What are the Readings of a Lexical Item: Pragmatic Methods for Lexical Semantics

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1 Introduction

The problem addressed in this paper is what the criteria are for defining the readings of a lexical item; a number of proposals have previously been made with respect to deciding what has to go into the lexical entry of a linguistic lexicon and how to obtain the information wanted. This question involves two different aspects: On the one hand, there are different views on what should constitute lexical information in general; examples are the definition of truth conditions, a conceptual representation, or an account of the compositional features of a lexical item. On the other hand, the sense spectrum of a lexical item has to be devided and structured in some way or other; in particular it can be asked what the readings of the lexical item under consideration are and how they are related to each other.

The starting point in this investigation is the idea that pragmatic methods which allow to determine to what information the language users actually attend may be useful for determining which properties may contribute to a representation of what language users really know and attend to with regard to lexical items. Therefore, by investigating the semantic properties of a particular lexical item, namely the adjective *cognitive*, in particular corpus instances according to those procedures speakers use to display their own understanding of the lexical item, it becomes clear to which types of information speakers orient themselves and therefore also which kinds of information have to be accounted for.

After a short summary of some previous viewpoints on the question, the different contexts in which the adjective *cognitive* may occur will be determined, and its readings will be analysed in its different contextual combinations. As an example for the frequent combination of *cognitive* with the names of certain disciplines, the adjective-noun combination *cognitive linguistics* will then be discussed more deeply. During this analysis it will also be recorded which procedures the language users themselves employ to display to which readings they are referring. The results of this investigation will then be used to discuss the theoretical questions indicated above, namely how pragmatic methods can contribute to determining the kinds of information to be represented in a lexical entry and to drawing distinctions between different types of lexical information.

2 Previous Approaches

The answer to the question which types of information should be included depends on what we expect of such an entry; for instance, in his introduction to formal semantics, Cann (1993) argues that those types of information should be included in the lexicon which are needed to define the denotation of the lexical item and to allow for those inferences that are based on the knowledge of the meanings of a particular lexical item, such as ‘it’s a tulip, therefore it’s a flower’ or ‘it’s a tulip, therefore it’s not a rose;’ thus Cann defines lexical meaning the following way: “the meaning of a lexeme is the contribution it makes to the truth and falsity of the proposition expressed by any sentence in which it can appear together with the constraints it imposes on the extensions of other expressions in those sentences” (1993: 218). In his view, lexical meaning is therefore constituted by the truth conditions of the lexeme plus a number of semantic relations, which may be represented as meaning postulates and which concern the relationship between the extensions of the classes denoted by the respective lexical item and those of other lexemes. Fodor & Lepore (1998) argue against the position to include information depending on whether it may allow certain inferences, holding that on the basis of this view, semantic and encyclopedic information are indistinguishable; for instance, ‘it’s a tulip, therefore it has capillary vessels’ is a valid inference but it is not normally regarded as semantic, but as world knowledge. Therefore, Fodor & Lepore argue that the lexicon would be unnecessarily blown up by means of what they call ‘informational role semantics.’

In contrast to Cann’s position, in the structuralist framework it is held that an account of the semantic relations of the respective item to other words provides its complete semantic description; all linguistic aspects are thereby taken to be determined in opposition to those items which constitute other options in the semantic system. Cruse (1986:16), for instance, holds that “we can picture the meaning of a word as a pattern of affinities and disaffinities with all the other words in the language with which it is capable of contrasting semantic relations in grammatical contexts.” Lexical analyses are therefore typically carried out in the context of semantic fields, and their results are networks of semantic relations to other parts of the vocabulary. If semantic features are used to describe a lexical item at all, then their task is to distinguish the respective item from ist neighbors in the semantic field. In Cruse’s terms: “An extremely useful model of the meaning of a word, which can be extracted from the contextual relations, is one in which it is viewed as being made up, at least in part, of the meanings of other words. A particular word-meaning which participates in this way in the meaning of another word will be termed a semantic trait of the second word” (1986: 16). Unlike the approach instanced by Cann (1993), entailment relations are used here to diagnose the traits a particular lexeme displays; thus, it is not the aim of the representation to allow inference relations to be defined, but to provide a complete description of the respective item in opposition to other items. However, both approaches disregard the speakers’ actual understanding of the lexical item.

