principle explains the possibility that an argument or a predicate can be lexically unrealized at all: it reaches the same contextual effects as do overt arguments or predicates but with less processing effort. The principle of relevance also explains the possibility of composing a larger unit from predicates and arguments in such a way that the meaning of arguments does influence the activation of the meaning relevant from potential meanings of predicates.

3. SOME TECHNICAL DETAILS

To facilitate reading and understanding of non-English examples in several contributions, glosses were added, and expressions from languages with a not Latin alphabet (e.g. from Russian, which appears in more than one paper) are given in transliteration. Moreover, we try to be uniform throughout all papers in both respects. The Cyrillic script of Russian is transliterated in accordance with the system of the Library of Congress, which is more convenient for a non-Slavist reader. As to glossing, it is necessary to give a somewhat longer commentary. The main “rule” we used was to gloss every word form (graphic units separated by spaces) of the numbered examples other than English by means of the English word forms (not lexemes) plus abbreviations of only those meanings of the inflectional categories which the English word forms do not express. For the sake of simplicity, however, there are some minor divergences from the main rule:

- (i) Some meanings of inflectional categories are omitted. The most typical case of such an omission is the meanings in NPs/DPs that appear due to congruence.
- (ii) Only the meaning relevant in a given example is glossed. For instance, a form of several Russian nouns expresses both the nominative and accusative case but in a particular example it has only one of them.
- (iii) If a gloss of another word form can indicate which meaning is relevant from meanings characteristic of an English word form, we do not express this meaning as a gloss. Although, for instance, the English word form *absorbed* is ambiguous (Past Tense or Past Participle), there is no need – in the presence of a word form such as *was* – to use the gloss “Past Participle”.

4. SUMMARY

All eleven contributions to this volume highlight the necessary interaction between two different fields of linguistics, i.e. lexical semantics and pragmatics, in the research of several problems formerly handled only from one or the other point of view. It is our sincere hope that, on the one hand, papers of the present volume will **stimulate** further work in a new field of investigation, i.e. in lexical pragmatics, and **contribute** to adopting a more integrated and coherent view in the examination of various linguistic phenomena. And, on the other hand, because of its wide range of approaches, linguistic phenomena, and various languages, the present volume **provides an easy access** to lexical pragmatics for scholars and students with divergent backgrounds but with convergent interests in the interaction between lexical semantic and pragmatic information.

REFERENCES

- Atlas, J. and S. Levinson (1981). *It-clefts, informativeness and logical form*. In: *Radical Pragmatics* (P. Cole, ed.), pp. 1–61. Academic Press, New York.
- Bierwisch, M. (1983). Semantische und konzeptuelle Repräsentation lexikalischer Einheiten. In: *Untersuchungen zur Semantik (Studia grammatica 22)* (R. Růžicka and W. Motsch, eds.), pp. 61–99. Akademie-Verlag, Berlin.
- Bierwisch, M. (1996). How much space gets into language? In: *Language and Space* (P. Bloom, M. A. Peterson, L. Nadel, and M. F. Garrett, eds.), pp. 31–76. MIT Press, Cambridge, Mass.
- Bierwisch, M. and E. Lang (eds.) (1989). *Dimensional Adjectives: Grammatical Structure and Conceptual Interpretation*. Springer, Berlin.
- Blutner, R. (1998). Lexical Pragmatics. *Journal of Semantics*, **15**, 115–162.
- Deane, P. D. (1987). *Semantic Theory and the Problem of Polysemy*. PhD dissertation, Department of Linguistics, University of Chicago.
- Fischer, K. (2000). *From Cognitive Semantics to Lexical Pragmatics: The Functional Polysemy of Discourse Particles*. Mouton de Gruyter, Berlin.
- Grice, H. P. (1975). Logic and conversation. In: *Syntax and Semantics 3: Speech Acts* (P. Cole and J. L. Morgan, eds.), pp. 41–58. Academic Press, New York.
- Horn, L. R. (1984). Toward a new taxonomy for pragmatic inference: Q-based and R-based implicatures. In: *Meaning, Form, and Use in Context* (D. Schiffrin, ed.), pp. 11–42. Georgetown University Press, Washington.
- Jackendoff, R. (1990). *Semantic Structures*. MIT Press, Cambridge, Mass.
- Kleiber, G. (1993). *Prototypensemantik: Eine Einführung* (Michael Schreiber, transl.). Narr, Tübingen.
- Kustova, G. I. and E. V. Paducheva (1994). Slovar' kak leksicheskaja baza dannykh [A dictionary as a lexical database]. *Voprosy iazykoznanii*, № 4, 96–106.
- Lakoff, G. and M. Johnson (1980). *Metaphors We Live By*. University of Chicago Press, Chicago.
- Langacker, R. W. (1987). *Foundations of Cognitive Grammar I*. Stanford University Press, Stanford.
- Pustejovsky, J. (1995). *The Generative Lexicon*. MIT Press, Cambridge, Mass.
- Sperber, D. and D. Wilson (1995). *Relevance: Communication and Cognition*. 2nd ed., Blackwell, Oxford.

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TWO CASE STUDIES IN LEXICAL PRAGMATICS

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1. INTRODUCTION

Lexical Pragmatics is a particular account of the division of labor between lexical semantics and pragmatics (e.g. Blutner, 1998). It combines the idea of (radical) semantic underspecification in the lexicon with a theory of pragmatic strengthening (based on conversational implicatures). In the core of this approach is a precise treatment of Atlas and Levinson's (1981) Q- and I-principles and the formalization of the balance between informativeness and efficiency in natural language processing (Horn's (1984) division of pragmatic labor). In a roughly simplified formulation, the I-principle seeks to select the most coherent interpretation, and the Q-principle acts as a blocking mechanism which blocks all the outputs which can be grasped more economically by an alternative linguistic input. Recently, these mechanisms have been implemented within a bidirectional version of optimality theory (OT) which aims to integrate expressive and interpretive optimization (Blutner, 1999).

The aim of this paper is to apply this framework to two different kinds of examples. First, we want to provide a concise treatment of the phenomenon of **negative strengthening** as arising in connection with gradable adjectives. Second, we want to resolve some puzzles of **dimensional designation** of spatial objects. In the first case, the optimality theoretic treatment can be seen as a reformulation and revivification of earlier approaches by Horn (1989) and Levinson (2000). In the second case the treatment is really new and crucially deviates from earlier approaches.

The paper is organized as follows. Section 2 introduces **the bidirectional optimality framework** and illustrates how the Gricean framework of conversational implicature can be reformulated by means of this technique. In Section 3 we give a concise introduction to the

phenomenon of negative strengthening, and in the subsequent section we account for the basic phenomena by using the bidirectional optimality framework. In Section 5 some puzzles of dimensional designation of spatial objects are outlined. Finally, in Section 6, the bidirectional optimality framework is applied to solve these puzzles, and in Section 7 some preliminary conclusions are drawn.

2. BIDIRECTIONAL OT AND PREFERENCES FOR INTERPRETATION

Recently, de Hoop and de Swart (1998), Hendriks and de Hoop (2001), and de Hoop (2000) have applied OT to sentence interpretation. They argue that there is a fundamental difference between the form of OT as used in phonology, morphology and syntax on the one hand and its form as used in semantics on the other hand. Whereas in the former case OT takes the point of view of the speaker (expressive perspective), in the latter case the point of view of the hearer is taken (interpretive perspective).

One obvious reason for this difference is that ambiguity, polysemy, and other forms of flexibility are much more obvious and manifested much broader in the area of interpretation than in the realm of syntax. The assumption that OT in sentence interpretation takes the point of view of the hearer is mainly motivated by this observation. Using the interpretive perspective, a mechanism for preferred interpretations is constituted that provides insights into different phenomena of interpretations, such as the determination of quantificational structure (Hendriks and de Hoop, 2001), nominal and temporal anaphorization (de Hoop and de Swart, 1998), the interpretational effects of scrambling (de Hoop, 2000), and the projection mechanism of presupposition (Zeevat, 1999a, b; Blutner, 1999; Geurts, to appear).

However, Blutner (1999) argues that this design of OT is inappropriate and too weak in a number of cases. This is due to the fact that the abstract generative mechanism (called **Gen** in the OT literature) can pair **different** forms with one and the same interpretation. The existence of such alternative forms may raise blocking effects which strongly affect what is selected as the preferred interpretation. The phenomenon of blocking requires us to take into consideration what else the speaker could have said. As a consequence, we have to go from a one-dimensional, to a two-dimensional (bidirectional) search for optimality.

This bidirectional view was independently motivated by a reduction of Grice's maxims of conversation to two principles: the Q-principle and the I-principle (Atlas and Levinson, 1981; Horn (1984) writes R instead of I). The I/R-principle can be seen as the force of unification minimizing the Speaker's effort, and the Q-principle can be seen as the force of diversification minimizing the Auditor's effort. The Q-principle corresponds to the first part of Grice's quantity maxim (*make your contribution as informative as required*), while it can be argued that the countervailing I/R-principle collects the second part of the quantity maxim (*do*

not make your contribution more informative than is required), the maxim of relation and possibly all the manner maxims.

In a slightly different formulation, the I/R-principle seeks to select the most coherent interpretation, and the Q-principle acts as a blocking mechanism which blocks all the outputs which can be grasped more economically by an alternative linguistic input (Blutner, 1998). This formulation makes it quite clear that the Gricean framework can be conceived of as a bidirectional optimality framework which integrates expressive and interpretive optimality. Whereas the I/R-principle compares different possible interpretations for the same syntactic expression, the Q-principle compares different possible syntactic expressions that the speaker could have used to communicate the same meaning. The important feature of this formulation within bidirectional OT is that although it compares alternative syntactic inputs to one another, it still helps to select the optimal meaning among the various possible interpretational outputs of the single actual syntactic input given, by acting as a blocking mechanism.

A strong version of bidirectional OT can be formulated as given in (1). Here, we relate pairs (f, m) of possible (syntactic) forms f and meanings (= semantic interpretations) m , by means of an ordering relation $>$, *being more efficient*.

(1) **Bidirectional OT (Strong Version)**

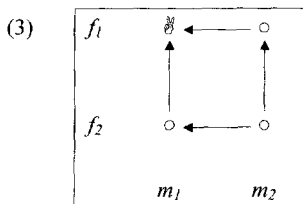
A form–meaning pair (f, m) is optimal iff it is realized by **Gen** and it satisfies both the Q- and the I-principle, where:

- (Q) (f, m) satisfies the Q-principle iff there is no other pair (f', m) realized by **Gen** such that $(f', m) > (f, m)$,
- (I) (f, m) satisfies the I-principle iff there is no other pair (f, m') realized by **Gen** such that $(f, m') > (f, m)$.

We will now give a very schematic example in order to illustrate some characteristics of the bidirectional OT. Assume that we have two forms f_1 and f_2 which are semantically equivalent. This means that **Gen** associates the same meanings with them, say m_1 and m_2 . We stipulate that the form f_1 is less complex (marked) than the form f_2 and that the interpretation m_1 is less complex (marked) than the interpretation m_2 . From these differences of markedness with regard to the levels of syntactic representation / semantic interpretations, the following ordering relation between representation–meaning pairs can be derived.

- (2) a. $(f_1, m_1) > (f_2, m_1)$
- b. $(f_1, m_2) > (f_2, m_2)$
- c. $(f_1, m_1) > (f_1, m_2)$
- d. $(f_2, m_1) > (f_2, m_2)$

Using Dekker and van Rooy's (1999) notation, the following bidirectional OT diagram can be construed, nicely representing the preferences between the pairs. More importantly, such diagrams give an intuitive visualization for the optimal pairs of (strong) bidirectional OT: they are simply the halloos if we follow the arcs. (It should be noted that Dekker and van Rooy (1999) give bidirectional OT a game theoretic interpretation where the optimal pairs can be characterized as so-called Nash Equilibria.) The optimal pairs are marked with the symbol \otimes in the diagram.



The scenario just installed describes the case of **total blocking** where some forms (e.g., **furious*, **fallacy*) do not exist because others do (*fury*, *fallacy*). However, blocking is not always total but may be partial. This means that not all the interpretations of a form must be blocked if another form exist. According to Kiparsky (1983) **partial blocking** is realized in the case where the special (less productive) affix occurs in some restricted meaning and the general (more productive) affix picks up the remaining meaning (consider examples like *refrigerant* – *refrigerator*, *informant* – *informer*, *contestant* – *contester*). McCawley (1978) collects a number of further examples demonstrating the phenomenon of partial blocking outside the domain of derivational and inflectional processes. For example, he observes that the distribution of productive causatives (in English, Japanese, German, and other languages) is restricted by the existence of a corresponding lexical causative. Whereas lexical causatives (e.g. (4a)) tend to be restricted in their distribution to the stereotypical causative situation (direct, unmediated causation through physical action), productive (periphrastic) causatives tend to pick up more marked situations of mediated, indirect causation. For example, (4b) could have been used appropriately when Black Bart caused the sheriff's gun to backfire by stuffing it with cotton.

- (4) a. Black Bart killed the sheriff.
b. Black Bart caused the sheriff to die.

Typical cases of total and partial blocking are not only found in morphology, but in syntax and semantics as well (cf. Atlas and Levinson, 1981; Horn, 1984; Williams, 1997). The general tendency of partial blocking seems to be that “unmarked forms tend to be used for unmarked situations and marked forms for marked situations” (Horn, 1984: 26) – a tendency that Horn (1984: 22) terms “*the division of pragmatic labor*”.

There are two principal possibilities to avoid total blocking within the bidirectional OT framework. The first possibility is to make some stipulations concerning **Gen** in order to exclude equivalent semantic forms. The second is to weaken the notion of (strong) optimality in a way that allows us to derive Horn's division of pragmatic labor by means of the evaluation procedure.

Blutner (1998, 1999) argues that the second option is much more practicable and theoretically interesting. A **weak** version of two-dimensional OT was proposed, according to which the two dimensions of optimization are mutually related:

(5) **Bidirectional OT (Weak Version)**

A form–meaning pair (f, m) is **super-optimal** iff it is realized by **Gen** and it satisfies both the Q- and the I-principle, where:

- (Q) (f, m) satisfies the Q-principle iff there is no other pair (f', m) realized by **Gen** which satisfies the I-principle such that $(f', m) > (f, m)$,
- (I) (f, m) satisfies the I-principle iff there is no other pair (f, m') realized by **Gen** which satisfies the Q-principle such that $(f, m') > (f, m)$.

A more transparent formulation of **super-optimality** has been proposed by Jäger (2000):

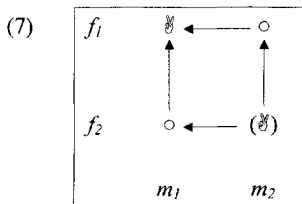
(6) **Bidirectional OT (Weak Version, Jäger's variant)**

A form–meaning pair (f, m) is **super-optimal** iff it is realized by **Gen** and it satisfies the following two conditions:

- (Q) there is no other **super-optimal** pair (f', m) : $(f', m) > (f, m)$,
- (I) there is no other **super-optimal** pair (f, m') : $(f, m') > (f, m)$.

Under the assumption that $>$ is transitive and well-founded, Jäger (2000) observes that both versions of weak bidirection coincide; that is a representation–meaning pair is super-optimal in the sense of definition (5) if and only if it is super-optimal in the sense of definition (6).

The important difference between the weak and strong notions of optimality is that the weak one accepts super-optimal form–meaning pairs that would not be optimal according to the strong version. It typically allows marked expressions to have an optimal interpretation, although both the expression and the situations they describe have a more efficient counterpart. Consider again the situation illustrated in (3), but now apply the weak versions of bidirectional optimization (to make things more concrete we can take f_1 to be the lexical causative form (4a), f_2 the periphrastic form (4b), m_1 direct (stereotypic) causation and m_2 indirect causation).



We have seen that the **strong** version cannot explain why the marked form f_2 has an interpretation as well. The **weak** version, however, can explain this fact. Moreover, it explains that the marked form f_2 gets the atypical interpretation m_2 . The form f_2 gets the interpretation m_2 because this form–meaning pair is super-optimal: (i) the alternative form f_1 doesn't get the atypical interpretation m_2 , and (ii) we prefer to refer to the typical situation m_1 by using f_1 instead of f_2 . In this way, the weak version accounts for the pattern called “*the division of pragmatic labor*”. It is not difficult to see that this pattern can be generalized to systems where more than two forms are associated by **Gen** with more than two interpretations. In the general case, we start with determining the optimal pairs. Then we drop the rows and columns corresponding to the optimal pair(s) and apply the same procedure for the reduced tableau.

The additional solutions are due to the flexibility and ability to learn which the weak formulation alluded to. The strong view is sufficient when it is enough to find **one** prominent solution. The weak view allows us to find out other solutions as well. In Section 4 we will make use of this more general solution concept to explain the effects of negative strengthening, and in Section 6 we will use it in order to explain the patterns of dimensional designation for spatial objects.

3. THE PHENOMENON OF NEGATIVE STRENGTHENING

Negation in natural language is a rich source of a variety of non-logical inferences (see Horn, 1989). Standard examples are **scalar implicatures** (*Not all of the students came* \approx *Some of them came*). Others are collected under the term *negative strengthening*. For an excellent discussion of the phenomenon of **negative strengthening** we refer to Horn (1989) and Levinson (2000).

One instance of the phenomenon of negative strengthening arises with gradable adjectives which typically occur as antonyms, such as {*good*, *bad*}, {*large*, *small*}, {*happy*, *unhappy*}. Semantically, the elements of antonym pairs are **contraries**, that is they are mutually inconsistent but do not exhaust the whole spectrum, permitting a non-empty **middle ground**.

What are the effects of negating gradable adjectives? For the sake of explicitness let us consider the gradable antonyms *happy* and *unhappy*, and assume three possible states of happiness – iconized by ☺, ☹, and ☹. Not unexpectedly, we want to take *happy* as referring to

the first state, *unhappy* as referring to the second state, and *neither happy nor unhappy* as referring to the third state.

Let's consider first the effect of negating positive adjectives, starting with a sentence like (8a). Obviously, the preferred interpretation of this sentence is (8c); this corresponds to a logical strengthening of the content of (8a) which is paraphrased in (8b). The discourse (8d) shows that the effect of strengthening (8c) is defeasible. This indicates that the inferential notion that underlies the phenomenon of strengthening ought to be non-monotonic.

- (8)
- | | | | |
|----|-----------------------------------|-----------------|-----|
| a. | I'm not happy. | | |
| b. | It isn't the case that I'm happy. | (Entailment) | ⊗ ☹ |
| c. | I'm unhappy. | (Implicature) | ☹ |
| d. | I'm not happy and not unhappy. | (Defeasibility) | |

Following Levinson (2000), the effect of negative strengthening for positive adjectives can be illustrated in the following way:

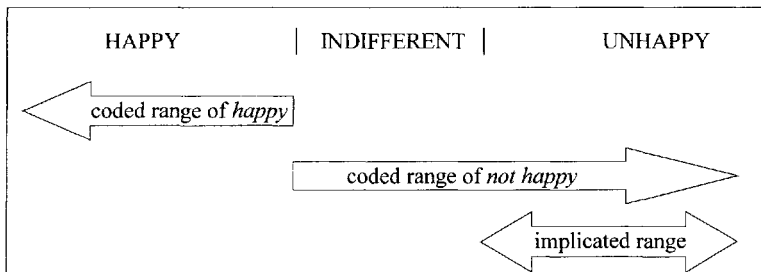


Figure 1: Negative strengthening as implicated contraries

It describes the effect of negative strengthening as implicating contraries from contradictions.

The illustrated shape of negative strengthening is restricted to the positive (unmarked) element of an antonym pair. When considering negative adjectives, deviations from this pattern may be found. The deviations are rather obvious for adjectives with affixal negation. This leads us to the well-known case of double negation (litotes):

- (9)
- | | | | |
|----|-----------------------------------------------------------------------------------------------|----------------------|-----|
| a. | I'm not unhappy. | | |
| b. | It isn't the case that I'm unhappy. | (Entailment) | ☺ ☺ |
| c. | I'm neither happy nor unhappy. | (Implicature) | ☺ |
| d. | I'm rather happy (but not quite as happy as using the expression <i>happy</i> would suggest). | (proper Implicature) | |
| e. | I'm not unhappy, in fact I'm happy. | (Defeasibility) | |

Admitting only three states on the happiness scale allows only a rather rough approximation of the interpretational effects. The simplest approximation describes negative strengthening as a preference for the middle ground. This is what (9c) expresses. A more appropriate formulation of the effect is given in (9d). For the sake of precision, we would have to introduce intermediate states between ☺ and ☹ (on the scale of happiness). Other interpretational effects left out here, may be seen as cultural preferences, as for example in the case of understatement extensively used in British English, where *I am NOT happy* (negation phonologically marked) is often taken to implicate that I am unhappy. In the following diagram a fairly adequate illustration of the basic pattern is presented (as described in Horn, 1989; Levinson, 2000).

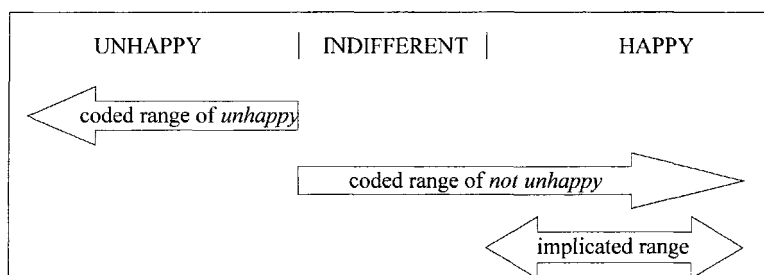


Figure 2: Litotes: when two negatives don't make a positive

As in the case discussed above, the effect of negative strengthening proves defeasible, a fact that requires the underlying inferential notion to be non-monotonic.

4. NEGATIVE STRENGTHENING AND BIDIRECTIONAL OT

In the previous section a concise description of the phenomenon of negative strengthening was given. This phenomenon will be brought into play in order to illustrate the general mechanism of pragmatic strengthening, which is formulated by using the method of bidirectional optimization.

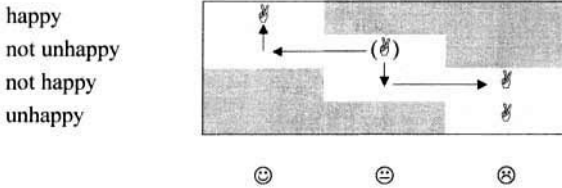
In the analysis of Horn (1989) and Levinson (2000) there are some types of negative strengthening that are obviously attributable to the I/R-principle. A clear case is the negation of positive adjectives, which was described in connection with example (8). Here the I/R principle leads to a pragmatic strengthening effect excluding the middle ground and inferring the contrary.

The situation is not so clear in the case of adjectives with affixal negation such as in example (9). Whereas Horn (1984, 1989) seems to attribute the observed effect of negative strengthening to the interaction between Q and R, Levinson stipulates a third pragmatic

principle, the M(anner)-principle: “What’s said in an abnormal way, isn’t normal; or Marked message indicates marked situation” (Levinson, 2000: 33). Obviously, this principle expresses the second half of Horn’s **division of pragmatic labor**. In our opinion, Levinson (2000) tries to turn a plausible heuristic classification scheme based on the three principles Q, I, and M into a general theory by stipulating a ranking $Q > M > I$. Accepting the heuristic classification schema, we see problems for this theory, which is burdened with too many stipulations. Not unlike Horn’s conception, we would rather like to see the M-principle as an **epiphenomenon** that results from the interaction of Zipf’s two “economy principles” (Q and R in Horn’s terminology).

Let us now have a look at how bidirectional OT accounts for the effects of negative strengthening. The bidirectional tableau (10) shows the competing candidate forms to the left. (Take the candidate entries as shortcuts for complete sentences; for example take *happy* as abbreviating *I’m happy*, etc.) The three columns designate the possible states of happiness considered in this simplified analysis. The gray areas in the tableau indicate which form–interpretation pairs are excluded by the compositional mode of truth-functional semantics, which is described by **Gen**. For example, *I’m not unhappy* is assumed to exclude the state iconized by ☹.

(10)



The preferences between the form–interpretation pairs are due to markedness constraints for forms and markedness constraints for interpretations, respectively.

With regard to the forms, we simply assume that the number of negation morphemes is the crucial indicator. The corresponding preferences are indicated by the vertical arrows. (Note that *not happy* and *unhappy* aren’t discriminated in terms of markedness – a rough simplification, of course.)

With regard to the states, we assume that they are decreasing in markedness towards both ends of the scale, assigning maximal markedness to the middle ground. Although this assumption seems not implausible from a psycholinguistic perspective, we cannot provide independent evidence for it at the moment. In the tableau (10), the corresponding preferences are indicated by the horizontal arrows.

Now it is quite easy to find the optimal solutions – indicated by \otimes . One optimal solution pairs the sentence *I'm not happy* with the interpretation \ominus . This solution corresponds to the effect of negative strengthening that is attributable to the I/R-principle. The other two optimal solutions are reflecting the truth condition of *I'm happy/unhappy*.

Most interesting, there is an additional super-optimal solution, indicated by \otimes . It pairs the sentence *I'm not unhappy* with the interpretation \ominus . This corresponds to the effect of negative strengthening in the case of **litotes**, normally attributed to Levinson's (2000) M-principle or Horn's **division of pragmatic labor**. As already stressed, this solution comes out as a natural consequence of the weak form of bidirection, which can be seen as a formal way of describing the interactions between Q and I/R.

It's an interesting exercise to introduce more than three states of happiness and to verify that the proper shape of implicature as indicated in Figure 2 can be approximated. More importantly in the context of litotes it seems necessary to account for the effect of gradient acceptability and continuous scales. Using a stochastic evaluation procedure, Boersma, (1998) did pioneering work in this field, which should be exploited in the present case.

The other prominent class of examples that exhibit the effect of negative strengthening concerns the phenomenon of neg-raising, i.e. the tendency for negative main sentences with subordinate clauses to be read as negations of the subordinate clause (cf. Horn, 1989; Levinson, 2000). It seems desirable to analyze the phenomenon using the same technique as described before.

5. SOME PUZZLES OF DIMENSIONAL DESIGNATION

The term *dimensional designation* refers to the contextual interpretation of a group of spatial adjectives such as *long, high, broad, deep, thick*, and can be illustrated by the following example:

- (11) a. The windowsill is 1 m long, 30 cm wide and 3 cm thick.
b. The windowsill is 1 m wide, 30 cm deep and 3 cm thick.

In (11a) the adjective *wide* refers to the secondary dimension whereas in (11b) it refers to the maximal (most salient) dimension. In order to explain the basic effects of dimensional designation we need the right combination of lexical stipulations and general principles of coherence, blocking and (perhaps) deblocking. In the following, we want to illustrate how bidirectional OT solves this conceptual and methodological problem.

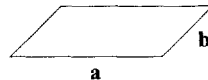
There is a thorough literature describing the linguistic facts of dimensional designation of spatial expressions (e.g. Bierwisch, 1967; Lang, 1989). It is not the aim of this section to extend this literature or to find out new observations that challenge the basic facts described there. As usual, the facts are described by using some (semi-)formal representational system.

Certainly, there are good reasons for further improving the existing systems. However, that will not be of any concern in the present article. Let us concentrate on a small sector of the known observations by using standard representational systems. What is more important, we feel, is to provide a real explanation of these facts and observation. Our aim is to demonstrate that the framework of bidirectional optimization can be an appropriate tool for obtaining **explanatory adequacy**. Hopefully, this tool will help us to get a real understanding of the basic facts. A related point is a methodological one. It aims at the right relationship between lexical stipulations and general principles of economy. This is of great importance also for practical systems that should use lexical stipulations sparingly.

Suppose a physical object that our brain tries to encode. Suppose further that we can discriminate different dimensions (or axes) of spatial extent. It is the typical function of a spatial adjective to refer to a particular dimension of that object (in a particular contextual setting). The theoretical problem concerning the dimensional designation of spatial objects is to provide a mechanism that allows a realization of the mapping between dimensional adjectives on the one hand and the dimensions of physical objects referred to on the other hand. For simplicity, we will concentrate on two- and three-dimensional spatial objects where all axes are disintegrated (i.e. we don't considering objects like *tree*, *ball*, and *wheel* where two or more axes are integrated into one dimension). Furthermore, we are considering only a very restricted number of adjectives, namely the following: *long*, *high*, *wide*, *deep*, *thick*.

The facts we are considering aim at two different but interrelated phenomena: interpretational preferences and blocking. We start with the first aspect, preferences in interpretation. As an example, consider the following question in the context of a visually presented rectangle:

- (12) How long and how wide is this rectangle?



Obviously, there is a strong preference to refer to the maximal axis *a* with *long* (and to the secondary axis *b* with *wide*). However, as noticed in Lang, 1989: 349, there are exceptions to the rule that *long* designates the maximal axis:

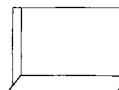
- (13) a. The seed drill is wider than long.
 b. Our new double bed is 2 m long and 3 m wide.
 c. The velvet remnant is 1,3 m wide but only 0,5 m long.

Obviously, in cases where a non-maximal axis is designated, this axis is the most salient for other reasons than spatial extent (salient direction of movement / salient inherent orientation / prototypical designation). As a consequence, we should not characterize the adjective *long* as referring to a **maximal** dimension. Instead, we should take the lexical entry for *long* to be a

candidate for radical **underspecification** and we should look for a mechanism of pragmatic strengthening that conforms to internal competition and aims to assign the most salient axis in the given context.

A more complex example which is appropriate to make a similar point was already presented at the beginning of this section and is repeated here for convenience:

- (11) a. The windowsill is 1 m long, 30 cm wide and 3 cm thick.
b. The windowsill is 1 m wide, 30 cm deep and 3 cm thick.



The puzzling fact is that in contexts where we try to conceptualize an inherent observer (example b) the adjective *wide* designates the maximal dimension. However, in observer-free context (example a) there is a strong preference to designate the secondary (next to maximal) dimension. This makes clear that the adjective *wide* is another candidate for radical **underspecification**. The puzzling point (to be resolved in the next section) is how to manage the extreme context-dependency of this adjective.

Spatial adjectives provide an excellent area for studying the phenomenon of blocking. The examples are legion, and so we can restrict ourselves to a short list. In this list, the (a) examples block the corresponding (b) examples.

- (14) a. The tower is 10 m high. [vertical dimension]
b. ??The tower is 10 m long.
- (15) a. The pencil is 20 cm long. [maximal dimension]
b. ?The pencil is 20 cm high. (possible in particular contexts!)
- (16) a. The tunnel is 2 km long. [maximal dimension]
b. ?The tunnel is 2 km deep. (possible in particular contexts!)
- (17) a. The well is 10 m deep. [vertical, observer direction]
b. ??The well is 10 m long / high.

The examples (15b) and (16b) can be taken to illustrate the phenomenon of deblocking: in particular contexts, the anomalies may disappear. As is discussed elsewhere (e.g. Blutner, 1998), the phenomenon of blocking/deblocking excludes a classical treatment of such examples as simple violations of definite conditions.

Another domain where the effects of interpretational preferences, blocking and deblocking come to the surface is the field of spatial prepositions (see Solstad, 2000). However, reasons of space force us to drop this extension here.

(19)	<	a	b	c	>	'intrinsic'
				Vert		'gravitational'
			Obs			'observer'

Following Jackendoff (1996), we can see the lexicon as the interface between the language module and the modules CS and SR. For spatial dimensional adjectives it is plausible to assume that an association with SR is most crucial. The question of how the association of an object scheme with some spatial object and thus with the lexeme or lexical material representing this object comes about is an interesting one, but also obviously one that cannot concern us here. In the following we assume that dimensional adjectives are discriminated by two factors:

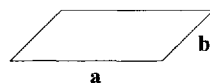
- the reference frame they trigger, e.g. intrinsic: *long*, *wide*, gravitational: *high*, observer: *deep*, *wide*;
- specificity, e.g. {*long*, *deep*, *high*} > *wide*.

The assumption that *wide* is the most unspecific adjective considered here derives from the fact that it is related to two different frames (intrinsic and observer) whereas the other adjectives refer to one frame only.

In subject-predicate expressions the reference frame triggered by the predicate must be present in the SR of the subject term. This is our basic assumption determining the **Generator**. Roughly spoken, it is a realization of all the potential pairings of a dimensional adjective with the designated axes of an object scheme given by the predicate term. The only condition is that the reference frame triggered by the adjective is compatible with the designated axis.

In the case of our earlier example (12) the generator leaves this correlation completely underspecified: Each of the two adjectives *long* and *wide* can be paired with either of the two axes *a* and *b*. This fact is due to the lexical entries of *long* and *wide* which only contain the information that both axes are to be intrinsic axes. The correct correlations *a* – *long* and *b* – *wide* are realized by the basic mechanism of bidirectional optimization (weak version). The discussion is completely analogous to that of the schematic example (7). The two axes are intrinsically ordered by salience: *a* > *b*, and the two adjectives are ordered by specificity: *long* > *wide*. From these two orderings of the inputs / outputs the ordering of the adjective–axes pairs can be derived. This is shown in (20):

(20) How long and how wide is this rectangle?

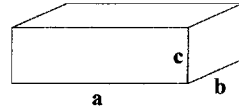


The framework of bidirectional optimization then produces the right correlation which can be seen as another reflection of the **division of pragmatic labor**: the salient axis correlates with the more specific adjective.

Earlier solutions (e.g. Bierwisch, 1967; Lang, 1989) crucially deviate from the present solution. They make use of features like MAX DIMENSION in case of *long* and SECONDARY DIMENSION in case of *wide*. The model theory of these features defines a kind of **internal competition** that simply stipulates the wanted result. The aim of the present approach is to avoid such stipulations and to replace internal competition by an external one. Needless to say, external competition is defined by the overall framework of bidirectional optimization, and thus reflects claims that are motivated independently (see Wilson, 1998 for a general discussion of the relationship between internal and external competition).

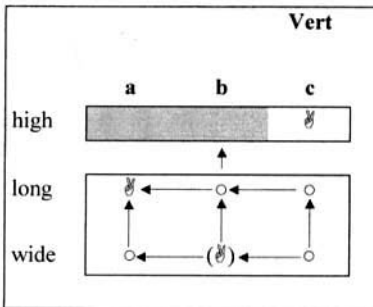
Let us finally present the analysis for a more complex example, (21).

- (21) a. The brick is 24 cm long, 15 cm wide, 8 cm high.
b. The brick is 24 cm wide, 15 cm deep, 8 cm high.

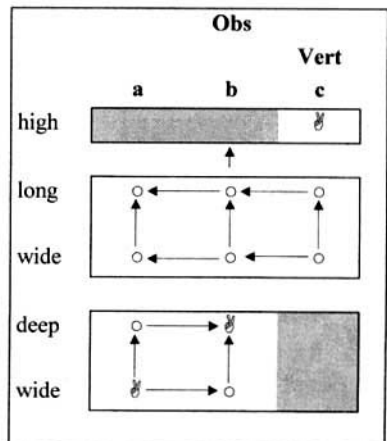


Similar to example (11), we assume that the module SR realizes two different object schemes for the term *brick*, one that doesn't involve the observer – represented in (18), and one that does – represented in (19). The tableau that corresponds to the first case is the one in (22a). It involves the intrinsic frame and the gravitational frame. The tableau that corresponds to the second case involves all three frames (intrinsic, gravitational, observer). It is (22b).

- (22) a.



- b.



The ranking of the different sub-tableaus conforms to the following general assumption:

- (23) If activated, the involved frames of reference are ranked as follows:
environmental > intrinsic.

This assumption reflects the relative autonomy of the environmental frames relative to the intrinsic frame. It is an easy exercise to determine the super-optimal solutions in the tableaux (22a, b). In the first case, (21a), it comes out that the adjective *long* designates the maximal axis *a*, the adjective *wide* the secondary axis *b*, and *high* the vertical axis *c*. In the second case, (21b), it results that the observer-sensitive variant of *wide* designates the maximal axis *a*. The adjective *deep* designates the observer axis *b*, and *high* the vertical axis *c*. Notably, the use of the adjective *long* is **blocked** if an observer axis is involved. The treatment of example (11) is analogous. However, it involves a further dimension: **substance** (triggered by the adjective *thick*, cf. Lang, 1989).

7. SUMMARY AND CONCLUSION

Investigating the interactions between the (mental) lexicon and pragmatics we have pointed out that situated meanings of many words and simple phrases are combinations of their lexical meanings proper and some superimposed conversational implicatures. The basic approach of lexical pragmatics combines the idea of (lexical) underspecification with a theory of pragmatic strengthening. The latter is formulated in terms of a bidirectional OT formalizing Grice's idea of conversational implicature. The mechanism of pragmatic strengthening crucially makes use of "non-representational" parameters that are described by preferential relations, such as information scales or salience orderings.

The main advantage of bidirectional OT is that it helps us to put in concrete terms what the **requisites** are for explaining the peculiarities of negative strengthening, dimensional designation and other potential phenomena that may be discussed. What are the relevant cognitive scales? How do we measure morpho-syntactic markedness? How do we measure the values of probabilistic parameters that control and organize conceptual knowledge (salience, cue validity)?

An important challenge for the present view is the work done in relevance theory (e.g. Sperber and Wilson, 1986; Carston, 1998, 2000). Although we prefer a variant of Atlas, Levinson, and Horn's framework, that doesn't mean that we are taking a stand against relevance theory. Rather, it seems desirable and possible to integrate most insights from relevance theory into the present view. As a kind of meta-framework, optimality theory can help to realize this integrative endeavor and to bring the two approaches closer to each other. Recently, van Rooy (2000a, b) made the first important steps in this direction.

The general conclusion that can be drawn from the present analysis is that weak bidirection can simplify the system of lexical stipulations rather radically. In the case of negative strengthening, the interpretational effects of negating graded adjectives were treated by means of weak bidirection. This appropriately accounts for the differences between positive and negative adjectives, thus avoiding unmotivated lexical stipulations. In the case of dimensional designation, on the other hand, bidirectional OT helps to eliminate internal competition and to replace it by external competition. Both analyses nicely illustrate Saussure's view that the semantics of natural language is partly determined by the inventory of lexical items.

REFERENCES

- Atlas, J. and S. Levinson (1981). *It*-clefts, informativeness and logical form. In: *Radical Pragmatics* (P. Cole, ed.), pp. 1–61. Academic Press, New York.
- Bierwisch, M. (1967). Some semantic universals of German adjectivals. *Foundations of Language*, 3, 1–36.
- Blutner, R. (1998). Lexical Pragmatics. *Journal of Semantics*, 15, 115–162.
- Blutner, R. (1999). Some aspects of optimality in natural language interpretation. In: *Papers on Optimality Theoretic Semantics* (H. de Hoop and H. de Swart, eds.) (Uil OTS Working Paper), pp. 1–21. Utrecht Institute of Linguistics OTS. Also available from <http://www2.rz.hu-berlin.de/asg/blutner/pap.html>
- Boersma, P. (1998). *Functional Phonology*. Holland Academic Graphics, The Hague.
- Carston, R. (1998). The semantics/pragmatics distinction: A view from relevance theory. *UCL Working Papers in Linguistics*, 10, 1–30.
- Carston, R. (2000). *Informativeness, Relevances and Scalar Implicature*. Manuscript, University College London.
- Dekker, P. and R. van Rooy (1999). Optimality theory and game theory: Some parallels. In: *Papers on Optimality Theoretic Semantics* (H. de Hoop and H. de Swart, eds.) (Uil OTS Working Paper), pp. 22–45. Utrecht Institute of Linguistics OTS.
- Geurts, B. (to appear). *Buoyancy and Strength*. Manuscript. Available from <http://www.kun.nl/phil/tfl/bart/>
- Hendriks, P. and H. de Hoop (2001). Optimality theoretic semantics. *Linguistics and Philosophy*, 24, 1–32.
- Hoop, H. de (2000). Optimal scrambling and interpretation. In: *Interface Strategies* (H. Bennis, M. Everaert, and E. Reuland, eds.), pp. 153–168. KNAW, Amsterdam.
- Hoop, H. de and H. de Swart (1998). *Temporal Adjunct Clauses in Optimality Theory*. Manuscript, OTS Utrecht.
- Horn, L. R. (1984). Toward a new taxonomy for pragmatic inference: Q-based and R-based implicatures. In: *Meaning, Form, and Use in Context* (D. Schiffrin, ed.), pp. 11–42. Georgetown University Press, Washington.
- Horn, L. R. (1989). *A Natural History of Negation*. University of Chicago Press, Chicago.

- Jackendoff, R. (1996). The architecture of the linguistic-spatial interface. In: *Language and Space* (P. Bloom, M. A. Peterson, L. Nadel, and M. F. Garrett, eds.), pp. 1–30. MIT Press, Cambridge, Mass.
- Jäger, G. (2000). Some notes on the formal properties of bidirectional optimality theory. In: *Studies in Optimality Theory* (R. Blutner and G. Jäger, eds.), pp. 41–63. Linguistics in Potsdam, Potsdam.
- Kiparsky, P. (1983). Word-formation and the lexicon. In: *Proceedings of the 1982 Mid-America Linguistics Conference* (F. Ingeman, ed.), pp. 47–78. University of Kansas.
- Lang, E. (1989). The semantics of dimensional designation of spatial objects. In: *Dimensional Adjectives: Grammatical Structure and Conceptual Interpretation* (M. Bierwisch and E. Lang, eds.), pp. 263–417. Springer-Verlag, Berlin.
- Levinson, S. C. (2000). *Presumptive Meaning*. MIT Press, Cambridge, Mass.
- McCawley, J. D. (1978). Conversational implicature and the lexicon. In: *Syntax and Semantics 9: Pragmatics* (P. Cole, ed.), pp. 245–259. Academic Press, New York.
- Rooy, R. van (2000a). *Comparing Questions and Answers: A Bit of Logic, a Bit of Language, and Some Bits of Information*. Manuscript, ILLC, Amsterdam.
- Rooy, R. van (2000b). *Decision Problems in Pragmatics*. Manuscript, ILLC, Amsterdam.
- Solstad, T. (2000). *The Optimal Lexicon and Methods in Lexical Semantics*. Project outline.
- Sperber, D. and D. Wilson (1986). *Relevance: Communication and Cognition*. Blackwell, Oxford.
- Williams, E. (1997). Blocking and anaphora. *Linguistic Inquiry*, **28**, 577–628.
- Wilson, C. (1998). *Bidirectional Optimization and the Theory of Anaphora*. Manuscript, Johns Hopkins University.
- Zeevat, H. (1999a). Semantics in optimality theory. In: *Papers on Optimality Theoretic Semantics* (H. de Hoop and H. de Swart, eds.) (Uil OTS Working Paper), pp. 76–87. Utrecht Institute of Linguistics OTS.
- Zeevat, H. (1999b). *Explaining Presupposition Triggers*. Manuscript, AC99, University of Amsterdam. Available from <http://www.hum.uva.nl/computerlinguistiek/henk/>

ON THE SCALES AND IMPLICATURES OF *EVEN*¹

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1. INTRODUCTION

In this paper, I will concentrate on some unusual phenomena related to the behavior of *even*, mostly in Russian. Since the seminal paper Karttunen and Peters, 1979, the notions of an existential and a scalar implicature are widely used to describe the meaning of *even* and other focus particles. Here I present data that the traditional approach fails to describe adequately. They concern both the existential and the scalar implicature.

In Section 2 I reproduce the conventional semantic definition of *even*. Section 3 enlarges this definition as far as the existential implicature is concerned. New data are introduced that demonstrate the **double scalarity** of *even* in certain contexts. Two kinds of sentences of the type *not X, not even Y but Z* (*diminuendo* and *crescendo* sentences) as well as the problems bound up with them are introduced in Section 4. The opposition between *diminuendo* and *crescendo* sentences is mostly illustrated with Russian examples. Section 5 proposes and substantiates a modification of the scalar implicature of *even*. In Section 6 I dwell on the mechanism of sentence interpretation, introduce the notion of an interpretation strategy and show how it helps overcome the problems presented before: *diminuendo* and *crescendo* sentences are interpreted by means of different strategies. One of the strategies is used by

¹ The research reported here was in part supported by a grant (№ 99-06-80277) from the Russian Foundation for the Basic Research, whose assistance is gratefully acknowledged. I had an opportunity to discuss this paper with several colleagues: O. Boguslavskaja, D. Dobrovol'skii, L. Iomdin, E. Paducheva, B. Partee, A. Shmelev. Shirota Shun provided Japanese examples, D. Dobrovol'skii was the source of German examples. B. Partee checked my English. I am very grateful to all these colleagues.

default and is responsible for the generation of the scalar implicature. The second one – the “best-alternative-excluded” strategy – applies in the *crescendo* context. Section 7 shows that although these strategies are not based on any specific features of Russian, they are non-universal in the sense that different languages apply them in different degrees.

I will elaborate on a description outlined in Boguslavsky, 1996 and 2001.

2. THE CONVENTIONAL DEFINITION OF *EVEN*

The word *even* and its correlates in other languages are textbook examples of the so-called focus particles that are notorious for creating difficulties for linguistic and logical semantics and pragmatics. The main feature they have in common is the fact that they bear a certain semantic relation to the intonationally marked element of the sentence, i.e. the focus. The group of focus particles is not large and rather heterogeneous. For English, König (1991) lists 21 focus particles: *also*, *alone*, *as well*, *at least*, *even*, *especially*, *either*, *exactly*, *in addition*, *in particular*, *just*, *merely*, *only*, *let alone*, *likewise*, *as much as*, *solely*, *still/much less*, *purely*, and *too*. *Even*, along with *only*, *also*, and *just*, can be considered a prototypical member of this group.

The difficulties focus particles raise are related to several factors, the most important of which is, perhaps, the **qualitative heterogeneity** of their meaning components. It was this property that put focus particles in the center of the discussion in the 70s on the notion of presupposition and its delimitation from related phenomena (Fraser, 1971; Anderson, 1972; Karttunen and Karttunen, 1977; Kempson, 1975; Wilson, 1975; Karttunen and Peters, 1979; Oh and Dinneen, 1979). Moreover, focus particles often serve as a touchstone for introducing and polishing new semantic notions, as, for example, in Karttunen and Peters, 1979 where four different elements of the sentence meaning were postulated: focus, scope, existential implicature, and scalar implicature.

The semantic contribution of the focus particles to the meaning of the sentence is to a large extent determined by the context. It is often difficult to specify the proper contribution of the particle, and it is easy to mistake something which is alien to the meaning of the particle for an inherent element of it. As will be shown below, an error of this sort still survives in the generally accepted definition of *even*. Namely, we claim that the meaning normally conceived of as the scalar implicature of *even* has in fact nothing to do with this word and is introduced by pragmatic inference.

The semantics of *even* was analyzed in a great number of works. Many insightful and subtle observations were made in particular in Wierzbicka, 1968; Horn, 1969; Fraser, 1971; Anderson, 1972; Fauconnier, 1975; Kreidlin, 1975; Karttunen and Peters, 1979; Bennett 1982; Jacobs, 1983; Anscombe and Ducrot, 1983; Rooth, 1985; Kay, 1990; Barker, 1991; König, 1991; Lycan, 1991; Berckmans, 1993. Although these authors do not agree in all details, the following major components of the definition seem to be generally accepted:

- (1) EVEN (P, Q) =
- a. ' Q has the property P ',
 - b. 'there are other Q' such that they have the property P ' [existential implicature],
 - c. ' Q' are more likely to have the property P than Q ' [scalar implicature].

According to this definition, the meaning of sentence (2) can be represented as (3):

- (2) Even John can solve this problem.
- (3)
- a. 'John can solve this problem',
 - b. 'there exist other people than John who can solve this problem' [existential implicature],
 - c. 'these people are more likely to solve this problem than John' [scalar implicature].

Below we will dwell on both implicatures introduced in this definition.

3. IMPLICATURES OF *EVEN*

3.1. Existential Implicature

The existential implicature claims that property P pertains not only to Q but to some other Q' as well. This is basically true but not in all cases. Situations exist in which Q' do not necessarily have property P . Sentence (4)

- (4) Do not climb this tree. Even John fell from it.

does not imply that there were some other people besides John who tried to climb the tree and fell down, although it is not excluded either. It is only claimed that other people who are not as good in climbing trees as John is, even if they did not fall down yet, will probably do so if they try to climb this tree. This suggests the following modification of the existential part of (1): 'there are other Q' such that they have property P or can possibly have it'.

This modification makes it possible to account for other types of sentences which do not easily agree with the existential implicature (1b). Consider the Russian sentence (5):²

² Throughout this paper I use the following abbreviations: 2 – second person, 3 – third person, ACC – accusative, AP – adverbial participle, DAT – dative, EMV – emphatic modal verb (there is no English analogue), EPITHEM – nominalizer, GEN – genitive, IMP – imperative, INS – instrumental, LOC – locative, MASC – masculine, NOM – nominative, PFX – prefix, PL – plural, PRED – predicative form of the noun, PREP – prepositional (case), SG – singular, TOPIC – topicalizing particle.

- (5) Ot neozhidannosti Dzhon dazhe vzdrognul.
 of surprise.GEN John.NOM even startled.SG.MASC
 'John even startled from surprise.'

The focused element *Q* here is *vzdrognul* 'startled'. The property *P* ascribed to this element is 'happen to John'. If we try to apply definition (1) to this sentence, we would have to admit that there are some other, more expected states (or actions) *Q'* that John experienced (or performed). However, these *Q'* are difficult to name or even to imagine. Most likely, (5) does not refer to any specific states or actions *Q'*. Should it mean that (5) is to be described by a different definition of *even* which would not make any reference to *Q'*? No, it should not. The most plausible interpretation of (5) is (5'):

- (5') 'It could so happen that John would not have startled, and this would better conform to the speaker's expectations, but he startled.'

This interpretation easily fits in the standard definition with the refinement of the existential implicature made above. The semantic component that serves as *Q'* is 'not to startle', while the property ascribed to it is 'could have happened to John'. This ensures correct interpretation of (5).

Now, we will discuss yet another type of sentences which are problematic from the viewpoint of the existential implicature. As stated above, this implicature brings to the sentence the idea that some property *P* ascribed to the element *Q* also belongs or can belong to some other objects (*Q'*). Therefore, sentence (6a) describes the same or nearly the same situation, as (6b):

- (6) a. Even the women were in love with her.
 b. Everybody was in love with her, and even the women.

If *Q* is the only carrier of property *P*, *even* is inappropriate:

- (7) *Everybody disliked her, and even John was in love with her.

Nevertheless, there are cases in which this requirement does not hold, or, to be more exact, it is weakened. In these cases, *even* keeps the idea of some elements *Q'* which exist besides *Q*, but their property *P'* is not identical to the property *P* ascribed to *Q*.

- (8) a. All the men in the village were in love with Jane, and even the women did not dislike her much.
 b. Everybody laughed, and even John smiled.

- c. The bus was shaken up. All the children fell down, and even the teacher barely kept his feet.

Sentence (8a) does not imply that somebody besides the women disliked Jane. (8b) does not mean that somebody else smiled, and in (8c) there is only one person who kept his feet. Therefore, strictly speaking, the existential implicature does not hold at full scale. Properties *P* and *P'* are not identical, but at the same time they must correlate in a non-arbitrary way. *P* and *P'* should be conceived as belonging to the same scale and denoting different degrees of the same property. *P'* should denote a higher degree than *P*. Properties *to be in love*, *to laugh*, and *to fall down* are in a certain sense “stronger” than *not to dislike much*, *to smile*, and *to barely keep one’s feet*.

If the difference between *P* and *P'* cannot be interpreted as quantitative, the sentence will be anomalous:

- (9) *Everybody spoke Polish, and even John spoke Dutch.

If *P* and *P'* can be thought of as situated on the same scale, but in the opposite order (*P* denotes a higher degree than *P'*), the sentence will be deviant as well:

- (10) *Everybody smiled and even John laughed.

What is most remarkable in sentences of the type (8) is that they demonstrate a rare phenomenon – **double scalarity** of *even*. The semantic interpretation of these sentences refers to two scales at a time: the *Q*-scale and the *P*-scale. The former contains **objects** *Q* and *Q'* ordered according to the degree of their unexpectedness with respect to some property.³ For example, in (8a) *Q* = *the women*, *Q'* = *all the men in the village*. The latter scale orders **properties** – property *P* of *Q* and property *P'* of *Q'* – according to their degree. In (8a) *P* = *did not dislike Jane much*, *P'* = *were in love with Jane*.

What is the most adequate way of describing these facts? To start with, there is the simplest, but intuitively, the least acceptable possibility: to postulate a different lexical unit for sentences of the type (8) than the one realized in standard sentences. If, however, we acknowledge that the difference between these two types of usage is not large enough to justify the splitting of a single lexical unit, we see two possibilities.

First, one can formulate a modification of the main semantic definition within the same lexical unit. This modification, intended for sentences of the type (8), may look as follows:

³ Below, we will show that this scale does not contribute to the meaning of the sentence directly, as a part of the semantic definition of *even*, but appears due to a pragmatic inference. This however does not cancel the fact that this scale is an integral part of the sentence meaning.

- (11) EVEN (P, Q) =
- ' Q has the property P ',
 - 'there are other Q' such that they have the property P ',
 - ' P ' and P can be thought of as situated on the same scale, and P corresponds to a smaller degree than P ',
 - 'the speaker expected that Q would have a property weaker than P '.

This modification is only realized if the meaning P is expressed in an explicit way. This requirement is not met, for example, in sentences (6a) and (6b). Therefore, these sentences can only have a standard interpretation described by definition (1).

There is a second way to account for the presented facts. One can use the same semantic definition both for the standard sentences and sentences of the type (8). Of the two definitions which we have at our disposal – (1) and (11) – only the more general definition (11) can act in this capacity. To extend it to sentences of the type (2), it is sufficient to allow properties P' and P to coincide in a particular case.

In essence, the latter approach was adopted in Paducheva, 1977 in a similar situation, when she was describing Russian adverb *tozhe* 'also'. Here are her examples:

- (12) Khoziain tozhe molchal.
 host.NOM also was.silent.MASC
 'The host was also silent.'

Sentence (12) ascribes property P ('be silent') to person Q ('the host'). Implicitly, this sentence introduces another person (or persons) Q' which has the same property, as the host, i.e. the property of being silent. (13) is a typical context for (12):

- (13) Gost' molchal. Khoziain tozhe molchal.
 visitor.NOM was.silent.MASC host.NOM also was.silent.MASC
 'The visitor [Q'] was silent [P]; the host [Q] was also silent [P].'

However, there exist contexts in which objects Q and Q' have different, though similar, properties.

- (14) Gost' byl pogloshchen edoi i govoril malo.
 visitor.NOM was.MASC absorbed.SG.MASC eating.INS and spoke.SG.MASC little
 Khoziain tozhe molchal.
 host.NOM also was.silent.MASC
 'The visitor [Q'] was absorbed in eating and spoke little [P']; the host [Q] was also silent [P].'

To describe these facts, E. Paducheva uses the notion of “the associative link of the similarity type”. This link connects the focus of the sentence containing *tozhe* ‘also’ with some element of the preceding text. In (14) this link exists between ‘spoke little’ and ‘was silent’. The identity relation ‘was silent’ – ‘was silent’ in (13) is nothing else than a particular case of similarity.

The *tozhe* ‘also’ case has very much in common with our *even* case. Both lexemes have a valency of the object Q and its property P . In both cases, there is a presupposition of the existence of some other object(s) Q' different from Q . Both lexemes have two distinct types of usage. Let us call them the main and the peripheral ones. In the main class, object Q' has the same property P as object Q . This class includes, in particular, sentences with no explicit information about Q' and its properties (as (6a) and (12)).

In the peripheral class, properties P and P' of the objects Q and Q' are not identical, although they are very similar. It is noteworthy that the character of this lack of identity of properties is different for *tozhe* ‘also’ and *even*. In the *tozhe* case, P' should be considered a particular instance of P (B. Partee, personal communication) while in the case of *even*, it is not necessary. Being 70 years of age is a particular case of being over 60. Therefore, (15a) is OK and (15b) is ill-formed. The difference between total silence and saying a few words is so large that neither of these situations can be considered a particular case of the other one. Therefore, (15c) is inappropriate. On the other hand, saying a few words is weaker than being totally silent, which makes (15d) acceptable.

- (15) a. Bill is already 70, and John is over 60 too.
 b. *John is over 60, and Bill is 70 too.
 c. *John was totally silent, and Bill said only a few words too.
 d. John was totally silent, and even Bill said only a few words.

The question stands as follows: should the main and the peripheral classes of usage be covered by the same semantic definition or by different ones?

If we accept the first option, we will do with fewer definitions but lose a possibility to dissociate the main and the peripheral classes. Under the second option, these classes will be separated in a very natural way: the main class will be covered by the main and simpler definition, and the peripheral class will be described by a modification of it. But we will have to pay for it with a larger number of definitions.

To make a well-founded choice between these alternatives, additional data are needed. In the absence of these data, we prefer to postulate two definitions, the main one and its modification.

3.2. Scalar Implicature

The scalar implicature claims that John and other people who can also solve the problem (as stated by the existential implicature) differ as to their ability of solving problems. To be more exact, they occupy different positions on the scale of people ordered according to the speaker's expectation of their being able to solve this problem. We will call this scale the scale of expectation, or, to be more precise, the **scale of unexpectedness**. The elements of the unexpectedness scale are ordered as follows: *X* is higher than *Y* with respect to the property *P* iff it is more natural, normal / less unexpected, less surprising... for *Y* to have property *P* than it is for *X*. *Even* can only be attached to an element situated at the higher end of such a scale, i.e. to an element which is the **least likely**, as compared to other relevant elements, to have the property under consideration.

Coming back to the definition (1), we intend to show that the component (1c) must be considerably weaker and the idea of the expectation scale should be excluded from this definition. This claim may seem absurd, since the inclusion of the scalar implicature is intuitively very plausible and besides that it is supported by strong evidence of at least two types.

First, it is intuitively beyond any doubt that sentence (16)

(16) The problem was solved by Bill and even by John

suggests that Bill and John have different abilities for solving problems (Bill is evidently smarter) and this difference immediately vanishes as soon as one removes *even* from the sentence.

Second, there exists a class of deviant sentences which are anomalous just because they do not conform to the natural scale (Kreidlin, 1975); cf. well-formed (17a) and ill-formed (17b):

- (17) a. He was smiling and even laughing.
b. *He was laughing and even smiling.

If one excludes the scale from the definition of *even*, the ill-formedness of (17b) will be up in the air.

These facts seem to offer a sufficient reason for the conviction that a scale is inherent in the meaning of *even*. And still we argue against it. Crucial evidence in support of our view comes from sentences containing not only *even* but also negation.

4. SENTENCES OF THE TYPE *NOT X AND NOT EVEN Y*

Let us consider two events: *write a poem* and *publish a poem*. We proceed from an assumption that it is more common to write a poem than to publish it. At least, there are many people who write poems but never publish them. Therefore it is more likely (less unexpected, less surprising) for a person only to write a poem, than to publish it. As mentioned above, *even* is used to mark a more surprising, more unexpected, less common situation. Therefore, sentence (18) is normal and (19) is inappropriate under the assumption taken above.

(18) The poem was written and even published.

(19) *The poem was published and even written.

If we order different situations on the scale according to the degree of their unexpectedness, *even* can only be attached to the situations located at the higher pole of this scale. The unexpectedness scale underlying sentences (18)–(19) implies that publishing a poem [= *X*] is less likely to take place [= *P*] (more unexpected) than writing a poem [= *Y*]. In short:

(20) to publish a poem >> to write a poem (with respect to the property 'to take place').

Let us introduce a negation into the picture.

(21) *The poem was not written and not even published.

(22) The poem was not published and not even written.

Now, the combinability of the actions with *even* within **the same picture of the world** swapped. It is quite natural: while publishing a poem is less likely than writing it, it is exactly the other way around with not-publishing and not-writing a poem: the "not-publishing" is of course more likely than "not-writing". Again, *even* in (22) is attached to the element at the higher end of the scale, but the elements of the scale in (22) are opposite as compared to (18):

(23) not to write a poem >> not to publish a poem (with respect to the property 'to take place').

This is a conclusion that we will need below: the positions of the elements *not-X* and *not-Y* on the unexpectedness scale are inverted with respect to the positions of *X* and *Y*. Therefore, if one introduces negation in a sentence of the type *X and even Y* to get *not-X* and *not-Y*, **one cannot leave *even* with *Y***. One has to attach it to *X* (cf. (18) and (22)).

The same holds true for the omission of the negation in *not X and not even Y* (cf. (22) vs. (19) and (18)). If the negation is omitted in *not X and not even Y*, the sentence becomes inappropriate (with respect to the same expectation scale), but it will regain correctness, if *X* and *Y* change places and *even* attached to *X*:

- (24) He did not defeat the champion and not even the beginner → He defeated the beginner and even the champion.

Schematically:

- [illegible]

4.1. *Diminuendo* Type

Let us examine more closely sentences of the type (22) in the context of contrast (*not X and not even Y, but Z*). What is the position of the element *Z* on the scale with respect to *X* and *Y*? The most natural continuation of the sentence (22) would be something like (26):

- (26) The poem was not published and not even written, but only existed in my mind.

This means that elements X , Y , and Z are situated on the scale monotonically: Y is more likely to have the property P than X and Z – even more so. The unexpectedness associated with Z is the least of all.

Sentences of the type *not X and not even Y but Z* are built according to the following semantic pattern: ‘*P* does not hold for *X*; *P* doesn’t hold even for *Y* (which would be more natural) but – *P* holds (only) for *Z* (which is more common/ordinary/normal/expected...)’. Hence element *Z* can be normally preceded by something like *only (merely, as little as...)*. As one passes from *X* to *Y* and from *Y* to *Z*, the degree of unexpectedness (deviation from normal) decreases. Therefore we will describe these sentences as belonging to the *diminuendo* type. Other examples:

- (27) a. He didn't even seal the letter but only folded it.
b. It was not a robbery, and not even an attempted robbery, but merely an intention.

Naturally, these examples obey the regular correspondence (25) between the negative and the affirmative sentences that was established above: **sealed and even folded the letter* vs. *folded and even sealed the letter*.

4.2. *Crescendo* Type

Strange as it may seem, there are sentences that are built according to an opposite pattern: the elements of the sequence *not X and not even Y but Z* go “crescendo” on the expectation scale, and not “diminuendo”. I found most of the examples of this type in Russian but they can also be found in other languages (more examples are given in Section 7):

- (28) a. Ego naveshchali v bolnice ne zhena i dazhe ne
 him.ACC visited.PL in hospital.PREP not wife.NOM and even not
 tovarishchi po rabote, a liudi kotorykh on edva znal.
 friends.NOM at work.DAT but people.NOM whom.ACC he hardly knew.SG.MASC
 ‘When he had visitors in the hospital, it was not his wife, not even his colleagues,
 but people he hardly knew at all.’
- b. Ivan kupaetsia v more ne letom, dazhe ne osen’iu,
 Ivan.NOM swims in sea.PREP not summer.INS even not autumn.INS
 a zimoi.
 but winter.INS
 ‘It is not in summer, not even in autumn, but in winter that Ivan goes swimming in
 the sea.’
- c. While the rich are snapping up real estate in Cyprus, southern Spain and London,
 Parliament recently set the minimum wage at just under \$5. Not per day or even
 per week. That’s per month (Newsweek, July 17, 2000).
- d. Virgil is not merely one of the greatest poets of Rome and not even the first of the
 poets. He is the only poet among them.

The order of the elements *X*, *Y*, and *Z* on the scale is **inverse** with respect to their order in (26) or (27). The last element *Z* can no longer be interpreted as the least unexpected, most ordinary, etc. It can no longer be preceded by anything like *only*, *merely*, *as little as...* On the contrary, *Z* is associated with the meaning of the type *moreover* or *as much as*. Sentence (28b’) sounds semantically odd, as opposed to (28b’”).

- (28) b.’ ??It is not in summer, not even in autumn, but merely/only in winter that Ivan goes
 swimming in the sea.
 b.” It is not in summer, not even in autumn, but in the very winter that Ivan goes
 swimming in the sea.

Words like *only*, *merely*, *as little as* can now accompany only the first element (cf. (28d)).

In (28a–d) *Z* is more unexpected, more marked than both *Y* and *X*. As opposed to the *diminuendo* type sentences, sentences (28a–d) are built according to the following semantic pattern: ‘*P* does not hold for *X* (which would be quite normal); *P* doesn’t hold even for *Y* (which (= *Y* taking place) would be more unusual) but *P* holds for *Z* (which is most unexpected)’.

To better feel the difference between the *diminuendo* and *crescendo* patterns, one can compare *crescendo* sentences (28a–b) with *diminuendo* sentences (29a–b). The underlying scale is the same in both cases, but the perspective is different: in (28) the unexpectedness increases, while in (29) it diminishes.

- (29) a. Ego vstrechali v aeroportu ne zhurnalisty i dazhe ne
him.ACC met.PL in airport.PREP not journalists.NOM and even not
tovarishchi po rabote, a (lish’) zheni.
colleagues.NOM at work.DAT but (only) wife.NOM
‘When he arrived home, it was not the journalists who were waiting for him at the
airport, not even his colleagues, but (only) his wife.’
- b. Ivan kupaetsia v more ne zimoi dazhe ne osen’iu,
Ivan.NOM swims in sea.PREP not winter.INS even not autumn.INS
a (vsego lish’) letom.
but (only) summer.INS
‘It is not in winter, not even in autumn, but (only) in summer that Ivan goes
swimming in the sea.’

The fact that sentences (28) are modeled after quite a different pattern is clearly demonstrated by the negation omission test (25). Instead of becoming unacceptable, sentences (28) remain quite natural. At the same time, the reversal of *X* and *Y* within the same scale makes a sentence abnormal:

- (30) a. He was visited in the hospital by his wife and even by his colleagues.
b. *He was visited in the hospital by his colleagues and even by his wife.
- (31) a. Ivan swims in the sea in summer and even in autumn.
b. *Ivan swims in the sea in autumn and even in summer.

Now, we are faced with the following problem concerning *crescendo* sentences. The definition (1) claims that in the situation under discussion, *Q* has the same property *P* as some

Q' (existential implicature) and this Q' is **more** likely to have property P (scalar implicature). The *crescendo* sentences obviously **contradict the scale requirements**. In sentence (28a), colleagues play the role of Q , the wife plays the role of Q' , not-visiting a person in the hospital plays the role of P . However, the wife is **less** likely not to visit a person in the hospital than the colleagues.

These facts can only be accounted for, if besides the semantic definition of *even*, we also consider **strategies of interpretation** of sentences. But before discussing these interpretations, we will touch the problem of scalar implicature.

5. IS A SCALE REALLY NEEDED?

As is mentioned in Section 2, nobody will doubt that (32) presents John as being less smart than Bill:

(32) The problem was solved by Bill and even by John.

The question is, however, whether this information is conveyed by *even* itself. To prove that it is not, we will try to render a similar situation without resorting to the word *even*:

(33) Both Bill and John solved this problem, and I did not expect John to be able to do it.

This sentence introduces the idea of a scale and the relative positions Bill and John occupy on this scale in as obvious a way as (32) does. However, there is not a single word in (33) to which a scalar implicature could be ascribed. Hence, it is not the **word** *even* that is directly responsible for this implicature. The implicature appears every time the **meaning** of the type (32) or (33) is expressed, irrespective of the words being used. In other words, instead of being part of the semantic definition of *even* as a conventional implicature, the idea of a scale is generated in the context, which means that it is no more than a conversational implicature. In more detail, I will speak about it in Section 7.

Comparison of (32) and (33) alone, regardless of the problem raised by interpretation of the *crescendo* sentences, may be sufficient for the exclusion of the scalar implicature (1c) from the definition of *even*. Of course we cannot simply delete component (1c) from the definition. I will replace it with a weaker component: 'the speaker expected that Q would not have the property P '.

In the next section I will focus on two questions:

- If the scalar implicature is absent from the definition of *even*, how does this interpretation come up in a sentence?
- How are different interpretations of *crescendo* and *diminuendo* sentences obtained?

6. STRATEGIES OF INTERPRETATION

I propose that the source of the differences between the *crescendo* and *diminuendo* sentences lies in interpretation strategies. Before presenting them, I will have to discuss a more general question of how the interpretation of natural language utterances is obtained.

As is well-known, more often than not this process involves more than just taking semantic definitions of words and combining them together. Our comprehension of natural language utterances can only partly be ascribed to the rules of language that assign meaning to sentences on the basis of the meanings of their parts. To a considerable extent, it is due to our ability to somehow infer what the utterance conveys besides its linguistic meaning. This remainder (i.e. what is conveyed by the utterance less what is directly said) is known to consist of two parts: conventional and conversational implicatures. Conventional implicatures include all non-truth-conditional aspects of what is conveyed by the utterance solely due to the words or syntactic constructions the sentence contains. They are closely connected with the meaning of specific words and constructions and can be considered part of their semantic definition.

In contrast, conversational implicatures are only indirectly associated with the linguistic content of utterances. They are derived from the content of the sentences used and owe their existence to the fact that participants in a conversation are constrained by the common goal of communication to be cooperative. This is where Grice's Cooperative Principle comes in. Conversational implicatures are supposed to be **calculable**, i.e. deducible from the Cooperative Principle and its maxims of conversation (Grice, 1975: 45–46). I would like to emphasize an important aspect of this calculability.

It is sometimes claimed that "Grice's maxims are, roughly, a set of rules for inferring the intentions behind speech acts" (Morgan, 1978: 262). This is not exact: they are rules of linguistic – and more broadly – of communicative behavior and not rules for inference. Their role in the sentence interpretation is that they rather **activate** some dynamic procedure that lets an addressee infer implicit meanings. An assumption that the speaker conforms to the Cooperative Principle is a stimulus for the addressee to overcome the gap between the literal meaning of an utterance and the situation in which it has been uttered.

To take an indirect speech act example, *Can you pass me the salt?* has a literal meaning of an information question. The addressee's reasoning can be as follows: "assuming that the speaker had a good reason for this utterance (Grice's maxim of relevance), I should discover it. In the current situation, the reason of his asking this question cannot be his ignorance of my abilities. Therefore, I should infer that the speaker meant more than he has actually said and look for another interpretation". This is where the general mechanism of the Cooperative Principle stops. It only urges the addressee to look for some explanation of the utterance but does not provide any particular solution. It is some **specific procedure** indirectly triggered by the

Cooperative Principle that generates conversational implicatures. In this particular case, such a procedure generates the meaning of request.⁴

The process of sentence interpretation outlined above includes three components:

- the maxims of the Cooperative Principle that impel the addressee to look for a bridge between the literal meaning of the utterance and its intended meaning;
- conversational implicatures, i.e. the intended meaning the addressee discovers;
- a procedure of reasoning that brings the addressee to this discovery.

The maxims and the conversational implicatures have attracted enormous attention in the literature since their appearance. Reasoning procedures that generate conversational implicatures have been less lucky. In this paper, I am trying to do more justice to the reasoning procedures which I will call (to give them more weight) “strategies of interpretation”. I will not only introduce some specific procedures but also show that they are not as universal as they may seem.

Coming back to the *even* sentences, let us try to imagine the logic behind their interpretation. We will begin with the analysis of the simplest sentences (32) and (33).

How can the addressee coordinate the literal meaning of these sentences with his or her background knowledge and embed it in the reality? Given that I have already excluded the scalar implicature from the semantic definition of *even*, the literal meaning in both cases claims that the problem was solved both by John and Bill, but for one of them this is unexpected. The maxim of relevance suggests that it is not accidental that John and Bill are regarded by the speaker differently. The task of the addressee is to discover the reason.

The first and the most natural guess would be that the speaker considers John as less capable of solving problems than Bill. If the previous experience of the addressee does not contradict this assumption, it can be accepted. This is how the scalar implicature comes on the scene.

The same strategy of interpretation applies in the case of the *diminuendo* sentences. In (26) the speaker says that though the poem has been neither published nor written, only one of these facts was unexpected – the second one. The addressee first tries the same, default, reasoning. The difference in the speaker’s attitude towards publishing and writing a poem may be explained by their different position on the scale: not publishing a poem is more likely to be expected than not writing it. This assumption seems plausible and is accepted.

What happens, if this way of reasoning fails? Usually, the sentence is considered inappropriate with respect to the picture of the world adopted by the addressee:

(34) *He defeated the champion and even the beginner.

⁴ This is of course a simplified picture. Sometimes, conversational implicatures are not simply generated by some procedure but are to a certain extent conventionalized (Morgan, 1978). This problem is irrelevant for the current discussion and I will leave it aside.

The situation changes in the *crescendo* type sentences. They provide the addressee with a way to overcome the difficulty and he or she can come up with a reasonable interpretation. Consider (28b).

- (28) b. Ivan kupaetsia v more ne letom, dazhe ne osen'iu,
 Ivan.NOM swims in sea.PREP not summer.INS even not autumn.INS
 a zimoi.
 but winter.INS
 'It is not in summer, not even in autumn, but in winter that Ivan goes swimming in the sea.'

First, the addressee tries to apply the same line of reasoning. The sentence claims that Ivan swims neither in summer nor in autumn, but only in autumn not-swimming is considered unexpected. Why? Could the reason be the same as in the previous examples, i.e. because it is more common to swim in autumn than in summer? No, on the contrary, our background knowledge contradicts this assumption. Then, how could one justify the expectation of the autumn swimming inherent in the (28b) meaning?

The addressee's interpretation strategy may be roughly described as follows. The sentence contains the information that there is a season when Ivan goes swimming in the sea. However it is not summer, which is the best time for doing this. In this case, the swimming season priority naturally passes to the second-best option. If Ivan goes swimming sometime and he does not swim in summer, then may be – less likely, but still probable – he would swim in autumn? No, it turns out that **even** this possibility, the most probable under the circumstances, fails. The actual time of Ivan's sea swimming, winter, is still farther from the normal expectations than autumn.

Let it be emphasized that the correlation between swimming in autumn and swimming in summer in the *crescendo* sentence (28b) is entirely different from the correlation between writing a poem and publishing it in the *diminuendo* sentence (26). Sentence (26) considers writing a poem as a more trivial thing than publishing it **by nature**. It is part of our picture of the world. In (28b), swimming in autumn receives high priority not because it is really more common to swim in autumn than to swim in summer. It becomes more expected only in the current situation, given that a more appropriate alternative is already excluded. This "best-alternative-excluded" strategy allows the addressee to justify the high position of the autumn swimming on the scale imposed on him by the speaker.

7. TO WHAT EXTENT ARE INTERPRETATION STRATEGIES UNIVERSAL?

The interpretation of an utterance by means of conversational implicatures was initially supposed to be universal across languages. All inferred meaning components that are language specific were believed to belong to conventional implicatures. It was however soon discovered that this was an oversimplification.

As mentioned in Section 6, the process of sentence interpretation by means of the Cooperative Principle includes three major components:

- the maxims of the Cooperative Principle that urge the addressee to bridge the gap between the literal meaning of the utterance and its intended meaning;
- conversational implicatures, i.e. the intended meaning the addressee discovers;
- strategies of interpretation that lead the addressee to this discovery.

All these three components are not truly universal.

First of all, as I already mentioned above, some types of conversational implicatures are conventionalized to various degrees; cf. Morgan, 1978. Second, even maxims of conversation turn out to be language or culture specific. One example is reported in Keenan, 1976: 70: in the Malagasy-speaking community of Madagascar the maxim of Quantity is not observed.

Our data concerning *crescendo* sentences with the meaning 'even' show that the third component of this triad – interpretation strategies – is also not as universal as it might seem. I will show it with examples taken from four languages – Russian, English, German, and Japanese. I will proceed from the assumption that the meaning 'even' in these languages is basically similar (at least in those aspects that are relevant for our discussion). Nothing prevents us from believing that sentences of the type (32) – *The problem was solved by Bill and even by John* – in these languages are interpreted in the same way. Let us recall what was said in Section 6 on the way 'even' sentences are interpreted.

It is required that a motivation should be found why Q (in this example, John) is treated differently by the speaker than Q' (in this example, Bill). The simplest and shortest way motivate this is to assume that Q' is situated lower on the scale than Q . This strategy, which is also applicable in the *diminuendo* sentences, is common to English, Russian, German, and Japanese. The problem appears when it comes to the *crescendo* sentences in which this line of reasoning fails, because the actual position of Q and Q' on the scale happens to be different.

We showed above that *crescendo* sentences are served by another – “best-alternative-excluded” – strategy that explains the speaker's intentions. It turns out that this strategy is not equally applicable even in our small selection of languages. Our data suggest that in Russian the “best-alternative-excluded” strategy is used very widely. According to our informant, Japanese allows this strategy equally freely. Examples below demonstrate both the *diminuendo* strategy (in (35)), and the *crescendo* strategy (in (36)–(37)):

- (35) Shiwa happyosarenakatta, kakare sac sinakatta. Tada
poem.TOPIC.NOM be.published.not.PAST be.written.even do.not.PAST only
kokorono nakade kangaerareta nodearu.
heart.GEN inside.space.LOC be.thought.PAST EMV.PRESENT
'The poem was not published and not even written, but only existed in my mind.'
- (36) Karega umide oyoida nowa natsudewa nakatta.
he.NOM sea.LOC swim.PAST EPITHEM.TOPIC summer.PRED.TOPIC not.PAST
Akidesae nakatta. Fuyudatta nodearu.
autumn.even.PRED not.PAST winter.PRED EMV.PRESENT
'It is not in the summer, not even in autumn, but in winter that he goes swimming in the sea.'
- (37) Tekiwa futaridewa nakatta sannimdesae
enemy.TOPIC.NOM two.persons.PRED.TOPIC not.PAST three.persons.even.PRED
nakatta. Gonimde atta nodearu.
not.PAST five.persons.PRED be.PAST EMV.PRESENT
'There were not two enemies. Even, not as few as three. There were five of them.'

English speakers can also take refuge in this strategy, but, according to our informants, in English, the number of naturally-sounding *crescendo* sentences is much less than it is in Russian: cf. acceptable sentences (28c–d) and inappropriate sentences (38b), (39b), (40b):

- (38) a. I ne dva ofitsera. I dazhe ne tri. Piatero.
and not two.NOM officer.GEN and even not three.NOM five.NOM
'Not two officers. Even, not as few as three. Five of them.'
- b. Not two officers. *Not even three. Five of them.
- (39) a. Biudzhethnyi defitsit razrushaet ekonomiku, vvergaia vsekh nas
budget deficit.NOM destroys economy.ACC casting.AP all us.ACC
dazhe ne v infliacionnuu, a v giperinfliacionnuu spiral'.
even not in inflational but in hyper-inflational spiral.ACC
'The budget deficit destroys the economy, bringing about not just an inflational but a hyper-inflational spiral.'
- b. *'The budget deficit destroys the economy, bringing about not even an inflational but a hyper-inflational spiral.'

- (40) a. No pozvol'te! – dazhe ne zakrichal, a zaoral ia.
 but allow.IMP.2PL even not cried.out.SG.MASC but yelled.SG.MASC I
 'Excuse me! – I didn't just cry out, I yelled.'

- b. *Excuse me! – I didn't even cry out, I yelled.

Finally, in German the situation is quite different. To begin with, *sogar*, the German word for *even*, cannot attach negation at all. To express the meaning 'not even' another expression is used – *nicht einmal*. It is this expression that is used in all *diminuendo* sentences; cf. (41a–c):

- (41) a. Das Gedicht wurde nicht veröffentlicht, es wurde nicht einmal
 the poem.NOM was not published, it.NOM was not even
 geschrieben, es existierte nur in meinem Kopf.
 written, it.NOM existed only in my head.DAT
 'The poem was not published and not even written, but only existed in my mind.'
- b. Er hat den Brief nicht einmal versiegelt, er hat ihn
 he has the book.ACC not even sealed, he has it
 nur zusammengefaltet.
 only folded
 'He didn't even seal the letter but only folded it.'
- c. Das war kein Überfall, nicht einmal ein Versuch,
 it.NOM was not robbery.NOM not even an attempt.NOM
 das war lediglich eine Absicht.
 it.NOM was only an intention.NOM
 'It was not a robbery, and not even an attempted robbery but merely an intention.'

What is remarkable is that *nicht einmal* can under no circumstances be used in the *crescendo* sentences.

(42) a. [= (28a)]

*Wenn er im Krankenhaus besucht wurde, war das nicht seine Frau,
 when he in.the.hospital.DAT visited was was it.NOM not his wife.NOM
 nicht einmal seine Kollegen sondern Menschen, die er
 not even his colleagues.NOM but people.NOM whom.ACC he
 kaum kannte.
 hardly knew
 ‘When he had visitors in the hospital, it was not his wife, not even his colleagues,
 but people he hardly knew at all.’

b. [= (28b)]

*Ivan badet im Meer nicht im Sommer, nicht einmal
 Ivan.NOM swims in.the.sea.DAT not in.the summer.DAT not even
 im Herbst, sondern im Winter.
 in.the autumn.DAT but in.the winter.DAT
 ‘It is not in summer, not even in autumn, but in winter that Ivan goes swimming in
 the sea.’

c. [= (28c)]

[...] das Parlament setzte vor kurzem den Minimallohn
 the parliament.NOM set.3SG recently the minimum.wage.ACC
 bei 5 Dollar an. *Nicht pro Tag und nicht einmal pro Woche,
 at 5 dollar.DAT PFX not per day.ACC and not even per week.ACC
 sondern pro Monat.
 but per month.ACC
 ‘[...] Parliament recently set the minimum wage at \$5. Not per day or even per
 week. That’s per month.’

This might be motivated by the semantics of *nicht einmal* that keeps a trace of its origin (Dobrovol’skii, personal communication). Literally, *nicht einmal* means ‘not a single one, not a single time’ which favors the *diminuendo* and resists the *crescendo* construction.

8. CONCLUSION

In the modeling of human understanding processes, one has to pay utmost attention to the interplay between the different sources of semantic knowledge. In the present paper we have introduced two types of interpretation of *even* sentences – *diminuendo* and *crescendo* types – that come into conflict with the scalar implicature generally acknowledged in the lexical

semantics of *even*. It is demonstrated that sentences of these two types have the same linguistic structure and can be served by the same semantic definition of *even*. The difference in their interpretation is accounted for by different strategies applied by the addressee. In other words, the scalar implicature has to be downgraded from the rank of a conventional implicature to a much lower rank of a conversational implicature that is calculated in the context on the basis of the literal meaning, knowledge of the context of utterance, and the background knowledge. On the other hand, it is obviously language-specific and therefore cannot be considered purely pragmatic and external to the linguistic description proper. In other words, it belongs exactly to the intersection of pragmatics and linguistic semantics.

REFERENCES

- Anderson, S. T. (1972). How to get *even*. *Language*, **48**, 893–906.
- Anscombe, J. and O. Ducrot (1983). *L'Argumentation dans la langue*. Mardaga, Bruxelles.
- Barker, S. (1991). *Even, still* and counterfactuals. *Linguistics and Philosophy*, **14**, 1–38.
- Bennett, J. (1982). Even if. *Linguistics and Philosophy*, **5**, 403–418.
- Berckmans, P. (1993). The quantifier theory of *even*. *Linguistics and Philosophy*, **16**, 589–611.
- Boguslavsky, I. (1996). *Sfera deistviia leksicheskikh edinit* [Scope of lexical units]. Shkola "Iazyki russkoi kultury", Moscow.
- Boguslavsky, I. (2001). *Even* in discourse: Interaction of lexical semantics and interpretation strategies. In: *Pragmatics in 2000: Selected Papers from the 7th International Pragmatics Conference* (E. Németh T., ed.), Vol. 2, pp. 92–101. IPrA, Antwerp.
- Fauconnier, G. (1975). Pragmatic scales and logical structure. *Linguistic Inquiry*, **4**, 353–375.
- Fraser, J. B. (1971). An analysis of 'even' in English. In: *Studies in Linguistic Semantics* (C. Fillmore and M. Langendoen, eds.), pp. 151–180. Holt, Rinehart, and Winston, New York.
- Grice, H. P. (1975). Logic and conversation. In: *Syntax and Semantics 3: Speech Acts* (P. Cole and J. L. Morgan, eds.), pp. 41–58. Academic Press, New York.
- Horn, L. R. (1969). A presuppositional analysis of *only* and *even*. In: *CLS 5: Papers from the Fifth Regional Meeting*, pp. 98–107. Chicago Linguistic Society, Chicago.
- Jacobs, J. (1983). *Fokus und Skalen: Zur Syntax und Semantik der Gradpartikeln im Deutschen*. Niemeyer, Tübingen.
- Karttunen, F. and L. Karttunen (1977). Even questions. In: *NELS 7: Proceedings of the 7th Annual Meeting of the North Eastern Linguistic Society*, pp. 115–134. Cambridge, Mass.
- Karttunen, L. and S. Peters (1979). Conventional implicature. In: *Syntax and Semantics 11: Presupposition* (C.-K. Oh and D. A. Dinneen, eds.), pp. 1–56. Academic Press, New York.
- Kay, P. (1990). Even. *Linguistics and Philosophy*, **13**, 59–111.
- Keenan, E. O. (1976). The universality of conversational postulates. *Language and Society*, **5**, 67–80.

- Kempson, R. M. (1975). *Presupposition and the Delimitation of Semantics*. Cambridge University Press, Cambridge.
- König, E. (1991). *The Meaning of Focus Particles: A Comparative Perspective*. Routledge, London and New York.
- Kreidlin, G. (1975). Leksema *dazhe* [Lexeme *even* in Russian]. In: *Semiotika i informatika*, Vol. 6, pp. 102–115. Moscow.
- Lycan, W. (1991). *Even and even if*. *Linguistics and Philosophy*, **14**, 115–150.
- Morgan, J. (1978). Two types of convention in indirect speech acts. In: *Syntax and Semantics 9: Pragmatics* (P. Cole, ed.), pp. 261–280. Academic Press, New York.
- Oh, C.-K. and D. A. Dinneen (eds.) (1979). *Syntax and Semantics 11: Presupposition*. Academic Press, New York.
- Paducheva, E. V. (1977). *Tozhe i takzhe: vzaimodeistvie aktual'nogo chleneniia i assotsiativnykh sviazei* [*Tozhe* and *takzhe* 'also': Interaction of the communicative structure and associative links]. In: *Predvaritel'nye publikatsii Instituta russkogo iazyka AN SSSR*, Vol. 155, pp. 3–14. Moscow.
- Rooth, M. E. (1985). *Association with Focus*. Doctoral dissertation, University of Massachusetts at Amherst.
- Wierzbicka, A. (1968). Nabroski k russko-semanticheskomu slovariu [Outline of the Russian–Semantic Dictionary]. *Nauchno-tekhnicheskaja informatsiia*, Series 2, № 12, 23–28.
- Wilson, D. (1975). Presupposition, assertion and lexical items. *Linguistic Inquiry*, **6**, 95–114.

THE FLEXIBILITY OF INFERENCE IN TRIGGERS FOR INFERABLE ENTITIES: EVIDENCE FOR AN INTERPRETABILITY CONSTRAINT

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1. INTRODUCTION

Determining the meaning of an utterance can require a great deal of inference. For example, the intended meaning of a polysemous word in a particular utterance is generally not explicitly stated; it is inferred from situational and linguistic information. Determining the antecedent of a pronoun, connecting a particular discourse referent with the use of a definite noun phrase, and even deciding whether an indefinite noun phrase has specific or non-specific meaning are also inferential processes. In addition, a hearer must make time and place inferences about events, as well as inferences about the rhetorical relations between pairs of utterances. In each case, the inferential process focuses at least in part on a hearer's understanding of a speaker's intentions.¹

Speakers, therefore, must take into account the inferences that they expect hearers to make in choosing linguistic forms and expressions. For example, one of the most studied aspects of discourse structure is how speakers use different types of referring expressions to lead hearers to make different inferences. A robust model of how speakers make this choice must, at the very least, include a good characterization of the different possible mental activation statuses a discourse entity may have and a means for limiting the possible felicitous referring expression choices based on these statuses.²

¹ Although this work refers to "speakers" and "hearers" for convenience, most of the argument is as applicable to writers and readers as it is to participants in spoken discourse.

² I am by no means claiming that level of activation is the only factor relevant to a speaker when choosing a referring expression. The interaction between activation and other aspects of information status, syntactic and lexical constraints, and other discourse and sociolinguistic factors, while not relevant to the purposes of this paper, must ultimately be part of any discourse model that claims psycholinguistic adequacy.

One particularly complex and interesting part of this study concerns the classification of entities that achieve an increased activation status based on an inferential relationship to another discourse entity. Most activation statuses are characterized in terms of whether an entity has or has not been used in the current discourse before, as well as in terms of whether the speaker has any expectation that the hearer has previous knowledge of this entity. Inferable entities, in contrast, meet neither of these criteria and yet are still at least somewhat activated in the mind of the hearer. Specifically, they have a relevant relationship to some other activated entity. For example, in the discourse segment below, the expression *those people* refers to an inferable entity.

- (1) I got another call today from somebody trying to sell me long-distance services. *Those people* drive me crazy.

In this particular case, the speaker expects that the hearer will be able to infer, from the mention of a particular long-distance salesperson, that there is a set of long-distance salespeople. (This particular relationship will be categorized later in the chapter.)

The general informational state of inferable entities, as well as various subsets of more specific inferable relationships, has been recognized repeatedly by researchers in linguistics, psychology, and computer science. Unfortunately, though not surprisingly, a wide variety of different names have been used to represent some or all of these entities, including “Inferables” (cf. Prince, 1981, 1992), “indirect anaphors” (cf. Gundel and Erkkü, 1987), and “inferentially accessible entities” (cf. Lambrecht, 1994).³ Inferable entities have also been directly or indirectly subsumed by more general studies of inference, such as the treatment of inferable information in Birner, 1997 and, to some extent, the comprehensive idea of ostensive-inferential communication in Sperber and Wilson, 1995. Partially as a result of these two practices, there is not yet a widely accepted theory of how inference works to give these inferable entities their meaning (reference). While it may well be that certain general inferential principles extend to the treatment of inferable entities, as I will show in this work, there is much work to be done before we completely understand even the specific inferences that are being made.

In the remainder of this chapter, I will characterize many of these more specific inference types based on the types of “triggers” that can make an entity inferable. In doing so, I will demonstrate that triggers for inferable entities do not necessarily provide enough information for a hearer to actually disambiguate the meaning of a referring expression. I argue that this is not a unique property of inferable entities. Comparing inferable entities to previous work

³ There are even more different terms for various subsets of inferable entities; studies of some particular types of inferable entities, for example, can be found under discussions of “implicit participants” (cf. Mauner and Koenig, 2000), “role-filling links” (cf. Garrod and Terras, 1999), “one-substitution” (cf. Kuno, 1987), and even, I’d argue, in the many casual references to so-called “generic *they* and *you*” (cf. Lambrecht, 1994).

on null subjects and implicit objects, it is clear that we need to define the reference of referring expressions (both null and overt) not in terms of identification of co-referents, binding, or recoverability of antecedents but in terms of “interpretability”.

2. PREVIOUS WORK ON INFERABLE ENTITIES

Prince (1992: 305) characterizes a speaker’s perception of the informational state for “inferred” in the following way:

“Minimally, the speaker must have a warrant for believing (A) that the hearer already has the belief that the entity in question is plausibly related to some other ‘trigger’ entity [...], where the trigger entity is itself not (or, minimally, would not be), at the relevant point in time, Hearer-new, and (B) that the hearer is therefore able to infer the existence of the entity in question.”

A trigger, then, may serve as an alternative to a co-referent in the set of discourse entities. It is an entity that the speaker believes is, minimally, known to the hearer (though not necessarily, under this definition, evoked in the current discourse) and somehow inferentially linked to the speaker’s target entity. Because the trigger substitutes for a co-referent, some of the referring expression forms that are used for entities with co-referents in the set of discourse entities may also be used for inferable entities. In what is perhaps the most straightforward case (specifically, Prince’s “Containing Inferred”), an inferable entity is represented by a noun phrase that actually contains the inferable entity’s trigger. In example (2) below, taken from Prince, 1992, *the door* is an inferable entity and its trigger is *the Bastille*. The hearer does not have to seek out a trigger for this inferable entity, the linguistic form explicitly ties the door to the building, and the hearer only need infer, trivially, that the speaker expects her to know that buildings have doors.

- (2) The door of the Bastille was painted purple.

Though it is perhaps arguable, therefore, that the information status of inferable entities with contained triggers may be signaled by the syntactic form of the noun phrase used,⁴ many inferable entities do not have contained triggers in their referring expressions. We cannot rely on particular referring expressions to signal inferable entities either. In English at least, there is

⁴ There are even problems with this argument because what Prince calls “Brand-New-Anchored” entities can use similar referring expressions; there is just no inference that the connection between the two entities should be expected by the hearer. I think there probably is, in fact, something to be gained by labeling these two types of entities differently, but the benefits are not visible within a single utterance.

no special type of referring expression used just for inferable entities;⁵ the set of referring expressions available for reference to entities previously introduced into the discourse context (particularly the various definite noun phrase types and pronominal expressions) are also used to refer to some inferable entities. On occasion, as noted in Prince, 1992, it is even felicitous for an inferable entity to be represented by an indefinite noun phrase. Notice the contrast in examples (3) and (4) below.

- (3) One day, while walking around outside on a blustery afternoon, I noticed *a feather* floating in the wind.
- (4) The brightly-colored bird shook its wings, and *a feather* floated down from the branches of the tree.

In example (3), the feather that is introduced into the discourse is a brand-new⁶ discourse entity; there is no particular feather that a hearer might infer anything about in this context. In example (4), on the other hand, though an indefinite referring expression is also used, *a feather* is triggered by the discourse entity "bird". The speaker can expect that the hearer will infer that the feather being observed is a feather from that particular bird. (This particular trigger relationship will also be characterized below.) The difference can be seen by looking at the relative acceptability in these two contexts of a subsequent utterance that depends on this inference. In examples (5) and (6) below, there is a clear difference in the acceptability of the utterance *It was odd to see it separated from the others*. This utterance is felicitous only in the latter discourse segment, because the feather in that context has been inferred to be a member of a set of feathers belonging to the bird.

- (5) One day, while walking around outside on a blustery afternoon, I noticed *a feather* floating in the wind. #It was odd to see it separated from the others.
- (6) The brightly-colored bird shook its wings, and *a feather* floated down from the branches of the tree. It was odd to see it separated from the others.

To further complicate matters, there is some variation in which linguistic forms constitute felicitous references to particular inferable entities. (Notice, for example, that the indefinite noun phrase *a feather* in example (6) would not work as an inferable entity if it was changed to a definite referring expression.) The apparent lack of lexical or syntactic distinctions between

⁵ But see Birner (1997) for a discussion of the special intonational characteristics of inferable entities in certain non-canonical syntactic constructions.

⁶ A brand-new entity, in Prince's terminology, is essentially an unactivated entity. (Cf. Hajicová and Vrbová, 1982 for another discussion of the hierarchy of discourse entity activation.)

inferable entities and other entities, as well as the wide variation in how inferable entities are represented themselves, has made it difficult to fit them neatly into any ontological explanation for the different types of referring expressions.

Prince (1981) suggested, therefore, that inferable entities may need to be broken down into different groups, and she laid out some examples based on types of conceptual relationships between entities. Another effort to deal with more specific types of inferable entities can be found in Gundel and Erkü, 1987, who argued, for example, that inferable entities represented by definite referring expressions are governed by the principle that “a definite noun phrase is an instruction to the hearer to locate the referent in a shared set” (p. 540). They also argued that all inferable entities are either included in sets that are evoked by another entity (inclusive), included in sets of which another discourse entity is a part (exclusive), or related to propositions or events described in the previous discourse (created).⁷ There is something intuitively appealing here, but sets are very malleable concepts and the idea of sets does not, by itself, help to identify inferable entities in a reliable way. The interesting question is, “How do particular sets become relevant?”

2.1. Some Specific Types of Inferable Entities

Building on Prince, 1981, I have suggested that there are a number of very specific types of conceptual relationships that hearers have available to them as sources of inferences about new entities. In Cote, 1988, 2000a, I proposed that an inferable entity might, for instance, be linked to the lexical-semantic class of its trigger, either through an **inferable class** relationship or through an **additional instance of class** relationship.

Example (7) below demonstrates an inferable class relationship. The reference to *a Dalmatian* is the trigger. It makes available to the hearer the concept of a class of Dalmatians, and this is what permits the use of the referring expression *they* in the second utterance. There is no antecedent for this pronoun, but there is a trigger, which makes it interpretable.

- (7) The judge awarded “Best of Show” to a Dalmatian this year. I have always believed that *they* are great animals.

Example (1) above was another instance of a trigger of this type.

⁷ Again, there have been discussions of very specific types of inferable entities, characterizing them essentially as inferential oddities. I’m limiting the discussion here to research that recognizes the bigger pattern and is concerned with accounting in a systematic way for the linguistic choices that relate referring expressions and discourse statuses.

In example (8), lexical-semantic class is also relevant. In this case the trigger relationship is an additional instance of the class “brothers”. The first utterance introduces the class, so *my brothers* serves as a trigger for *hers* in the subsequent utterance.

- (8) My brothers are workaholics. Marjorie says that *hers* is too.

It is worth noting here that the inferable entity in both these previous examples was referenced with a pronoun. While this is not the only or most common choice of referring expression, it is acceptable with these types of trigger relationships.⁸ With other types of inferable entities, a pronominal reference may not be felicitous, as in (9) and (10) below.

- (9) We’re planning a trip to Argentina in December. *The weather* / **It* should be wonderful. (for *it* = the weather in Argentina in December)
- (10) The first grape harvest of the year makes a very dry wine. *The later harvests* / **They* yield much sweeter wines.

I have argued that the trigger relation in examples like (9) is a **discourse domain element** relation in which more general world knowledge comes into play. In order to successfully interpret *the weather* in the second utterance in example (9), the hearer must understand that Argentina, evoked in the previous utterance, is a geographic location, and that geographic locations have weather patterns. The hearer must also understand that taking a trip involves going to that location; there is a scenario or “domain” in which the weather in Argentina would be relevant. Notice that there is no way for a pronoun to refer to the weather in this particular sentence (despite the existence of a “weather-*it*” in English).⁹ The interpretation of *it* would be the trip. Nonetheless, the discourse entity “a trip to Argentina” is a trigger for *the weather*.

In example (10), the trigger is *the first harvest*, and the fact that this particular entity is ordered (i.e., *first*) triggers, in particular, a **sequential** relationship with *the later harvests*. Using Gundel and Erku’s terms, there is an exclusive shared set here, the set of harvests. We only know this, however, because a sequence is triggered.

Two other trigger relations discussed in Cote, 1988, 2000a are **part-whole** and **possessive**, both of which depend on knowledge about the conceptual properties of certain things in the world.¹⁰ Examples (11) and (12) both demonstrate a trigger that has a part-whole relation to

⁸ Gundel and Erku (1987) argue that pronouns are not possible with inferable entities, but these examples seem to fit their criteria.

⁹ Of course, a small change making it clear that the speaker is now talking about Argentina rather than the trip is all it takes to make the weather-*it* acceptable (e.g., *It should be nice there.*).

¹⁰ I also discussed the possibility that clause-evoked entities are a type of inferable entity. Event reference of this type will be discussed briefly later in this chapter.

a target inferable entity. In the first example, the trigger, *a chicken*, is introduced in the first utterance by person A. In person A's next utterance, *the head* can be inferred to be the head of the chicken. The trigger is the whole, and the inferable entity is a part. In example (12), the trigger, *a little white button*, is a part that is most commonly associated with a particular type of clothing, i.e. shirts. The target inferable entity then, *the damaged shirt*, can be inferred to be the whole to which this part belongs.

- (11) A: You ever seen anybody kill a chicken?
 B: No, but I, I've, I've heard stories uh, I've heard stories.
 A: And they put *the head* under a tin tub and chop the head off.
- (12) Glen found a little white button on the floor but still hasn't identified *the damaged shirt*.

Examples (13) and (14) demonstrate the possessive relation. A hearer of the utterance in (13) can infer that "Johnny" has certain other entities that are associated with him. As a human being, for example, he has a mother. The reference *his mother* is therefore acceptable here. Similarly, in example (14), the speaker is an activated discourse entity in his own discourse and, though he has not mentioned that he is married, he expects the hearer to be able to infer that an adult living in suburban America is quite likely to have a wife. He can therefore say *my wife* without further presentational information. In contrast, he could not have reasonably expected his hearer to make the inference in example (15) below, because the hearer has no world knowledge that would make her expect that the speaker possesses a wallaby.¹¹

- (13) Johnny got upset when *his mother* told him that it was bedtime.
- (14) Uh, and I cook a little bit now. What I like to do mostly is stir-fries and *my wife* normally says, oh, Tom, why don't you make a stir fry tonight.
- (15) Uh, and I cook a little bit now. #What I like to do mostly is stir-fries and *my wallaby* particularly likes my vegetarian stir-fry.

Finally, in example (16), a possessive noun phrase is again used to refer to an inferable entity, but the inference seems to be based on the part-whole relation. Toes are generally part of the whole human body. The only possessive relation would be that human beings do, in fact, have bodies. It is well known that, though the possessive form is used in English for this type

¹¹ Of course, it doesn't seem absolutely out of the question for Tom to say something like this, but it would immediately be marked by the hearer as an unusual and humorous choice. It seems, in fact, that Tom would be intentionally flouting a conversational maxim (cf. Grice, 1975). One might then predict the hearer, in fact, to focus on this referential choice, saying something like *You have a wallaby?*, rather than something like *That's sweet*.

of inferable entity, the preferred referring expression is not universally the possessive. The exact connection between part-whole relations and possessive relations bears further scrutiny.

- (16) Wendy stubbed *her toe* on the pool ladder.

3. A CORPUS STUDY

In Cote (2000b), I tested these inferable entity trigger relation types with a corpus study. In the process, I found some additional relation types and a number of complicating factors. The source for most of the data was the Switchboard Corpus of telephone conversations. Twelve discourses were examined, all of which involved two adult participants ("A" and "B") discussing some randomly assigned topic (ranging from hobbies, to air pollution, to public service, to the weather), and all of which lasted about 10 minutes. Inferable entities were identified wherever a referring expression referenced an entity that was not already either evoked in the discourse or situationally present but that met Prince's two minimal criteria. (See discussion above.) A total of 227 inferable entities were then examined for types of relationships to their triggers.¹²

3.1. Triggers in the Discourse Context

190 of these switchboard tokens were either inferable entities with triggers found strictly outside their noun phrases or possessives. A variety of different types of triggers were found in these tokens, and the types of referring expressions also varied.

Examples (17)–(20) below would be classified, based on the earlier terminology, as discourse domain triggers. The triggers for the inferable entities in these examples come from the discourse participants' understanding of either the current discourse domain or the specific scenario under discussion. In example (17), the speaker can refer to *the garage* because the hearer is likely to know that inspections take place in garages. In example (18) the hearer can infer which city is being evoked because the events are set in the area of DFW (Dallas Fort Worth) airport. The hearer in (19) can infer that *the stitch* is a technical choice related to knitting. Finally, in example (20), the trigger for *my degree* is the previously discussed piece of information that B went to college for four years – in the normal scenario for attending college.

¹² The total set of inferable entities in these discourses is actually larger than 227, but it eventually became clear, for example, that including all possessive noun phrases referring to family members and body parts was not going to add anything to this particular study. Still, a separate examination of all inferable entities of this type will eventually need to be done for completeness and for the purposes of comparing part-whole triggers and possessive triggers in more detail.

a student receives a degree after four years, and the speaker can assume that the hearer is likely to know this. In all examples of this type, speakers used a definite full noun phrase. Using the categories adapted from Cote (1988, 2000a), these inferable entities are all classified as discourse domain elements, though it should be becoming clear that there is a lot of variation in exactly how these entities fit into the discourse domains. Only in example (19) is there an overt referring expression representing the trigger (i.e., the gerund *knitting*). In examples (17), (18), and (20), there is no particular explicitly evoked discourse entity that serves as the trigger for the inferable entity. In these examples, scenarios must first be created as discourse entities; specifically, the hearer must know to create the “getting an inspection” scenario, the “flying into DFW” scenario, and the “attending college” scenario. In other words, these examples are like the weather example in the previous section. There does not appear to be any difference in referring expression choices based on whether the discourse domain trigger is or is not overt, so it may be simply that there is an additional inferential step to get to the domain triggers in some situations. Nonetheless, based just on these few examples, it is clear that what at first seemed like a fairly straightforward type of inference (roughly equivalent to a case of Gundel and Erkkü’s created sets) will eventually need to be formalized in more detail.

- (17) A: And, and a lot of, when you, a lot of places when you go get the inspection they just pull it out of *the garage* and then pull it back in and they don’t really check anything, they just make sure *the lights* work.
- (18) A: I noticed once flying into D F W there was just a, a brownish-orange haze,
 B: Yeah that’s it,
 A: over *the city*.
- (19) A: Okay. I, uh, I started knitting awhile ago, I knitted I didn’t know, even know what *the stitch* is called. I just had this, uh, uh, piece of yarn and I wanted to start something so I remembered something I learned I think when I was five years old [laughter]. So I kept doing that, and now I have a little blanket but that’s all I’ve done.
- (20) B: I mean, *my degree* is absolutely worthless.

As just one more example of complications in determining discourse domain inferences, look at example (21) below. The second italicized referring expression in this discourse segment (I will return to the first shortly) is an inferable entity that also involves a trigger in the discourse scenario, but the relationship is not quite the same. A bus and a bus stop are elements of sequential steps in the process of taking a bus. First, one **goes to a bus stop**, and then one **gets on a bus**. Not only is the relevant set ordered, but the inferable entity is not actually a set

member; it is just an internal component of a set member. Note that a “bus” is not a part of a “bus stop”, so the part-whole relation does not work. Nor is there a particular bus, “the bus” associated with the domain of a bus stop. We need the whole park-and-ride scenario, with its time frame and purpose, as well as the set of steps one follows in this scenario, to understand what bus is being discussed. The bus that is inferred is the bus that would be the reason for going to the bus stop, not just any bus. In other words, one might consider this a **thematically parallel stage elements** relationship.

- (21) A: And they go all around, that it’s just real easy to get around once you’re downtown, the problem is getting downtown and they have some, uh, Park and Ride, uh, expresses, where you go to the, *the bus stop* and you get on *the bus* and it takes you directly downtown, but they don’t have enough of *them* and they’re not convenient enough –

Now let’s examine the first italicized referring expression in this discourse segment for a moment, i.e. *the bus stop*. Notice that this entity might also be treated as inferable, with the trigger again being the park-and-ride scenario. Alternatively, a Park and Ride may just be thought of as an entity itself, a particular type of bus stop. In this case, the expression the bus stop is just a lexical variant representing the same entity while emphasizing or introducing different characteristics of this entity. Certainly, alternative full noun phrase characterizations of an entity are not uncommon in discourse (epithets being one good example), but the problem is that it is sometimes difficult to tell whether an expression is referring to the exact same entity or just to a closely related but distinct and inferable entity. Since the entity certainly can be inferred from the scenario, it may be that this is the safest way for a hearer to treat it. On the other hand, if the speaker was expecting hearers to understand that a Park and Ride is a kind of bus stop, this lack of understanding could have implications later in the discourse.

There were many examples in this corpus involving inferable entities with triggers that are, in fact, themselves discourse entities. A number of these fit rather neatly into one of the trigger relation types discussed above. For example, the part-whole relationship in example (11) of this chapter was actually taken from the Switchboard corpus. In example (22) below, however, the reference to *all the healthy food* is inferentially triggered for the hearer by a combination of the scenario (shopping) and an entity that can be classified as a purchasable food item (sweets). Like sweets, healthy food is a purchasable food item but this relationship is not quite the same as an additional instance of the lexical-semantic class “sweets”. There are differences between the two entities beyond the fact that they are distinct instances; they are not members of the same basic conceptual class but are instead members of a class (purchasable food items) that is evoked as much by the scenario (shopping) as by the mention of a particular

food group. I will therefore tentatively define inferable entities of this type as a new relation in which the target entity is **situationally parallel** to its trigger.

- (22) A: but we just went shopping and we came back with, uh, with, uh, sweets, you know, chocolate covered peanuts and –

B: Ugh.

A: – uh, we came back with sweets. We didn't bring *all the healthy food* back too.

Yet another type of inferable entity is introduced in example (23). In the discourse from which this fragment is taken, the discourse participants have been discussing fishing and fishing locations. The entity “the garage” is not obviously inferable from anything that has come before in the conversation. Nonetheless, it is clear to us, and probably was meant to be clear to the listener, that A must have a garage at the place where he lives and that this is the garage to which he is referring. Why is this garage inferable? It seems reasonable to suggest that discourse participants not only use the discourse domain/scenario as a source of inference triggers, but are also prepared to infer the existence of entities that they know are prevalent in their everyday world. Possessive inferable entities like the earlier examples of family member inferences (i.e., examples (13)–(14)) clearly work this way, and examples like (23) may be related. What this means though, is that it is possible to have a discourse domain trigger with the target inferable entity expressed as a possessive noun phrase (as in example (20)), and a possessive trigger relation with a target inferable entity expressed as a definite referring expression (though not commonly in English.) There is also something intuitively different about the inference that a child has a mother and the inference that a man in the suburbs has a garage. In the former case, the two entities are actually equal members of a set (“family”), but there is no such set for a man and his garage. In Cote, 2000b, I suggested that these latter triggers be separately referred to as **world knowledge** triggers, which is really just a suggestion that these kinds of inferences may not be completely categorizable without a better understanding of how we organize world knowledge in general.

- (23) A: Yeah. Now I've got most of mine hung up in *the garage* now. Like I say, it's been a long time since I've gotten to go, you know. [...]

3.2. Contained Triggers

Before moving on to inferable entities evoked with pronominal referring expressions, I would like to briefly explore the complications that arose in categorizing even the 37 tokens in this study that could be classified as examples of inferable entities with triggers contained inside their noun phrases (not counting possessives). Simple examples of these are given in (24)–(26):

- (24) A: Um, I guess in Colorado, I'm trying to think of *the place we went* was in Pagosa Springs, and we went up kind of in *the Southwest corner of Colorado*.
- (25) A: I remember coming back into *the, uh, port where we left* and I had a cooler on my head as a hat.
- (26) A: I've got my fishing tackle in *the trunk of my car*, so if the urge ever [laughter]...

The types of triggers that can be contained within referring expressions are, at the very least, related to the types that can be discourse triggers. A larger study of contained triggers is needed to confirm the exact relationship; I will, however, point out here several factors that clearly complicate the identification of inferable entities with contained triggers even in this small set. The next three examples illustrate some of the more complex issues that can make inferable entities with contained triggers difficult to identify.

- (27) A: But, it's, uh, you know, I, I got into that mode where I was buying lures and, and rods and reels, and just all kinds of stuff. I had *one of those little two-man, little two-man boats that*,¹³
- B: Um, um.
- A: *used to go around a lot*, use that a lot, but like I say, I kind of got out of the fishing business when the kids got up big enough so, I,

In example (27), the noun phrase headed by the indefinite quantifier *one* refers to a member of the set of *those little two-man boats*. In other words, *those little two-man boats* triggers the availability of a subsequent reference to a single member of that class. This seems to be a fairly straightforward inference related to class membership. What makes this example more complicated is that the trigger is itself the head of a noun phrase that seems to contain a trigger clarifying which set of little two-man boats is being referred to (i.e., *those that used to go around a lot*). So, the trigger appears to be being introduced as an inferable entity too. It is not at all clear, however, that the speaker believes there is some other set of little two-man boats that do not have this characteristic. He seems perhaps to be simply justifying why he thinks the little two-man boats are already known to the hearer, or simply reminding the hearer of something that she already knows. On one level, the speaker therefore seems to be assuming that the boats are inferable entities and, on another, by his choice of an essentially vacuous trigger, to be assuming that they are hearer-old. One could explain this contrast as being the

¹³ The observant reader may have noticed that there is another inferable entity (also with a contained trigger) in this discourse fragment: *that mode where I was buying lures and...* It is not the intended example here, but I left it in rather than chopping up speaker A's turn.

result of a rhetorical device, but that explanation would not necessarily determine which information status should be assigned to this entity.

Example (28) below raises a different question. The trigger for *the air conditioning* is *the car*. Note that this trigger is, at least superficially, not inside the noun phrase. Instead, it is extraposed. The question then is the following: Does the fact that the speaker chose to extrapose the prepositional phrase correspond to an assumption on his part that the scenario or domain of the discourse already provided a trigger? One could argue that this utterance would have been equally felicitous if the words *on the car* had been left out. Under that argument, the trigger for *the air conditioning* is instead the domain information that the scenario of “riding” (at least under the conditions described in this discourse) involves something that gets ridden in, something which quite likely would have air conditioning. On the other hand, the speaker did choose to include the prepositional phrase *on the car* and did not choose to use intonational phrasing that would suggest this phrase was an afterthought (although this does happen with some contained triggers). If the speaker intended all along to include this apparently unnecessary information, why was it extraposed? The significance of this example is that it shows that the decision to use a contained trigger may be marked in some way that we have not as yet identified.

- (28) A: Yeah, [laughter] my wife and I, the last day we were in Florida, we, my visiting my, uh, my parents, and my brother and sister, we were, we were down there and, the last day, right before we left, we had to, I had to ride with my sister and *the air conditioning went out on the car* [laughter],

Finally, example (29) raises the interesting possibility that a contained trigger may not completely obviate the need for some inference based on the broader discourse context. The context for this discourse segment is the following: speaker A has already talked about the last time he went camping. The prepositional phrase, *before that* is therefore crucial to understanding the event he is now introducing. He is not discussing “the last time”, he is discussing “the last time before the time already discussed”. So, there is a sequential trigger here as well. This example seems to suggest that triggering an inferable entity may be a process that requires more than one stage.

- (29) A: And then, I guess *before that, the last time I went camping*, was up on, backpacking up on the Continental Divide.

3.3. Inferable Entities and Pronominal Reference

As mentioned earlier, not all inferable entities are expressed with full noun phrases, whether they be definite or indefinite, containing or non-containing. Of the tokens examined in Cote, 2000b, 37 occurred with pronominal referring expressions, and not all of these were clearly inferable entities. The breakdown of specific pronominal forms was as follows:

Personal		Demonstrative		Possessive		Indefinite	
<i>We:</i>	7	<i>That (or All that):</i>	4	<i>Mine:</i>	2	<i>One:</i>	1
<i>Us:</i>	1	<i>Those:</i>	1			<i>You:</i>	3
<i>It:</i>	1						
<i>They:</i>	13						
<i>Them:</i>	4						

Notice that I have tentatively included uses of the so-called “indefinite” or “generic” *you*¹⁴ on this list because it seems that speakers intend hearers to constrain the set of possible referents for this pronoun based on subsets triggered by the discourse domain. For instance, in example (30), the speaker expects the hearer to know that the *you* must be people who are DISD employees.

- (30) A: [...] Well, I work for D I S D and I don’t know what you’re talking about when you say health insurance, but Dallas doesn’t pay. It pays most of mine, you know, now, after *you* work ((I think)) five years, they begin to pay most of it. But then, for the, the family, you know, I put my kids on my policy. It’s like two hundred dollars –

There are at least two questions that we can ask about these pronominal expressions. Which types of triggers allow them, and how can we fit them into theories of anaphora resolution that normally depend on the existence of antecedents.

3.3.1. Pronominal Reference and Inferable Co-Referents. It is generally accepted that one of the defining characteristics of personal pronouns is that they have co-referents, either antecedents provided by the discourse context or situationally available entities. Pronouns are used felicitously only when they can be identified with a co-referent, and even then there are additional constraints. (Cf. Walker *et al.*, 1994 for one discussion.) In some tokens from the Switchboard data, an inferable entity represented by a pronominal linguistic form did, in fact, have an inferable co-referent.

¹⁴ See, for example, Lambrecht (1994) who, along with many others, suggests that generic *you* and *they* may be used for entities that do not have active status in the discourse.

In particular, as predicted earlier, class and additional instance of class triggers provided particular co-referents for inferable entities, allowing pronominal reference to these inferable entities. For example, the pronoun *those* in example (31) below refers to the class of jalapeño peppers; the trigger is the specific set of jalapeño peppers introduced in the previous utterance. This is a trigger though, not an antecedent, because the pronoun does not refer to these particular peppers. In example (32), *mine* refers to speaker A's fishing tackle, and the trigger is speaker B's reference to his own fishing tackle. In example (33), B's use of the pronoun *it* refers to the humidity (in Orlando) in general, and the trigger is A's discussion of the humidity in that city on a particular day.

- (31) B: Yes. We planted, um, potatoes and onions and bell peppers.
 A: Um, boy.
 B: Uh, what else did I get in there, and jalapeño peppers
 A: Oh, yeah, always got to have *those*.
- (32) B: I've got my fishing tackle in the trunk of my car, so if the urge ever [laughter],
 A: [Laughter].
 B: ever bites, you know, I'm ((kind of)) available but [laughter],
 A: Go across the bridge, across the water, if it looks good, you can just pullover and start it then.
 B: Yeah, right.
 A: Yeah. Now I've got most of *mine* hung up in the garage now. Like I say, it's been a long time since I've gotten to go, you know. [...]
- (33) A: and this, it was just, the humidity was like eighty plus, eighty percent plus and it was just killing us.
 B: Oh, yeah, *it's* just terrible. Orlando is the only place I've ever been where I've seen a car sweat.

There is another example that should be considered at this point, one which may or may not belong with this group. The expression *all that* in example (34) refers to the class of practical camping items, and the trigger is the several items introduced as a related list. This last example is the least clear case. As with the "purchasable food items" back in example (22), no one trigger here creates a class which can be referred to as a whole. While this complicates the idea of class triggers, it does seem plausible that the grouping of multiple related entities creates a class in the mind of hearer. On the other hand, the definition of class triggers gets much less straightforward if inferences like these are include. Though I have no final answer to offer here, another possibility is that this example is best explained in terms of a set that is introduced by a domain trigger. If so, the explanation for why there is a pronominal reference

here gets more complicated (and perhaps has something to do with the quantificational nature of this particular expression).

- (34) A: There's a few things that you just kind of have to have or you can't go camping.
 B: Uh-huh.
 A: Depending on what kind of camping you're doing, like a stove or sleeping bag, and a tent, and *all that*.

In Cote, 2000b, I incorporated an analysis of pronominal inferred entities resulting from either of the two class trigger relationships into a revised model of attentional state in local discourse structure (i.e., the Centering Theory discussed in some detail in Grosz *et al.*, 1995). The major change required to handle the preferred interpretation of pronouns in these examples (as well as other phenomena¹⁵) was to make information from Lexical Conceptual Structures (cf. Jackendoff, 1990, 1993) available for discourse processing. Assuming this information is available, pronominal references to inferable entities of this type do not force a revision of our concept of pronouns.

There are other kinds of triggers that provide co-referents for pronominal inferable entities, and some do clearly use the pronoun *that*. For instance, in example (35) below, *that* refers to the inferred result of a cooking process. These types of references, based on inferences about the results of a process, have been observed before, both with pronominal and definite reference, but the issue that remains is how they are related to other types of inferable entities. We could perhaps propose another kind of trigger, based on a **completed process**, and it may even be that these inferable entities are co-referential with implicit roles in the lexical conceptual structure of certain process verbs, but further study is needed.¹⁶

- (35) B: Then you, uh, pour *that* in there, you know, to make the gravy. And you let it come to a boil again and then you let it simmer and you add, uh, about a tablespoon of, what I'm using now is Jamaican curry powder.

Only a few of the remaining tokens of inferable entities with pronominal reference found in the Switchboard corpus were of this last type. In the remainder, the pronouns did not behave as predicted under theories of co-reference.

¹⁵ Cf. Cote, 1993, 1996 for a discussion of the need for lexical conceptual information to account for the interpretation of certain types of implicit objects in English.

¹⁶ There were only three such examples in the Cote, 2000a data; clearly, a larger sample is needed.

3.3.2. Pronominal Reference and Elusive Co-Referents. In particular, one of the more interesting features of some of these inferable entities is that the hearer cannot always infer the existence of an unambiguous co-referent for the pronoun. I argue that, in some cases, a speaker may not intend a hearer to make an exact identification of the referent. Furthermore, there are cases where even the speaker may not even be able to pin down the referent. Yet these examples do not seem infelicitous.

Consider example (36) below. In this example, the speaker uses what is sometimes called a generic or arbitrary *they*. Though the speaker believes there is some specific group of people who have done the cracking down, and that these people should be identifiable if necessary, they are nonetheless not identified here. It is not even clear that B knows who the *they* are.

- (36) B: *They*'ve really cracked down up here.

Similarly, in example (37), the speaker is referring to fishing authorities of some sort whom he believes he has encountered and who are individuals who would know how to use the term *jig and a pig* correctly. The speaker does not really care, however, for his purposes in this discourse, who fits in this group.

- (37) B: One thing, uh, in fishing that I have not ever, have not done and I'm not really sure what *they* mean, I guess is when they're talking about using a jig and a pig.

In example (38), the speaker could have chosen a referring expression that would disambiguate between all the possible groups that could be *we* (the U.S. as a group, the speaker's state or hometown, the Western world, and so forth) in this utterance, but she chooses not to.

- (38) B: But, *we* have so much traffic now, so many cars. You know they're trying to fix it, uh, with all this emission control and everything.

Finally, in (39), the speaker is including himself in a group (*us*), but he is really talking about his own situation and is not concerned with whether the hearer interprets the group as the speaker and his schoolmates, the speaker and his family, the speaker and his father, the speaker and other people on limited budgets, or any other plausible option.

- (39) A: So, I mean, it's, for, for *us*, it's like, I, I can spend, I can spend that money but it's not, it's not what I want to spend it on, you know.

4. INEXACT TRIGGERS AND INTERPRETABILITY

Though there are differences between the examples in the last section, they could, perhaps, all be classified as having an **inexact trigger** relationship to the previous discourse. In other words, while the trigger does give the speaker a warrant for believing that the hearer can infer the existence of such an entity, meeting Prince's criteria, it does not allow the hearer to actually identify this entity.

One reason why inferable entities with inexact triggers are expressed as pronouns may be that it is awkward and often difficult to create full noun phrases that have the same effect. For example, notice that difference between examples (40) and (41) below and examples (36) and (37).

(40) *Some or all of the people in my area who make decisions about and enforce emission laws relevant to our discussion* have really cracked down around here.

(41) One thing, uh, in fishing that I have not ever, have not done and I'm not really sure what *those people who write fishing articles or otherwise inform us about their expertise in fishing and who use the particular term I am about to mention mean*, I guess is when they're talking about using a jig and a pig.

It is not actually easy to come up with a noun phrase that captures all the possibilities that the speakers can mean in their succinct reference to *they*, nor is it clear that speakers themselves could tell you what they meant. In fact, the inferred entity in these cases is not an important part of the intended communication in their utterances. (It is interesting that these triggers are all human entities; this shared feature may ultimately also provide part of the explanation for why a pronominal reference is possible.)

4.1. The Interpretability Constraint

The actual requirement for felicitous use of these pronouns might be defined in the following way:

Interpretability Constraint:

A hearer must be able to assign as much meaning to a pronoun as is needed to avoid causing a speaker to fail to achieve his discourse purpose.

The means for achieving interpretability would be dependent on the intentions of the speaker. While the "normal" uses of pronouns, where the entity referred to by the pronoun is

identified with another entity in the discourse, would certainly meet this constraint, there are many other possibilities. A possible set of means would include at least the following options:

4.2. Means for Achieving Interpretability with Pronouns¹⁷

Here is a non-comprehensive list of ways speakers satisfy the interpretability constraint:

- (i) Discourse and situational structure features combine with semantic features and syntactic co-reference constraints to determine a set of possible co-referents for a referential pronoun and, when there is more than one possible co-referent, to create a ranking of the possibilities in terms of likelihood in order to facilitate disambiguation.
- (ii) Lexical conceptual features of another referring expression lead to the inference of a possible referent.
- (iii) The pronoun is one which can take arbitrary reference and this interpretation is consistent with the discourse context.
- (iv) The pronoun is one which can be expletive, and this interpretation is consistent with the discourse context.
- (v) Semantic features of the pronoun itself combined with the discourse context and/or world knowledge lead to the inference of a loosely defined set of plausible antecedents, and the discourse intentions of the speaker do not require that this ambiguity be resolved.

The second possibility on this list distinguishes the inferred co-referents for inferred entities with class and additional instance of class triggers from interpretability based on overt discourse antecedents. The third and fourth allow for a natural treatment of truly arbitrary or expletive pronouns under the same constraint. The final option accounts for felicitous pronominal references with inexact triggers.

5. OTHER EVIDENCE FOR THE INTERPRETABILITY CONSTRAINT

If the interpretability constraint were needed only for the treatment of inferable entities, one might suggest that there is simply a different process at work for inferable entities and entities evoked in other ways. There are, however, other motivations for this constraint.

¹⁷ I first started talking about interpretability with respect to null subjects in English, which are not always recoverable in felicitous uses (Cote, 1996). There are a slightly different set of options for achieving interpretability with null arguments, but the principle is the same.

5.1. Null Subjects

Cote (1996) first proposed the interpretability constraint as a way to explain the interpretation of null subjects in English and other languages. Though null subjects are not as prevalent in English as they are in so-called “pro-drop” or “discourse-oriented” languages, they are, in fact, not uncommon in conversational or informal written English. They can even be found occasionally in somewhat formal written English registers. Naturally-occurring tokens of these English null subjects can be found in examples (42)–(45) below.

- (42) This is Sid. *θ* thought I’d call you up. (conversation in Hopper, 1992: 35)
- (43) Oops – *θ* won’t hear me complaining. (television commercial)
- (44) Are you sure you wanna change it? *θ* Looks kinda sexy to me. (television commercial)
- (45) *θ* Sounds as if Mr. X has a lot in common with those nuts who parade around the countryside at night in white sheets,... (a letter to the editor of a newspaper)

While null subjects as a group in English cannot be accounted for by late phonological reduction processes, and can be shown to have specific discourse constraints,¹⁸ they do not always meet the recoverability condition on empty categories.¹⁹ Examples (46)–(47) include tokens of this type. In example (46), the null subject could be referring to the speaker as an employer, to the speaker and her office colleagues, to the offices in her area in general, and so forth. An exactly defined subject simply is not necessary for the speaker’s purposes here. Similarly, in example (47), it is not relevant to the speaker’s point that the hearer know whether it is she, her husband, or both of them together making the stop for the video.

- (46) A: We’re having a lot of allergies down here right now.
 B: Uh-huh.
 A: Everything blooming, and the weather.
 B: Uh-huh.
 A: And I think a lot of people have contracted spring fever too, so. *θ* Had a lot of people out at work, you know, for fishing and, and uh,

¹⁸ See Cote (1996) for a detailed discussion of the grammatical and discourse properties of English null subjects, including a large corpus study (also from the Switchboard corpus) showing that the discourse constraints observed in these null subjects are statistically different from the constraints on overt pronouns and other referring expressions in English.

¹⁹ See Roberge (1990) for one discussion of the recoverability condition.

B: [Laughter].

A: and golfing, reasons and things like that.

(47) A: We, uh, got a new baby in the house –

B: Oh, yeah.

A: – and, and, she just turned a year old, so it just kind of put the –

B: Yeah.

A: – clamp on things. Uh,

B: So you watch videos.

A: Yeah.

B: Then, uh,

A: *0* Stop by and get them at, you know, for ninety-nine cents, and bring them home but,

In each of these cases, it is impossible to determine the full set of features associated with the null subject. In other words, there is no overt pronoun in English that could even be reliably substituted for these null pronouns. With these ambiguities, the subject cannot be ‘recovered’ in the traditional sense because there is no overt subject that can maintain these particular ambiguities. The utterance can, however, still be interpreted by a hearer acting under the assumption that the missing features are irrelevant to the information the speaker wishes to convey.

This aspect of interpretability is compatible with the Gricean maxim of quantity; even overt pronouns may be underspecified in certain ways. For example, the use of *we* in the following example could mean “my family”, or just “my spouse and I”. The distinction is simply not crucial to the speaker, and a listing of the included members therefore would be non-cooperative.

(48) The old mini-van finally died, so *we* got a new station wagon last week.

For this reason, and because there is so much variation in the use of null arguments cross-linguistically that has not been adequately accounted for,²⁰ Cote, 1996 argued that a more robust hypothesis might be that there is a continuum from null argument to non-null argument languages rather than a number of preset language types, and that the only absolute constraint on null arguments is interpretability. A language may, in principle, obey this constraint by using null arguments that have one (or more) of the characteristics below:

²⁰ For example, like the various null arguments found in a number of other configurational, non-discourse-oriented languages, English null subjects also do not meet any of the agreement conditions on the licensing of null pronouns in pro-drop languages.

- (i) Recoverable from grammatical features in sentence,
- (ii) Recoverable from discourse/situational context,
- (iii) Recoverable because of limited feature variation in null pronouns in that language,
- (iv) Arbitrary in reference,
- (v) Expletive,
- (vi) Identification of exact referent of subject unnecessary.

Within the range of these possibilities, we can try to determine whether there is any correspondence between general discourse constraints and/or functions associated with the types of null arguments available in a particular language and the way null arguments satisfy interpretability in that language. In other words, we can hope to learn if the functions of null arguments are partially or completely dependent on the patterns of interpretability.

5.2. Null Objects

Cote (1996) also discussed interpretability with respect to null objects, a largely lexical phenomenon in English. Null objects in English have been shown to be constrained by choice of verb, both in terms of availability and in terms of how they are interpreted. Certain verbs, for example, require that a null object establish a new discourse entity (though it may ultimately be shown to be identical to an already existing one). Hence, verbs like *eat* assign partial interpretations to their null objects directly. In other words, there is yet another way that a null argument can satisfy the interpretability constraint:

- (vii) Sufficient information can be extracted from lexical constraints.

Two examples of null object utterances are given below in (49)–(50).

- (49) The young man always wrote very carefully.
- (50) At Sunday's picnic, the children ate sitting on blankets.

Write and *eat* are both verbs that allow what Cote (1996) calls “Indefinite Null Objects”. In (49), the null object is the discourse entity corresponding to what the young man wrote. It is constrained only to be a set of things that the intended hearer should not consider abnormal for the young man to be writing in whatever context is provided. Similarly, in (50), the null object is the discourse entity corresponding to what everybody ate, which is constrained only to be something that the intended hearer should not consider abnormal for the children at the picnic to be eating. Other types of null objects would have different interpretability constraints.

5.3. Event Reference

Anecdotal evidence suggests that interpretability may turn out to be the only absolute constraint on event reference too. For instance, in example (51) below, the event to which *that* refers is unclear. It could be the whole series of actions proposed by the first speaker or just some part. Subsequent utterances could disambiguate, as in the two alternative discourse progressions in example (52). Yet, if the speaker is unconcerned about this ambiguity, the reference may never be resolved, as in the possible progression in example (53).

(51) A: I just can't stand the attitude at my office anymore. I'm just gonna quit, open up a used book store, and feed stray cats all day.

B: *That* won't work.

(52) B1: *That* won't work. Used book stores don't make any money. You should open a used CD store instead.

B2: *That* won't work. It's never good to run away from your problems. You should try to change the attitude at your office by introducing "Casual Fridays".

(53) B: *That* won't work. Life is so depressing. Let's go get hot fudge sundaes.

If a speaker does not need a hearer to disambiguate to make his point, it should not be surprising if he does not go out of his way to provide the information needed for disambiguation. These event references may, in fact, be very similar to certain kinds of discourse domain triggered inferable entities, but this is material for future work.

In general, hearers are not surprised and do not perceive anything infelicitous about loosely interpretable referring expressions.²¹ Of course, there can be a conflict between what the speaker intends to communicate and what the hearer hopes to learn. Interestingly, this conflict seems to come into play in the use of pronominal event reference in written contexts. Anyone who has read a college-level essay knows that speakers (actually writers in this case) may attempt to hide sloppy thinking behind loosely interpretable pronominal event references. Hence the ban in some classes on the use of pronominal *this* and *that* in written work.

²¹ If you're skeptical, consider this. When's the last time you thought it odd when someone wrote "Hope to see you soon" in a card, letter, or email message? Did she mean herself, her whole family, or some other subset?

6. RELATED ISSUES

The interpretability constraint is clearly related to other discourse processing issues. Although an extensive discussion of these connections is beyond the scope of this work, I will point out in this section just a few issues that need to be considered.

6.1. Failed Anaphora Resolution

There is some experimental evidence that hearers sometimes themselves choose not to make the effort to resolve anaphors, even when the speaker does provide the necessary information. For example, Levine *et al.* (2000) did a study in which they determined that readers sometimes simply stop trying to resolve definite noun phrase anaphors that have antecedents that are difficult to retrieve. The difficulty arose when they provided a “distractor” along with an antecedent. The distractor was semantically plausible antecedent but did not play the discourse role of the antecedent. A simplified example of this type of context is reproduced below.

- (54) Wanda was throwing a surprise party for her best friend John. John had just been promoted to Vice President of the company and some of his close friends wanted to congratulate him. Wanda even made him a *tart*.

She felt a little pressured because her daughter’s graduation dinner was the next day and she needed to prepare for that as well. She also still had to get decorations and stop at the bakery for a *cake*. Her daughter loved chocolate *cakes*.

Wanda hoped John’s party would be fun. The guests arrived right on time. As everyone sat down to eat, Wanda said to leave room for *the dessert*.

Anaphora resolution task: What was the dessert? (Levine *et al.*, 2000: 612)

As the authors themselves mention, the reader could simply be treating *the dessert* as a new entity (inferable, really), but, technically, it is not. The discourse context does in fact include the information that the dessert at John’s party was a tart.

At least two questions relating to interpretability arise. How much of the intended interpretation is actually enough? How much do hearers really care about speakers’ discourse purposes? These questions have impacts for other aspects of discourse study as well.

6.2. Relevance

The interpretability constraint also seems to be very compatible with the principle of relevance discussed in Sperber and Wilson, 1995. Relevance is, according to this work, crucial to all

“inferential communication”. For example, hearers make referential hypotheses because references generally are not recoverable by linguistic decoding alone. More generally, Sperber and Wilson talk about semantic incompleteness, but then suggest that identification of propositional form is still an essential part of the process. It seems that it would take little to say that full identification is not an absolute constraint in inferential communication.

6.3. Local Discourse Models

Finally, the interpretability constraint has substantial implications for models of pronoun resolution and local discourse coherence. Current models treat co-indexing with an antecedent as a goal in and of itself rather than as a means to achieve interpretability. If the interpretability constraint is, in fact, the only absolute constraint, then the design of these models needs to be modified.

For example, Centering Theory (cf. Grosz *et al.*, 1995; Walker *et al.*, 1994; Cote, 1998), is a model of local discourse coherence which, as it is currently discussed and implemented, makes the following assumptions:

- (i) At any point in a discourse segment, there is a backward looking center that serves as the crucial point of continuity with the previous utterance, and
- (ii) a partially ordered forward-looking centers list of discourse entities that may become the next backward-looking center.
- (iii) The ordering of the discourse entities on this list is an indication of how likely each of them is to be the next backward-looking center.

A hearer may, therefore, choose between ambiguous interpretations of an utterance by considering these features.

Even in robust versions of the theory, which incorporate information status and lexical conceptual information as well as grammatical information in the template used to form forward-looking center lists, the antecedent for pronouns is still sought on these lists. Ultimately, theories like this will need to allow for inexact triggers and other linguistic phenomena that allow incomplete identification of an antecedent. In addition, they will have to be modified to handle a wide variety of still largely under-formalized triggers for inferable entities.

7. CONCLUSION

In this work, I have attempted to demonstrate that inferable entities are complex phenomena and that, while some specific classification choices can improve our ability to predict the availability of inferable entity references, we do not yet have all the tools we need to describe these phenomena. I have discussed some of the observations that arise out of even a relatively small data study and proposed areas where more data need to be collected. Perhaps the most interesting observation is that not all triggers for inferable entities serve to identify those entities with unique co-referents.

More generally, I have argued that an interpretability constraint on various types of discourse entity inferences, including some inferable entities, correctly represents the real inferential expectation that speakers attempt to fulfill for hearers. Other supposedly absolute constraints are actually common means for adhering to the interpretability constraint, but certainly not the only means. This seemingly small change in perspective can have significant impacts on our understanding of anaphoric references and of the structuring of local discourse.

REFERENCES

- Birner, B. J. (1997). The linguistic realization of inferrable information. *Language & Communication*, **17**, 133–147.
- Cote, S. A. (1988). *Just what are You Inferring?: Toward an Analysis of Inferable Entities in Discourse*. Manuscript.
- Cote, S. A. (1993). *The Ranking of Forward-Looking Centers*. Presented at the Workshop on Centering Theory in Naturally-Occurring Discourse, IRCS, University of Pennsylvania, May 8–10.
- Cote, S. A. (1996). *Grammatical and Discourse Properties of Null Arguments in English*. PhD dissertation, University of Pennsylvania.
- Cote, S. A. (1998). Ranking forward-looking centers. In: *Centering Theory in Discourse* (M. Walker, A. K. Joshi, and E. F. Prince, eds.), pp. 55–69. Oxford University Press, Oxford.
- Cote, S. A. (2000a). *Inferable Entities in Discourse and in Narrative*. Presented at Linguaging 2000, University of North Texas, March 3–4.
- Cote, S. A. (2000b). *Lexical Conceptual Structure and Inferable Entities in Discourse*. Presented at the 7th International Pragmatics Conference, Budapest, July 9–14.
- Garrod, S. and M. Terras (1999). The contribution of lexical and situational knowledge to resolving discourse roles: Bonding and resolution. *Journal of Memory and Language*, **42**, 526–544.
- Grice, H. P. (1975). Logic and conversation. In: *Syntax and Semantics 3: Speech Acts* (P. Cole and J. Morgan, eds.), pp. 41–58. Academic Press, New York.
- Grosz, B., A. K. Joshi, and S. Weinstein (1995). Centering: A framework for modelling the local coherence of discourse. *Computational Linguistics*, **21**, 203–225.

- Gundel, J. and F. Erkü (1987). The pragmatics of indirect anaphors. In: *The Pragmatic Perspective: Selected Papers from the 1985 International Pragmatics Conference* (J. Verschueren and M. Bertucci-Papi, eds.), pp. 533–545. John Benjamins, Amsterdam.
- Hajicová, E. and J. Vrbová (1982). On the role of the hierarchy of activation in the process of natural language understanding. In: *COLING 82* (J. Horecký, ed.), pp. 107–113.
- Hopper, R. (1992). *Telephone Conversation*. Indiana University Press, Bloomington.
- Jackendoff, R. (1990). *Semantic Structures*. MIT Press, Cambridge, Mass.
- Jackendoff, R. (1993). On the role of conceptual structure in argument selection: A reply to Emonds. *Natural Language and Linguistic Theory*, **11**, 279–312.
- Kuno, S. (1987). *Functional Syntax*. University of Chicago Press, Chicago.
- Lambrecht, K. (1994). *Information Structure and Sentence Form*. Cambridge University Press, Cambridge.
- Levine, W. H., A. E. Guzmán, and C. M. Klin (2000). When anaphor resolution fails. *Journal of Memory and Language*, **43**, 594–617.
- Maurer, G. and J.-P. Koenig (2000). Linguistic vs. conceptual sources of implicit agents in sentence comprehension. *Journal of Memory and Language*, **43**, 110–134.
- Prince, E. (1981). Toward a taxonomy of given-new information. In: *Radical Pragmatics* (P. Cole, ed.), pp. 223–255. Academic Press, New York.
- Prince, E. (1992). The ZPG letter: Subjects, definiteness, and information-status. In: *Discourse Description: Diverse Linguistic Analyses of a Fund-Raising Text* (W. C. Mann and S. A. Thompson, eds.), pp. 295–325. John Benjamins, Amsterdam.
- Roberge, Y. (1990). *The Syntactic Recoverability of Null Arguments*. McGill-Queen's University Press, Montreal.
- Sperber, D. and D. Wilson (1995). *Relevance: Communication and Cognition*. 2nd ed., Blackwell, Oxford.
- Walker, M., M. Iida, and S. Cote (1994). Japanese discourse and the process of centering. *Computational Linguistics*, **20**, 193–232.

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IN DEFENCE OF MONOSEMY¹

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1. INTRODUCTION

According to most current pragmatic approaches inspired by Paul Grice's theory of meaning (1957) and his theory of conversation (1975) the linguistic meaning of lexical items, including function words as well as open-category lexemes, typically underdetermines the meaning that the speaker intends to convey by using those items in a given utterance. Meaning that is encoded in the lexicon of a language only provides an indication of how the hearer's inferential processing of lexical content is meant to proceed. Grice aimed at explaining richness of communicated meaning not at the linguistic-semantic level in terms of disambiguation of linguistic ambiguities but at the pragmatic level in terms of inference. He was arguing for what he saw as the superiority of the methodological principle he called the Modified Occam's Razor (MOR): "Senses are not to be multiplied beyond necessity" (Grice, 1989: 47), illustrating how it works in practice by applying it to the natural language counterparts of logical connectives.

Grice resorted to his generalized conversational implicature of the quantity type in order to maintain a unitary semantics for logical connectives and cardinals while maximizing the role of inference in communication; in developing the thesis of semantic underdeterminacy first proposed by Wilson and Sperber (1981), Carston (1988, 1998) has argued that the well-

¹ I am indebted to Elizabeth Traugott for having provided me with a copy of her unpublished 1997 paper, to Bruce Fraser and Steve Nicolle for a lunch-time discussion on the topic of *after all*, to Nana Aba Appiah Amfo for sharing with me her views on concessive relations in Akan and elsewhere, to Lita Lundquist for informing me of an interesting difference between the Danish and the Norwegian lexicon, and to Scott Schwenter and Stig Johansson for reading and commenting on the submitted version of this paper, and to Stig for initiating me to the English-Norwegian Parallel Corpus. I am also grateful to the audience at the Relevance Theory Workshop in Luton, 1998.

known cases of Gricean implicature associated with the use of natural language connectives are better handled as inferential enrichment which contributes to truth-conditional semantics, to the explicatures rather than the implicatures of utterances.

The latter view of the relationship between 'linguistic semantics', 'what is said', and 'what is meant', which is based on the general thesis of semantic underdeterminacy, is an approach to the investigation of meaning in context which has also gained support from philosophers (Récanati, 1993; Atlas, 1989), and it has been seen to influence even the work of a grammatical typologist like Paul Kent Andersen (1991, 1994) whose 'semiotic approach' to the investigation of morphology has led him to distinguish sharply between the encoded meaning of a sign (its 'signatum') and its context-dependent uses (its 'interpretantia'). The various possible interpretations of a sign in a given utterance should not be given an account in terms of polysemy, if there is a viable analysis in terms of pragmatic enrichment. Polysemy in the lexicon, as normally understood, applies to linguistically determined variants of meaning, not to pragmatically enriched meaning.

While I do not dispute the existence of lexical polysemy, whether in open lexical categories (including metaphorical extension) or in function words, I am claiming in this paper that oftentimes, what would traditionally be considered a case of lexical polysemy should rather be analysed as monosemy, as a lexical item with a univocal meaning which will inevitably be modified in context by a process of inferential enrichment of the encoded lexical meaning. According to the theoretical framework to be applied to the data examined in this paper – Sperber and Wilson's Relevance Theory (RT) (1986, 1995) – pragmatic enrichment of encoded meaning takes place at all levels of utterance interpretation, and even includes ad hoc context-dependent conceptual enrichment of lexical meaning (Carston, 1996; Sperber and Wilson, 1998). In their paper on the mapping between the mental and the public lexicon, Sperber and Wilson (1998) argue, convincingly in my opinion, that most concepts do not map onto words, only a fraction of a language user's conceptual repertoire is lexicalized.

An utterance may contain linguistic items which give the hearer a clue as to the intended direction of the inferential enrichment of its encoded logical form. Relevance theory distinguishes between two types of linguistic encoding: conceptual and procedural (Blakemore, 1987; Wilson and Sperber, 1993). Linguistic items that encode a procedure do not contribute to the proposition expressed by an utterance; rather, by guiding the addressee's inferential phase of comprehension they place constraints on the thought processes by which implicatures (Blakemore, 1987) and ground-floor and higher-level explicatures (Wilson and Sperber, 1993) are derived. In recent years there has been an upsurge of published papers in which lexical entries have been assigned a meaning in terms of procedural semantics, e.g. the majority of papers appearing in Andersen and Fretheim, 2000, in which the function words examined are

argued to provide evidence for the speaker's communication of a specific attitude to the proposition expressed by the utterance.²

Procedural information is also conveyed by means of intonation (Fretheim, 1998a) and syntactic form. I shall give you one example of the latter, because it bears directly on the issue of pragmatic enrichment of conceptual meaning encoded in the lexicon. The process of enrichment of the lexical meaning of verbs is sometimes guided by the kind of complement the verb is constructed with. For instance, the English verb *persuade* appears with an indirect object plus one of two types of direct object complement, either a *that*-clause or an infinitival clause. We understand that the speaker of (1) (believes that she) actually caused Peter to act as advised in the infinitival clause complement, while the speaker of (2) just caused Peter to adopt a certain mental attitude to the proposition expressed in the complement.

- (1) I persuaded Peter to stay at the Wellington.
- (2) I persuaded Peter that the best place to stay was the Wellington.

In (1) the speaker is saying that Peter was persuaded to engage in a particular kind of extra-linguistic act; in (2) he was persuaded (i.e. convinced) to adopt a specific epistemic stance with respect to the proposition expressed by the finite clause complement.

A lexical meaning difference like the one illustrated by the pair (1)–(2) could be argued to be due to lexical polysemy if it turned out that the type of object complement of *persuade*, non-finite or finite, encodes a specific meaning which makes it unique among English verbs that take either type of complement. The truth is that the alleged polysemy attributable to the difference in complement type is not something which is unique to *persuade*. There are other English verbs, too, which cause us to associate an infinitival object complement with the introduction of a deontic modality in which the complement proposition is to be embedded, and to associate a finite clause complement with epistemic rather than deontic modality, as exemplified by *tell* in (3)–(4) and *ask* in (5)–(6). (Observe that the finite complement in (6) is of the indirect question type due to the inherent meaning of *ask*.)

- (3) I told Peter to stay at the Wellington.
- (4) a. I told Peter that the best place to stay was the Wellington.
b. I told Peter that I had renewed my passport.
- (5) I asked Peter to give Jane a copy.

² See furthermore Nicolle, 1998 which is a procedural monosemous account of *be going to* and *will*.

- (6) a. I asked Peter if he had given Jane a copy.
 b. I asked Peter if he was going home.

Thus the fact that we tend to interpret the matrix verb differently in (1), (3), and (5) than in (2), (4), and (6) seems to depend on a difference in procedural semantics cued by two distinct complement types appearing with English verbs of saying, rather than on certain idiosyncratic conceptual properties of the individual lexical verb, and we should therefore define the conceptual meanings of lexical entries like *persuade*, *tell*, *ask*, and other verbs of similar type in such a way that they do not duplicate the semantic job of the type of object complement that the verb is constructed with in a given sentence (Pustejovsky, 1995 and Goldberg, 1995 offer some interesting alternative approaches).

The noted procedurally defined semantic difference between finite and non-finite complement also extends to other classes of cognitive verbs, including the two-place predicate *remember* and its inherently negative counterpart *forget*. When you remember/forget to do something, you remember/forget to perform some extra-linguistic act that it is your duty (self-imposed or otherwise) to perform, but when the object complement of *remember/forget* is a finite clause, the expressed modality shifts from the deontic to the epistemic domain.

Anaphoric indexicals are words whose context-dependent enrichment consists in the hearer's finding a discourse antecedent that will furnish him with the information needed to recover the propositional content of the utterance processed. A personal pronoun like *they* must refer to something countable, and to a set of two or more entities, but the question whether a given occurrence of *they* in an utterance of an English sentence like *They are impressive* will be understood to refer to animate or inanimate objects, or maybe to something abstract, depends entirely on the hearer's inferential processing of the utterance in context. Similarly, the adverbial indexical *then* constrains the truth of the proposition expressed in the same way that a temporal or a conditional adjunct of the non-pronominal sort does. The hearer's choice between a temporal, a conditional, or a causal interpretation of the discourse anaphor *then* is not, however, a matter of selecting one of three different polysemous meaning variants encoded by this indexical. Being an integral part of the task of anaphor resolution the hearer's choice between a temporal and a conditional adjunct and the possible pragmatic strengthening from conditional to causal is wholly due to pragmatic inference. The syntactic placement of *then* can provide the hearer with decisive procedural information directly affecting his choice between a conditional and a temporal interpretation, as shown in the dialogues of (7) and (8) where the clause-initial *then* in the former is likely to be pragmatically enriched as 'If I do not have to be present at the meeting before seven thirty', while the clause-final *then* in the latter is likely to be pragmatically enriched as 'at seven thirty'.

- (7) A: The meeting starts at 7 o'clock but you need not be there before 7.30.
 B: Then I'll try to be there.
- (8) A: The meeting starts at 7 o'clock but you need not be there before 7.30.
 B: I'll try to be there then.

The extra-clausal and therefore unstressed *then* in (9) B works like (7) B rather than (8) B.

- (9) A: The meeting starts at 7 o'clock but you need not be there before 7.30.
 B: I'll try to be there, then.

The procedural information to be gained from observation of the formal differences between (7) B, (8) B, and (9) B should, as noted above, not be confused with lexical properties of *then*. An English adjunct serving as a contextual premise (e.g. the protasis of a material conditional) tends to be placed in front, in the topic position, while an adjunct that is part of an asserted discourse-new proposition (e.g. a temporal modifier) tends to get the clause-final focus position. These are general information-structural differences, in English as in many other languages. However, the initial position does not force a conditional interpretation, as seen in (10)–(11) where *then* is normally understood temporally regardless of the syntactic difference between the two B responses.

- (10) A: I didn't see you last Friday.
 B: Then I was indisposed.
- (11) A: I didn't see you last Friday.
 B: I was indisposed then.

For pragmatic reasons we are inclined to reject the material implication interpretation of the complex English sentence *If you didn't see me last Friday, I was indisposed*. Rather, to the extent that this conditional is judged to be immediately interpretable, its meaning is that I was indisposed and that's why you didn't see me. By the same token we are also inclined to judge *#If you didn't see me last Friday, then I was indisposed* to be a strange message for pragmatic reasons, because *then* forces the material implication interpretation (cf. Dancygier and Sweetser, 1997; Fretheim, 1998b, 2000a).

In this paper I am going to offer a monosemy-based RT-inspired analysis of four lexical entries, two of them English and two Norwegian, all of which may initially look like fairly convincing candidates for a lexical analysis in terms of polysemy. The items I am going to examine are all adverbial phrases that have become lexicalized, and except for the last one their lexical meaning is essentially procedural rather than conceptual. Section 2 is devoted to the

non-truth-conditional concessive adverbial *after all* in English. In Section 3 I turn to the Norwegian concessive adverbial *likevel* (literally: equally.well), which sometimes translates as 'after all' and sometimes as 'even so' or 'nevertheless'. The scalar English particle *at least* is the topic of Section 4. There exists an analysis of *at least* (Kay, 1997) which cuts this marker in three lexical pieces, though the author equivocates and leaves us in doubt as to whether he opts for an analysis in terms of three distinct words or a single polysemous word. Kay's paper on *at least* will be critically reviewed. Finally, in Section 5 I examine the Norwegian lexicalized temporal adverbial *med en gang* (alternatively *med det samme*), whose best approximate gloss is presumably 'at once' but which turns out to have two conceptually distinct uses that prove it necessary to vary its translation into English in accordance with the context of utterance. In all four cases I am going to argue that a single parsimonious lexical definition designed to cover all uses, in combination with massive reliance on contextual enrichment in actual conversational dialogue, is superior to an account in terms of lexical polysemy and disambiguation in context.

2. **ENGLISH AFTER ALL**

There are two different uses of the English adverbial marker *after all*, only one of which has attracted much attention in current pragmatic research. Diane Blakemore, in her seminal work (1987) on what was later to be referred to as the difference between conceptual and procedural meaning (Wilson and Sperber, 1993), took a fresh look at some of Grice's (1975) examples of so-called conventional implicature associated with discourse markers like *but* and *therefore* and redefined their meaning as a lexically encoded instruction to the hearer to carry out certain kinds of pragmatic inference. She gave a similar account of the meaning of *after all*. In so doing she was particularly concerned with the function of *after all* in such sentence structures as (12) and (13) where this marker is placed in a pre-clausal and a post-clausal position, respectively, or (14) where the marker is inserted parenthetically between the finite copula and its predicate complement.

(12) After all, he is her brother.

(13) He is her brother, after all.

(14) He is, after all, her brother.

In (15), however, *after all* is the clause-final item.

(15) He is her brother after ALL.

The adverbial marker in (15) occupies the focal syntactic position and carries focal, or nuclear accent, contrasting with the non-focality of its parenthetical positions in (12)–(14). This is what Traugott (1997) refers to as the concessive ‘nevertheless’³ meaning of *after all*, as opposed to the epistemic ‘as we (all) know’ meaning.

The structural difference between (12)–(14) on the one hand and (15) on the other has important consequences for the information structure of the utterance, or rather for the information-structural relations between the proposition expressed by the utterance and some contextually determinable proposition or set of propositions evoked by the procedural meaning of the concessive adverbial *after all*. What happens in (12)–(14) is that *after all* instructs the addressee that the proposition *P* expressed by those utterances is to be processed as a shared premise sufficient to conclude that a proposition *Q* explicated immediately prior to this utterance cannot but be true. The expression *after all* may be said to literally allude to the fact that, even if there might be other contextual evidence that would appear to speak against *Q*, the truth of *P* outweighs any such evidence. I would like to make the claim, in fact, that an element of compositional conceptual meaning has survived in this lexicalized prepositional phrase. What an utterance of (12)–(14) conveys is in my opinion the following, ‘**After all** facts that might seem to contradict *Q* have been considered (read: subtracted), there is still *P*, as we both know, and the truth of *P* alone warrants the conclusion that *Q* holds’.⁴ Due to the syntactic handling of *after all* in (12)–(14) the assumption that the subject referent is the brother of a contextually determinate woman is understood by the addressee to have been presented as mutually known information (cf. Blass, 1990: 129). The parenthetical position of *after all* offers the procedural information that (i) the proposition *P* is part of the interactants’ common ground, and (ii) the truth of *P* provides sufficient grounds for concluding that *Q* is true. Neither (i) nor (ii) is a meaning component that belongs to the lexically encoded meaning of *after all*.

When *after all* is endowed with the surface-structural properties of a focus constituent – syntactically as well as prosodically – then its function is to instruct the addressee to construe the proposition expressed not as a crucial premise in an inferential chain but rather as the speaker’s conclusion based on factual evidence that verifies the proposition expressed and contradicts any evidence previously held by the speaker or hearer to invalidate (or at least possibly invalidate) the proposition. This is the meaning of *after all* that is derivable from its

³ In Section 3 it will be demonstrated why ‘nevertheless’ is not a felicitous gloss for what Traugott calls the concessive meaning of *after all*.

⁴ A functionally related concessive adverbial phrase in English is *in spite of everything*, where the universal quantifier *everything* ranges over a more or less clearly delimited set of assumptions which would seem to falsify the proposition expressed, much like *all* in *after all*, except that with *after all*, as Bruce Fraser (personal communication) has reminded me, the set of contextually salient assumptions to which the proposition of the sentence modified by *after all* is to be related typically has a single member. Furthermore, *in spite of everything* can modify a proposition asserted to be true, while *after all* in (12)–(14) evokes a contextual assumption that the speaker is presenting as being shared by speaker and hearer.

clause-final position and prosodic handling in (15). An utterance of (15) indicates that it is the affirmative polarity of the proposition expressed which is its new information. By using *after all* the speaker is alluding to the existence of contextual assumptions which might suggest that the proposition expressed by the utterance of (15) were false. Someone, possibly the speaker herself, may even have previously asserted that it is false. But now some newly acquired knowledge has evidently made it quite safe to assert, when all pro's and con's have been assessed, that the man referred to is indeed the brother of the woman referred to.

To sum up what we have found so far: the parenthetical position of *after all* in (12)–(14) tells us to construe the proposition expressed as a **premise** in a process of deductive reasoning, while the position of *after all* in (15) tells us to conceive of the same proposition as the **conclusion** in a deduction. Does this mean that *after all* has two different encoded meanings depending on its syntactic location in the sentence used? Not at all. If the difference in meaning depends on what information we may derive from the syntactic position of the item, then we do not also want to duplicate it by including it in the lexical definition of the same item. The univocal lexical meaning of *after all* is the procedural meaning that the proposition expressed is to be construed either as a premise or as a conclusion in a deduction; moreover this marker activates a context in which some evidence that appears to falsify the conclusion is overridden by some stronger evidence that supports it. What is pragmatically inferred information concerns the question whether the proposition explicated by the utterance modified by *after all* functions as premise or as conclusion, and the syntactic position of *after all* constrains the addressee's search for an answer to that question. When the conclusion precedes the premise, the speaker will phrase her material implication $P \rightarrow Q$ in accordance with the syntactic formula in (16); when the premise precedes the conclusion, (17) is the appropriate linguistic form.

(16) Q . After all, P / P , after all.

(17) P (not necessarily ostensively communicated). Q after ALL.

Now let's test in practice what impact the difference between a parenthetical and a clause-final occurrence of *after all* might have on our processing of a sequence of utterances, in particular on our understanding of the communicated logical relations between the propositions. Consider (18)–(21).

(18) Derek knows exactly where Polly's birthmarks are. After all, he is her brother.

(19) Derek knows exactly where Polly's birthmarks are. He is her brother, after all.

(20) Derek knows exactly where Polly's birthmarks are. He is after all her brother.

- (21) Derek knows exactly where Polly's birthmarks are. He is her brother after all.

There is a striking difference in meaning between (18)–(20) on the one hand and (21) on the other (if we assume that the focal accent falls on the clause-final items *brother* in (18)–(20) and (*after*) *all* in (21)). In (18)–(20) the truth of the proposition 'Derek is Polly's brother' is presented as sufficient evidence for drawing the conclusion that Derek is someone who knows where on Polly's body her birthmarks are located. In (21) Derek's knowledge of Polly's birthmarks is presented as sufficient evidence for drawing the conclusion that he is indeed her brother, in spite of certain previously activated pieces of evidence to the contrary. The statement that Derek is Polly's brother is presented as a reminder (old information) in (18)–(20) but as an assertion (new information) in (21). We see that the premise interpretation does not require a parenthetical *after all*; its non-focal position, in (20), is sufficient.

As the alternatives given above exhaust the list of possible syntactic positions for *after all*, we may conclude that the significant difference is between the procedural information conveyed by its focus position in (21) and the procedural information that is derivable from its non-focus positions, whether extra- or intra-clausal. However, certain linguistic devices which unequivocally mark the proposition expressed as representing the speaker's conclusion are seen to neutralize the communicative effect of the difference between a clause-final focally accented *after all* and a clause-medial *after all*. The linguistic difference that was seen to account for why we interpret (20) differently than (21) is seen to have lost its ability to offer any useful procedural information in (22a) compared to (22b), since the conclusion is now prefaced by the indexical *then*.

- (22) Derek knows exactly where Polly's birthmarks are.
 a. Then he is after all her brother.
 b. Then he is her brother after all.

For exactly the same reason the consequence marker *so* in (23) greatly reduces the communicative importance of the prosodic difference between (23a) and (23b).

- (23) Derek knows exactly where Polly's birthmarks are.
 a. So he is after all her brother.
 b. So he is her brother after all.

Regardless of the differences in word order, (22) and (23) implicate that the conclusion that Derek is Polly's brother contradicts someone's thought, typically the speaker's own thought before she received the information about Derek that was expressed in the first utterance.

In my view the way we interpret (18)–(21) on the one hand and (22)–(23) on the other testifies to the correctness of an analysis which attributes the difference between the premise

reading and the conclusion reading to a difference in the contextual assumptions accessed and brought to bear in the process of utterance interpretation. The two uses of *after all* display a pattern of complementary distribution, which is not what one would expect to find if this marker is lexically polysemous. When it accompanies a conclusion, it is both syntactically and prosodically focal; when it accompanies a premise, it is not sentence-final and does not receive nuclear accent. The observed differences in syntactic position and prosodic handling can help the hearer determine whether the proposition expressed is to be processed as a premise or as a conclusion, but *then* in (22) and *so* in (23) are only compatible with a conclusion interpretation.

There is a conspicuous iconic relation between the non-focal *after all* and the premise interpretation and between the focal *after all* and the conclusion interpretation. When *after all* is itself handled syntactically and prosodically the way one would handle contextually given conceptual material, the procedural instruction to the addressee is to process the proposition expressed as a premise (*P*) to be related to a previously expressed conclusion (*Q*); when *after all* is placed in final position and carries the focal accent in the utterance, the addressee is instructed to process the proposition expressed as non-recoverable information (*Q*) derived on the basis of some newly acquired information that contradicts $\neg Q$.

What, then, is the encoded meaning of the lexical entry *after all* on my monosemous account? *After all* instructs the hearer to construe a premise (*P*) – conclusion (*Q*) relation between the proposition expressed by the utterance containing this marker and a different, contextually recoverable proposition. That's all. The English lexicon does not include information about which one of the two propositions, the ostensibly communicated one or the inferred one, is supposed to be the premise and which one is supposed to be the conclusion, but the hearer will be able to tell whether *after all* is attached to *P* or to *Q* by taking its syntactic position and prosodic handling into account. Only an underspecification approach to the lexically encoded meaning of *after all* can adequately account for how we access the one or the other of the two context-dependent meaning variants.

Traugott (1997) refers to the *after all* appearing in (15) and (21) as a 'concessive sentential adverb' and to the *after all* in (12)–(14) and (18)–(20) as an 'epistemic connective'. There is something intuitively correct about her reserving the label 'concessive' for occurrences of *after all* in the focal position. Our feeling of a communicated pragmatic incompatibility, i.e. a concessive relation, between two contrasting assumptions is much more salient when *after all* marks a conclusion than when it marks a premise. A focal *after all* causes the addressee to activate the contradictory counterpart of the explicated proposition *Q*. The speaker has come to possess information which refutes certain mutually manifest assumptions that are inconsistent with the truth of *Q*, assumptions which someone – not necessarily the speaker or the hearer – must have explicitly or implicitly endorsed. This point will be elaborated in the next section.

3. NORWEGIAN *LIKEVEL*

The Norwegian concessive adverb *likevel* (literally: equally.well), or its synonym *allikevel* (literally: all.equally.well), is multifunctional just like English *after all* and shares one pragmatic function with *after all*. The English–Norwegian Parallel Corpus (ENPC) (no year) shows a very clear correlation between *(al)likevel* in the final position in a main clause and *after all* and *anyway* in the same position, and an equally clear correlation between an initial or medial *likevel* and an initial or medial *still*, *nevertheless*, and *nonetheless* – and above all *even so* and concessive *yet*, which are always initial, the former frequently cooccurring with *but* and the latter typically introducing the second conjunct in an *and* conjunction.

Of a total of 355 tokens of *likevel* or *allikevel* in the ENPC (in Norwegian original texts as well as translations), 156 were sentence-initial, 144 were sentence-medial, and 55 were sentence-final. Initial and medial occurrences are local discourse coherence markers and are found equally in fiction and non-fiction. Final occurrences are typical of informal discourse (primarily colloquial speech, including dialogue in fiction) and are fairly rare in non-fiction, which accounts for the relatively low number of tokens of sentence-final *(al)likevel* in the corpus. There were 69 *likevel* – *nevertheless* (including a few *nonetheless*) correspondences, the largest distributional category within that set being initial *likevel* – initial *nevertheless* [33], followed by medial *likevel* – medial *nevertheless* [15] and medial *likevel* – initial *nevertheless* [15]. The most numerous correspondence of all was initial *likevel* – initial *yet* [43]. Initial/medial *still* corresponded to initial/medial *likevel*, the most notable correspondences being medial *likevel* – medial *still* [19] and initial *likevel* – initial *still* [15]. A sentence-final *(al)likevel* very rarely matches a non-final English marker. For the final position the correspondences with *after all* and *anyway* are the most frequent ones. In my corpus there were 20 final *likevel* – final *after all* correspondences and an equal number of final *likevel* – final *anyway* correspondences. *All the same* was the distributionally most versatile English concessive adverbial in the corpus, matching not only initial and a modest number of medial occurrences of *likevel* but even some final ones. The medial position of *likevel* appears to be functionally less distinctive than either the initial or final positions. It was frequently matched not by an English marker of concession but by zero, or at most by the adversative connective *but*. Not only was a medial *likevel* often left out in English translations but it was even added in quite a few translations into Norwegian where the English original text contained no corresponding item.

The observed tendency of authors as well as translators to let the discourse function of *likevel* be reflected in its syntactic position in the sentence is for me a clear indication that *likevel* is not an ambiguous word but a monosemous word whose actual pragmatic function as an information-structuring device is underdetermined by its lexical properties. I propose that the Norwegian lexical entry *likevel* encodes an instruction to the addressee to identify a mutually manifest thought (in practice, the most accessible thought) which is pragmatically

incompatible with *Q* (the proposition expressed) but not logically inconsistent with *Q*, and to represent that thought mentally as the proposition *P*. The indicated concessive relation between *P* and *Q* allows the addressee to work out a contrary-to-expectation implicature, an assumption attributed to the speaker herself, to the hearer, or to some third person.

When *likevel* is in the initial position, the canonical topic position, it causes the addressee to activate what resembles a regular antecedent-anaphor relation. Initial *likevel* serves the function of an adverbial discourse anaphor which has to be inferentially enriched in the same way that a higher-order entity anaphor like English *it*, *that*, or adverbial *then* has to be enriched by the transfer of conceptual material from an 'antecedent' structure in the immediately preceding discourse. That position provides the addressee with the procedural information that a local discourse link is to be established between *likevel* and what was said or written immediately before. In oral communication the proposition which is supposed to be in a concessive relation to the proposition expressed by the utterance modified by an initial *likevel* is to be sought in the addressee's working memory rather than his long-term memory. The procedural information which is due to the linear order of elements is that the addressee should narrow down the search for *P* to a specific range of propositions activated in working memory. Occasionally the proposition here referred to as *P* will not be a single proposition at all but rather a set of propositions expressed in the immediately preceding paragraph, or the like. No matter how cognitively complex an entity *P* is, the important thing is that an initial *likevel* instructs the addressee to identify *P* by restricting his search to the set of mutually manifest propositions activated in speaker and hearer's working memory.

Conversely, when *likevel* appears in the sentence-final position and carries focal accent, the word instructs the addressee to draw inferences of a kind similar to what an English audience processing an utterance with a sentence-final focally accented *after all* would do. It is possible to use focal *after all* in an utterance produced out-of-the-blue. In such situations it invariably cues activation of that proposition which is the contradictory counterpart of the proposition expressed; no previous discourse providing an 'antecedent' proposition is required. An utterance of (24) might be the opening of a conversation. The felicitousness of (25), on the other hand, depends on the existence of a previous discourse segment for the anchoring of the sentence-initial concessive anaphor *likevel*.

- (24) Tore og Trine skal gifte seg LIKEVEL.
 Tore and Trine shall marry REFL⁵ CONC
 'Tore and Trine are getting married after ALL.'

⁵ The abbreviations used in the glosses throughout this paper are the following: 1 – first person, CONC – concessive adverb, DEF – definite, FUT – future, INF – infinitive marker, PL – plural, POSS – possessive, REFL – reflexive, SG – singular.

- (25) Likevel skal Tore og Trine GIFTE seg.
 CONC shall Tore and Trine marry REFL
 'Even so Tore and Trine are getting MARRIED.'

Due to its position in (24), *likevel* indicates that the addressee should not limit his search for *P* to the immediately preceding discourse, which, as I said, may not even exist. By placing *likevel* at the end of the sentence the speaker instructs the hearer to first test the following strategy of interpretation: activate the contradictory counterpart of the proposition *Q* and embed it under a higher-level description *P* (of the type "*X* used to believe that $\neg Q$ "), so that there is a concessive relation between *P* and *Q* (i.e. granted that *P* is true, one would not normally expect *Q* to be true). Thus an utterance of (24) is meant to activate the thought that someone – for example the speaker, or the interlocutor, or the couple Tore and Trine – was once entertaining the thought that the couple had no (definite) plans to get married. This assumption is refuted by some new information that the speaker of (24) has received, which confirms that Tore and Trine are indeed getting married. There is a pragmatic incompatibility between the speaker's communicated belief at the time of utterance and the belief that the speaker is alluding to by means of her concessive adverb. Pragmatically the focal *likevel* and the focal *after all* examined in Section 2 come out as equivalent items.

The following example from the Norwegian daily newspaper *Adresseavisen*, February 16, 2001, shows that even a sentence-medial *likevel* can be in order in the opening line of a text. After the heading *Ikke OK med partiledersex* ('Party leader sex not OK') the article starts *in medias res* with the following statement:

- (26) Organisatorisk nestleder i Sør-Trøndelag FpU, C.B. (18), synes likevel
 organizational deputy.leader in S.-T. FpU, C.B. (18) thinks CONC
 det er betenkelig at partitoppen T.S. hadde sex med en av de yngste
 it is critical that party.top.SG.DEF had sex with one of the youngest
 delegatene på ungdomslandsmøtet.
 delegate.PL.DEF on youth.land.meeting.SG.DEF
 'Organizational deputy leader of the South-Trøndelag Youth League of the Progress
 Party has misgivings after all about the fact that the party boss T.S. had sex with one of
 the youngest delegates to the Youth League's National Meeting.'

An occurrence of *likevel* in the medial (post-finite) position right after the finite verb, as in (26), could in principle be glossed either as 'nevertheless' or as 'after all' but since the above quote is the opening line of the article, 'nevertheless' is inapplicable because it demands a local link to a discourse antecedent. The function of *likevel* in (26) is to direct the reader to a higher-level representation (a proposition embedded under a cognitive predicate) which is pragmatically incompatible with the deputy leader C.B.'s attitude quoted in (26) by the journalist who

was interviewing her. As there is no previous discourse, the most accessible thought is that the reported attitude contrasts with C.B.'s former attitude quoted in the media a few days earlier, namely that she had no misgivings about what had happened at the FpU meeting. Even for a Norwegian who had missed what C.B. had told the press earlier on, the presence of *likevel* here automatically evokes the thought that C.B. must have changed her mind. The only appropriate gloss in (26) is *after all*, specifically the focal rather than the parenthetical *after all* examined in Section 2.

One rather interesting attested example is (27) below, where *likevel* in the second sentence is again seen to appear in the post-finite position. This is the beginning of a summary of the items covered in a news report from the Norwegian Radio P2, June 29, 2000. The different topics that were given a more or less thorough treatment in the actual news report are being mentioned quite briefly again in a summary at the end of the program. The sign '–' indicates the change of discourse topic from the first to the second sentence and a kind of paragraph-initial intonational marking at the beginning of the second sentence; it is not meant to represent pausing on the part of the news-reader. A sentence-final *after all* is required in the English translation of (27), as its post-finite position in the alternative following the slash seems to force us to link *after all* locally to the preceding sentence where the reference is to a completely unrelated discourse topic.

- (27) O.U. er sagt opp fra sin stilling som konsernsjef i NSB. –
 O.U. is said up from REFL.POSS position as concern.chief in NSB
 Bensinprisene går likevel ikke opp fra 1. juli.
 gas.price.PL.DEF go CONC not up from the.first July
 'O.U. has been given notice to quit his position as managing director of the Norwegian National Railway Company. – The price of gasoline is not being raised on July 1 after all.' / # 'The price of gasoline is after all not being raised on July 1.'

A sentence-initial *likevel*, as in the manipulated alternative text of (27'), forces the hearer to try to somehow connect the two sentences as a coherent text, contrary to the speaker's intention.

- (27') O.U. er sagt opp fra sin stilling som konsernsjef i NSB. –
 O.U. is said up from REFL.POSS position as concern.chief in NSB
 #Likevel går ikke bensinprisene opp fra 1. juli.
 CONC go not gas.price.PL.DEF up from the.first July
 'O.U. has been given notice to quit his position as managing director of the Norwegian National Railway Company. – #Nevertheless / even so the price of gasoline is not being raised on July 1.'

The effect of the procedural information derived from the sentence-initial position of *likevel* in (27') cannot even be neutralized by our knowledge of the world. (27') could only mean that the price of gasoline is not being raised even though O.U. was forced to resign, a communicated concessive relation between two events that are unrelated, apart for the accidental fact that there was a reference to both in the same news bulletin.

The English phrasal adverb *even so* which appears predominantly in the initial position is seen to consist of the concessive marker *even* and the transparent anaphor *so*. The very form of the lexical entry *even so* indicates that the addressee is supposed to establish a local discourse link between two propositions which are typically viewed as pragmatically incompatible (but which are nevertheless both true in the current situation). Norwegian *likevel* may be replaced by the phrasal expression *til tross for det* (literally: in spite of that) in some contexts. *Det* is a higher-order entity pronoun corresponding to English demonstrative *that*. It requires a nearby antecedent representing an event or situation activated in speaker and hearer's working memory. A long-distance link to information made manifest in a previous discourse, possibly on a different date, is ruled out by the presence of the pronoun *det*. *Likevel* is not a pronoun, nevertheless the word displays certain anaphor-like properties. These properties are more salient when *likevel* is in the initial position, because then, like a proper pronoun, it demands an antecedent in the immediately preceding discourse.

It should be noted, though, that the global intonation imposed on the utterance can override the seemingly clear-cut distinction between a sentence-initial more anaphor-like concessive marker with a local link to a discourse antecedent and a sentence-final, less anaphor-like concessive marker with a 'long-distance' link to some maximally accessible information stored in long-term memory. In order for a sentence-final *likevel* to correspond to sentence-final *after all* the utterance must be produced with a broad-focus intonation pattern (Ladd, 1980) involving a single focal phrase-accent aligned with the final syllable of *likevel*, as indicated in (24), which is repeated here.

(24) Tore og Trine skal gifte seg LIKEVEL.

Tore and Trine shall marry REFL CONC

'Tore and Trine are getting married after ALL.'

An intonational phrasing with two focal phrase-accents in the Intonation Unit, as shown in (24'), contextualizes differently. (Notice the deliberate change from use of names in (24) to use of pronominal *de* 'they' in (24'). The intonational phrasing indicated in (24') presupposes a discourse context in which the subject referent is maximally salient, which makes a plural personal pronoun rather more natural than a coordination of proper nouns.)

- (24') De skal GIFTE seg LIKEVEL.
 they shall marry REFL CONC
 'They are getting married nevertheless / all the same.'
 # 'They are getting married after all.'

The presence of two rather than a single focal accent in the fundamental frequency contour offers the addressee the procedural information that just one of the focally accented phrases expresses new information, the other one presents information which the speaker considers to be activated by speaker and hearer alike in the course of their conversation (see e.g. Fretheim, 1987). What this implies for the interpretation of (24') is that the information about the marriage is inferred to be the new information associated with the focal accent on the reflexive verb *gifte seg* 'marry', while the discourse-activated information associated with the focal accent on the sentence-final item *likevel* points backwards to a concessive antecedent proposition in the immediately preceding discourse. I would like to think that our understanding of how the given and the new information is distributed in a Norwegian utterance produced with two focal accents in the Intonation Unit depends entirely on Sperber and Wilson's (1995) Communicative Principle of Relevance, but the implications of that position will not be discussed in the present paper.

Interrogatives and imperatives have a syntactic form that prevents us from preposing an adverb like *likevel*. The initial position has been shown to have strong context-creating implications in declaratives. When that position is inaccessible, as it is in non-declaratives, one might expect the sentence-medial and sentence-final positions of *likevel* to constrain the addressee's search for an antecedent *P* less efficiently than in declaratives. This expectation is borne out. B's answers B₁ and B₂ are linguistically the same in (28) and (29) but in the context of A's stimulus the appropriate gloss is bound to be 'nevertheless' in (28) and 'after all' in (29).

- (28) A: Det er snart midnatt.
 it is soon midnight
 'It's close to midnight.'

B₁: Skal du ha en kopp kaffe likevel?
 shall you have a cup coffee CONC
 'Are you going to have a cup of coffee nevertheless?'

B₂: Skal du likevel ha en kopp kaffe?
 shall you CONC have a cup coffee
 'Are you nevertheless going to have a cup of coffee?'

- (29) A: Har du fremdeles noe kaffe?
 have you still some coffee
 'Do you still have some coffee left?'

 B₁: Skal du ha en kopp kaffe likevel?
 shall you have a cup coffee CONC
 'Are you going to have a cup of coffee after all?'

 B₂: Skal du likevel ha en kopp kaffe?
 shall you CONC have a cup coffee
 'Are you going to have a cup of coffee after all?'

Now look at the three suggested candidate translations of B's imperative in (30).

- (30) A: Det er snart midnatt.
 it is soon midnight
 'It's close to midnight.'

 B: Gi meg en kopp kaffe likevel.
 give me a cup coffee CONC
 i. 'Give me a cup of coffee anyway.'
 ii. 'Give me a cup of coffee all the same.'
 iii. 'Give me a cup of coffee after all.'

Anyway is arguably the most natural gloss in (30) B. It instructs the addressee not to zoom in on one specific proposition which is meant to be in a concessive relationship to the propositional content of the imperative. Rather, the idea is that no matter what possible arguments against coffee-drinking are being considered (including, of course, A's ostensive reminder that it's very late), B would still like to have a cup of coffee. *Anyway* in (30) (Bi) may be regarded as the anaphoric adverbial counterpart of Haspelmath and König's (1998) universal concessive conditional clauses (the 'no matter what' type); see also König, 1986: 241–242. In (30) (Bii), the lexicalized phrase *all the same*, like *nevertheless*, reveals that (Bii) ostensibly points to A's specific proposition as one whose truth would generally be considered a sufficient reason for B to refrain from drinking coffee. Finally, *after all* in (30) (Biii) makes it sound as if B had already said he was not having coffee, and so his utterance in (30) implies a change of mind. Alternatively, *after all* might even in principle cue the interpretation that, **because** it is late at night, B wouldn't mind a cup of coffee. All of these nuances are within the use range of the Norwegian concessive adverb *likevel* in the imperative of (30) B. No stipulation of polysemy is

needed to accommodate the fact that the nature of the concessive relation varies with the context of interpretation selected by the interlocutor.

Intonation can constrain the search for the concessive propositional partner *P* even in imperatives. Consider the difference between (31) and (32) where the focal accent on the imperative *steng* 'close' in (32) implies that the other focally accented item, on *likevel*, is to be associated with something discourse-activated.

- (31) Steng butikken LIKEVEL.
 close shop.SG.DEF CONC
 'Close the shop after all.'
- (32) STENG butikken LIKEVEL.
 close shop.SG.DEF CONC
 'Close the shop nevertheless / all the same.'

In both cases the speaker and the hearer must have deliberated upon the question whether the shop should be open or closed, but only the intonation suggested in (31) would work in a situation where the speaker returns to the shop and announces, with no forewarning, that it must be closed (in spite of earlier information to the contrary). The extra focal accent on the imperative in (32) is acceptable just in case the utterance is a verbal reaction to some question brought up by the interlocutor. An occurrence of *likevel* in the medial position between the imperative and the direct object has similar consequences: (31') equals (31), and (32') equals (32).

- (31') Steng LIKEVEL butikken.
 close CONC shop.SG.DEF
 'Close the shop after all.'
- (32') STENG LIKEVEL butikken.
 close CONC shop.SG.DEF
 'Close the shop nevertheless / all the same.'

In (32) and (32') alike, the presence of two focal accents, on the imperative and on *likevel*, offers the hearer the procedural information that *likevel* should be associated with some discourse-activated concepts. The intonation pattern is not one that can be used out-of-the-blue (cf. (24') compared to (24)).

My final illustration is taken from the Norwegian newspaper *Dagbladet*, December 17, 2000, from an article on the Norwegian model E.S. rumored to be the girl friend of Crown Prince Felipe of Spain. It shows that *likevel* will sometimes have to be inferentially enriched

through some higher-level representation which is only implicitly communicated in the preceding discourse.

- (33) Å kombinere skolegang med en modellkarriere og et kjærlighetsforhold til
 To combine school.attendance with a model.career and a love.relation to
 Spanias prins er ikke like enkelt. Medelever ved Westerdals reklameskole
 Spain's prince is not equally simple co.students by W.'s advertising.school
 er likevel imponert over den innsatsen E. legger ned ved skolen.
 are CONC impressed over that energy.SG.DEF E. lays down by school.SG.DEF
 'Combining school attendance with a career as a model and a love relationship with the
 Prince of Spain is not that simple. Fellow students at Westerdal's school of advertise-
 ment are nevertheless impressed by the energy that E. puts into her education.'

What is the relevance of the marker *likevel* (glossed as 'nevertheless') in (33)? The meaning cannot be that the students in her class are impressed even if it is not easy to combine school, modeling, and a royal love affair. On the contrary, they are impressed **because** it is not easy to do all those things successfully, not in spite of it. The point is that the concessive marker is supposed to be related to an implicit assumption attributed to the readers of the preceding sentence, namely that the young lady can't possibly cope with school in addition to those things that have now made her a desirable target of international paparazzis. So the inferred proposition *P* represents the newspaper reader's normal expectation (as interpreted by the writer of (33)) that E.S. is bound to fail as a student, an assumption which is refuted by the proposition *Q* expressed in the sentence modified by *likevel*.

A comparison of the use potentials of the Norwegian lexical entry *likevel* and the English lexical entry *after all* which was the topic of Section 2 shows an interesting overlap but this does not imply that *likevel* and *after all* share a lexical meaning component. Rather, their functional similarity depends on the kind of context-driven thought processes that the use of these markers may trigger in a given situation. *After all* encourages the addressee to use the proposition expressed either as a premise (*P*) or as a conclusion (*Q*) in a deduction, where the truth of *P* overrides any manifest evidence against *Q*. The syntactic placement of *after all* helps the addressee decide whether the proposition expressed by the utterance is meant to have the role of *P* or the role of *Q* in the deduction. This account implies that the concessive contrast in terms of belief or desirability that we associate with *after all* is not to be defined as a relation between the propositions *P* and *Q* but as a relation between the present claim that *Q* is true, question whether it is true, or recommendation that it be made true on the one hand, and someone's belief that $\neg Q$ is true on the other. In contrast to *after all*, the Norwegian adverb *likevel* encourages the addressee to identify a proposition *P* which is in a concessive relation to the overtly expressed proposition *Q*. The concessive marker *likevel* represents *P*, whose

reference must be resolved by an inferential process which is very similar to more familiar cases of anaphor resolution where *P* is to be recovered through a search in the immediately preceding discourse; it is less anaphor-like when *Q* is intended to be in a concessive relation to its contradictory $\neg Q$ embedded under some expression of positive attitude to $\neg Q$.

Akan, a Kwa language of the Niger-Congo phylum and the major indigenous language in Ghana, has a concessive marker, *mmom*, whose range of uses is quite similar to that of Norwegian *likevel*, and it also resembles *likevel* in that its initial position in an Akan sentence instructs the hearer to find an antecedent proposition in the immediately preceding discourse, while its sentence-final position allows for either a 'short-distance' or a 'long-distance' link between the expressed proposition *Q* and the inferred proposition *P* (Amfo, 2001). Amfo proposes a semantic underdetermination analysis of *mmom* which implies that the difference between the various meanings glossable as 'even so', 'nevertheless', 'all the same', or 'after all' relies very heavily on pragmatic inference. In addition *mmom* has one specific use which is not found with Norwegian *likevel*. It can be added to an Akan sentence to indicate that the utterance is to be taken as a polite refusal to participate in some event, as when speaker A in (34) asks speaker B to go shopping with her and B, a student, answers that she would rather go to school. In that context it is linguistically indeterminate whether B's answer (34), with *mmom* in the final position, is to be inferentially enriched as 'Even if it would be nice to go shopping with you, I'd rather go to school', or 'Even if you heard me saying earlier on that I'm not going to school today, I (have changed my mind and) am going to school after all'.

- (34) Mɛkɔ sukuu mmom.
 1SG.FUT.go school CONC
 'I will rather go to school.' or 'I will go to school after all.'

On the other hand, if the word order is as in (35), B would be understood to be willing to accompany A; the utterance is an expression of B's wish to do both things, with the added implicature that the shopping event will have to be rather short.

- (35) Mmom mɛkɔ suku.
 CONC 1SG.FUT.go school
 'Even so I will go to school.' i.e. 'Even if I go shopping with you, I will/am determined to go to school (afterwards).'

The possible gloss 'rather' in (34) shows that there is a special use convention associated with Akan *mmom*, a convention which Norwegian users of *likevel* cannot indulge in if they feel a need to perform a polite refusal. It would be totally arbitrary – and rather ethnocentric – to postulate a polysemous item *mmom* with as many meaning variants as there are English glosses that might be felt to capture the range of contextually inferred meanings of *mmom* in actual discourse.

4. ENGLISH AT LEAST

The scalar particle *at least* in English belongs to a small group of idiomatized and lexicalized prepositional phrases which also includes *at most*, *at best*, *at worst*. *At least* is the only one of these four markers whose scope represents the lower bound on a scale. The other three are upper-bounding by linguistic convention.

In a paper first published in 1992, Paul Kay (1997) postulates three different uses of *at least*, which he dubs Scalar, Evaluative, and Rhetorical, respectively (the use of caps is Kay's). Scalar *at least* occurs canonically with numerical scales and other quantitative scales, Evaluative *at least* is found in utterances expressing a low degree of favorable evaluation, and Rhetorical *at least* is used in epistemically weakening afterthought expressions like *Mary is at home, at least that's what Sue said*. Kay (1997: 121) concludes that, "The notional observations we can make relating the various usages of *at least* to each other belong to the ad hoc, non-productive family of polysemy relations.", and before his conclusion on the last page of his paper he made the observation that (ibid. 117–118), "There is no established principle of English from which, knowing the scalar use of *at least*, we could predict the evaluative use of this form. The two must be learned separately. Some speakers may notice the connection at the relevant level of (un)consciousness and others may not; the grammarian *per se* has no way to find this out." Kay does not even mention the possibility of postulating a sparse univocal lexical meaning as an alternative to an analysis based on polysemy, or even homonymy/homophony.

Kay's Scalar reading of *at least* is the only one of his three readings that he relates explicitly to the lower bound on a scale, often, but by no means necessarily, a numerical scale. The function of Scalar *at least*, he says, is to suspend the upper-bounding Gricean Quantity implicature cued by the type of scalar phrase that *at least* can modify. While an utterance of (36) is typically, within neo-Gricean linguistics (e.g. Levinson, 1987; Horn, 1989), said to implicate that the speaker's daughter will be at most worried, *at least* in (37) suspends the implicature and opens for an interpretation that would be compatible with even a stronger predicate on the same scale as *worry*, like *scare*, *alarm*, *make distraught*, etc. (Kay, 1997: 102).

(36) That is going to WORRY my daughter.

(37) That is going to at least WORRY my daughter.

While the implicit scale to be evoked by the collocation *at least worry* in (37) is one of increasingly less desirable situations, Kay's so-called Evaluative *at least* requires a scale of increasingly more desirable situations. This constraint would seem to speak in favor of his polysemy approach. The canonical syntactic position of Evaluative *at least* is said to be the sentence-initial position. Why do native speakers of English find it unnatural to associate a

sentence-initial *at least* with an implicit scale of increasingly less desirable states of affairs, while other languages, my native Norwegian for one, freely admits the use of a corresponding scalar expression (glossed as ‘at least’) for the purpose of communicating that the proposition expressed represents the lower bound on a scale going from bad to worse (i.e. the situation is AT LEAST THIS BAD)? Kay’s analysis of *at least* as polysemous might be said to account for the language-specific fact that English sentences like (38) and (39) are hard to associate with a context in which their use would be felicitous, because Evaluative *at least* is supposed to activate a scale based on degrees of desirability.

(38) #At least he’s later than usual today.

(39) #At least they were bullying her. (Some would say they were harrassing her.)

On the other hand there are some serious problems with Kay’s neat tripartite classification of the different (non-coinciding) meaning variants of *at least* which show that it cannot be sustained. In his opinion the choice between a Scalar and an Evaluative interpretation of an utterance of (40) implies context-dependent resolution of the linguistic ambiguity of *at least*.

(40) I got móst of the answers right, at least.

It is only the Scalar reading of (40) that is accessible in (41), he says, while the Evaluative reading is the only one in (42).

(41) I got móst of the answers right, at least, and maybe ál.

(42) I got móst of the answers right, at least, so I’m content.

An important point for Kay (1997: 114) is that the Scalar and the Evaluative readings are “not only distinct but incompatible”. I take this to imply that they cannot be the outcome of context-driven inferential enrichment of one univocal lexical meaning, which seems to leave him with one of two solutions: polysemy or homonymy. Kay’s claim that the Scalar and the Evaluative interpretations of *at least* are incompatible and therefore mutually exclusive are far from convincing. He seems to want his readers to believe that the suspension of the interpretation ‘no more than *most* of the answers’ in (41) is due to the presence of the parenthetical *at least*, but this suspension is certainly a consequence of the meaning of the afterthought conjunct *and maybe ál*, as demonstrated by the fact that the upper-bounding Gricean implicature otherwise associated with the quantifier *most* is also suspended in (43), which contains no *at least*.

(43) I got móst of the answers right, and maybe ál.

The contextual assumptions that the addressee brings to bear in his inferential processing of an utterance of (40) allows him to activate either a scale defined in terms of desirability or one defined in terms of quantity. *At least* as a lexical entry is compatible with either type of pragmatic inference. In my view it is lexically underdetermined (cf. Carston, 1996) with regard to the difference between a Scalar, an Evaluative, and a Rhetorical understanding. The added information in (42) normally allows us to focus on the desirability scale at the expense of the quantity scale but it is simply not true that the speaker of a sentence like (42) cannot have chosen to add *at least* in order to suggest to the addressee that even a stronger term than *most* might be defensible. It is also not correct that the added suspending expression *and maybe all* in (41) makes it impossible to interpret *at least* in that sentence as Evaluative in Kay's sense. On the contrary, one readily recognizable communicative difference between an utterance of (41) and an utterance of (43) is that the former conveys the speaker's relief, a propositional attitude made manifest by the presence of *at least* interacting with a set of contextual assumptions.

It is even harder to understand how Kay can maintain his claim that there is an incompatibility between assigning a Scalar interpretation to an utterance of (44) and assigning a Rhetorical interpretation to the same utterance (in the same context).

(44) He has, at least temporarily, fixed the leak.

My understanding of Kay's example (45) given below is that the speaker intends to say that the subject referent has fixed the leak, finds it opportune to add the parenthetical expression modified by *at least* to make manifest the assumption that you never know whether it is going to last, and finally expresses his hope that the added reservation is unwarranted. The afterthought does not cancel one's feeling that the qualification *at least temporarily* must have been intended as a so-called 'rhetorical retreat' in (45) no less than in (46).

(45) He has, at least temporarily, fixed the leak – and possibly permanently.

(46) He has, at least temporarily, fixed the leak.

So we can catch our breath before we have to start bailing again.

I would say that the speaker of (45) sounds more optimistic than the speaker of (46), but that impression is due to the way this speaker chose to end her turn, to the meaning of the linguistic material that makes (45) different from (46). We do not have to assume that the speaker must have selected the so-called Scalar meaning variant of *at least* in (45) and the Rhetorical meaning variant in (46). By postulating a lexical entry *at least* which is unspecified with regard to those aspects of meaning that caused Kay to posit his semantic ambiguity, we obtain a psychologically more plausible account of the way that the information at the end of (45) and

(46), respectively, constrains our thoughts concerning what kind of mentally represented scale the speaker intends us to activate. The scale can usually be defined in terms of downward entailment in indicative descriptions of the world; it is often more natural to define it in terms of degrees of desirability, or preference, or expectation when the proposition expressed represents a future state of affairs, or a hypothetical state of affairs as when *at least* is found inside a conditional clause.

In Norwegian and the other Scandinavian languages, as well as in German, there is a special function word that encodes what seems to be very close to Kay's Scalar reading of *at least*, while other lexemes – like Norwegian *iallfall* (literally: in.all.case) – must be used if you intend to express some other meaning variant.

- (47) Det blåser minst stiv kuling.
 it blows least stiff gale
 'It's blowing at least a moderate gale.' [scalar – Beaufort's wind scale]
- (48) Eriksen er minst major.
 Eriksen is least major
 'Eriksen is at least a major.' [scalar – military rank]
- (49) Eriksen er iallfall major.
 Eriksen is in.all.case major
 'At least Eriksen is a major.' [evaluative]

A given occurrence of (49) might convey that 'The situation could have been worse for Eriksen, at least he has the rank of major'. An utterance of the minimally different (48) immediately activates the addressee's mental representation of the next higher military rank above major (provided the addressee possesses that sort of encyclopaedic knowledge). What is encoded by *minst* in (48), as opposed to *iallfall* in (49), is that the implicit scalar values ranked above the expressed lower bound are determinate, and identifiable independently of the specific context of utterance.

It is interesting to observe that Kay's Scalar *at least* reading does not coincide with the meaning of the Norwegian function word *minst* illustrated in (47)–(48). One might have expected to find that Kay's three-ways ambiguity matches some lexical division lines observable in languages where there is no single word meaning the same as *at least*. What we find, however, is that Kay's example (50), which exemplifies the Scalar use of *at least*, translates into Norwegian not as (51) but as (52).

- (50) She's going to flunk at least you and me.

- (51) *Hun kommer til å stryke minst deg og meg.
 she comes to INF stroke least you and me
- (52) Hun kommer til å stryke iallfall deg og meg. [= English (50)]
 she comes to INF stroke in.all.case you and me

The noted lexical condition that the higher values on the scale evoked by Norwegian *minst* be determinate without access to specific ad hoc contextual assumptions is not as arbitrary as one might initially think. With the exception of a couple of idiomatized special cases, *minst* covers all and only those cases where English *at least* affects the truth conditions of the proposition expressed. If you state, as in (48), that someone is at least a major, your statement is true even if the person is a colonel, but if you say that someone is a major and drop *at least*, you will normally be understood to have committed yourself to the belief that the person is not, for example, a colonel. On the other hand, if you say of some people that they are going to be flunked, as in (50), it does not affect truth conditions a bit whether you have *at least* in your sentence or leave it out. I can imagine someone presenting a polysemy analysis of *at least* based on the fact that *at least* sometimes affects truth conditions and sometimes not. That kind of lexical subdivision seems to me to be at least as well motivated as Kay's analysis, which it would conflict with because, while Kay's truth-conditional cases are all subsumed under the Scalar *at least* reading, they constitute only a proper subset of his Scalar category and not even a subset he has given any attention to.

At least in (50) above makes it manifest to the addressee that the set of people who are going to be flunked is open-ended, that other more highly ranked propositions may also be true. But isn't the absence of an upper bound part of what *at least* implies in all its uses? What happens if we replace *flunk* by its antonym *pass*? Is (53) ambiguous because *at least* can be either Scalar or Evaluative there, while (50) is unambiguous because the verb *flunk* is not compatible with Kay's Evaluative reading?

- (53) She's going to at least let you and me pass.

If we say that the speaker's use of the verb (*let*) *pass* reveals that *at least* is Evaluative rather than Scalar in (53) – or maybe Scalar rather than Evaluative – how does the communicative potential of (54) differ from that of (53)?

- (54) At least she's going to let you and me pass.

One important pragmatic difference between (53) and (54) is the difference in the scope of *at least*. When *at least* appears in front before the subject of the sentence and there is also no contrastive accent on a non-final linguistic item, the speaker signals that anything to the right

of *at least* is in its scope. When *at least* appears in a later position in the sentence, however, anything to the left is outside its scope. The Scalar interpretation requires a scope that is narrow, but even in (54) where it is sentence-initial, an accent on *at least* makes the narrow scope *you and me* accessible, though not necessarily at the expense of the wide scope characterizing the Evaluative reading. Sentence-initial *at least* can have a narrow scope with regard to one inferred scale and a wide scope with regard to a different inferred scale. It is also fairly obvious, I think, that *at least* in (53) is Evaluative in Kay's sense in spite of its syntactic position, but due to an indicated scope difference between (53) and (54) I feel that different things are being evaluated. In (54) the female person referred to by the pronoun *she* is included in what the speaker is evaluating: 'I don't like her or find her in any way attractive but there is at least one positive thing that I can say about her: I know for sure that she'll let you and me pass.' The female subject referent is not being evaluated when someone utters (53). The pragmatic impact of the noted scope differences is not captured by Kay, because he has, rather arbitrarily in my opinion, based his analysis on certain observed meaning differences without recognizing the implications of the fact that it is the syntactic position of *at least* that provides the addressee with procedural information concerning the width of the scope of this marker, information which in turn affects the addressee's choice between a truth-conditional and a non-truth-conditional interpretation of the marker.

The way we enrich a given utterance with *at least* is very heavily dependent on the context which the cognitive environment that we share with a given interlocutor causes us to select (Fretheim, 1998c). Take a look at (55), an exchange between A and B.

- (55) A: I hope they'll be back by ten.
 B: At least by ten thirty.

The closer to the time of utterance, the less likely it is that the people referred to have already come back. 10 o'clock is higher on a decreasing likelihood scale than 10.30, which is B's lower bound. There is a reference to a numerical scale here which relates directly to a temporal scale working from more distant to less distant viewed from the time of utterance, but B may also succeed in activating a scale of increasingly desirable situations where return at 10.30 is to be understood as the lower bound on a desirability scale. How salient the latter scale is depends crucially on A and B's mutually manifest assumptions, including their assumptions about each other's personalities. If A is generally an apprehensive and maybe also a rather pessimistic person and B is generally a lot more relaxed and easy-going, there is a fair chance that B's propositional attitude is not the attitude expressed in A's main clause. B does not **hope** that the people will be back at 10.30, he just considers 10.30 to be a bit more realistic than 10. On the other hand, if A and B are both worried, the most accessible higher-level explicature (Wilson and Sperber, 1993) is that B hopes that they will be back by 10.30. In the latter context *at least*

can be given a wide or a narrow scope, the former with an emphasis on the scale of desirability (evaluation) as indicated in (56), the latter with an emphasis on a scale of likelihood as indicated in (57).

- (56) At least I hope that they will be back at ten thirty.
or: I hope that at least they will be back at ten thirty.
- (57) I hope that they will be back at least by ten thirty.
or: I think/believe that they will be back at least by ten thirty.

The temporal scale, the decreasing likelihood scale and the desirability scale interact in a similar way in (58) where there is even less to decode and more to infer.

- (58) A: I hope they'll be back by ten.
B: At least.

Is *at least* in (58) Scalar or Evaluative in Kay's sense? It could be both, in equal measure, as different scales can be inextricably intertwined.

Kay only examined declaratives in his paper. An Evaluative *at least* cannot occupy the initial position in an English interrogative, and there are interrogatives whose utterance on a given occasion may simultaneously activate a temporal scale (presumably Kay's Scalar *at least*) and a desirability scale (presumably Kay's Evaluative *at least*). (59) is one example.

- (59) Can't you at least wait until your mother has passed away?

An utterance of (59) in a given context could combine the evaluative aspect of the declarative in (60) and the scale of temporal distance activated by the speaker's placement of *at least* immediately before the temporal phrase in (61).

- (60) At least you should wait until your mother has passed away.
- (61) You should wait at least until your mother has passed away.

Activation of the desirability scale requires a syntactic wide-scope position for *at least*, as the values on the scale are propositions whose truth conditions are increasingly harder to satisfy, which have other contextual implications than well-defined scales involving numerical values. It is therefore to be expected that Kay's Evaluative *at least* appears at the beginning of a declarative. What is less obvious to me is why such scales seem to always work from a modest degree of desirability to something more desirable, and presumably never from something undesirable to something even less desirable. An interpretation of (62) below in terms of a

lower bound on a scale of desirability working from good to better is not available, and possibly due to the disjunctive connective *or*, which gives the last utterance a repair-like character, *at least* in (63) looks very much like Kay's Rhetorical variant. Since it is far from easy to see how (62) and (63) might differ in their degree of relevance in a given discourse, I guess that Kay himself might decide to classify not only (63) but also (62) as a case of rhetorical retreat.

- (62) I thought something would happen to me if I bought that car. At least I would feel guilty and miserable driving it.
- (63) I thought something would happen to me if I bought that car. Or at least I would feel guilty and miserable driving it.

In my opinion (62) and (63) both qualify as evaluations, although they obviously differ from Kay's examples of Evaluative *at least* in that the scale here works from bad to worse. The question is to what extent this kind of situation presupposes a previous reference to a worse state of affairs, a kind of discourse structure which is admittedly reminiscent of what Kay called rhetorical retreats. I do not have the answer but I do believe my discussion to have shown that two or more scales can interact and even blend in a single utterance.

To conclude this section, pragmatic inferences are responsible for the nature of the scale that a hearer will set up mentally in his interpretation of an utterance containing *at least* and the contextual implications that may follow from its occurrence. The lexical entry itself can be assigned a very simple univocal procedural meaning, as in (64):

- (64) Define what you consider to be the scope of *at least* as the lower bound on a scale.

And then the intended scope of *at least*, which in large part determines the conceptual nature of the intended scale, must be inferred on the basis of the syntactic position of the marker; its prosodic handling, which has only been considered in passing here, further constrains the way the hearer is supposed to process *at least* in order to optimize the relevance of the utterance.

5. NORWEGIAN *MED EN GANG* / *MED DET SAMME*

The Norwegian lexical item *med en gang* (literally: 'with one time'), alternatively *med det samme* (literally: 'with the same'), can roughly be glossed as 'at once', but in some cases the meaning is 'at first' rather than 'at once' in the sense of 'immediately' / 'right away' / 'in no time'. I am going to relate the meaning variant 'immediately' to what will be referred to as the dynamic interpretation of *med en gang* / *med det samme*, and the meaning variant 'at first' to what will henceforth be called the static interpretation (see also Fretheim, 2000b), and I am

going to argue that the hearer's choice of one of these meanings at the expense of the other depends on how the conceptual meaning encoded by these two synonymous lexical items is enriched in context (cf. Carston, 1996; Sperber and Wilson, 1998).

How can the dynamic interpretation and the static interpretation be reconciled? In other words, what is the univocal encoded lexical meaning of *med en gang* / *med det samme*? What unites the two interpretations is in my opinion a reference to a very early phase of some temporally delimited event. The dynamic type of pragmatic enrichment is the result of the hearer's focusing on how soon the event was completed. Fulfillment of the state of affairs described in the utterance was achieved in the course of a very short time (i.e. immediately), implying that the event did not extend beyond the initial period suggested by the conventional meaning of the lexicalized adverbial. The static interpretation on the other hand implies early achievement followed by a gradual or instantaneous loss of the achieved effect (i.e. at first, but not later on).

A Norwegian hearer's choice of the dynamic or the static type of pragmatic enrichment of the lexical meaning of *med en gang* and *med det samme* can depend crucially on the meaning of the lexical verb or adjective which these temporal adverbs modify. Some predicates provide information which tends to trigger activation of an upper-bounding scalar implicature (Horn, 1989; Fretheim, 2000b) implying that the predicates obviously have a meaning which is conducive to activation of the static interpretation of *med en gang* / *med det samme*. Therefore they characteristically do not denote activities but states, quite often psychological states. Other predicates have a meaning which is rather unlikely to cause the hearer to derive the said type of implicature. Compare (65) and (66).

- (65) a. Jeg skjønte poenget med en gang.⁶
 I understood point.SG.DEF with one time
 'I got/grasped/saw the point at once / immediately / #at first.'
- b. Monica dro av sted med en gang.
 Monica pulled off place with one time
 'Monica set off at once / immediately / #at first.'
- c. Jeg la meg med en gang da det TV-programmet var over.
 I laid 1SG.REFL with one time when that TV.program.SG.DEF was over
 'I went to bed at once / immediately / #at first when that TV program was over.'

⁶ My examples contain *med en gang*, not *med det samme*, but as far as I can see this choice is arbitrary, it has no practical or theoretical significance whatsoever.

- (66) a. Det kjentes nokså kaldt med en gang.
 it felt enough.so cold with one time
 ‘It felt quite cold at first / (#)immediately.’
- b. Jeg nølte med en gang.
 I hesitated with one time
 ‘I hesitated at first / #immediately.’
- c. Var det uforståelig med en gang?
 was it un-understandable with one time
 ‘Was it incomprehensible at first / #immediately?’

The predicate in (66c) contains a negative prefix, the verb in (66b) also has something to do with negation or the absence of a certain action on the part of the subject referent, and (66a) relates to a temperature that deviates from a certain norm. In fact, negatives may be a good source of data liable to evoke the propositional content that gives rise to the upper-bounding implicature: the beginning phase is characterized by a lack of fulfillment of the state of affairs described but then, either gradually or instantaneously, a change occurs.

Overt negatives also provide us with data suggesting that it is at times hard to keep the static and dynamic interpretations apart. Take a look at (67), the negated form of (65a), and its two alternative English translations given in (68).

- (67) Jeg skjønnte ikke poenget med en gang.
 I understood not point.SG.DEF with one time
- (68) i. ‘I didn’t get the point immediately.’
 ii. ‘I didn’t get the point at first.’

Is there a real logical difference between the two interpretations of (67) offered in (68)? Before we try to answer that question, one rather interesting prosodic difference between (68i) and (68ii) should be observed. The word *immediately* in the end position normally carries focal accent, but the focal accent tends to be shifted back from *at first* to the preceding phrase in the production of an English sentence whose final item is *at first*. My claim is that (68i) is a negation of the assumption that the speaker got the point very quickly, where the temporal adverb *immediately* is the focus of the assumption which is negated; *at first* in (68ii) on the other hand takes scope over negation and represents the topic of the negative predication.

My proposal that the dynamic interpretation of *med en gang* makes this adverbial a focus constituent in the scope of negation and that the static interpretation makes it a topic outside the scope of negation is supported by the fact that my informants generally found it easy to

enrich *med en gang* as ‘at first’ and harder to enrich it as ‘immediately’ when it occupied the unmarked sentence-initial topic position in (69), while the dynamic and the static interpretations were equally accessible when *med en gang* was placed at the end of the matrix clause and the complement clause was extraposed, as in (70).

- (69) Med en gang la jeg ikke merke til at noen hadde vært inne
 with one time laid I not mark to that some had been inside
 på kontoret mitt.
 on office.SG.DEF mine
 ‘At first / #Immediately I didn’t notice that someone had been in my office.’
- (70) Jeg la ikke merke til det med en gang at noen hadde vært inne
 I laid not mark to it with one time that some had been inside
 på kontoret mitt.
 on office.SG.DEF mine
 i. ‘I didn’t notice it immediately that someone had been in my office.’
 ii. ‘I didn’t notice it at first that someone had been in my office.’

It has to be admitted, though, that some informants find the difference between an ‘at first’ interpretation and an ‘immediately’ interpretation with wide scope of negation too subtle for them to handle in a negative declarative like (70). A polysemy analysis which implies that *med en gang* has two meanings, ‘at first’ and ‘immediately’, would fall short of accounting for their feeling that the difference is almost neutralized here.

The speaker’s global intonational phrasing also provides information that may be helpful in the process of enriching a negative sentence containing *med en gang*, which could be taken either way in (71).

- (71) Jeg kjente deg ikke igjen med en gang.
 I knew you not again with one time
 ‘I didn’t recognize you at first.’ or ‘I didn’t recognize you immediately.’

In (72) the small caps indicate focal accent positions both in the Norwegian versions that are differentiated solely by means of intonation and in the respective English translations where ‘at first’ appears in (72a) and ‘immediately’ in (72b).

- (72) a. Jeg kjente deg ikke IGJEN med en gang.
 I knew you not again with one time
 ‘I didn’t RECOGNIZE you at first.’

- b. Jeg KJENTE deg ikke igjen med en GANG.
 I knew you not again with one time
 'I didn't recognize you IMMEDIATELY.'

The essential prosodic features of the Norwegian utterance in (72a) are a focal accent at the end of the discontinuous predicate *kjente ... igjen* 'recognized' and no pitch accent on the following temporal adverbial *med en gang*. In (72b) there are two accentually highlighted syntactic elements; there is a focal accent on the finite verb *kjente*, indicating wide scope of negation, as well as one on *med en gang*. In the corresponding English intonation contours there would presumably be a straight fall on *recognize* in (72a), and a fall-rise on *immediately* in (72b) to indicate that the adverb is there in the scope of negation.

A focal accent on the numeral *en* 'one' of the lexical item *med en gang* is another way to provide the hearer with procedural information that will in all likelihood resolve the direction of the pragmatic enrichment process in favor of the dynamic 'immediately' interpretation. This works even for the sentence-initial topic position occupied by *med en gang* in (73), a position which would otherwise normally point to a static interpretation of the adverbial and a complementary upper-bounding implicature.⁷

- (73) a. Med en GANG likte jeg henne.
 with one time liked I her
 preferred: 'I liked her at 'first.', 'At first I liked her.'
 dispreferred: 'I liked her immediately.', 'I immediately liked her.'
- b. Med EN gang likte jeg henne.
 with one time liked I her
 preferred: 'I liked her immediately.'
 dispreferred: 'At first I liked her.'

My analysis of *med en gang* / *med det samme* should not be taken to imply that there is one literal meaning, for instance what is here glossed as 'immediately', and that only the static meaning is pragmatically derived. Any attempt to paraphrase Norwegian *med en gang* / *med det samme* involves a pragmatic development guided by the Communicative Principle of Relevance (Sperber and Wilson, 1995). Interestingly, this situation contrasts with what we find in another Scandinavian language, Danish. This language does not contain *med en gang* in its

⁷ No similar prosodic handling is available if *med det samme* is used instead of *med en gang*, which is, to the best of my knowledge, the only available evidence that might cause one to doubt that *med en gang* and *med det samme* have a potential for being pragmatically strengthened which is exactly the same for the two allegedly synonymous items.

lexicon, only *med det samme*. I have been told, however (Lita Lundquist, personal communication), that Danish *med det samme* always means ‘immediately’, it cannot mean ‘at first’. A Danish sentence like (74) will never be understood to convey the meaning ‘I hesitated at first’, it can only have the slightly odd meaning that the speaker was very quick to hesitate. Norwegian (75), on the other hand, means that the speaker hesitated at first.

- (74) #Jeg tøvede med det samme.
 I hesitated with the same
 #‘I hesitated immediately.’

- (75) Jeg nølte med det samme.
 I hesitated with the same
 ‘I hesitated at first.’

Since we certainly have no evidence that Danes are incapable of working out upper-bounding scalar implicatures, we must conclude that the Danish lexical item *med det samme* has a different lexical meaning than Norwegian *med det samme*. While the meaning ‘immediately’ is arrived at partly through pragmatic inference in Norwegian, the same meaning is evidently encoded and decoded in Danish, and the upper-bounding implicature that secures the interpretation ‘at first’ in Norwegian is consequently blocked in Danish.

6. CONCLUSION

I have located the meaning differences associated with each one of two English and two Norwegian lexicalized phrases – the markers *after all* and *at least* and the Norwegian markers *(al)likevel* and *med en gang / med det samme* – outside language, accounting for all meaning differences in terms of a context-dependent enrichment of the encoded logical form, which is part of the inferential processing of the utterance at hand. These function words serve as blueprints designed to engage the hearer in a specific kind of inferential activity. Except for *med en gang / med det samme* the lexical entries encode a predominantly procedural meaning as defined in Relevance Theory. For all of them it has been demonstrated that their information-structural handling, such as their syntactic position in the sentence, the choice between a marker located inside the clause structure and a parenthetically introduced marker, and the choice between an accented and an unaccented marker, gives the addressee procedural information beyond what is offered by the lexical entry *per se*.

In her influential procedural analysis of certain non-truth-functional markers Blakemore (1987) offered a sophisticated analysis of one of two distinguishable uses of *after all*. I asked myself what a univocal account of the lexical meaning of *after all*, regardless of its syntactic

position, might look like, and my proposal was that the difference between construing the proposition expressed as a premise or as a conclusion in a deduction depends largely on the procedural information derived from the speaker's syntactic and prosodic choices. A focal *after all* indicates that the proposition expressed is a conclusion in a deduction, while a non-focal *after all* indicates that the proposition expressed is a contextual premise.

The Norwegian concessive adverb (*al*)*likevel* behaves in a rather similar manner, in that it offers the addressee one type of procedural information when the marker is sentence-final and there is a broad-focus intonation contour, and a different type of procedural information when the marker is sentence-initial. In either case (*al*)*likevel* instructs the addressee to construe a concessive relation between two propositions *P* and *Q*, of which *P*, which is anaphorically represented by the concessive adverb (*al*)*likevel*, is to be identified as part of the mutually manifest context. The syntactic position of (*al*)*likevel*, in conjunction with the global intonational phrasing imposed on the utterance, instructs the addressee to limit his search for *P* to discourse-activated information in working memory when (*al*)*likevel* is handled syntactically and prosodically like a topic, and to retrieve it from long-term memory when it is handled like a focus element.

Due to the addressee's inferential processing of English *after all* and Norwegian (*al*)*likevel* these two markers can be shown to have identical, or near-identical pragmatic functions in their focal positions, despite the fact that their lexical meanings are distinct.

The scalar particle *at least* in English is a multifunctional lexical entry; its multifunctionality is not a function of its invariant lexical meaning, however, but of the way it is processed in context, and again the syntactic position of *at least* was seen to offer the addressee procedural information about the nature of the scale that this particle is meant to activate, enabling the addressee to determine whether or not it affects the truth conditions of the proposition expressed. The three distinct and allegedly incompatible meanings of *at least* recognized by Kay (1997) were shown to be co-present in a way that his analysis fails to account for. A very simple univocal lexical definition of *at least* interacts with procedural meaning derivable from word order plus other contextual information, yielding a variety of pragmatic meanings.

The Norwegian temporal adverbials *med en gang* and *med det samme* encode a concept rather than a procedure, but the encoded concept differs from the pragmatically strengthened concept which is part of the truth-conditional representation of an utterance containing one of those items. Those contextual assumptions that are most immediately available to the hearer will determine his choice between what was referred to as the dynamic and the static meaning variants of *med en gang* / *med det samme*. It is conceivable that, say, the static interpretation with the concomitant information derived from an upper-bounding scalar implicature could come to be lexicalized at some point in the history of the Norwegian language, so that the dynamic and the static interpretations would have to be defined as differences in codified semantic content, but there is no evidence that that development has already taken place.

For the cases of context-dependent meaning examined in this paper, stating that the different interpretations of the same lexical entry are due to polysemous meaning variants means duplicating information which the hearer would still have to obtain by means of pragmatic inference, i.e. by an inferential process of lexical disambiguation in context. Relevance Theory affords a cognitively more plausible alternative to on-line disambiguation: the fact that *after all* can modify either a premise or a conclusion, that *(al)likevel* represents either information activated in working memory or information retrievable from long-term memory, that *at least* sets the lower bound on a quantitative implicational scale or on a scale of increasingly desirable situations, that *med en gang / med det samme* means either 'immediately' or 'at first', all of this information is left unspecified in the lexicon of the respective languages. Instead these meanings are arrived at by pragmatic processes operating on linguistically encoded semantic representations. A univocal lexical meaning is the semantic input in all four cases.

One should opt for a monosemous rather than a polysemous account of lexical meaning when (i) syntax, prosody, or their combination is what causes the hearer to exclude one meaning variant and adopt the other one, or (ii) when there exist contexts which neutralize the difference between the meaning variants. English *after all* exemplifies the former situation, Norwegian *med en gang / med det samme* ('at once'; 'at first') and English *at least* the latter.

REFERENCES

- Amfo, N. A. A. (2001). *A Relevance-Theoretic Study of Some Pragmatic Markers in Akan*. M. Phil. Thesis, Department of Linguistics, University of Trondheim (NTNU).
- Andersen, G. and T. Fretheim (2000). *Pragmatic Markers and Propositional Attitude*. John Benjamins, Amsterdam.
- Andersen, P. K. (1991). *A New Look at the Passive*. Peter Lang, Frankfurt am Main.
- Andersen, P. K. (1994). *Empirical Studies in Diathesis*. Nodus Publikationen, Münster.
- Atlas, J. D. (1989). *Philosophy Without Ambiguity*. Clarendon Press, Oxford.
- Blakemore, D. (1987). *Semantic Constraints on Relevance*. Blackwell, Oxford.
- Blass, R. (1990). *Relevance Relations in Discourse: A Study With Special Reference to Sissala*. Cambridge University Press, Cambridge.
- Carston, R. (1988). Implicature, explicature, and truth-theoretic semantics. In: *Mental Representations* (R. M. Kempson, ed.), pp. 155–182. Cambridge University Press, Cambridge.
- Carston, R. (1996). Enrichment and loosening: Complementary processes in deriving the proposition expressed. *UCL Working Papers in Linguistics*, 8, 61–88.
- Carston, R. (1998). Postscript to Carston (1988). In: *Pragmatics – Critical Concepts* (A. Kasher, ed.), Vol. IV, pp. 466–479. Routledge, London.
- Dancygier, B. and E. Sweetser (1997). *Then* in conditional constructions. *Cognitive Linguistics*, 8, 109–136.

- English–Norwegian Parallel Corpus (no year). Department of British and American Studies, University of Oslo. See <http://www.hf.uio.no/iba/prosjekt/>
- Fretheim, T. (1987). Pragmatics and intonation. In: *The Pragmatic Perspective* (J. Verschueren and M. Bertuccelli-Papi, eds.), pp. 395–420. John Benjamins, Amsterdam.
- Fretheim, T. (1998a). Intonation and the procedural encoding of attributed thoughts: The case of Norwegian negative interrogatives. In: *Current Issue in Relevance Theory* (V. Rouchota and A. H. Jucker, eds.), pp. 205–236. John Benjamins, Amsterdam.
- Fretheim, T. (1998b). A relevance-theoretic account of *if* and *in case*. In: *Proceedings of the Fourteenth Eastern States Conference on Linguistics* (J. Austin and A. Lawson, eds.), pp. 58–69. CLC Publications, Ithaca.
- Fretheim, T. (1998c). *Are There at Least Two* at least? Paper presented at the Relevance Theory Workshop, 8–10 September 1998, University of Luton.
- Fretheim, T. (2000a). The semantic difference between Norwegian *hvis-da* ('if-then') and *hvis-så* (≠ 'if-then'). In: *The Nordic Languages and Modern Linguistics* (G. Thórhallsdóttir, ed.), Vol. 10, pp. 81–92. University of Iceland, Reykjavík.
- Fretheim, T. (2000b). Constraining explicit and implicit content by means of a Norwegian scalar particle. *Nordic Journal of Linguistics*, 23, 115–162.
- Goldberg, A. E. (1995). *Constructions: A Construction Grammar Approach to Argument Structure*. Chicago University Press, Chicago.
- Grice, H. P. (1957). Meaning. *Philosophical Review*, 66, 377–388.
- Grice, H. P. (1975). Logic and conversation. In: *Syntax and Semantics 3: Speech Acts* (P. Cole and J. L. Morgan, eds.), pp. 41–58. Academic Press, New York.
- Grice, H. P. (1989). *Studies in the Way of Words*. Harvard University Press, Cambridge, Mass.
- Haspelmath, M. and E. König (1998). Concessive conditionals in the languages of Europe. In: *Adverbial Constructions in the Languages of Europe* (J. van der Auwera, ed.), pp. 563–640. Mouton de Gruyter, Berlin.
- Horn, L. R. (1989). *A Natural History of Negation*. Chicago University Press, Chicago.
- Kay, P. (1997). *Words and the Grammar of Context (CSLI Lecture Notes, № 40)*. CSLI Publications, Stanford.
- König, E. (1986). Conditionals, concessive conditionals and concessives: Areas of contrast, overlap and neutralization. In: *On Conditionals* (E. C. Traugott, A. ter Meulen, J. S. Reilly, and C. A. Ferguson, eds.), pp. 229–245. Cambridge University Press, Cambridge.
- Ladd, D. R. (1980). *The Structure of Intonational Meaning: Evidence from English*. Indiana University Press, Bloomington.
- Levinson, S. (1987). Minimization and conversational inference. In: *The Pragmatic Perspective* (J. Verschueren and M. Bertuccelli-Papi, eds.), pp. 61–129. John Benjamins, Amsterdam.
- Nicolle, S. (1998). *Be going to* and *will*: a monosemous account. *English Language Linguistics*, 2, 223–243.
- Pustejovsky, J. (1995). *The Generative Lexicon*. MIT Press, Cambridge, Mass.
- Récanati, F. (1993). *Direct Reference: From Language to Thought*. Blackwell, Oxford.

- Sperber, D. and D. Wilson (1986). *Relevance: Communication and Cognition*. Blackwell, Oxford.
- Sperber, D. and D. Wilson (1995). *Relevance: Communication and Cognition*. 2nd edition with a Postface, Blackwell, Oxford.
- Sperber, D. and D. Wilson (1998). The mapping between the mental and the public lexicon. In: *Thought and Language* (P. Carruthers and J. Boucher, eds.), pp. 184–200. Cambridge University Press, Cambridge.
- Traugott, E. C. (1997). *The Discourse Connective* after all: *A Historical Pragmatic Account*. Paper presented at the ICL, Paris, July 1997.
- Wilson, D. and D. Sperber (1981). On Grice's theory of conversation. In: *Conversation and Discourse* (P. Werth, ed.), pp. 155–178. Croom Helm, London.
- Wilson, D. and D. Sperber (1993). Linguistic form and relevance. *Lingua*, **90**, 1–25.

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PRAGMATICS AND THE FLEXIBILITY OF THEORETICAL TERMS IN LINGUISTICS: TWO CASE STUDIES¹

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1. INTRODUCTION

1.1. The Problem of Theoretical Terms

One of the most important factors which the workability of scientific theories hinges on is the fact that they introduce, among other things, **theoretical terms**. Simple and well-known examples of such theoretical terms are *atom*, *electron*, *mass*, *force*, etc. Such expressions, like all theoretical terms, have two central **structural properties**. The first results from the specific nature of their **reference**: they refer to ‘unobservable’ objects. The second is that their ‘meaning’ – whatever ‘meaning’ means – depends on the **context** of the theory in which they occur.

It is exactly these structural properties which are responsible for at least two major **functions** of theoretical terms. Firstly, however strange it may seem at first sight, although they refer to ‘unobservable’ objects, it is theoretical terms which establish a **relationship** between theory and observable reality. Secondly, theoretical terms are applied in scientific generalizations which are indispensable for the **explanation** of facts.

The role which theoretical terms play in scientific investigation can be characterized by an interesting dichotomy. On the one hand, as indicated, they are conducive to the construction

¹ My research was supported by the National Scientific Research Fund (OTKA), grant № T 034662. The paper includes some considerably revised paragraphs from Kertész, 1997, 1998, 2001 by permission of the publishers. Throughout the paper bold characters indicate emphasis; elements of the language which is the object of our investigation (i.e. the language of theories) are italicized; and expressions, whose occurrence is relevant but which are used in a preexplicative sense, are (occasionally) put within single quotation marks. I am grateful to Tibor Laczkó and Gergely Pethő for helpful comments.

of scientific theories, to the explanation of the facts observed, and to our scientific understanding of the world in general. On the other hand, their status is still highly questionable, because we do not know on the basis of what mechanism these important tasks are carried out. Therefore, one of the central topics of the analytic philosophy of science is **the problem of theoretical terms**, namely, the question of how this dichotomy can be captured. The development of the most important views within the analytic philosophy of science concerning this problem can be summarized in the following way.

(a) The first influential attempt proposed by Hempel, Carnap, and others, consisted, on the one hand, in distinguishing between theoretical and observational terms: as opposed to theoretical terms, observational terms were assumed to refer clearly to observable objects. On the other hand, it was assumed that theoretical terms could be reduced completely to observational terms. In particular, this meant that one attempted to define all theoretical terms occurring in a given theory by means of observational terms.

(b) As a result of a series of unsolvable difficulties this reductionist stance was given up later on. Instead, a new approach was suggested which acknowledged the relative independence of theoretical terms from observational ones. Observational terms were thought to refer directly to observable objects in a way which did not need the use of instruments; that is, in this view, observable properties had to be identifiable without measurement.² Examples of such terms are *red*, *warm*, *hard*, *shorter than*, *moving*, etc. Accordingly, theoretical terms were defined negatively and were identified with expressions which could not be related to immediate sensory experience such as *electronic field*, *atom*, *electron*, *mass*, *force*, etc. Consequently, the theory-dependence of theoretical terms was acknowledged.

(c) Nevertheless, it was realized that all observation was theory-laden and, therefore, the distinction mentioned in (b) turned out to be untenable. Therefore, the next important stage in the development of the problem was necessarily an approach which gave up the dichotomy between observational and theoretical terms completely. The 'non-statement view' (also called 'the structuralist view of theories') developed by J. D. Sneed, W. Stegmüller, and others, abandoned the notion of observational terms and defined theoretical terms in the following way:

"The function n is theoretical with respect to [a theory, A. K.] T if and only if there is no application i of T in which n_i is T -independent; n is non-theoretical with respect to T if and only if there is at least one application i of T in which n_i is T -independent."
(Sneed, 1971: 33)

² Since it was physical theories which were considered as the paradigmatic examples of theory formation, 'measurement' played a central role.

This means, in a very simplified manner, that a property is to be regarded as theoretical if it is determined solely by the context of a given theory. Unfortunately, this definition is circular: theoretical terms, which constitute a given theory, are determined by this theory itself.

(d) However successful the non-statement view of theories is, this and further difficulties call for revision. A recent approach attempts to interpret certain tenets of the non-statement view on the basis of the Duhem–Quine thesis and obtains the following conclusion:

“In a holistic philosophy of science the problem of theoretical terms is no more real. When the distinction between theoretical and non-theoretical terms is resolved, this problem vanishes and opens the way to a new understanding of theories.” (Zoglauer, 1993: 8; my translation, A. K.)

(e) Throughout this development of the problem of theoretical terms certain background assumptions have remained more or less stable. Firstly, the analytic philosophy of science assumes that theoretical terms are introduced into a scientific theory by the method of **explication** according to which a ‘vague’ or ‘ambiguous’ term of ordinary language (the **explicandum**) is replaced by an ‘exact’ or ‘precise’ term (the **explicans**);³ the relationship between the explicans and the explicandum is basically a **semantic** one.

Secondly, as already mentioned, it is assumed that theoretical terms are involved in **scientific explanations**. Thereby, scientific explanations are considered to be **subsumptive** insofar as they subsume individual facts under general laws and it is these laws which contain theoretical terms; they are **deductive** in that they deduce the explanandum from the explanans; finally, explanations are considered to be structurally identical with predictions, therefore, they must be **predictive**.

What does this development of the problem of theoretical terms boil down to? By way of summary, let us make the following observations.

- (i) The problem is of a basically **linguistic** nature, because it focuses on the structure of terms which are linguistic entities.
- (ii) As we have seen, in the course of its development the focus of the problem has changed. Whereas early logical empiricism mainly emphasized the referential aspect of theoretical terms, later developments pushed their **context-dependency** into the foreground.
- (iii) However, despite its clearly linguistic nature, the problem of theoretical terms was not conceived of as such, but rather as a quandary in the **philosophy of science**.

³ See Carnap and Stegmüller, 1959.

- (iv) Nevertheless, the view quoted above in (d), according to which the problem of theoretical terms seems to lose its relevance for the philosophy of science, may be interpreted in at least two different ways. Firstly, as Zoglauer (1993) suggests, it will be possible to develop philosophies of science which focus on different, and perhaps more substantial problems; evidently, such a task must not be our concern here. Secondly, we may also say that now it is fully legitimate to restore the basic linguistic nature of the problem by **reconstructing it as an essentially linguistic issue**. This is what the present paper will be devoted to.
- (v) Undoubtedly, such a reconstruction will have to raise the general topic of **word meaning**. Moreover, since the role of context is acknowledged, the relevance of the relationship between **semantics and pragmatics** must not be excluded at the outset. Finally, this means that what has to be analyzed is a specific type of context, namely, scientific theories, and the specific way in which such contexts are related to word meaning in the light of the semantics-pragmatics relation.

Thus there is no doubt that the aspects of the problem of theoretical terms mentioned in (v) are closely related to the main topic of the present volume.

1.2. The Problem of Theoretical Terms in Generative Linguistics

In the previous section the problem of theoretical terms was formulated on a high level of abstraction. However, in this general form the problem cannot be handled: what is needed is its specification with respect to well-defined theories and a well-defined set of theoretical terms whose structure may be analyzed by linguistic means. For the following two very straightforward reasons it might be useful to choose the theoretical terms of generative linguistics as paradigmatic examples and to reduce the problem to the structure of these terms. Firstly, one of the central features of Chomsky's programme was that he identified grammars with scientific theories and assumed that their structure was similar to the structure of theories in natural science. Secondly, during the continuous development of Chomskyan generative linguistics this structure underwent considerable changes, and the investigation of these changes might be instructive with respect to the structure of theoretical terms in linguistics.

As a starting point, let us show very briefly how Chomsky characterizes the relationship between 'grammar', 'theory', and 'hypothetical constructs' (the last expression is another name for 'theoretical terms') at the outset:

"A grammar of the language *L* is essentially a theory of *L*. Any scientific theory is based on a finite number of observations, and it seeks **to relate the observed phenomena and to predict new phenomena by constructing general laws in terms of**

hypothetical constructs such as (in physics, for example) ‘mass’ and ‘electron’. Similarly, a grammar of English is based on a finite corpus of utterances (**observations**), and it will contain certain grammatical **rules (laws)** stated in terms of the particular phonemes, phrases, etc. of English (**hypothetical constructs**). These rules express structural relations among the sentences of the corpus and the indefinite number of sentences generated by the grammar beyond the corpus (**predictions**). Our problem is to develop and clarify the criteria for selecting the correct grammar for each language, that is the correct theory of this language.” (Chomsky, 1957: 49)

Now, if we relate the insights of the previous section to the objectives of generative linguistics thus characterized, we obtain the following problem:

- (P1) (a) What is the structure of theoretical terms in generative linguistics?
(b) How does the structure of theoretical terms influence the structure of scientific explanations in generative linguistics?
(c) To what extent are the answers to (a) and (b) related to semantic and pragmatic factors?

The solution to (P1) is the main concern of the present paper. Having thus outlined our central problem, we have to take the next step: we need a **methodological framework** which is capable of capturing (P1). Let us try to explore the possibilities.

1.3. The Cognitive Science of Science

Although the analytic philosophy of science can be divided into several schools and although it has undergone considerable changes, there are certain basic assumptions which all the different schools and all the different phases of development share. One of these central assumptions holds that the philosophy of science is a **philosophical** discipline whose main task is the **justification** of the results of scientific inquiry.

However, despite a few successful decades, the decline of the analytic philosophy of science was unavoidable. Among other things, it was Quine’s **replacement thesis** which outlined a new perspective (Quine, 1969). According to the replacement thesis the analytic philosophy of science should be **replaced by empirical science**, in particular, by natural science which, instead of justifying its object of investigation, should rather **describe and explain** it. The direct consequence of this tenet is the **reflexivity** of scientific inquiry along the lines of which the philosophy of science “is only **science self-applied**” (Quine, 1975: 293; emphasis

added, A. K.). This new attitude resulted in what has been called **naturalized philosophy of science**.⁴

As later developments showed, however, the scope of the programme of naturalized philosophy of science could not be restricted to natural science, and in this respect its development deviated strongly from Quine's original intention. In particular, it was related to the **cognitive turn** which emerged independently of the naturalization of the philosophy of science. The main idea behind the cognitive turn is the assumption that the nature of cognition should be investigated by using empirical methods rather than philosophical ones, and that such investigations should be carried out by the interdisciplinary interaction of several disciplines such as psychology, artificial intelligence research, linguistics, anthropology, neuroscience, etc. It is easy to realize that naturalized philosophy of science and cognitive science **share** a common background assumption: both strive, by using the methods of empirical disciplines, to investigate the way in which we gain knowledge of the world.

The consequence is that "much recent naturalized philosophy of science can be characterized as **cognitive science of science**" (Downes, 1993: 453; emphasis added, A. K.). This also means that naturalized philosophy of science **must not** be restricted to using the standards of natural science, but it should comprise those of the subdisciplines of cognitive science.⁵

If a certain kind of linguistics is considered to be a genuine subdiscipline of cognitive science, and this part of cognitive science is what may be called **cognitive linguistics**, then there is no avoiding the following conclusion which may be called the 'metascientific extension of cognitive linguistics':⁶

⁴ At this point a terminological remark is in order. Naturalism does not distinguish strictly between epistemology and the philosophy of science, because both are considered to investigate the foundations of scientific inquiry. Although Quine uses the term 'epistemology', in the literature the features attributed to naturalized epistemology are assumed to be valid for 'naturalized philosophy of science' as well. Since both expressions refer to the scientific investigation of science in the widest sense, in what follows I will not differentiate between them and will not explicate them, either. Occasionally I will use the term 'metascience' (and 'metascientific') as an abbreviation for 'naturalized epistemology and/or philosophy of science'. Since we cannot go into a thorough terminological discussion, there is no way of avoiding this terminological vagueness.

⁵ For example, Giere (1988) and Goldman (1986) regard cognitive psychology as the primary source of the cognitive science of science; Langley *et al.* (1987), Thagard (1988, 1992) or Slezak (1989) put forward the idea of a computational science of science; Churchland (1986) and Churchland (1989) advocate neuroscience; Arbib and Hesse (1986) argue for the application of schema theory to the cognitive science of science.

See Haack, 1993 and Kertész, 1999 on the ambiguity of the term 'science' in the work of Quine. Haack showed convincingly that, on the one hand, in Quine's approach 'science' may be interpreted as 'natural science'; and, on the other hand, Quine often uses the term in a wide sense which includes any kind of inquiry and is not restricted to natural science. This ambiguity is quite problematic, because it may yield a kind of 'de-naturalization' of the philosophy of science, which questions the tenability of Quine's programme; see Kertész, 1999 on this.

⁶ A cognitive linguistic approach to the philosophy of science as a possible manifestation of the idea of a cognitive science of science was systematically developed in Kertész, 1991, 1993.

(MECL) One of the tasks of cognitive linguistics is to contribute to the solution of classic problems of metascience.

However, the subdisciplines of cognitive science consist of many different approaches and these may be even inconsistent or incompatible with each other; one of the constitutive properties of cognitive science is its **pluralism**. Therefore, there are as many potential subdisciplines of the cognitive science of science as of cognitive science itself, and there are as many approaches within each subdiscipline of the former as there are within those of the latter.⁷

This consequence is relevant to (MECL) as well. If cognitive linguistics may serve as a possible approach to the cognitive science of science and if we acknowledge the fact that it is as pluralistic as the other subdisciplines of cognitive science, then one has to face the problem of **which approach within cognitive linguistics, as a possible manifestation of the cognitive science of science, is suited for tackling (P1).**

Given the richness of cognitive linguistics, this question is not easy to answer. However, it can be even sharpened, if we consider the fact that cognitive linguistics is, at least to a considerable extent (but not exclusively), still characterized by the antagonistic relationship of **modularism** and **holism** (see e.g. Kiefer, 1995; Schwarz, 1992; Müller, 1991; etc.). It is important to realize that both the proponents of modular cognitive linguistics and those of holism consider the metascientific extension of their particular approach to be fully legitimate. For example, M. Bierwisch, whose so-called 'two-level approach'⁸ is the paradigmatic manifestation of modular cognitive linguistics, emphasizes that this framework is capable of capturing the nature of theoretical terms in linguistics itself. Illustrating one of the conceptual operations he introduced (see Section 3.2 for details), he (Bierwisch, 1983a: 67) makes the following remark:

"In fact, the recent history of linguistics consists to a reasonable extent in the clarification of the concepts associated with language, eventually distinguishing them terminologically by *competence, performance, dialect, idiolect, communication*, etc."

⁷ D. Stump (1992: 459; emphasis added, A. K.) summarizes this argument as follows:

"A tension which has been ignored by the proponents of naturalized philosophy of science has been introduced into their program. On the one hand, naturalism demands unified method. On the other hand, naturalism also demands that the philosophy of science be true to science as practiced and, *pace* the positivists, science itself has shown not to be unified in its method. [...] While it is certainly true that we can distinguish different levels of analysis in the sense that the science of science is metalevel discourse of science, naturalism requires that the methodology of this metalevel discourse have the same status as the methodology of science. So, **if there are many methods of science, then there must be many methods of philosophy of science as well.**"

⁸ See Bierwisch, 1980, 1983a, b; Lang, 1994; etc.

Alternatively, Lakoff and Johnson (1980: 19), the proponents of the holistic approach to cognitive linguistics, mention the applicability of their cognitive theory of metaphor to scientific theories:⁹

“So-called purely intellectual concepts, e.g. the concepts in a scientific theory, are often – perhaps always – based on metaphors that have a physical and/or cultural basis. The *high* in ‘high-energy particles’ is based on MORE IS UP. The *high* in ‘high-level functions’, as in physiological psychology, is based on RATIONAL IS UP. The *low* in ‘low-level phonology’ (which refers to detailed phonetic aspects of the sound systems of languages) is based on MUNDANE REALITY IS DOWN (as in ‘down to earth’). The intuitive appeal of a scientific theory has to do with how well its metaphors fit one’s experience.”

Thus we obtain the following problem:¹⁰

(P2) To what extent can

(a) holism (exemplified by the cognitive theory of metaphor) and

(b) modularism (exemplified by the two-level approach),

as possible manifestations of the cognitive science of science, contribute to the solution of (P1)?

This means that we will have to **solve (P1) via (P2)**.¹¹

In order to prepare the evaluation of the results to be obtained, it is useful to show how the analytic philosophy of science would answer (P1). In the light of (e) in Section 1.1, the ‘received view’ can be summarized in the following way:¹²

(RV) (a) Theoretical terms are introduced into a theory by the method of ‘**explication**’. The explicandum is ‘**vague**’, the explicans is ‘**exact**’, and the relationship between the explicans and the explicandum is basically a ‘**semantic**’ one.

⁹ Small capitals indicate **metaphorical concepts**. On this term see the next section.

¹⁰ Holism itself may be divided at least into two main trends which, though they are closely connected, are clearly distinguishable: Langacker’s cognitive grammar and Lakoff and Johnson’s cognitive theory of metaphor. We will choose the cognitive theory of metaphor as an example of holism. See, e.g., Lakoff and Johnson, 1980, 1999; Lakoff, 1987; and Kövecses 1986, 1990, 2000.

¹¹ As we have seen in the previous section, naturalized philosophy of science is characterized by reflexivity; therefore, analogously to Quine’s original project, it is not implausible to develop a metascientific application of cognitive linguistics to a linguistic theory itself.

¹² The notion ‘received view’ was introduced by Hilary Putnam for reference to a system of assumptions which most trends within the analytic philosophy of science, despite their differences, share.

- (b) Theoretical terms appear in 'scientific explanations'. Scientific explanations are 'subsumptive', 'deductive', and 'predictive'.
- (c) Pragmatics is not relevant to the structure of theoretical terms.¹³

As opposed to this, our answer to (P2) will yield the following thesis as an answer to (P1):

- (H) (a) The metascientific extension of both holism and modularism, despite their differences, maintains that theoretical terms in generative linguistics do not hinge on the replacement of a 'vague' term by an 'exact' one and the relationship between the explicans and the explicandum is **not** semantic in the sense of (RV).
- (b) However antagonistic the two approaches may be, modularism and holism differ only slightly with respect to their treatment of scientific explanations in generative linguistics. According to holism they are (i) **not** subsumptive, (ii) **not** deductive, and (iii) **predictive**, whereas modularism says that they are (i) **not necessarily** subsumptive, (ii) **not necessarily** deductive, and (iii) **predictive**.
- (c) Nevertheless, they differ considerably in the treatment of pragmatics:
 - (i) The cognitive theory of metaphor does not differentiate strictly between the semantic, conceptual, and pragmatic aspects of theoretical terms and explanations; it acknowledges, therefore, in this holistic sense the role of pragmatics in scientific concept formation.
 - (ii) As opposed to this, the two-level approach considers the notion of 'pragmatics' to be implausible and reduces central properties of theoretical terms to the interaction between relatively autonomous semantic and conceptual factors.

The plausibility of (H) will be exemplified by two case studies. As can be seen, (RV) and (H) share the assumption that scientific explanations are predictive, while in all other respects (H) is the denial of (RV) – this is, in fact, what could more or less be expected at the outset. However, what seems to be definitively counterintuitive is the claim that despite their antagonism the two-level approach and the cognitive theory of metaphor yield similar results with respect to (H)(a) and (H)(b). Therefore, (H) needs to be proved carefully. Accordingly, in Section 2 the first case study will discuss the metascientific implications of Lakoff and Johnson's approach. In Section 3 the second case study will be devoted to the metascientific application of the modularity hypothesis within the two-level model. Finally, Section 4 will evaluate the findings.

¹³ Nevertheless, in the early eighties attempts to develop 'pragmatic' accounts of scientific explanations were made. See Stegmüller, 1983.

2. CASE STUDY 1

2.1. The Cognitive Theory of Metaphor

In a very simplified manner which, however, emphasizes the contrast between the modular and the holistic approach, the **Holistic Hypothesis** can be introduced as follows:

(HH) Human cognitive behavior constitutes a coherent whole.

With respect to the cognitive theory of metaphor, this general assumption is to be specified like this:

(HH') Human cognitive behavior is structured by metaphorical concepts.

(HH'), in turn, may be spelled out in the form of a set of even more specific theses. These can be summarized as follows (see also Kertész, 2001):

- (1) Metaphor is not a specific rhetorical phenomenon restricted to poetic language, but rather it is constitutive both of everyday language and expert discourse. Metaphors are to be considered part of linguistic competence in general.¹⁴ Moreover, metaphors are **conceptual** entities and the conceptualization of reality is basically metaphorical – metaphors play a central role in cognition.
- (2) **Metaphorical expressions** are not isolated individual phenomena, but rather they are the linguistic manifestation of **metaphorical concepts**. For example, metaphorical expressions like *this relationship is foundering, we are going nowhere, this relationship is dead-end street, we are at a crossroads*, etc. are related to the metaphorical concept of LOVE IS A JOURNEY. Metaphorical concepts fulfill all their functions not individually, but as complex networks of metaphorical expressions.
- (3) Metaphors connect two conceptual domains: the **target domain** and the **source domain**. In the course of metaphorical processes the source domain **corresponds** to the target domain; in other words, there is a **mapping** or a **projection** between the source domain and the target domain. This means that the target domain *X* is understood in terms of the source domain *Y*. For example, in the case of the metaphorical concept mentioned above, LOVE is the target domain whereas JOURNEY is the source domain. Whenever JOURNEY is mapped onto LOVE, the two domains correspond to each other in a way which enables us to interpret LOVE as JOURNEY.

¹⁴ This is what the **Ubiquity Hypothesis** amounts to.

- (4) The source domain is based on sensory experience and is **concrete**, while the target domain is **abstract**.
- (5) The **Thesis of Unidirectionality** is one of the central tenets. Jäkel (1997), as a result of his careful critical analysis of Lakoff and Johnson, 1980, suggests an explication of the Thesis of Unidirectionality which is more precise than Lakoff and Johnson's formulations. According to this, a metaphor (*X is Y*) connects an abstract and complex target domain (*X*) as an **explanandum** to a concrete, simply structured source domain (*Y*) based on sensory experience as an **explanans**.¹⁵
- (6) In the course of metaphorical projection certain patterns inherent in the source domain are projected onto the target domain. Since it is hypothesized that these image schemas preserve their invariance during the projection, it follows that even very abstract domains are rooted in sensory experience.¹⁶
- (7) Consequently, one of the main properties of metaphorical concepts is their **explanatory role**. This means that the only way for us to capture abstract domains and theoretical constructs is conceptualizing them along the lines of metaphorical projection. As a result of the fact that abstract domains are traced back to sensory experiences via metaphors, the former are explained in terms of the latter.
- (8) Metaphors also lead to the restructuring of conceptual domains and can, accordingly, **create new realities**.
- (9) However, conceptual metaphors capture the target domain **only partially** in that they focus on certain aspects and blur others. Thus, they fulfill a specific kind of **focusing function**.
- (10) Metaphors are closely connected to **idealized cognitive models** of certain segments of reality:

"[...] we organize our knowledge by means of structures called idealized cognitive models, or ICMs, and that category structures and prototype effects are by-products of that organization. [...] Each ICM is a complex structured whole, a gestalt, which uses four kinds of structuring principles: [...] metaphoric mappings, as described by Lakoff and Johnson [...]" (Lakoff, 1987: 68)

¹⁵ This interpretation of the cognitive theory of metaphor yields a very important consequence with respect to its metascientific application: it facilitates, along the lines of naturalism in general and the cognitive science of science in particular, the **metascientific explanation** of certain aspects of objectscientific research.

¹⁶ This assumption is called the **Invariance Hypothesis** which has given rise to heated discussions in the literature.

(11) These cognitive models constitute **scenarios**:

“A scenario consists fundamentally of the following ontology: an initial state, a sequence of events, and a final state. In other words, the scenario is structured by a SOURCE-PATH-GOAL schema in the time domain, where

- the initial state = the source
- the final state = the destination
- the events = locations on the path

and the path stretches through time. The scenario is a **WHOLE** and each of these elements is a **PART**.

The scenario ontology also consists typically of people, things, properties, relations, and propositions. In addition, there are typically relations of certain kinds holding among the elements of the ontology: causal relations, identity relations, etc. These are represented structurally by link schemas, each of which is categorized as to the kind of relation it represents. Scenarios also have a purpose structure, which specifies the purposes of people in the scenario. Such structures are represented metaphorically via SOURCE-PATH-GOAL schemas, as discussed above.” (Lakoff, 1987: 285–286)

2.2. The Structure of Theoretical Terms

In accordance with the ideas underlying the cognitive science of science outlined in Section 1.3, (HH) – together with the above basic tenets it is related to – has to be transferred to the metascientific level along the lines of (MECL). Thus we may argue as follows.

- (12) If
- (a) scientific knowledge is part of human cognitive behavior, and
 - (b) the latter is organized along the lines of (HH),
- then
- (c) we obtain the metascientific extension of the holistic hypothesis:

(MHH) Scientific behavior constitutes a coherent whole.

If we accept the assumption that the cognitive theory of metaphor is related to one specific interpretation of this hypothesis, we may specify (MHH) with respect to Lakoff and Johnson’s approach in this way.

(MHH’) Scientific behavior is structured by metaphorical concepts.

Thus (P2)(a) may be specified like this.

(P2') What is the solution of (P1) if (MHH') is accepted?¹⁷

Since, in accordance with (MHH'), all the main tenets of the cognitive theory of metaphor enumerated in (1)–(11) apply not only to everyday cognition but to scientific cognition as well, the answer to (P2') can be inferred from them quite mechanically. The first remark, then, concerns the fact that the instances of scientific concept formation are not to be restricted to individual metaphors but rather they are to be identified with complex conceptual networks including different cognitive models. Let us carry out a case study which, by using the framework of the cognitive theory of metaphor, reveals the metaphorical nature of theoretical terms in generative linguistics. In the course of this case study I will reinterpret certain observations first published in Riley, 1987 and further analyzed in Kertész, 1991 in a different context.

In analyzing the metaphorical structure of the Standard Theory (hence ST), put forward, among other things, in Chomsky, 1957, 1965; Riley 1987: 177 lists the following terms:

(13) *cycle, daughter, deep, flip-flop, hopping, insertion, inversion, kernel, node, pruning, raising, shift, sister, support, surface, tree, underlying.*

Evidently, the cognitive theory of metaphor characterizes these terms as parts of metaphorical expressions which are based on metaphorical concepts. The question, then, is this: Which metaphorical concepts govern these expressions? The answer is not difficult to find, for a simple reflection on the terms in (13) shows that, on the one hand, the target domain is STRUCTURE whereas the source domain is something which is closely connected to the growth, movement or change of living organisms. Thus, we obtain the following metaphorical concepts:¹⁸

(14) (a) The metaphorical concept: STRUCTURES ARE PLANTS

(b) Examples of metaphorical expressions:

The set of kernel S's in a language is the set of S's produced by applying only obligatory transformational rules to underlying structures.

A tree diagram, or phrase marker, is a hierarchical representation of a structure described by either a phrase structure rule or a transformational rule.

A cycle is the domain of application of rules within a structure containing one or more embedded S's.

¹⁷ Please, note that we don't claim that theoretical terms in generative linguistics do work along the lines of the cognitive theory of metaphor. Rather, we proceed **hypothetically**: we set out to explore what the case **would be** if (MHH') were true.

¹⁸ The examples enumerated below are freely adapted from Riley, 1987 and the basic literature of generative linguistics.

*A **node** is a labelled point in a tree structure.*

***Pruning** is the elimination of a node which, as the result of a transformational rule, no longer dominates any material.*

- (15) (a) The metaphorical concept: STRUCTURES ARE HUMAN ACTIVITIES

- (b) Examples of metaphorical expressions:

***Support** (insertion) is the introduction of 'dummy' elements (such as auxiliary *do* or the subject noun phrase *it*) into a structure.*

***Raising** is the movement of an element from an *S* at a lower level in a tree diagram to an *S* at a higher level.*

***Hopping** is the movement of an affix from its base-generated position onto the verb form that follows it. (Similar terms are *flip-flop*, *inversion*, *shift*.)*

- (16) (a) The metaphorical concept: STRUCTURES ARE HUMAN ROLES

- (b) Examples of metaphorical expressions:

*If node *B* is immediately dominated by a node *A*, then *B* is the **daughter** of *A*.*

*If two or more nodes are daughters of the same node, then they are **sisters**.*

- (17) (a) The metaphorical concept: STRUCTURES ARE LEVELS OF HUMAN CONSCIOUSNESS

- (b) Examples of metaphorical expressions:

*A **deep** or **underlying** structure is one generated by the base component, or *PS* rules, of a grammar.*

***Surface** structure represents the final result of any transformational rules that have applied to an underlying structure.*

These analyses are in full accordance with what Lakoff and Johnson's approach suggests: the metaphorical expressions are related to metaphorical concepts whose source domain is closely connected to our experiences concerning the behavior of living organisms – that is humans and plants.

Let us compare the corresponding terms of Government-Binding Theory (hence GBT) with the observations in (14)–(17). Riley (1987: 177) lists the following data:

- (18) *barrier, binding, command, condition, constraint, control, filter, government.*

These metaphorical terms seem to be related to metaphorical concepts which are very different from those in (14)–(17):

- (19) (a) The metaphorical concept: STRUCTURE IS SOCIAL HIERARCHY
 (b) Examples of metaphorical expressions:
B c-commands (constituent-commands) C if the first branching node dominating B dominates C, and B does not dominate C (or vice versa).
Control is the coreference relationship that holds between an empty pronominal NP (PRO) in an infinitive complement and its antecedent.
Governing nodes are Verb, Preposition, Noun, Adjective, tense, and Possessive.
A governs B if A is the minimal governing node c-commanding B.
- (20) (a) The metaphorical concept: STRUCTURE IS RESTRICTION
 (b) Examples of metaphorical expressions:
A barrier is an NP or S-bar boundary that blocks government.
An argument (NP position) is bound if it is coindexed with a c-commanding argument; otherwise it is free.
Constraints/conditions are used to describe structures which prohibit the application of a rule during derivation.
A filter is a restriction on the surface structure resulting from derivation.

It is important to emphasize that the instances of scientific concept formation are not to be confined to individual metaphors but, rather, they are to be identified with complex conceptual networks including different cognitive models (cf. (1), (2)). Therefore, the scope of scientific concept formation is considered to be significantly wider than that assumed by the analytic philosophy of science. In particular, (1) and (2) yield the assumption that it is not only the theoretical terms themselves which matter, but rather the system of metaphorical expressions. Thus the theoretical terms listed in (13)–(20) are manifestations of metaphorical concepts whose main task is the conceptualization of the subject matter of linguistic theory, namely, grammar. Nevertheless, as we have seen, the theoretical terms of ST and GBT conceptualize ‘grammar’ in two very different ways. Theoretical terms in ST are rooted in metaphorical concepts which conceptualize grammar with respect to **creativity, dynamism, motion, growth**. Theoretical terms in GBT are based on metaphorical concepts which conceptualize grammar as being something which is exposed to **limitations, restrictions, confinements**.¹⁹

We have noticed in Sections 1.1 and 1.3 that the general method for introducing theoretical terms into a theory is that of **explication** (cf. (RV)(a)). How can the process of

¹⁹ One may argue that these theoretical terms express well-defined structural relations and could, therefore, be replaced for example by symbols like *P*, *Q*, *R*, etc. which serve the very same tasks. However, the point is that if we assume (MHH), then this must not be the case: from Lakoff and Johnson’s approach it follows immediately that it is the metaphorical nature of theoretical terms which shape the cognitive structure of the theory and that the cognitive structure of the theory would be different if metaphorical expressions were replaced by something else.

explication be interpreted if the theoretical terms of generative grammar are conceived of as the manifestations of metaphorical concepts? In order to find an answer, let us quote Riley, again:

“[...] Chomsky and other linguists have adopted the jargon of transformational syntax from other vocabularies, and in doing so **have endowed each term with a specialized meaning, one not necessarily meant to convey the denotative or connotative properties of the term as it is used outside of linguistics.**” (Riley, 1987: 184; emphasis added, A. K.)

If we reinterpret this quotation with respect to the cognitive theory of metaphor, we can make the following observations.

Firstly, the explicans is to be identified with the ‘technical’, i.e. theory-dependent, use of the term in metaphorical expressions. The point is not that the explicans is ‘precise’ or ‘exact’ (as the ‘received view’ of the analytic philosophy of science would maintain), but rather that its meaning is specialized, new, and different from the nontechnical use of the same expression. Secondly, it follows from this that the main feature of the explicandum – the original, nontechnical use of expressions like *deep*, *govern*, *command*, etc. – is not the fact that their vagueness is to be contrasted with the exactness of their theoretical use. Thirdly, given the nature of metaphorical expressions, the relation between the explicandum (for example, *govern* in its nontechnical sense) and the explicans (for example, *govern* as a theoretical term of GBT) may be labeled as conceptual (in the ‘holistic’ sense mentioned earlier, which definitively differs from the ‘traditional’ notion of ‘semantic’ presupposed by (RV)). Thus the metascientific application of the cognitive theory of metaphor to the theoretical terms of generative linguistics has shown the tenability of (H)(a):

- (H) (a) If (MHH) is accepted, theoretical terms in generative linguistics do **not** hinge on the replacement of a vague term by an exact one, and the relationship between the explicans and the explicandum is **not** semantic in the sense of (RV).

Now, after revealing the metaphorical structure of theoretical terms with respect to two phases of the development of generative linguistics and interpreting them along the lines of the cognitive theory of metaphor, we have to address further questions. First of all, the following question arises. What are the consequences of the above insights with respect to the role which theoretical terms play in scientific **explanations**? Let us draw those conclusions from (H)(a) which yield an answer to this question.

2.3. The Structure of Explanations

The answer may be inferred from theses (5) and (7) immediately: In scientific explanations it is the target domain *X* of a metaphor which is to be regarded the explanandum whereas the source domain *Y* plays the role of the explanans.

This amounts to the assumption that metaphors provide us with image schemas by the help of which in the course of linguistic research an unknown phenomenon *X* can be made understandable insofar as it is related to a very different domain *Y* which, nevertheless, can be experienced immediately or which is, at least in a certain respect, more familiar than *X*. Exactly this is the case, for example, with respect to source domains like PLANTS, HUMAN ACTIVITIES, HUMAN ROLES, etc. in ST.

An important consequence of this is the way in which metaphorical concepts may fulfill their focusing function (see (9)). Clearly, the properties mentioned are rendered salient in the explanations, too: in ST, the creative, dynamic nature of grammatical structures is emphasized, whereas the explanations of GBT focus on their restrictiveness.

Accordingly, the following conclusions seem to be quite straightforward.

(i) We have noticed that in the light of (MHH') and (1)–(11), explanations in generative linguistics are not to be regarded as sets of statements. Rather, it is conceptual metaphors which exert an explanatory function (see (5) and footnote 15). Therefore, it is not the case that explanations contain general statements under which individual facts are subsumed. Since an explanation is not to be identified with a set of statements among which certain relations hold and since, as a result of this, the explanans cannot contain general statements, **explanations cannot be subsumptive** – at least insofar as we define 'subsumption' in the sense of the analytic philosophy of science.²⁰

(ii) There are several reasons why **explanations cannot be deductive** if (MHH') is presupposed. Firstly, owing to the fact that the explanandum (i.e. the target domain *X*) and the explanans (i.e. the source domain *Y*) are related to each other in a network-like manner, their relationship involves much more complex relations than deduction. Secondly, by definition, deduction (in a logical sense which is presupposed by (RV)) is a relation which operates on sentences (propositions) only. As opposed to this, the cognitive theory of metaphor does not identify the explanans and the explanandum with sentences, but with conceptual domains. Therefore, it does not make sense to apply the term 'deduction' to their relationship.

²⁰ Nevertheless, in a wider sense we may assume the subsumptivity of explanations. If we identify the explanandum with the target domain and the explanans with the source domain (see (5)), and if we assume that metaphorical concepts are 'generalizations' because they conceptualize individual phenomena by establishing a correspondence relation between the target domain and the source domain, then we may claim, although in a different sense, that explanations have a kind of 'subsumptive' function.

(iii) Since in the light of (9) metaphorical concepts focus on just one specific aspect of the target domain, which is identified with the explanandum of an explanation, one may predict that all future occurrences of the phenomena thus conceptualized will have the very same aspect. Therefore, grammatical explanations – seen as metaphorical concepts along the lines of (5) and footnote 15 – appear to be, in this sense, **predictive**.

Thus the metascientific application of the cognitive theory of metaphor yields corresponding part of (H)(b):

- (H) (b) If (MHH') is accepted, scientific explanations in generative linguistics are (i) **not** subsumptive, (ii) **not** deductive, and (iii) **predictive**.

Now, the next question which has to be addressed in the light of (P1)(c) is this. How is the metaphorical structure of theoretical terms related to typical pragmatic factors like priorities and aims? The following section will discuss this problem.

2.4. Theoretical Terms and Pragmatics

By definition, holism denies the existence of boundaries between what might be called 'semantic', 'cognitive' or 'pragmatic' aspects of the knowledge of language. For example, Lakoff and Johnson (1999: 482) characterize their approach in the following way.

"It [i.e. their approach, A. K.] includes, for starters, all those things you would have to learn if you were to learn a foreign language: the meanings, the pragmatics, the speech-act constructions, constraints on processing, and on and on."

Accordingly, if, on the basis of (MHH'), the vocabulary of generative linguistics is described in terms of a holistic approach to the 'cognitive science of science', then we have to capture the 'wholeness' of at least (a) the metaphorical expressions which constitute the system of theoretical terms of generative linguistics, (b) the metaphorical concepts determining them, and (c) the scenarios which are to be regarded as the overall cognitive framework with respect to which metaphorical concepts and metaphorical expressions work.

No matter how we may define the notion of pragmatics, it goes without saying that 'goals' and 'priorities' belong to pragmatics. Now, as Riley shows, the terminology of both ST and GBT reflect the goals of linguistic theory in a clear-cut way. As regards ST, Riley (1987: 181) emphasizes "Chomsky's interest in what could properly be called the **creative** or **dynamic** properties of language systems". The result of comparing the terminology of ST with the goal of capturing the creative and dynamic nature of knowledge of language boils down to this.

“Regarding language as an intricate, creative, yet rule-governed system, linguists within the ST framework have adopted and introduced a metalanguage that is highly compatible with their paradigm. The recurring qualities of ST jargon are those associated with the properties that distinguish **living organisms** from nonorganic entities: **process, movement, and growth. The dynamic and creative qualities of ST jargon thus strongly parallel the central concerns of the theory itself, its emphasis on the creative aspects of language.**” (Riley, 1987: 181; emphasis added, A. K.)

This insight may be used to reveal the general scenario (in the sense of (11)) which includes at least the following components:

- INITIAL STATE: there are living organisms;
- PATH: these living organisms move, grow, develop;
- FINAL STATE: the results of this growth, development and creativity, i.e. richness and complexity.

We may adapt Riley’s findings to GBT in an analogous way. Accordingly, the main goal of GBT is the restriction of grammar. It is instructive to notice how Chomsky himself contrasts the goal of ST with that of GBT:

“The theory presented in [the *Logical Structure of Linguistic Theory* (1955)] permitted a great number of rules. I tried at first to provide a system rich enough to express as much as I could imagine. Now, in a sense, I’m trying to do the opposite, **to limit the expressive power of rules.**” (Chomsky, 1979: 182; quoted in Riley, 1987: 182; emphasis added, A. K.)

The scenario:

- INITIAL STATE: there are abstract social relations,
- PATH: these social relations are restricted,
- FINAL STATE: impoverished system of relations.

The pragmatic aspects of theoretical terms are rooted in the very nature of metaphorical concepts and the scenarios associated with them. Therefore we get the first part of (H)(c).

- (H) (c) (i) As a consequence of (MHH’), the cognitive theory of metaphor does not differentiate strictly between the semantic, conceptual and pragmatic aspects of theoretical terms and explanations; it acknowledges, therefore, in this ‘holistic’ sense, the role of pragmatics in scientific concept formation.

To sum up: (P2)(a) may be answered by referring to the fact that the metascientific extension of the cognitive theory of metaphor yielded (H)(a), (H)(b), and the first part of (H)(c) as a possible solution to (P1).

3. CASE STUDY 2

3.1. The Two-Level Approach

The basic assumption is the **modularity hypothesis**:

(MH) Knowledge of language is determined by the interaction of relatively autonomous sub-systems called modules.

The most radical generalization of the idea underlying the notion of modularity is Bierwisch and Lang's two-level approach:²¹

"Basically, **all human cognitive behavior is organized in a modular fashion**. The structure formation underlying any concrete behavioral performance is based upon the integration of various relatively autonomous, task-specifically interacting systems and subsystems (MODULES)." (Lang *et al.*, 1991: 12; emphasis added, A. K.)

Thus we may spell out this idea in the following way.

(MH') The whole of human cognitive behavior is determined by the interaction of modules.

(MH') is related to a few assumptions which characterize the nature of modules. For the sake of clarity, let us review them briefly (see also Bierwisch, 1981, 1983a, 1983b; Grewendorf *et al.*, 1987; Bierwisch and Lang (eds.), 1989; Lang, 1994; etc.).

- (21) Modules are not systems of external states of affairs, but they are the representations of states of affairs in the human mind and constitute, accordingly, **cognitive systems**. This means that whatever modules there are, they can be treated qualitatively in the same way, namely, as cognitive structures and processes.
- (22) At present there is very little evidence at our disposal for identifying the modules of human behavior. Nevertheless, it is assumed that both the **grammatical** and the **conceptual** module are relatively autonomous subsystems in that neither of them is determined by the other and that they are connected by an interface called **semantic**

²¹ For an explication of the structure of the argument which leads from (MH) to (MH') below, see Kertész, 1993.

representation. The exact number and the definition of further modules is less important in the present context.²²

- (23) Modules in general consist of **universal principles** which determine **rules** and these rules, in turn, determine **representations**. **Instances of behavior** consist of sets of representations.²³
- (24) By definition, every module is **relatively autonomous**. This means, on the one hand, that they are based on independent regularities which cannot be derived from another module. On the other hand, the autonomy of modules is not absolute, because they are connected by interfaces and thus they can interact with one another. The relative autonomy of modules is manifested in the fact that the universal principles which they involve are associated with **free parameters**. In this sense, universals are under-determined, because usually (but not always) they contain at least one element – that is, a parameter – whose value is not specified at the outset. The important claim is that the value of a parameter P_1 associated with a universal principle UP_1 in the module M_1 may depend on the value of a parameter P_2 associated with a principle UP_2 belonging to the module M_2 . This relation between UP_1 and UP_2 is called the **parametrization relation**.
- (25) We have said that the universal principles determine particular rules of behavior. Then from the way the parametrization relation has been formulated, it follows that a particular rule is nothing but a principle whose parameter has been fixed at a certain value. If the parameter is fixed at different values in different cases, then we get different rules. The second consequence is that the values of the parameters which in fact yield specific rules may depend on the values of parameters belonging to another module and therefore, a rule R_1 belonging to a module M_1 may not simply be determined by the principles of this module M_1 only, but can also result from the parametrization relation between at least two universal principles UP_1 and UP_2 belonging to two different modules M_1 and M_2 , respectively.

3.2. The Structure of Theoretical Terms

If we relate, in accordance with what has been said in Section 1.3, an empirical hypothesis like (MH') to the Quinean idea of "science self-applied" (Quine, 1975: 293), which naturalized philosophy of science presupposes, then (MH') may be transferred to the metascientific level. Therefore, analogously to (12) in Section 2.2, a very simple argument presents itself. Namely, there is no denying that scientific knowledge is part of human cognitive behavior. If, however, scientific knowledge is part of human cognitive behavior and the latter is organized in terms of

²² See Bierwisch, 1981 and Grewendorf *et al.*, 1987 for possible candidates.

²³ For examples illustrating these notions, see, e.g. Bierwisch, 1987 and Kertész, 1991.

(MH'), then scientific knowledge must also be organized in a modular way. Thus we obtain the metascientific extension of the modularity hypothesis:

(MMH') Scientific behavior is determined by the interaction of modules.

In what follows I will illustrate the way in which this mechanism works by reducing (P2)(b) to (P2'').²⁴

(P2'') What is the structure of theoretical terms if (MMH') is accepted?²⁵

One corollary of (MH') is the following thesis which specifies the nature of the interpretation of lexical items (see also (22) in Section 3.1).²⁶

(26) The interpretation of term *A* of language *L* in context *ct* is the mapping of its **semantic representation** (*sem*) onto the level of **conceptual structure** (*CS*) in a way that *sem* (*A*) receives the **conceptual representation** *m* in *CS* relative to the context *ct*, that is: *sem* (*A*, *ct*) = *m*.

According to (MMH') this corollary must apply not only to natural language, but also to the language of scientific theories in general. Therefore, we should adopt it with the only remark being that *L* is the language of an objectscientific theory – say, ST or GBT. The main idea behind (26) is identical with that of modularity: representations are determined by the interaction of universal principles belonging to different modules. *Sem* is the interface between the grammatical and the conceptual module, whereas context *ct* and *m* belong to the latter. Seen in this light, a very important aspect of (26) is that, as a result of the intermodular definition of interpretation, what may be called the 'meaning' of a term is semantically underdetermined, because it is not only semantic information, but also information from the conceptual module which it makes use of. In a specific sense *sem* is 'empty': what *A* 'means' in a certain context *ct* is not something semantic but something conceptual. This semantic underdetermination leads to far-reaching consequences with respect to the nature of theoretical terms.

The nature of such terms can be explained on the basis of (26). We may assume that a term *A* is associated with a family of concepts characterized by the following properties: (i) a **family of concepts** is a set of conceptual representations, i.e. $FC = \{m_i\}$; (ii) any element of this set is a function of the semantic representation *sem* of *A* with respect to a given context *ct*, i.e. *sem* (*A*, *ct*) = *m*; (iii) *FC* is structured by a set of conceptual principles.

²⁴ Obviously, (P2'') is analogous to (P1'). Also, we proceed analogously to what has been said in footnote 17.

²⁵ For a detailed analysis of these questions, see Kertész (1991).

²⁶ See Lang (1994: 26), Bierwisch and Lang (1989) for details.

Conditions (i) and (ii) should be clear from what has been said above. (iii) is a straightforward consequence of (MMH') and (26), specifying the nature of the interpretation of terms. In accordance with (MMH'), we have to assume that the modules determining scientific knowledge, just like those of knowledge of language, consist of universal principles. Consequently, we must assume that this applies to the conceptual module as well, and this in turn means that the relationship between the representations localized in the conceptual module is governed by such principles.²⁷ In particular, the elements of *FC* may be connected by the principle of **conceptual shift** in that the interpretation of *A* is shifted from one conceptual area to another. The principle of **conceptual specification** may also operate whose main characteristic is that *sem* is specified according to the contexts, but – unlike in the case of conceptual shift – within the same conceptual domain, without being shifted to different conceptual areas. The third principle which appears to be relevant is that of **conceptual selection**. It operates when terms which have been governed by one of the principles mentioned above are coordinated as a result of which the interpretation of one term selects the interpretation of another (Bierwisch, 1983b).

At this point it is important to make a short digression by raising the question of how the two-level approach handles metaphors. Indeed, Bierwisch (1979) considers the principle of **metaphorization**. Basically, Bierwisch treats metaphors as follows. Let us assume that the 'literal meaning' *LM* of a term *A* is determined by the function *sem* (*A*, *ct_a*), where *ct_a* is a 'neutral context' characterized by the fact that it does not contain pieces of information inconsistent with *sem*. What matters, is that Bierwisch infers the 'metaphorical meaning' *MM* of a term from its 'literal meaning' *LM*. Although metaphorical meanings are always established in 'non-neutral' contexts, there is for every non-neutral context *ct_a* a 'nearest' neutral context *ct_a'* which determines the 'literal meaning' *LM*. The metaphorical meaning *MM* of a term *A* is yielded by the conceptual principle *M* (*LM*, *ct_a*). The effect of this principle is that in the non-neutral context *ct_a* the metaphorical meaning *MM* is defined as the minimal change of the literal meaning *LM* of *A* consistent with the latter. Now, these assumptions suggest that there may be a specific relationship between metaphorical and literal meaning in the case of theoretical terms. In particular – as we have seen in (13) and (18) in Section 2.2 – most theoretical terms of generative grammar are of a metaphorical origin, but it follows from what has just been said that their 'metaphorical meaning' results from the 'literal meaning' of the common sense use of the corresponding terms. Moreover, after they have been introduced into the theory, they are interpreted as 'literal' expressions relative to the context of the theory and are exposed to the conceptual operations conceptual selection and conceptual shift (see the analysis of the term *bind* below). For a more detailed discussion of these relationships and case studies concerning the role of metaphors in scientific explanations along the lines of the two-level model see Kertész, 1991.

²⁷ Cf. Bierwisch, 1983a, b with respect to (MH').

After this digression, let us turn to the question of how, against this background, the metascientific extension of the two-level approach (cf. (MMH')) answers (P1)(a). Evidently, the relationship between two different explications of a given theoretical term *A* can be seen as that between two conceptual representations of this term which are members of the same family of concepts *FC*. For example, they may be connected with each other by the principle of conceptual shift: that is, the *sem* which they share is mapped onto two different theoretical contexts and as a result of this, the interpretation of the term *A* is shifted to two different conceptual domains. The term under discussion is, of course, not 'exact' in the sense of the analytic philosophy of science, because it can be interpreted in many different ways. However, it is neither ambiguous between two meanings inherent in its lexical structure nor vague, because there is a clear-cut difference between the two 'meanings'; rather, it is simply assigned different interpretations according to the conceptual areas which it is mapped onto. Thus, we may conclude that in the light of (MMH'), **the structure of explications** of a given theoretical term is characterized by two aspects. Firstly, as opposed to the claims of the analytic philosophy of science, what has traditionally been labelled as the **explicandum**, is neither something vague nor something ambiguous, but rather it can be identified with the semantically under-specified semantic representation *sem*. Secondly, the **explicans**, as contrasted with the classic view (see (RV)(a)), is not an 'exact' term, but one of the conceptual interpretations yielded by one or another of the conceptual operations mentioned above. Consequently, we obtain the result that **the explicandum of a term A is its *sem* and its different explicantia are its conceptual representations *m***. From these findings it follows that the metascientific application of the two-level approach yields (H)(a).

- (H) (a) If (MMH') is accepted, theoretical terms in generative linguistics do **not** hinge on the replacement of a vague term by an exact one and the relationship between the explicans and the explicandum is **not** semantic in the sense of (RV).

The analytic philosophy of science cannot explain how it is that, on the one hand, the exactness of terms is a major requirement, while, on the other hand, theories work quite well even if the terms they use are not exact.²⁸ The lack of exactness would be fatal only if in a given context the interpretation of the term were not clear and if there were no connection between the various interpretations. But if we try to understand the structure of theoretical terms

²⁸ One can go even one step further in maintaining that sometimes objectscientific theories may work very well even if their fundamental theoretical terms are not defined at all. For example, in the Standard Theory of Generative Grammar *sentence* was given a recursive definition. In the light of further research, this definition turned out to be unworkable, however, and no proponent of Government-Binding Theory would try to define the theoretical term *sentence* (see also Stechow and Sternefeld, 1988). Nevertheless, it is used very often, and, of course, in every context in which it appears it may be used in a slightly different sense.

with respect to families of concepts as we have done above, neither case will apply. Thus we obtain:

(i) Theoretical terms may be assigned different conceptual representations according to the contexts in which they are used. These interpretations are related to each other by conceptual principles like the principle of conceptual shift, conceptual specification, and conceptual selection.

(ii) The conceptual principles do not relate the particular conceptual representations directly, but only indirectly, through *sem*.

(iii) Consequently, the different conceptual representations of a theoretical term *A* are not independent of each other and their continuity is accounted for.

As a result, the metascientific extension of the two-level approach makes the structure of theoretical terms appear to be significantly different from what the analytic philosophy of science assumed.

3.3. The Structure of Explanations

Turning to **explanations** now, we can claim that the most important function of theoretical terms is that they are part of the 'explanans' of scientific explanations. As a first approximation we may say that a scientific explanation is a pair between a statement to be explained (the **explanandum**) and a set of other statements (the **explanans**) which **explains** the former. What matters now, is that the main reason why theoretical terms are introduced into a theory is that without them the explanation of a fact described by the corresponding explanandum would not be possible, because theoretical terms enter the explanans in a significant way. What we must be interested in now, is the effect of the above account of theoretical terms with respect to the role they play in scientific explanations.

Let us assume that Em_i is the explanandum of the explanation *E* in which a certain term T_i occurs and that T_i has the conceptual representation CR_i . Em_i should be explained by an explanans Es_i which contains the theoretical term t_i with the conceptual representation cr_i . However, both CR_i and cr_i are members of families of concepts associated with T_i and t_i , respectively, in the sense mentioned in the previous section. These families consist of a set of conceptual representations related to each other by conceptual principles like conceptual shift and conceptual specification. Given the fact that Em_i and Es_i are, within the explanation, connected with each other, T_i interacts with t_i . Consequently, the principle of conceptual selection will operate and according to this principle a given conceptual representation of one term selects a conceptual representation from the family associated with another term. Therefore, it may be the case that cr_i , instead of selecting CR_i , selects another element CR_2 from the family of concepts associated with T_i , while CR_i and CR_2 are related to each other by one of the conceptual principles. This means that, if this is the case, Es_i does not explain Em_i but Em_2 ,

which differs from Em_I at least insofar as the interpretation of T_I is not CR_I but CR_2 . The effect of this mechanism is that an explanans may explain an explanandum not identical with that one which originally motivated the search for an explanation. Let us illustrate this mechanism by an example from the history of generative linguistics.

The theory of binding focuses on the question of why X and Y are coreferential in (27a) and not in (27b):

- (27) (a) Mary_i admires herself_i.

X Y

- (b) *Mary_i admires her_j.

X Y

Then the explanandum Em_I is as follows:

- (28) (a) In the sentence (27a) X and Y are coreferential.
(b) In the sentence (27b) X and Y are not coreferential.

In (27) and in (28) X and Y are syntactic expressions in a structural configuration and *coreferential* is the term T_I which occurs significantly in Em_I . Without going into an analysis of the historical development of suggestions put forward to explain (28), let it suffice to refer to Chomsky's classic solution (Chomsky, 1981):

- (29) (a) An anaphor is bound in...
(b) A pronoun is free in...
(c) An R -expression is free.

Thus the explanation is based on the **introduction of the theoretical term *bind*** – which I will label as t_I – into the explanans. The interpretation of t_I corresponds, on the basis of (MMH'), to its context-dependent conceptual representation cr_I which may be characterized as follows.

- (30) X binds Y iff
(i) X c-commands Y and
(ii) X and Y are coindexed.

In (30) *c-command* is a structural relation between two nodes in the sense of Chomsky, 1981. Accordingly, we get the explanans Es_I which yields the following explanation E_I .

- (31) In (27a) X and Y are coreferential, because Y is bound in...

So, in the light of cr_1 (i.e. the context-dependent interpretation of the theoretical term *bind*) it is clear that *coreferential* is a relation between two nodes in a constituent structure, in particular, between two noun phrases. Thus, the term T_1 receives the conceptual representation CR_1 .

(32) CR_1 : Relation between two NPs.

However, (30) is, of course, not the only explication of the term *bind*. Among many other suggestions, Williams (1987) introduced the notion of *theta-binding* which may be conceived of as the lexicalization of the conceptual representation cr_2 of t_1 . Consider (33):

(33) Y is theta-bound if there is a theta-role X which th-commands Y and is coindexed with it.

Then, the explanation E_2 is this.

(34) In (27a) X and Y are coreferential, because Y is theta-bound in...

Although E_2 seems to have been motivated by the explanandum Em_1 , which is a statement containing the term T_1 with the conceptual representation CR_1 as specified in (27), what is really explained here is no longer Em_1 , but a new explanandum Em_2 . The reason why this is so is that cr_2 does not select CR_1 from the family of conceptual representations associated with T_1 (the term *coreferential*), but, rather, CR_2 .

(35) CR_2 : Relation between two theta-roles.

Indeed, the relation between cr_1 and cr_2 can easily be identified with that of conceptual shift, as mentioned earlier: whereas in (31) the conceptual representation of t_1 is localized in a theory capturing structural relations between nodes of constituent structure, in (34) it has been shifted to another domain, namely, theta theory. Consequently, cr_2 selected another element of the family of concepts associated with T_1 , namely, CR_2 , where probably it is conceptual shift again which relates CR_1 and CR_2 .

The scope of this example can be easily extended to further cases. To mention one more case, Reinhart (1983) introduces another notion of binding which differs from the previous ones in that binding is seen as a semantic operation of binding variables. Therefore, if t_1 is introduced into the explanans Es_1 with the conceptual representation cr_3 which results from identifying the c-command relation with the translatability of a pronoun into a bound variable, then the conceptual representation of the term *bind* will be shifted to the domain of the interpretation of sentences. Accordingly, cr_3 will select CR_3 from the family of concepts associated with T_1 .

(36) *CR*₃: Relation between an operator and a variable.

Thus we obtain exactly what could be expected on the basis of the general structure of theoretical terms and explanations. In particular, the terms in the explanans and those in the explanandum are associated with families of concepts *FC*_{*i*} whose members are related to each other by the conceptual operations conceptual shift or conceptual specification. Consequently, the relationship between the explanans and the explanandum is rooted in the principle of conceptual selection relating the particular conceptual representations in the former to those in the latter. Therefore, the explanans may modify the explanandum.

What remains to be shown is how this finding is related to (H)(b). Consider:

(i) By definition, the explanandum *Em* of a scientific explanation *E* is a description of a fact to be explained whereas the explanans *Es* contains some general statement which should explain this fact. However, as we have just seen, the relationship between the *Em* and the *Es* is based on the principle of conceptual selection, so the latter can modify the former. Consequently, if this modification is really the case, we cannot say that the fact described by *Em* is subsumed under the general statement which the *Es* includes. However, such a subsumption is not excluded at the outset, either: if *Es* does not select a new *Em* differing from the original one – which of course may be the case – then subsumption is possible. Thus we obtain exactly what (H)(b)(i) says: scientific explanations are **not** necessarily subsumptive.

(ii) We get (H)(b)(ii) by the same token. If *Es* selects an *Em*₂ instead of the original *Em*₁, the relationship between the *Es* and the *Em*₁ is **not** deductive. However, in two other cases it **may be** deductive. Firstly, when the *Es* does not select another *Em*₂ instead of *Em*₁. And secondly, if we consider the relationship between *Es* and *Em*₂. Accordingly, scientific explanations may be, but are **not** necessarily deductive.

(iii) It is also straightforward that the structure of scientific explanation we have revealed yields the **predictiveness** of scientific explanations. Since *Es* may select *Em*₂ which may not be identical with *Em*₁ one originally wanted to explain, it is straightforward that *Em*₂ meets the criteria along which something counts as a prediction. Firstly, it is related to *Es* – in whatever way. Secondly, it is not identical with *Em*₁. Thirdly, it is not available at the time at which the latter is available.

Thus the metascientific application of the two-level model yields exactly what (H)(b) says:

- (H) (b) If (MMH') is accepted, scientific explanations in generative linguistics are (i) **not** necessarily subsumptive, (ii) **not** necessarily deductive, and (iii) **predictive**.

3.4. Theoretical Terms and Pragmatics

The two-level model draws a dividing line between the domain of language and that of communication, where speech acts are construed as interconnecting these two fields in a particular way. That is to say, a speech act makes a linguistic utterance, on the basis of its meaning, the source of a communicative sense. But the latter, according to this approach, is not a linguistic entity at all; rather, it belongs to the domain of social interaction. The following notions will help to capture this idea (see Bierwisch, 1980).

A linguistic utterance is conceived of as an **inscription** *ins* and a **linguistic structure** *ls*. The latter is a triple of a **phonetic**, a **syntactic**, and a **semantic** representation *pt*, *syn*, *sem*, respectively:

$$(37) \quad u = \langle ins, \langle pt, syn, sem \rangle \rangle.$$

The semantic representation *sem* determines an **utterance meaning** *m* by the help of a **context** *ct* with respect to which *u* is interpreted.²⁹ A triple consisting of an utterance *u*, its utterance meaning *m*, and the context *ct* is a **meaningful utterance** *mu*:

$$(38) \quad \mu = \langle ins, \langle \langle pt, syn, sem \rangle, ct, m \rangle \rangle.$$

What has been defined so far belongs to the domain of **language**, and involves two modules, namely, the grammatical and the conceptual. Turning now to the domain of communication, a **speech act** may be defined as a meaningful utterance to which a **communicative sense** *cs* is assigned relative to a certain **interactional setting** *ias*:

$$(39) \quad sa = \langle ins, \langle \langle \langle pt, syn, sem \rangle, ct, m \rangle, ias, cs \rangle \rangle.$$

ias and *cs* are representations belonging to the module of social interaction. There are two crucial points here. Firstly, in this model there is **no such thing as pragmatics**, because the phenomena, which within the framework of other approaches count as 'pragmatic' are distributed between *mu* and *sa* here. Secondly, according to Bierwisch, *ias* and *cs* belong to the domain of social interactions and are, therefore, not accessible to linguistic means. That is to say, a communicative sense depends on the interplay between a meaningful utterance and the principles or conditions of social interaction determining the interactional setting of a given utterance; but this interplay can be captured only on the basis of a suitable theory of social interaction which, in Bierwisch's opinion, is outside the scope of linguistics.

²⁹ In (26) *sem* was restricted to the semantic representation of lexical items (i.e. terms), whereas in (37) it is utterances whose different representations are focused on. The symbols *m* and *ct* are conceptual representations, just like in (26).

Thus, with respect to the question of how theoretical terms are related to pragmatic factors, the metascientific extension of this approach yields two conclusions. Firstly, although in the light of the two-level model the structure of theoretical terms is – as a result of the interplay between the semantic and the conceptual representation – characterized by a considerable degree of ‘variability’ and ‘flexibility’ (see Sections 3.2 and 3.3), it does not make sense to ask the question of how ‘pragmatic’ factors influence this structure. Secondly, the aspects outside this kind of ‘variability’ and ‘flexibility’ cannot even be captured by linguistic means and, consequently, they do not belong to the subject matter of the metascientific extension of the two-level approach.

So, we inferred the second part of (H)(c):

- (H) (c) (ii) The two-level approach regards the notion of ‘pragmatics’ as implausible and reduces central properties of theoretical terms to the interaction between relatively autonomous semantic and conceptual factors.

In sum, (P2)(b) may be answered by referring to the fact that the metascientific extension of the two-level approach has yielded (H)(a), (H)(b), and the second part of (H)(c) as a possible solution to (P1).

4. CONCLUSIONS

The aim of the present paper has been twofold. Firstly, with respect to (P2) we examined to what extent a modular approach and a holistic approach to cognitive linguistics yield new means for the solution of problems traditionally raised by the philosophy of science. Secondly, by developing a modular and a holistic approach to the ‘cognitive science of science’ we set out to compare two alternative solutions to (P1).

In the course of the argumentation we have seen that the two-level model and the cognitive theory of metaphor have **common implications**:

- They yield analogous results concerning the structure of theoretical terms and scientific explanation in generative grammar. Both of them have led to the justification of our hypothesis (H)(a), (b) put forward as our solution to the problem (P1)(a), (b).
- This result contradicts the hypotheses which the analytic philosophy of science maintains and which were summarized in (RV)(a), (b) in Section 1.3.

Nevertheless, the **means** by which the two models drew this picture are **very different** in several respects:

- The empirical hypotheses – i.e. (MH) and (HH) – which the two-level model and the cognitive theory of metaphor presuppose are antagonistic.
- The phenomena which they cover are not the same, and this also affects the way in which their metascientific extension interprets the structure of theoretical terms and scientific explanations. On the one hand, **the cognitive theory of metaphor**
 - focuses on metaphor;
 - emphasizes that metaphors are not to be understood in the narrow sense of individual linguistic expressions of some kind, but, rather, in a much broader sense as networks of expressions along the lines of which the world is conceptualized;
 - does not restrict scientific explanations to statements (sentences, propositions), but captures them as the relationship between conceptual domains;
 - infers the main properties of scientific explanations from the unidirectionality of metaphorical processes;
 - treats the semantic, conceptual and pragmatic aspects of theoretical terms and explanations as an undividable whole.

On the other hand, **the two-level approach**

- attributes to metaphors a marginal role only, while it focuses on other kinds of conceptual operations (conceptual selection, conceptual shift, and conceptual specification);
 - considers the terms affected by these operations as individual linguistic expressions which occasionally enter the explanantia;
 - regards explanations basically as sets of statements with a propositional structure connected by certain (conceptual) operations;
 - maintains that they are determined by the interaction of the explananda and the explanantia;
 - implies that the notion of 'pragmatics' cannot be made use of if the structure of theoretical terms and that of explanations have to be captured.
- Moreover, we have also seen that there are slight differences in the way the two approaches account for the subtheses of (H). For example, whereas the two-level model leads to the conclusion that scientific explanations in generative linguistics may be, but are not necessarily deductive, the cognitive theory of metaphor implies that they are not deductive at all.

As a result, the similarities and the differences boil down to the following **generalizations**:

- Since (H), which both models lead to, differs considerably from the 'received view' (RV), the conclusion follows that cognitive linguistics, applied as a tool for the philosophy of science, may yield novel and unexpected solutions to classic problems.

- Since (H) has been justified by two very different models which presuppose incompatible empirical hypotheses, we may conclude that (RV) is untenable, indeed.

So, the main finding of this paper thus summarized serves as a rather strong argument for the plausibility of (MECL) introduced in Section 1.3. Since, however, the very means by which the two approaches falsified (RV) and justified (H) are very different, the question arises as to what further implications these differences have. Therefore, it is not necessarily the case that the two approaches should be applied to the same problems, but rather, it is quite probable that the problems to which they can be applied most successfully, will not be identical. It is the task of future research to spell out their potential in this respect.

REFERENCES

- Arbib, M. A. and M. B. Hesse (1986). *The Construction of Reality*. Cambridge University Press, Cambridge.
- Bierwisch, M. (1979). Wörtliche Bedeutung: Eine pragmatische Gretchenfrage. In: *Sprechakttheorie und Semantik* (G. Grewendorf, ed.), pp. 119–148. Suhrkamp, Frankfurt am Main.
- Bierwisch, M. (1980). Semantic structure and illocutionary force. In: *Speech Act Theory and Pragmatics* (J. R. Searle, F. Kiefer, and M. Bierwisch, eds.), pp. 1–36. Reidel, Dordrecht.
- Bierwisch, M. (1981). *Die Integration autonomer Systeme. Überlegungen zur kognitiven Linguistik*. Manuscript, Berlin.
- Bierwisch, M. (1983a). *Essays in the Psychology of Language*. Zentralinstitut für Sprachwissenschaft, Berlin.
- Bierwisch, M. (1983b). Semantische und konzeptuelle Repräsentation von lexikalischen Einheiten. In: *Untersuchungen zur Semantik* (R. Růžicka, and W. Motsch, eds.), pp. 61–100. Akademie Verlag, Berlin.
- Bierwisch, M. (1987). Linguistik als kognitive Wissenschaft: Erläuterungen zu einem Forschungsprogramm. *Zeitschrift für Germanistik*, 8, 645–667.
- Bierwisch, M. and E. Lang (eds.) (1989). *Dimensional Adjectives: Grammatical Structure and Conceptual Interpretation*. Springer, Berlin.
- Carnap, R. and W. Stegmüller (1959). *Induktive Logik und Wahrscheinlichkeit*. Springer, Wien.
- Chomsky, N. (1957). *Syntactic Structures*. Mouton, The Hague.
- Chomsky, N. (1965). *Aspects of the Theory of Syntax*. MIT Press, Cambridge, Mass.
- Chomsky, N. (1979). *Language and Responsibility*. Pantheon, New York.
- Chomsky, N. (1981). *Lectures on Government and Binding*. Foris, Dordrecht.
- Churchland, P. (1986). *Neurophilosophy: Toward a Unified Science of the Mind/Brain*. MIT Press, Cambridge, Mass.

- Churchland, P. M. (1989). *A Neurocomputational Perspective: The Nature of Mind and the Structure of Science*. MIT Press, Cambridge, Mass.
- Downes, S. (1993). Socializing naturalized philosophy of science. *Philosophy of Science*, **60**, 452–468.
- Giere, R. (1988). *Explaining Science: A Cognitive Approach*. University of Chicago Press, Chicago.
- Goldman, A. I. (1986). *Epistemology and Cognition*. Harvard University Press, Cambridge, Mass.
- Grewendorf, G., F. Hamm, and W. Sternefeld (1987). *Sprachliches Wissen: Eine Einführung in moderne Theorien der grammatischen Beschreibung*. Suhrkamp, Frankfurt am Main.
- Haack, S. (1993). The two faces of Quine's naturalism. *Synthese*, **94**, 335–356.
- Jäkel, O. (1997). *Metaphern in abstrakten Diskurs-Domänen*. Peter Lang, Frankfurt am Main.
- Kertész, A. (1991). *Die Modularität der Wissenschaft: Konzeptuelle und soziale Prinzipien linguistischer Erkenntnis*. Vieweg, Braunschweig.
- Kertész, A. (1993). *Artificial Intelligence and the Sociology of Knowledge: Prolegomena to an Integrated Philosophy of Science*. Peter Lang, Frankfurt am Main.
- Kertész, A. (1997). The reflexivity of cognitive science and the philosophy of linguistics. In: *Metalinguistik im Wandel: Die 'kognitive Wende' in Wissenschaftstheorie und Linguistik* (A. Kertész, ed.), pp. 197–233. Peter Lang, Frankfurt am Main.
- Kertész, A. (1998). What can cognitive semantics do for the philosophy of science? In: *The Diversity of Linguistic Description* (J. Andor, B. Hollósy, T. Laczkó, and P. Pelyvás, eds.), pp. 145–168. KLTE, Debrecen.
- Kertész, A. (1999). *Metalinguistik: Grundlagen und Fallstudien*. Latin Betűk, Debrecen.
- Kertész, A. (2001). Metascience and the metaphorical structure of scientific discourse. In: *Approaches to the Pragmatics of Scientific Discourse* (A. Kertész, ed.), pp. 135–158. Peter Lang, Frankfurt am Main.
- Kiefer, F. (1995). Cognitive linguistics: A new paradigm? In: *Linguistics in the Morning Calm* Vol. 3 (I.-H. Lee, ed.), pp. 93–111. Seoul.
- Kövecses, Z. (1986). *Metaphors of Anger, Pride, and Love. A Lexical Approach to the Study of Concepts*. John Benjamins, Amsterdam.
- Kövecses, Z. (1990). *Emotion Concepts*. Springer, New York.
- Kövecses, Z. (2000). *Metaphor and Emotion*. Cambridge University Press, Cambridge.
- Lakoff, G. (1987). *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind*. University of Chicago Press, Chicago.
- Lakoff, G. and M. Johnson (1980). *Metaphors We Live By*. University of Chicago Press, Chicago.
- Lakoff, G. and M. Johnson (1999). *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought*. Basic Books, New York.
- Lang, E. (1994). Semantische vs. konzeptuelle Struktur: Unterscheidung und Überschneidung. In: *Kognitive Semantik / Cognitive Semantics. Ergebnisse, Probleme, Perspektiven* (M. Schwarz, ed.), pp. 25–40. Narr, Tübingen.
- Lang, E., K.-U. Carstensen, and G. Simmons (1991). *Modelling Spatial Knowledge on a Linguistic Basis: Theory – Prototype – Integration*. Springer, Berlin.

- Langley, P., G. L. Bradshaw, H. A. Simon, and J. M. Zytkow (1987). *Scientific Discovery: Computational Explorations of the Creative Process*. MIT Press, Cambridge, Mass.
- Müller, R.-A. (1991). *Der (un)teilbare Geist: Modularismus und Holismus in der Kognitionsforschung*. de Gruyter, Berlin.
- Quine, W. V. O. (1969). Epistemology naturalized. In: *Ontological Relativity and Other Essays*, pp. 69–90. Columbia University Press, New York.
- Quine, W. V. O. (1975). Reply to Smart. In: *Words and Objections: Essays on the Work of W. V. Quine* (D. Davidson and J. Hintikka, eds.), pp. 292–295. Reidel, Dordrecht.
- Reinhart, T. (1983). *Anaphora and Semantic Interpretation*. Croom Helm, London.
- Riley, K. (1987). The metalanguage of transformational syntax: Relations between jargon and theory. *Semiotica*, **67**, 173–194.
- Schwarz, M. (1992). *Einführung in die Kognitive Linguistik*. Francke, Tübingen.
- Slezak, P. (1989). Scientific discovery by computer as empirical refutation of the strong programme. *Social Studies of Science*, **19**, 563–600.
- Sneed, J. D. (1971). *The Logical Structure of Mathematical Physics*. Reidel, Dordrecht.
- Stechow, A. von and W. Sternefeld (1988). *Bausteine syntaktischen Wissens: Ein Lehrbuch der generativen Grammatik*. Westdeutscher Verlag, Opladen.
- Stegmüller, W. (1983). *Erklärung – Begründung – Kausalität*. Springer, Berlin.
- Stump, D. (1992). Naturalized philosophy of science with a plurality of methods. *Philosophy of Science*, **59**, 457–460.
- Thagard, P. (1988). *Computational Philosophy of Science*. MIT Press, Cambridge, Mass.
- Thagard, P. (1992). *Conceptual Revolutions*. Princeton University Press, Princeton.
- Williams, E. (1987). Implicit arguments, the binding theory and control. *Natural Language and Linguistic Theory*, **5**, 151–180.
- Zoglauer, Th. (1993). *Das Problem der theoretischen Terme*. Vieweg, Braunschweig.

THE DEVELOPMENT OF THE GROUNDING PREDICATION: EPISTEMIC MODALS AND COGNITIVE PREDICATES¹

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1. THE BACKGROUND

1.1. Cognitive Predicates and Epistemic Grounding

Based on Langacker's holistic cognitive grammar, this paper will discuss changes of word meaning and word use that also count as changes in the grammatical system, concentrating on two areas and the connections between them: **modal auxiliaries** (a grammatical category) and **cognitive/modal predicates** (verbs or adjectives: lexical categories). Our final aim is to find semantic evidence that cognitive predicates, similarly to epistemic modals, can function as grounding predications.

In the spirit of Langacker's system, the paper will not draw a clear dividing line between synchronic and diachronic linguistic analysis. Since the development of modals and cognitive predicates (including the extension of root meanings into the epistemic domain) is a historical process that is well documented both in the data and in linguistic analyses, the paper will freely rely on diachronic data to argue or emphasize a synchronic point.

We will examine some of the factors that led to the emergence of the grounding predication, a device that relates sentences (utterances) to the situation of their use, with special attention to the speaker's epistemic commitment. We will argue that grounding can be established through epistemic modals and cognitive predicates. This is to some extent at variance with Langacker's (1987, 1991) view that all modals and only modals are grounding predications (in English).

¹ This paper was sponsored by Grant № T 029590 of OTKA (The Hungarian Fund for Academic Research).

In the argument we will examine the characteristics of the image schemas of the deontic (root) and epistemic modals and compare them to the image schemas that describe the meanings of cognitive and other modal predicates. We will argue that the image schemas for root modals and some (deontic) modal predicates (e.g. *permit, allow, compel, oblige, forbid*) have similar arrangements, to the extent that even the differences in highlighting can be shown to have a systematic effect on syntactic structure, and that the schemas for epistemic modals and cognitive predicates are also very closely related. The root and the epistemic group will nevertheless be shown to have differences that are significant enough for only the latter to be regarded as grounding predications. Throughout the paper our attention will be focused on the development of epistemicity and of the grounding predication.

Cognitive predicates are verbs or adjectives taking subject or object complement clauses that have meanings very similar to those of the epistemic modals. They denote cognitive processes (e.g. *seem, appear, turn out, think, believe, assume, suppose, know* or *possible, probable, likely*, etc.). Two distinct but closely related groups are speech act verbs (i.e. *assert, claim, say, maintain*, etc.) and verbs of sensation (through a system of evidentials, cf. 3.1.). Most cognitive predicates are non-factive and exhibit exceptional syntactic behavior (discussed in some detail below), which led Kiparsky and Kiparsky (1970) to the conclusion that factivity (constancy of the complement's truth under negation of the matrix predicate) is a semantic/pragmatic factor that plays a role in the formulation of syntactic rules. Pelyvás (1991, 1996) has nevertheless revealed that it is the absence of the presupposition rather than its presence that really has syntactic consequences – or, more important still, the special semantic content of the predicates in question.²

Cognitive predicates are known to exhibit irregular syntactic behavior.³ Pelyvás (1996), partly based on the observations of Kiparsky and Kiparsky, 1970, lists 9 instances:

- **only non-factive (and cognitive factive) predicates allow the Nominative with the Infinitive or Accusative with the Infinitive construction:**⁴

² Some initial evidence is provided by *know*, a factive predicate that nevertheless behaves syntactically like a non-factive – arguably owing to its semantic content, see also Pelyvás, 1999.

³ Pelyvás (1996) argues that (then) existing versions of generative grammar were unable to give a systematic account of why the structures listed below are permissible only with this group of predicates. I am not aware of any new developments in this respect. This aspect of the problem is nevertheless not going to play a central role in this paper.

⁴ This phenomenon, discussed as raising or exceptional case marking in generative grammar, is given a thorough cognitive analysis in Langacker, 1995, 1999 with the conclusion that the 'raised' element serves as a reference point (based on metonymy) for assessing the situation as a whole. The use of the reference point construction is made possible by the special semantic properties of the matrix predicate.

- (1) a. I suspect him to be a criminal.
b. He is suspected to be a criminal.
c. *I resent him to be a criminal.
d. *He is resented to be a criminal.

- **only non-factive (and cognitive factive) predicates allow Wh-movement from the subordinate clause:**

- (2) a. What do you think he is talking about?
b. *What do you resent he is talking about?

- **only non-factives allow Negative Raising:**

- (3) a. I do not think that you are right.
b. ?I think that you are not right.
c. I reported that you were not there.
is not equal to
d. I did not report that you were there.

- **non-factives do not allow all kinds of gerundial constructions and nominalizations in -ness:**

- (4) a. *The clumsiness of the hunters was possible.
b. The clumsiness of the hunters was frightening.

- **with non-factives extraposition is obligatory, with factives it is optional:**

- (5) a. *That he is a fool is likely.
b. That he is a fool is obvious.

- **non-factives allow a time adverb from the subordinate clause to be placed at the beginning of the matrix clause or of the subordinate clause:**

- (6) a. I think that tomorrow he will come.
b. Tomorrow I think that he will come.
c. *I am angry that tomorrow he will come.
d. *Tomorrow I am angry that he will come.

- **only non-factives allow topicalization of the object from the subordinate clause:**

- (7) a. Egg creams, I think I like.
 b. *Egg creams, he resents I like.

- **non-factives and factives allow different coreference relationships in conditionals:**

- (8) a. It_i would be nice if *you opened the window*_i.
 b. *It_i would be possible if *you opened the window*_i.

- **question tags tend to leave cognitive predicates out of their scope when the subject is first person. This is impossible with non-cognitive predicates:**

- (9) a. I don't think that she is clever, *is she*?
 b. ?I don't think that she is clever, *do I*?
 c. *I don't regret that she is clever, *is she*?
 d. I don't regret that she is clever, *do I*?

Pelyvás (1996) argues that these phenomena can be readily accounted for by postulating that the matrix clauses containing cognitive predicates are in fact grounding predications⁵ to (and consequently part of) the clauses that appear as subordinate. Since in Langacker's (1991) formulation the grounding predication is a special part of the clause that it grounds (and must be present in all clauses), it is not surprising that many of the irregularities listed above relate the resulting structures to simple clauses (for details, cf. Pelyvás, 1996).

1.2. The Grounding Predication

In Langacker's work epistemic grounding – the linguistic expression of the speaker's epistemic commitment – plays an enormous role in the organization of both content and form. The semantic function of the grounding predication is to relate a clause⁶ (the linguistic expression of a process) to the situation of its use: speaker/hearer knowledge, time and place of utterance (Langacker, 1987: 489). It would be a thoroughly pragmatic notion (similarly to presuppositions) in any theory that makes a distinction between semantics and linguistic pragmatics. Langacker's holistic cognitive theory, however, holds the view that the two levels of linguistic description need not be separated. Epistemic grounding is a clear-cut example that often they

⁵ Some qualifications are of course necessary: the most important among them is that the matrix predicate that takes an object complement clause must have a first person (singular) subject.

⁶ ... or a NP, a not insignificant detail that we nevertheless will not be discussing here.

cannot be separated at all. The linguistic expression of the grounding predication – tense and the modal auxiliaries for English according to Langacker (1987: 489) – obviously play a role in syntactic and semantic structure as well: they actually create the finite clause.

Pelyvás (1996) argues that Langacker's definition of what can function as a grounding predication (which is also language-specific) should be reduced on the one hand to exclude deontic (root) modals, which do not seem to have the conceptual properties required of an epistemic notion, and extended on the other to include cognitive predicates. The second part of that argument, apart from intuition and the obvious similarity of their meanings to those of the modals,⁷ was only based on the syntactic properties of cognitive predicates: the fact that the complex sentences containing them resemble simple clauses in many relevant aspects (Pelyvás, 1996: 184–188).

Since then, I have made detailed studies of the image schemas of some of the modals,⁸ with special attention to the changes that result from extension of the root meanings into the epistemic domain. On the basis of these results, it now appears possible to draw up the image schemas for some modal and cognitive predicates as well, separate deontic, epistemic, and transitional meanings, and show that the principles underlying these schemas are identical to those for the modal auxiliaries. Since the schemas of the modal and cognitive predicates are in many cases related to grammatical structure in a more straightforward manner than those of the modal auxiliaries, this analysis may also confirm the descriptions of the latter.

2. THE IMAGE SCHEMAS OF THE MODAL AUXILIARIES: METAPHORICAL EXTENSION OF THE ROOT MEANINGS INTO THE EPISTEMIC DOMAIN

2.1. Interplay of Forces: The Deontic Meanings

In the description of the image schemas for the modals I rely on the outlines given in Langacker, 1991 and on a substantially revised version of Sweetser's (1990) analysis. Sweetser finds it best to describe these meanings in terms of force dynamics (Talmy, 1988), i.e. in terms of forces and barriers. For reasons discussed in detail in Pelyvás, 1996, 2000 I find it far preferable to describe them in terms of forces alone, with forces associated with the doer's

⁷ Langacker (1991: 247) accounts for the similar meaning and communicative effect by postulating that the cognitive predicate can override an already established value of grounding. For arguments against this view, see Pelyvás, 1996: 181.

⁸ Pelyvás, 2000 studies *may* and *must*, Pelyvás, 2001b discusses *should* and *ought*. These studies suggest radical changes in Sweetser's (1990) proposals. The general properties of the deontic and epistemic meanings, and of the transition, are described in detail in Pelyvás, 2001a.

intention or reluctance replacing barriers in the deontic senses.⁹ These forces, which are disregarded altogether in Sweetser's analysis, serve as directly relevant components of the epistemic meanings as well.

In the analyses presented in Pelyvás, 1996, 2000, 2001a, 2001b, the prototypical deontic meaning has two sets of relationships in immediate scope (often called the objective scene, abbreviated OS in the figures). One is the **potential action**, which has to involve (though not always actually express, cf. *The car must be ready by 10*) purposeful action. This requirement is a consequence of the second set of relationships, much of which often remains hidden in grammatical form – an **interplay of forces** between two participants:

- one is the **doer**, who obtains permission or is obliged to perform some purposeful action on the one hand, and may intend to perform an action (*may*) or show some reluctance to perform it (*must, should, ought*), on the other.
- the second participant is the **permission giver, imposer of obligation**, etc., depending on the modal meaning. This role is prototypically, though not necessarily, associated with the speaker.

Please note that the doer has a dual role in these structures: 'agent' (in the loose sense) in the potential action and 'permittee', 'obligee', etc. in the interplay of forces between the participants of the situation. Languages can usually grammaticalize only one of these roles with the modal auxiliaries or equivalent words, but they vary according to which role this will be. English appears to be consistent in grammaticalizing the agent role in the potential action (nominative case), but Hungarian has a tendency to grammaticalize the doer's subordinate role in the interplay of forces (dative case), cf. (10):

- (10) a. John must go.
 b. Jánosnak mennie kell.
 John.DAT to.go.3SG must
 'John must go.'

The permission giver / imposer of obligation role is hardly ever grammaticalized in the deontic senses of the modals¹⁰ and it never appears in the epistemic senses. Grammatical

⁹ Sweetser's analysis does not appear to observe the Invariance Hypothesis (a requirement that all properties of the source domain that are not incompatible with the target domain are mapped onto the target and that important structural relationships must be preserved in the extension, cf. e.g. Lakoff and Turner, 1989; Lakoff, 1990; Brugman, 1990), since it confuses doer and speaker roles in the extension into the epistemic domain and can be shown to be in some cases inadequate for understanding important aspects of the root domain as well. In the case of *may* it also contradicts diachronic data, since epistemic *may* appeared well before its deontic counterpart and is assumed to have developed from a now extinct ability meaning (cf. Traugott, 1989).

¹⁰ Sanders and Spooren (1997: 97) give an example of Dutch deontic *moet*, which can name the imposer with the equivalent of the English *by*-phrase. This option is not available in the epistemic sense.

structures involving cognitive predicates, as we shall see in Section 3, are far more explicit in this respect. In some deontic modal meanings, as we shall see, the second relationship (interplay of forces) loses (some of) its significance. The best example is what Nordlinger and Traugott (1997) call ‘wide scope’ deontic *ought*, a meaning that is far from the prototypical deontic sense but can serve as an excellent illustration of the processes that take place in the extension into the epistemic domain (cf. 2.3.2.).

2.2. Subjectification and Reference Point: The Epistemic Senses

Langacker (1991: 216) sees the essence of the development of modal meanings, which he identifies indiscriminately with the emergence of the grounding predication, in two factors: in subjectification and in the reference point construction. We claim here that these factors are only essential in the development of the epistemic senses and are in fact the factors that separate root and epistemic modals. As a result, only the epistemic senses of the modals should be regarded as grounding predications (cf. 1.2.).

Subjectification is a process in which some aspects of a relationship that was originally construed entirely along the **objective axis** (with no special role assigned to the speaker/conceptualizer) are reorganized, in a slightly modified form, to hold along the **subjective axis**, which directly involves the speaker/conceptualizer as a participant. Pelyvás (1996) argues that subjectification plays at most a minor role in the deontic meanings¹¹ and sees it as a decisive step in the development of epistemicity.

‘Straightforward’ cases of subjectification can be illustrated with sentences like the pair in (11):

- (11) a. Mary is behind the house.
b. Mary is behind the tree.

In (11a) Mary’s position is defined on the objective axis, i.e. without reference to the speaker/conceptualizer. A house can be said to have a front and a back determined objectively. In (11b), however, Mary’s position is only determined with respect to the speaker/conceptualizer, since a tree does not have a front or a back independent of the observer’s position. We can think of the speaker/conceptualizer as a sort of reference point in (11b). Reference points identified with the speaker/conceptualizer are often left unexpressed or unmarked (cf. cases of deixis or the present tense) and this will be observable in the modal meanings as well.

¹¹ The case of Dutch *moet* (above) clearly supports this view. Two further arguments: (i) The imposer, etc. – speaker/conceptualizer identity observable in the prototypical deontic meanings appears to be based, as we shall see in the image schemas, on correspondence rather than direct inclusion of the speaker/conceptualizer in immediate scope. (ii) As a consequence, a deontic meaning still can (and indeed must always) be epistemically grounded.

The essence of the **reference point construction** (Langacker, 1991, 1993, 1999: 171–202) is a basic psychological operation, a shift of attention. The speaker invokes the conception of one entity (the reference point, *R*) only for the purposes of establishing mental contact with another (the target, *T*) (Langacker, 1999: 173). Once the target has been contacted, the reference point often recedes into the background to give prominence to *T*. The reference point is in most cases cognitively more salient than the target – e.g. a basic level term or a ‘whole’ (gestalt) in a part-whole relationship.

The transitional nature of the reference point construction is largely responsible for the exceptional properties of the grounding predication. On the syntactic level, it makes sure that the profile determinant of the finite clause remains the grounded head (roughly equivalent to the propositional content in traditional analyses (cf. Langacker, 1991: 200–215; Pelyvás, 1996: 160–163)), a crucial factor in the one-clause analysis of cognitive predicates briefly outlined in 1.2.

Subjectification and the reference point construction dominate the development of the epistemic senses of the modals. In the extension into the epistemic domain the sociophysical forces (intention, reluctance, obligation, permission, etc.) that make up the second part of the deontic image schema will have to disappear since, as Sweetser (1990) also notes, they are not compatible with the epistemic domain (cf. the Invariance Hypothesis). We will refer to this as a restriction of immediate scope, which will only include the potential action in the epistemic sense. Overall scope, on the other hand, will be extended to include the speaker/conceptualizer (subjectification) as a reference point. Some of the forces that were present in the deontic sense are reoriented to the subjective axis: the doer’s reluctance of deontic *must*, largely unassailable for the imposer of the obligation, for instance, can be reinterpreted as forces of reality unknown to the speaker in its epistemic counterpart. A detailed analysis is given in Pelyvás, 2000.

2.3. Image Schemas for the Modals

The figures given below are the image schemas for the different senses of the English modal auxiliaries *should/ought*. These two auxiliaries, which for the purposes of this analysis I will regard as identical, appear to be the most suitable examples because they give a simpler and clearer illustration of the changes I will be referring to than would *may* or *must* (analyzed in detail in the sources referred to in Footnote 8), owing to the fact that a ‘**narrow scope**’ and a ‘**wide scope**’ deontic meaning can be clearly separated.

2.3.1. The ‘Narrow Scope’ Deontic Meaning. In this meaning (Figure 1) the immediate scope or objective scene (OS) includes a relationship between imposer and doer (interplay of

forces¹²) as well as some purposeful action that the doer potentially takes part in. The dotted line between the two occurrences of doer in the schema marks correspondence (cf. 2.1.). The conceptualizer (speaker/ground – S/G) is not part of the scope of the predication at all: a deontic modal can (and must) be epistemically grounded (cf. Footnote 11).

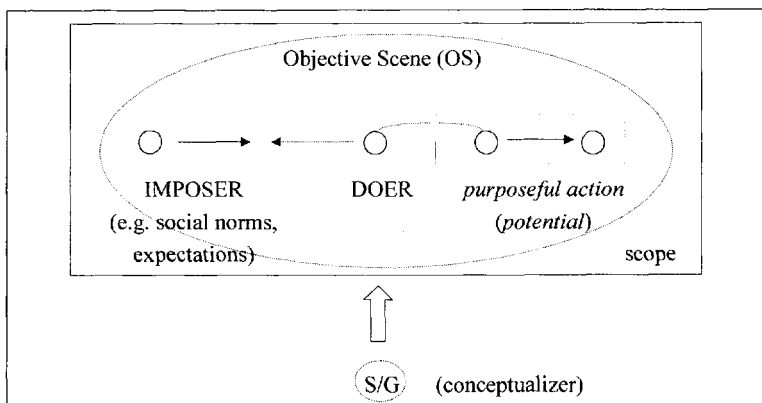


Figure 1: 'Narrow scope' deontic *should/ought*

This structure is characteristic of all deontic meanings. The only difference between this schema and the ones for *may* and *must*, apart from the relative strengths of the forces involved, is that the imposer prototypically corresponds to the speaker/conceptualizer in the latter two.

A 'natural' way for the syntactic expression of such a schema would be a complex clause, with the main clause expressing the interplay of forces and the subordinate clause referring to the potential action, as in e.g. '*I advise you that you should help your mother.*' Specific factors in the development of the modal verbs,¹³ however, seem to have favored development in the direction of a one-clause model in which, as we have seen in 2.1., some of the factors remain unexpressed.

2.3.2. The 'Wide Scope' Deontic Meaning. In this meaning, which is only observable in *should/ought*, the image schema changes in ways that suggest but may not actually involve

¹² The imposer is relatively strong and the doer (his/her reluctance to perform the act) is relatively weak, but still, unlike in *must*, a factor to be considered in the situation. This is why *should/ought* is weaker and also more polite than *must*: the essence of politeness is leaving options open to your partner.

¹³ Some of these factors, based on Lightfoot's (1979) diachronic facts but suggesting new interpretations for them, are discussed in Pelyvás, 2001a. I do not claim to have a full explanation but the fact that modals were originally preterite-present forms (a form that tends to blur the actual vs. potential distinction) that could take NP objects must have been a significant factor.

simplification. No obligation is laid directly on the doer – essentially because such a participant cannot be readily identified, as in (12):

- (12) Mothers who have been raped, ... , by God, they have rights, too. And the bill ought to say that. (4 July 1990, UPI)

‘those who are responsible for the bill have a moral responsibility to ensure that it says that’ (Nordlinger and Traugott, 1997: 302)

OUGHT TO [the bill (says that...)], or

OUGHT TO [those responsible for the bill (ensure that...)]

Deontic obligation is still clearly part of the meaning, but its target remains unspecified. Nordlinger and Traugott (1997) describe the differences between this meaning and the one described above in terms of logical scope and find that *ought* has ‘wide scope’ here. I use inverted commas with these terms because a cognitive interpretation of scope leads to the opposite result: in cognitive terms immediate scope is **restricted** in this meaning to involve only the potential situation, which therefore no longer has to be deliberate action (cf. Pelyvás, 2001b). The imposer still remains in (overall) scope (Figure 2).

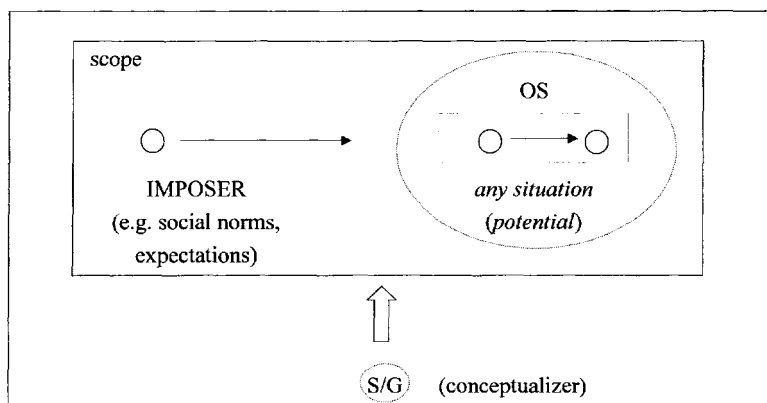


Figure 2: ‘Wide scope’ deontic *should/ought*

From our present perspective this stage in the development of *should/ought* is of particular importance because it reveals that the change in immediate scope, associated with the root → epistemic extension in Pelyvás, 1996, can in fact occur within the deontic domain. In Section 3 we shall see that such a change of scope can characterize the deontic meanings of cognitive predicates as well.

Epistemic meanings must always have ‘wide scope’, and the existence of such a deontic arrangement in *should/ought* explains why sentences like (13)

(13) They should all be dead by now,

in which the meaning is predominantly epistemic, can nevertheless retain a ‘deontic overtone’: the speaker, apart from being more or less certain, also **wishes** the state of affairs to be true.¹⁴

2.3.3. The Epistemic Meaning. As we have stated in 2.2., the decisive step in the extension of the modal meanings into the epistemic domain is **subjectification**, a process in which one facet of a relationship previously interpreted objectively is reinterpreted along the subjective axis. In the case of the modals this means that some of the forces active between the participants of OS in the root meaning will be subjectified to include the **speaker/conceptualizer** directly, as a **reference point** (Figure 3).

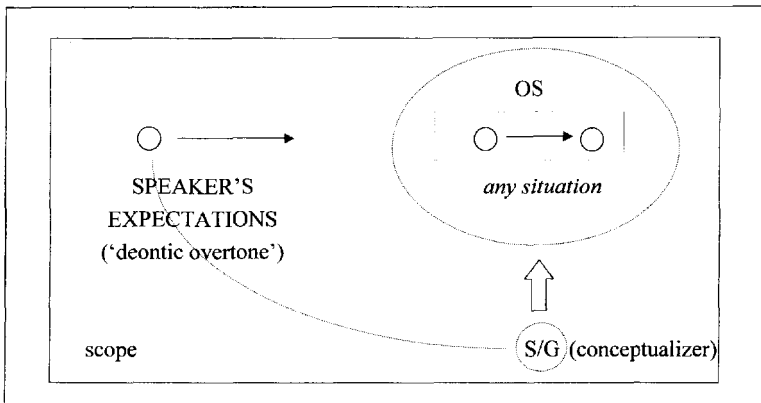


Figure 3: Epistemic *should/ought*

Epistemic modals are grounding predications owing to subjectification and the transitional nature of the reference point construction. The semantic role of the grounding predication (cf. 1.1., 1.2.), its transitional nature, and the fact that in many cases it is left unmarked (‘zero grounding’) can be assumed to have a consequence on syntactic structure as well: the

¹⁴ Please note that while the source of obligation for both deontic senses of *should/ought* were social norms or expectations rather than the speaker, the source of the deontic overtone is invariably the speaker in the epistemic sense. This may again serve as an argument in the subjectification vs. correspondence issue, cf. Footnote 12 (for details, see Nordlinger and Traugott, 1997; and Pelyvás, 2001b).

ground (\approx factuality or probability) of a situation has to be provided before the situation itself is given, to prevent misunderstanding or reanalysis. This could explain why epistemic modals conformed to the SMVO pattern instead of the 'expected' SVOM in the transition of English from SOV to SVO (cf. Lightfoot's (1979) treatment and its discussion in Pelyvás, 2001b) and also why cognitive predicates require extraposition of their subject clause (cf. (5) in 1.1.).

In this section we have outlined the image schemas that can characterize (with well-motivated variations) the deontic (root) meanings of the modals. These are characterized by the presence of sociophysical forces (intentions, obligation, etc.) between the participants of the schema. Although the speaker/conceptualizer is often involved as a participant, this is not necessarily the case and only occurs through correspondence. Deontic *should/ought* has a 'wide scope' meaning as well, in which the forces constitutive of the prototypical deontic meaning only play a marginal role (through disappearance of one participant). Since this change of immediate scope is essential in the epistemic meaning, it is not surprising that the epistemic meaning of *should/ought*, but not of the other modals, can have a (wide scope) 'deontic overtone'.

We have taken a look at the processes active in the metaphorical extension of the deontic meanings into the epistemic domain,¹⁵ emphasizing the role of subjectification and the reference point construction – essential ingredients of the grounding predication. The nature of the differences between the source and target domains strongly suggests that only epistemic schemas should be afforded the status of grounding predication.¹⁶

We have also given the general characteristics of the epistemic schema that results from application of the processes described above. The task of the next section will be to examine whether the schemas and connections described above can also be used successfully in the analysis of modal and cognitive predicates.

3. IMAGE SCHEMAS FOR MODAL AND COGNITIVE PREDICATES

In this section we will set out to find similarities between the image schemas set up for the modal meanings in Section 2 and image schemas that can be attributed to modal and cognitive predicates. The separation of the two groups may look arbitrary: sometimes they are indiscriminately referred to as cognitive predicates (even though 'modal' appears to be the more

¹⁵ *May* appears to be an exception here, since its epistemic sense developed from another root sense: **ability** (now extinct) rather than from the deontic one (for a detailed description, see Pelyvás, 1996, 2000). The processes active in the extension for *may*, nevertheless, are not different in kind, since the original ability meaning 'be strong enough' implies forces that are similar in nature to deontic ones. We will attempt a similar analysis for *believe* in Section 3.

¹⁶ At least as far as **epistemic** grounding is concerned. It is quite possible that a theory of **deontic** grounding could also be considered.

general term). In separating them, we are trying to emphasize a systematic correspondence: the meanings of the predicates that we call **modal** are predominantly non-epistemic and can be compared to the root modals, whereas the meanings of the predicates that we call **cognitive** are basically epistemic in nature.

Our hypothesis is that some of these predicates can be shown to have image schemas that are very similar to the schemas for the modal auxiliaries, though perhaps sometimes more explicit, and processes of extension into the epistemic domain can be observed here as well.

Our purpose in doing so, besides finding support for both the root and epistemic analyses of Section 2, is to find evidence in this field as well for the claim formulated in Section 1: cognitive predicates often function in exactly the same ways as epistemic modals do and can be regarded as assigners of epistemic modality rather than overriders of already established values of modality (epistemic grounding – cf. Footnote 7). In this way, we are looking for indirect semantic support for the one-clause analysis.

The system of the modal auxiliaries is usually seen as a relatively well-defined closed system (cf. e.g. Warner, 1993). In comparison, modal and cognitive predicates may be regarded as very loosely, if at all, defined, and appear to be an open set. We will not aim at a classification and detailed analysis of ‘all’ modal and cognitive predicates here. The purpose of this section is to find cases that are ‘interesting’: significant in the sense that some properties and regularities of the image schemas described above for the modals may be discerned in them. We will be mainly interested in cases that seem to be ‘active’ today and put aside, for the time being, cases where only a true diachronic investigation of a word’s history would reveal connections.¹⁷ The names ‘deontic’ and ‘epistemic’ will be used in a looser sense here than they were in the previous section. The analyses are regarded as a first approximation to problems that will certainly require further study.

3.1. Speech Act Verbs and Evidentials

We could easily dismiss speech act verbs as a group on the grounds that they do not readily lend themselves to analysis in terms of force dynamics. In addition, with second and third person subjects they do not directly function as grounding predications since they express someone else’s epistemic commitment rather than the speaker’s own,¹⁸ communicating uncertainty in this roundabout way. With first person subjects they are mostly used non-performatively, referring to past or future speech acts.

¹⁷ I would regard *assume*, for instance, to be such a case.

¹⁸ Incidentally, epistemic commitment could be viewed as a thoroughly **deontic** force, at least in its origins, cf. the formulation of Grice’s Maxims of conversation, including the Maxim of Quality, which is directly relevant here.

Say and *tell* can, nevertheless, mark subtle differences that can be related to epistemic grounding. In the sentences of (14)

- (14) a. I told him that I was powerless.
b. I said (to him) that I was powerless.

say seems to permit the reading that I did not communicate (what I believe now to be) the truth: this reading appears to be less likely with *tell*.

In languages that have a system of **evidentials** – a system of verbal endings that mark the source of the information communicated by the rest of the sentence, but which also function as a fully objective scale of epistemic probability, information communicated by others ranks rather low on the probability scale.¹⁹ Pelyvás (1996) suggests that this may also be the case in English, a language in which only traces of a system of evidentials can be observed, since the complement of speech act verbs and those verbs of the senses that refer to the ‘less reliable’ senses (cf. *hear* vs. *see*) can be replaced by *so* rather than *it*. (Compare also for cognitive predicates, e.g. *think*, *believe*, *assume*, *expect*, *hope*, etc.) That this is indeed a distinction in terms of reliability is illustrated by the sentences in (15):

- (15) [The Prime Minister is resigning...]
a. Yes, I heard/think/believe/expect/hope *so*.
b. Yes, I heard *it* on the radio.
c. Yes, I heard *so* on the radio.

Since the radio is regarded as a basically reliable source of information, (15b) is more likely than (15c), which would suggest fundamental distrust in the reliability of the media.

We will return to verbs of the senses in a different though not unrelated context, that of making sense of situations (creating Idealized Cognitive Models) rather than ‘simply’ judging truth or falsity, in 3.7.

3.2. Semi-auxiliaries

Semi-auxiliaries like *be bound to* or *be going to* (cf. Quirk *et al.*, 1972: 68) seem to permit an analysis in terms of force dynamics and extension into the epistemic domain. Although the epistemic senses can be regarded as near-synonymous, the root senses are based on rather different image schemas.

¹⁹ For a description of evidentials in Tuyuka, see Palmer (1986: 67).

Be bound to appears to be rather similar to *must* and *should/ought* in most of its relevant aspects and need not be analyzed again in detail here (cf. 2.3.). One difference that needs to be emphasized is that in its ‘narrow scope’ deontic sense it is the obligee role of the doer rather than his/her agentive role (usual with the modals – cf. 2.1.) that is grammaticalized, even though, as Quirk *et al.* (1972: 69) remark, the apparent passive role of the doer ‘has no active analogue’.

Be going to, a phrase that has its origins in actual movement with purpose (cf. Hungarian ‘*Megyek, eloltom a villanyt*’ [I go switch off the light]) appears to conform to another ‘narrow scope’ root schema, with extension possible into the epistemic domain. The schema of the root sense is based on intention, similarly to the schemas for *may* (ability = ‘be strong enough’) or *will* (intention).

The schema for *must*, *should/ought* (cf. Figure 1) and the one for *may* (and probably *will*, of which I do not yet have a reliable analysis) have a lot in common, despite superficial differences in the arrangement and directionality of forces associated with the participants. Both are built around a force (*a* in Figure 4) that marks some sort of potentiality on the part of the doer of the potential action, with another counteracting force regarded as inherent in the situation.²⁰

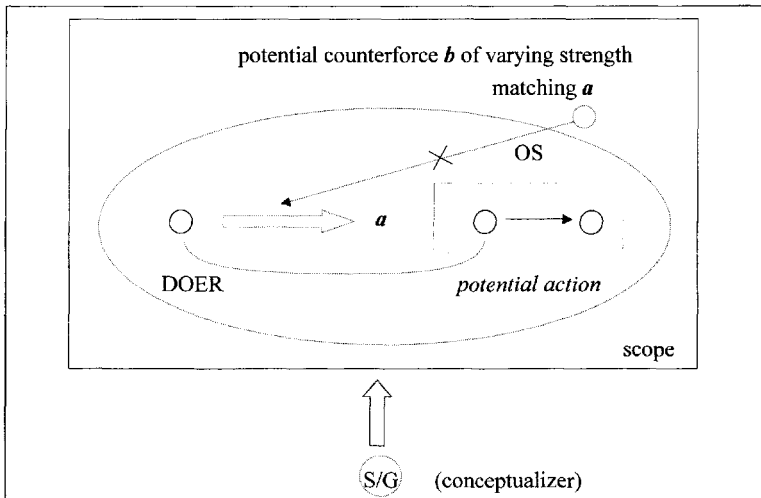


Figure 4: General schema for the ‘narrow scope’ root senses

²⁰ Not all forces involved are socio-physical: these are not deontic meanings in the strict sense.

Figure 4, the general 'narrow scope' root schema, based on the common properties of *be going to*, *may*, *must*, *will*, and 'narrow scope' *should/ought* (cf. Figure 1, a prototypical 'narrow scope' deontic schema), describes sentences like (16a), but will not describe (16b), in which no intention on the part of the subject is involved:

- (16) a. I am going to open another bottle.
b. You are going to hate this film.

The force marked with *a* and associated with the subject/doer plays no role at all in (16b). This situation therefore requires a 'wide scope' schema for its description. Nor can it be regarded as a root sense any more, since the meaning is the speaker/conceptualizer's prediction, an epistemic notion.

Figure 5 describes the generalized epistemic schema. The value (in terms of certainty) of the grounding predication (marked *b'* in the Figure), which results from subjectification of force *b* of the root schema, varies from item to item.²¹ Both in *will* and *be going to*, the degree of commitment will be stronger than in *may*.

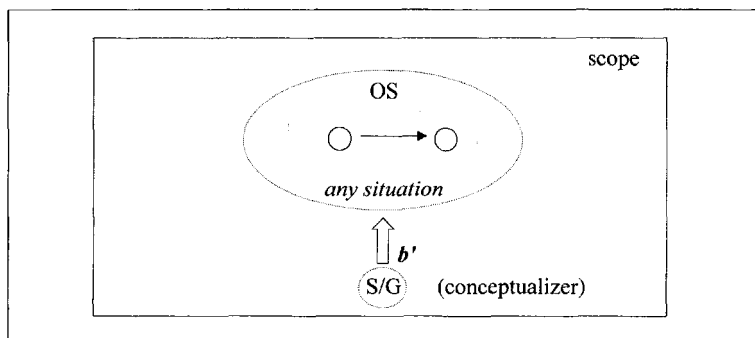


Figure 5: The generalized epistemic schema

3.3. *Permit/allow*

Permit/allow appear to be predicates that reflect the image schema of *may* in their grammatical structure. This is clearly true of the sentences in (17):

²¹ Pelyvás (1996, 2000) builds the deontic sense of *may* on a schema similar to Figure 4: force *b* is associated with the speaker / permission giver's relative weakness. The epistemic sense is based on a schema similar to Figure 5, with force *b'* marking the weakness of the speaker's epistemic commitment.

- (17) a. I do not permit John to enter my study when I am working.
b. Mary does not allow/permit John to enter her room.

The prototypical schema is 'narrow scope' deontic, with the participants associated with the forces clearly identifiable. The permission giver need not correspond to the speaker/conceptualizer and the doer is again grammaticalized in his/her role as receiver of permission rather than in the agent role. Similarly to deontic *may*, the doer's intention to perform the action has to be part of the schema (at least in the loose form of a felicity condition). This schema, as Figure 6 suggests, will only differ from Figure 4 in its pattern of highlighting of the participants associated with the socio-physical forces.

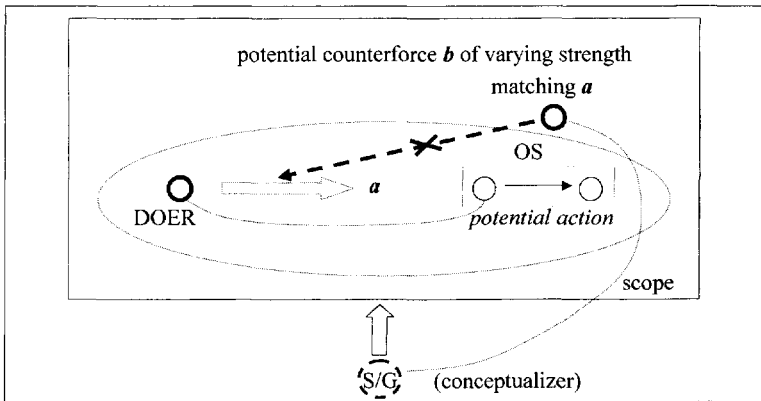


Figure 6: 'Narrow scope' *permit*

Permit or *allow* do not normally allow extension into the epistemic domain (for a possible exception, see Section 4), but may permit a 'wide scope' deontic reading. Illustration (apart from the previous sentence) could be provided by the sentences in (18):

- (18) a. I will not permit smoking in this room.
b. This situation does not permit delay or hesitation.

In (18a) 'erosion' of the 'narrow scope' meaning into a 'wide scope' one begins with the disappearance (generalization) of the doer, and the appearance of the gerund can be seen as symbolic of the process. In (18b) neither participant is identifiable and the meaning can only be 'wide scope'.

3.4. *Expect*

This verb clearly has a 'narrow scope' meaning of the loosely deontic type (19a), an epistemic meaning (19c) and perhaps a 'wide scope' deontic meaning as well (19b), which may be difficult to separate from the epistemic one:

- (19) a. I expect all candidates to try harder in the next round.
- b. (I expect this storm to go away soon.)
- c. I expect John to fail his maths exam.

The image schema for 'narrow scope' deontic *expect* will be quite close to deontic *must* or *should/ought* – depending on the source of the expectations (force *a* in Figure 4), with the counterforce attributed to the doer's reluctance / alternative choices (the equivalent of force *b* of Figure 4 in Figure 1) about as strong as in *should/ought*. (19b) is clearly 'wide scope', though not clearly deontic, since it could also mark prediction. (19c) does not seem to have a 'deontic overtone'.

The grammatical realization of the schema, in opposition to the modals, will again concentrate on the participants of the 'interplay of forces' part of the 'narrow scope' deontic schema. The source of obligation/expectation is named (and need not be the speaker). The doer role is grammaticalized as 'target' of the expectation rather than 'agent' of the potential action (can be passivized).

The epistemic schema would be close to the one given in Figure 5. Less than full certainty is provided by *b'*.

3.5. *Want*

Want does not permit extension into the epistemic domain. It is, nevertheless, a good example of scope change within the root domain. *Want* is prototypically the expression of the subject's intention – a 'narrow scope' deontic sense (20a). Over the years, however, it developed a structure with gerundial complements that remain active even though the meaning is passive (20b) – a 'wide scope' sense.²² The latest development is an active infinitival construction that nevertheless expresses necessity/obligation rather than the subject's intention (20c) and is clearly 'wide scope' – the meaning is exactly the opposite of what a 'narrow scope' reading would give:

²² Cf. Nordlinger and Traugott (1997) on the role of impersonal/passive constructions in the development of 'wide scope' meanings.

- (20) a. John wants a new car again.
 b. Your car wants washing.
 c. ... and of course you want to change the title... (= You are advised to...)

I do not venture now to give detailed image schemas for these meanings. I do not think that a counterforce *b* can be meaningfully introduced in the ‘narrow scope’ meaning. The only basis for such a force could be the potentiality (non-actuality) of the situation in the ‘sub-ordinate’ part but this would lead to circularity since so far we have been trying to account for this non-actuality in terms of the existence of a socio-physical counterforce.

The solution I would favor is that (20c) did not arise as an extension and subjectification of socio-physical forces existing in the image schema of *want* but by analogy to the modals and other modal predicates where these forces are indeed part of the image schema – thereby confirming the existence of that general schema.

The case of *want* also shows similarity with an unusual deontic use of *may* or *will* to give an order, as in (21):

- (21) a. [Headmaster to boy:]
 You may leave now.
 b. Private Jones will report at 09.00.

Arguably, the speaker giving ‘permission’ or ‘predicting a future event’ (usually a person with unchallenged authority in the situation) puts himself/herself in a position where (s)he can determine the addressee’s intentions as well as his/her actions (cf. Pelyvás, 1996: 142–143).

3.6. *Believe*

Believe (similarly to *think*, *assume*, and a few others) is a cognitive predicate that has not got a deontic meaning. This fact clearly makes it different from the modal auxiliaries, since one influential argument for deriving epistemic meanings from deontic ones rather than the other way round is the fact that there is no epistemic modal that does not have a deontic counterpart, whereas the reverse does not hold true.

Believe, however, appears to be amenable to analysis in terms similar to force dynamics. The meaning ‘feel sure that sy is telling the truth’ presupposes two participants whose views on a certain situation are different at the outset. The person who *believes* the other often relinquishes his/her own views in the end. This is very similar to the analysis of deontic *may* in Pelyvás, 1996, 2000 – the permission giver relinquishes authority. This meaning can be extended into the epistemic domain and the meaning of epistemic *believe* is again very close to

that of *may* (the speaker relinquishes epistemic commitment²³). The two are also similar in the sense that epistemic *may*, although not without a deontic counterpart, developed from a non-deontic root sense (cf. Footnote 15).

What the two obviously differ in is what aspects of the similar image-schematic structure are reflected in grammatical structure. Epistemic *believe* prototypically names the speaker/conceptualizer, epistemic *may* never does (cf. Footnote 10). With non-first person subjects *believe*, apart from describing other persons' views (not grounding, and a function that modals are not normally capable of), can, together with *know*, give indication whether the speaker/conceptualizer shares these views:

- (22) a. John believes that the Earth is flat.
b. John knows that the Earth is flat.

On one reading, these two sentences differ in whether the speaker/conceptualizer himself regards the Earth as flat – a clear case of epistemic grounding (for details of the analysis cf. Pelyvás, 1999).

3.7. *Appear/apparent/see*

Instead of trying to analyze these predicates in terms of force dynamics (an uncongenial task), I would like to introduce here a tentative new dimension into the analysis.

Traditional linguistics forces the linguist to think about epistemic modality in terms of truth and falsity, or, at most, in terms of degrees of probability. Although this is certainly part of the truth, it may nevertheless not be the whole truth. Since in cognitive grammar conceptualization or the internalization of a situation is seen as an active task that depends on the background and dispositions of the conceptualizer, it is possible to think of modality (and, consequently, epistemic grounding) as a process of cognitive model formation. Idealized Cognitive Models (ICM: a situation, its participants and the relationships between them – as conceptualized by the speaker, cf. Lakoff, 1987) give the speaker/conceptualizer considerable freedom in assessing **what** is happening rather than just force him/her to decide whether something is or is not the case. The sentences in (23) describe what could essentially be the same event in terms of entirely different ICMs:

- (23) a. John is loading hay onto the cart.
b. John is loading the cart with hay.
c. John is stealing hay.

²³ This meaning seems to be quite recent. It only appears independently '*think, perhaps mistakenly*' in the 4th edition (1989) of the Oxford Advanced Learner's Dictionary.

Separating (23c) from the rest may not be the linguist's task, but the differences between (23a) and (23b) certainly require linguistic attention (cf. Pelyvás, 1996: 102–108).

Apparent may reflect the development of more subjectified and epistemically more qualified epistemic meanings from evidentials (discussed in some detail in Pelyvás, 1996: 147–150) since it is ambiguous between two contradictory readings, one of which (24a) is directly related to evidentiality (what we see is regarded as certain – cf. 3.1.), whereas the other (24b) reflects the (perhaps more modern) subjective element and indecision in ICM formation:

- (24) a. It soon became apparent that we were deep in trouble.
- b. I was surprised by John's apparent lack of concern for our safety.

Appear as a cognitive verb now only seems to have the second option.

Verbs of the senses, e.g. *see* can also be used to express problems in ICM formation. The conceptualizer can misconstrue a situation (a common source of misunderstanding between humans). When the mistake is understood and corrected, linguistic expression can be given to it, with grammatical structures that are very similar to the ones discussed in Section 1, where we argued that they can be grounding predication + grounded head constructions. Compare the sentences in (25):

- (25) a. I saw *her steal your car*, but at the time I thought that you had lent it to her.
- b. *I saw that *she stole your car*, but at the time I thought that you had lent it to her.

The difference between these sentences is not in the **grounding** of the whole structure (something that the speaker does at the time of speaking) but in that of the italicized subordinate structure. The less than fully grounded non-finite construction indicates a (now corrected) problem in **conceptualization** or **ICM formation** [borrowing vs. stealing] (something that the conceptualizer does at the time of perception). Barwise and Perry (1981, 1983; cf. Laczko, 1991) describe this difference as one concerned with whether the conceptualizer, when exposed to a series of events, is fully aware of the true nature of the situation (ICM) (s)he is confronted with.

4. CONCLUSIONS AND FURTHER ISSUES

The basic aim of this paper was to introduce general schemas that can describe the root (deontic) and epistemic senses of both modal auxiliaries and some modal and cognitive predicates. The investigations seem to suggest that although modals may be exceptional in the way they grammaticalize certain aspects of their image schemas, they do not prove to be exceptional regarding the relationships within the image schemas. Modal and cognitive predicates can be

shown to have image schemas that are very similar to root and epistemic modal auxiliaries. Cognitive predicates, which are traditionally considered to be true matrix predicates, but in view of both their semantics and their irregular syntactic properties can be analyzed as grounding predications, can conform to exactly the same schemas and consequently carry the same functions as modals (in addition perhaps to others that modals are incapable of – cf. e.g. 3.7.).

The paper brings examples to suggest that some cognitive predicates, which my earlier work proposed regarding as grounding predications mainly on the basis that their syntax shows symptoms of a one-clause structure, can also be analyzed in terms of force dynamics. The schemas suggested for them are close to those suggested for the epistemic modals. In a number of cases extension of root meanings into the epistemic domain is also possible.

The paper also gives evidence that the generalized deontic and epistemic schemas are different enough in their general characteristics to justify regarding only the latter as grounding predications in the sense of Langacker, 1991.

An analysis in these terms also highlights the possibility of a more comprehensive view on epistemic modality. The formal heritage of linguistic semantics suggests that this type of modality should be regarded as dealing with the truth, falsity, probability or possibility of a certain situation. Taking the full cognitive scene into consideration permits the linguist to interpret epistemicity in terms of the speaker's (correct or incorrect) choice of an Idealized Cognitive Model to describe the situation (s)he is exposed to. The different meanings of the different complement structures of *see* suggest that at least some aspects of this choice can and should be described in linguistic terms.

The differences in the syntactic structures of clauses containing what we called modal predicates and cognitive predicates raise an interesting question. Modal predicates like *permit* are typically EQUI and cognitive predicates like *believe* are RAISING in generative terms. Generative grammar regards the two structures as entirely different, but Langacker (1995, 1999) finds that the two structures are at different ends of a continuum (compare also for Footnote 4). We have seen that *permit* has a 'wide scope' deontic sense in which the semantic role in the matrix clause of the subordinate subject (a precondition for EQUI) cannot be taken for granted any more. *Expect*, which has a deontic meaning, can be extended into the epistemic domain as well. Deontic *expect* is probably EQUI and epistemic *expect* is likely to be RAISING. Since the force dynamics disappears / is reoriented in the extension, the transition from EQUI to RAISING can be seen as symbolic of the changes in the image schemas. The details will require further research.

The analyses proposed for the cognitive and modal predicates in Section 3 should be regarded as tentative and cannot take into account the fact that choice of subject, tense, and many other factors of use can result in enormous changes in what is communicated (e.g. in terms of grounding status). To illustrate this point, let me give a final example:

- (26) Bertrand must not be a good painter; he, Dixon, would not permit it.
(Kingsley Amis: *Lucky Jim*. Harmondsworth: Penguin, 1979: 112)

Since the speaker/conceptualizer (Dixon) is in no position to grant or deny Bertrand permission to be a good painter (which is not even purposeful action), the meaning is 'wide scope' and has to be at least partly epistemic. ('*He could not tolerate it. That would be too much.*') But *must not* is not a possible negation for epistemic *must*, and *permit* is not normally extended into the epistemic domain. The result is a confusion of deontic and epistemic elements that communicate exactly what needs to be communicated: Dixon's jealousy and inferiority complex – an epistemic meaning with a deontic overtone? A deontic meaning with an epistemic overtone?

This is an example that shows how our epistemic judgements and predictions are almost hopelessly intertwined with our wishes and desires.

REFERENCES

- Barwise, J. and J. Perry (1981). Situations and attitudes. *The Journal of Philosophy*, **78**, 668–691.
- Barwise, J. and J. Perry (1983). *Situations and Attitudes*. MIT Press, Cambridge, Mass.
- Brugman, C. (1990). What is the Invariance Hypothesis? *Cognitive Linguistics*, **1**, 257–267.
- Kiparsky, P. and C. Kiparsky (1970). Fact. In: *Progress in Linguistics* (M. Bierwisch and K. E. Heidolph, eds.), pp. 143–173. Mouton, The Hague.
- Laczko, T. (1991). Cognitive verbs in lexical-functional grammar and situation semantics. In: *Studies in Linguistics 1* (B. Korponay and P. Pelyvás, eds.), pp. 7–17. Kossuth University, Debrecen.
- Lakoff, G. (1987). *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind*. University of Chicago Press, Chicago.
- Lakoff, G. (1990). The Invariance Hypothesis: Is abstract reason based on image-schemas? *Cognitive Linguistics*, **1**, 39–75.
- Lakoff, G. and M. Turner (1989). *More Than Cool Reason: A Field Guide to Poetic Metaphor*. University of Chicago Press, Chicago.
- Langacker, R. W. (1987). *Foundations of Cognitive Grammar I*. Stanford University Press, Stanford.
- Langacker, R. W. (1991). *Foundations of Cognitive Grammar II*. Stanford University Press, Stanford.
- Langacker, R. W. (1993). Reference-point constructions. *Cognitive Linguistics*, **4**, 1–38.
- Langacker, R. W. (1995). Raising and transparency. *Language*, **71**, 1–62.
- Langacker, R. W. (1999). *Grammar and Conceptualization*. Mouton de Gruyter, Berlin and New York.
- Lightfoot, D. W. (1979). *Principles of Diachronic Syntax*. Cambridge University Press, Cambridge.

- Nordlinger, R. and E. C. Traugott (1997). Scope and the development of epistemic modality: Evidence from *ought to*. *English Language and Linguistics* **1**(2), 295–317.
- Palmer, F. R. (1986). *Mood and Modality*. Cambridge University Press, Cambridge.
- Pelyvás, P. (1991). Non-factive and cognitive factive predicates in the theory of government and binding. In: *Studies in Linguistics 1* (B. Korponay and P. Pelyvás, eds.), pp. 18–24. Kossuth University, Debrecen.
- Pelyvás, P. (1996). *Subjectivity in English: Generative Grammar Versus the Cognitive Theory of Epistemic Grounding*. Peter Lang, Frankfurt am Main.
- Pelyvás, P. (1999). What we think, what we know and what we think we know. In: *Szaknyelvi-oktatási tanulmányok* [Studies in language education for specific purposes] (L. Kornya and I. Pelyvás, eds.), pp. 32–42. Kossuth Lajos University, Debrecen.
- Pelyvás, P. (2000). Metaphorical extension of *may* and *must* into the epistemic domain. In: *Metaphor and Metonymy at the Crossroads* (A. Barcelona, ed.), pp. 233–250. Mouton de Gruyter, Berlin and New York.
- Pelyvás, P. (2001a). On the development of the category modal: A cognitive view. How changes in image-schematic structure led to the emergence of the grounding predication. In: *Wort und (Kon)text* (P. Kocsány and A. Molnár, eds.), pp. 103–130. Peter Lang, Frankfurt am Main.
- Pelyvás, P. (2001b). Extension of *should* and *ought* into the epistemic domain. In: *Színes eszmék nem alszanak...: Szépe György 70. születésnapjára* [Colorful Ideas Do Not Sleep...: For György Szépe on His 70th Birthday] (J. Andor, T. Szűcs, and I. Terts, eds.), pp. 932–945. Lingua Franca Csoport, Pécs.
- Quirk, R., S. Greenbaum, G. Leech, and J. Svartvik (1972). *A Grammar of Contemporary English*. Longman, London.
- Sanders, J. and W. Spooren (1997). Perspective, subjectivity, and modality from a cognitive linguistic point of view. In: *Discourse and Perspective in Cognitive Linguistics* (W.-A. Liebert, G. Redeker, and L. Waugh, eds.), pp. 85–112. John Benjamins, Amsterdam.
- Sweetser, E. (1990). *From Etymology to Pragmatics: Metaphorical and Cultural Aspects of Semantic Structure*. Cambridge University Press, Cambridge.
- Talmy, L. (1988). Force dynamics in language and cognition. *Cognitive Science*, **2**, 49–100.
- Traugott, E. C. (1989). On the rise of epistemic meanings in English: An example of subjectification in semantic change. *Language*, **65**, 31–55.
- Warner, A. R. (1993). *English Auxiliaries: Structure and History*. Cambridge University Press, Cambridge.

WHAT IS POLYSEMY? – A SURVEY OF CURRENT RESEARCH AND RESULTS¹

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1. INTRODUCTION

In this paper, I will try to give a general and comprehensive overview of one of the central issues in present day research in word meaning (both in semantics and in pragmatics): polysemy. As is widely known, polysemy has been intensively studied in several strands of linguistic research since about the beginning of the 1980s.

The first important strand to appear before 1980 was that of descriptive lexical semantics, which proceeded usually in the manner of classical **structural semantics** (that is by examining the **relations** between different interpretations of words).

In the 80s, another approach appeared, that of **cognitive linguistics**. Cognitive linguists abandoned the structuralist principle that linguistic phenomena should be examined in language-internal terms, i.e. that they should be accounted for on the grounds of relations between linguistic entities, in this case meanings. They proposed that the meaning of words should be accounted for by relating them to the concepts they stand for, i.e. psychological entities, and the peculiarities of word use should be explained, whenever possible, by reference to properties of these concepts and relations among them.

¹ This paper is a revised and expanded version of Pethő, 1999. I know of few points where the two papers would contradict each other, but in such cases, I consider what is said here to be valid. – My research was financially supported by the OTKA (National Scientific Research Fund) grant Strukturális magyar nyelvtan 4: A szótár szerkezete [A structural grammar of Hungarian 4: The structure of the lexicon] (project leader: Ferenc Kiefer, grant № T 030295) and by two grants of Pro Renovanda Cultura Hungariae Alapítvány “Diákok a Tudományért” Szakalapítványa (Pro Renovanda Cultura Hungariae Foundation, “Students for Science” Special Foundation). I am also grateful for the intellectual and financial support of the Láthatatlan Kollégium (Invisible College) in the early phase of my research.

It was also in the 80s that owing to the availability of high-performance computer equipment, extensive work started on **natural language processing** (NLP), which was faced with the problem of ubiquitous ambiguity in language. Since this was of course a major handicap for progress in NLP, disambiguation became one of the more important issues in this branch of research. Disambiguation includes the treatment of ambiguities that arise in syntactic parsing as well as kinds of ambiguity that are usually considered instances of homonymy, but it also includes polysemy proper. Several aspects of NLP research co-operate in solving the problem of disambiguating polysemy and representing it, both for NLP and for other purposes. These are mainly computational lexicography, corpus linguistics, knowledge representation, and NLP implementations. These are usually intertwined and cannot really be separated from one another.

The main problem for polysemy research in general is the fact that there is rather **poor communication** between these major strands of research. The result of this state of affairs is that different approaches usually concentrate on different aspects of polysemy without really knowing about those aspects that have been noted and examined by researchers in the other branches. Another further result is that different researchers often find sets of data, modes of representation or generalisations that they believe to be new but which in fact have already been known for some time to researchers working in another branch or even in another community within the same branch. All this leads to a fragmentation of research that is quite pathological because it hinders both the accumulation of empirical knowledge on the topic at hand and the effective discussion of new theoretical proposals.

In this paper my goal is twofold. For one, I will try to provide some kind of annotated **bibliography** of the most important works in polysemy research that have appeared in the last 15 years. I will constrain myself to those more theoretical pieces of the literature that discuss the question of what polysemy itself is in general and I will not be concerned with those empirical ones that just examine certain cases of polysemy in one theory or the other. This will be quite an extensive task in itself, however.

The **structure of the paper** will reflect the historical shift in attention between several aspects of the field of research, as outlined above:

My point of departure will be the excellent dissertation of Paul D. Deane (1987) on polysemy, which also includes a survey of literature on polysemy up to that date (Section 3), mostly representatives of the structural semantics strand. This survey is both exemplary in terms of philological thoroughness and very useful for our considerations because it highlights just those aspects of these earlier works that should be considered most relevant for the research today.

Then I will examine the works of researchers who have explored the problem of polysemy in cognitive linguistics: the holistic cognitive semanticists (mainly Lakoff and Geeraerts) including Deane will be summarized in Section 4; the mostly German school of two-level

semantics, which is based on seminal papers by Bierwisch and Lang in Section 6. The pragmatic approach of Nunberg, though it isn't a typical cognitive approach, will also be discussed here, in Section 5, in part because it influenced both of the aforementioned approaches and in part because it appeared at approximately the same time as these.

Finally, two computational approaches will be examined: the DATR knowledge representation system employed by Kilgarriff and Gazdar (Section 7); and last but not least, the Generative Lexicon group centered around Pustejovsky (Section 8). I will take the liberty of drawing together with any one of these groups other researchers (most notably, Ruhl, Blutner, and Cruse) who do not really belong to the group but whose position I judge to be sufficiently close to it.

The other, arguably more important goal of my paper is to present and **compare the ideas** expressed by these groups and to assess how, if in any way at all, these independent branches of research can be considered to be **parts of a whole**. To put it another way, I will try to sketch the overall picture of polysemy that arises when one puts together the puzzle pieces that one finds in the various theories.

My final conclusion (to be detailed in Section 9) will be that, despite the differences in the terminology and the descriptive formalisms that are characteristic of these approaches, it seems that most of them share most assumptions about what components a model of polysemy should have, what the functions of these components are, and how they cooperate to produce different kinds of polysemy. They also share some general explicit or implicit assumptions about the status of polysemy in linguistic theory.

2. WHAT IS POLYSEMY? – A NOTE ON TERMINOLOGY

Before starting to elaborate on the structure outlined above, I would first like to fix some terminological decisions that are necessary prerequisites to comparing the different approaches to polysemy.

The first issue to be addressed is: **what is polysemy?** The standard answer to this can be found throughout linguistic literature. Polysemy is the phenomenon of **a single word having two or more meanings**, no matter how meaning is defined in a given approach.² **Word** is to be understood here as an **element of the lexicon** of a language, i.e. as lexeme,³ as opposed to word form (which is a realization of one or more lexemes) and word token (which is a concrete material realization of a word form in actual discourse). A further point that is frequently

² I will not attempt to define *meaning* here. I will use the word pretheoretically, and attempt to refer by it to the intuitive core of the different explications of meaning in different theories.

³ The terminology is not at all clear. Alternative terms to be encountered for the concept of 'word as an element of the lexicon' are e.g. *lexical item* and *lexical unit*, and there are several others as well.

added to the above definition is that those two or more meanings should be **related** to each other. Though this addition is correct in principle, one may argue that it is **redundant** and therefore should be left out, since if a word has two or more unrelated meanings, it can no longer be a single lexeme, but it is in fact two or more lexemes that happen to be formally identical, i.e. realized by the same word form. In this latter case, we talk about homonymy, which is an ambiguity of a different kind from polysemy, cf. Figure 1.

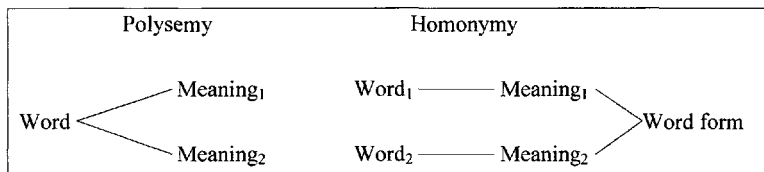


Figure 1

This definition of polysemy is shared in most of the literature. However, although the intension of the term *polysemy* is therefore construed in basically the same way in the various approaches, its **extension varies widely**. This variation derives from the fact that it is quite unclear intuitively, on the one hand, how strongly meanings should be allowed to differ so that they can still be considered to be related and, on the other hand, how strongly meanings have to differ so that they can indeed be considered to be two different meanings and not just variations of a single meaning. Since intuition cannot be relied upon here, the decision about these two questions eventually depends on two factors: (i) the architecture of the lexicon that is assumed by a theory and (ii) how powerful the system of relations is that relate two possible meanings of a single word to each other. Therefore, the extension of the term *polysemy* is necessarily **theory-dependent**.

The literature generally assumes at least since Apresjan, 1973 that there are two kinds of polysemy: regular (or **systematic**) polysemy and irregular (or **non-systematic**) polysemy. Systematic polysemy is that kind of polysemy where the relation between the interpretations a_1 and a_2 of a word A is the same as between the interpretations b_1 and b_2 of a word B , and there are parallel sets of meanings for several further words as well. So, for example, *bottle* can refer both to a container (of liquids) – as in *This bottle is full of water* – and to a quantity (of liquids) – as in *I would like to buy half a bottle of wine*. Accordingly, *bucket* can have the same two interpretations, as can have *glass*, *flask*, *box*, *crate*, etc. Therefore, *bottle* is to be considered to be systematically polysemous with respect to these two readings, as are the other words mentioned. Systematic polysemy is also systematic crosslinguistically, i.e. it usually occurs with the same words in several languages. On the other hand, *glass* can both refer to a certain material, or to a certain kind of container and to a certain optical aid which are often made of this

material. But although these three meanings of the word are therefore related to each other, the relations among them are not systematic, since you can't give rules that would account for these three meanings of *glass*, but you rather have to include them in the lexicon. So, for example, it is impossible to say why it is glasses as containers and glasses as optical aids that are called *glass* and not, say, bottles or windows, even though they are often made of glass as well. Furthermore, non-systematic polysemy is specific to individual languages. It is quite accidental which of the objects that are usually made of glass are referred to by the same word as the material, if any at all, in a given language.

The literature seems to be most divided (at least in terms of terminology) with regard to these two kinds of polysemy. Most work from the 90s calls just systematic polysemy *polysemy* and considers non-systematic polysemy instances of homonymy and therefore theoretically uninteresting. On the other hand, most of the early texts on polysemy from before the 80s took little notice of systematic polysemy and therefore called non-systematic polysemy *polysemy*. And finally, there are several authors who treat polysemy as a more general common term encompassing both kinds of polysemy (referring to kinds of polysemy by adjectival specification or by introducing new terms).

In the following, I will stick to **the more general interpretation** of *polysemy*, that is, I will be equally interested in what the literature has to say about systematic and non-systematic polysemy. Additionally, I will approach the problem onomasiologically, i.e., I will not care what the authors actually call the phenomena they are writing about, if they use the term *polysemy*, *logical*, *complementary* or *lexical polysemy*, *meaning variation*, *sense extension*, *allonymy*, *metonymy*, *alternation* or whatever. I will assume that all these terms are in some way related to each other, since there are relatively stable sets of linguistic data they refer to. I will follow those authors who adopt this more general interpretation of *polysemy* in grouping these stable sets of data together under the term *polysemy*, ignoring the problem of whether this grouping can be justified intuitively or theoretically or if it is completely arbitrary.

There is one further terminological choice I will employ in the following. I will use the term *meaning* (as was mentioned above) in the vague, pretheoretical way as it is used usually. I will use the term *sense* or *lexical sense* for the set of semantic information that is associated with a lexeme in the lexicon. Therefore, every content word has one and only one sense. This does not exclude the possibility that there are function words that don't have a sense at all, like indexicals. Moreover, I will use the term *interpretation* to refer to a realization of a lexical sense in a specific context of utterance. In this way, words may have several interpretations in different contexts, even though they have only a single lexical sense that is common to all of these interpretations. For example, if one understands *bottle* as a container in the context mentioned above, that is one possible interpretation of this word. The quantity interpretation in the other context is another. These are both realizations, or instantiations, of the same lexical sense.

3. SEMANTIC LITERATURE ON POLYSEMY BEFORE 1987

As I said above, I will concentrate only on the more recent literature on polysemy, mostly on work that appeared after 1987. The reason for this is that the literature up to 1987 was very thoroughly collected, reviewed, and summarized by Paul Deane in his PhD dissertation (1987).⁴ I think that Deane's comments on this literature are generally correct and relevant, and it would therefore be superfluous for me to survey it again. Although it is quite likely that Deane didn't find all the papers that contain relevant ideas on the topic, he nevertheless discusses a very large body of literature that has for the most part been forgotten since the beginning of current polysemy research in the 1980s. This is regrettable, since many of the insights that were revealed in the more recent literature had actually been published by different authors much earlier, so one gets the impression that modern researchers wasted (and are also now wasting) a lot of time discovering things that should in fact have been known for 20 or 30 years.

On the other hand, early works on polysemy also provide many interesting ideas that could be fruitfully explored further in current research, and they also include some interesting empirical findings that could be used to reinforce certain theoretical decisions concerning polysemy. Deane not only reviews the literature in general, but also points out these important ideas.

In this section, I would like to recapitulate and summarize (based on Deane's overview) very roughly only those ideas from the early literature on polysemy that appear to be most relevant with respect to the further parts of this paper,⁵ without providing precise references. For a much more complete and comprehensive discussion I refer the reader to the first three chapters of Deane, 1987.

Although Deane also discusses the theory of Nunberg thoroughly, I will nevertheless look at it in a separate section of this paper, since Nunberg has modified his original ideas (1979) quite radically and also because his is one of the few more detailed theories of polysemy that deserve special attention. There was one important theory that appeared at the beginning of the 80s (the most important results being published in 1987) that is not discussed by

⁴ Deane (1987) basically commences his overview at around the middle of the 20th century. There is however a recent paper by Nerlich and Clarke (1997) that deals with some of the literature that had appeared prior to this period, concentrating on the work of philologists at the end of the 19th century. This paper is an interesting (semasiological) investigation of the history of the term *polysemy* from ancient to modern times, but it contains little of interest for the present discussion, so I will not discuss it further.

⁵ I will roughly follow Deane's argumentation in this section, but I will generally not refer explicitly to exactly where these thoughts are to be found in his dissertation. Since I try to summarize a rather long part of it very briefly, it is unavoidable that I emphasize some aspects of it while ignoring others. What I will present also essentially involves my own interpretation of the literature summarized, so while I definitely give credit to Deane for providing the necessary basis of this summary, I would not want to insinuate that he would agree with everything that appears in this section.

Deane, and this is the so-called two-level semantics of Bierwisch and Lang. This will also be examined separately in a section of its own.

3.1. Polysemy versus Homonymy

One of the most important and intuitively most salient distinctions in connection with our topic is the one between polysemy and homonymy. This distinction has already been touched upon in Section 2 above. Deane (1987: 21–36) quotes a sizeable body of (mostly European) literature, beginning with Bally, that dealt with this distinction before the beginning of modern polysemy research. His summary of this literature reveals that the conception I have outlined in Section 2 was one of the two standard linguistic models for polysemy and homonymy from the beginning. To recapitulate, this model (which I will refer to as Model A in the following) claims that polysemy occurs when the same word (or lexeme) has different readings. The concrete, observable readings relate to the abstract, not directly observable lexeme in the same way as **contextual** (or, to put it more precisely, **contextually determined**) **variants** of abstract morphological or phonological units in actual utterances relate to these abstract units. Homonymy is then considered to be two or more words that happen to have the same form.

The other model of polysemy (Model B) concentrates less on relating the different meanings of words. It rather holds that polysemy can be assumed if a word behaves as **a single linguistic sign**, i.e. its syntactic, morphological, and semantic **properties remain constant** if it is used in different meanings. For example, one indication that two instances of words belong to different lexemes is if they are **spelled differently**.⁶ Another one is that a word should only have one set of **morphological** properties.⁷ Yet a different method that mostly leads to the same result as this latter one is to check if two meanings of a word belong to the same **semantic** field. If not, they are homonyms. Further semantic tests include checking if the word has the same set of synonyms and antonyms when used in different meanings. **Distribution tests** that are related to pronominalization and zeugma, still widely used today, also appeared in the earlier literature.⁸

⁶ For example, *hair* and *hare* are likely homonyms on this basis.

⁷ For example, *cut* as a noun and *cut* as a verb are therefore homonyms, notwithstanding that they can plausibly be considered to be related in terms of meaning.

⁸ Cf. Deane's (1987: 27) examples:

- (i) The newspaper didn't give me a job, so I decided not to subscribe to it. *versus*
- (ii) *I decided to relax on the bank after I withdrew my money from one.

Pronominalization is normally possible with polysemous words, whereas it leads to a special kind of unacceptability called zeugma with homonymous ones. These and further tests of ambiguity are also presented and extensively explained in Cruse, 1986 and, based on Cruse's discussion, in Geeraerts, 1993.

It should be noted that Model A entails that the relation between the contextual variants and abstract word meanings ought to be governed by specific rules of alternation (as is the case in phonology and morphology), i.e. certain regularities and some systematicity should be expected. This does not necessarily follow from Model B. This brings us to the second important distinction to be discussed.

3.2. Systematic versus Non-systematic Polysemy

If one applies the criteria mentioned above to decide if a word is polysemous or homonymous, it turns out that they frequently provide results which conflict with each other or with one's intuitions. For example, based on these criteria, one would often be forced to judge a word to be homonymous even though its relevant meanings are obviously related to each other.

To quote an example of Deane's: The following sentence includes a literal and a metaphorical sense of the word *kill*, which are obviously related, but in contradiction to this, the zeugma test diagnoses homonymy.

- (1) *That story just killed him, and so did the terrorists.

One possible conclusion that was drawn is that these tests simply do not work. Another explanation that was suggested is based on the realization that there are **two kinds of phenomena** that the standard definition of polysemy is compatible with. Thus the term *polysemy* actually **conflates two independent things**. These two kinds of phenomena are what I referred to in Section 2 as *systematic* and *non-systematic polysemy*.

The distinction between these two kinds of polysemy is widely believed to have first been stated in Apresjan, 1973, which is very often referred to for this reason. It is central to much of the more recent literature, as will be demonstrated in the further sections. However, the first to have mentioned this duality was surely not Apresjan. At least McCawley (1968) already stated it explicitly before him, characterizing these two classes in terms of systematicity, thus basically in the same way as it is done today. Even earlier, Ullmann (1957) had already stated that these two groups exist.⁹ He named **three kinds of multiple meanings** of words: (i) **homonymy** (understood in the standard way as a word having meanings that have nothing in common whatsoever), (ii) **polysemy** (defined in the more general sense as was introduced in Section 2, i.e. a word having **several related senses**, as in *human head*, *head of department*, etc.), (iii) **shifts in application** (defined as **several aspects of one sense**, as in *healthy climate*,

⁹ Deane (1987) does not mention this aspect of Ullmann's work, so the following discussion complements his overview. Ullmann's position is briefly (but nevertheless in a way that is highly relevant from our perspective) discussed by Ruhl (1989: 3–5).

healthy complexion, etc.). Although Ullmann did not define them in terms of regularity or systematicity, it is obvious from the examples he gave that his second group is equivalent to what I have called non-systematic polysemy and his third group to what I have called systematic polysemy. So it turns out that this distinction is in fact much older than it is usually believed.

If one presupposes such a distinction between systematic and non-systematic polysemy, one can claim that the heuristics I have mentioned in the previous subsection in fact signal the presence of two different senses rather than homonymy. Thus if a word has two senses, these tests will disclose this, whether the senses are related to each other or not (it is not trivial how this latter question is to be decided). Only if they are not related should one necessarily talk of homonymy. However, if they are related, one may speak of polysemy, but one should be aware that this is a case of just one of two kinds of polysemy, namely the non-systematic one. On the other hand, if the tests yield the opposite results, this does not simply indicate that the word in question is polysemous, but rather that it has only one sense with respect to the ways of its use which are being examined, which means that it is an instance of systematic polysemy.

It should be noted that this distinction is not independent of the choice between the two models of polysemy that have been mentioned in Section 3.1. The model where polysemy is treated parallel to contextual variation in phonology (Model A) is only supposed to account for systematic polysemy. Where the relation between meanings cannot be accounted for in terms of some kind of rule, this model fails. Thus a word is expected to have several readings that are contextual variants of a single sense, but it would make little sense in this model to allow for a single word to have more than one sense. In such a model, non-systematic polysemy cannot be distinguished from homonymy and is generally theoretically uninteresting.

On the other hand, the less restrictive model where a word is only expected to behave basically as a single linguistic unit (Model B) may well allow such a word to have more than one sense, provided that these are reasonably similar to each other. It does of course also allow a word to have a single sense that can correspond to several different interpretations in different contexts, but the existence of and the relations between these interpretations are not accounted for, so, in this model, systematically polysemous words are just plain words with a single sense and therefore uninteresting.

So it turns out that these two models of polysemy were proposed each with a different kind of polysemy in mind.¹⁰

What has been said so far suggests that systematic and non-systematic polysemy taken together **do not define** a homogenous, theoretically interesting class of phenomena. The term *polysemy* itself (which encompasses both kinds) should perhaps be therefore abandoned and

¹⁰ The term *polysemy* conflates these two kinds of phenomena because of the ambiguous formulation "two meanings of the same word" that appears in its definition. In case this is understood as "two lexical senses of the same word", *polysemy* will refer to non-systematic polysemy. In case it's understood as "two interpretations of the (same lexical sense of the) same word", *polysemy* refers to systematic polysemy.

always explicated as either systematic or non-systematic polysemy. However, once one is faced with actual data, the situation is not so clear anymore. The argumentation above strongly depends on the assumption that systematic and non-systematic polysemy can be definitely distinguished from one another. This is also entailed by Model A, but not by Model B. On the other hand, Model B entails that non-systematic polysemy can be distinguished definitely from homonymy, whereas Model A does not entail this.

The question which of these predictions actually correspond to the observable facts was indeed investigated in the early literature. **Experiments** were carried out with the aim to learn if speakers have strong intuitions about identities and differences of words (and therefore of senses of words).¹¹ The results can be summarized as follows: Speakers have strong intuitions that homophonous instances of words that are prototypical cases of systematic polysemy are definitely to be considered to belong to **the same word**. They also have strong intuitions that homophonous instances of words that are clear cases of homonymy belong to **different words**. However, there were cases where speakers had **no clear intuitions** about this at all and where their answers were also **statistically very uneven**. These cases were homophonous words that would be considered instances of non-systematic polysemy.

These results both confirm and contradict the models that were presented above. They confirm that there is indeed an intuitive distinction between systematic polysemy, non-systematic polysemy, and homonymy, so it may be assumed that these classes are not just artefacts of polysemy research but have some independent motivation.¹² On the other hand, the results contradict both models also because they do not allow clear dividing lines to be drawn among of the three phenomena.

What arises from these considerations is a spectrum of kinds of meaning variation that can be sketched in the following way:

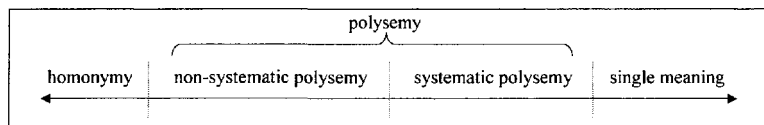


Figure 2

It is to be noted, that there are some respective characteristics that were proposed for their *prima facie* distinction. One of the most revealing of these is that systematic polysemy is usually motivated **metonymically**, whereas non-systematic is motivated **metaphorically**.¹³

¹¹ Cf. Lehrer, 1974; Panman, 1982.

¹² However, as Deane points out, the findings do not tell us anything about the relations between meanings *per se*, but rather only about speakers' **naïve concept of what a word is**.

¹³ The first paper that published this observation and put it this way was to my knowledge Apresjan, 1973.

3.3. Two Models of Systematic Polysemy

I have outlined above Model A of systematic polysemy, which seems to be the most widespread in the early literature. However, this model allows for considerable variation in what properties the rules that relate different interpretations to each other have and what subsystem of grammar they belong to.

McCawley (1968) proposed that these are **implicational semantic relations** that hold between contextual variants ("lexical items" as he himself put it) of lexemes. That is, the lexicon only needs to specify a single interpretation of systematically polysemous words and contain some rules that derive the further interpretations. He mentions a "principle that for each lexical item denoting a temperature range there is a lexical item identical to it save for the fact that it is restricted to articles of clothing and means 'producing the sensation corresponding to the temperature range denoted by the original adjective'".¹⁴ McCawley's principles are probably supposed to be something like lexical rules that apply to all members of semantically specified sets of words.

Leech (1974) also locates the corresponding rules in the lexicon. He postulates a set of lexical rules that operate in the lexicon and relate lexemes (e.g. adjectives and their nominal derivatives in *-ness*) to each other by specifying how their semantic, syntactic and morpho-phonological properties differ. Rules that capture the interpretations of systematically polysemous words are special cases of such lexical rules, where the rule only modifies the semantic and possibly also the syntactic properties (like argument structure) of words, but not their form. Leech does not assert that these lexical rules are fully productive. He rather suggests that they just relate existing lexical units to each other, thereby increasing the economy of the lexicon (so they serve as **redundancy rules**) and they may determine how to use new lexical units. Thus they seem to be like descriptions of **analogical structures** in the lexicon rather than actual rules. What follows from this is that systematic polysemy should not be expected to be fully productive.

There is a very obvious contrast between the general **goals** of McCawley's version of Model A and Model B. McCawley's rules are supposed to **explain** the contextual variation of meaning that appears as systematic polysemy. Explanation is understood here in the sense as appropriate to the specific theory of science that generative linguistics is based on in general: one can claim to have explained something if one can derive, by way of **deduction** based on a **set of generalizations** in the form of rules, certain **predictions** concerning phenomena that were not considered directly when developing these generalizations. In the case at hand, this means that one can claim to have explained systematic polysemy if one can provide a certain set of rules that define for every context what interpretation a systematically polysemous word

¹⁴ McCawley, 1968: 64, quoted by Deane, 1987: 54.

will receive in this context. When Deane claims that McCawley's rules are productive, he actually seems to have in mind that they are **predictive** in this sense. Such rules are designed to account for just those linguistic phenomena that are **systematic** and **creative**.

On the other hand, Model B of polysemy is **not explanatory** in this sense. It allows for several related senses to be associated with a single word, but it does not explain in any way how these meanings relate to each other and on what conditions they are used.

Leech's version of Model A is yet a different case. The way its rules are understood to work has the effect that it is **not explanatory** either, in the sense that it does not allow predictions. However, Leech's model does provide some kind of "explanations" in another sense. It relates structures in the lexicon to certain rules, but it does not define an exact procedure for the derivation of new elements of the lexicon, it rather specifies some general regularities of how new elements of the lexicon are **usually** derived. To elucidate what such rules do, they can be paralleled to "explanations" of diachronic **linguistic change**. Historical linguistics does not claim to be able to make predictions concerning future change, but it does claim to be able to provide the **motivation** for any future linguistic change by referring to the same **regularities** that motivated linguistic change in the past.¹⁵ Leech's non-explanatory rule-based model of lexical rules does not provide predictions either, but it aims to specify by means of a set of rules the motivation for why words are polysemous in the way they are.

As Deane correctly states, this model works best for **phenomena that are not fully predictable**, which is true of non-systematic polysemy (which is taken to be motivated by certain regularities of how we conceptualize the world around us, but is essentially stored in the lexicon).¹⁶

To summarize this section, Deane claims that in the early literature on polysemy it is not only suggested that systematic and non-systematic polysemy can be distinguished from each other but also that one should also adopt different models of description for dealing with each, whereby the essential difference between these two kinds of models is the explanatory power to which they aspire. I will try to show that this duality is also present in the later literature.

¹⁵ This mode of "explanation" that is adopted by certain historical linguists is discussed in more detail by Keller (1989). In addition, historical linguistics of course also provides "genetic" explanations, i.e. it tells us how the current state of certain linguistic units came to be by enumerating its previous historical stages.

¹⁶ It works for systematic polysemy as well, of course, but as long as one acknowledges that providing predictions is superior as a goal of linguistics to giving motivations, McCawley's model should be preferred for creative and systematic phenomena.

4. POLYSEMY IN HOLISTIC COGNITIVE SEMANTICS

Before discussing Deane's own theory of polysemy, which actually posits a combination of these two models to work in parallel and in a complementary way to deal with systematic and non-systematic polysemy respectively, I will first examine how holistic cognitive semantics¹⁷ in general treats polysemy. Deane himself can be characterized as a holistic cognitive semanticist to a certain degree; however, this duality of his approach is not a "prototypical" case of the holistic cognitive approach to polysemy. The latter can be usually described as a **non-explanatory motivational** approach (in the sense outlined above) to polysemy, concentrating on cases of what I call non-systematic polysemy and at the same time **denying the possibility of distinction between kinds of polysemy** on the basis of systematicity or regularity.

4.1. Prototypes and Polysemy

If one wants to summarize what can be learned about polysemy from Lakoff, 1987, which is generally considered to be the most important seminal work of holistic cognitive linguistics, it seems that what I call polysemy is a result of a highly complex interaction between several aspects of our cognition.

One such aspect is that we categorize the world around us by **prototypical concepts**.¹⁸ This means that the membership of our mental categories cannot be defined in terms of necessary and sufficient conditions. According to the standard conception of prototypicality introduced in cognitive psychology, to decide if a certain phenomenon *a* is a member of a certain conceptual category *A*, one has to compare *a* to the so-called prototype of this category (*a**), which is the best, i.e. most characteristic, most salient and central member of *A*. If *a* is sufficiently similar to *a**, it can be considered to be a member of *A*. Essentially, **it cannot be defined** how similar *a* has to be to *a** to be a member of *A* just by looking at *a**, which implies that the prototype does not by itself define the borders of the extension of the prototypical category. What delimits a prototypical category *A* are actually other prototypical categories *A'*, *A''*, etc. that are the alternatives to *A* when categorizing a phenomenon *a*. If *a* is more similar to *a** of *A* than to *a*' of A'*, *a* will be categorized as a member of *A* rather than of *A'*. The measure by which the similarity of any *a* to an *a** can be quantified is termed cue validity in the

¹⁷ On the distinction between holistic and modular cognitive linguistics, cf. Schwarz, 1992 and Kiefer, 1995. I will not characterize either of these theories, nor cognitive linguistics in general. I would like to note however that I use the term *holistic cognitive semantics* to refer to what holistic cognitive linguistics says about meaning in language, with "meaning" understood in a pretheoretical way and as generally as possible. This note is necessary to make because holistic cognitive linguistics itself does not define semantics as a field of linguistic study.

¹⁸ For an introduction to prototypes in cognitive linguistics, cf. Kleiber, 1993 and Taylor, 1995a.

literature.¹⁹ If an a is equally dissimilar to a^* of A and to a^{**} of A' (and there are no other alternatives better than A and A' for its classification), it will be impossible to determine if a should be a member of A or A' . Therefore, the boundaries of prototypical categories are generally vague or fuzzy.

For example, let us suppose that we want to decide if a pear is a member of the category FRUIT (A) or of VEGETABLE (A'). Let us suppose further that the prototype (a^*) of A is the apple and that of A' (a^{**}) is the cabbage. When categorizing pear, we compare it both to the apple (a^*) and to the cabbage (a^{**}) and decide that it is much more similar to a^* than to a^{**} . Therefore, pear will be categorized as a fruit (a member of A) rather than a vegetable. When categorizing tomato or avocado on the other hand, one is faced with the problem that these are both rather dissimilar to both the apple and the cabbage in certain relevant respects (e.g. what they look like, how they grow, how they taste and how they are eaten), so, in the end, it will be impossible to decide if these belong to the category of fruits or vegetables (and there is no third category that would be a better alternative to categorizing them than these two).

One very important characteristic of this prototype model is that it tries to capture two kinds of relation: (i) the relations between categories and their members, and (ii) the relations between alternative, more or less complementary categories at the same level of categorization. Thus it does not tell us anything about the hierarchical organization of categories, i.e. the relation between a subordinate and its superordinate category, or if there are such relations at all.²⁰

This standard conception of prototype theory is obviously concerned with the properties of the **generality**²¹ of human cognitive categories, which corresponds to the "single meaning" area of the spectrum shown in Figure 2, which falls outside of polysemy. However, since the boundary between single meaning and polysemy is just as unclear as that between polysemy and homonymy, one should well expect there to be cases where polysemy can be accounted for by referring to the prototypical structure of the concept in question.²²

¹⁹ For a more detailed discussion of this concept and of this procedure in general, cf. Blutner, 1985 and Blutner, 1995. The latter also contains an interesting criticism of the use of prototypes in holistic cognitive semantics (which he calls simply Cognitive Semantics) and outlines an attempt to reduce the concept of prototype to two other phenomena, which he terms vagueness and typicality.

²⁰ This is highly relevant for us because as it will become clear later, many theories of non-systematic polysemy try to derive some of its characteristics from the hierarchical organization of our conceptual system and the implicational relations that derive from it; cf. especially Section 7 below.

²¹ Generality corresponds to abstraction and contrasts with singularity, cf. Quine, 1960 for a detailed philosophical treatment of general vs. singular terms. Generality of categories is a substantial implication of any act of categorization, since to abstract from contingent properties of entities and to treat them as similar in some relevant respect is exactly what categorization is supposed to achieve.

²² This issue is extensively discussed in Geeraerts, 1993, who refers to generality in the above sense by the term "vagueness". It should be noted that, although he says little about polysemy, Jackendoff seems to want to account for cases of polysemy in this way as well. He mentions the verb *see*, which is polysemous, having the two possible readings 'notice' and 'look at', as in these two sentences (Jackendoff, 1983: 150, quoted by Deane, 1987: 61):

Another source of polysemy is connected to another conception of prototypicality that Lakoff takes to be compatible with the previous one. In this conception, it is allowed that a prototypical category does not have a single prototypical member, but it is rather required to have a set of members, all of which are similar to at least one other member, but none of which are required to be similar to all other members (as is the case for the prototype in the standard model discussed above). This is referred to as the model of **family resemblances**. For example, a prototypical category *A* based on family resemblance has a set of members *a*, *b*, *c*, *d*, of which *a* is similar to *b*, *b* is similar to *a* and *c*, *c* is similar to *b* and *d*, but *a* is not at all similar to *d* and there is no single member of *A* that is similar to all other members.²³ In such a scenario, one will likely be tempted to judge the word w_A that corresponds to the category *A* to be polysemous, but one will have difficulty deciding exactly what distinct meanings to attribute to it (which is exactly what is usually encountered with polysemy, by the way).²⁴

4.2. Metaphor, Metonymy, and Polysemy

A third source of polysemy (which itself can be split up to at least two different sources) are **general cognitive operations** that operate on our concepts, relating them to each other in certain ways. At least two basic kinds of cognitive operation are assumed by holistic semanticists: **conceptual metaphor**²⁵ and **metonymy**. Conceptual metaphor is a general cognitive strategy which involves the conceptualization of abstract or less familiar phenomena by recourse to something more concrete or more familiar. Conceptual metaphor in general does not apply to individual phenomena, but rather to whole conceptual domains. For example, the conceptual metaphor LOVE IS A JOURNEY relates a more abstract conceptual domain (love) to a more concrete one (journey). By virtue of this conceptual metaphor, individual phenomena that are

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- (i) I must have looked at that a dozen times, but I never saw it.
 - (ii) I must have seen that a dozen times, but I never noticed it.

Jackendoff assumes a prototypical structure for the meaning of the word *see*, with the prototypical case ('notice') having both of the features 'x's eyes are directed at y' and 'y comes into x's visual awareness', whereas the interpretation 'look at' only involves the former feature.

²³ Cruse (1986, 1995) refers to this phenomenon as "sense spectrum" and mentions some interesting examples.

²⁴ Cruse (1995: 47), although he sympathizes with the prototype approach in general and with the treatment of non-systematic polysemy in prototype theoretical terms in particular, notes that the approach is inadequate to account for the different behavior of words that express what Deane (1988) calls open referential polysemy, cf. Section 4.4 below. This is one of the few criticisms of the approach that do not reject it out of hand but try probing the predictions it makes.

²⁵ There is an extremely rich literature on the theory of conceptual metaphor, beginning with Lakoff and Johnson, 1980. One of its most prominent proponents is Kövecses, whose as yet unpublished book (1998) provides a comprehensive introduction to the theory.

specific aspects of love will be conceptualized according to (and thereby effectively equated with) specific aspects of journeys. Such metaphors often lead to polysemy. For example, another conceptual metaphor is *AN OBJECT IS A HUMAN BODY*.²⁶ If this metaphor is applied to an object that has parts protruding from it so that they resemble appendages, these can be referred to as *arms* and *legs*. Thus one can talk about an *arm of an ocean* or *legs of a table*. These are, obviously, lexicalized uses of the words *arm* and *leg* that are motivated by this conceptual metaphor.

This is probably the most important aspect of the holistic cognitive approach to polysemy: The theory aims primarily to account for non-systematic polysemy by relating it to general conceptual metaphors. The implication for non-systematic polysemy, as for metaphor in general, is that it is **not an essentially linguistic phenomenon**, since it derives from conceptual metaphor, which is itself no linguistic regularity, but a general cognitive strategy.

As I mentioned above, the holistic cognitive account of polysemy is non-explanatory and motivational. It is non-explanatory (according to the sense that was defined for explanation above), since **it does not make any predictions** about what meanings a specific word will have. For example, the theory does not tell us exactly what parts of what objects a certain body-part term like *arm* will refer to. Rather, it will provide the motivation for why there is a tendency to use several body-part terms to name certain parts of objects.²⁷

Metonymy, on the other hand, is another possible source of polysemy according to holistic cognitive semantics. This is hardly surprising, since, as I mentioned above, metonymy has been known for a long time to motivate a certain kind of polysemy, namely systematic polysemy. Accordingly, it is mainly cases of systematic polysemy that are discussed in connection with metonymy. The holistic cognitive literature on this topic is rather sparse compared to that on metaphor. The only work I know of that devotes itself specifically to metonymy is Kövecses and Radden (1998). These authors examine mostly those cases that are seen as examples of systematic polysemy in the literature. As opposed to those authors who emphasize that systematicity, and therefore predictability constitutes a major difference between systematic and non-systematic polysemy, Kövecses and Radden do not claim senses derived by metonymy to be any more (or less) predictable or systematic than ones by metaphor.

²⁶ Such body-metaphors receive a detailed discussion in Johnson, 1987.

²⁷ It is worth noting that the role attributed to predictions in holistic cognitive linguistics corresponds to the fact that this theory is founded on a theory of science that is different to what modularistic cognitive linguistics (and, as a part of it, generative linguistics) is based upon. The theory of science of holistic cognitive linguistics views explanation in a very different light; specifically, it does not require an explanation to be predictive but only to provide the motivation to an observed phenomenon (Zoltán Kövecses, personal communication). Another (actually quite common) way of viewing the fact that holistic cognitive linguistics introduces models that "would seem capable of describing practically anything while predicting little or nothing" (Deane 1987: 65) is that the shift from pre-cognitive to holistic cognitive linguistics is "less of a scientific revolution, but rather a return to a pre-scientific stage of the description of phenomena" (Blutner 1995: 235).

4.3. Geeraerts' Refinement of the Holistic Cognitive Account of Polysemy

Thus it looks as if the distinction between single general meaning, systematic polysemy and non-systematic polysemy was maintained in holistic cognitive semantics, and these three phenomena could be captured and given a non-explanatory, motivational treatment in three different ways, namely by referring to the prototypical structure of concepts, metonymy, and conceptual metaphor, respectively. This would mean, of course, that one should normally be able to distinguish these phenomena quite clearly. However, as Geeraerts (1993) points out, this is not the case.²⁸ He shows that there is a model of prototypicality that allows us to represent these three sources of polysemy in basically the same way, which would entail that the **distinction between them is obscured**. This would be a fortunate outcome, since it would reflect the fact that the distinction between these types of polysemy is **not at all clear-cut indeed**.²⁹

This model, which is called the radial set model³⁰ in the literature, can be characterized in the following way: The meanings of a polysemous word, which are related to each other by metaphor and metonymy as was proposed above, are organized in just the same way as possible members of a category, i.e. referents belonging to a certain concept. The readings of words, just as members of a prototypical category, "are connected in pairwise fashion by means of **relational links** that indicate how one reading is an extension of another" (Geeraerts, 1995: 28, emphasis added – G. P.). The central, or most salient entity (the prototype), which is the central reading of a word in one case and the central member of a category in the other, is that element of a radial set from which many other elements emanate (i.e. which is connected by relational links to many other elements that are its extensions). The set of all readings of the word and the category as a whole, respectively, will be thus an extension of such a prototype.

It should be noted that the radial set model is able to represent both the classical and the family resemblance model of prototypes. If polysemy is represented in such a radial set model, the choice between these two has certain **implications**: If the meanings of a word are organized according to the **standard model**, then one expects such a word to have a **single central reading**, from which all other meanings are derived as its extensions, either directly or indirectly. On the other hand, if the meanings are organized according to the **family resemblance**

²⁸ Another paper by a proponent of holistic cognitive semantics which emphasizes the impossibility of distinction between homonymy (which he calls ambiguity), polysemy and generality (which is referred to as "vagueness" there, as by Geeraerts) is Tuggy (1993), who aims to investigate the nature of the meaning of the terms *polysemy*, *ambiguity*, and *vagueness* rather than providing a means to account for any of them.

²⁹ Although this is supposed to be a desirable implication of this solution, the conscious and deliberate confusion of the referential level (or the extension of the word) with the conceptual level (or its intension) is, of course, highly problematic; cf. Blutner, 1995 for a relevant criticism.

³⁰ Different representational formats in holistic cognitive linguistics are summarized in Geeraerts, 1995. Geeraerts examines their respective implications and tries to show that they are notational variants of each other. This paper complements the discussion of polysemy in Geeraerts, 1993 and touches on the topic directly.

model, the word will not have a single central meaning. It will rather have **a set of meanings that are equally “basic”** or “central” and possibly also others that are extensions of the basic senses.

4.4. Deane’s Theory of Polysemy

Deane’s dissertation (1987) was never published and therefore was completely ignored by later researchers of polysemy, which is very regrettable, since Deane’s work is valuable not only for its summary of the previous literature (cf. Section 3 above) but for the theory of polysemy that it presented.³¹ In my opinion, Deane (1987) is the single best piece of literature on polysemy to date, containing lots of brilliant observations and presenting the most elaborate and stimulating theory of polysemy currently available.

As I have mentioned, Deane does not fit into the picture of holistic cognitive semantics outlined above. His approach is definitely in line with the general holistic treatment of polysemy insofar as he also claims polysemy to derive from general cognitive strategies. More specifically, he outlines a theory “in which word meaning is **closely integrated** with certain kinds of **extralinguistic knowledge** (i.e., the cultural background, expressed in the form of ICMs³².) Without such information, it would be impossible to account consistently for polysemy” (emphasis added – G. P.). However, contrary to Geeraerts (1993) and Tuggy (1993), he maintains that **it is reasonable to distinguish polysemy from both homonymy and generality**, and also to treat systematic and non-systematic phenomena, which he considers to be instances of two kinds of polysemy, separately.

More specifically, Deane accepts the insight of previous researchers that systematic polysemy (which he calls **allosemy**) is the result of a **creative application of a certain set of rules**, which can be construed in analogy to rules of alternation in morphology and phonology and whose application is invoked by certain linguistic and non-linguistic **contexts**. On the other hand, he assumes like other holistic cognitive semanticists that non-systematic polysemy (which he calls **lexical polysemy**) can be accounted for by specifying **certain cognitive operations of metaphor and metonymy** by which it is usually derived. But contrary to them, Deane explicitly claims that these senses of a word are essentially different from the interpretations of systematically polysemous ones in that the former have to be **stored in the lexicon**, whereas the latter do not.

³¹ Deane (1987) includes a detailed investigation of the semantics of English body-part terms and several shorter case studies of other words, which are also interesting, but which will not be discussed here, being of no direct relevance to the topic of this paper.

³² ICM is the standard abbreviation of Idealized Cognitive Model, a central notion of holistic cognitive linguistics, cf. Lakoff, 1987.

Deane's theory of polysemy is composed of two different parts that have certain common elements. The part that accounts for systematic polysemy is **predictive** and includes a system of rules (of mostly **metonymic**, but also of **metaphoric motivation**) that are applied in everyday use of language as parts of an **active interpretative process**. On the other hand, the part that accounts for non-systematic polysemy is non-predictive and motivational and it includes exactly the same set of rules (of both **metaphoric and metonymic motivation**) that play an important part in our general conceptualization of the world, but are less central to the actual use of non-systematically polysemous words; they rather surface when new words and **new senses of words are created**, thus they apply more on an **historical or etymological scale**.

Deane explicitly specifies a full system of metonymic relations. This system is based on a detailed list of metaphoric and metonymic relations presented by Norrick (1981).³³ However, Deane claims that Norrick's relations are not basic but that they can themselves be derived from more primitive elements that define a coherent system of relations.

Deane loosely bases his system of rules³⁴ of metonymic transfer on Jackendoff's (1983) theory of conceptual semantics. Its basic elements are **two abstract relations**. The first one, which can be called "static", has the following form: *P (theme, landmark), D*, where *P* is the relation itself, its two arguments loosely correspond to thematic roles of arguments of object-language predicates, and *D* is a variable over conceptual domains to which the relation can apply. The second – "dynamic" – one has the form *PATH (source, route, goal), D*, which is to be interpreted similarly to the former. These two general relations (which can also be combined to form a complex four-place relation) plus a set of domain specifiers (like *spatial, temporal, possessive*, etc., which may be values of *D*) **define a set of metonymic relations**.

Metonymic transfer in language, which is the basis of systematic polysemy, is based on such relations. I will try to show how it works on a specific example. Let us take the metonymic relation (2):

(2) *P (ham sandwich, PATH (x, server, customer)), possessive*.

The theme of this relation is a ham sandwich, whose possession (specified by the domain designation *possessive*) is transferred from some *x* (its source) by a server (its route) to its customer (its goal). This metonymic relation serves as the basis of a variety of metonymic transfers. Metonymic transfer is essentially a semiotic operation, which involves designating one thematic role of a metonymic relation by an expression that directly refers to another thematic role of the same relation. For example, in sentence (3) below, *ham sandwich*, which would usually name the theme role of the relation, designates the customer, whereas in (4), it

³³ This work is discussed in more detail by Deane (1987: 66–73).

³⁴ This system is presented in Deane, 1987: 76–108.

designates the server (thus these are metonymic transfers of the type theme-goal and theme-route, respectively).

- (3) The ham sandwich is at table 9. [meaning the person who ordered the ham sandwich]
- (4) The ham sandwich is walking toward you from the kitchen at this very moment. [meaning the person who serves the ham sandwich]

These basic relations and the domains thus **generate** a set of more specific metonymic relations. According to Deane's theory, generally any thematic role in any relation may be paired with another thematic role in that relation to motivate a metonymic transfer, thus **it predicts exactly what kinds of metonymic transfer should exist**.³⁵

Deane's theory of **metaphoric motivation** (1987: 109–127) is simpler and consists of two very general rules: operations of **abstraction**, which delete certain specifications from semantic representations, and operations of **transfer**, which substitute a domain specifier in a representation with another one (this latter operation corresponds to the function of conceptual metaphor, mentioned above). These operations are applied when creating and interpreting novel and creative examples of metaphors, but they also motivate conventional metaphors (which are stored in the lexicon with their conventional metaphorical sense as well, however).

Deane also considers the place of his rules of metaphoric transfer in the linguistic system. He states that his own rules basically do the same thing as and can be considered more explicit versions of the referential functions of Nunberg (1979) (cf. Section 5 below), but he attacks Nunberg's position that these rules are **pragmatic** in nature and claims that they should be viewed as a part of grammar proper, more specifically, as **a generative mechanism of semantics**, which is a part of grammar.³⁶ He argues in a principled way on theoretical grounds for his own position (Deane, 1987: 147–162).

There is one more important point in Deane's discussion I would like to point out. It is the distinction between **two kinds of systematic polysemy**. Based on observations by Fauconnier, Deane (1987: 176–179) states that the first kind of systematic polysemy (which he calls *open allosemy*), which appears e.g. in the case of *newspaper*, is **related to the complex structure of our knowledge** about the kinds of objects that are named by these words. In the case *newspaper*, this folk knowledge includes (among other things) that a newspaper is (i) a bunch of paper, which (ii) contains a certain amount of information, moreover, (iii) there are

³⁵ Some logically possible pairings of thematic roles are excluded for metonymic transfer by higher principles of cognitive accessibility or for other plausible reasons, cf. Deane, 1987: 104–105.

³⁶ This problem is, of course, a fundamentally modularistic one, so Deane can't be in fact considered a proponent of holistic cognitive semantics if one examines more closely the theory of language implied by his ideas. Regrettably, I can't go into the details of this issue here.

lots of bunches of paper that are alike in the respect that they contain exactly the same information, (iv) such sets of bunches of paper corresponding to a certain information appear regularly under the same title, and (v) the information is compiled and put on the bunches of paper by a certain institution, (vi) which resides in one or more buildings and (vii) has a number of workers, etc. Under certain conditions, any aspects of this complex, structured knowledge may be referred to by uttering *newspaper*. The interpretations of this word arising in this way are therefore to be considered **induced by the lexical sense** of the word. This kind of polysemy is systematic with respect to delimited classes of words that refer to things that are **similar** to each other **according to our folk knowledge** about them.³⁷ Although he is not completely clear about this, Deane seems to claim that the relations among the different aspects of concepts that correspond to words ought to be described in terms of the general metonymic and metaphoric relations mentioned above. Therefore, like Nunberg (1979) and contrary to Bierwisch (1983a) (cf. Sections 5 and 6 below), he apparently should assume that **one of the aspects** of such a system of knowledge is the **primary interpretation** of the word.³⁸

However, Deane (1987: 179–190) also specifically claims that in cases of open allo-semy, it is in general impossible to decide which one of a set of interpretations is primary. The two interpretations of *game*, ‘a set of rules’ and ‘an activity governed by this set of rules’, constitute just such a case. Since one has no grounds on which to decide which of these is the primary interpretation, Deane claims, contrary to Nunberg and with Bierwisch, that the meaning of *game* (and apparently of other cases of open allo-semy) is **unspecified** with respect to these two interpretations and the possibility of both interpretations is represented as such in the lexical representation of *game*:

(5) ‘x governs the performance of y’.³⁹

³⁷ Cruse (1995: 44–46) also mentions the existence of this group of phenomena. He calls the different aspects of the thing that the polysemous word can refer to facets and says that “the different facets of a word sense form a gestalt”. He also notices some further interesting properties of this kind of systematic meaning variation that have to my knowledge not been mentioned elsewhere. Cruse (1999) summarizes the properties of facets in a more didactic way and adds some more to their previous list. He demonstrates the working of these properties on words belonging to the semantic field of *book*. From these papers, it becomes clear that this kind of systematic polysemy has remarkably many properties that any of the approaches outlined in this paper should be able to account for, but none of them actually is.

³⁸ Lexical knowledge seems to play a role only to the extent that referring to one aspect by the word that normally designates the other (e.g. referring to aspect (vii), the workers of a newspaper company by uttering the word *newspaper*, which normally refers to aspect (i) is accessible, and therefore pragmatically sanctioned **in any context of use** by virtue of the meaning of the word.

³⁹ The two readings of *game* are then derived from this representation by binding one of the variables with a lambda-abtractor. A completely parallel treatment of this phenomenon was presented by myself, independently of Deane (1987), based on quite different background assumptions and arguing for this solution in a completely different way, in Pethő, 1998, 2001.

As far as I can tell, this is in contradiction with the previous picture.⁴⁰ Deane either does not consider it a contradiction or does not notice it, since he does not discuss the issue any further.

The other kind of systematic polysemy (called *closed allosemy*) has nothing to do with lexical factors, but is **only dependent on specific discourse contexts**. The same metonymic and metaphoric operations apply, but such metonymic or metaphoric transfer is applicable in a certain context only if it is pragmatically licensed, i.e., if the context itself guarantees that the intended referent will be unambiguously determinable (accessible) from the "direct" referent.

Although Deane presents this distinction and also mentions a property of open vs. closed allosemy (namely that the former usually does not lead to zeugma, whereas the latter does), he does not explain these two concepts in more detail.

It is worth noting that Deane **explicitly rejects** the treatment of polysemy in terms of prototypes. He maintains that what is referred to as a prototype by holistic cognitive semanticists is actually a confusion of several distinct phenomena to which the concept of prototype can be reduced, which are (i) what is usually called vagueness (there is a single, clearly specified focal referent of a term, like the focal red color, and other instances of color are compared to this focal referent), (ii) the deletability of certain specified semantic features by the operation of abstraction (see above), and (iii) the inapplicability of certain specified semantic features because the phenomenon to be categorized is inconsistent with some relevant aspect of the ICM underlying the use of a word (which is why the Pope can't be called a bachelor). All in all, Deane seems to claim that his theory can account for everything the prototype-theoretical approach can, and for other data as well.⁴¹

Thus the overall picture of polysemy of Deane, 1987 can be sketched in the following way:

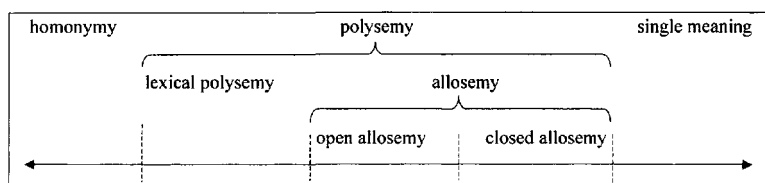


Figure 3

Here, lexical polysemy is approximately equivalent to what I chose to call non-systematic polysemy and allosemy is systematic polysemy, separated into two kinds. This spectrum is, of course, necessarily metaphorical in nature, and I am not sure if Deane would

⁴⁰ Note that additionally in this case, the variation is coded in our knowledge of games and there seems to be no active application of general metonymic or metaphoric principles whatsoever at play.

⁴¹ Deane, 1987: 346–349. Deane, 1988: 346–348 presents a slightly different picture.

have represented it in the same way. I placed open allosemy closer to lexical polysemy, since it is dependent on lexically encoded information, whereas closed allosemy is not, so its natural place is closer to single meaning.

Deane, 1988 presents a significantly modified version of Deane's theory. The modifications are so far-reaching that it is hard to compare them, in part because the new model is explained in less detail than the older one despite being more refined.

The most important difference seems to be that Deane, 1987 is a **representational** theory of polysemy, whereas Deane, 1988 is a **procedural** one, and correspondingly, the representational part of the 1987 theory which was based on Jackendoff, 1983 is replaced by a procedural part that is based on Anderson, 1983. Deane, 1988 concentrates on the former metonymic operations and the phenomena that were termed allosemy in Deane, 1987. The system of metonymic relations is replaced by a set of conceptual **activation functions** that form complex activation patterns. These patterns have the same function that metonymic relations had in the old model, but they also serve to explain why certain kinds of metonymic transfer are generally impossible (cf. footnote 35), by referring to cognitive processing procedures and principles of relevance.

Another difference is that whereas Deane, 1987 gave an account of the generation, motivation, and lexical storage of interpretations, Deane, 1988 devotes much attention to the problem of how these interpretations are selected in specific contexts. This aspect of the problem is usually neglected.

Deane, 1988 presents an even more fine-grained classification of polysemy phenomena than he did in Deane, 1987, although (at least in part because the categories are not characterized in sufficient detail) it is not obvious how the classes exactly relate to the kinds of polysemy in Deane, 1987. He discusses three kinds of **semantic** polysemy and two kinds of **referential** polysemy. The three kinds of semantic polysemy are the following:

1. **Lexical polysemy** has been taken over with little change (in terms of its extension) from Deane, 1987. The different senses of such a word are stored in the lexicon, but their resemblance has an important cognitive role: the secondary senses of a lexically polysemous word are easier to learn, use and remember because of their connection to the primary one.

2. Allosemy does not refer to the same concept as in Deane, 1987, i.e. systematic polysemy, but rather to **generality and vagueness** taken together (both denote variations of a single meaning). Thus *arm* as used to designate the real arm of a person, the artificial arm of a person, the arm of a statue or the arm of a robot is a case of allosemy in this sense.

3. Regular polysemy is not equivalent to the "regular polysemy" of Apresjan, 1973, which would be systematic polysemy in the terminology chosen by me, but it rather seems to refer to (i) extremely productive strategies of zero-derivation, as in (6) and (ii) certain conceptual metaphors (that are not explicitly stored in the lexicon).

- (6) He Hitlered whole populations.

The two kinds of referential polysemy correspond to the open and closed allosemy of Deane, 1987 respectively, and are thus representatives of systematic polysemy in our terminology:

4. Closed referential polysemy derives from an **asymmetric spread of activation** in a conceptual network, which accounts for the facts that (i) with closed polysemy, it is always obvious which the primary, "direct" referent of a word is and which is derived and (ii) closed polysemy disallows crossed-sense anaphora (or more generally, leads to zeugma):

- (7) *The ten million dollar inheritance just walked in to be reinvested.

The (asymmetric) conceptual relations that give rise to an asymmetric spread of activation are approximately equivalent to the metonymic relations of Deane, 1987, the main differences being that they do not constitute an axiomatic system here and that they are described in procedural terms. Closed referential polysemy is extremely creative and dependent on contextual factors.

5. Open referential polysemy on the other hand derives from a **symmetric spread of activation**, which accounts for the phenomena opposite to what has been observed with closed polysemy: (i) no primary referent can be established, (ii) no zeugma arises:

- (8) The newspaper won't hire me, so I don't subscribe to it.

Symmetric spread of activation results either from a single symmetric conceptual relation, or a combination of two asymmetric operations. Thus closed polysemy is caused by operations that are **different** from those that cause open polysemy. This eliminates the contradiction I noted above in connection with the 1987 model: open and closed polysemy are actually derived by partially different sets of rules in the current model.

Thus Deane, 1988 presents a theory where basically **two systematically predictable types of polysemy** are present: open and closed systematic polysemy. Regular polysemy is also predictable, but it is not quite clear how different it is from closed referential polysemy (which it resembles and like which it is accounted for by asymmetric activation spread). Lexical polysemy, like homonymy, is genuinely unpredictable. Finally, allosemy is apparently so diffuse and vague that little substantial may be said about it.

A schematic representation of these concepts of polysemy is given in Figure 4. Most of the changes to the schema in Figure 3 should be self-evident. The only significant change worth pointing out is that Deane, 1988 seems to assume that open and closed referential polysemy have clearly delimited boundaries.

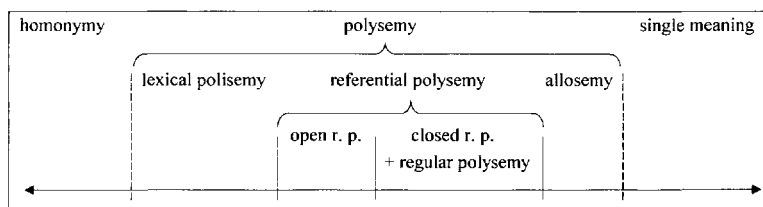


Figure 4

5. NUNBERG'S PRAGMATIC THEORY OF POLYSEMY

The early version of Nunberg's theory of polysemy has already been mentioned above, since it was quite extensively discussed in Deane, 1987. By comparing it to Deane's work, the scope of Nunberg's theory can be defined quite well. Nunberg adopts in his writings a narrower concept of polysemy. He does not discuss cases of non-systematic polysemy at all, but identifies polysemy simply with systematic polysemy. He tries to provide a theory that is capable of dealing with all instances of systematic polysemy, but he concentrates on cases of what Deane called closed referential polysemy. The central examples of Nunberg are like the following:

- (9) The ham sandwich is sitting at table 20.

Nunberg's basic idea can be summarized in the following way: phenomena of systematic polysemy are phenomena of **referential variation** (as opposed to a variation of lexical meaning), and they are deducible from **pragmatic factors**.

Nunberg, 1979 is the first in a series of papers Nunberg devoted to this topic.⁴² He presents the problem of polysemy as a problem of **reference**, which he believes to be an essentially pragmatic issue. Reference depends on the **co-operation between a speaker and a hearer**, and can be considered successful if the hearer is able to identify what the speaker has in mind. One way of referring is by direct ostension or by direct linguistic specification of the intended referent. But another common way of referring, which Nunberg claims to be the basis of (systematic) polysemy, is **deferred reference, in which** the speaker does not directly refer to his intended referent, but instead to another entity which stands in a specific and obvious relationship with the referent. So, for example, one can point to a part of something to refer to the whole.

The key to successful deferred reference is that the relation between the intended and the direct referent (the demonstratum) has to be **identifiable by the hearer**. So the speaker has

⁴² It is based on a general theory of reference presented in Nunberg, 1978.

to choose from among a finite number of such relations, which Nunberg calls **referring functions**; specifically, he has to choose a function and a demonstratum such that it is **common knowledge** that this function applied to the demonstratum yields the intended referent. To do otherwise would be uncooperative and would jeopardize the success of reference. It is important that the hearer expects the speaker to be cooperative and will expect the speaker to choose the demonstratum and the referring function in an appropriate way. Thus the hearer is able to narrow down what the demonstratum is actually intended to refer to.

A referring function other than the identity function will be chosen by the speaker (and the hearer knows this as well), if the predication expressed by the utterance cannot be applied to a direct referent of an expression. Therefore, in a restaurant situation where customers can be commonly identified by what they ordered, *ham sandwich* in sentence (9) will be straightforwardly understood as referring not to an actual sandwich, but to a customer.

Nunberg, 1979 actually only tries to explain why such deferred reference is possible at all by specifying some pragmatic factors that are necessary for it to work. As he himself states, he does not give a complete theory that would allow us to make exact predictions as to what instances of deferred reference will be allowed in exactly which situations. This would require, among others, specifying what common knowledge is (which is, as was mentioned above, a necessary element of such a theory) and exactly which elements the finite set of referring functions consists of.⁴³

Polysemy, as presented by Nunberg, 1979, is a general semiotic strategy and definitely not a lexical issue. This suggests that what is indeed captured by Nunberg is just the closed referential polysemy of Deane, 1988. Nunberg generally states that a word always has a single, lexically defined primary reference and that all other references are derived by referring functions, and are thus secondary. This is a straightforward strategy for dealing with closed referential polysemy, but it is not trivial to see how one can account for open referential polysemy in this way, which has the characteristic that one cannot in general specify which referent is primary (cf. *game* above). Nunberg notes the existence of such cases, but he doesn't treat them separately from the former ones. He just states that the referring function connecting reading *a* to reading *b* is just as easily determinable by the hearer as that connecting *b* to *a*. Therefore, it doesn't matter which one of these readings a speaker of a language specifies as primary in his lexicon, as long as a single one is specified. Therefore, Nunberg claims that the lexicons of different speakers will be different in this respect, for example, that *game* is specified as referring a set of rules for one speaker and to an activity for another (but in any event, one could not tell

⁴³ Thus (notwithstanding their disagreement with respect to the question how important the role played by pragmatics is in the treatment of polysemy), Nunberg's theory can be considered to complement Deane's and vice versa. Nunberg specifies the general pragmatic framework of the use of (at least closed) referential polysemy, whereas Deane, 1987, and indirectly Deane, 1988 as well, provides a detailed theory of the inventory of referring functions and the actual role played by world knowledge.

the difference). This is an essentially different solution from that which is given by Deane, 1987 or by the two-level approach (Section 6), which claim that in such a case, it is lexically unspecified if the word in question refers to *a* or *b*.

Nunberg elaborated his theory in more detail in later papers. In Nunberg, 1996,⁴⁴ he radically modifies his stance compared to Nunberg, 1979. He still maintains that to consider pragmatic factors is necessary if one wants to explain the phenomena he discussed in Nunberg, 1979. However, he claims that on closer examination (by considering further data involving, for example, quantification and anaphora), these phenomena also obey certain idiosyncratic grammatical rules that cannot be reduced to pragmatic factors and regularities of the underlying cognitive processes like *metonymy* alone.

He claims that the deferred reference of indexicals is a phenomenon connected to, but different from cases like (9), which involve an actual transfer of the meaning of the expression *ham sandwich*, not just a transfer of its reference. This **transfer of meaning** may apply both to the nouns and the verbs in a sentence.

He further adds that meaning transfers like those in the *ham sandwich* examples is essentially dependent on the **special properties of its context of use**, it has nothing to do with the semantics of the actual words involved, thus it would not be appropriate to say that "*ham sandwich* is polysemous, with lexical sense along the lines of 'ham sandwich orderer'" (Nunberg, 1996: 116). On the other hand, he states that there is a class of examples where the choice of senses does not derive from the context, but rather depends to a certain degree on the lexical meaning of the words involved in certain kinds of transfer. These are the cases of systematic polysemy, as Nunberg calls them.⁴⁵ Some examples he mentions are: painters for works (*a Picasso, a Derain*), place for inhabitants (*Indianapolis voted for the referendum*) and tree for wood (*The table is made of oak*).

Nunberg maintains that the principles relating the senses of such systematically polysemous words are the same as the principles of non-systematic (i.e. contextually triggered) meaning transfer, the only difference being that these kinds of transfer are **more frequently needed** and thus **conventionalized** in a way that the transfer "thing ordered for the person who ordered it" is not.

Note, however, that in all of these cases it is obvious which is the primary meaning and which is the secondary meaning of a word. Thus these are still cases of **closed polysemy** in Deane's terminology (like *ham sandwich*), though conventionalized cases of it. Nunberg

⁴⁴ Also of interest to the topic is Nunberg, 1993, where the reference of indexicals receives a more refined treatment.

⁴⁵ Nunberg, 1996: 116–119. This phenomenon (more specifically, a certain kind of it which is usually referred to in the literature as "animal grinding") was discussed in more detail in Nunberg and Zaenen, 1992 with very similar conclusions. The authors concentrate on the problem of distinguishing lexical and encyclopedic knowledge in this paper.

stresses that these cannot be definitively separated from non-conventionalized cases, the distinction being gradual (quantitative, not qualitative).

He does mention cases of **open polysemy**,⁴⁶ however, as a methodological problem for his theory. The distinguishing property of such words is that no single meaning may be established as primary with respect to some other. He concludes that "the central problem [...] is not just how to set this up formally, but also **how to structure the knowledge representations** for the relevant entities [...] so that we can predict that we will get this pattern of transfer with *newspaper* and *dictionary* but not, say, with *novel* or *user's manual*"⁴⁷ (emphasis added – G. P.). So although his point is not exactly clear, Nunberg seems to now regard open polysemy as a possibly different phenomenon from what he calls systematic polysemy, thereby acknowledging the independent status of these two kinds of variation.

It should be stressed that in all of his papers, Nunberg presents some very interesting problems and data that have inspired the research on polysemy to a large degree. However, he presents only the rough outlines of an approach to which pragmatics is central, world knowledge also indispensable, and the content of the lexicon more or less uninteresting. He does not present an actual theory detailed enough to allow one to draw specific predictions concerning actual examples.

Although he does not directly follow Nunberg, Blutner's works should be mentioned here as actual predictive pragmatic theories of lexical meaning. Blutner, 1998a develops a formal theory of pragmatic principles of language use that includes a formal theory of conversational implicatures.⁴⁸ He tries to account for several phenomena like lexical blocking and systematic polysemy (in basically the same sense as I use it) in this framework which he calls Lexical Pragmatics. This theory is formulated on the basis of the modularist theory of language of Bierwisch (see below). It aims to explain two things: (i) Why the speaker prefers to choose one expression to formulate his thoughts to choosing another one (e.g. why one would normally say *Peter killed John* instead of saying *Peter caused John to die*), and (ii) why the hearer chooses a certain interpretation of an expression in a certain context rather than another one (e.g. why the hearer chooses to interpret *Peter caused John to die* as saying that Peter was involved indirectly in John's death rather than directly). More recently, Blutner has explored how one could express essentially the same pragmatic theory in another framework, namely bi-directional optimality theory.⁴⁹

⁴⁶ He calls such words, like *newspaper*, "densely metonymous" and characterizes their senses as being inter-defined (Nunberg 1996: 126).

⁴⁷ For the sake of clarity, it should be noted that Nunberg refers to the same pattern of transfer here that is characteristic of *newspaper* (i.e. that it can also refer to a company). The latter examples are, obviously, densely metonymous themselves considering (at least) their interpretations 'object' and 'content'.

⁴⁸ Blutner, 1998b also uses this framework but concentrates more on examples than on the formalism.

⁴⁹ Cf. the paper of Blutner and Solstad in this volume for details and a selection of the relevant literature.

6. POLYSEMY IN TWO-LEVEL SEMANTICS

Of all the approaches discussed in this paper, the one that has served most frequently as the theoretical framework of empirical analyses and the point of departure of theoretical discussions is that of two-level semantics.⁵⁰ This theory was outlined in several papers, the most important of which are Bierwisch, 1983a, b.⁵¹ The framework has been adopted in one way or another since then in an extremely large number of publications which have primarily examined the semantics of words expressing **spatial relations**. It served as the basis of Bierwisch and Lang (eds.), 1987, English version 1989, which is a very detailed account of the semantics and grammar of dimensional adjectives and clearly one of the most important achievements (if not the most important one) of lexical semantics so far. This work has further inspired computational approaches to the topic (cf. Lang, 1994 for a selection of the literature) as well as cognitive ones (cf. for example Ludewig and Geurts (eds.), 1998). Another application of the framework were accounts of the semantics of verbs that have something to do with location (e.g. Maienborn, 1996, Kaufmann, 1995, Bibok, 1998) and spatial prepositions (e.g. Kaufmann, 1991).

Two-level semantics is based on a **modularist** theory of cognition and of language (contrary to holistic cognitive semantics) which holds that not only are the linguistic and the conceptual system (which includes, among other things, world knowledge) autonomous modules of cognition, but the linguistic system is itself composed of several submodules which include at least the following: phonology, morphology-syntax, semantics, and lexicon. The lexicon contains a listing of lexical items, which are tuples including at least a phonological, a morphosyntactic and a semantic representation, which specify the respective properties of the lexical item in question. The linguistic submodules are further connected to each other by interfaces, e.g. argument structure serves as an interface between syntax and semantics.⁵²

The crucial concept of two-level semantics in connection with the treatment of polysemy⁵³ is **underspecification**. Two-level semantics claims that the semantic representation of lexical items (which is stored in the lexicon) may be underspecified in several ways. It accounts for the phenomena I chose to call systematic polysemy by deriving the actual

⁵⁰ The tenets of two-level semantics have been critically discussed by several authors. Such critical discussions of the approach in general include Krifka and Wenger, 1990; Meyer, 1994; Taylor, 1994, 1995b, and Pethő, 2001.

⁵¹ Although these predate Deane, 1987, he was apparently not aware of Bierwisch's theory and does not mention it in his summary of relevant literature.

⁵² Lang, 1994. For a more complete presentation of Bierwisch's general theory of language and cognition, cf. Bierwisch, 1981, 1983a, b; Lang, 1994, 1995, or more conveniently, the paper of Kertész in this volume. Bierwisch (1997) presents an updated picture that adopts considerations of minimalism to essentially the same theory of language and cognition.

⁵³ Note that early literature on two-level semantics does not use the term *polysemy* to refer to the phenomenon. I will not explain the reason for this here; cf. Pethő, 2001: 57 for a discussion.

interpretations of systematically polysemous words that appear in specific contexts from these underspecified representations by rules belonging to the conceptual system (so the general architecture of this account corresponds to Model A outlined in Section 3 above, and the rules of alternation deriving the interpretations are suggested to be extra-linguistic in nature).

Interpretation of an utterance proceeds in two steps: first, based on the **semantic representations** contained in the lexical entries of the words the uttered sentence consists of and its syntactic structure, a **Logical Form** (the semantic representation of the sentence) is constructed, which is considered to be identical to the LF of formal semanticists, i.e. represents things like function application, quantifier scope, etc. However, this LF may contain words whose interpretation is not specified in the lexicon. Therefore, the **conceptual system** analyzes this LF, considers both the linguistic (e.g. the general theme of the discourse that contains the utterance) and the extra-linguistic (e.g. where the utterance occurs) **context** and accordingly specifies what interpretation the words in question should receive and ultimately what the utterance means. The range of possible interpretations of a word is not completely indeterminate at the outset, however. The semantic representation of a word rather specifies a family of concepts (which is a structure contained in the conceptual system) from which a specific concept is chosen that can serve as an interpretation which is coherent with the context.

The classic examples of Bierwisch are like (10):

- (10) a. On Friday morning, Bill came out of the university and took a cab.
 b. For two years, Bill has been teaching at the University of Appletown.
 c. The university by now covers the whole area around the house you lived in.
 d. The university is a typically European institution that developed during the Middle Ages.

He paraphrases the interpretations as (i) building, (ii) institution, (iii) campus, and (iv) "something like an educational principle".⁵⁴ Bierwisch calls the conceptual operation that is involved in deriving the interpretations in examples like (10) **conceptual shift**. The lexical entry of *university* contains a **radically underspecified** semantic representation like (11):

- (11) λx PURPOSE (x, w) & PROCESSES OF HIGHER EDUCATION (w).

That is, this specifies only that a university is something that has the purpose of higher education. The function of conceptual shift (which can be construed, as I mentioned above, as some

⁵⁴ In these cases, it is just the predication that is made in connection with *university* that determines the appropriate interpretation, but a more general context may be involved in other cases.

kind of alternation rule) is to specify what kind of thing *university* refers to in a given context. This is achieved by adding another conjunct to (11), like BUILDING (x) in (10a).⁵⁵

In addition to what is explicitly contained in (11), the lexical item *university* is supposed to be connected with a family of concepts that includes at least {institution, building, campus, educational principle}. How this connection is achieved is not at all clear from what Bierwisch says, but it may safely be assumed to be somehow trivial.

Unlike Deane, Bierwisch does not try to compile a system for or list of possible conceptual shifts. However, it is quite obvious that his shifts are not the general cognitive and semiotic operations of metonymy assumed by Deane and Nunberg. They are rather connected to the specific concepts expressed by the actual lexical items.⁵⁶

In any event, cases of systematic polysemy are assumed by Bierwisch to be connected to the conceptual system. They are extra-linguistic phenomena and may only be properly accounted for by an analysis of how knowledge of the world is represented in the conceptual system.⁵⁷

There has been some recent research that tries to explore the interaction between the lexicon, the semantic system, and the conceptual system more closely. Common to these attempts is that they consider cross-linguistic data to either formulate generalizations about the conceptual system⁵⁸ or to dispute theoretical assumptions of classic two-level semantics.⁵⁹

⁵⁵ For a description of the exact mechanism, cf. Bierwisch, 1983a. Caramazza and Grober, 1976 propose essentially the same treatment of polysemy, the only differences being that (i) they call conceptual shifts *instruction rules*, (ii) they call the underspecified lexical semantic representation *core meaning*, and (iii) they place less emphasis on the systematicity of the observed meaning variation, thereby possibly conflating interpretations that should more properly be considered to follow from homonymy with systematic polysemy.

⁵⁶ An interesting theory of such more specific conceptual operations that seems to be quite compatible with the general idea of two-level semantics is presented by Konerding (1997). His operations work on cognitive schemata. Konerding's overall theory (worked out in much more detail in Konerding, 1993) is based on Fillmore's (1985) frame semantics, but is much more elaborate than previous proposals in that framework.

⁵⁷ This position is very similar to that expressed in Deane, 1987.

⁵⁸ A work in this line is Bibok, 2000, who tries to establish implicational relations that hold between different interpretations of certain words. For this end, he examines possible readings of Hungarian words and their equivalents in Russian, which respectively divide the essentially common conceptual "field" differently.

⁵⁹ Schwarze and Schepping (1995) suggest that whereas classic two-level semantics holds that every systematic variation of meaning is to be accounted for by conceptual operations, this is not plausible, since there obviously are exceptional cases where conceptually natural possible shifts seem to be blocked lexically (i.e. cross-linguistic variation occurs with otherwise equivalent words in different languages: they have different possible interpretations where this can't be explained straightforwardly on a conceptual basis). Their conclusion is that beside the more general conceptually determined systematic polysemy (i.e. which follows from the structure of knowledge represented in our conceptual system), there is also a semantically determined one (i.e. where either additional meanings are stored or otherwise possible ones are blocked in the lexicon).

I present a stronger version of this claim in Pethő, 2001 and my forthcoming PhD thesis, namely that the connection between the lexicon and the conceptual system is not trivial in the way Bierwisch suggests, and,

Note that there is an **interesting parallel between Nunberg's and Bierwisch's theories** of polysemy. The central examples of Bierwisch (like *university*) are what Deane would call cases of open polysemy.⁶⁰ On the basis of such data, he adopted a treatment of the phenomena by underspecification, which can plausibly be assumed to be more appropriate for such cases than Nunberg's (1979) idea of arbitrary specification. However, Bierwisch was not aware of the possibility of a distinction between open and closed polysemy, so he simply assumed that cases like *university* or *newspaper* are the rule and generalized the underspecification approach to the whole range of systematic polysemy. As a result, Bierwisch (1983a) would treat even a proper name like *Faulkner* as underspecified (having possible interpretations like 'Faulkner himself', 'Faulkner's writings', etc., which is a quite clear case of closed polysemy), instead of specifying the 'person' interpretation as primary and the 'writings' one as metonymically derived (which would be intuitively plausible).

By contrast, Nunberg follows exactly the opposite strategy. He starts from clear cases of closed polysemy (like the *ham sandwich* examples), establishes that it is reasonable to specify a single reading in the lexicon and to derive contextual variants of it in the appropriate context (since this kind of variation is highly independent of anything that could be reasonably included in the lexicon), then generalizes this treatment to the whole range of systematic polysemy, and finally goes on to wonder why his approach yields patently counterintuitive results with respect to cases of open polysemy like *newspaper*.

This parallel suggests that the **more differentiated** theory presented by Deane is more appropriate than either that of Bierwisch or that of Nunberg.⁶¹

Two-level semantics not only suggests the unified treatment of the cases that I called systematic polysemy (which corresponds to the range of referential polysemy + regular polysemy as shown in Figure 4), but also discusses another phenomenon which appears in sentences like the following:

(12) Faulkner is hard to understand.

Bierwisch states that in (12), *understand* may be interpreted for example as 'acoustically understand (what he says)', 'intellectually understand (what he writes)' or 'understand the

therefore, Deane's open systematic polysemy generally results from an inseparable interaction between the conceptual system and the lexicon (whereas closed polysemy results from another system of rules).

⁶⁰ Or at least it is the opinion of Bierwisch that it is not appropriate to designate any of the interpretations in (10a-d) as primary in relation to all the others.

⁶¹ It should be mentioned that Pause *et al.* (1995: 245–256) present an alternative overview about four approaches to polysemy (namely the holistic approach, Nunberg 1979's, Bierwisch 1983a's, and Caramazza and Grober 1976's). Their interpretation of the relation between Nunberg's and Bierwisch's theory is especially irreconcilable with what I have said above. I assume that this is due to an evident fundamental misunderstanding of these approaches on their side, but I can't go into details here.

motivations (of what he does)'. He claims that, in such cases, the interpretation of *understand* does not vary in the same way as that of *university* does. Instead, *understand* has an abstract meaning which varies by virtue of the generality of the concept expressed by it. Thus no conceptual shift occurs in interpreting *understand*, but this verb rather has a general meaning that allows us to express such different things with it as 'understand someone's motivations' or 'understand what someone says', just as the noun *dog* can refer to such different individuals as a German shepherd or a bulldog. What Bierwisch has in mind is the same kind of meaning variation that Deane (1988) called allosemy (cf. Figure 4).⁶² Bierwisch models this variation in the way that he assumes an underspecified semantic representation of the lexical item in question, which includes an existentially bound parameter, which may vary over different modes of understanding in the case of the verb *understand*, for example. He further assumes an operation he calls *conceptual specification*,⁶³ which restricts the domain of this existential quantifier⁶⁴ according to the context (e.g. specifies what kind of understanding is involved in (12) if it becomes clear from the context).

To summarize, two-level semantics tries to provide a theory of those phenomena that appeared in Figure 4 as referential polysemy + regular polysemy (by conceptual shift) and as allosemy (by conceptual specification). It should be noted that whereas conceptual shift seems

⁶² These phenomena are referred to by Cruse, 1986 as "modulation". Cruse, 1995 explores the phenomenon further and argues with a selection of interesting data that there is no way in which cases corresponding to Deane's (1988) allosemy could be told apart from cases of a single general meaning. Ruhl, 1989 contains some very interesting thoughts about this range of phenomena as well (though he says little about what I would call systematic polysemy). Whereas the discussions of polysemy usually revolve around a small number of constructed examples, Ruhl presents several case studies that beautifully show how the kind of contextual meaning variation he examines actually appears in real life examples taken from a wide variety of texts. Apart from some very interesting observations concerning mostly the meanings of verbs (like *bear* or *hit*), he also presents some provocative arguments that many cases that are usually considered idioms should also be seen as instances of meaning variation. Ruhl's basic claim is that the fact that such words are considered polysemous is just a fallacy that is suggested to us (both "normal" speakers of a language and linguists) by dictionaries, which are theoretically completely unfounded and therefore irrelevant to linguistics. Note that this is a reasoning diametrically opposed to Kilgariff's (1992) opinion about the role of lexicography in polysemy research, cf. Section 7. Cf. Cruse, 1992 for a thorough review of Ruhl, 1989.

⁶³ Thus an underspecified semantic representation may be specified either by conceptual specification or by conceptual shift. This is obviously an unfortunate choice of terminology.

⁶⁴ It is not obvious if this strategy is thought to be adequate by Bierwisch to account for any kind of meaning variation among nouns. With verbs, it is suggested that this kind of variation is widespread. As it stands, it seems that conceptual specification essentially captures generality of meaning in verbs (cf. footnote 21). It is not at all obvious why generality in this domain should be considered any different from that among nouns. However, note that it would be highly unorthodox to derive the generality of *dog* by claiming that its semantic representation includes an existential quantifier whose domain includes different kinds of dogs (*kind* understood as the opposite of *individual*) like German shepherd and bulldog. Interestingly, exactly such an account of nouns behaving in a certain way, like *knife*, is contemplated by Cruse (1995: 43).

usually to be connected to nouns, conceptual specification appears mainly in the description of verbs and adjectives.

So far these conceptual operations only tell us how the underspecified semantic and the specified conceptual representations should relate to each other. But the important question **how the appropriate interpretations of lexical items are selected** in given contexts has not been considered so far. The classical texts of two-level semantics, such as Bierwisch, 1983a, tell us nothing at all about this issue, however crucial it may be (Bierwisch only expresses the need for an operation of **conceptual selection**, although he does not describe how it should work). There have been two proposals concerning the problem, neither of which can really be viewed as “official” for different reasons.

One is Dölling’s, described e.g. in Dölling, 1992, 1994, 1995, who tries to address the problem in the semantic representation of lexical items. He proposes a system of common-sense ontology that supplements the classic type-theoretical formal system that is adopted by two-level semantics for its semantic representations. The variables of type *e* (i.e. those denoting entities) are each assigned an ontological sort. The semantic representations of lexical items include sortal specifications. For example, let us suppose that the lexical item *school* is represented as $\lambda x \text{ school}(x)$, where *x* is of type *e* and additionally specified to be of the sort ‘kind of institution’. Let us suppose further that *take a field trip* demands an argument of the sort ‘group of persons’. If we then have a sentence like (13):

(13) The school took a field trip,

first a sort conflict is established and then **sort coercion** occurs, which means that ‘kind of institution’ will first be shifted (by a semantic shift function) to the sort ‘institution’, which will again be shifted to ‘group of persons’. The latter will then be applicable to *took a field trip* and the interpretation will converge. This solution of course transfers some things that Bierwisch would have considered to belong to the conceptual system, like folk ontology, into the semantic system and also employs an impoverished version of underspecification.

The other proposal, Blutner (1998a) retains radical underspecification and leaves the semantic system untouched, but shifts the burden of explanation from the conceptual to the pragmatic system and tries to account for conceptual selection by **pragmatic** means like conversational implicatures.

7. KILGARRIFF’S (1992) APPROACH

In his 1992 PhD dissertation on polysemy, Kilgarriff follows a course that is quite characteristic of NLP (natural language processing) research. His approach is inspired by modern lexicography in general and computational lexicography in particular, corpus linguistics, com-

putationally oriented linguistic theories like HPSG (Head-driven Phrase Structure Grammar) and issues of artificial intelligence research (most importantly, knowledge representation).

Like Deane's, his dissertation includes an interesting and useful summary of literature, and it complements the former very well. Whereas Deane (1987) discusses the opinions on and findings about polysemy in traditional descriptive and cognitive linguistics, Kilgariff seems to be unaware of most of this literature, but he presents a comprehensive picture of considerations about the topic in computational linguistics and lexicography up to 1992.

After this summary, Kilgariff presents in the rest of the first part of his dissertation something that can be considered a detailed reconstruction of exactly how a modern lexicographer goes about constructing the dictionary entry of a polysemous word on the basis of a large corpus. This is certainly a valuable part of the dissertation, but contains few points that are really surprising or illuminating. Kilgariff makes some extremely dubious assertions throughout this part, e.g. that lexicography is without doubt an integral part of linguistics or that lexicographers are the most skilled in deciding if two uses of a word instantiate altogether different words, different senses of the same word, or different interpretations within the same sense, and that, therefore, one can safely base lexical semantic analyses on dictionary entries.⁶⁵

Kilgariff also notes that polysemy is no phenomenon the definite borders of which could be clearly defined. He (1992: 71–81) suggests that what is usually referred to as polysemy is actually a **complex** and gradual phenomenon at the **crossroads** of homonymy, collocation, analogy and alternation (so he actually chooses a two-dimensional metaphor to represent its graduality instead of the common one-dimensional one). **Homonymy** is understood in the usual way.⁶⁶ **Alternation**⁶⁷ is approximately equivalent to Deane's (1988) open referential polysemy, i.e. the kind of meaning variation that is both systematic and is intimately connected to the structure of encyclopedic knowledge about the thing denoted by the word. **Collocation** is a kind of contextual meaning variation that is closely associated with the word one is interested in co-occurring with some particular other word, e.g. *frontal* meaning 'direct and obvious' "seems to occur only with *attack* and *assault*". **Analogy** is another kind of contextual meaning variation that is quite interesting. Kilgariff (1992: 72) gives the following characterization for

⁶⁵ This assumption would be considered clearly naive by many, since it fails to take into consideration that dictionaries are not vehicles of learning about the nature of language but simply consumer goods and accordingly have priorities absolutely different from those of a theoretical linguist. As has been mentioned above, Ruhl (1989) is the most resolute critic of the stance taken by Kilgariff (1992).

⁶⁶ However, Kilgariff and Gazdar, 1995 state that once one has a theory of systematic polysemy (which is what they aspire to), it is not possible to tell apart homonymy and non-systematic polysemy. This is quite a reasonable conclusion, to which most rule-based approaches, including two-level semantics and Generative Lexicon theory, would assent. A notable exception is Deane (1988), who argues that non-systematic polysemy is not altogether uninteresting.

⁶⁷ The choice of this designation was inspired by the widely accepted name of syntactic-semantic verbal alternations, which were extensively described by Levin and Rappaport in a series of publications.

it: "Two words, x and y , have a similar meaning in their primary senses x_1 and y_1 , and x has a familiar secondary sense, x_2 . Then, if y is used in the sort of context where x_2 is often used, y will be interpreted as the novel y_2 , relating to y_1 in the same way that x_2 relates to x_1 ." For example, there is a lexicalized use of *hand* (x) in the expression *keep one's hand in* (containing x_2). *Finger* (y), which is not normally used in such a context will be understood analogously to x_2 in the novel expression *keep one's finger in* (containing y_2).

Analogy is somewhat systematic but connected neither to the knowledge representation underlying the use of y (like open polysemy), nor to general discourse context (like closed polysemy). This phenomenon has received very little attention in the literature and we know correspondingly little about the mechanisms that underlie it.⁶⁸

What is far more interesting than this first half of the dissertation is its actual core, containing a model in which noun and verb alternations can be represented. Kilgariff uses the **lexical knowledge representation language DATR** for his analyses. This language is quite simple and its mechanism can be easily grasped intuitively. Figure 5 shows a visual representation of a simple knowledge representation network described in DATR.

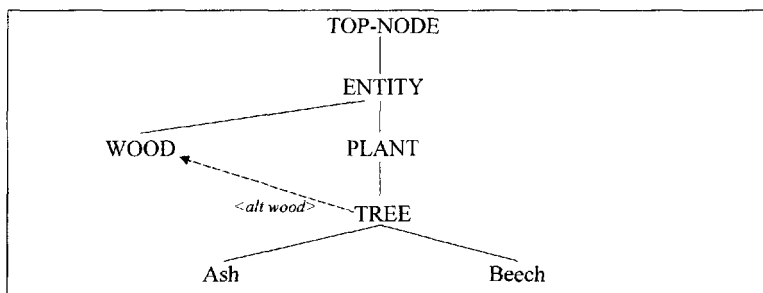


Figure 5

What this representation tries to capture is that the English lexemes *ash* and *beech* both may denote either some tree or the wood of this tree. Lexical knowledge is represented in this system (if one translates the formalism to intuitive terms) in the way that with each node, a certain **array of properties** is associated. These properties are (at least) those that distinguish the conceptual category in question from all its sisters (e.g. with **PLANT**, one would associate in this system such properties that distinguish plants from dead wood, represented by **WOOD**). Such properties are always **inherited from nodes higher up in the hierarchy to lower ones** (e.g. **TREE** would inherit all the properties associated with **PLANT**). "Ash" and "Beech" are

⁶⁸ Ruhl (1989) mentions quite a few further interesting cases that could be classified as instances of analogy in Kilgariff's system.

the nodes of the knowledge representation that correspond to the appropriate English words. Since both are daughters of TREE, they inherit all the properties that are associated with that node (and, since the inheritance relation is transitive, all those associated with PLANT, ENTITY and TOP-NODE as well). So the total properties associated with "Ash" (or "Beech") include those that are specified at the node "Ash" (e.g. properties that distinguish ashes from other trees⁶⁹) and those that are inherited from nodes higher up in the hierarchy.

The primary interpretation of *ash* and *beech* is specified in this network as 'tree'. The **alternation path** <alt wood> takes care of the 'wood' interpretation. This path has a function that corresponds to that of a conceptual shift in two-level semantics. It says that if a word that is a descendant of TREE is interpreted as 'wood', it inherits its properties not from the node TREE, but from WOOD (thus in case *ash* would be interpreted as 'wood', it would lose its properties that it would otherwise inherit from the PLANT and the TREE nodes). This alternation path is stated as a **special kind of property** at the TREE node. Thus any word that is a daughter of TREE would inherit from it the possibility that its interpretation may be shifted to WOOD. This is how this network accounts for the **systematicity** of this type of polysemy. However, DATR allows that any property that would be inherited by default from a higher node may be **overridden** at a lower one. So if there were an exceptional word for a tree that does not allow this shift of interpretation, this could be stated at its lexical node and thus the inheritance of this property from TREE would be barred.

In Kilgariff, 1992, a case study of the representation of the alternations between the interpretations 'tree', 'wood', and 'fruit' is included. Kilgariff and Gazdar, 1995 present another case study dealing with the alternations between 'crop', 'fiber', 'yarn', 'fabric', and 'garment' which are observable among such words as *cotton* or *silk* (cf. also Kilgariff, 1995). Kilgariff, 1992 moreover presents a quite convincing account of several types of verbal alternations which were collected in Levin and Rappaport Hovav, 1991.

Kilgariff's dissertation convincingly demonstrates the potential usefulness of knowledge representation systems in accounting for polysemy. However, some points should be noted in connection with it. DATR does not include a mechanism to represent underspecification and therefore is forced to specify a specific interpretation even if this would not be intuitively plausible. This is not necessarily a problem, of course, especially if psychological reality is not an issue. In any event, even if the cases of open polysemy where no primary interpretation can be established and interpretations seem to be "interdefined" might pose a problem for the approach, it seems that cases of conventionalized closed polysemy (i.e. which Nunberg (1996) calls *systematic polysemy*) can be captured quite well. However, there are problems inherent to the approach. Note that <alt wood>, for example, is a subtype of grinding (cf. Section 8). There is no obvious way how this could be expressed in Kilgariff's system. So although the

⁶⁹ Kilgariff not only places conceptual information (i.e. encyclopedic or world knowledge) into the knowledge representation system, but morpho-syntactic and phonological properties as well.

systematic character of this single type of variation is captured individually, there is no way to capture the systematicity of what alternations are allowed.

Another, more serious shortcoming is that Kilgarriff only represents knowledge structures associated with single words. How these can be combined to form complex expressions is not treated at all. Generative Lexicon theory is based on similar knowledge representation structures, but it can be considered to be a next step, since it also includes a theory of how to account for such complex expressions.

8. GENERATIVE LEXICON THEORY

I will discuss Generative Lexicon (GL) theory only very superficially, mainly because (in comparison with the two-level approach, for example) it does not present a simple consistent picture of polysemy. Different authors present different models in connection with various data and even seem to change their minds quite frequently about how one should account for them. Therefore, there is no such thing as the overall GL model of polysemy. To assess all relevant proposals individually would require a paper of its own and to detail a small number of them would not do justice to the GL enterprise as a whole. Therefore, I will only provide a very general outline of what phenomena GL theory aims to account for and some general characteristics of the approach that relate it to and distinguish it from those discussed so far.

GL theory was first outlined in a series of papers by Pustejovsky (e.g. Pustejovsky, 1991; Pustejovsky and Boguraev, 1993) at the beginning of the 1990s and then codified in Pustejovsky, 1995.⁷⁰

The main aims of GL theory are to explain phenomena like the well-known verbal alternation types (like the one called inchoative-causative, as in *The window opened suddenly* vs. *Mary opened the window suddenly*), nominal alternations like grinding and portioning (or packaging), i.e. the alternate uses of a noun as a count noun and a mass noun, (e.g. *Texans drink a lot of beer* vs. *Patsy relished every beer she drank*), or variation in the use of adjectives. According to Pustejovsky, these may all be considered kinds of polysemy.⁷¹

⁷⁰ Beside this book, a collection of papers that appeared in the *Journal of Semantics* and were then reprinted as Pustejovsky and Boguraev (eds.), 1996 represent also an important step in this process of codification. Fodor and Lepore (1998) criticize the basic assumptions of Pustejovsky, 1995. Pustejovsky, 1998 replies to this criticism, dismissing it. Wilks (2001) also argues for the validity of the GL approach.

⁷¹ Pustejovsky's use of the term *polysemy* is thus similar to my own use of *systematic polysemy*. It has to be noted that GL theory also regards as polysemy cases like the one Deane, 1988 calls *allosemy* and Bierwisch (1983a) accounts for by conceptual specification, i.e. which many authors would consider the application of a single general meaning to different things in the world (that are nevertheless instances of the same single category), i.e. monosemy, to use Ruhl's (1989) term.

Pustejovsky's (1995) point of departure is identical to Kilgariff's (1992). He argues that the traditional treatment of such data in computational linguistics, which involved collecting possible meanings and listing them as separate dictionary entries is unfeasible. Such **sense enumeration lexicons**⁷² are not only uneconomical and present instances of systematic phenomena as arbitrary and idiosyncratic features of single words, but they also do not account for the productive nature of these underlying regularities. He proposes as an alternative, more adequate account of a lexicon that includes **more richly structured lexical entries** than what is usually assumed and **certain rules of composition** to derive meanings of complex expressions on the basis of the lexical entries. The latter is especially important, since none of the formerly mentioned theories proposed a treatment of this clearly crucial issue (excluding the works of Dölling and Blutner). Moreover, Pustejovsky, 1995 contains the rough outlines of a system of folk ontology and theories of argument structure and event structure.⁷³

The **lexical entries** contain information about the argument structure and event structure of the lexical item. They also specify the inheritance relations of the lexical item in a system of lexical knowledge representation similar to what was outlined in Section 7. Most important for the treatment of polysemy is, however, **qualia structure**, which basically contains all possible kinds of knowledge about the thing that is denoted by the lexical item.⁷⁴ Four such types of knowledge are differentiated in Pustejovsky, 1995, which are represented as separate "roles" in qualia structures: formal, constitutive, telic and agentive.

The **constitutive** role specifies what the thing in question consists of. This could involve listing important parts of an object (e.g. articles of a newspaper) or what material it is composed of in the case of nouns.

The **formal** role specifies distinctive characteristics of an object that distinguish it "within a larger domain".

The **telic** role describes the object's purpose and function.⁷⁵ In the case of *book* for example, this would list that a book's function is to be read, or in the case of *door* that its function is to be opened and closed.

The **agentive** role finally describes how the object comes into being. In the case of *cake*, it would specify that a cake is created by baking.

⁷² Pustejovsky, 1995: 29. Kilgariff (1992) referred to the same idea as the Bank Model.

⁷³ The ontology and event structure were detailed in a series of later papers, cf. e.g. Pustejovsky, 2001 and 2000 respectively for a recent contribution and a selection of literature. To my knowledge, the theory of argument structure did not receive much attention. Pustejovsky (1995) itself is notorious for its being extremely sketchy about the most important parts of the theory.

⁷⁴ For a summary of the aforementioned aspects of the lexical item, which are considered to be separate levels of representation by Pustejovsky, cf. Pustejovsky, 1995: 61–104.

⁷⁵ This formulation is itself ambiguous. What Pustejovsky means is more exactly, that the telic role describes what one usually does with the object when using it in the way it is meant to be used. It does not usually refer to what the object itself does.

This is how Pustejovsky (1995: 76) defines what the qualia roles should do. However, these roles are formulated so vaguely that they apparently allow a large number of interpretations or, more appropriately put, associations. For example, one would consider the defining characteristic of a man that he is male and possibly also that he is human. This would suggest that one put this information into the formal quale (which should include the defining properties, most naturally identified as the *differentiae specificae* of the concept relating it to its complementary categories at the same taxonomical level). However, Pustejovsky chooses to specify the 'male' characteristic in the constitutive role (which should describe parts of the object named) and the 'human' characteristic in the formal role. This decision is justified by Pustejovsky (1995: 96) by saying that HUMAN is the main category that men belong to and that MAN and WOMAN are just two sorts (i.e. two parts) of this main category. This reasoning obviously involves a deliberate confusion of meronymical and taxonomical structures, which is quite questionable. Since GL theory is a formal system, it should ultimately be evaluated neither by the intuitive acceptability of the informal paraphrases given for the basic concepts of the theory, nor by that of its metaphysical decisions, but by the correctness of the predictions it makes. But in any event, such formulations are at least misleading and they make it extremely hard to judge the coherence of the theory.

It should be stressed that Pustejovsky's qualia structures for the most part simply take over the function of classic **semantic features**, but they also include kinds of information that most other semanticians would be very reluctant to put into the lexicon. As it is usually the case with knowledge representation approaches, lexical and encyclopedic knowledge are not (and may not be) distinguished from each other.

The system of Pustejovsky's rules of composition includes among others rules of type coercion (which have the same intuitive function as Dölling's sort coercion rules, cf. Section 6 above, but employ a different formal mechanism) and selective binding.

An example of type coercion is (14). As (15) shows, *begin* normally selects an argument of the type event, which is not the case in (14).

(14) John began a book.

(15) John began reading a book.

Pustejovsky's (1995: 106–122) proposal is basically to shift the type of *book* from individual object to event. What kind of event (14) expresses is probably unspecified and recoverable on the basis of the context, but the choice is restricted to either the content of the agentive or that of the telic quale of *book*, which is *write* and *read*, respectively. This restriction serves to exclude such normally unacceptable sentences as (16).

(16) ?John began a dictionary.

Selective binding is similar in function to conceptual specification in two-level semantics, but the mechanism how the selection of the interpretation is achieved is treated in a different way formally and, what is more important, it is also described how it depends on the context.

One of Pustejovsky's examples is *a good knife* (Pustejovsky, 1995: 129). *Good* is specified in the lexicon approximately like 'good for *x*' (which corresponds to the existentially bound quantifier of Bierwisch in conceptual specification), where *x* is an event which *good* selects as its argument. *Good* binds this argument selectively, i.e. it looks into the telic quale of the noun it modifies and selects an appropriate event predicate from there. Thus, since the telic role of *knife* specifies that a knife is used for cutting, *a good knife* will be usually interpreted as 'a knife that cuts well'.

Importantly, in the cases where no single primary interpretation may be established, Pustejovsky (1995) assumes underspecification, just like Bierwisch (e.g. *newspaper* would be underspecified and could have two interpretations: 'organization' and 'physical object containing some information').⁷⁶

Copestake and Briscoe (1996) represents an important extension of Pustejovsky's (1995) theory of polysemy. Whereas Pustejovsky only provides semantic construction rules, some types of systematic polysemy require other types of rules, since they modify the morpho-syntactic properties of words as well. Such an alternation is grinding, which was mentioned above. Copestake and Briscoe propose HPSG-style lexical rules for this task that operate on entire lexical representations, and are thus not separated into e.g. morphological, syntactic, and semantic rules of their own. The exact formal mechanisms they use to derive variations are also different from Pustejovsky's (1995), but I will not discuss this in detail.

What is more important is that they outline a classification of different phenomena of systematic polysemy that follows from their system.

The first group of such phenomena is constructional polysemy, which arises from processes of **syntagmatic composition**, like co-composition and selective binding in Pustejovsky, 1995. It includes cases like *good* which could well be considered variation within the boundaries of a single interpretation (i.e. modulation of a meaning). This modulation can go into two directions: to the **more specific** (like in the case of *good*), where some parameter required for the interpretation of a word is filled in on the basis of the context⁷⁷ or to the **less specific**, if the sense is "broadened". One such example is the (novel) expression *cloud of mosquitoes*, in which the default (but defeasible) semantic specification of *cloud* 'consists of water vapor' is

⁷⁶ Whereas Bierwisch would consider 'information' and 'physical object' two different interpretations, Pustejovsky considers them as a single one, different aspects of which may be highlighted in different contexts. It is not exactly clear to me if this difference corresponds to any intuitive distinction or is just necessary for capturing the different behavior with respect to zeugma of the 'organization' reading as opposed to these two latter ones.

⁷⁷ This, again, corresponds to conceptual specification in two-level semantics.

overridden by the context (Copestake and Briscoe 1996: 35). As Copestake and Briscoe note, this is a kind of creative metaphorical sense extension. Thus if we add up these two directions, the category of constructional polysemy turns out to be identical to Deane's (1988) allosemy.

The second group they call **sense extensions**. This involves the application of a lexical rule, like grinding, portioning or referring to a tree by naming its fruit. Copestake and Briscoe concentrate on such rules that involve some kind of morpho-syntactic change, since they point out that only in such cases can a lexical regularity be safely established. Specifically, they mention that the status of Nunberg's (1996) meaning transfers is not quite clear and, therefore, it is not obvious if such rules of sense extension would indeed be the adequate means of treating them. They would nevertheless consider such an approach feasible, but they do not detail it in this paper.

Sense extensions may be characterized with a measure of **familiarity**, which is a function of the **frequency** of the type of sense extension itself (i.e. animal grinding is very frequent, as opposed to the 'characteristic dress → person who wears it' extension) and of the frequency of the actual word taking part in this sense extension (i.e. *chicken* is a very frequent input to the animal grinding rule, whereas *mole* is not). They point out that unfamiliar sense extension is usually less acceptable than familiar one.

Moreover, the frequency, and therefore the acceptability of conceptually natural sense extensions is dependent on linguistic conventions. Since one usually does not refer to the liquid of a fruit (or the spirit made from it) by the name of the fruit in English, this rule of sense extension will be disfavored. This **blocking** always depends on **pragmatic factors**, as the speaker aims to express himself in a conventional way so as to be understood and the hearer expects him to do so. In the case of the inapplicability of animal grinding to English *pig*, for example, the conventional word to refer to the meat of a pig would be *pork*. Since the hearer therefore expects the speaker to refer to this meat by saying *pork*, his interpretation of an utterance where a "ground" instance of *pig* occurs will be that the speaker wanted to refer to some other part of a pig rather than its meat, since he would have said *pork* otherwise.

So far the concept of sense extension seems to correspond quite well to Deane's (1988) closed referential polysemy. But Copestake and Briscoe present some quite convincing arguments that explain why the zeugma test (which was traditionally the primary test of the closedness or openness of polysemy) is **unreliable**. They show that pragmatic factors like the requirement to say something relevant can rule out constructions that we would expect to be semantically acceptable. This may possibly open a way to explain why different speakers frequently have extremely different intuitions about the acceptability of such constructions. The phenomena of closed polysemy form a coherent group in this approach nevertheless, but their defining characteristics have to be modified.

Copestake and Briscoe can't really decide how to treat phenomena of open referential polysemy. They specifically mention *book* and *newspaper*. They point out that, with *book*, one

may indeed find two central interpretations ‘object’ and ‘information content’, but there are other intermediate interpretations as well. E.g. *book* may also refer to the specific linguistic realization of this content as in (17) and to the specific graphic representation of this linguistic realization as in (18):

(17) That book is full of long sentences.

(18) That book is full of spelling mistakes / typographic errors.

They assume that these are cases of constructional polysemy, but don’t present a model how exactly the correct interpretations could be reached. With *newspaper*, they consider that in addition to this same kind of constructional polysemy, a sense extension may be required to derive the ‘institution’ interpretation.

So, although how open polysemy phenomena should be exactly treated is unclear, they obviously present a problem for the theory, and by virtue of this may well be considered an individual class.

9. CONCLUSIONS

My conclusions should have become quite clear from what I have said up to this point, so I will only present a short summary to recapitulate my point.

Although the literature on polysemy is extremely incoherent with respect to the terminology used and the specific methods of description employed, and is additionally also very fragmented (i.e. the different approaches are often absolutely unaware of each other’s work), a surprisingly **coherent overall picture** arises, which I believe to be only possible because the material described strongly suggests it itself. This picture can be summarized as follows:

A theory of language that aspires to account for systematic polysemy should have at least two components: a **lexicon** where words are represented and a **conceptual system** where knowledge about the world is represented. The connection between the lexicon and the conceptual system may be characterized like Blutner (1995) proposes: The form of a word is associated with an entry in the lexicon that is associated with a set of **addresses** (corresponding to **possible interpretations** of the word), which are **indexed to appropriate parts of the conceptual system**. These addresses may all be considered different intensions of the word in question. The extension of the word is not determined directly, but via the conceptual system. For example, the word *dog* in its physical manifestation is associated with a representation in the lexicon, which determines a set of addresses (like ‘dog as a kind of animal’, ‘dog as an individual animal’, ‘dog meat’, etc.), which point to a certain concept (or rather cluster of concepts) in our mind each. By virtue of these concepts in our mind that include such things as

what a dog looks like, what it means to be a kind of animal, etc., we can determine what kinds of real-world or conceptual entities *dog* may refer to.⁷⁸ This is represented schematically in Figure 6. Note that the lexicon and the conceptual system overlap.⁷⁹

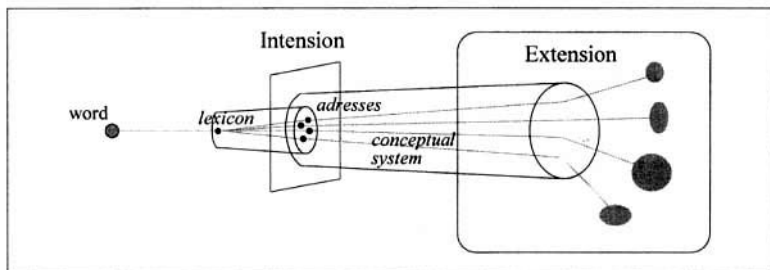


Figure 6

The addresses (or interpretations) are generated by an **address generator**, which is responsible for the systematicity of polysemy.

In the case of **non-systematic polysemy**, the different senses of a word belong to different lexical representations and are not derived by the address generator. This assumption is necessary, because it is absolutely clear that non-systematic polysemy is not predictable and has to be stored in the lexicon. The meanings of non-systematically polysemous words may be associated to each other secondarily, i.e. their intensions may be considered similar by the conceptual system. But this is irrelevant for the lexical representation of non-systematic polysemy.

The phenomenon that was called **modulation** (Cruse, 1986), **allosemy** (Deane, 1988), and **constructional polysemy** (Copestake and Briscoe, 1996) falls somewhat **outside** of the representational model in Figure 6. The word is associated with a single lexical representation in this case, and there is some parameter in the representation whose value depends on the context (although often there is probably a single default value for the parameter present, determining a default address for the interpretation). The address will therefore not be determined by an address-generating mechanism but will rather **follow directly from the interaction between the lexical representation and the context**. Thus, modulation is interesting for lexical semantics only in so far as an underspecified lexical representation has to be constructed. The actual variation between the senses is only related to the composition of larger structures.

⁷⁸ This will only be a general idea and the set of possible extensions will therefore not be exactly delimited for each interpretation, but will rather have vague borders. Cf. Blutner, 1995 for a deeper discussion.

⁷⁹ How one interprets the precise nature of this overlap depends on one's theory of language of choice. For a holistic cognitive linguist, the conceptual system will include the whole lexicon. For a modularist, the overlap will be an interface connecting the lexicon to the conceptual system.

The main questions are how **systematic polysemy** is to be treated and what the **nature of the address-generation rules** is. The reason why Blutner assumes an overlap between the lexicon and the conceptual system is that (i) the application of these rules is (at least partially) dependent on the lexical semantics of the word and (ii) they are never arbitrary, so they are always motivated in some way by general regularities of our cognition or by more specific world knowledge.

The position taken (among others) by Kilgarriff (1992), Nunberg (1979), and Copestake and Briscoe (1996) is that there is a **primary address** associated with a word and this serves as the input of the **address-generation system** that produces further addresses. This approach generalizes the treatment that would be ideal for closed polysemy.

On the other hand, the underspecification view (of Bierwisch, for example) states that there is **no primary address at all**, but there is a **set of equally primary addresses** that are all generated from the lexical representation directly. This generalizes open polysemy.

There is a third possibility, presented by Deane (1988), Dölling (1992), considered by Nunberg (1996), and also argued for by myself in Pethő, 2001, according to which there are **two classes of phenomena** of systematic polysemy. **Openly polysemous items** are associated not with a single address, but a **cluster of addresses**. The reason for this is that they do not point to a simple concept, but rather to a **complex conceptual schema**, several parts of which may be focused upon when one uses the word. Any single address, including elements of such a cluster of addresses, may then serve as **the basis of rules of sense extension** that give rise to **closed polysemy**.

Which one of these is the best solution is an unresolved question.

Apart from this important disagreement, the different approaches generally seem to complement rather than to contradict each other. The reason why they say so different things about polysemy is, in my opinion, essentially that they concentrate on **different aspects of the model** outlined above. The holistic cognitive approach generally concentrates on non-systematic polysemy and the cognitive principles underlying it. The two-level approach, Kilgarriff, and Cruse (1995) concentrate on the representation of open polysemy, Copestake and Briscoe on that of closed polysemy.⁸⁰ Ruhl examines modulation, which is also touched upon by Cruse (1995), the two-level approach, and Copestake and Briscoe. Deane (1987) presents a detailed theory of the address generator for closed polysemy and also of the motivation of non-systematic polysemy. The selection of senses depending on linguistic context has been investigated by Pustejovsky (1995) and by Dölling for several types of systematic polysemy, whereas the exact structure of the lexical representations was pushed into the background by them. Finally, Nunberg (1979) highlights some pragmatic prerequisites underlying the functioning of the address generator for closed polysemy.

⁸⁰ Accordingly, the first group focuses especially on the structure of lexical representations and the addresses, whereas Copestake and Briscoe on the properties of the address generator.

All of these approaches can be considered to be pieces of a puzzle we do not have all parts of yet and we are not certain how some of them fit together either, but nevertheless they all contribute to our knowledge of the phenomena that I have referred to as polysemy.

There is another aspect of the problem of systematic polysemy that should be stressed but has been neglected until recently: the fact that systematic polysemy very much depends on pragmatic factors. As Nunberg (1996), Copestake and Briscoe (1996) and Blutner (1998a) have argued very convincingly, the pragmatic factors of the phenomenon have to be clearly visible before one may attempt to give a semantic account for it. Thus, if one is inclined to accept that systematic polysemy is of crucial importance to lexical semantics, one cannot overestimate the importance of **lexical pragmatics research**.

REFERENCES

- Anderson, J. R. (1983). *The Architecture of Cognition*. Harvard University Press, Cambridge, Mass.
- Apresjan, J. D. (1973). Regular polysemy. *Linguistics*, **142**, 5–32.
- Bibok, K. (1998). A *hív* és a *küld* igék konceptuális szemantikai vizsgálata [A conceptual semantic interpretation of the verbs *hív* 'call' and *küld* 'send']. *Magyar Nyelv*, **94**, 436–446.
- Bibok, K. (2000). Conceptual semantic investigations in Russian and Hungarian. In: *Applied Russian Studies in Hungary* (G. Szépe, ed.), pp. 15–32. Krónika, Pécs.
- Bierwisch, M. (1981). *Die Integration autonomer Systeme – Überlegungen zur kognitiven Linguistik*. Manuscript, (Dissertation B), Berlin.
- Bierwisch, M. (1983a). Semantische und konzeptuelle Repräsentation lexikalischer Einheiten. In: *Untersuchungen zur Semantik (Studia grammatica XXII)* (R. Růžicka and W. Motsch, eds.), pp. 61–99. Akademie-Verlag, Berlin.
- Bierwisch, M. (1983b). *Essays in the Psychology of Language (Linguistische Studien, Reihe A 114)*. Akademie der Wissenschaften der DDR, ZISW, Berlin.
- Bierwisch, M. (1997). Lexical information from a minimalist point of view. In: *The Role of Economy Principles in Linguistic Theory (Studia grammatica 40)* (C. Wilder, H.-M. Gardner, and M. Bierwisch, eds.), pp. 227–266. Akademie, Berlin.
- Bierwisch, M. and E. Lang (eds.) (1987). *Grammatische und konzeptuelle Aspekte von Dimensionsadjektiven (Studia grammatica XXVI + XXVII)*. Akademie-Verlag, Berlin.
- Bierwisch, M. and E. Lang (eds.) (1989). *Dimensional Adjectives: Grammatical Structure and Conceptual Interpretation*. Springer, Berlin.
- Blutner, R. (1985). Prototyp-Theorien und strukturelle Prinzipien der mentalen Kategorisierung. In: *Generische Sätze, Prototypen und Defaults (Linguistische Studien, Reihe A 125)*, pp. 86–135. Akademie der Wissenschaften der DDR, ZISW, Berlin.
- Blutner, R. (1995). Prototypen und kognitive Semantik. In: *Die Ordnung der Wörter* (G. Harras, ed.), pp. 227–270. de Gruyter, Berlin.
- Blutner, R. (1998a). Lexical Pragmatics. *Journal of Semantics*, **15**, 115–162.

- Blutner, R. (1998b). Lexical underspecification and pragmatics. In: *Lexikalische Semantik aus kognitiver Sicht: Perspektiven im Spannungsfeld linguistischer und psychologischer Modellierungen* (Ludewig, P. and B. Geurts, eds.), pp. 141–171. Narr, Tübingen
- Caramazza, A. and E. Grober (1976). Polysemy and the structure of the subjective lexicon. In: *Georgetown University Round Table on Language and Linguistics, 1976* (C. Rameh, ed.), pp. 181–206. Georgetown University Press, Washington, DC.
- Copestake, A. and T. Briscoe (1996). Semi-productive polysemy and sense extension. In: *Lexical Semantics: The Problem of Polysemy* (J. Pustejovsky and B. Boguraev, eds.), pp. 15–67. Clarendon Press, Oxford.
- Cruse, D. A. (1986). *Lexical Semantics*. Cambridge University Press, Cambridge.
- Cruse, D. A. (1992). Monosemy vs. polysemy. *Linguistics*, **30**, 577–599.
- Cruse, D. A. (1995). Polysemy and related phenomena from a cognitive linguistic viewpoint. In: *Computational Lexical Semantics* (P. Saint-Dizier and E. Viegas, eds.), pp. 31–49. Cambridge University Press, Cambridge.
- Cruse, D. A. (1999). Lexical ‘facets’: Between monosemy and polysemy. In: *Sprachspiel und Bedeutung: Festschrift für Franz Hundsniesser zum 65. Geburtstag* (S. Beckmann, P.-P. König, and G. Wolf, eds.), pp. 25–36. Niemeyer, Tübingen.
- Deane, P. D. (1987). *Semantic Theory and the Problem of Polysemy*. PhD dissertation, Department of Linguistics, University of Chicago.
- Deane, P. D. (1988). Polysemy and cognition. *Lingua*, **75**, 325–361.
- Dölling, J. (1992). Polysemy and sort coercion in semantic representations. In: *Discourse and Lexical Meaning (Arbeitspapiere des Sonderforschungsbereichs 340, № 30)* (P. Bosch and P. Gerstl, eds.), pp. 61–78.
- Dölling, J. (1994). Sortale Selektionsbeschränkungen und systematische Bedeutungsvariationen. In: *Kognitive Semantik / Cognitive Semantics: Ergebnisse, Probleme, Perspektiven* (M. Schwarz, ed.), pp. 41–59. Narr, Tübingen.
- Dölling, J. (1995). Ontological domains, semantic sorts and systematic ambiguity. *International Journal of Human-Computer Studies*, **43**, 785–807.
- Fillmore, C. J. (1985). Frames and the semantics of understanding. *Quaderni di Semantica*, **6**, 222–254.
- Fodor, J. A. and E. Lepore (1998). The emptiness of the lexicon: Reflections on James Pustejovsky’s *The Generative Lexicon*. *Linguistic Inquiry*, **29**, 269–288.
- Geeraerts, D. (1993). Vagueness’s puzzles, polysemy’s vagaries. *Cognitive Linguistics*, **4**, 223–272.
- Geeraerts, D. (1995). Representational formats in cognitive semantics. *Folia Linguistica*, **29**, 21–41.
- Jackendoff, R. (1983). *Semantics and Cognition*. MIT Press, Cambridge, Mass.
- Johnson, M. (1987). *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason*. University of Chicago Press, Chicago.
- Kaufmann, I. (1991). *Semantik der wegbezogenen Präpositionen des Deutschen. (Theorie des Lexikons: Arbeiten des Sonderforschungsbereichs 282, №. 8)*. Düsseldorf.
- Kaufmann, I. (1995). Positionsverben und Richtung. *Kognitionswissenschaft*, **4**, 154–165.
- Keller, R. (1989). Erklärung und Prognose von Sprachwandel. *Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung*, **42**, 385–398.

- Kiefer, F. (1995). Cognitive linguistics: A new paradigm? In: *Linguistics in the Morning Calm* Vol. 3 (I.-H. Lee, ed.), pp. 93–111. Seoul.
- Kilgariff, A. (1992). *Polysemy*. PhD dissertation, University of Sussex.
- Kilgariff, A. (1995). Inheriting polysemy. In: *Computational Lexical Semantics* (P. Saint-Dizier and E. Viegas, eds.), pp. 319–335. Cambridge University Press, Cambridge.
- Kilgariff, A. and G. Gazdar (1995). Polysemous relations. In: *Grammar and Meaning: Essays in Honor of Sir John Lyons* (F. Palmer, ed.), pp. 1–25. Cambridge University Press, Cambridge.
- Kleiber, G. (1993). *Prototypensemantik: Eine Einführung* (Michael Schreiber, transl.). Narr, Tübingen.
- Konerding, K.-P. (1993). *Frames und lexikalisches Bedeutungswissen: Untersuchungen zur linguistischen Grundlegung einer Frametheorie und zu ihrer Anwendung in der Lexikographie*. Niemeyer, Tübingen.
- Konerding, K.-P. (1997). Grundlagen einer linguistischen Schematheorie und ihr Einsatz in der Semantik. In: *Methodologische Aspekte der Semantikforschung* (I. Pohl, ed.), pp. 57–84. Peter Lang, Frankfurt am Main.
- Kövecses, Z. (1998). *A student's guide to metaphor*. Manuscript.
- Kövecses, Z. and G. Raden (1998). Metonymy: Developing a cognitive linguistic view. *Cognitive Linguistics*, 9, 37–79.
- Krifka, M. and K. Wenger (1990). Graduierung und Dimension: Eine Diskussion von "Grammatische und konzeptuelle Aspekte von Dimensionsadjektiven". *Linguistische Berichte*, 130, 478–504.
- Lakoff, G. (1987). *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind*. University of Chicago Press, Chicago.
- Lakoff, G. and M. Johnson (1980). *Metaphors We Live By*. Chicago University Press, Chicago.
- Lang, E. (1994). Semantische vs. konzeptuelle Struktur: Unterscheidung und Überschneidung. In: *Kognitive Semantik / Cognitive Semantics: Ergebnisse, Probleme, Perspektiven* (M. Schwarz, ed.), pp. 25–40. Narr, Tübingen.
- Lang, E. (1995). Das Spektrum der Antonymie: Semantische und konzeptuelle Strukturen im Lexikon und ihre Darstellung im Wörterbuch. In: *Die Ordnung der Wörter* (G. Harras, ed.), pp. 30–98. de Gruyter, Berlin.
- Leech, G. (1974). *Semantics*. Penguin Books, Harmondsworth.
- Lehrer, A. (1974). Homonymy and polysemy: Measuring similarity of meaning. *Language Sciences*, 32, 33–38.
- Levin, B. and M. Rappaport Hovav (1991). Wiping the slate clean: A lexical semantic exploration. *Cognition*, 41, 123–151.
- Ludewig, P. and B. Geurts (eds.) (1998). *Lexikalische Semantik aus kognitiver Sicht: Perspektiven im Spannungsfeld linguistischer und psychologischer Modellierungen*. Narr, Tübingen.
- Maienborn, C. (1996). *Situation und Lokation*. Stauffenburg, Tübingen.
- McCawley, J. D. (1968). The role of semantics in a grammar. In: *Universals in Linguistic Theory* (E. Bach and R. T. Harms, eds.), pp. 124–169. Holt, Rinehart, and Winston, New York.

- Meyer, R. (1994). Probleme von Zwei-Ebenen-Semantiken. *Kognitionswissenschaft*, **4**, 32–46.
- Nerlich, B. and D. D. Clarke (1997). Polysemy: Patterns of meaning and patterns in history. *Historiographica Linguistica*, **26**, 349–385.
- Norrick, N. R. (1981). *Semiotic Principles in Semantic Theory*. John Benjamins, Amsterdam.
- Nunberg, G. (1978). *The Pragmatics of Reference*. Indiana University Linguistics Club, Bloomington.
- Nunberg, G. (1979). The non-uniqueness of semantic solutions – polysemy. *Linguistics and Philosophy*, **3**, 143–184.
- Nunberg, G. (1993). Indexicality and deixis. *Linguistics and Philosophy*, **16**, 1–43.
- Nunberg, G. (1996). Transfers of meaning. In: *Lexical Semantics: The Problem of Polysemy* (J. Pustejovsky and B. Boguraev, eds.), pp. 109–132. Clarendon Press, Oxford.
- Nunberg, G. and A. Zaenen (1992). Systematic polysemy in lexicology and lexicography. In: *Euralex '92 Proceedings*, Part II (H. Tommola, K. Varantola, T. Salmi-Tolonen, and J. Schopp, eds.), pp. 387–396. Tampere.
- Panman, O. (1982). Homonymy and polysemy. *Lingua*, **58**, 105–136.
- Pause, P., A. Botz, and M. Egg (1995). *Partir c'est quitter un peu*: A two-level approach to polysemy. In: *Lexical Knowledge in the Organization of Language* (U. Egli, P. Pause, Ch. Schwarze, A. von Stechow, and G. Wienold, eds.), pp. 245–282. John Benjamins, Amsterdam.
- Pethő G. (1998). A *száj* szó jelentésének kognitív szemantikai leírása [A cognitive semantic description of the meaning of *száj* 'mouth']. *Folia Uralica Debreceniensia*, **5**, 133–202.
- Pethő, G. (1999). Die Behandlung der Polysemie in der Zwei-Ebenen-Semantik und den prototypentheoretischen Semantiken. *Sprachtheorie und Germanistische Linguistik*, **9.1**, 19–57.
- Pethő, G. (2001). Konzeptuelle Fokussierung. Bemerkungen zur Behandlung der Polysemie in der Zwei-Ebenen-Semantik. In: *Wort und (Kon)text* (P. Kocsány and A. Molnár, eds.), pp. 49–101. Peter Lang, Frankfurt am Main.
- Pustejovsky, J. (1991). The generative lexicon. *Computational Linguistics*, **17**, 409–441.
- Pustejovsky, J. (1995). *The Generative Lexicon*. MIT Press, Cambridge, Mass.
- Pustejovsky, J. (1998). Generativity and explanation in semantics: A reply to Fodor and Lepore. *Linguistic Inquiry*, **29**, 289–311.
- Pustejovsky, J. (2000). Events and the semantics of opposition. In: *Events as Grammatical Objects: The Converging Perspectives of Lexical Semantics and Syntax* (C. Tenny and J. Pustejovsky, eds.), pp. 445–482. CSLI Publications, Stanford.
- Pustejovsky, J. (2001). Type construction and the logic of concepts. In: *The Language of Word Meaning* (Bouillon, P. and F. Busa, eds.), pp. 91–123. Cambridge University Press, Cambridge.
- Pustejovsky, J. and B. Boguraev (1993). Lexical knowledge representation and natural language processing. *Artificial Intelligence*, **63**, 193–223.
- Pustejovsky, J. and B. Boguraev, eds. (1996). *Lexical Semantics: The Problem of Polysemy*. Clarendon Press, Oxford.
- Quine, W. V. O. (1960). *Word and Object*. MIT Press, Cambridge, Mass.
- Ruhl, C. (1989). *On Monosemy: A Study in Linguistic Semantics*. State University of New York Press, Albany.

- Schwarz, M. (1992). *Einführung in die Kognitive Linguistik*. Francke, Tübingen.
- Schwarze, Ch. and M.-T. Schepping (1995). Polysemy in a two-level-semantics. In: *Lexical Knowledge in the Organization of Language* (U. Egli, P. Pause, Ch. Schwarze, A. von Stechow, and G. Wienold, eds.), pp. 283–300. John Benjamins, Amsterdam.
- Taylor, J. R. (1994). The two-level approach to polysemy. *Linguistische Berichte*, 149, 3–26.
- Taylor, J. R. (1995a). *Linguistic Categorization: Prototypes in Linguistic Theory*. 2nd ed., Oxford University Press, Oxford.
- Taylor, J. R. (1995b). Approaches to word meaning: The network model (Langacker) and the two-level model (Bierwisch) in comparison. In: *Current Approaches to the Lexicon* (R. Dirven and J. Vanparys, eds.), pp. 3–26. Peter Lang, Frankfurt am Main.
- Tuggy, D. (1993). Ambiguity, polysemy and vagueness. *Cognitive Linguistics*, 4, 273–290.
- Ullmann, S. (1957). *The Principles of Semantics: A Linguistic Approach to Meaning*. Blackwell, Oxford.
- Wilks, Y. (2001). Fodor-“Fodor” bites back. In: *The Language of Word Meaning* (Bouillon, P. and F. Busa, eds.), pp. 75–85. Cambridge University Press, Cambridge.

INTERPRETING MORPHOLOGICALLY COMPLEX LEXEMES REVISITED¹

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1. INTRODUCTION

The aims of this paper are threefold: firstly, to offer an integrated outline of the process of interpretation of morphologically complex lexemes, i.e. polymorphemic affixations and compositions; secondly, to (re)assess the roles of semantics and pragmatics in the process of interpretation; and thirdly, to (re)assess the relationship between semantics and pragmatics in general, and in lexical analysis in particular. For exemplification purposes, agentive nouns in English, formed from verbal bases by the addition of one of the six competing agentive suffixes, *-er*, *-or*, *-ant*, *-ent*, *-ist*, *-ee* (e.g. *speaker*, *director*, *assistant*, *resident*, *typist*, *escapee*, respectively),² will be used throughout. Agentive nouns display remarkably high referential versatility,³ because of their capability to refer – in appropriate contexts – to persons (e.g. *bus-driver*), animals (*retriever*), plants (*creeper*), things (*computer*), and abstractions (*eye-opener*).

Echoing Lyons, 1977, the tentative dividing line between semantics and pragmatics, the two linguistic disciplines crucially involved in interpretation, is marked by the absence or

¹ This is an expanded version of the paper “Interpreting morphologically complex lexemes, and the semantics/pragmatics interface” (Prčić, 2001). For useful comments and suggestions I wish to thank Ferenc Kiefer, discussant at the panel *Pragmatics and the Flexibility of Word Meaning*, Enikő Németh T. and Károly Bibok, panel organizers and editors of this volume, and an anonymous reviewer; a special word of thanks to Dieter Kastovsky for a theoretical/methodological ‘eye-opener’.

² For similarities and differences between the six suffixes, see Prčić, 1999a.

³ The term ‘referential versatility’ follows Hurford and Heasley, 1983.

presence of context – both linguistic and extralinguistic.⁴ Semantics and pragmatics are seen here as complementary disciplines, with semantics constituting (part of) the abstract and de-contextualized language system, and pragmatics representing a concrete and contextualized application of that system.

The exposition is organized in the following way: the role of semantics in interpretation is dealt with in Section 2, which also includes a discussion of semantic underspecification; the role of pragmatics is analyzed in Section 3, which comprises discussions of (i) inferable features contained in morphologically complex lexemes, (ii) the transparency/opacity cline, (iii) the distinction between explicit, implicit, and implied information conveyed in/by these lexemes, and (iv) pragmatic specialization; Section 4 focuses on the treatment of compositionality and idiomatization in dictionaries; in Section 5 one view of the interface between semantics and pragmatics is proposed; and finally, the main points and findings of the paper are summarized in Section 6.

2. THE ROLE OF THE LANGUAGE SYSTEM: SEMANTICS

When deriving from the abstract language system, especially its morphological and semantic subsystems, reflected by linguistic knowledge, interpretation is based on the principle of **morphosemantic compositionality**, according to which the sense of a morphologically complex lexeme represents the sum total of the senses of its constituent bases and affixes.

Essentially determined syntagmatically, morphosemantic compositionality involves rule-governed incorporation of the sense of lower lexical units, i.e. bases and affixes, into the sense of a higher lexical unit, i.e. lexeme (Cruse, 1986; Lyons, 1977; Prčić, 1995, 1997). For successful interpretation, knowledge of all lower units and the way these units are combined in the higher unit is presupposed as a necessary condition.

Compositionality-based interpretation of a lexeme out of context centers around the lexeme being viewed in isolation, while making every effort to exclude the influence of any of its established senses, however salient, typical or frequent it may be. This kind of interpretation, in its prototypical manifestation, consists of **binary processing**, a top-down morphosemantic analysis of the lexeme into **HEAD** (_H, for short), the typically right-hand element in English, conveying given information and thus thematic in nature, and **MODIFIER** (_M, for short), the typically left-hand element in English, conveying new information and thus rhematic in nature. The process of analysis is recursive and may go several levels deep, depending on the

⁴ When used without qualification, the term 'context' and its derivatives imply the simultaneous interplay of linguistic and extralinguistic contexts; for a detailed description of linguistic and extralinguistic contexts, see Radovanović, 1986 or Verschueren, 1999.

morphological complexity of the lexeme,⁵ which apparently makes processing time progressively longer. (This claim, however, has yet to be experimentally verified.)

Levels of complexity of a polymorphemic lexeme can be represented by bracketing the constituents morphemes and marking the corresponding levels with numbers, as seen in examples (1) and (2), which show a typical affixation (in the present example, a suffixation) and a typical composition, respectively:

(1) $\text{speaker} > 1 (\text{speak}_M + \text{-er}_H)$

(2) $\text{record-breaker} > 1 (\text{record}_M + \text{breaker}_H) > 2 (\text{break}_M + \text{-er}_H)$

Alternatively, levels of morphological complexity can also be illustrated, visually far more effectively, by using a branching diagram, as in Figure 1 showing examples (1) and (2):

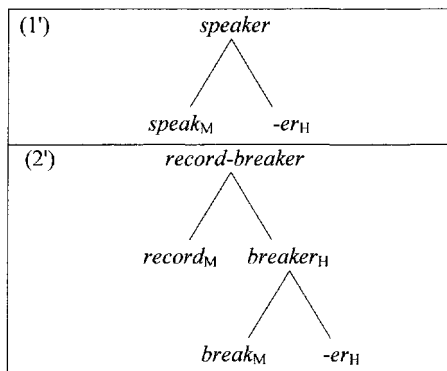


Figure 1: Levels of morphological complexity of *speaker* and *record-breaker*

2.1. Semantic Underspecification

An out-of-context, semantics-only, analysis yields a sense that can be glossed as ‘one that *verbs*, is *verbing*, or has *verbed* (...)’, where the parenthesized three dots provide for the sense of the modifier in compositions. Alternatively, and more metalinguistically, the gloss could be put more briefly as ‘one that *mod verb* (...)’, where *mod* stands for the modality component which also takes care of the necessary adjustments of the *verb* form. The principal property of

⁵ For theoretical and methodological problems besetting morphosemantic analysis, see Kastovsky, 1986a, b; Lipka, 1976, 1992a; Prčić, 1999b or Warren, 1978.

this sense of morphologically complex lexemes, captured by either formulation, is **semantic underspecification**,⁶ which manifests itself in the lack of information needed for adequate interpretation, because the sense of the lexeme is left insufficiently specified, in terms of the following:

- the referent, which subsumes person, animal, plant, thing, and abstraction (shown in the definitions by the unmarked forms 'one that');
- modality, which subsumes habitual, i.e. timeless present, and non-habitual, i.e. progressive and perfective co-occurring with the present;
- the sense of the constituent bases and affixes, which subsumes all their theoretically possible combinations and thus makes them multiply ambiguous (Bauer, 1979, 1983);
- the relationship between head and modifier, which displays only "a connection between" the elements (Bauer, 1979: 46).

To overcome all limitations imposed by semantics-only interpretation (which, admittedly, has theoretical relevance only), the missing information has to be filled in at the level of use by the hearer/reader, thereby making the general sense appropriately specific. To this end, pragmatics-enriched interpretation, the only realistic and viable procedure found in actual communication, which consistently draws on the interplay between linguistic and extralinguistic factors, needs to be employed.

3. THE ROLE OF THE USE OF THE LANGUAGE SYSTEM: PRAGMATICS

When deriving from the use of the abstract language system in a concrete communication situation, against a background of world knowledge, which complements linguistic knowledge, the interpretation is based on the principle of **pragmatic plausibility**,⁷ according to which the sense of a morphologically complex lexeme represents the reading, selected from among the available senses, with the highest degree of probability in the universe of discourse, i.e. "the particular world, real or imaginary (or part real, part imaginary)" (Hurford and Heasley, 1983: 59), collaboratively created and assumed by encoder(s) and decoder(s) in a given context.

Essentially determined referentially, pragmatic plausibility involves hypothesis-governed active reconstruction of sense by inferring the appropriate set of sense features from the context and assigning it to the lexeme; the process may be repeated cyclically until a fitting set of sense features is activated (Grice, 1989; Leech, 1983; Thomas, 1995).

⁶ The term 'semantic underspecification' follows Poesio, 1996. Alternative terms are 'underdetermination', 'incompleteness', 'generality', and 'vagueness'; for various treatments of the phenomenon, see Bach, 1994; Blutner, 1998; Cruse, 1986, 2000; Kempson, 1977; Poesio, 1996; Ruhl, 1989; Sperber and Wilson, 1995.

⁷ The term 'pragmatic plausibility' follows Taylor, 1989.

3.1. Inferables

All sense features contained in a morphologically complex lexeme that must – and not only can – be inferred during the process of interpretation will be called here **inferables**. They can be divided into two groups – intrinsic and extrinsic features.⁸

Relating to morphosemantic compositionality, **intrinsic features** (IFs, for short) comprise the following:

- features inherited from the constituent bases and affixes;
- general referent-defining features, like [human], [animate], [inanimate], [concrete], [abstract], [dual], [masculine], [feminine];
- general action/state-defining features [habitual], expressing timeless present, and [non-habitual], expressing progressive and perfective aspects.

On the other hand, making an addition to the compositional sense and typically functioning as object and/or adverbial complements are **extrinsic features** (EFs, for short, and indicated by '+', to emphasize their supplementary nature). They can be subdivided into the following:⁹

- **system-predictable** features, which systematically occur in specific categories of meaning expressed by affixation/composition (Hansen *et al.*, 1982; Lipka, 1992a); in agentives, two such features may typically be found:
 - [+ for a living], as in *baker*, *bus-driver*; to elicit this feature and contrast it with the feature [habitual], a diagnostic test of the form *He/She works as a(n) _____* can be used;¹⁰
 - [+ purpose], as in *mincer*, *windscreen-wiper*; to elicit this feature, a diagnostic test of the form *A(n) _____ is used for verb-ing* can be used;
- **ellipted** features, which are the result of ellipsis of either the modifier or, less frequently, the head of a composition, with subsequent incorporation of the sense of the ellipted element into the sense of the remaining element (Lipka, 1977):
 - front (modifier) ellipsis of *shock-absorber* produces *absorber* [+ shock];
 - back (head) ellipsis of *shock-absorber* produces *shock* [+ absorber];¹¹
- **unpredictable** features, which comprise all other, very numerous and heterogeneous, EFs: *viewer* [+ television], *retriever* [+ shot game], *escapee* [+ from prison], *worrier* [+ a lot].

⁸ The terms 'intrinsic feature' and 'extrinsic feature' follow Prčić, 1995.

⁹ Glossing of senses and extraction of extrinsic features follow the definitions in the *Longman Dictionary of Contemporary English* (Summers ed., 1995).

¹⁰ Mention should be made, in passing, of a distinction between *professional dancer/player/singer/photographer*, containing EF [+ for a living], and *amateur dancer/player/singer/photographer*, containing only IF [habitual].

¹¹ Interestingly, the form *absorber* is typical of British English, whereas *shock* is typical of American English.

3.2. The Transparency/Opaquity Cline

Any morphosemantically analyzable lexeme whose sense is predictable to a greater or lesser degree is said to display a greater or lesser degree of **transparency**. At the same time, any lexeme whose sense is not predictable, despite its analyzability, is said to be **idiomatized** to a greater or lesser degree and to display a greater or lesser degree of **opacity**. The process of gradual shift from the principle of morphosemantic compositionality, whereby a morphologically complex lexeme progressively loses its transparency and gains in opacity because its sense no longer represents the pure sum total of the senses of its constituent bases and affixes is known as **idiomatization**.¹²

The boundary separating compositionality from idiomatization is fuzzy and gradient, and is largely determined by the course of time and the frequency of use of any particular lexeme. Idiomatization is manifested in two ways – incrementation and decrementation.¹³ Addition of features, as a rule EFs, to the compositional sense belongs to the domain of **incrementation** (illustrated above), whereas **decrementation** covers subtraction of features from the compositional sense, mostly through loss/demotion of IFs of individual bases and, in turn, addition of new EFs, as in: *professor* ‘a teacher of the highest rank in a university department’, *reader* ‘a teacher in a British university who has the rank just below professor’, *Beefeater* ‘a ceremonial guard at the Tower of London’.

Compositionality, incrementation, and decrementation form a cline of transparency of morphologically complex lexemes, which is diagrammed in Figure 2 (Prčić, 1995, 1997).

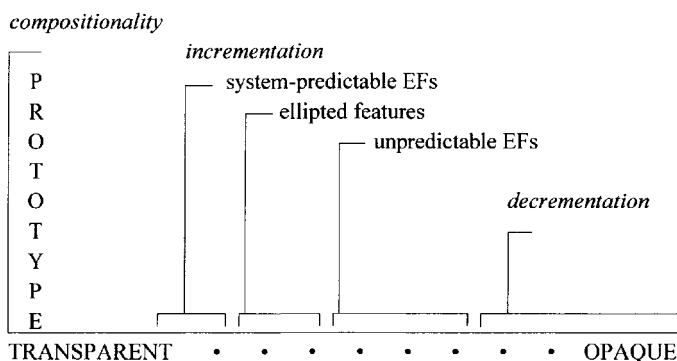


Figure 2: A scale of transparency of morphologically complex lexemes

¹² Alternative terms are ‘lexicalization’, ‘petrification’, and ‘fossilization’; for various treatments of the phenomenon, see Bauer, 1978, 1983; Lipka, 1977, 1992a, 1992b; Lyons, 1977; Prčić, 1995, 1997.

¹³ The terms ‘incrementation’ and ‘decrementation’ follow Prčić, 1995, 1997.

One end of the scale is occupied by fully transparent, prototypically compositional, lexemes, which need to be defined for each individual affixation and composition type – for agentives, it is lexemes denoting persons and containing no EFs, i.e. ‘a person who *verbs* (...)’, ‘a person who is *verbing* (...)’, ‘a person who has *verbed* (...)’. The other end has fully opaque decrementations, which approach, and sometimes even equal, morphologically simple (monomorphemic) lexemes. Spanning the space in-between the two extremes are incrementations with gradually diminishing transparency.

It has to be pointed out that one lexeme can have one or more compositional readings, as well as one or more idiomatized readings, incremental and/or decremental. This is shown, for example, in the lexeme *speaker*, which has a compositional sense ‘a person who is speaking’, two incrementations ‘a person who is speaking to an audience’, ‘a person who speaks a particular language’, a front ellipsis of the decremental composition *loudspeaker* ‘a thing used for turning electrical signals into audible sound’, and a decrementation ‘the person who controls discussions in a parliament’. These senses apparently need different processing times, which increase with the decrease of transparency of the individual senses. (This claim would also have to be experimentally verified.)

3.3. The Explicit, the Implicit, and the Implied in Morphologically Complex Lexemes

One important consequence of idiomatization is a narrowing down of denotation that a lexeme might have if judged by the principle of morphosemantic compositionality (Leech, 1981; Lyons, 1977). Depending on the type of idiomatization, two general tendencies can be identified as prevalent (Prčić, 1995, 1997): in incrementations, the denotation **is** what follows from the compositionality principle, but it has been made more precise; for example, a *viewer* [+television] is basically ‘a person who views (something)’, but more specifically, it is ‘a person who views television’. Conversely, in decrementations, the denotation is **not** what would follow from compositionality, because what is really denoted is something totally different and unexpected; for example, a *gate-crasher* is not ‘a person who crashes through a gate’, but rather ‘a person who goes to a party uninvited’.

Intimately connected with this observation is the fact that compositionals, incrementations and decrementations display different kinds of correlation between the expressed information, which is accessible surface-structurally, and the actually communicated information. The correlations can be described in the following way:

- in compositionals, like *speaker* in the sense ‘a person who is speaking’, what is expressed corresponds to what is communicated, because the information conveyed, by means of IFs, is prototypically explicit;

- in incrementations, like *escapee* in the sense 'a person who has escaped from prison', what is expressed basically corresponds to what is communicated but the denotation of the latter is made more restricted in scope, because in addition to the explicit information some precisifying implicit information is also conveyed, by means of EFs – in the present example, it is [+ from prison];
- in decrements, like *Beefeater* in the sense 'a ceremonial guard at the Tower of London', what is expressed does not correspond to what is communicated, because the explicit information – in the present example, it is 'a person who eats beef' – has been superseded by implied/implicated information, which is markedly different and unrelated (synchronically, at least) to the former.

Owing to certain similarities of form and content, and arguably comparable inferencing processes involved in their respective interpretations, incrementation in morphologically complex lexemes can be viewed, *mutatis mutandis*, as an analog of conversational implicature, based on conceptual filling in of the needed lexical material, at the level of utterance. On the other hand, decrementation can be regarded, *mutatis mutandis*, as a lexical counterpart of generalized conversational implicature, based on the maxim of relation (or relevance), as found in utterances.¹⁴ (However, in order to elaborate on both of these observations, a thorough investigation is first required.)

3.4. Pragmatic Specialization

As stated above, pragmatics-enriched interpretation of morphologically complex lexemes aims at filling in the information missing from lexemes when they are viewed in isolation and thus making their general sense appropriately specific in a given context. The plausibility-based process, which will be termed here **pragmatic specialization**,¹⁵ consists of three successive stages, as follows:

- reference assignment, which identifies the appropriate referent – person, animal, plant, thing or abstraction;

¹⁴ For a discussion of conversational implicature, see Bach, 1994, and for various treatments of conversational implicature, see Cruse, 2000; Grice, 1989; Leech, 1983; Sperber and Wilson, 1995; Thomas, 1995; Verschueren, 1999.

¹⁵ The term 'pragmatic specialization' follows Ruhl, 1989. Alternative terms are 'enrichment', 'strengthening', '(local) completion', and 'precisification'; for various treatments of the phenomenon, see Bach, 1994; Blutner, 1998; Cruse, 2000; Poesio, 1996; Ruhl, 1989; Sperber and Wilson, 1995.

- morphosemantic analysis, which determines head and modifier constituents, and their appropriate relationship, in correlation with the lexeme's degree of transparency, where
 - **binary** processing is used for compositionals;
 - **expanded binary** processing is required for incrementations, to deal with additional EFs;
 - **debinarized/unitary** processing is used for decrementsations, in accordance with how close they come to simple (monomorphemic) lexemes;
- local completion,¹⁶ which selects the appropriate inferences, both intrinsic and extrinsic.

Pragmatic specialization is contingent on the interplay between linguistic and extralinguistic factors, correlating with the language system and the use of that system respectively. All these factors form what will be called here the *referent–lexeme* and *lexeme–referent* chain of communication, which is summarized in Figure 3 (Prčić, 1995, 1997). Arranged between the referent and the lexeme, and at the same time reflecting encoder (i.e. speaker/writer) and decoder (i.e. hearer/reader) perspectives, the chain consists of the following principal links:

- communicative intention – what the encoder wishes to achieve by communicating certain referent-related content to the decoder;
- linguistic knowledge – a command of linguistic units and rules for their appropriate combination, selection, and use;
- world knowledge – an awareness of the organization and operation of phenomena in the global and local world; those phenomena can be of two kinds: static, comparable to pictures and captured in human memory as frames, and dynamic, comparable to movie sequences and captured as scripts.¹⁷

Unifying these principal links is the application of knowledge in a communication situation, which makes possible the interaction of linguistic and extralinguistic contexts that qualitatively influence the development of a concrete communication event in a certain place and time. It is largely during this interaction of contexts that pragmatic specialization takes place and makes the semantically underspecified sense of morphologically complex lexemes (and others, as well) duly specific.

¹⁶ The term 'local completion' follows Bach, 1994.

¹⁷ For a detailed account of frames and scripts, see Taylor, 1995.

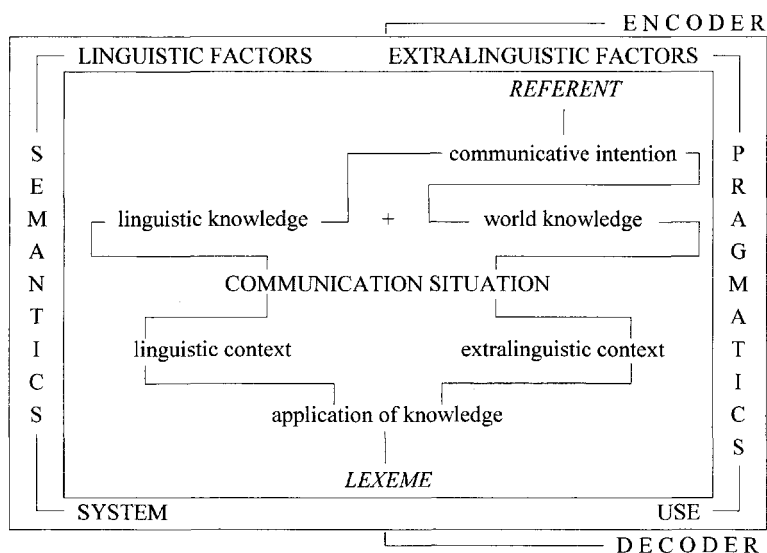


Figure 3: The referent-lexeme and lexeme-referent chain of communication

To illustrate now the working of pragmatic specialization, the lexeme *record-breaker* will be taken, as instantiated in example (3):

(3) ATHLETICS: JAMAICAN RECORD-BREAKER MAKES IT AGAIN!

This utterance/inscription, a headline above a newspaper sports report, establishes a 'sporting competition' universe of discourse, which – together with the necessary segments of linguistic and world knowledge – triggers unmistakably in the hearer/reader the intended pragmatic specialization of this lexeme, viz. 'a person who breaks a previously held record in a sport'. This pragmatic specialization represents the prototypical, or default, sense of the lexeme *record-breaker*, in which *record* is interpreted in the sense of 'best time or distance' and *break* in its metaphorical sense of 'outdo, beat'.

By a different act of reference, in a different 'sporting competition' universe of discourse, a winning animal (e.g. a racehorse or a greyhound) could be meant to be identified. And in a still other, this time 'non-sporting competition' universe of discourse, a person (e.g. a spelling-bee winner), an animal (e.g. a cat), a plant (e.g. a rose), a thing (e.g. a yacht), or even

an abstraction (e.g. a project proposal) could be intended. ‘Competition’ universes of discourse produce actual, and more or less established, readings of the lexeme *record-breaker*.¹⁸

However, a totally different universe of discourse, created in a hypothetical film entitled *The Record-Breakers*, depicting an eccentric and aggressive group of LP-hating CD and MC freaks with a self-imposed mission to destroy all LPs in the world, would elicit the lexeme’s potential (but not yet realized) readings: members of that group would, of course, be known as *record-breakers*, and their shredder-type machines with which they execute their “job” would be called, not surprisingly, *record-breakers*. In both of these uses, *record* would be interpreted in the sense of ‘a gramophone record’ and *break* in its literal sense of ‘smash, shatter’. The flexibility of the process of pragmatic specialization would provide the senses intended by the speaker/writer in this case as well.

All things considered, in pragmatics-enriched interpretation, achieved in the process of pragmatic specialization, most (if not all) limitations of semantic underspecification, imposed by semantics-only interpretation, are eliminated. In stark contrast to the lack of adequate information characterizing readings of morphologically complex lexemes in isolation, their pragmatic specializations contain all the information necessary for successful interpretation, especially in terms of the following:

- referents:
 - person: *drinker* ‘a person who verbs (...)’, including their gender: *teacher* [dual], *womanizer* [masculine], *street-walker* [feminine];
 - animal: *retriever* ‘an animal which verbs (...)’;
 - plant: *creeper* ‘a plant which verbs (...)’;
 - thing: *bottle-opener* ‘a thing used for verbing (...)’;
 - abstraction: *eye-opener* ‘something which verbs (...)’;
- modality: *drinker* [habitual], ‘a person who verbs (...)’, *speaker* [progressive], ‘a person who is verbing (...)’, *escapee* [perfective], ‘a person who has verbed (...)’.

Furthermore, the process of pragmatic specialization offers a mechanism to aptly and easily handle the following linguistic phenomena:

- extrinsic features (EFs), as in: *viewer* [+ television], *worrier* [+ a lot];
- literal vs. metaphorical uses, as in: *proof-reader* vs. *mind-reader*;
- literal vs. metonymic uses, as in: *printer* (person) vs. *printer* (thing);

¹⁸ For attestations of some of these readings in the British National Corpus, see Appendix; as will be realized, linguistic context alone is very often not sufficient for successful interpretation.

- structural ambiguity, as in: *weight-lifter* (from: one lifts weights) vs. *shop-lifter* (from: one lifts in shops);
- actual vs. potential uses in morphological and/or semantic innovations and nonce-formations, as in: *record-breaker*, above.

4. COMPOSITIONALITY AND IDIOMATIZATION IN DICTIONARIES

According to a widely held view, the dictionary contains an inventory of all those properties of lexemes which are idiosyncratic, in that they cannot be captured by a general rule and, consequently, be predicted by a general rule (Lyons, 1977; Leech, 1981; Bauer, 1983). The dictionary is therefore expected to provide, ideally, only unpredictable information on any individual lexeme, regarding its orthography, phonology, morphology, syntax, semantics-cum-pragmatics (including syntagmatic and paradigmatic relations), and stylistics. All properties of morphologically simple (monomorphemic) lexemes are, by definition, unpredictable and as such must all be entered in the dictionary. On the other hand, properties of morphologically complex (polymorphemic) lexemes are predictable to varying degrees, depending on whether they are compositional, when characterized by predictability, or idiomatized, when their properties are unpredictable to a greater or lesser degree, and so necessitate that those lexemes be listed in the dictionary.

At the level of semantics-cum-pragmatics, on which this discussion focuses, it must be stressed first that dictionary definitions contain – or, at least, should contain – the established pragmatic specializations of any given lexeme included as a headword. In other words, dictionary definitions are predominantly pragmatic in nature, because what they reflect are the actually occurring uses of lexemes as evidenced by the corpus on which their analysis is based. By the same token, potential uses, those theoretically possible but not yet actualized, cannot be dealt with lexicographically until (and unless) they have gained some currency after their launch. To return briefly to a previous example, the ‘competition’ instantiations of the lexeme *record-breaker* would be eligible to be defined as they are (more or less) established, but the ‘LP-destruction’ uses, being still only potential but not realized, would not be suitable candidates – at least, not at the present moment.

Predictability of meaning manifests itself in the transparency/opacity cline (discussed and illustrated above). This cline can serve as a reliable guiding principle for the treatment of polymorphemic lexemes in the dictionary. The principle could be stated in the following way: any morphologically complex lexeme which occupies any point along the scale of transparency, diagrammed in Figure 2 – except the prototypically compositional and therefore fully transparent position – is considered to be an unpredictable idiomatization in need of being defined in the dictionary. More specifically, idiomatizations, comprising both incrementations and decrements, should receive separate-entry treatment with full definitions of their individual

senses, whereas compositionals should be handled as undefined run-ons, placed at the end of the entry for the base headword from which they have been derived.

Run-on treatment of compositionals, applicable mainly to affixations, fulfills two basic functions: firstly, it explicitly records the corpus-attested actual (although not necessarily established) existence of a given derivative, and secondly, it implicitly indicates the predictable form/meaning relationship between the input base and the output lexeme. In order that this condensation of information may work efficiently, an accurate description of prefixes and suffixes should be provided as well, setting out the properties that they prototypically contribute orthographically, phonologically, morphosyntactically, semantically and stylistically to the properties of bases to which they are attached. This description, of course, calls for prior thoroughgoing corpus-based research into affixal properties, which is yet to be done properly.¹⁹

In addition to these general observations, mostly reflecting currently prevalent lexicographic practice, a few specific points need to be raised here, with a view to achieving a fuller and more faithful account of the systematic relations between some morphologically complex lexemes, especially affixations, and their input bases. And to support and illustrate those points, a model entry for the lexeme/headword *speaker*, discussed earlier, is provided in example (4).²⁰

(4) *speaker*

- 1 a person who is speaking
a a person who is speaking to an audience
b a person who speaks a particular language
- 2 (**Speaker**) the person who controls discussions in a parliament, especially the House of Commons in Great Britain and the House of Representatives in the United States
- 3 short for **loudspeaker** = a device used for turning electrical signals into audible sound

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speakership (from sense 2)

¹⁹ For a seminal analysis of theoretical and practical aspects of dealing with compositionals in the dictionary, see Gove, 1966, for a discussion of some lexicographic treatments of polymorphemic lexemes, see Stein, 1976, and for a set of criteria for a more consistent and complete representation of affixes in the dictionary, see Prčić, 1999b.

²⁰ The model entry, containing only information relevant to meaning, follows the structure and sense distinctions in the entry for the headword *speaker* in the *The New Oxford Dictionary of English (NODE)*, Pearsall ed., 1998; the original definitions have been rewritten (in the style of a learner's dictionary) to bring them in line with the points being made.

The suggestions, which aim not only to improve lexicographic practice but also to offer a more methodical and user-friendly presentation of facts in dictionaries, for native speakers and foreign learners alike, are as follows:

- to contribute to a more comprehensive coverage, entries for lexemes having both idiomatized and compositional senses should provide definitions for them all, in a decreasing order of transparency, as seen in example (4), where sense 1 is the prototypically compositional, and the rest are idiomatizations – senses 1a and 1b belonging to incrementation, and senses 2 and 3 to decrementation (in fact, this feature is implemented in one way or another in many dictionaries, but, with the innovative exception of *NODE*, most approaches are ripe for a major overhaul, particularly in terms of consistency of selection and wording of definitions);
- to capture the systematic form/meaning relationship between the output lexeme and the input base, definitions of incrementations, and compositionals when they are defined, should explicitly incorporate the base, as in senses 1a and 1b (by contrast, since no similar relationship is found in decrementations, this method in this case does not apply, as seen in the definitions of senses 2 and 3);
- to avoid misrepresentation of facts by inadvertent indication of potential – or, not infrequently, even non-existent – form/meaning relationships, all run-on entries listing lexemes derived from polysemous bases should contain explicit reference to relevant sense(s) of their base, when derivatives are restricted only to certain senses, as shown in the section DERIVATIVES of example (4), where the run-on *speakership* is linked only with the ‘parliamentary’ sense of the headword *speaker* (this feature seems to have been first introduced in *NODE*);
- to register their existence and put them on a par with suffixations, prefixations qualifying as compositional, such as *untrained*, *overcook*, *undercook*, should also be given run-on treatment, but for greater ease of reference they should be listed twice: first, at the end of the entry for their input base (in the present examples, it is *train* and *cook*, both used as verbs), and second, as separate headwords, properly alphabetized and immediately cross-referred to the appropriate base headword.

5. THE SEMANTICS/PRAGMATICS INTERFACE

During the discussion so far, inextricable connections between semantics and pragmatics has been hinted at several times, but no attempt has been made to delineate the domains of the two disciplines. Now, with the aid of Figure 4, the interface between semantics and pragmatics will be outlined within a larger framework, which considers levels of linguistic analysis from a

morphocentric perspective (Prčić, 1995, 1997; building in part on Bugarski, 1983, 1989, 1993); afterwards, some light will be shed on lexical pragmatics in relation to lexical semantics.

According to the approach taken here, the structure of language includes four levels – phonology (as peripheral; represented by a broken line), morphology, syntax, and semantics (as central; solid lines), all united in two interdependent supralevels – grammar and lexicon, with pragmatics providing the obligatory contextual setting and support to both (thick line), itself being neither a level nor a supralevel. Within the domain of grammar belong syntactic units, formed by the operation of grammatical rules, while the lexicon deals with lexical units, formed by the application of word-formation rules. Underlying both types of units are morphemes, whose complex chaining – through lexemes, phrases, clauses, and sentences – produces text, the ultimate linguistic creation of variable length. Consequently, semantics and pragmatics are seen as complementing each other, both in terms of the actual functioning of language and of the description of that functioning: semantics “opens into” pragmatics, which, by providing a contextual setting and support for communication and by helping in the elimination of, among others, semantic underspecification, constitutes a natural, if not necessary, extension of semantics (Leech, 1981, 1983; Kempson, 1977).²¹

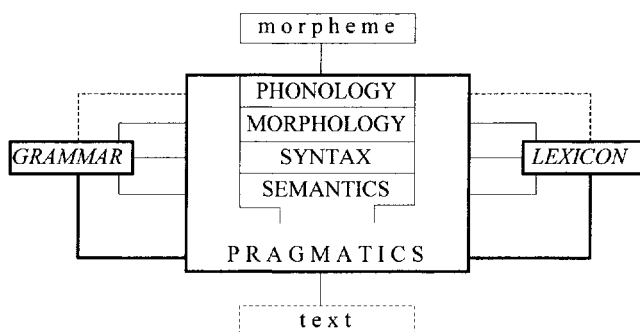


Figure 4: Levels of linguistic analysis – a morphocentric approach

Lexical semantics and lexical pragmatics, as subsets of general semantics and pragmatics, follow the same division of labor, firstly, by building around the central role of linguistic and extralinguistic contexts; secondly, by reflecting the constantly interacting dichotomies of the abstract language system and its concrete use; and thirdly, by concentrating on lexemes – not only morphologically complex (polymorphemic) but also simple (monomorphemic). Lexical pragmatics, in contradistinction to context-free lexical semantics, embraces all those phenomena in which linguistic and extralinguistic contexts, including interacting

²¹ For various other approaches to the semantics/pragmatics interface, see contributions in Turner ed., 1999.

speaker/writers and hearer/readers, have direct bearing on (some segments of) the lexicon, in terms of form, function, and/or content.²² As good candidates for the realm of lexical pragmatics proper would pre-eminently be seen the production/formation, interpretation and explanation of the following:

- transferred/figurative uses of lexemes, based on metaphor and metonymy, and including ad hoc loose uses, as in *France is hexagonal*, where *hexagonal* is used in a relaxed, non-literal, sense;²³
- contextual modulations of a single sense of lexemes, as in *buy a car, paint a car, wash a car, Hoover a car, service a car, fuel a car*, where certain, more relevant, sense features of the referent *car* are highlighted by specific contexts, while other features are temporarily suppressed as irrelevant;²⁴
- word formation processes and their results, especially of prefixation, suffixation, composition and conversion, and including innovations and non- formations, as already exemplified above.²⁵

6 SUMMING UP

Decontextualized, semantics-only, interpretation of morphologically complex lexemes is based on binary processing and results in a reading characterized by semantic underspecification, which leaves the sense insufficiently specified and calls for the missing information to be filled in during the process of pragmatic specialization.

Contextualized, pragmatics-enriched, interpretation of morphologically complex lexemes consists of reference assignment, morphosemantic analysis, and local completion, and results in a reading characterized by all information required for successful interpretation appropriately supplied.

Semantics and pragmatics are seen as complementary disciplines, with semantics being (part of) the abstract language system, and pragmatics – considered an extension of semantics – providing a contextual setting and support for communication.

²² For an elaborate and ground-breaking account of lexical pragmatics, see Blutner, 1998.

²³ For various approaches to metaphor and metonymy, see Cruse, 2000; Lipka, 1992a; Taylor, 1995; and for a detailed account of loose use of lexemes, see Carston, 1997.

²⁴ For discussions of contextual modulation, and other systematic influences of context on lexical meaning, see Cruse, 1986, 2000; Taylor, 1995.

²⁵ For stimulating discussions of production and interpretation of innovations and non- formations in word formation, see Aronoff, 1980; Bauer, 1979, 1983; Clark and Clark, 1979; Downing, 1977; Lipka, 1992a.

And to end on a metaphorical note, the semantics/pragmatics interface can be effectively explained by way of the 'camera metaphor': an out-of-focus image in the viewfinder, with only "a connection" between objects discernible (= semantics), calls for the (automatic) adjustment of the lens (= pragmatic plausibility/specialization) in order to produce an in-focus picture, with all objects showing clearly and sharply (= pragmatics).

REFERENCES

- Aronoff, M. (1980). Contextuals. *Language*, **56**, 744–758.
- Bach, K. (1994). Conversational implicature. *Mind and Language*, **9**, 124–162.
- Bauer, L. (1978). On lexicalization (neither a lexicalist nor a transformationalist be). *Archivum Linguisticum*, **9**, 1–14.
- Bauer, L. (1979). On the need for pragmatics in the study of nominal compounding. *Journal of Pragmatics*, **3**, 45–50.
- Bauer, L. (1983). *English Word-Formation*. Cambridge University Press, Cambridge.
- Blutner, R. (1998). Lexical Pragmatics. *Journal of Semantics*, **15**, 115–162.
- Bugarski, R. (1983). *Lingvistika o čoveku* [Linguistics about man]. Second, expanded edition, Prosveta, Belgrade.
- Bugarski, R. (1989). Generative structuralism. In: *Yugoslav General Linguistics* (M. Radovanović, ed.), pp. 33–46. John Benjamins, Amsterdam.
- Bugarski, R. (1993). Jezički nivo, diskurs, tekst: Pojmovno-terminološki osvrt [Linguistic level, discourse, text: Concepts and terms]. *Naučni sastanak slavista u Vukove dane*, **21/2**, 14–19.
- Carston, R. (1997). Enrichment and loosening: Complementary processes in deriving the proposition expressed? *Linguistische Berichte*, **8**, 103–127.
- Clark, E. V. and H. H. Clark (1979). When nouns surface as verbs. *Language*, **55**, 767–811.
- Cruse, D. A. (1986). *Lexical Semantics*. Cambridge University Press, Cambridge.
- Cruse, D. A. (2000). *Meaning in Language: An Introduction to Semantics and Pragmatics*. Oxford University Press, Oxford.
- Downing, P. (1977). On the creation and use of English compound nouns. *Language*, **53**, 810–842.
- Gove, P. B. (1966). Self-explanatory words. *American Speech*, **41**, 182–198.
- Grice, P. (1989). *Studies in the Way of Words*. Harvard University Press, Cambridge, Mass.
- Hansen, B., K. Hansen, A. Neubert, and M. Schentke (1982). *Englische Lexikologie*. VEB Verlag Enzyklopädie, Leipzig.
- Hurford, J. R. and B. Heasley (1983). *Semantics: A Coursebook*. Cambridge University Press, Cambridge.
- Kastovsky, D. (1986a). The problem of productivity in word formation. *Linguistics*, **24**, 585–600.
- Kastovsky, D. (1986b). Problems in the morphological analysis of complex lexical items. *Acta Linguistica Academiae Scientiarum Hungaricae*, **36**, 93–107.
- Kempson, R. M. (1977). *Semantic Theory*. Cambridge University Press, Cambridge.

- Leech, G. (1981). *Semantics*. Second edition, Penguin Books, Harmondsworth.
- Leech, G. (1983). *Principles of Pragmatics*. Longman, London and New York.
- Lipka, L. (1976). Topicalization, case grammar, and lexical decomposition in English. *Archivum Linguisticum*, 7, 118–141.
- Lipka, L. (1977). Lexikalisierung, Idiomatisierung und Hypostasierung als Probleme einer synchronischen Wortbildungslehre. In: *Perspektiven der Wortbildungsforschung* (H. E. Brekle and D. Kastovsky, eds.), pp. 155–164. Bouvier Verlag Herbert Grundmann, Bonn.
- Lipka, L. (1992a). *An Outline of English Lexicology*. Second edition, Max Niemeyer Verlag, Tübingen.
- Lipka, L. (1992b). Lexicalization and institutionalization in English and German. *Linguistica Pragmatis*, 35, 1–13.
- Lyons, J. (1977). *Semantics 1–2*. Cambridge University Press, Cambridge.
- Pearsall, J. (ed.) (1998). *The New Oxford Dictionary of English*. Oxford University Press, Oxford.
- Poesio, M. (1996). Semantic ambiguity and perceived ambiguity. In: *Semantic Ambiguity and Underspecification* (K. van Deemter and S. Peters, eds.), pp. 159–201. CSLI Publications, Stanford.
- Prčić, T. (1995). *Agentivni sufiksi u savremenom engleskom jeziku: Morfosintaktički i semantički aspekti* [Agentive suffixes in present-day English: Morphosyntactic and semantic aspects]. PhD dissertation, Faculty of Philology, Belgrade.
- Prčić, T. (1997). *Semantika i pragmatika reči* [Semantics and pragmatics of the word]. Izdavačka knjižarnica Zorana Stojanovića, Sremski Karlovci, Novi Sad.
- Prčić, T. (1999a). Productivity of competing affixes: The case of agentive suffixes in English. *Linguistica e filologia*, 9, 125–134.
- Prčić, T. (1999b). The treatment of affixes in the 'big four' EFL dictionaries. *International Journal of Lexicography*, 12, 263–279.
- Prčić, T. (2001). Interpreting morphologically complex lexemes, and the semantics/pragmatics interface. In: *Pragmatics in 2000: Selected Papers from the 7th International Pragmatics Conference* (E. Németh T., ed.), Vol. 2., pp. 470–480 IPrA, Antwerp.
- Radovanović, M. (1986). *Sociolingvistika* [Sociolinguistics]. Second edition, Književna zajednica Novog Sada, Dnevnik, Novi Sad.
- Ruhl, C. (1989). *On Monosemy: A Study in Linguistic Semantics*. State University of New York Press, Albany.
- Sperber, D. and D. Wilson (1995). *Relevance: Communication and Cognition*. Second edition, Blackwell, Oxford.
- Stein, G. (1976). On some deficiencies in English dictionaries. In: *Contemporary English: Occasional Papers 1* (C. Gutknecht, ed.), pp. 1–27. Peter Lang, Frankfurt am Main; Herbert Lang, Bern.
- Summers, D. (ed.) (1995). *Longman Dictionary of Contemporary English*. Third edition, Longman, Harlow.
- Taylor, J. R. (1989). Possessive genitives in English. *Linguistics*, 27, 663–686.
- Taylor, J. R. (1995). *Linguistic Categorization: Prototypes in Linguistic Theory*. Second edition, Clarendon Press, Oxford.

- Thomas, J. (1995). *Meaning in Interaction: An Introduction to Pragmatics*. Longman, London and New York.
- Turner, K. (ed.) (1999). *The Semantics/Pragmatics Interface from Different Points of View*. Elsevier, Oxford.
- Verschueren, J. (1999). *Understanding Pragmatics*. Arnold, London.
- Warren, B. (1978). *Semantic Patterns of Noun-Noun Compounds*. Acta Universitatis Gothoburgensis, Göteborg.

APPENDIX

Instantiations of the lexeme *record-breaker* in the British National Corpus. Available from <http://thetis.bl.uk/lookup.html> (italicization T. P.).

1. With such a big wing and the drag of all those struts, mass-balance weights and dangling bits of rope trailing in the slipstream, the Beaver was never meant to be a *record-breaker*, but the normal cruise speed of 95 knots at Tony's parsimonious power setting of 28 inches and 1,750 rpm burns a fairly frugal (for this big engine) eighteen gallons per hour. (BNV 264)
2. We feel Betty Willis may well be a *record-breaker* with the super-size socks she made for her super-size son-in-law whose super-loud voice gave him fifth place (out of 100 contestants) in the 1991 world championships for Town Criers. (CGV 1124)
3. *Record-breaker*: Nigel after Sunday's victory in Portugal (CH1 7513)
4. *Record-breaker* Colin Clarke set Northern Ireland off on a World Cup romp in Belfast last night. (CH3 1727)
5. The Abbey, from Trap 1, should gain first run on Sheffield *record-breaker* Pineapple Lemon. (CH3 3693)
6. *Record-breaker* Fenra Wolf, 37, of Brimington, Derbys, stood barefoot on a bed of nails for 58 seconds while holding 400lbs of cement. (CH6 8902)
7. The news came on the day another *record-breaker*, Harry Taylor, 33, returned home after he became the first Briton to reach the summit from the Nepalese side without the aid of oxygen. (E9S 195)
8. Top of the world: *record-breaker* Harry Taylor (E9S 198)
9. *Record-breaker* Murray aims for Toronto (K5A 4621)
10. Either way, astronomers are regarding it as a fascinating astronomical object and not just a *recordbreaker*. (B78 382)
11. Wooderson continued running for a few years, winning the European 5,000 metres and stretching his span of achievement from world *record breaker* at half-mile to national cross-country champion over nine miles in 1949. (AA7 375)
12. Sex, violence, mystery – all the ingredients of a box-office *record breaker*. (BPE 261)

13. The 1987 champion berry, a woodpecker, weighed in at 28 drams 4 grains; not a *record breaker* this time. (BPK 1424)
14. Rail traction both ancient and modern will feature in the events, including the naming of a 125 mph InterCity Power Car 'County of Somerset' and star-turn appearances by an even older *record breaker* 'City of Truro', the world's first 100 mph steam loco. (CJ6 413)
15. The video is already a *record breaker* in that it was produced in only three weeks as opposed to the normal six to eight weeks. (GXA 500)
16. Completing the history-making line-up are '4468 – The *Record Breaker*', Equinox's 'Iron Road', 'The Last Train through Medicine Hat', 'Night Mail', 'Manchuria Express', 'Palace on Wheels' and 'O. Winston Link' the most innovative steam photographer. (HHH 252)
17. This year's Sellafield Pro-Am Golf Tournament was a *record breaker* three times over. (HPC 448)
18. *Record Breaker* Betty Law Retires (HS1 375)
19. Today there's not enough blow, but to be a *record breaker* you have to be ready. (K1D 2514)
20. Experts are now being called out to check this tress vital statistics, and establish it officially as a *record breaker*. (K1M 1352)

CULTURAL CONSTRAINTS ON MEANING EXTENSION: DERIVATIONAL RELATIONS BETWEEN ACTIONS AND HAPPENINGS¹

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1. INTRODUCTION

This paper addresses the issue of the difference between regular patterns of semantic extension in standard Russian and those deriving slang meanings.

The term *slang* here is restricted to Russian general slang, which is understood as a part of modern Russian slang not associated with any restricted social or age group. Russian general slang is used or at least understood by every adult citizen. Its relevant feature, which distinguishes it from special jargons, such as school jargon, drug addicts' jargon, black market jargon, etc., is that it is spoken by the educated speakers of standard Russian and quite frequently used in the language of mass media, through which it is dispersed (Rozina and Zemskaja, 1994).

Semantically, slang words are, on the whole, not different from the words of standard Russian, cf., for instance *vodiara* 'vodka', *alkonavi* 'alcoholic', *depresniak* 'depression', *prokolot'sia* 'be pierced', in slang 'fail', *zaletet* 'fly too far or to the wrong place', in slang 'get pregnant against one's wish',² etc. However, a great number of general Russian slang words are easily identifiable as slang, because they differ from the words of standard Russian in shape. Among them, a few are original creations, i.e. words created in slang not on the basis of any standard words (e.g. *chmo* 'a despised person'), some are loanwords from other languages (e.g. *ksiva* 'passport or other official document' from Hebrew *ktiva* 'letter'), while others are

¹ This research has been supported by INTAS, grant 96-00855, the Russian State Foundation for Humanities (RGNF), grant 99-04-00262a, and the Russian Foundation for Fundamental Research (RFFI), grant 01-06-80234. I acknowledge the assistance of Ruth A. Marks (Toronto, Ontario) in editing the text of this paper.

² The first word in the inverted commas is a literal translation, the second, after a comma, is its slang equivalent.

phonetic distortions of standard words, such as, for instance, *kranty* 'the end to everything' from standard Russian *kran* 'water faucet'. Quite a few slang words are easily and unmistakably distinguished by native speakers from the words of standard Russian, because they are derived by means of slang word-formation patterns.

Among the differences between standard and slang word-formation there is the use in slang derivation of the forms never used in standard word derivation, such as, for instance, the suffix *-on*,³ e.g. in *vypivon*, from *vypivka* 'drinking bout', *zakuson*, from *zakuska* 'hors d'oeuvre', *zakidon* 'caprice', from *zakiǔvat* 'throw too far', etc. Another type of the differences between the standard and non-standard word-formation is due to the violation of the word formation rules in slang derivation. A good illustration of this is the use of the suffix *-ukh(a)* to form new slang words from reduced word bases, e.g. *prezentukha*, from *prezentatciia* 'presentation', *pornukha*, from *pornografiia* 'pornography', whereas in standard Russian the same suffix is combined with either adjectival or verbal bases, e.g. *starukha* 'old woman' from *staraia* 'old', *striapukha* 'cook' from *striapat* 'to cook'. Also, the results of attaching the same suffix to the base in the standard language and in slang can differ. Thus, the suffix *-ak (-iak)* applied to adjectival and verbal bases produces slang nouns denoting something by its characteristics, e.g. *prokhodniak*, from *prokhodit* 'go through', meaning 1. 'accepted work of art, 2. 'passing score at university entrance exam'; *mertviak*, from *mertvyi* 'dead', meaning 'something that has no hope to succeed'.

Many slang words are not shaped differently from the words of the standard language, because, by origin, they are new derived meanings of the latter.⁴ Examples are *chainik* 'kettle', 'non-professional' in slang, *krysha* 'roof', 'mind, reason' in slang, and *navarit* 'cook', 'get profit' in slang, cf.:⁵

³ The suffix *-on* was borrowed into Russian general slang in the 19th century from the jargon of seminary students. By its origin, it is an inseparable element of Greek words, such as *asyndeton*, *sinedrion*, *flogiston*, which were jokingly used by seminarists to produce pseudo-Greek words.

⁴ All data are based on the corpus of the dictionary of Russian general slang (Ermakova *et al.*, 1999). Approximately the same relationship holds between formally marked and non-marked units of American slang, i.e. those derived by means of the semantic extension of meanings of words from the standard English (Rozina, 1978).

⁵ To keep closer to the original texts, I supply my own translations of all illustrations in the paper. In the glosses to Russian examples the following abbreviations have been used: 3 – third person, ACC – accusative, AP – adverbial participle, DAT – dative, DIMIN – diminutive, FEM – feminine, GEN – genitive, INS – instrumental, MASC – masculine, NEUT – neutral, NOM – nominative, PL – plural, PREP – prepositional (case), SG – singular. To indicate the sources, the following abbreviations have been used: Brodskii – I. Brodskii. *You will ride in the night...*; Bulgakov – M. Bulgakov. *The Master and Margarita*; ChS – *Chastnaia sobstvennost'*; Dovlatov – S. Dovlatov. *The compromise*; Gogol – N. Gogol. *Dead souls*; Ilf and Petrov – I. Ilf and E. Petrov. *The golden calf*; Izv. – *Izvestiia*; KP – *Komsomolskaia pravda*; MK – *Moskovskii komsomolets*; Nabokov – V. Nabokov. *Mary*; NG – *Nezavisimaia gazeta*; Pushkin – A. S. Pushkin. *The statue at Tsarskoe Selo*; Simonov – K. Simonov. *The living and the dead*; SO – *Severozapadnyi okrug*; Strugatskii and Strugatskii – A. Strugatskii and B. Strugatskii. *The snail on the slope*; TsP – *Tsentrl-Plus*; Uppsala corpus – *The Uppsala Corpus of Russian Texts*, 1993.

- (1) V rezul'tate poluchaetsia, chto *chainik* za rulem opasnee
 in result.PREP looks that kettle.NOM behind wheel.INS more.dangerous
 liubogo zhestkogo zashchitnika na futbol'nom pole. (KP, June 30, 1993)
 any tough back.GEN on football field.PREP
 'As a result, it looks like a *non-professional* at the wheel is much more dangerous than
 any tough back on the football field.'
- (2) Dal'she shli eshche bolee nemyslimye komplimenty.
 further went.PL even more unthinkable compliments.NOM
 Poniatno, u menia *krysha* poekhala ot schast'ia.
 clear with me.GEN roof.NOM went.SG.FEM from happiness.GEN
 (Voznesenski. *Sur. Izv.*, Aug. 4, 1994)
 'Then the compliments continued to the point of the unthinkable. Sure, my *head* started
 sliding from happiness.'
- (3) Kak mne skazal Misha K., kotoryi byl odno vremia
 as me.DAT told.SG.MASC Misha.NOM K. which.NOM was.MASC some time.ACC
 sviazan s etim biznesom, "*navarivat*" na ikre mozžno prilichno.
 related with this business.INS to.cook on caviar.PREP possible well
 (NG, June 22, 1993)
 'As I have been told by Misha K., who had been related to this business for some time,
 one can *earn a lot of profit* on caviar.'

The question arises why, then, can educated speakers of Russian distinguish the standard word meaning from the slang one even when they come across the latter for the first time. It is not the denotation of slang meanings that makes them specific. On the contrary, they generally denote the same as standard meanings, cf. *zhelezo* 'iron', 'computer' in slang, *v'ekhat* 'drive in' / *vrubit'sia* 'cut in', 'understand' in slang, *zasvetit* 'light', 'discover someone' in slang, *nakryt* 'cover', 'catch someone doing something forbidden' in slang, *iashchik* 'box', 'TV set' in slang, etc. This suggests that the speakers' intuitions are based on the differences in the patterns of semantic extension (or patterns of semantic derivation) resulting in standard and slang word meanings, and that these differences are regular. Familiarity with the patterns of semantic derivation helps the native speaker immediately to identify new meanings as either slang or standard, in the same way as the familiarity with patterns of word formation enables one to tell slang derivatives from standard ones.

In the present paper I concentrate on the patterns of semantic derivation of one part of speech only, namely Russian verbs. In particular, I analyze the derivational relations between

actions and happenings.⁶ Meanings of happenings in standard language are the bases for slang meanings of actions, e.g. *tolknut' rebenka* 'push a child' – *tolknut' kurtku* (lit. 'push a jacket') 'to sell a jacket' in slang; *naekhat' na peshekhoda* 'run into a passer-by' – *naekhat' na firmu* (lit. 'run into a firm') 'attack with threats' in slang; *vzdrognut'* (lit. 'shudder') 'take a drink' in slang. Cf.:

- (4) ... v odnoi tol'ko moskovskoi oblasti kompashek,
 in one only moscow oblast.PREP companies.DIMIN.GEN
 tolkaiushchikh tachki ne odin desiatok. (MK, Aug. 17, 1995)
 pushing cartwheels.ACC not one ten.NOM
 '... in Moscow oblast' alone the number of small groups *selling* cartwheels exceeds ten.'
- (5) Pytalis' na nas *naekhat'*, zastavit' podniat' tsenu. Nu,
 tried.PL on us.ACC to.run.over to.make to.raise price.ACC well
 poka oboshlos'. (ChS, June 30, 1993)
 so.far went.round.SG.NEUT
 'They tried *to threaten* us to make us raise the price. Well, so far it has come to nothing.'
- (6) Kak *vzdrognut'* po pravilam (headline, KP, March 1, 1997)
 how to.shudder on rules.DAT
 'How to *take a drink* according to the rules'
- (7) Nu, *vzdrognuli!* Liubiteliam kristall'no chistoi sivukhi
 well shudder.PL lovers.DAT crystall clear home.brew.GEN
 (headline, TsP, 1994, № 38)
 'Well, let's *take a drink!* To the lovers of crystal-pure vodka'

The paper is divided into sections: Section 2 reveals principles of word meaning explication used in the research, Section 3 examines the differences between the lexicographic explications of actions and happenings, Section 4 analyzes the derivational relations between actions and happenings in standard Russian, and, finally, Section 5 reveals patterns of semantic derivation of actions from happenings that result in slang meanings.

⁶ The notion of happening was introduced in Wierzbicka (1980: 177) and developed by Paducheva (1994).

2. PRINCIPLES OF LEXICOGRAPHIC EXPLICATION OF WORD MEANING

Lexicographic explications of word meanings are based on the principles developed for the database of Russian verbs "Lexicographer".⁷ The participants of the situation described by each verb are characterized with respect to four parameters: the semantic role, the form of expression, the rank and the taxonomic class. The list of semantic roles more or less corresponds to that proposed by Fillmore (1968). It is worth noting here that two semantic roles, namely the Observer and the Experiencer, are differentiated: the Observer, unlike the Experiencer, is an outside participant of the situation to which no variable corresponds in the utterance. Thus in (8) the Observer is implied, whereas in (9) Y is the Experiencer:

- (8) Tuchi zakryli nebo.
 clouds.NOM closed.PL sky.ACC
 'The clouds *closed* the sky.'
X covered Y.
 before t X was not between the Observer and Y
 the Observer could see Y
 in t X moved
 it caused
 at MS⁸ X is between the Observer and Y
 the Observer can't see Y
- (9) Ee golova zakryla mne ekran.
 her head.NOM closed.SG.FEM me.DAT screen.ACC
 'Her head has blocked the screen from me.'
X closed Y from Z.
 before t X was not between Y and Z
 Y could see Z
 in t X moved
 it caused
 at MS X is between Y and Z
 X can't see Y

Among forms by which participants of the situation may be expressed, the Subject, the Object, and various oblique case forms and prepositional phrases are differentiated. The ranks

⁷ The project has been carried out by a number of Russian scholars in Moscow under the supervision of E. V. Paducheva (see Kustova and Paducheva, 1994).

⁸ MS = the moment of speech.

that are assigned to them are the Center, the Periphery, and Offscreen, the two central participants being the Subject and the Object. The Observer always has an Offscreen rank. Other participants of the situation can change their forms of expression and ranks, which is accounted for by the notion of the diathesis. Thus, for example, the verb *namazat* 'spread' has two diatheses:

- (10) a. On *namazal* varen'e na khleb lozhkoi.
 he spread.SG.MASC jam.ACC on bread.ACC spoon.INS
 'He spread jam on the bread with a spoon.'
- b. On *namazal* khleb varen'em.
 he spread.SG.FEM bread.ACC jam.INS
 'He spread the bread with jam.'

In (10a) *varen'e* 'jam' is the Patient, which is expressed by the Object, having the rank of a central participant, whereas *lozhka* 'spoon' has the semantic role of the Instrument and is expressed by the Instrumental case and assigned the rank of the Periphery. In (10b) *varen'e* 'jam' is assigned the role of the Means, is expressed by the Instrumental, and acquires the rank of the Periphery, whereas another obligatory participant of the situation, the Instrument, goes off screen. Examples of taxonomic classes into which participants of the situation fall are PERSON, THING, SUBSTANCE, SURFACE, CONTAINER, etc.

Components of explications of word meanings have a sentential form. Among the components those constituting presupposition, background, assertion, implication, and inference are distinguished. The background components and the presupposition are very close to each other in the sense that both provide the conditions for the utterance to be true, the difference between them being that in contrast to presupposition, the background components do not remain unchanged under negation. In the explication of the meaning of the verb *vysokhnut* 'dry' in (11) the component 'X was not dry' constitutes the presupposition, whereas the component 'Y affected X' belongs to the background:

- (11) Rubashka *vysokhla* na solntse.
 shirt.NOM dried.SG.FEM on sun.PREP
 'The shirt dried in the sun.'
- X dried in Y.*
- | | |
|----------------------------------|------------------|
| before t X was not dry | <presupposition> |
| in t Y affected X | <background> |
| it caused | <background> |
| at the moment of speech X is dry | <assertion> |

The difference between the implication and the inference, which are both consequences of the action or the event, is that the implication is an obligatory consequence, whereas the inference is optional and can be easily eliminated by the context, e.g.:

- (12) a. On udaril molotkom po gvozdiu i *sognul* ego.
 he struck.SG.MASC hammer.INS on nail.DAT and bent.SG.MASC him.ACC
 'He struck the nail with a hammer and *bent* it.'
- b. Nakonets emu udalos' *sognul* ' gvozd'.
 finally him.DAT managed.SG.NEUT to.bend nail.ACC
 'At last he managed to *bend* the nail.'

Both in (12a) and (12b) the change of the shape of the Object is an obligatory consequence of the action *sognut* 'bend', i.e. an implication. However, in (12a) it invokes the inference that the Object is damaged, whereas in (12b) the word *nakonets* 'at last' eliminates it.

3. ACTIONS AND HAPPENINGS

Actions and happenings are taxonomic verb classes, the distinction between which is based on Vendler's verb classes (Paducheva, 1996: 103–110). Actions and happenings differ by the nature of the causal relation between the components of their lexicographic explications.⁹ The following example is an illustration of the lexicographic explication of an action:

- (13) ... prokurator ... *razbil* kuvshin o mozaichnyi pol. (Bulgakov)
 procurator.NOM broke.SG.MASC jar.ACC against mosaic floor.ACC
 '... the procurator ... *smashed* the jar against the mosaic floor.'
- X smashed Y against Z.*
- | | |
|-------------------------------------------|------------------|
| before t Y was whole | <presupposition> |
| Causer at MS X acted with a goal: | <assertion> |
| affected Y: brought Y into contact with Z | |
| causation it caused | |
| the result at MS Y is not whole | <implication> |
| Y has been damaged | <inference> |

⁹ What follows is the summary of the ideas of the differences between actions and happenings, worked out in the course of the database "Lexicographer" development. A detailed account of these ideas can be found in Paducheva, 1994.

Actions imply a purposeful, or controlled, causation, whereas happenings do not. Behind this general opposition, there are at least two other features that differentiate actions and happenings, namely the nature of the Causer and that of the caused. The Causer of actions is the Subject's goal-oriented activity, which is reflected by the component 'X acted with a goal' in the lexicographic explication of actions. This is why the Subject of actions always has the semantic role of the Agent, which determines its taxonomic class as a person. What the actions cause is the result identical to the Subject's activity goal.

The Causer of happenings is an event, which is reflected in the lexicographic explications of happenings by the component 'something happened', as shown in the following examples:

- (14) Staraias' za chto-nibud' ukhvatit'sia, Berlioz upal
 trying.AP behind something.ACC to.hold.on Berlioz.NOM fell.SG.MASC
 navznich'. (Bulgakov)
 on.back
 'Trying to get hold of something, Berlioz *fell* on his back.'
X fell.
 before t X was upright <presupposition>
 Causer| something happened to X <background>
 causation| it caused <assertion>
 consequence| X is in the horizontal position
 X has been damaged <inference>
- (15) Urnu s vodoj uroniv, ob utes ee
 jar.ACC with water.INS having.dropped.AP against cliff.ACC her.ACC
 deva razbila. (Pushkin)
 maiden.NOM broke.SG.FEM
 'The girl *broke* the jar, having dropped it against the cliff.'¹⁰
X broke Y with Z.
 in t < MS X acted with the goal: supported Y <exposition>
 before t Y was whole <presupposition>
 Causer| in MS something happened
 causation| it caused <assertion>
 consequence| Y came into contact with Z; Y is not whole
 Y has been damaged <inference>
 X is responsible for the damage <inference>

¹⁰ The two meanings of Russian *razbit'* 'break into pieces', 'intentional' and 'unintentional', in English are expressed by two different verbs, *smash* and *break* respectively.

Therefore the Subject of happenings cannot be goal-oriented, i.e. it never has the role of the Agent, and even in those instances when the Subject is a person, this person's activity is not the Causer of the happening. The Subject's activity is represented in the lexicographic explication of a happening by a specific component, namely the exposition, as shown in the explication of *razbit* 'break' in (15). What happenings cause is not a result but a consequence, which usually implies a damaging effect either for the Subject as in (14) or for the Object as in (15).

However, there are happenings that do not imply any damage at all. They are what is called perceptual happenings that describe changes not in the outer world, but in the Observer's perception, e.g.:

- (16) *Vot i les otvalitsia, ostalsia gde-to szadi, i*
 now and forest.NOM got.off.SG.MASC stayed.SG.MASC somewhere back and
reka ushla kuda-to v storonu, navstrechu gruzoviku
 river.NOM went.SG.FEM somewhere in side.ACC towards truck.DAT
sypalas' raznaia raznost'. (Uppsala corpus)
 spilled.SG.FEM various variety.NOM
 'Now the forest *got off*, remained somewhere behind, and the river, too, *went* some-
 where to the side, various things *spilled out* in the truck's way.'

4. DERIVATIONAL RELATIONS IN STANDARD RUSSIAN

4.1. Happenings as Derivatives of Actions

In standard Russian, many verbs that are actions in their basic meanings become happenings in their derived meanings (Paducheva, 1994; see also Apresian 1995a: 228 and 1995b: 177 about verbs having 'intentional' and 'non-intentional' meanings), as for instance, *razbit* 'smash' and 'break' in examples (13) and (15). Other examples of the same are *prorezat* (*petliu – plat'e*) 'cut through (a button hole – a dress)', *zalit vodoi (kartoshku – pol)* 'pour water (on the potatoes – on the floor)', *porvat (pis'mo – rukav)* 'tear (the letter – the sleeve)', etc.

The main change accompanying the derivation of a happening from an action is the introduction into the explication of an action of the component 'something happened to X' characterizing a new non-goal-oriented Causer. Further steps depend on what kind of a relationship between situations is reflected by the semantic extension.

A. Semantic extension reflects the similarity between two situations, namely the similarity between the physical result of the goal-oriented Subject's activity and the consequence of the non-goal oriented Subject's activity, as shown in the following example:

- (17) a. Rybak *probil* lunku vo l'odu lomom.
fisherman.NOM broke.through.SG.MASC hole.ACC in ice.PREP crow-bar.INS
'The fisherman *has made a hole* in the ice with a crow-bar.'
X has made Y in Z with S.
before t Z was whole <presupposition>
in t < MS X acted with the goal:
affected Z with S: abruptly, with force <assertion>
it caused
the result| in MS there is Y in Z; Z is not whole
- b. Etot edinstvennyi oskolok *probil* zadniu stenku
this only splinter.NOM broke.through.SG.MASC back wall.ACC
'villisa', proporal kartu, kotoruiu v etot moment
villis.GEN pierced.SG.MASC map.ACC which.ACC in this moment.ACC
derzhal Sintsov. (Simonov)
held.SG.MASC Sintsov.NOM
'That only splinter *made a hole* in the back of the Villis and pierced the map Sintsov was holding at that moment.'
X has made Y in Z.
before t Z was whole <presupposition>
in t < MS something happened
X came into contact with Z: abruptly, with force
it caused <assertion>
the consequence| in MS there is Y in Z; Z is not whole
Z has been damaged <inference>

In this instance, the explication of the happening retains all the components relating to the result of the physical affect and loses all the components relating to the former Causer. The component characterizing the former goal-oriented Causer is replaced by the new causal component, whereas the Subject changes its semantic role and taxonomic class: instead of being the Agent, the Subject becomes the Patient of a happening and is no longer a person.

The components of the explication corresponding to the peripheral participants related to the former Causer, such as the Instrument and the Means, change as well. Indeed, the very presence of these participants in the situation is possible only if the situation involves the Agent (Fillmore, 1968). Now these participants either have to be eliminated from the explication or to acquire a new role. Only the role and the taxonomic class of the Object remain unchanged. In this way, one of the classes of happenings is formed, namely **Object-related happenings**.

In the explication of the happening there appeared a new inferential component 'Z has been damaged'. It reflects the consequence produced by the non-goal-oriented Causer, which, though on the surface it is identical to the result of the goal-oriented Causer's activity, is almost always damaging, either because it is out of place, or because it is not totally identical to the result of human action (Paducheva and Rozina, 1993). This can be illustrated by the difference between the situation when somebody banged the window frame because somebody had been cold, and the situation when the wind banged the window frame, either when it was stuffy in the room, or producing a lot of noise, etc.

B. Semantic extension reflects the derivational relation between two situations, where one situation is part of another one. Example (15) shows that in the situation described by a happening, a non-goal-oriented Causer interfered with the goal-oriented Causer's activity, so that it has not been brought to the desired result. In this instance, in the course of the semantic derivation of a happening, all the components of the action that are the base for the derivation remain except for the component 'X acted with the goal' corresponding in the explication to the former Causer, i.e. the Agent. The latter component is pushed out to a peripheral position of an exposition. Just like in the first instance, the Subject's semantic role changes into the Patient. However, the Subject does not change its taxonomic class remaining a person. The Object, just like in the first instance, retains both its role and its taxonomic class. In this way a subclass of happenings with the Object, namely **happenings with the acting Subject, or with the Subject of responsibility**, are formed. Here, too, the changes of the explication have several consequences.

One consequence is the loss of the components revealing the goal and the way of the former Causer's action. As a result, the explication becomes as generalized as possible. For instance, the goal of the Causer of *razbit* 'smash' in (13), identical to the result of the action, is revealed in the explication as 'to make Y not whole', whereas the way by which it is done is 'X brought Y into contact with the surface'. The way in which the Agent acts may be revealed in the explication through the indication of the type of the Instrument as well (cf. Levin and Rappaport Hovav, 1991).

The second consequence is the change of the semantic roles of such peripheral participants as the Instrument and the Means, which has been already discussed above. Thus, the participant 'surface' in (13) has the double role of the Instrument and Place, whereas in (15) it has a single role, Place. Example (18) illustrates the change of the role Instrument into the role Patient:

- (18) a. Ona osadila poslushnuiu shchetku, otletela v storonu,
 she stopped.SG.FEM obeying broom.ACC flew.away.SG.FEM in side.ACC
 a potom, broshivshis' na disk vnezapno, kontsom shchetki
 and then having.attacked.AP on disk.ACC suddenly end.INS broom.GEN
razbila ego vdrebezgi. (Bulgakov)
 broke.SG.FEM him.ACC to.pieces
 'She forced the obedient broom back, flew aside, and then, suddenly having at-
 tacked the disk, *smashed* it with the end of the broom.'
- b. Vchera ona podmetala pol i kontsom shchetki
 yesterday she swept.SG.FEM floor.ACC and end.INS broom.GEN
razbila steklo.
 broke.SG.FEM glass.ACC
 'Yesterday, when she was sweeping the floor, she broke the window with the end
 of the broom.'

The role Means is usually changed into the role Patient as well, as shown in (19):

- (19) a. ... potom komu-to stalo liubopytno, chto budet,
 then somebody.DAT became.SG.NEUT interesting what.SG.NOM will.3SG
 esli *zalit'* eto vodoi. I *zalili*.
 if to.pour this.ACC water.INS and poured.PL
 '... then someone became interested in what would happen if water was poured
 over it. And they did *pour* water over it.' (Strugatskii and Strugatskii)
- b. On zabyl zadernut' zanavesku i *zalil* ves' pol
 he forgot.SG.MASC to.draw curtain.ACC and poured.SG.MASC all floor.ACC
 vodoi.
 water.INS
 'He forgot to draw the curtain and *poured* water all over the floor.'

The change of roles of peripheral participants when the meaning of the action is extended to the meaning of the happening is consistent with the loss by the former Causer of the components that made its characteristics more detailed. The Instrument and the Means are much more specialized roles than the Patient, because they are certain types of the Patient. So, when the roles of the Instrument or the Means are changed into the role of the Patient, the roles of these participants, as well as of the former Causer, become as generalized as possible. This suggests that the derivation of happenings from actions is always accompanied by the **generalization** of the explication.

On the surface level it is reflected in the diathesis change (Paducheva, 1998), due to which a peripheral participant becomes an optional one and goes off screen, as in (20), where the Instrument, the ball, is missing:

- (20) Vchera mal'chishki igrali na poliane v futbol
 yesterday boys.NOM played.PL on meadow.PREP in soccer.ACC
 i razbili nam steklo.
 and broke.PL us.DAT glass.ACC
 'Yesterday the boys played soccer in the meadow and *broke* our window.'

The third important consequence of the former Causer having been pushed out is the appearance of the inferential components 'Y has been damaged' in the explication, similarly to the derivation of the Object-related happenings.

However, in some instances neither the derivation of a happening with the Subject nor the derivation of an Object-related happening includes all the steps that have been specified above. In particular, the component corresponding to the new Causer may not appear in the lexicographic definition of the happening. At the same time (and, perhaps, for this very reason), the component corresponding to the Agent is not completely pushed out of the definition but simply goes to the background. This can be illustrated by the derivation of a happening from the action described by the verb *vyiti* (lit. 'go out') in example (21):

- (21) a. On shel na Odessu, a vyshel
 he went.SG.MASC on Odessa.ACC but went.out.SG.MASC
 k Khersonu (Russian song)
 to Kherson.DAT
 'He was going to Odessa, but emerged at Kherson'
X went out to Y.
 before t X was acting: moving in some direction <presupposition>
 it caused
 in t X is in the vicinity of Y¹¹ <assertion>
- b. Doroga vyshla k lesu.
 road.NOM went.out.SG.FEM to forest.DAT
 'The road led up to the forest.'

¹¹ This is a simplified definition of the verb *vyiti* (lit. 'go out') satisfying the needs of the present paper. A detailed analysis of this verb and a definition reflecting all the components of its meaning are given in Apresian, 1995c.

X went out to Y.

before t the Observer did not see that X is in the vicinity of Y <presupposition>

the Observer was moving along X <background>

it caused

in t the Observer sees: X is in the vicinity of Y <assertion>

In the definition of the action *vyiti* (lit. 'go out') (21a), the Causer, i.e. the component corresponding to the Agent is 'before t X was acting: moving in the direction of Y'. In the definition of the derived happening *vyiti* (lit. 'go out') (21b), the same component remains, but now it is in the background, whereas the role of the Agent changes into that of the Observer. In both meanings, that of the action and the happening *vyiti* describes one and the same situation; yet in (21a) the speaker presents it as the change of the Agent's location caused by the Agent's activity, whereas in (21b) it is interpreted as a change in the Observer's perception.

Happenings of this kind, namely **perceptual happenings**, are regularly derived on the basis of verbs of motion, such as *pereletet* 'fly over', *podoiti* 'come up', *uiti* 'leave, go away'.¹² E.g.:

- (22) ... poneslas' doroga lugami... i pereletela mostami
 rushed.SG.FEM road.NOM meadows.INS and flew.OVER.SG.FEM bridges.INS
 v raznykh mestakh odnu i tu zhe reku, ostavliaia ee
 in different places.PREP one and that indeed river.ACC leaving.AP her.ACC
 to vpravo, to vlevo ot sebia. (Gogol)
 either to.right or to.left from self.GEN
 '... the road rushed across meadows... and flew over via bridges one and the same river
 in different places, leaving it first on its right and then on its left.'

- (23) Tol'ko ushel nazad gorod, kak uzhe poshli pisat' po nashemu
 only went.SG.MASC back town.NOM as already went.PL to.write on our
 obychaiu chush i dich po obeim storonam dorogi:
 tradition.DAT nonsense.NOM and wilderness.NOM on both sides.DAT road.GEN
 kochki, el'nik, nizen'kie zhidkie kusty molodykh sosen. (Gogol)
 tussocks.NOM fur.trees.NOM low.DIMIN thin bushes.NOM young pine.trees.GEN
 'Hardly had the city gone away to the back, when already nonsense and wilderness
 started appearing on both sides of the road: tussocks, fur trees, low thin bushes of young
 pine trees.'

¹² For a more detailed analysis of these verbs' meanings see Rozina, 1996. Cognitive interpretation of instances of this type can be found in Talmy, 1996.

- (24) Doroga *podoshla* k sadam.
 road.NOM came.SG.FEM to gardens.DAT
 'The road *came up* to the gardens.'

Perceptual happenings do not imply any damage, which is natural, as the change of perception does not affect the integrity of any physical entity.

4.2. Actions as Derivatives of Happenings

In standard language one can seldom find the opposite-directed pattern of semantic derivation from happenings to actions. It is natural, because happenings, as a rule, imply damage. The extension of happenings to actions requires the replacement of the causal component 'something happened' with the component 'X acted with the goal'. In this way, one ascribes to the Subject a purposeful infliction of harm to someone or something, which apparently contradicts the cultural and social norms encoded by standard Russian. The standard Russian language allows for one type of extension of happenings to actions only: the derivation of semiotic actions from happenings. That it is possible to derive semiotic actions on the basis of happenings was indicated by Paducheva (1998) for the verbs of sound production, e.g.:

- (25) a. *Stuknulo* okoshechko kassy, vysunulsia serdityi
 knocked.SG.NEUT window.DIMIN.NOM cash.GEN looked.out.SG.MASC angry
 kassir i zakrichal. (Strugatskii and Strugatskii)
 cashier.NOM and shouted.SG.MASC
 'The window of the booking-office *knocked*, the angry cashier looked out and started shouting.'
- b. Beskudnikov *stuknul* pal'tsem po tsiferblatu,
 Beskudnikov.NOM knocked.SG.MASC finger.INS on watchface.DAT
 pokazal ego sosedu, poetu Dvubratskomu. (Bulgakov)
 showed.SG.MASC him.ACC neighbor.DAT poet.DAT Dvubratskii.DAT
 'Beskudnikov *tapped* the face of his watch with his finger and showed it to his neighbor, the poet Dvubratski.'

This pattern is likely to be of a more general nature. Polysemy of the same kind is characteristic of quite a few verbs of mimics and gesture, in their basic meanings describing spontaneous reactions, e.g.:

- (26) a. – O da, ty ne pokhozh na slabounnogo, – tikho
 o yes you.SG not like.MASC on feeble-minded.ACC quietly
 otvetil prokurator i ulybnulsia kakoi-to strashnoi
 answered.SG.MASC procurator.NOM and smiled.SG.MASC some frightening
 ulybkoi. (Bulgakov)
 smile.INS
 ‘‘Oh, no, you don’t look feeble-minded’’, said the procurator in a low voice and
smiled a frightening smile.’
- b. Mekhaniki pogliadeli na nego, rasseianno emu
 mechanics.NOM looked.PL on him.ACC absent-mindedly him.DAT
 ulybnulis’ i snova sklonilis’ nad bumagoi. (Strugatskii and Strugatskii)
 smiled.PL and again bent.PL over paper.INS
 ‘The mechanics looked at him, absent-mindedly *smiled* at him and bent over the
 paper again.’
- (27) a. Ot ispuga zhenshchiny vskochili i zamakhali rukami.
 from fright.GEN women.NOM jumped.up.PL and waved.PL hands.INS
 ‘The women jumped with fright and *waved* their hands.’
X waved Y.
 before $t < MS$ X was still <presupposition>
 causer| at $t < MS$ something happened
 it caused <assertion>
 the consequence| at MS X is moving Y
- b. Menedzher strashno nakhmurilsia, prizhal palets k gubam,
 manager.NOM severely frowned.SG.MASC pressed.SG.MASC finger.ACC to lips.DAT
 a potom zamakhal na Peretsa rukoi. (Strugatskii and Strugatskii)
 and then waved.SG.MASC on Perets.ACC hand.INS
 ‘The manager frowned severely, pressed his finger to his lips and then *waved* at
 Perets with his hand.’
X waved Y at Z.
 Causer| in MS X acted with the goal <presupposition>
 moved Y
 by this
 Goal/result| X let Z know something
 Z perceived something <inference>

It can be expected that the derivation of semiotic actions from happenings, which works in the opposite direction compared to the derivation of happenings from actions, will include, in contrast to the latter, the **specialization** of meaning explication instead of its generalization. The main step of semiotic actions derivation consists in adding to the explication the component 'X acted with a goal' corresponding to the new goal-oriented Causer, which pushes out of the explication the component corresponding to the non-intentional, non-goal-oriented Causer of the happening. The detailed elaboration of the goal depends on the semantic class of the derived verb. For instance, for semiotic actions the goal is 'to let Z know something'. The semantic role of the participant having a syntactic position of the Subject changes accordingly, so that it becomes the Agent instead of the Patient. But, as I have previously demonstrated in the course of the analysis of meaning extension from actions to happenings, the change of the central component of the explication inflicts changes on the peripheral participants.

The sources of semiotic actions can be happenings of two types, namely happenings with the Subject, as shown in (26) and (27), and Object-related happenings, as shown in (28):

- (28) a. Vzjav shchetku pod myshku, Margarita voshla v
 having.taken.AP broom.ACC under armpit.ACC Margarita.NOM went.SG.FEM in
 pod''ezd, tolknuv dver'iu udivlennogo shveitsara. (Bulgakov)
 entrance.ACC having.pushed.AP door.INS astonished warden.ACC
 'With the broom under her arm, Margarita went through the front door of the
 building, *having pushed* the surprised warden with the door.'
- b. Margarita pod stolom tolknula nogoi mastera. (Bulgakov)
 Margarita undertable.INS pushed.SG.FEM foot.INS master.ACC
 'Margarita *nudged* the Master under the table with her foot.'

If the source of the semiotic action is the happening with the Subject, as in (26) and (27), a new participant appears in the situation described by the derived semiotic action, namely the Addressee, cf. *emu ulybnulis* 'smiled at him' in (26b), *zamakhal na Peretsa* 'waved at Perets' in (27b) and the explications of *zamakhat* in (27).

If the source of the semiotic action is the Object-related happening as in (28), the role of the participant occupying the syntactic position of the Object changes: instead of being the Patient, it becomes the Patient-Addressee, that is, its role becomes more specialized. For the semiotic actions including the component of physical contact, such as *tolknut* 'push', the place of contact is relevant,¹³ as it expresses semiotic information. Therefore, another new participant may appear in the situation, namely the Goal, whereas the verb in this meaning has a new diathesis, which can be called the locative one, cf. *tolknul loktem v bok* 'pushed with the elbow

¹³ This is referred to as 'adapter' in semiotic terminology (Kreidlin, 1999).

into somebody's side'. This diathesis is characteristic of semiotic actions irrespective of their origin, cf. non-derived semiotic actions *pogladil po golove* 'stroked somebody on the head', *potseloval v lob / v guby* 'kissed somebody on the forehead / on the lips' and semiotic actions derived on the basis of physical actions *udaril po litsu / po plechu* 'struck somebody on the face / on the shoulder', etc.¹⁴

A natural explanation of why standard language allows the derivation of semiotic actions from happenings can be suggested along the following lines. The basis for the derivation of semiotic actions are those happenings the consequences of which cannot be a physical contact with the Subject or the Object either destroying them or inflicting on them other kinds of damage. It is such happenings the consequences of which are either surface physical contacts, e.g. verbs of sound, or spontaneous reactions of the Subject, not threatening its physical well-being. In the instances when semiotic actions are derived from the Object-related happenings, implying that the Object is physically affected, the component of damage is irrelevant, as the Subject's goal is the transmission of information, whereas damage, for example, pain as in (28b), is merely the means.

5. THE DERIVATION OF SLANG MEANINGS

The derivation of actions from happenings is a regular pattern of slang semantic derivation. The derived slang actions are not semiotic, cf. slang meanings of the verbs *vzdrognut'*, *naekhat'*, and *tolknut'* cited at the beginning of the paper, as well as *zasvetit' kogo-to* 'expose somebody', 'discover someone's presence and make it known to others against the wish of the former' in slang, *otorvat'sia* 'tear off', 'have a good time' in slang, *smyt'sia* 'wash away', 'disappear unnoticed' in slang, *sliniat'* 'wash off, fade', 'leave' in slang. E.g.:

- (29) Zinaida Mikhailovna pervaiia zasvetila ikh: 'Chto zhe ty –
 Zinaida Mikhailovna.NOM first exposed.SG.FEM them.ACC what indeed you.NOM
 kombiniizon natiianul rabochii, a tufel'ki lakovye
 overalls.ACC pulled.on.SG.MASC working and shoes.ACC lacquer
 ostavil. (Izv., Aug. 4, 1994)
 left.SG.MASC
 'Zinaida Mikhailovna exposed them first, 'Why, you have put overalls on and remained
 in lacquer shoes!'

¹⁴ About the role of predicate frame in determining verb's semantic class see Atkins *et al.*, 1988.

- (30) Osobenno *otorvalis*’ deti, kotorye reshili, chto etot prazdnik
 especially tore.off.PL children.NOM which.NOM decided.PL that this holiday.NOM
 ustroen imenno dlia nikh. (MK, Dec. 29, 1993)
 be.arranged.SG.MASC especially for them.GEN
 ‘The children especially *enjoyed themselves*, they decided the holiday was organized
 specially for them.’
- (31) Poka vse uspokaivali plachushchego malyssha, khoziaika so svoim
 while all.PL.NOM quieted.down.PL crying baby.ACC owner.NOM with her
 zverem potikhon’ku *smylis*’. (SO, № 7 (63), 1997)
 beast.INS quietly washed.off.PL
 ‘While everyone was trying to calm down a crying baby, the owner and her dog quietly
disappeared.’
- (32) Na tom kontse provoda – voobrazhaemaia rodnia, kotoraiia, ne buduchi
 on that end.PREP wire.GEN imaginary kin.NOM which.NOM not being.AP
 duroi, *sliniala* na rodnoi Braiton. (MK, June 11, 1993)
 fool.INS washed.off.SG.FEM on native Brighton.ACC
 ‘On the other end of the wire there is an imaginary kin, which, not being foolish, *left* for
 beloved Brighton long ago.’

The sources of slang actions, as well as of semiotic actions in standard language, can be Object-related happenings (cf. *zasvetit’ plenku* ‘expose film’ – *zasvetit’ kogo-to* ‘expose somebody’) and happenings with the Subject (cf. *pugovitsa otorvalas* ‘a button has torn off’ – *my otorvalis* ‘we have enjoyed ourselves’, lit. ‘we have torn off’). The main step in the derivation of slang actions is the same as in the derivation of semiotic actions from happenings in standard language: it is the replacement of the component characterizing the Causer of the happening by the component characterizing the Causer of the action which is accompanied by the change of the Subject’s semantic role from Patient into Agent. However, there are certain differences as well.

The first difference concerns the component of damage. In standard language, when actions are derived from happenings, the inferential component of damage disappears. When happenings are the base for the derivation of slang actions, this component is retained as an inferential one, as shown in the following example:

- (33) a. Kogda on perebegal ulitsu, na nego *naekhal*
 when he crossed.over.SG.MASC street.ACC on him.ACC ran.over.SG.MASC
 gruzovik.
 truck.NOM
 'While he was crossing the street, a truck *ran over* him.'
X ran over Y.
 exposition| before t < MS X was acting: moving
 X was not in contact with Y <presupposition>
 Causer| something happened
 it caused <assertion>
 X came into contact with Y: suddenly, abruptly <attribute>
 by this X affected Y
 Y has been damaged <inference>
- b. Na nashu firmu *naekhali*.
 on our firm.ACC ran.over.PL
 'Our firm *has been threatened*.'
X ran over Y.
 exposition| before t Y was acting <presupposition>
 X wanted Y to act in a different way <background>
 X performed an action: <assertion>
 affected Y: by words / by force
 Y has been damaged <inference>

The second difference concerns the fate of the peripheral participants. When actions are derived from happenings in standard language, the number of peripheral participants may grow. When slang meanings are derived, the number of peripheral participants is either the same as in the basic meaning or fewer. Actually, what takes place here is incorporation.¹⁵ Cf.:

- (34) a. Pugovitsa *otorvalas'* ot pal'to.
 button.NOM tore.SG.FEM off coat.GEN
 'The button *fell off* the coat.'
- b. My khorosho *otorvalis'*.
 we well tore.off.PL
 'We have greatly *enjoyed ourselves*.'

¹⁵ See Paducheva, 1999 about incorporated participants. More details concerning the role of incorporation in slang derivation are given in Rozina, 1999.

- (35) a. Kraska *sliniala* s tkani.
 color.NOM washed.out.SG.FEM off cloth.GEN
 'The color *has washed out* of the cloth.'
- b. My bystro *sliniali*.
 we fast washed.out.PL
 'We have *left fast*.'

An exception is the slang meaning of *tolknut*, literally 'push', where a new participant, the Counteragent, appears, cf. *tolknut' tachku komu-to*, 'push a wheelcart to somebody', in slang 'sell a car to somebody'.

The third difference, which is especially important from my point of view, concerns the taxonomic characteristics of participants. As has been shown above, when semiotic actions are derived from happenings in standard language, their taxonomic class is not changed. When slang actions are derived from happenings, the taxonomic characteristics of participants change. For instance, in (33b) the participant having a syntactic function of the Subject becomes, as the result of action derivation, a person instead of a non-person; cf. also *otorvat'sia*, *smyt'sia*, *sliniat'*. *Zasvetit'* 'notice somebody' in slang and *tolknut'* 'sell' in slang change the taxonomic class of the Object, i.e. the Object of *zasvetit'* becomes a person instead of a non-person, the Object of *tolknut'* becomes a non-person instead of a person.

An interesting case worth considering with respect to action derivation in Russian general slang is the verb *vozniknut'* 'emerge, start to exist' in its basic meaning. E.g.:

- (36) ... legkie postroiki *voznikali* po utram, chtoby s
 light constructions.NOM emerged.PL on mornings.DAT in.order.to with
 zakhodom solntsa ischeznut'... (Il'f and Petrov)
 sunset.INS sun.GEN to.disappear
 '... light constructions *emerged* in the morning to vanish at sunset...'

Among the derived meanings of this verb there is one slang meaning 'keep attracting someone's attention to oneself by continuously expressing one's opinion or by protesting'. E.g.:

- (37) Nedavno otets uvez nesovershennoletnego rebenka vo Frantsiiu.
 recently father.NOM took.SG.MASC underage child.ACC into France.ACC
 A k materi podoslal dobrykh molodtsev prigrozit',
 and to mother.DAT sent.SG.MASC good chaps.ACC to.threaten
 chto esli budet *voznikat'*, narvetsia na nepriiatnost'. (Izv., Jan. 19, 1995)
 that if will.3SG to.emerge will.run.into.3SG on trouble.ACC
 'Not long ago a father took an underage child to France. And he sent some chaps to the child's mother to warn her that if she keeps *emerging*, she will be in trouble.'

The latter meaning is a derivative of another, also derived, meaning of *vozniknut'* 'emerge in someone's field of vision'. E.g.:

- (38) Ale! Narezik, gde ty? – zakrichal Kuzin.
 hello Narezik.NOM where you.SG.NOM shouted.SG.MASC Kuzin.NOM
Voznik ofitsiant s unylo podzhatymi gubami. (Dovlatov)
 emerged.SG.MASC waiter.NOM with dolefully pursed lips.INS
 "Hello! Narezik, where are you?" Kuzin shouted. The waiter *emerged* with dolefully pursed lips.'

Several peculiarities of this meaning suggest that it is a perceptual happening. First, the Subject of *vozniknut'* in (38) does not have the role of the Agent, as the verb *vozniknut'*, in contrast to such verbs of movement as *priiti* 'come', *pribezhat'* 'come running', *priekhat'* 'arrive by vehicle', does not describe an action the Subject has performed on its own will. The role of the Subject is the Percept, i.e. the participant of the situation perceived by some other participant having either the role of the Observer, as in the given example, where it has no lexical expression, or the role of the Experiencer if it is lexically expressed, as shown in (39):

- (39) Potom eshche raz sverknulo, i pered administratorom
 then more once flashed.SG.NEUT and in.front administrator.INS
voznik vtoroi – malen'kii, no s shirokimi
 emerged.SG.MASC second.SG.MASC.NOM little but with broad
 plechami, ryzhii, kak ogon'. (Bulgakov)
 shoulders.INS red as fire.NOM
 'Then there was one more flash, and *in front of the administrator emerged* another one, small, but broad-shouldered, with fiery red hair.'

Second, the absence of the Agent among the participants of the situation described by the happening *vozniknut'* does not result in the presence of any other, non-human Causer of the change of state of affairs. The Causer is the background activity of the participant expressed by the Subject, namely its movement, as illustrated by example (40), or the background activity of the moving Observer, as shown by example (41):

- (40) Nu i skachet zhe on po zamerzshej trave, rastvorias' vpot'makh,
 well and gallops indeed he on frozen grass.DAT dissolving.AP in.darkness
voznikaia vdali, osveshchennyi lunoi na beskrainikh kholmakh. (Brodskii)
 emerging.AP in.distance being.lit moon.INS on endless hills.PREP
 'How is he galloping on the frozen grass, dissolving in the darkness, *emerging* in the distance, lit by the moon on the endless hills.'

- (41) Vse emu vspomnilos' srazu: mokraia trava, khleshchushchaia po
 all.NOM him.DAT recalled.SG.NEUT at.once wet grass.NOM beating on
 dvizhushcheisia ikre, po spitsam koles, krug molochnogo
 moving calf.DAT on spokes.DAT wheels.GEN ring.NOM milk
 sveta, vpvivaiushchii i rastvoraiushchii t'mu, iz kotoroi
 light.GEN absorbing and dissolving darkness.ACC from which.GEN
voznikli: to morshchinistaia luzha, to blestiaschii kamushek, to
 emerged.PL or rippled paddle.NOM or glittering stone.DIMIN.NOM or
 navozom obitye doski mosta i, nakonets, vertiaschiasia
 manure.INS covered boards.NOM bridge.GEN and finally rotating
 kalitka... (Nabokov)
 gate.NOM
 'He recalled everything at once: the wet grass beating on his moving calf and on the
 moving spokes of the wheel, the ring of milk-white light absorbing and dissolving dark-
 ness, out of which *emerged*: now a rippled paddle, now a glittering stone, now boards
 of the bridge covered with dried manure, and finally the rotating gate...'

Two other, peripheral, participants of the situation described by the happening *vozniknut* 'also suggest that *vozniknut* 'in the meaning under consideration is a perceptual happening. One of these participants is the initial position, which, in contrast to happenings describing the situations of uncontrolled change of location, is expressed not by nouns denoting some physical space or surface, but by nouns denoting some substance obscuring one's vision, such as *tuman* 'fog', *t'ma* 'darkness', as illustrated by example (41). Another participant is the final position, the expression of which is restricted to the Observer's field of vision, as shown by examples (42)–(45):

- (42) *V komnate *voznikla* sobaka.
 in room.PREP emerged.SG.FEM dog.NOM
 'The dog *emerged* in the room.'
- (43) Zatem na poroge *voznikla* zhena glavnogo redaktora
 then on doorstep.PREP emerged.SG.FEM wife.NOM main editor.GEN
 Zoia Semenovna. (Dovlatov)
 Zoia Semenovna.NOM
 'Then the head editor's wife, Zoia Semenovna *emerged* on the doorstep.'

- (44) Margarita podnialas' s kovrika, i togda v dveriaxh
 Margarita.NOM got.up.SG.FEM from rug.GEN and then in doors.PREP
voznik · Korovev. (Bulgakov)
 emerged.SG.MASC Korovev.NOM
 'Margarita got up from the rug, and then Korovev *emerged* in the door.'
- (45) V protivipolozhnykh domakh v oknakh na osveshchennom
 in opposite houses.PREP in windows.PREP on being.lit
 fone *voznicali* temnye siluety liudei, staravshikhsia
 background.PREP emerged.PL dark silhouettes.NOM people.GEN trying
 poniat', pochemu bez vsiakoi prichiny lopaiutsia stekla
 to.understand why without any reason.GEN burst.PL glasses.NOM
 v novom zdanii Dramlita. (Bulgakov)
 in new building.PREP Dramlit.GEN
 'In the windows of the houses on the other side of the street, against the lit background
emerged dark silhouettes of people who had been trying to understand, why for no ap-
 parent reason glass windowpanes of the new building of Dramlit had been cracking.'

The meaning of the perceptual happening *vozniknut*' can, then, be explicated in the following way:

- (46) *X emerged.*
 before t X wasn't present in Y's field of vision (Y did not see X) <presupposition>
 X moved or Y moved <background>
 it caused <background>
 in t X is in Y's field of vision (Y sees X) <assertion>

As generally in the explications of perceptual happenings, the component of damage is absent from the explication of *vozniknut*'.

In its slang meaning *vozniknut*' is an action, and the Subject (X) has the role of the Agent. The component corresponding to the Subject in the explication is not a physical movement, but 'X acts repeatedly: voices X's opinion or protest'. This meaning of *vozniknut*' is metaphoric, X's activity hinders the psychological state of another participant of the situation, the Observer, and invokes a negative evaluation. So the meaning under consideration can be explicated as follows:

(47) *X voznikaet.*

'*X emerges* [repeatedly].'

the Observer perceives:

<presupposition>

X acts: voices X's opinion or protest

<assertion>

X does it repeatedly

X damages the balance and the activity of others

<inference>

So, though in the lexicographic explication of the perceptual happening *vozniknut* 'the component of damage is absent and cannot be inherited by the derived action *vozniknut*', it still appears in its definition on analogy with other actions derived from happenings in slang.

There are no other actions derived from perceptual happenings in slang, so the example of *vozniknut* is a unique one, yet being an exception, it confirms the conclusion that the general direction of slang derivation is from happenings to actions, and that actions derived by this pattern contain the component of damage in their meanings. Besides, this example suggests that the conclusion that actions derived from happenings in slang inherit from the latter the component of damage can be reformulated into a more general one, namely that in the course of action derivation in slang an inferential component of damage is invoked in their meanings.

There are, indeed, examples of action derivation in slang from verb classes other than happenings that confirm this suggestion. Thus, the component of damage is not inherited but invoked in the meanings of such slang actions as *stuknut* 'inform on someone to the authorities' derived from standard Russian *stuknut* 'knock', *podstavit* 'put somebody in a vulnerable position' from standard Russian *podstavit* 'put something under something', *obut* 'rob one of one's money' from standard Russian *obut* 'put shoes on', etc. The same holds with respect to activities. In slang *shurshat* 'produce actions disturbing others' derived from the meaning of the process *shurshat* 'rustle', as well as in *mochit* 'kill' from *mochit* 'make something wet' in standard Russian, the component of damage is not inherited but invoked.

6. CONCLUSIONS

To sum up, patterns of semantic derivation in slang differ from patterns of semantic derivation in standard language in several aspects. First, the general direction of meaning extension is different. In standard language, the main direction of semantic derivation is from actions to happenings, whereas the derivation from happenings to actions is restricted to one type of actions only, namely to semiotic ones. Furthermore, the direction of semantic derivation from happenings to actions is the only pattern used to derive slang actions. There are no derived happenings in slang.

Second, the derivation of slang actions from happenings differs from the similar pattern of derivation in standard language. Whereas the derivation of semiotic actions from happenings

in standard Russian implies the increase in the number of peripheral participants, in the course of slang actions derivation the number of peripheral participants is reduced. The inferential component of happenings, namely 'damage to the Patient', is retained in slang actions, whereas it is eliminated in the course of the derivation of semiotic actions from happenings in standard Russian. When the component of damage cannot be inherited in derived slang actions, it is invoked in their meanings. This is true not only with respect to the derivation of actions from happenings, but, generally, with respect to slang actions and activities derived from various verb classes.

The conclusions concerning the component of damage in slang derived actions and activities deserves a commentary. General slang reflects and imposes on its users social norms different from those reflected and dictated by the standard language. The sources of Russian general slang, as well as the sources of general slang of other languages, are special jargons of various restricted social groups, such as black market dealers, criminals, drug addicts, etc., hostile to non-members. Entering the "greater world" of general slang, the words of special jargons, nevertheless, drag along with them the norms and moral values of subcultures of their inventors and former speakers, which imply that causing a damage to others is a virtue, as it helps one to defend oneself and to prosper.

* * *

The analysis of ways in which general slang replenishes itself is a subject of great interest in itself, especially as the development of general slang is a living process, which all present-day speakers of Russian are witnesses to and participants of. Yet what makes the study of slang derivation fascinating is that revealing the processes that take place when semantic extension results in slang makes conclusions about patterns of semantic extension in the standard language verifiable.

REFERENCES

- Apresian, Iu. D. (1995a). Glagoly momental'nogo deistviia i performativy v russkom iazyke [Verbs of momentary action and performatives in Russian]. In: *Izbrannye trudy* [Selected papers], Vol. 2, pp. 219–241. Shkola "Iazyki russkoi kul'tury", Moscow.
- Apresian, Iu. D. (1995b). *Leksicheskaia semantika* [Lexical semantics]. Shkola "Iazyki russkoi kul'tury", Moscow.
- Apresian, Iu. D. (1995c). Leksikograficheskii portret glagola *vyiti* [The lexicographic portrait of the verb *vyiti* 'go out']. In: *Izbrannye trudy* [Selected papers], Vol. 2, pp. 485–502. Shkola "Iazyki russkoi kul'tury", Moscow.
- Atkins, S., J. Kegl, and B. Levin (1988). Anatomy of a verb entry: from linguistic theory to lexicographic practice. *International Journal of Lexicography*, 1, 84–126.

- Ermakova, O. P., R. I. Rozina, and E. A. Zemskaja (1999). *Slova, s kotorymi my vse vstrechalis'*: *Tolkovyi slovar' russkogo obshchego zhargona* [Words we have all come across: The explanatory dictionary of Russian general slang]. Azbukovnik, Moscow.
- Fillmore, C. (1968). The case for case. In: *Universals in Linguistic Theory* (E. Bach and R. T. Harms, eds.), pp. 1–88. Holt, Rinehart, and Winston, New York.
- Kreidlin, G. E. (1999). Natsional'noe i universal'noe v semantike zhesta [National and universal in gesture semantics]. In: *Obraz cheloveka v iazyke* [The image of a human being in language], pp. 170–185. Nauka, Moscow.
- Kustova, G. I. and E. V. Paducheva (1994). Slovar' kak leksicheskaja baza dannykh [A dictionary as a lexical database]. *Voprosy iazykoznanii*, № 4, 96–106.
- Levin, B. and M. Rappaport Hovav (1991). Wiping the slate clean: A lexical semantic exploration. *Cognition*, 41, 123–151.
- Paducheva, E. V. (1994). Tipy kauzal'nykh otnoshenii v semanticheskoi strukture leksemy [Types of causal relations in the semantic structure of lexemes]. *Russian Linguistics*, 18, 1–16.
- Paducheva, E. V. (1996). *Semanticheskie issledovaniia* [Semantic investigations]. Shkola "Iazyki russkoi kul'tury", Moscow.
- Paducheva, E. V. (1998). Paradigma reguliarnoi mnogoznachnosti glagolov zvuka [A paradigm of regular polysemy of verbs of sound]. *Voprosy iazykoznanii*, № 5, 3–23.
- Paducheva, E. V. (1999). Printsip kompozitsionnosti v neformal'noi semantike [The principle of compositionality in non-formal semantics]. *Voprosy iazykoznanii*, № 5, 3–22.
- Paducheva, E. V. and R. I. Rozina (1993). Semanticheskii klass glagolov polnogo okhvata [The semantic class of verbs with a completely affected goal]. *Voprosy iazykoznanii*, № 5, 5–16.
- Rozina, R. I. (1978). *Sotsial'naja markirovannost' slova v sovremennom angliiskom iazyke (na materiale amerikanskogo slenga XX-go veka)* [Socially marked words in modern English (on the material of the American XXth century slang)]. Doctoral dissertation. Moscow.
- Rozina, R. I. (1996). O nekotorykh proizvodnykh znacheniiakh glagolov peremeshcheniia v russkom iazyke [On some secondary meanings of Russian verbs of movement]. *Moskovskii lingvisticheskii zhurnal*, № 2, 352–360.
- Rozina, R. I. (1999). Semanticheskie protsessy pri obrazovanii zhargona [Semantic processes accompanying slang derivation]. In: *Slova, s kotorymi my vse vstrechalis'*: *Tolkovyi slovar' russkogo obshchego zhargona* [Words we have all come across: The explanatory dictionary of Russian general slang] (O. P. Ermakova, R. I. Rozina, and E. A. Zemskaja, eds.), pp. XXVIII–XXXV. Azbukovnik, Moscow.
- Rozina, R. I. and E. A. Zemskaja (1994). O slovare sovremennogo russkogo zhargona: Printsipy sostavleniia i obraztsy slovarnykh statei [About the dictionary of modern Russian slang: Lexicographic principles and specimens of entries]. *Rusistika*, № 1–2, 96–112.
- Talmy, L. (1996). Fictive motion in language and 'ception'. In: *Language and Space* (P. Bloom, M. A. Peterson, L. Nadel, and M. F. Garrett, eds.), pp. 211–276. MIT Press, Cambridge, Mass.
- Wierzbicka, A. (1980). *Lingua Mentalis*. Academic Press, Sydney.

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THE COMMUNICATIVE FUNCTION OF THE HUNGARIAN ADVERBIAL MARKER *MAJD* ‘LATER ON, SOME TIME’

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1. INTRODUCTION

This paper offers a pragmatic account of the use of the Hungarian adverbial marker *majd* with respect to utterances referring to the future. Future events are necessarily potential and are often associated with hypotheticality (Comrie, 1985). It is also well known that future tenses can convey meanings of intention, volition, prediction, uncertainty, etc. According to Frawley (1992: 356): “the future tense is much more connected to the unknown. As a consequence, the future more often than not fails to express pure futurity and is instead bound up with modality and the expression of belief and possibility”.

We can use various linguistic devices that provide information on when approximately the event in a given utterance is to be realized. The Hungarian adverb *majd* can be said to fulfill such a linguistic function, cf. (1).

- (1) *Majd (holnap) elmesélem, hogy mi történt.*
later.on (tomorrow) tell.DEF.1SG¹ that what.NOM happened.INDEF.3SG
‘(Tomorrow) I’ll tell you, what has happened.’

Within the relevance theoretical framework (Sperber and Wilson, 1986, 1995) adopted here, we can address the question whether *majd* encodes conceptual or procedural information,

¹ The abbreviations used in the glosses throughout this paper are the following: 1 – first person, 2 – second person, 3 – third person, ACC – accusative, COND – conditional, DAT – dative, DEF – definite (conjugation), FUT – future, ILL – illative, IMP – imperative, INDEF – indefinite (conjugation), INS – instrumental, NOM – nominative, PFX – prefix, PL – plural, SG – singular, SUB – sublativ, SUP – superessive, TER – terminative.

the former being linguistically encoded information contributing to building up conceptual representations, while the latter serves to constrain the inferential interpretation of conceptual representations (Blakemore, 1987).

Utterance interpretation is governed by a communicative principle, the principle of relevance. Here I refer to the second (communicative) principle of relevance (cf. Postface, Sperber and Wilson, 1995). A proposition can be considered optimally relevant if it yields enough contextual effects in which new pieces of information can interact with the hearer's existing assumptions about the world with the least processing efforts possible. In an interaction between new and old information, new items can convey cognitive effects in three different ways: adding new information to existing beliefs, strengthening old assumptions or eliminating them. With the help of various linguistic devices encoding procedural information, the search for communicated assumptions relevant to the addressee can be narrowed down. They instruct the addressee how to process a given utterance and can help to reveal the speaker's propositional attitude. These linguistic elements do not contribute to the proposition expressed; rather they encode information about conceptual representations to be used in inferential processing, thus helping the addressee to identify the speaker's communicative intentions in utterance interpretation. According to relevance theoretic accounts, context is not something given in the course of a discourse, but choosing the right context is part of the interpretation process. Consider the following examples:

- (2) a. Egyedül is vezethetsz majd, ha lesz
 alone too can.drive.INDEF.2SG later.on if be.FUT.INDEF.3SG
 elég gyakorlotod.
 enough your.practice.NOM
 'You can also drive alone, when you have enough practice.'
- b. Egyedül is vezethetsz, ha lesz
 alone too can.drive.INDEF.2SG if be.FUT.INDEF.3SG
 elég gyakorlotod.
 enough your.practice.NOM
 'You can also drive alone, when you have enough practice.'

The appearance of *majd* in (2a) does not add anything to the semantic representation of the sentence, but offers an additional clue to the addressee that the proposition in the conjunct *majd* stands with *is* to be realized at some later time in the future. The speaker's selection of a particular future time expression can save processing cost by constraining the contextualization. Compare it with (2c) where an adverbial phrase makes this future time even more specific:

- (2) c. Egyedül is vezethetsz néhány hét múlva,
 alone too can.drive.INDEF.2SG a.few week.NOM in
 ha lesz elég gyakorlatod.
 if be.FUT.INDEF.3SG enough your.practice.NOM
 'You can also drive alone in a few weeks, when you have enough practice.'

It would also be quite normal to combine the two adverbs of time: *majd néhány hét múlva* 'later on in a few weeks', emphasizing the speaker's communicative message that although the event in question cannot be effected at the time of the utterance, there is a strong intention that it is going to happen in the specified period of time in the future.

In the present paper I am going to discuss the communicative role of *majd* and try to show that this adverb of time not only signals the postponement of an event in the flow of time, but also gives an indication of the speaker's propositional attitude, thus conveying procedural information to be used in utterance interpretation. *Majd* as a one-word utterance does convey some conceptual meaning, as well, that can be paraphrased in English as *later (on)*, *afterwards*, or *some time/day in the future*, *then*, but none of these expressions covers the procedural meaning of *majd*. It is a characteristic feature of pragmatic markers that they are difficult to translate or to find an appropriate gloss in other languages. In the case of *majd* it is very often simple future tense, eventually with an adverb of time referring to the future, that is used in paraphrasing.

In the major part of this article (Sections 2 and 3) I am going to argue that the adverb *majd* indicates that a certain state of affairs described in the proposition expressed will take place some time in the future. Signaling this intention or possibility, *majd* also conveys a certain moderating effect towards the hearer. Sections 4 and 5 offer a brief analysis of the two other functions of *majd*. In Section 4, *majd* is presented in a connective role indicating temporal order between two or more subsequent events. And finally in Section 5 *majd* is described as an adverb signaling approximation, estimates that are not exactly right, but nearly so, or actions that almost took place but did not get realized after all.

2. MAJD INDICATING POTENTIALITY

The semantic content of lexical items referring to the future has been investigated by several linguists. Haegeman (1989) argues that both *will* and *be going to* encode procedural information constraining the inferential process of the utterance they occur in. The main difference between these two items according to Haegeman's analysis is that while *be going to* signals that the proposition it occurs with is relevant if the utterance is processed against a present context, *will* suggests that the relevant context is future. "The contrast is one that comes into play at the level of contextualization of the utterance, since these various expressions of future

time contain processing instructions" (Haegeman, 1989: 305). Nicolle (1997) on the other hand suggests that the semantics of both forms concerns potentiality rather than time. *Majd* cannot be considered as the Hungarian counterpart of either *be going to* or *will*, but it imposes constraints on the processing of the proposition it is associated with in a similar way.

The use of *majd* very often suggests a conditional state of affairs, which may, (4), or may not, (3), be communicated verbally.

- (3) Majd jövőre elutazunk Ausztráliába.
 some.time next.year travel.INDEF.1PL Australia.ILL
 'Next year we'll go to Australia.'
- (4) Majd jövőre, ha Laci bácsi meghív,
 some.time next.year if Laci.NOM uncle.NOM invites.INDEF
 elutazunk Ausztráliába.
 travel.INDEF.1PL Australia.ILL
 'Next year, if uncle Laci invites us, we'll go to Australia.'

Given the same background assumption, (3) and (4) convey the same information: We cannot go to Australia now, but it can be done as soon as certain conditions are fulfilled. These conditions are explicitly communicated in (4), while in (3) it is the role of *majd* to help to recover a similar truth-functional constraint. What sort of condition is coded in the use of *majd* is highly context dependent, but there does not have to be any overt linguistic form enabling the addressee to recover the intended propositional form. Context selection is part of the hearer's inferential process, and the speaker can use a procedural clue to instruct the hearer how to constrain the process of selecting the intended context, one that enables the hearer to arrive at an optimally relevant interpretation of the utterance. Consider the following examples:

- (5) a. Telefonálok, ha megtudom az eredményt.
 call.INDEF.1SG if know.DEF.1SG the result.ACC
 'I ring you, if I get to know the result.'
- b. Majd telefonálok, ha megtudom az eredményt.
 later.on call.INDEF.1SG if know.DEF.1SG the result.ACC
 'I'll ring you, if I get to know the result.'

With the use of *majd* the speaker can make it clear for the hearer that the state of affairs described in the main clause will be realized only when the condition is fulfilled, then but not before. (5a) expresses a usual conditional state of affairs that can be paraphrased in the following way:

- (5') a. Akkor telefonálok, amikor megtudom az eredményt.
 then call.INDEF.1SG when know.DEF.1SG the result.ACC
 'I'll ring you then, when I get to know the result.'

Majd in (5b), signals, however, that the speaker does not intend to give a call unless the result is known.

- (5') b. Majd telefonálok, ha megtudom az eredményt.
 later.on call.INDEF.1SG if know.DEF.1SG the result.ACC
 'I'll ring you, if (and only if) I get to know the result.'

What conditions should be realized in order to satisfy the truth conditions of the *majd*-proposition is frequently unspecified, unimportant or even unknown by the speaker herself (6).

- (6) a. Majd beszélünk.
 some.time talk.INDEF.1PL
 'We'll talk.' / 'Keep in touch.'
- b. Majd hívlak.
 some.time call.INDEF.1SG
 'I'll call you.'

Utterances like (6a) and (6b) can be regarded as idiomatic phrases for saying good-bye, such as the English *See you later*.

The reference to the future in an utterance modified by *majd* is not to be associated with the speaker's promising to behave in the manner described, rather it is meant to signal that the action is postponed to a later time, perhaps an indefinitely long time ahead which also includes the possibility of 'never'.

- (7) A: Ma biztos nyerek a lottón.
 today sure win.INDEF.1SG the lottery.SUP
 'Today, I am sure to win the lottery.'

- B: Majd ha fagy, s hó lesz nagy!
 some.time if freezes.INDEF and snow.NOM be.FUT.INDEF.3SG big
 'When hell freezes over.'

An utterance semantic representation modified by *majd* is meant to be processed as representing a potential state of affairs. As mentioned above, potentiality and future reference are

closely connected. However, the speaker can increase the degree of probability by adding an adverb of time to the otherwise rather indefinite future indicated by *majd*.

- (8) a. Holnap elmegyek vásárolni.
tomorrow go.INDEF.1SG to.shop
'Tomorrow I am going shopping.'
- b. Holnap majd elmegyek vásárolni.
tomorrow some.time go.INDEF.1SG to.shop
'Tomorrow I am going shopping.'

There is a natural connection between future events and present context. Present intention, cause can lead to future activities. While (8a) is a report of an intention, (8b) can be interpreted as the speaker's opinion of the state of affairs: 'if today I have no time / don't feel like it / etc. I can do it tomorrow', which implies that the speaker will not go shopping on the day of the utterance. It is rather a postponement of the event described in the proposition. *Majd* indicates that the state of affairs represented by the proposition it modifies can be realized at some time in the future, and at the same time it constrains the inferential process by indicating that the proposition expressing the event cannot take place at the time of the utterance, but later, namely tomorrow.

The future point or period of time is often mentioned in the *majd*-sentences (9), even though sometimes the reference to the future can be quite vague, remote, or non-committal (10). This is especially true if the speaker's actual communicative intention is to give a negative response (in an attempt to avoid an open conflict, or too much damage to the interlocutor's face). Though it greatly depends on the context, (11) can be interpreted as an indication that the speaker would rather not comply with A's indirect request either now or at any later time.

- (9) Pénteken majd elmegyek abba a könyvesboltba,
Friday.SUP some.time go.INDEF.1SG that the bookshop.ILL
amelyet ajánlottál.
that.ACC recommended.2SG
'On Friday I am going to the bookshop you recommended.'
- (10) Majd máskor megcsinálom.
later another.time do.DEF.1SG
'I will do it another time.'

- (11) A: Mikor látogatod meg az anyósod?
 when visit.DEF.2SG PFX the your.mother.in.law
 'When are you going to visit your mother-in-law?'

B: Majd.
 some.time.later
 'Some time later.'

Although the speaker can claim the postponement of a certain task to a later time: tomorrow in (8), Friday in (9), or to a rather indeterminate point in time (10), sometimes it can reach an extreme point that is never. This seems to be especially true when *majd* is used as a one-word utterance.

In everyday conversation, *majd* may be used as a means of polite refusal. Packing the refusal in a way that a certain event is delayed to some time in the remote future can make the refusal less awkward.

- (12) A: Csinálj valamit ezzel a sok könyvvel, mert
 do.IMP.INDEF.2SG something.ACC that the many book.INS because
 elfoglalja a fél szobát.
 takes.DEF the half room.ACC
 'Do something with these books, because they take up half of the room.'

B: Jó, majd összepakolom.
 good some.time pack.DEF.1SG
 'Okay, I'll tidy them up later.'

Having (12) in mind, one might truly raise the question of what linguistic meaning is actually encoded by *majd*, the placement in the future of the event described, or the information that the truth conditions cannot be satisfied at the time of utterance (and maybe never).

The same can be said about utterances intended to be understood as a menace (13a, b).

- (13) a. Majd adok én neked!
 later give.INDEF.1SG I you.DAT
 'You're going to get it!'
- b. Majd visszakapod te még ezt!
 some.time get.DEF.2SG you.NOM still this.ACC
 'You'll pay for this!'

3. THE EXCLUSIVE ROLE OF *MAJD*

Majd conveys two main ideas: on the one hand, the event the proposition *majd* occurs with cannot come into being (for one reason or another) at the time of the utterance; on the other hand, *majd* indicates an intention that it can happen some time later in the future. The expected time of the event is often mentioned in the utterance excluding other time references. The truth value of the *majd*-modified sentence is left unaffected by the use of *majd*. The function of the adverbial marker is to emphasize prior intention (14b) or to draw the addressee's attention to a specified reference point (15b), excluding other possibilities.

- (14) a. Azt ígérte, hogy meglátogat.
 that.ACC promised.DEF.3SG that visits.INDEF
 'He promised to visit me.' (e.g. at a specific point in time to be determined in context)
- b. Azt ígérte, hogy majd meglátogat.
 that.ACC promised.DEF.3SG that some.time visits.INDEF
 'He promised to visit me.' (some time indeterminate)

What happens in (14b) is that *majd* instructs the addressee that the proposition should be processed in a context which is sufficient to conclude that the promised visit is to take place at an indeterminate point of time after a certain temporal reference point. Observe the change in utterance interpretation caused by the appearance of the time adverb *now*.

- (15) a. Azt ígérte, hogy most meglátogat.
 that.ACC promised.DEF.3SG that now visits.INDEF
 'He promised to visit me now.'
- b. Azt ígérte, hogy majd most meglátogat.
 that.ACC promised.DEF.3SG that some.time now visits.INDEF
 'He promised that this time he surely will visit me.'

Putting the adverb *now* in the preverbal focus position, as in (15), the speaker can indicate that there could have been previous plans for the visit in question, but so far they have not been realized. With the exclusive role of *majd*, the speaker can make it more evident that even though previous attempts failed, this time they can succeed.

It is beyond the scope of this paper to discuss the challenging questions of Hungarian word order, but since *majd* can occur both in the topic and the comment part of a sentence, a few remarks must be made. Hungarian is said to be a language with a 'free' word order.

However, ample literature in this field (e.g. É. Kiss, 1987; Kálmán and Rádai, 1998) has shown that the seemingly free order of syntactic constituents places constraints on the information structure of a given utterance. This much discussed freedom has its costs and benefits. Concerning the grammatical functions the sequence of words may be free, but as far as the pragmatic roles are concerned the order of the constituents in a sentence is highly dependent on the communicative function, the sentence is aimed to fulfill. Furthermore, mention must be made of the important role that accentuation plays in the interpretation of each utterance (16), where capitals signify accented items. Which of these sentences (16a–h) a speaker would choose of course varies according to the conversation antecedents. But no matter whether the topic of the conversation is that those people are *coming* (16d–f), those people are *the others* (16g–h), or when (16a–c) they are acting, with *majd* the speaker signals that it is going to happen at a later time, in a short while as it is specified in the text. Depending on the circumstances, *majd* can also have a calming, comforting affect: ‘Don’t worry, they are coming’ (16).

(16) a. NEMSOKÁRA jönnek majd a többiek is.
soon come.INDEF.3PL some.time the others.NOM too
‘The others are coming soon, as well.’

b. Nemsokára a TÖBBIEK is jönnek majd.
soon the others.NOM too come.INDEF.3PL some.time
‘The others are coming soon, as well.’

c. Majd NEMSOKÁRA jönnek a többiek is.
some.time soon come.INDEF.3PL the others.NOM too
‘The others are coming soon, as well.’

d. Majd jönnek nemsokára a többiek is.
some.time come.INDEF.3PL soon the others.NOM too
‘The others are coming soon, as well.’

e. JÖNNEK majd nemsokára a többiek is.
come.INDEF.3PL some.time soon the others.NOM too
‘The others are coming soon, as well.’

f. JÖNNEK majd a TÖBBIEK is nemsokára.
come.INDEF.3PL some.time the others.NOM too soon
‘The others are coming soon, as well.’

- g. A TÖBBIEK is jönnek majd nemsokára.
 the others.NOM too come.INDEF.3PL some.time soon
 'The others are coming soon, as well.'
- h. A TÖBBIEK is nemsokára jönnek majd.
 the others.NOM too soon come.INDEF.3PL some.time
 'The others are coming soon, as well.'

In all the uses of *majd* we can recover its exclusive role, that is: not now, but later. Even in the case of wishes that are obviously future-oriented, *majd* can activate those immediate contextual assumptions that make it evident to the hearer that the situation described can be factual later, but not now. (17a) also implies that there might be other conditions that must be fulfilled before the proposition in the *majd*-sentence will be true.

- (17) a. Szeretnék majd elmenni Indiába.
 like.COND.INDEF.1SG some.time to.go India.ILL
 'Some day I'd like to go to India.'
- Szeretnék elmenni Indiába.
 like.COND.INDEF.1SG to.go India.ILL
 'I'd like to go to India.'

With *majd* the speaker can indicate that she is quite aware of the fact that now – i.e. at the time of the utterance – the time is not adequate for a trip to India, but there might be a time in the future when the necessary conditions are fulfilled. The utterance without *majd* is a general wish not indicating the speaker's realization that for the time being it is an unrealistic plan.

Though *majd* is more often than not associated with a condition, this word can also serve as an indicator of a promise, intention or hope in general. However, even these propositions can easily be enriched by some contextual assumptions that are connected to certain unspecified conditions: Don't worry, I'll write, when/if I can (18). I don't know the solution now, but we can settle the problem later, one way or another (19).

- (18) Ne aggódj, majd írok.
 no worry.IMP.INDEF.2SG some.time write.INDEF.1SG
 'Don't worry, I'll write.'
- (19) Majd megoldjuk.
 later.on solve.DEF.1PL
 'We'll solve it (one way or another).'

Finally, mention must be made of the important observation that *majd* can only be used with expressions that are under the control of the speaker.

- (20) #Majd beteg lesz.
 later.on sick be.FUT.INDEF.3SG
 ‘He/She will be sick.’
- (21) #Majd esik az eső.
 some.time falls.INDEF the rain.NOM
 ‘It will be raining.’

As *majd* signals that the event of the proposition cannot be executed now, but may be or will be scheduled to a later time, it sounds odd to claim that somebody plans to be sick and for the time being we cannot order rainfalls either. We can of course think of some special contextual background where these utterances may sound all right. Think of a student e.g., feigning sickness, who would like to join his friends instead of going to school. Then someone might suggest (20). These examples also show that the procedural information encoded by *majd* cannot be illustrated by an English auxiliary. I have mentioned previously, in the beginning of Section 2, that the English *be going to* does share some similarities with *majd*, both expressions imposing constraints on the inferential processing and often suggest intention. However, there is at least one major difference, namely the use of *be going to* does not only suggest prior intention, but can occur in a context implying imminence or inevitability.

4. MAJD AS A CONNECTIVE

In the previous sections *majd* was associated with propositions that referred to some situation or action scheduled to some later time in the future. Though the speaker’s commitment can vary and can even be reduced to zero, *majd* always indicates that the state of affairs represented by the proposition can or will take place at a later time. Example (22), on the other hand, refers to some past events, and here as well, we can paraphrase *majd* as *later, then* functioning as a sort of connective between the two conjuncts.

- (22) Elolvasta a levelet, majd lefordította a szöveget magyarra.
 read.DEF.3SG the letter.ACC then translated.DEF.3SG the text.ACC Hungarian.SUB
 ‘She read the letter, then translated the text into Hungarian.’

As *majd* indicates that the event described in the second conjunct is subsequent to the one described in the first conjunct, it functions as a discourse connective. In a relevance-theoretic

account, linguistic devices like *majd* have the task of indicating some inferential process they point to, linking a unit of discourse with a certain context (Rouchota, 1996; Carston, 1998). The connective *majd* shows a number of similarities with the Hungarian connective *és* 'and' conveying temporal and/or causal connotation (22, 23).

- (23) Észrevette a piros lámpát, majd hirtelen fékezett.
 noticed.DEF.3SG the red lamp.ACC then suddenly braked.INDEF.3SG
 'He noticed the red light and jammed on the brakes.'

Although in most cases the conjoined sentences refer to past events, *majd* can also indicate that one event is going to take place after another one in the future. *Majd* encodes sequential ordering of events in narrative structures like the succession-marking indirect anaphor *aztán* 'then' (cf. Fretheim and Vaskó, 1996), but its discourse strategic function is also present when its task is to signal that a certain state of affairs is to be realized at a later point of time in the future (24).

- (24) Tegyük a halat a levesbe, főzzük 8 percig,
 put.IMP.DEF.1PL the fish.ACC the soup.ILL cook.IMP.DEF.1PL 8 minute.TER
 és/aztán/majd fűszerezzük ízlés szerint.
 and/then/afterwards season.IMP.DEF.1PL taste.NOM according.to
 'Add the fish to the soup, cook for 8 minutes, then season to taste.'

It is clear from the instructions of the cookbook (24) that the seasoning should be done after, and only after, the fish is cooked for 8 minutes; in other words, after certain conditions have been fulfilled. Compare it with (25) where the context is not spelled out, and it is the function of *majd* to direct the addressee towards the intended interpretation.

- (25) (Ne felejtst el,) Majd be kell fűszerezni a halat.
 no forget.IMP.DEF.2SG PFX later PFX has.to.INDEF to.season the fish.ACC
 '(Don't forget,) You will have to season the fish.'

Both the communicative function of the adverbial marker *majd* and the connective *majd* do share some core meaning. The proposition *majd* is associated with is to be processed in a context at some later time, some later time in the future or some time later than another event mentioned or referred to.

5. *MAJD* IN ESTIMATIONS

Majd in this role can be considered as the short form of the modifier word *majdnem*, meaning ‘almost, nearly’ (26, 27).

- (26) Úgy meghatódott, hogy majd elsírta magát.
so got.moved.INDEF.3SG that almost cried.DEF.3SG herself.ACC
‘She was so moved that she almost burst into tears.’

- (27) Majd három órát késett a vonat.
nearly three hours.ACC was.late.INDEF the train.NOM
‘The train was nearly three hours late.’

The function *majd* fulfills here is to signal the speaker’s estimation. This judgement or estimate can either refer to an action event that was close to the point of being realized (26), or can point to one particular aspect of an action or give approximate size, value, etc. (27). The modifying *majd* forms one intonation unit with the modified word. In the case of (28), *majd* signals that the person in question was pretty close to fainting when she heard the bad news.

- (28) Majd összeesett, amikormegtudta, hogy neki is
almost collapsed.INDEF.3SG when knew.DEF.3SG that her.DAT too
el kell hagynia a házat.
PFX has.to.INDEF to.leave.3SG the house.ACC
‘She almost collapsed when she learnt that she had to leave the house, too.’

In (29) however, *majd* being slightly stressed functions as a connective. Obviously, this utterance presupposes certain contextual backgrounds, events that preceded the actual faint.

- (29) Majd összeesett, amikormegtudta, hogy neki is
almost collapsed.INDEF.3SG when knew.DEF.3SG that her.DAT too
el kell hagynia a házat.
PFX has.to.INDEF to.leave.3SG the house.ACC
‘Then she collapsed when she learnt that she had to leave the house, too.’

In all cases where *majd* occurs in estimates, it can be substituted for the modifier word *majdnem*. However, the opposite is not true, though the discussion of their relation goes beyond the topic of the present paper.

6. CONCLUSION

I have argued that *majd* has two basic characteristic features. One that imposes a constraint on utterance interpretation by instructing the hearer to constrain the temporal reference to a time that is later than the time of the utterance. Secondly, *majd* implies overtly or by inferential process that for the successful realization of the events that *majd* is associated with, certain conditions have to be fulfilled. These conditions can either be recovered from the context at utterance interpretation or are explicitly communicated. An important characteristic feature of *majd* is that it has a suppressing, moderating effect, indicating to the hearer that the state of affairs described is going to be realized, if something is accomplished beforehand or if certain conditions are fulfilled, etc. The moderating effect is also achieved even if the speaker has a very weak commitment to the truth of the proposition. It is due to the moderating impact of *majd* that utterances like (20) and (21) are felt to be peculiar. On the other hand, providing it with particular contextual backgrounds, like a comforting solution for truancy, the utterance can readily be assigned an interpretation.

In discourse, as well as in narrative structures, the function of *majd* is to signal that the events of the proposition *majd* stands with is/was to be realized at a later point of time, either later in the future or subsequent to another event. Besides indicating temporal sequences, it also provides the hearer with instructions on how to process the utterances in question. *Majd* indicates the speaker's intention or opinion that even though the described event has not been realized at the time of the utterance, it can be done in the future, in this way conveying stimulating effect to the addressee.

REFERENCES

- Blakemore, D. (1987). *Semantic Constraints on Relevance*. Blackwell, Oxford.
- Carston, R. (1998). *Pragmatics and the Explicit – Implicit Distinction*. PhD thesis, University College London.
- Comrie, B. (1985). *Tense*. Cambridge University Press, Cambridge.
- Frawley, W. (1992). *Linguistic Semantics*. Erbaum, Hillsdale.
- Fretheim, T. and I. Vaskó (1996). Lexical properties and pragmatic implications of some markers of temporal succession and simultaneity: A contrastive analysis of Hungarian, Norwegian and English. *Language Sciences*, 18, 791–810.
- Haegeman, L. (1989). *Be going to and will*: A pragmatic account. *Journal of Linguistics*, 25, 291–317.
- Kálmán, L. and G. Rádai (1998). Word order variation in Hungarian from a constructionist perspective. In: *Papers from the Amsterdam Conference* (Approaches to Hungarian 6) (C. de Groot and I. Kenesei, eds.), pp. 149–181. JATE, Szeged.

- É. Kiss, K. (1987). *Configurationality in Hungarian*. Akadémiai Kiadó, Budapest.
- Nicolle, S. (1997). A relevance-theoretic account of *be going to*. *Journal of Linguistics*, **33**, 355–377.
- Rouchota, V. (1996). Discourse connectives: What do they link? *UCL Working Papers in Linguistics* **8**, pp. 199–214.
- Sperber, D. and D. Wilson (1986). *Relevance: Communication and Cognition*. Blackwell, Oxford.
- Sperber, D. and D. Wilson (1995). *Relevance: Communication and Cognition*. 2nd edition with a Postface, Blackwell, Oxford.

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HOW THE LEXICON AND CONTEXT INTERACT IN THE MEANING CONSTRUCTION OF UTTERANCES¹

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1. INTRODUCTION

The present paper is intended to investigate three types of Hungarian utterances. The first type, which was our research topic in several earlier publications (Németh T., 1998, 2000, 2001; Németh T. and Bibok, 1999; 2001; Bibok and Németh T., 2001), includes the utterances with implicit arguments. The main question in connection with this group of utterances is how an argument of a verbal predicate can be left implicit and how the references of lexically unrealized arguments can be recovered. English examples in (1) illustrate this class of utterances, they contain implicit direct object arguments (Groefsema, 1995).

- (1) a. John is eating/drinking.
- b. Paul gave to Amnesty International.

The second group contains utterances with “implicit predicates”. Comparing (2) to (3), one can see that there are implicit predicates in (2) treated by Pustejovsky (1995, 1998) in Generative Lexicon Theory by means of type coercion.

- (2) a. Mary began the book.
- b. The authoress began the book.

¹ We gratefully acknowledge the support of the following grants during the writing of this paper: Károly Bibok of the Bolyai János Research Grant and Enikő Németh T. of the Széchenyi Professorship. We also wish to thank Anna Fenyvesi for correcting our paper.

- (3) a. Mary began to read/write the book.
b. The authoress began to write the book.

In the third class of utterances, neither the predicates nor their arguments are missing, but they are connected to each other by means of a more sophisticated way than simple composition, called, in Pustejovsky's works, co-composition. However, similar problems of the derivation of utterance meaning have also been raised in the framework of two-level conceptual semantics (Bierwisch, 1983, 1996). The examples in (4) serve as an illustration.

- (4) a. The bottle floated in the river.
b. The bottle floated into the cave.

The aims of our study of these three types of utterances are **threefold**. **First**, although these utterance types were studied in different frameworks and different terms, we want to demonstrate that there is a common substantial feature they share. What connects all of them is that both lexical and contextual information has to be considered in the construction of their meaning. This is our starting-point. **Our second aim** is to investigate the role of different types of information in a more subtle way. Each type of utterances will be examined in a unified way, from points of view of both the lexicon and the context (immediate and extended). In this article we do not concentrate on the role of morphosyntactic structure in the utterance meaning construction, although there will be some remarks on this factor when it seems to be necessary. On the basis of how much lexical and contextual information is involved in the composition of utterance meaning, we will conclude that the same three manners of meaning composition can be applied to each type of utterances. Nevertheless, it is worth noting that the unified way of analyzing all the three types of utterances does not mean that their meaning can be represented in only one way. We will also propose alternatives of representations, sometimes looking for the more adequate one. Finally, **our third aim** is to argue that occurrences of these three types of utterances as well as their interpretation possibilities and the hierarchy of the latter ones can be explained by Sperber and Wilson's (1995) universal cognitive principle of relevance.

Our investigation will proceed as follows: We devote to each type of utterances a separate section, in which we thoroughly analyze each group of utterances and offer the same three manners of their meaning composition. The fifth section summarizes the results and recapitulates the three composition manners and identification mechanisms from a single cognitive pragmatic point of view, emphasizing that all the cases of occurrence and interpretation are regulated by the same principle, namely, by the principle of relevance.

2. UTTERANCES WITH IMPLICIT ARGUMENTS

In our former articles on implicit arguments in Hungarian (cf. Németh T., 2001; Németh T. and Bibok, 2001), we defined implicit arguments as arguments which are involved in the conceptual semantic representations of verbs but are lexically unrealized, and whose presence in utterances is demonstrated by lexical-semantic, grammatical, discourse, and/or pragmatic evidence. Such evidence shows that these utterances have null arguments and are not performance errors. This definition makes it possible to consider phonetically not realized, empty or covert pronouns (*pro* and even PRO) as implicit arguments. But, unlike the other types of implicit arguments which are not represented in the syntactic structure of sentences, pronouns without overt phonetic form have an own well-defined position in the syntactic structure. So, the presented characterization of implicit arguments obviously differs from the definition widely accepted in the generative grammatical tradition (cf. Radford, 1997). The fact that there are various types of lexically unrealized arguments is manifested in our definition by referring to various types of evidence for their demonstration. At the same time, the separate mention of the various constraints unambiguously indicates the different character of lexically unrealized arguments. Naturally, the occurrence of such a wide range of implicit arguments and the manners of their identification can only be explained if we take into account various lexical-semantic, grammatical, discourse or pragmatic factors and considering their intensive interaction.

The conclusion of our earlier investigation on implicit arguments (Németh T., 1998, 2000, 2001; Németh T. and Bibok, 1999; 2001; Bibok and Németh T., 2001) is that in Hungarian as in other *pro*-drop languages (e.g. Spanish, Japanese, Korean, Russian, and Warlpiri) verbs can occur with lexically unrealized arguments more frequently than in languages which do not show *pro*-drop phenomena (e.g. English, German, Norwegian, Dutch, and French). Unlike verbs of these latter languages, Hungarian verbs do not vary as to whether they can occur with indefinite/definite implicit arguments at all, but they vary as to in what manner or in what context they can be used with null arguments. An argument can be left lexically unrealized in Hungarian in the following three cases:

- (A) If some part of the conceptual semantic representation of a verb makes it possible to recover the implicit argument in accordance with the principle of relevance.
- (B) If the rest of the utterance in which the argument occurs makes immediately accessible an assumption with the typical interpretation in accordance with the principle of relevance.
- (C) If extending the immediate context of the argument leads to an interpretation which is consistent with the principle of relevance.

In the rest of this section, we will demonstrate these three possibilities, summarizing our previous results concerning implicit arguments as well as enriching them in some new respects and with new analyses.

2.1. The Role of the Conceptual Semantic Representation of Verbs

Studies on implicit arguments in different languages (e.g. Fillmore, 1986; Groefsema, 1995; Saeboe, 1996; Cote, 1997) have shared the opinion that the lexical-semantic properties of verbs are very important for the explanation of possible occurrences of verbs with various null arguments and they predict in some extent whether verbs can occur with lexically unrealized arguments. These lexical properties are marked in the semantic representations of verbs. In Jackendoff's (1990) approach, verb meanings are decomposed conceptual semantic representations. For example, the verb *drink* may have the representation similar to that in (5) (cf. *ibid.*: 53).

- (5) [Event CAUSE ([Thing]_i, [Event GO ([Thing LIQUID]_j, [Path TO ([Place IN ([Thing MOUTH OF ([Thing]_i))])])])])]

According to cognitive approaches, a lexically expressed verb gives access to its conceptual representation in the course of the interpretation, and this representation involves all arguments of the verb, even those arguments which are left implicit in the utterance. Conceptual representations of verbs determine what categories of arguments verbs can occur with. It is manifested in (5) that there are two arguments of the category THING in the conceptual representation of the verb *drink*, they are ordered, and the second THING argument must be LIQUID.² If a verb with such a conceptual semantic representation is included in a sentence, its first THING argument occupies the subject position, and its second THING argument the object position in the syntactic structure of the sentence.

2.1.1. Selection Restrictions. The conceptual representations of verbs also specify what selection restrictions are put on arguments. Verbs may predict their arguments by means of selection restrictions that they must be of a particular type or an instance of a particular type or have a particular property etc.³ For example, like *drink*, the verb *eat* predicts that its second THING argument is FOOD, the verb *read* predicts that its second THING argument is SYMBOLIC REPRESENTATION. Hungarian equivalents of the verbs *drink*, *eat*, and *read* – *iszik*, *eszik*,

² Generally speaking, all this information can be expressed if the lexical representation of predicates involves their argument structure, cf. also Pustejovsky, 1995, 1998.

³ The terms *type* and *instance* refer to super- and subcategories. Type as a supercategory is more general and has only few properties, whereas instance is subordinated to a type and has more specific properties.

The verbs *megetet* 'feed' and *megitat* 'make drink' put a selection restriction on their direct object arguments such that they must be of the type ANIMAL or HUMAN. These verbs also put a selection restriction on their adverbial arguments such that they must be of the type FOOD and LIQUID respectively. In a conversation about farms and the work of people living on a farm, the ANIMAL selection restriction becomes active in the interpretation of (6). Therefore, the reference of the implicit argument cannot be of the type HUMAN. The activated selection restriction and the context yield an adequate interpretation: if the speaker feeds the farm animals or gives them water to drink, then the person called Judit is angry with him/her. So, the implicit direct object argument of the verbs in (6) can be identified with farm animals. This reading is presented in (7). Let us imagine now that the speaker works as a nurse in a daycare or in an old people's home or in a hospital. There are people in these institutions who need feeding or being given to drink. In this context, the selection restriction to be of the type HUMAN becomes active. Thus, the implicit direct object arguments of *megetet* 'feed' and *megitat* 'make drink' in (6) can be identified with babies/children or old or ill people etc. who have to be fed or made to drink as it is presented in (8).

In addition to the verbs mentioned above, many other Hungarian verbs can be used with indefinite implicit objects because of the selection restriction on the type of their second THING argument which is syntactically realizable as an object. (9) contains verbs of this type.

- (9) *eszik* 'eat', *megetet* 'feed', *fal* 'devour', *zabál* 'devour/gobble', *iszik* 'drink', *megitat* 'make drink', *vedel* 'swill', *lát* 'see', *hall* 'hear', *olvas* 'read', *ír* 'write', *fest* 'paint', *főz* 'cook', *süt* 'bake', *mos* 'wash', *vasal* 'iron', *mosogat* 'do dishes', *takarít* 'clean', *varr* 'sew', *kapál* 'hoe', *locsol* 'water', *szánt* 'plow', *vet* 'sow', *kaszál* 'scythe', *arat* 'harvest', *épít* 'build', *fúr* 'drill', *farag* 'carve', *foltoz* 'patch', *stoppol* 'dam', *tereget* 'hang out/up', *szárogat* 'dry', etc.⁶

It is also worth noting that because of the fact that verbs in (9) always have two arguments in their conceptual semantic representations, they differ from intransitive verbs such as *alszik* 'sleep', *szuszog* 'puff', *horkol* 'snore', *sír* 'cry', *bőg* 'bawl', *lélegzik* 'breathe', which are one-argument verbs and can be used with an object only in a very restricted way and only in marked contexts.

A verb can specify not only that its argument is of a particular type, as we have seen in the examples above, but also that it is an instance of a particular type, or that it has a particular property. Analyzing the English verb *return*, Groefsema (1995: 146) maintains that this verb (in its sense of something coming back to where it was before) puts a selection restriction on

⁶ As Alsina (1992: 524) states: "only those verbs that describe an unbounded process (an event that takes place over time and is not inherently delimited), as opposed to a state, a result, or a bounded process, allow UOD [i.e. unspecified object deletion]".

the place that a THING returns to such that it is a place that THING was before. However, this property has been analyzed as a presupposition by Kiefer (1983: 187) with respect to Hungarian *visszaérkezik* 'return'. Thus, the information on the place of the subject's motion can be treated as a selection restriction as well as a presupposition. Saeboe (1996: 204) also claims that selection restrictions can often be considered as presuppositions and vice versa.

2.1.2. Lexical Stereotype and the Prototypical Structure of Implicit Arguments. Several verbs in (9), e.g. *eszik* 'eat', *megetet* 'feed', *fal* 'devour', *zabál* 'devour/gobble', *iszik* 'drink', *megitat* 'make drink', *vedel* 'swill', can occur with implicit arguments not only with the help of a selection restriction on arguments but also of some kind of encyclopedic information on the characteristic manner or goal of action as well as on the prototypical structure of object's type. Such information also influences how a verb can occur with lexically unrealized arguments.

Let us take the verbs *eszik* 'eat', *zabál* 'devour/gobble', *iszik* 'drink', and *vedel* 'swill'.⁷ The conceptual semantic representations of the verbs at stake have to include something more than 'Thing_i CAUSES that Thing_j of the type FOOD/LIQUID GO INTO MOUTH OF Thing_i' at least for two reasons. There is a difference, on the one hand, between the characteristic manner of actions expressed by *eszik* 'eat', *zabál* 'devour/gobble' and *iszik* 'drink', *vedel* 'swill' and, on the other hand, between the characteristic manner of actions expressed by *eszik* 'eat' and *zabál* 'devour/gobble' as well as *iszik* 'drink' and *vedel* 'swill'. Consider (10) and (11) answering the question *Mit csinál Péter?* 'What is Péter doing?'

- (10) a. Péter eszi a levest/joghurtot/kakaót/bólét.
 Péter.NOM eats.DEF the soup.ACC/yogurt.ACC/cocoa.ACC/punch.ACC
 'Péter is eating soup/yogurt/cocoa/punch.'
- b. Péter zabálja a levest/joghurtot/kakaót/bólét.
 Péter.NOM devours.DEF the soup.ACC/yogurt.ACC/cocoa.ACC/punch.ACC
 'Péter is devouring soup/yogurt/cocoa/punch.'
- (11) a. Péter issza a levest/joghurtot/kakaót/bólét.
 Péter.NOM drinks.DEF the soup.ACC/yogurt.ACC/cocoa.ACC/punch.ACC
 'Péter is drinking soup/yogurt/cocoa/punch.'
- b. Péter vedeli a levest/joghurtot/kakaót/bólét.
 Péter.NOM swills.DEF the soup.ACC/yogurt.ACC/cocoa.ACC/punch.ACC
 'Péter is swilling soup/yogurt/cocoa/punch.'

⁷ The differences between the verbs *eszik* 'eat' and *iszik* 'drink' were analyzed in Németh T., 2001 and Bibok and Németh T., 2001.

The soup, yogurt, cocoa, and punch are FOOD and LIQUID at the same time. They can be both eaten/devoured and drunk/swilled. If the second THING argument can be categorized as both FOOD and LIQUID, all four verbs can be used with this argument. First, however, there is a difference between eating and drinking, as well as devouring and swilling. Utterance (10a), i.e. *Péter eszi a levest/joghurtot/ kakaót/bólét* 'Péter is eating soup/yogurt/cocoa/punch', does not mean the same as utterance (11a), i.e. *Péter issza a levest/joghurtot/kakaót/bólét* 'Péter is drinking soup/yogurt/cocoa/punch'. Similarly, utterance (10b), viz. *Péter zabálja a levest/joghurtot/kakaót/bólét* 'Péter is devouring soup/yogurt/cocoa/punch', does not mean the same as utterance (11b), viz. *Péter vedeli a levest/joghurtot/kakaót/bólét* 'Péter is swilling soup/yogurt/cocoa/punch'. Second, there is a difference between eating and devouring, as well as between drinking and swilling. Utterances (10a) and (10b) (*Péter eszi a levest/joghurtot/kakaót/bólét* 'Péter is eating soup/yogurt/cocoa/punch' and *Péter zabálja a levest/joghurtot/kakaót/bólét* 'Péter is devouring soup/yogurt/cocoa/punch') are distinguishable from each other. Also, (11a) and (11b) (*Péter issza a levest/joghurtot/kakaót/bólét* 'Péter is drinking soup/yogurt/cocoa/punch' and *Péter vedeli a levest/joghurtot/kakaót/bólét* 'Péter is swilling soup/yogurt/cocoa/punch') are distinguishable from each other. The difference concerns not only the quantity of FOOD and LIQUID, but it can also be caught in the characteristic manner of eating, devouring, drinking, and swilling. The status of this latter information relating to the semantic representation is not completely clear in the literature. There are various solutions to this problem depending on whether the linguistic knowledge and the encyclopedic knowledge are distinguished or not. But it is indisputable that the semantic representation must be extended by this information, or this information somehow must be added to it. Jackendoff (1990) and Pustejovsky (1995, 1998) do not seem to distinguish the linguistic and encyclopedic information in conceptual semantic representations, so the information on the manner of action must be built in them. The two-level conceptual semantics (e.g. Bierwisch, 1983, 1996), however, distinguishes these two types of knowledge. Thus, the characteristic manner of eating, devouring, drinking, and swilling is captured by the lexical stereotype belonging to the encyclopedic knowledge.⁸ Although Sperber and Wilson (1995) make a distinction between linguistic and encyclopedic information, they treat them in the same way. According to Relevance Theory, the conceptual address of a verb involves three types of information, namely lexical, encyclopedic and logical information. All these can be accessed simultaneously if the conceptual address becomes active. The encyclopedic information on the manner of eating, devouring, drinking, and swilling is added to the lexical information of *eszik* 'eat', *zabál* 'devour/gobble', *iszik* 'drink', and *vedel* 'swill', respectively, in the course of the use or interpretation.

⁸ For the particular use of lexical stereotypes see Gergely and Bever, 1986; Bibok, 1996, 2000a.

In addition to selection restrictions and lexical stereotypes relating to the manner of actions, prototypical structures of object types also constrain the occurrence and identification of implicit arguments. The prototypical structure of categories FOOD and LIQUID, in the conceptual semantic representations of *eszik/zabál* 'eat'/'devour/gobble' and *iszik/vedel* 'drink'/'swill' respectively, must be taken into account when these verbs are used with implicit direct object arguments. Consider first (12), which utterance answers the question *Mit csinál Sándor?* 'What is Sándor doing?'

- (12) a. Sándor eszi/zabálja a szappant.
 Sándor.NOM eats.DEF/devours.DEF the soap.ACC
 'Sándor is eating/devouring the soap.'
- b. Sándor issza/vedeli a szappant.
 Sándor.NOM drinks.DEF/swills.DEF the soap.ACC
 'Sándor is drinking/swilling the soap.'

Although traditional (non-liquid) soap is not what normally belongs to the category of FOOD for mankind, one can conceptualize it as such in two distinct ways. First, for some living beings other than humans – say, for Martians or some fictive living beings – soap can serve as food. Second, soap shares some characteristic properties of food – it is also solid and chewable and has a good smell –, therefore one can categorize it as food (cf. Groefsema, 1995: 152). Naturally, in both cases and in the second case quite obviously, soap can be spoken of as atypical instances of food. As to liquid soap, although it is not a typical FOOD, similarly to traditional soap, it can be categorized as FOOD. Moreover, since it is LIQUID and FOOD at the same time, it can be used with *eszik/zabál* 'eat'/'devour/gobble' and *iszik/vedel* 'drink'/'swill' as in (12) depending on the manner of action.

However, the question *Mit csinál Sándor?* 'What is Sándor doing?' can also be answered with utterances including implicit direct object arguments. Cf. (13a–b).

- (13) a. Sándor eszik/zabál.
 Sándor.NOM eats.INDEF/devours.INDEF
 'Sándor is eating/devouring.'
- b. Sándor iszik/vedel.
 Sándor.NOM drinks.INDEF/swills.INDEF
 'Sándor is drinking/swilling.'

The selection restrictions of verbs *eszik/zabál* 'eat'/'devour/gobble' and *iszik/vedel* 'drink'/'swill' as well as the lexical stereotype concerning the manner of actions ensure somebody

who hears (13a–b) to get an interpretation: ‘Sándor is eating/devouring something that can be eaten (FOOD) and is drinking/swilling something that can be drunk (LIQUID)’. In (13a–b) verbs designate simply the physical activity of eating/devouring as well as drinking/swilling some FOOD/LIQUID stuff. They leave indefinite (being irrelevant) what this stuff is in the particular case. Nevertheless, to get a relevant interpretation, one has to take into account the prototypical members of categories FOOD and LIQUID as well. The speaker communicates by means of (13a–b) that this stuff is specific in some sense, namely, that it is not an atypical food or potable liquid.⁹ But if Sándor is eating soap or he is drinking hydrochloric acid or other non-typical members of the categories FOOD and LIQUID, the speaker – without any context – does not produce (13a–b), since the hearer can access assumptions about non-typical members of categories less easily. The access of atypical members needs more processing effort, and this contradicts the relevance considerations. In these cases speakers produce utterances with corresponding explicit arguments in the same way as they would if they meant the particular (typical) stuff being eaten/devoured or drunk/swilled.

Finally, it is also necessary to remark that the verbs *iszik* ‘drink’ and *vedel* ‘swill’, denoting a habitual or long-lasting activity, have the further specification of ‘drink alcoholic beverages’ which must be added to their semantic representations. Although – as we have seen above – there is a difference between these two verbs, both incorporate into their meanings the direct object argument, i.e. alcohol.

2.2. Implicit Arguments and the Role of Contexts of Utterances

An argument can be lexically unrealized in Hungarian secondly, if the rest of the utterance in which the argument occurs makes immediately accessible an assumption with the typical interpretation in accordance with the principle of relevance. An assumption is immediately accessible (i.e. retrievable in one step) if it is accessible from more than one conceptual address currently accessed. Consider (14)–(16).

- (14) Karácsonyra általában könyveket veszek.
 Christmas.SUB usually books.ACC buy.INDEF.1SG
 ‘I usually buy books for Christmas.’

⁹ Cote (1997: 150–151) comes to quite a similar conclusion about English verb *bake* used with an implicit argument in the utterance like *Joe baked today*: “the object refers to ‘something that you, the hearer, would not think abnormal for Joe to be baking in this context’”. Similar claims are valid for Hungarian verbs *süt* ‘bake’ and *főz* ‘cook’ when they occur without lexically realized objects. Cf. *Mihály süt/főz* ‘Mihály is baking/cooking’. The lexically unexpressed object of *süt* ‘bake’ and *főz* ‘cook’ must be some typical, normal THING for baking and cooking. The selection restriction on the object’s type, i.e. the category BUILDING in the conceptual semantic representation of *épít* ‘build’, has also a prototypical structure (cf. Németh T., 2001).

- (15) A szenvedélyes bélyeggyűjtők gyakran cserélnek.
 the passionate stamp-collectors.NOM often trade.INDEF.3PL
 'Passionate stamp-collectors often trade [stamps].'
- (16) A fegyőrök szigorúan büntetnek.
 the prison.guards.NOM strictly punish.INDEF.3PL
 'The prison guards punish [prisoners] strictly.'

In (14) the direct object argument of the verb *vesz* 'buy' is lexically expressed by the noun *könyv* 'book', but its syntactic dative argument is left lexically unrealized. The conceptual addresses of the verb *vesz* 'buy' and the noun *Karácsony* 'Christmas' make immediately accessible an assumption such as people usually buy presents for Christmas to the other people, namely their relatives, friends, and close acquaintances. This assumption leads one to the relevant interpretation: 'the speaker usually buys books for Christmas to the people who get presents from him/her for Christmas'. Thus, the implicit dative argument can be identified with the speaker's loved ones. If the speaker buys books for Christmas to a person that usually (or typically) does not belong to the people one buys presents for Christmas to, then the dative argument referring to this person has to be lexically expressed as in (17). Similarly, if the speaker thinks of a particular loved one, he/she has to refer to this person explicitly, this person must be lexically realized in the utterance (cf. (18)).

- (17) Karácsonyra általában könyveket veszek az elítélteknek.
 Christmas.SUB usually books.ACC buy.INDEF.1SG the prisoners.DAT
 'I usually buy books for the prisoners for Christmas.'
- (18) Karácsonyra általában könyveket veszek az unokaöcsémnek.
 Christmas.SUB usually books.ACC buy.INDEF.1SG the nephews.DAT
 'I usually buy books for my nephews for Christmas.'

Let us return to the examples in (15)–(16). In (15) the direct object argument of the verb *cserél* 'trade' is left lexically unexpressed, it is syntactically missing. The conceptual semantic representation of *cserél* 'trade' does not contain such information concerning the direct object argument that would restrict the range of the possible entities which this argument can refer to. Thus, accessing the conceptual semantic representation of *cserél* 'trade' alone does not yield an adequate interpretation, the reference of implicit direct object argument cannot be recovered. So, the rest of the utterance has to be taken into account. Encyclopedic information retrievable from the conceptual addresses of the noun *bélyeggyűjtő* 'stamp-collector' and the verb *cserél* 'trade' makes accessible the assumption that stamp-collectors trade stamps in one step. Therefore, the implicit direct object argument in (15) can be identified with stamps. The implicit

argument in (16) can be identified similarly. Conceptual addresses of the noun *fegyőr* 'prison guard' and the verb *büntet* 'punish' make immediately accessible the assumption that prison guards usually punish prisoners. So, the syntactically missing direct object argument refers to prisoners.

Summarizing the interpretation mechanisms of (14)–(18), one can generally establish that the identification of implicit arguments appearing in the second manner relies to large extent on the encyclopedic information stored under conceptual addresses of lexemes occurring in utterances. To put it the other way round, the encyclopedic part of lexical information and the context deeply interact in the meaning construction of this type of utterances.

2.3. Implicit Arguments and the Role of Context Extensions

There are many cases where implicit arguments cannot be identified by considering information in the conceptual semantic representation of verbs or encyclopedic information stored under conceptual addresses of lexemes of utterances as well as their interaction with the utterance context. The third way in which an argument can be lexically unrealized in Hungarian is if extending its immediate (utterance) context leads to an interpretation consistent with the principle of relevance. The utterance context can be extended with the following three types of information (Sperber and Wilson, 1995: 137–142): (i) with information from the immediately observable physical environment, (ii) with information from preceding discourse and 3) with adding the encyclopedic information of concepts already present either in the context or in the utterance being processed. Consider (19)–(21).

- (19) (Two women are chatting in front of a shop-window.)

– Megvegyem ezt a blúzt?
 buy.IMP.DEF.1SG this.ACC the blouse.ACC
 – Előbb próbáld fel!
 first try.IMP.DEF.2SG on
 '– Should I buy this blouse?
 – First try [it] on!'

- (20) (Two sisters are swinging in the playground. Suddenly their father notices an acquaintance and the father turns to the older sister.)

– Szálljál ki és lökjed!
 get.IMP.INDEF.2SG out and push.IMP.DEF.2SG
 '– Get out and push [your sister]!'

- (21) (A customer would like to pay with a bank card in a supermarket. The shop-assistant turns the card reader to the customer and asks him/her:)
- Legyen szíves, üsse be!
please punch.IMP.DEF.3SG in
'– Please, punch [your PIN-code] in!'

In (19) the direct object argument of the verb *felpróbál* 'try on' is not phonetically realized, it behaves as a zero anaphor, it is coreferential with the noun *blúz* 'blouse' in the previous utterance. To recover its reference the hearer has to extend the immediate context with the information from the previous discourse. In this case of extending the context, the identification of implicit arguments is exactly like a grammatical zero anaphor resolution. This process involves, mainly, decoding procedures which are commanded by the properties coming from the *pro*-drop characteristics of Hungarian and from the functions of the indefinite and definite conjugations. However, the results of psycholinguistic experiments (cf. e.g. Pléh's and his colleagues' experiments (Pléh, 1994)) have demonstrated that the grammar cannot describe every *pro*-form relation, and further, information coming from the encyclopedic and pragmatic knowledge can overwrite grammatical rules. These results provide evidence showing that the zero anaphor resolution may involve not only grammatical (decoding) procedures, but also inferential processes. (For more details see Németh T., 2001.)

In (20) one needs to extend the immediate context with information from the observable physical environment to recover the reference of the implicit direct object argument of the verb *lök* 'push': the father's younger daughter is sitting in the other swing. Thus, the implicit argument can be identified with younger sister. And finally, in (21) one has to extend the context with information from the encyclopedic knowledge concerning the use of a bank card, e.g. with an assumption such that every bank card has a special PIN-code that is necessary for its use. So, the reference of the direct object argument of the verb *beüt* 'punch in' can easily be identified with the PIN-code. Unlike the identification of the implicit argument in (19), the recovering of the lexically unrealized references in (20) and (21) involves mostly inferential processes.

Finally, it is worth noting that it can also be the case that the extended context makes possible more than one interpretation for implicit arguments. The speaker has the intention to produce such a verbal stimulus to which the hearer can order the intended pragmatically acceptable interpretation. The pragmatically acceptable interpretation is the first interpretation which is consistent with the principle of relevance (Blakemore, 1992: 74). If two or more identifications are relevant for a lexically unrealized argument, then one has to examine which of these identifications will be more relevant, i.e. which one yields more contextual effects, and that one will be the adequate identification. Usually, extending the context with information from the encyclopedic knowledge or observable physical environment may lead to the

possibility of multiple identifications of implicit arguments. In these cases, the hearer asks the speaker to confirm whether his/her identification is correct (for more details see Németh T., 2001).

2.4. A Classification of Hungarian Verbs According to their Usage with Implicit Arguments

The three possibilities in which verbs can occur with implicit arguments, characterized in the previous sections, do not mean either that every verb can be used in only one manner or that every verb can be used in all the three manners. From this point of view, Hungarian verbs belong to three groups, as outlined below.

Group 1 contains verbs that can be used with implicit arguments in all the three manners. The verbs of this type are as in (9). **Group 2** includes verbs which can be used with implicit arguments in both the second and the third manners. Verbs like *vesz* ‘buy’, *cserél* ‘trade’, and *büntet* ‘punish’ in (14)–(16) as well as other ones such as *ad* ‘give’, *kap* ‘get’, *gyűjt* ‘collect’, *oszt* ‘distribute’, *juttat* ‘distribute’ (see Németh T., 2000, 2001) belong to this type. The verbs of **Group 3** can occur with implicit arguments only in the third manner, i.e. only if the implicit arguments can be identified by means of extending their immediate contexts. Of many verbs of Group 3 we have only considered *felpróbál* ‘try on’, *lök* ‘push’, and *beüt* ‘punch in’ in this paper (see (19)–(21)). More verbs (*tologat* ‘push’, *tesz* ‘put’, *lakik* ‘dwell’, *bánik* ‘use’, *elolvas* ‘read’, *tűnik* ‘seem’, *bízik* ‘trust’, *elfelejt* ‘forget’, *otthagyt* ‘leave’, *beletanul* ‘learn’) can be found in Németh T., 2001.

The indefinite/definite conjugations also have some influence on the occurrences of Hungarian verbs with implicit arguments. Without going into details, we briefly mention the main results of our study devoted to this special morphosyntactic feature of Hungarian (Németh T. and Bibok 2001). In principle, the indefinite conjugation allows verbs to occur with implicit arguments in all three manners. Of course, real occurrences depend on which group a verb belongs to. The definite conjugation requires the salient presence of an entity in the context. This is the reason why the verbs conjugated for the definite form can occur with implicit arguments only in the third manner independently of which group verbs at stake belong to.

To summarize, if a verb can be used with an implicit argument in the first manner, it can also occur with it in the second manner, and – since an implicit argument of a verb of the second type can also be identified in the third manner – in this latter manner as well. Although there are verbs which can be used with implicit arguments only in the third manner, this is the manner which is suitable for every Hungarian verb for use with lexically unrealized arguments.

On the basis of our analyses and theoretical considerations in previous sections, the following claims seem to be verified. First, the conceptual semantic representation of the verbs of Group 1 is rich enough to identify implicit arguments because these verbs put selection restrictions on the type or property of their arguments. The conceptual semantic representation of the verbs of Group 2 is poorer and that of the verbs of Group 3 is even poorer. Therefore, the relevant interpretation of the utterances with implicit arguments can be reached by taking into account larger and larger contexts moving from Group 1 to Group 3. Second, if a verb is inflected for the definite conjugation, then its implicit argument can be recovered only in the third manner. However, if a verb is inflected for the indefinite conjugation, then one tries to find the necessary information to construct the adequate interpretation, first, in the conceptual-semantic representation of the verb, second, in its immediate context and, third, in its extended context. Finally, this order of interpretation mechanisms predicts that if the conceptual semantic representation of a verb in the second or third group becomes rich enough to identify the lexically unrealized argument by its own means alone, the verb may move to Group 1. The conceptual semantic representation of a verb can be enriched by means of conceptualization and grammaticalization of contextual elements. Consequently, the lexicon and the context also interact in this latter respect.

3. UTTERANCES WITH IMPLICIT PREDICATES

The second type of utterances to be investigated contains those with implicit predicates. To begin with, consider the Hungarian examples in (22), which correspond to (2) from the Introduction, in all the relevant aspects.

- (22) a. Mária elkezdte a könyvet.
 Mária.NOM began.DEF.3SG the book.ACC
 'Mária began the book.'
- b. Mária elkezdte olvasni a könyvet.
 Mária.NOM began.DEF.3SG to.read the book.ACC
 'Mária began to read the book.'

To express clearly the semantic relation between the occurrences of the verb *elkezd* 'begin' in (22a) and (22b), one can start from the assumption that *elkezd* 'begin' always needs a direct object with the semantic type of events. Furthermore, one can propose a rule of **type coercion**, which provides for the direct object argument of *elkezd* 'begin' to belong to the semantic type of events, independently of the form of its syntactic realization (cf. Pustejovsky, 1995, 1998). However, the question arises: Where does the relevant event, necessary for the semantic

well-formedness of (22a), come from? According to Generative Lexicon Theory, this information can be encoded in the lexical representation of the noun *könyv* 'book'.

3.1. The Role of the Conceptual Semantic Representation of Nouns

Pustejovsky (1995: 61) characterizes the generative lexicon as a computational system involving at least the following four levels of representations: argument structure, event structure, qualia structure, and lexical inheritance structure. Since the qualia structure is at the core of the generative properties of the lexicon, there is a need to deal with it in a more detailed way. It consists of four generative factors capturing how humans understand objects and relations in the world, and was inspired ultimately by Aristotelian *aitia*:

- (23) a. FORMAL: the basic category that distinguishes an object within a larger domain,
- b. CONSTITUTIVE: the relation between an object and its constituent parts,
- c. TELIC: the object's purpose and function,
- d. AGENTIVE: factors involved in object's origin or "coming into being".

Let us illustrate the role that the qualia structure plays in the semantic representation of lexical items. First, consider the noun *food*, the metalinguistic counterpart of which (FOOD) has already appeared in the previous section in connection with the selection restriction put on their arguments by the verbs *eszik* 'eat', *megetet* 'feed', *zabál* 'devour/gobble', etc. One obviously understands the concept of food as something paraphrasable by dictionary definitions such as 'edible substance'. All that seems to be required to capture the meaning of the noun *food* is some characterization of the relation between the property of substance and that of edible, relative to a class of certain individuals. One might simply conjoin or unify these properties to result in a specific intersective property of edible substance. Contrary to this, Pustejovsky gives the use of substance an explicit representation, distinct from the material aspect of *food*, associating these with the TELIC and FORMAL roles, respectively. Consider (24), which can be referred to as a unified type and in which the orthogonal values of the qualia roles can be analyzed as members of logical conjunction:

- (24)
$$\left[\begin{array}{l} \mathbf{food} \\ \text{ARGSTR} = \left[\text{ARG1} = x : \text{substance} \right] \\ \text{QUALIA} = \left[\begin{array}{l} \text{FORMAL} = x \\ \text{TELIC} = \text{eat} (e, y, x) \end{array} \right] \end{array} \right]$$

On the basis of (24) one can think of *food* as a word having an argument structure (ARGSTR) with an argument x which is substance and also having a qualia structure with a purpose (TELIC) consisting in eating this substance (the e is an event variable).

Now turn to the examples with nouns *lunch* and *book*, which are taken from Pustejovsky's paper (1998: 292).

- (25) a. I have my lunch in the backpack.
b. Your lunch was longer today than it was yesterday.
- (26) a. Mary doesn't believe the book.
b. John sold his books to Mary.

Unlike *food*, the noun *lunch* refers to either a substance as in (25a) or an event as in (25b). The noun *book* also has a meaning variation, i.e. it denotes two different things: in (26a) it refers to an information structure and in (26b) to a physical object. How can these different senses be treated as a single type? The only way is to construct a complex type which connects them.¹⁰ If x , i.e. the first argument variable of *book* equals with information and y , i.e. the second argument variable of *book* equals with a physical object, then the complex (dot) type can be construed as $x.y$. The relation between the two senses is also the part of semantics of this complex type. For nouns such as *book* there is a relation of "containment", i.e. *hold* (y, x), encoded as the FORMAL quale value. Considering all these details and also the purpose and origin of a book, the noun *book* and its Hungarian equivalent *könyv* have the following representation in the generative lexicon:

- (27)
$$\left[\begin{array}{l} \text{book/könyv} \\ \text{ARGSTR} = \left[\begin{array}{l} \text{ARG1} = x: \text{information} \\ \text{ARG2} = y: \text{phys_obj} \end{array} \right] \\ \text{QUALIA} = \left[\begin{array}{l} \text{information.phys_obj_lcp} \\ \text{FORMAL} = \text{hold}(y, x) \\ \text{TELIC} = \text{read}(e, w, x.y) \\ \text{AGENT} = \text{write}(e', v, x.y) \end{array} \right] \end{array} \right]$$

What still requires an explanation in (27) is the abbreviation *lcp*, which appears in the first line of its qualia structure. It stands for "lexical conceptual paradigm", which contains not only variables x and y , but also the complex type $x.y$:

¹⁰ Formally speaking, the structure assumed for each pair of meanings is a Cartesian type product. The product $\tau_1 \times \tau_2$, or τ_1, τ_2 , of types τ_1 and τ_2 , each denoting sets, is the ordered pair $\langle t_1, t_2 \rangle$, where $t_1 \in \tau_1, t_2 \in \tau_2$. However, as Pustejovsky (1998: 298) notes, his dot operator, unlike the Cartesian product, is not a commutative product.

- (28) $\text{information.phys_obj_lcp} = \{\text{information.phys_obj}, \text{information}, \text{phys_obj}\}.$

Now let us return to the examples in (22) repeated here for convenience.

- (22) a. Mária elkezdte a könyvet.
 Mária.NOM began.DEF.3SG the book.ACC
 'Mária began the book.'
- b. Mária elkezdte olvasni a könyvet.
 Mária.NOM began.DEF.3SG to.read the book.ACC
 'Mária began to read the book.'

According to the generative lexicon representation of *book/könyv*, as we have just seen in (27), the purpose of a book (the TELIC role) suggests reading it. If one takes this information into account, it is guaranteed that the verb *elkezd* 'begin' is connected with an event in (22a), where – unlike (22b) – the predicate *olvas* 'read' is not lexically expressed. However, the AGENTIVE role of *book* provides a further meaning, viz. (22a) might also mean that Mária began to write the book. So, in (22a) there can be another implicit predicate because of another quale role of *book/könyv*. Therefore, the unambiguous interpretation of (22a) needs some contextual support. This is the case of getting a relevant interpretation in the first manner mentioned in connection with the verbs *megetet* 'feed' and *megitat* 'make drink', which put a selection restriction on their direct object arguments such that they must be of the type ANIMAL or HUMAN (see 2.1.). Like identifying the implicit arguments of *megetet* 'feed' and *megitat* 'make drink', in accordance with the two lexically given possibilities, some contextual information from the physical environment, preceding discourse or encyclopedic knowledge has to be found to resolve the ambiguity of (22a). Only in this case can one choose either the predicate *read* or *write* offered by the representation of *book/könyv* in Generative Lexicon.

3.2. Implicit Predicates and the Role of Contexts (Immediate and Extended)

In the remaining part of this section we pay our attention exclusively to the issues concerning the contextual factors influencing the interpretation of the utterances like (22a) and the rule of type coercion providing for direct object arguments to be of the semantic type of events. As we have seen, one can attribute to (22a) either the sense 'Mária began to read the book' or the sense 'Mária began to write the book' by means of the qualia structure in the lexical representation of *book/könyv* in (27). However, they are only default, or typical, meanings (Pustejovsky, 1998: 304). Lascarides and Copestake (1998: 392) state that if we know that Mary is a goat, our interpretation of *Mary enjoyed the book* is different from 'Mary enjoyed reading the

book' triggered by the lexicon. Similarly, utterance (22a) can also be interpreted in other ways if one has **suitable pieces of world knowledge**, i.e. if one can rely on an encyclopedically extended context. For example, if it is known that Mária is a translator by profession, (22a) typically means that she began to translate the book. Furthermore, the lexically supplied interpretation can be ruled out **by means of the discourse context or immediately observable physical environment**. So, the utterance *Mary enjoyed the book* in the context of *My goats eat anything* is likely about enjoying eating, and not reading, the book (cf. Lascarides and Copestake, 1998). In the same way, if the relevant "world" is constructed in the context of a discourse or we can see a little girl who has torn up some newspapers, (22a) can denote an event such as Mária began to tear the book to pieces. Generally speaking, (22a) and other similar utterances can be interpreted in other ways than is suggested by lexical defaults if there is an extended context giving grounds for a pragmatically more acceptable interpretation.

At the same time, examining the utterances with implicit predicates, we argue for a treatment which goes further than both Pustejovsky's (1995, 1998) analysis via the type coercion based on the qualia structures of nouns and Lascarides and Copestake's (1998) solution distinguishing between the lexically default interpretation and interpretation triggered by discourse or wider world knowledge. We state, on the one hand, that some contextual information is necessary to select either of two lexically possible default meanings in case of (22a) and other similar utterances. On the other hand, all the above-mentioned utterance meanings, including these latter ones, also become available **in immediate contexts**, i.e. in the utterances themselves. If the subject position of utterances is filled in with nouns such as *író* 'authoress' or *fordító* 'translator' as in (29) and (30), these utterances have the same (typical) meanings as (22a) has with background information about Mária's profession.

- (29) Az író *elkezdte* a könyvet.
 the authoress.NOM began.DEF.3SG the book.ACC
 'The authoress began the book.'

- (30) A fordító *elkezdte* a könyvet.
 the translator.NOM began.DEF.3SG the book.ACC
 'The translator began the book.'

Utterances (29) and (30) share a common feature that they do not call for any information accessible only from one or another type of the extended context. Nevertheless, they differ from each other in some respects. While in (29) the noun in the subject position only confirms one of the lexically encoded possibilities, the understanding of (30) includes such a piece of encyclopedic knowledge that is not embodied in the qualia structure of *könyv* 'book'. The reason for this is that the noun *fordító* 'translator' may override the information in both TELIC and AGENTIVE roles of *könyv* 'book'. In some cases, however, it is obligatory to get over the

object argument of the verb *elkezd* 'begin' in order to reach an appropriate utterance meaning. Although the function of the car is to drive it, the phrase *begin a car* does not mean 'begin to drive a car' (Fodor and Lepore, 1998: 281). Let us take (31) to analyze this case of implicit predicates in more detail.

- (31) a. János öt perccel ezelőtt kezdte el a kocsidat.
 János.NOM five minute.INS ago began.DEF.3SG PFX the your.car.ACC
 'János began your car five minutes ago.'
- b. A szerelő öt perccel ezelőtt kezdte el a kocsidat.
 the mechanic.NOM five minute.INS ago began.DEF.3SG PFX the your.car.ACC
 'The mechanic began your car five minutes ago.'

If knowledge about the function of the car or the factors involving in the object's origin do not result in an adequate utterance interpretation,¹¹ one can rely on the extended context, or the immediate context, namely the noun featuring in the subject position of the verb *elkezd* 'begin'. One learns about János's profession from both types of contexts. Thus, the meanings of (31a) and (31b) can be given: 'János began to repair your car five minutes ago' and 'The mechanic began to repair your car five minutes ago', respectively.

Finally, two remarks seem to be in order. First, we want to stress that there is a good reason to distinguish two things with respect to the rule of type coercion. Since it is possible, or even necessary in some cases, to take into account nouns in the subject position, the component of construction of utterance meaning which provides for the relevant event to begin has to be separated from type coercion itself, which appears in connection with the object argument of the verb *elkezd* 'begin'. It is worth adding to this immediately that not only the verb of beginning meets the problem of interpretation forced by the qualia structure of the object argument, but other verbs also do. Cf. Fodor and Lepore's (1998: 281) examples with *enjoy*:

- (32) **enjoyed the doorknob*, **enjoyed the federal government*, **enjoyed the carpet tack*.

Second, as it has been demonstrated in this section that both the lexical conceptual information and the immediate or extended context play a distinguished role in the meaning composition of the utterances with implicit predicates, they are also interpretable in the same three manners as the utterances with implicit arguments.

¹¹ How a theory guarantees that the meaning of *begin a car* expected on Pustejovsky's account should be excluded as incorrect remains an issue which requires further investigation.

4. CO-COMPOSITION OF PREDICATES AND THEIR ARGUMENTS

Now we can turn to the third type of utterances, in which neither the arguments nor predicates are missing, but they are connected to each other by means of a more sophisticated way than simple composition.

4.1. Co-composition as a Lexically Induced Rule

4.1.1. A Problem of Co-composition. Let us start with the examples in (33), which are the same utterances as in (4) in the Introduction.

- (33) a. The bottle is floating in the river.
b. The bottle floated into the cave.

Pustejovsky (1995: 125–126) explains the systematic polysemy exhibited by (33a–b) in the following way. The verb *float* has only one meaning in the lexicon, which expresses the manner of motion (see (33a)). The sense ‘to move in some direction in some manner’ appearing in (33b) does not belong to the verb *float* itself, but to the phrase consisting of this verb and the prepositional phrase. Since the directional argument modifies the meaning of the predicate, the meaning of the phrase *floated into the cave* cannot be derived from its constituent parts, i.e. the verb and prepositional phrase, by means of a simple rule of composition. There is a need for a more complicated rule, that of **co-composition**.

Before Pustejovsky’s co-composition is examined more carefully, consider the pairs of Hungarian examples illustrating some range of verbs that vary in the same way as those in (33) do.

- (34) a. Péter a folyóban úszik.
Péter.NOM the river.INE swims.INDEF
‘Péter is swimming in the river.’
b. Péter a barlangba úszott.
Péter.NOM the cave.ILL swam.INDEF.3SG
‘Péter swam into the cave.’
- (35) a. A labda a gólvonalon pörög.
the ball.NOM the goal.line.SUP twirls.INDEF
‘The ball is twirling on the goal line.’

- b. A labda a kapuba pörgött.
the ball.NOM the goal.ILL twirled.INDEF.3SG
'The ball twirled into the goal.'
- (36) a. Péter a sarokban áll/térdel/ül/fekszik.
Péter.NOM the corner.INE stands.INDEF/kneels.INDEF/sits.INDEF/lies.INDEF
'Péter is standing/kneeling/sitting/lying in the corner.'
- b. Péter a sarokba állt/térdelt/ült/feküdt.
Péter.NOM the corner.ILL stood.INDEF.3SG/kneeled.INDEF.3SG/sat.INDEF.3SG/
lay.INDEF.3SG
'Péter stood/kneeled/sat/lay into the corner.'

These Hungarian examples demonstrate that the sort of polysemy at stake is characteristic of utterances containing verbs whose lexical meanings have a motion component denoting change of place or change of position, or do not have such a component at all, as attested by (34)–(36), respectively. Like the verb *float* in (33), in Pustejovsky's view, the verbs *úszik* 'swim', *pörög* 'twirl', *áll* 'stand', *térdel* 'kneel', *ül* 'sit', and *fekszik* 'lie/lay' in (34)–(36) have only one meaning in the lexicon: that of manner of motion/state. The meaning 'to move in some direction in some manner' comes from the corresponding verbs and nouns with adverbial inflections by means of co-composition because the latter ones affect the meaning of the former ones.

What has been said above does not mean that each member belonging to one or another lexical semantic field in question behaves in such a way. E.g.:

- (37) a. A kutya a sarokban heverészik/*heveredett.
the dog.NOM the corner.INE is.lying.INDEF/lay.down.at.full.length.INDEF.3SG
'The dog is lying / *lay down at full length in the corner.'
- b. A kutya a sarokba heveredett/*heverészik.
the dog.NOM the corner.ILL lay.down.at.full.length.INDEF.3SG/is.lying.INDEF
'The dog lay down at full length / *is lying into the corner.'

The verb *heverészik* 'be lying' cannot be used with directional arguments (cf. (37b)) but the verb *heveredik* 'lie down at full length' with local ones (cf. (37a)).¹² Thus in the latter case no co-composition proceeds. Therefore, the sense 'to move in some direction in some manner' of

¹² At this point the question whether the local expressions in the above examples are arguments or adjuncts can arise. They are given the latter status by Pustejovsky (1995: 125). However, one can think of them as arguments on the basis that localization seems to be an indispensable part of the situations denoted by the verbs under discussion.

heveredik 'lie down at full length' has to be fixed in the lexicon. In other words, *heveredik* 'lie down at full length' as a lexeme has this meaning.

Considering (33)–(36) more carefully, one has to notice that in the b-examples – in comparison with the a-examples containing local expressions being handled whether arguments or adjuncts – there is a change of the argument structure, because the verbs take directional arguments. But where is the information encoded according to which these verbs can take such arguments? Although Pustejovsky does not mention this problem, there is no doubt that it is encoded in the lexicon. Of course, not with each relevant lexical item, but a lexical rule changing the argument structure can be given (cf. Komlósy, 1992: 352–354). Such a solution, however, would lead to each verb in question being ultimately represented in the lexicon twice according to its two different argument structures. This would contradict with not only the requirement of economy of lexical representation (Bierwisch, 1997), but also one of the fundamental efforts of Generative Lexicon Theory. As Pustejovsky (1998: 293) says:

"Another crucial assumption in Generative Lexicon Theory is that, rather than assuming a fixed set of *primitives* to describe word meaning, we assume a fixed number of *generative devices* that are used to construct semantic expressions."

Co-composition can be regarded as such a device to produce the actual, contextually evoked senses only in that case **the change of argument structure is given account of**.¹³

4.1.2. Avoiding this Problem of Co-composition. To improve co-composition, we propose such a version in accordance with each verb has to be treated as a single lexical item. It joins the meanings appearing in both a- and b-lines but contains all that is relevant for the directional argument structure only as **an optional part of the representation**. At the same time, this modification of the generative device in question means that both meanings of the utterances such as (33a–b) are derived co-compositionally. As to the part of representations necessary to treat the examples in b-lines, it can be given as (38) in the view the totality of the verbs discussed.¹⁴

(38) [[MOVE x] : [FIN [LOC x] α [LOC u]]]

¹³ It is worth noting that in some cases co-composition proceeds without changing the argument structure (see Pustejovsky, 1995: 122–125, 221–225). We will return to such cases below.

¹⁴ This representation format is characteristic of two-level conceptual semantics, which proposes very abstract meaning representations on a linguistic level, including those with an optional part. The semantic form in general is part of the grammatically determined structure of an expression, but motivated by the properties of the conceptual structure (see e.g. Bierwisch 1987: 36–37, 1996). In a sense, then, the semantic representation is the interface between the linguistic and conceptual systems.

Formula (38) reads as follows: x moves so that the place [LOC u] to which x moves has a relation symbolized by α such as 'in', 'on', 'under', 'behind', 'beside', etc., to the end of a path, which is the result of applying the component FIN to x 's place, i.e. [LOC x].

Using (38) in the meaning representation of a verb, one has to take into consideration the following:

- (i) If the sense 'move in some direction in some manner' is lexicalized (e.g. *heveredik* 'lie down at full length'), the formula (38) is an obligatory part of the representation of the verb but not optional. Of course, the lexicalization of the other sense under discussion (e.g. *heverészik* 'be lying') makes (38) unnecessary.
- (ii) The meaning component FIN is bracketed as an optional part of the representation in case of all the verbs excluding the lexicalized senses. It becomes actual in such contexts as the b-examples above.
- (iii) If there is not a local argument in an argument structure – as Pustejovsky (1995: 125) represents the verb *float* –, the formula [[LOC x] α [LOC u]] expressing spatial location has to be put into (round) brackets, which are deleted when the meaning component FIN becomes actual. However, if one insists that the localization is an indispensable part of situations denoted by the verbs in question (cf. footnote 12), the expression [[LOC x] α [LOC u]] is never put into brackets.
- (iv) As to the formula [MOVE x], it is quite natural that it has to be bracketed if the verb in the a-line does not refer to a motion but a state (*áll* 'stand', *térdel* 'kneel', *ül* 'sit', and *fekszik* 'lie'). Contrary to this, if some verbs (e.g., *úszik* 'swim' and *pörög* 'twirl') refer to the motion in the a-line examples, the part [MOVE x] of formula (38) must not be optional in the representations of these verbs.

Thus, we have come to a modified version of co-composition giving the meaning of a phrase so that arguments change abstract predicates containing some parts of their meaning in brackets into concrete ones, in which the brackets are deleted. It can also be applied to such cases where the problem concerning the argument structure does not appear. Consider (39).

- (39) a. Kilépett a templomból.
 left.INDEF.3SG the church.ELA
 'He/She left the church (= the building).'
- b. Kilépett az egyházból.
 left.INDEF.3SG the church.ELA
 'He/She left church (= the institution).'

However, the underdetermined representation of the verb *kilép* ‘leave’ is not captured by means of putting optional parts into brackets, like in the representations of the verbs in (34)–(36). Rather, the meaning component MOVE figures in a very abstract sense, which only refers to a concrete one, depending on the directional arguments *templomból* and *egyházból* with lexically fixed meanings ‘church as building’ and ‘church as institution’, respectively. This concrete sense denotes either the physical motion (change of place) or the “social motion” (change in social relations).

There are two features characteristic of the mechanisms of utterance meaning composition with regard to (34)–(36) and (39). First, the verb meaning is affected by arguments. Therefore, it is co-composition, or rich composition, challenging the simple view of composition and argued for not only in Pustejovsky’s work, but also in Jackendoff’s (1997) and Bierwisch’s (1983, 1996). Furthermore, influencing predicates is carried out by **the lexically fixed** meanings of the arguments. As in these cases the lexical-semantic representation plays a crucial role, one can think of **the first manner of the interpretation** attested already in connection with implicit arguments and predicates in Sections 2 and 3. Second, the arguments affect the meaning of the predicates in both the a- and the b-examples. Thus, in both cases the meanings of the predicates are derived **from a lexically underspecified meaning**.

4.2. Co-composition as a Rule Induced by Contexts (Immediate and Extended)

The present subsection is devoted to another aspect of co-composition. There is a great number of cases where **our world knowledge** has to be taken into consideration in order to co-compose a relevant utterance interpretation. This conception of composition has its origin in two-level conceptual semantics (Bierwisch, 1983, 1996), which – as we have already mentioned in 2.1.1. – distinguishes between two types of knowledge and, accordingly, two levels of meaning representation. On the linguistic level, word meanings composed of semantic components are very often not fully specified. This underdetermined semantic, or core, meaning is made concrete by means of our everyday knowledge evoked by neutral contexts, i.e. ones not requiring metaphorical interpretation. The specification is done by conceptual shift, which “shifts” the core meaning into various conceptual fields, and by conceptual differentiation, which only “differentiates” the core meaning in different ways within one and the same conceptual domain, thereby yielding literal meanings. In other words, interpretations mean mapping underspecified semantic meanings onto fully determined conceptual meanings on the basis of our everyday knowledge.¹⁵

¹⁵ For detailed analyses of several Hungarian and Russian words in terms of the conceptual shift and differentiation see Bibok 1996, 2000a, b, c.

There is a third mechanism of conceptual interpretation, viz. the conceptual selection, which concerns the way in which the parts of the utterance meaning are coordinated in order to form an acceptable interpretation. The most interesting case of conceptual selection is when an agreement of conceptually shifted and differentiated word meanings takes place in composition of utterance meaning. Consider (40).

- (40) Elment az iskolából.
 left.INDEF.3SG the school.ELA
 ‘He/She left the school (= the building) / school (= the institution).’

In Pustejovsky’s view, the polysemy of the building-sense and institution-sense of the noun *iskola* ‘school’ can be treated by assuming the corresponding complex type. But in two-level conceptual semantics these meanings are contextual¹⁶ variants, derived – through conceptual shift – from an underspecified core meaning such as:

- (41) ‘x has the goal to provide for teaching/learning processes’.¹⁷

Independently, however, of whether Pustejovsky’s or two-level conceptual semantic account of *iskola* ‘school’ is accepted, the conceptually differentiable meanings of the verb *el-megy* ‘leave’, i.e. ‘change of place’ and ‘change in affiliation’, force one to assume an abstract meaning to compose both utterance meanings. The reason for this is that it is impossible to fix either verb meaning as a lexical one because of the polysemy of both the noun *iskola* ‘school’ and the whole utterance **without an extended context** disambiguating it. So, there is another reason why Pustejovsky’s original conception of co-composition needs to be modified.

The information necessary to disambiguate, or, more precisely, to make (40) concrete, can be involved **in the immediate context**, i.e. in the utterance itself. Cf.:

- (42) a. 1975-ben Péter elment az iskolából.
 1975.INE Péter.NOM left.INDEF.3SG the school.ELA
 ‘In 1975 Péter left school.’
 b. Délelőtt tíz órakor Péter elment az iskolából.
 A.M. ten o’clock.TEM Péter.NOM left.INDEF.3SG the school.ELA
 ‘At ten o’clock A.M. Péter left the school.’

¹⁶ In regard to (40) one should think of **extending the context** by means of the encyclopedic information about schools.

¹⁷ As a matter of fact, it should be clear that one has to introduce a variable of grade into the description of the core meaning of *iskola* ‘school’ and, accordingly, to specify it to separate the noun *iskola* from *egyetem* ‘university’ (cf. also *ministry of education*).

In the context of the time adverbial in (42a), *iskola* 'school' most likely refers to an institution (which, of course, can be overridden in a wider context), and, according to this, the verb *el-megy* 'leave' is interpreted as a change in affiliation. In (42b), *iskola* 'school' typically refers to a building and the verb *el-megy* 'leave' is interpreted as a change of place. Thus, depending on the time-adverbial phrases, the literal meanings of *iskola* and *el-megy* in (42a–b), respectively, are coordinated. Since the same inflectional morpheme appears with both time adverbials, it does not influence the conceptual selection. However, in Hungarian the inflections do influence the interpretations like the time adverbials above. Let us take (43) and assume that the ablative noun inflection *-tól* primarily denoting a direction from an external place refers to a direction having an internal source.

- (43) Péter elment az iskolától.
 Péter.NOM left.INDEF.3SG the school.ABL
 'Péter left school (= the institution).'

Although neither time adverbial occurring in (42) figures in (43), one understands it in only one way. Namely: there is a change in Péter's affiliation, because the noun *iskola* 'school' can have only the institution-sense. The only reason is the ablative case morpheme *-tól*. Hence, one has to take inflections into consideration in the composition of utterance meaning as well. On the basis of (42) and (43), we claim that while the elative case marking *-ból* rules out neither institution-sense nor building-sense of *iskola* 'school', the ablative inflection cannot be coordinated with the building-sense of *iskola* 'school'.¹⁸

Of course, the interpretation mechanisms mentioned in connection with (40) and (42)–(43) work in the case of utterances containing constituents with similar meanings. One can substitute any *school*-like noun listed in (44) below for *iskola* 'school'.

- (44) *középiskola* 'secondary school', *egyetem* 'university', *intézet* 'institute', *akadémia* 'academy', *múzeum* 'museum', *színház* 'theatre', *opera* 'opera house', *mozi* 'cinema', *parlament* 'parliament', *minisztérium* 'ministry', *bank* 'bank', *tőzsde* 'stock exchange', *bíróság* 'court of law', *kórház* 'hospital', *élelmiszer-áruház* 'supermarket', etc.

As to the verbs *kilép/el-megy* 'leave', any verb with meaning 'move in some direction' can be substituted for them, for instance *hív* 'call' and *küld* 'send'. Their meanings have the common part paraphrasable roughly as 'x causes that y knows that x wants that y moves somewhere' and, therefore, in their meaning representations the motion component figures in the argument

¹⁸ Compare also English phrases such as *at the institute* vs. *in the institute*, *from the institute* vs. *out of the institute*. Presence or absence of articles play also important role in composition of utterance meaning, cf. *leave school* vs. *leave the school*.

positions of the functors CAUSE, KNOW, and WANT. This is why the utterances (45)–(47) can be interpreted in similar ways as (40) and (42)–(43).

- (45) A minisztériumba hívták Pétert.
 the ministry.ILL called.DEF.3PL Péter.ACC
 'Péter was called to the ministry (= to the building) / to the ministry (= to the institution).'
- (46) a. 1975-ben a minisztériumba hívták Pétert.
 1975.INE the ministry.ILL called.DEF.3PL Péter.ACC
 'In 1975 Péter was called to the ministry.'
- b. Délelőtt tíz órakor a minisztériumba hívták Pétert.
 A.M. ten o'clock.TEM the ministry.ILL called.DEF.3PL Péter.ACC
 'At ten o'clock A.M. Péter was called to the ministry.'
- (47) A minisztériumhoz hívták Pétert.
 the ministry.ALL called.DEF.3PL Péter.ACC
 'Péter was called to the ministry (= to the institution).'

If one compares (42) and (46) with (43) and (47), two remarks seem to be in order. First, in accordance with **the immediate contexts**, i.e. the time adverbials, the first two utterances have two meanings, but the latter two only one interpretation. Second, the meanings of (42) and (46) can be thought of as typical only because one can easily interpret these utterances in the opposite way **extending contexts** with information from the preceding discourse or from the current discourse situation. However, one cannot term the interpretations of utterances (43) and (47) as typical since it is impossible to override them by means of extending contexts. This can be easily attested. Let us substitute the ablative form *iskolától* for the elative form *iskolából* in (42) and the allative form *minisztériumhoz* for the illative form *minisztériumba* in (46) what yields (48) and (49), respectively.

- (48) a. 1975-ben Péter elment az iskolától.
 1975.INE Péter.NOM left.INDEF.3SG the school.ABL
 'In 1975 Péter left school (= the institution).'
- b. Délelőtt tíz órakor Péter elment az iskolától.
 A.M. ten o'clock.TEM Péter.NOM left.INDEF.3SG the school.ABL
 'At ten o'clock A.M. Péter left school (= the institution).'

- (49) a. 1975-ben a minisztériumhoz hívták Pétert.
 1975.INE the ministry.ALL called.DEF.3PL Péter.ACC
 'In 1975 Péter was called to the ministry (= the institution).'
- b. Délélőtt tíz órakor a minisztériumhoz hívták Pétert.
 A.M. ten o'clock.TEM the ministry.ALL called.DEF.3PL Péter.ACC
 'At ten o'clock A.M. Péter was called to the ministry (= the institution).'

If the ablative and allative inflections refer to a direction having internal source and goal, respectively, they make the unlikely building-sense absolutely impossible in the case of the first time-adverbial phrase (*1975-ben* 'in 1975') and the unlikely institution-sense the only possible one in the case of the second time adverbial phrase (*délélőtt tíz órakor* 'at ten o'clock A.M.').

To summarize this section, we emphasize that the third type of utterances can also be interpreted – besides the first manner – in both the second and the third manners, i.e. through contexts, immediate or extended.

5. CONCLUSION

In this paper we have investigated three types of utterances, i.e. ones with implicit arguments and with implicit predicates as well as ones in which the predicates and their arguments are connected by the rule of co-composition. Moreover, this was done in a unified way. We have demonstrated that the meaning construction of these three types of utterances can only be described by assuming an **intensive interaction** between the lexicon and context. It has been our first aim. As we have noted in the Introduction, we have not concentrated on the morpho-syntactic features of these utterances. However, it does not mean that these factors as well as other structural properties of discourses in which the utterances take place do not influence the utterance meaning construction. But, in accordance with the title of the present volume and its main theme, which can be labeled lexical pragmatics, we have wanted to highlight the role of the interaction between the lexicon and context (immediate or extended) in the utterance meaning construction.

On the basis of the analyses presented above and their theoretical evaluation, we can conclude that **the same three manners** of meaning composition can be applied to each type of utterances. This has been our second aim. In the course of the investigation we have got results which concern the information to be incorporated in the conceptual semantic representations of words, i.e. lexical stereotype and prototype. Furthermore, we have modified both the rule of type coercion and the rule of co-composition. More concretely, the component of construction of utterance meaning which provides for the relevant event has to be separated from type

coercion itself, and the construction of the meaning of a phrase can include a change of abstract predicates into concrete ones.

At this point in our paper, it is reasonable to state that the possibilities of utterance meaning construction, as well as their hierarchy are regulated by the same principle, namely the cognitive principle of relevance. This rational principle refers to the economy balance of human cognitive behavior in general: "Human cognition trends to be geared to the maximisation of relevance" (Sperber and Wilson, 1995: 260), i.e. to achieve more cognitive effects with less processing efforts. Applying the cognitive principle of relevance to the meaning construction of the three types of utterances treated in the present article, it can be established that, to avoid unnecessary processing effort, the adequate interpretation can be formed through the lexical conceptual representation. If this does not lead to a relevant interpretation, then the immediate context should be taken into consideration. If this does not lead to the pragmatically acceptable interpretation either, the context should be extended.

The tendency towards maximization of relevance is strong enough to help guide human interaction, and it does indeed make the cognitive behavior of another human predictable enough to guide communication (Sperber and Wilson, 1995: 263). Communicators try to produce optimally relevant utterances to ensure that the hearer can reach adequate contextual effects with the least processing effort. The universal cognitive principle of relevance explains the possibility that an argument or a predicate can be lexically unrealized at all: to reach the same contextual effects as in the case of overt arguments or predicates but with less processing effort. If implicit arguments or predicates can be identified in the above-mentioned three manners, these arguments or predicates should be lexically unrealized according to the principle of relevance. The universal cognitive principle of relevance also explains the possibility of composing larger units from predicates and arguments in such a way that the meaning of arguments do influence the activation of the meaning relevant from potential meanings of predicates. The principle of relevance motivates not only the use of implicit arguments, predicates or manners of co-composition, but also guides their identification or derivation mechanisms from taking into account conceptual semantic representations of verbs to extending contexts.

Having shown **the impact of the principle of relevance** on the utterance meaning construction, we have reached our third aim, which has concerned explaining all the possible interpretations of the three types of utterances and the hierarchy of these possibilities

REFERENCES

- Alsina, A. (1992). On the argument structure of causatives. *Linguistic Inquiry*, **23**, 517–555.
- Bibok, K. (1996). Problema kontseptual'noi semantiki russkogo i vengerskogo iazykov [Conceptual semantic investigations in Russian and Hungarian]. *Voprosy iazykoznanii*, № 2, 156–165.
- Bibok, K. (2000a). Conceptual semantic investigations in Russian and Hungarian. In: *Applied Russian Studies in Hungary* (E. Lendvai, ed.), pp. 15–32. Krónika, Pécs.
- Bibok, K. (2000b). Issledovanie polisemii slov tipa *kniga* v dvukhurovnevoi kontseptual'noi semantike [An investigation of words of the type *kniga* 'book' in the framework of two-level conceptual semantics]. In: *Papp Ferenc akadémikus 70. születésnapjára: Barátok, pályatársak, tanítványok tanulmányai, visszaemlékezései* [Festschrift on the occasion of the 70th birthday of member of the academy, Ferenc Papp: Papers and recollections by friends, colleagues and former students] (I. T. Molnár and K. Klaudy, eds.), pp. 274–280. Kossuth Egyetemi Kiadó, Debrecen.
- Bibok, K. (2000c). O polisemii slov *grammatika* i *slovar* [On the polysemy of the words *grammatika* 'grammar' and *slovar* 'dictionary, lexicon']. In: *Nyelv, aspektus, irodalom: Köszöntő könyv Krékit József 70. születésnapjára* [Language, aspect, and literature: A book in honor of József Krékit on the occasion of his 70th birthday] (Z. Györke, ed.), pp. 37–44. Szeged.
- Bibok, K. and E. Németh T. (2001). On the interaction between lexical and contextual information in the composition of utterance meaning. In: *Cognition in Language Use: Selected Papers from the 7th International Pragmatics Conference* (E. Németh T., ed.), Vol. 1, pp. 12–25. IPrA, Antwerp.
- Bierwisch, M. (1983). Semantische und konzeptuelle Repräsentation lexikalischer Einheiten. In: *Untersuchungen zur Semantik (Studia grammatica 22)* (R. Růžička and W. Motsch, eds.), pp. 61–99. Akademie-Verlag, Berlin.
- Bierwisch, M. (1987). Some aspects of semantic form in natural language. In: *Language and Artificial Intelligence* (M. Nagao, ed.), pp. 35–50. Elsevier, Amsterdam.
- Bierwisch, M. (1996). How much space gets into language? In: *Language and Space* (P. Bloom, M. A. Peterson, L. Nadel, and M. F. Garrett, eds.), pp. 31–76. MIT Press, Cambridge, Mass.
- Bierwisch, M. (1997). Lexical information from a minimalist point of view. In: *The Role of Economy Principles in Linguistic Theory (Studia grammatica 40)* (C. Wilder, H. M. Gärtner, and M. Bierwisch, eds.), pp. 227–266. Akademie Verlag, Berlin.
- Blakemore, D. (1992). *Understanding Utterances*. Blackwell, Oxford.
- Cote, S. A. (1997). *Grammatical and Discourse Properties of Null Arguments in English*. PhD dissertation. Available from <http://babl.ling.upenn/~cote/index.html>.
- Fillmore, C. J. (1986). Pragmatically controlled zero anaphora. *Berkeley Linguistic Series*, **12**, 95–107.
- Fodor, J. A. and E. Lepore (1998). The emptiness of the lexicon: Reflections on James Pustejovsky's *The Generative Lexicon*. *Linguistic Inquiry*, **29**, 269–288.
- Gergely, G. and T. G. Bever (1986). Related intuitions and the mental representation of causative verbs in adults and children. *Cognition*, **23**, 211–277.

- Groefsema, M. (1995). Understood arguments: A semantic/pragmatic approach. *Lingua*, **96**, 139–161.
- Jackendoff, R. (1990). *Semantic Structures*. MIT Press, Cambridge, Mass.
- Jackendoff, R. (1997). *The Architecture of Language Faculty*. MIT Press, Cambridge, Mass.
- Kiefer, F. (1983). *Az előfeltevések elmélete* [The theory of presupposition]. Akadémiai Kiadó, Budapest.
- Komlósy, A. (1992). Régensek és vonzatok [Regents and complements]. In: *Strukturális magyar nyelvtan I: Mondattan* [A structural grammar of Hungarian I: Syntax] (F. Kiefer, ed.), pp. 299–527. Akadémiai Kiadó, Budapest.
- Lascarides, A. and A. Copestake (1998). Pragmatics and word meaning. *Journal of Linguistics*, **34**, 387–414.
- Németh T., E. (1998). Implicit argumentumok pragmatikai szempontból [Implicit arguments from the pragmatic point of view]. In: *A mai magyar nyelv leírásának újabb módszerei* [Recent methods in the description of contemporary Hungarian] (L. Büky and M. Maleczki, eds.), Vol. 3, pp. 281–298. JATE, Szeged.
- Németh T., E. (2000). Occurrence and identification of implicit arguments in Hungarian. *Journal of Pragmatics*, **32**, 1657–1682.
- Németh T., E. (2001). Implicit arguments in Hungarian: Manners of their occurrence and possibilities of their identification. In: *Argument Structure in Hungarian* (I. Kenesei, ed.), pp. 113–156. Akadémiai Kiadó, Budapest.
- Németh T., E. and K. Bibok (1999). Implicit arguments in Hungarian. In: *Pragmatics in 1998: Selected Papers from the 6th International Pragmatics Conference*, (J. Verschueren, ed.), Vol. 2, pp. 412–427. IPrA, Antwerp.
- Németh T., E. and K. Bibok (2001). Az alanyi és a tárgyas ragozás szerepe az igei tárgyi argumentumok elhagyhatóságában [The role of indefinite and definite conjugations in the omissibility of verbal direct object arguments]. In: *Újabb tanulmányok a strukturális magyar nyelvtan és a nyelvtörténet köréből* [Recent studies in the structural grammar of Hungarian and in the history of language] (M. Bakró-Nagy, Z. Bánréti, and K. É. Kiss, eds.), pp. 78–96. Osiris, Budapest.
- Pléh, C. (1994). Mondatközi viszonyok feldolgozása: Az anafora megértése a magyarban [Processing of intersentential relations: Interpretation of anaphors in Hungarian]. *Magyar Pszichológiai Szemle*, **50**, 287–320.
- Pustejovsky, J. (1995). *The Generative Lexicon*. MIT Press, Cambridge, Mass.
- Pustejovsky, J. (1998). Generativity and explanation in semantics: A reply to Fodor and Lepore. *Linguistic Inquiry*, **29**, 289–311.
- Radford, A. (1997). *Syntax: A Minimalist Introduction*. Cambridge University Press, Cambridge.
- Saeboe, K. J. (1996). Anaphoric presuppositions and zero anaphora. *Linguistics and Philosophy*, **19**, 187–209.
- Sperber, D. and D. Wilson (1995). *Relevance: Communication and Cognition*. 2nd ed., Blackwell, Oxford.

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