In order to provide a positive account of lexical knowledge, a number of attempts have been made to model what speakers actually know if they know a word, under the premise that this knowledge is semantic. For instance, Fillmore (1985) argues for a semantics of understanding, that is, for a semantic representation of "the conceptual structures which support and motivate [word meanings, K.F.]" (Lowe, Baker & Fillmore 1997). In Fillmore's view, this also concerns knowledge about stereotypical situations in which the respective concept is embedded. Similarly, for instance Wierzbicka (1985) argues that in a lexical semantic account we need to represent what people have in mind when they think of a word. A suitable method to identify the semantic properties of a lexical item in her approach is therefore introspection which is guided by the use of a restricted semantic metalanguage. Natural Semantic Metalanguage (Wierzbicka 1985, 1986) uses natural language items which have direct correspondents in all of the languages of the world. Furthermore, Wierzbicka argues for semantic features which are anthropocentric, i.e. which do not only describe the objective properties of the relevant lexical item, but which include the relation to the language users. For instance, in order to understand what a good object is one has to know what people expect of it, that is, for artifacts it is the function for which they were designed, with respect to a car, for instance, there are a number of different properties that may make it a good car.

Other approaches which attempt to provide an account of speakers' concepts of the meanings of a lexical item do not try to provide lexical entries with all that speakers know but distinguish between semantic and encyclopedic information. For instance, Bierwisch (1983) distinguishes abstract semantic information and a conceptual structure; only the former is part of the mental lexicon. In order to account for the different readings of a lexical item, conceptual functions are defined which map its abstract semantic meaning onto the actual readings of its contextual occurrences. These functions are regarded as part of the conceptual system and therefore as separate from the semantic information given by its abstract meaning.

In contrast to the latter approaches discussed, Pustejovsky (1995, 1998) argues that it should not be attempted to describe lexical items in their own terms but that the only reason to include semantic information in the lexicon is that it is needed to account for their compositional behaviour (1995: 58); in his view, approaches like the ones described above attempt to "achieve these goals without always applying the proper tools of analysis" (1995: 19). A proper way, in his view, is "looking more at the generative or compositional aspects of lexical semantics" (1995: 58). While he argues that it is impossible to account for the meanings arising in combinations on the basis of lexical entries which just point to classes in the world, he justifies the selection of information which has to go into a lexical entry by the requirement to account for their readings in context.

The position taken in this investigation is not to decide for a particular position in advance on the basis of preferences on theoretical grounds, but to see what phenomena we actually have to deal with as language users attend to them; thus the hypothesis argued for in this paper is that finding out which information the language users are oriented to when they are using a particular lexical item may provide a clue as to which information constitutes their understanding of the lexical item under consideration. Therefore, instead of arguing *a priori* what a lexical entry should contain, for instance, the information for drawing inferences, its distinctive properties, conceptual information or its compositional features, the procedure followed here will be to analyse the different strategies users employ themselves in order to disambiguate their uses of the lexical item under consideration.

The idea to look for what participants actually do is not entirely new in lexical semantics, however, to my knowledge there are no studies which analyse the consequences of such a view in detail. For instance, Pinkal (1980), in his taxonomy of phenomena of semantic indeterminacy, argues that vagueness can be distinguished from ambiguity by the criterion of whether the indeterminacy causes communicative problems or not. Thus, while vague phenomena cause no problems for communication, in Pinkal's view, ambiguity is something which needs to be attended to since it may (typically) cause such problems. Taking a point of view based on insights from the analysis of conversation now, we can analyse the corpus instances of the item under consideration for the amount of attention the language users devote to avoiding such problems. Consequently, this view allows not only to see to what contents the speakers attend but also to determine which types of information really potentially involve problems for the language users.

3 Procedure

The procedure in this investigation is the following: In a corpus-based study it will be shown which different meanings the adjective *cognitive* may have in the linguistic community. Therefore, it will now be investigated which the contexts are in which the word occurs, what its readings are, and what writers do to convey to their readers to which reading they are referring. The method employed will be an analysis of the occurrences of *cognitive* in a large corpus; corpus linguistics is always useful when we need to "find things that we could not, by imagination, assert were there" (Sacks 1984: 25), that is, when intuition may not suffice to account for the whole range of phenomena involved. The corpus considered is the world-wide web with its large number of abstracts, announcements, calls for papers, as well as papers and discussion lists. The corpus is very heterogeneous; consequently it is probable that all or most senses of the word will be attested, which is not guaranteed if some restricted task-oriented or register-bound corpus is used (cf. Biber et al. 1998).

Regarding the choice of the adjective for the example analysis, one may object that it is not a general language item but a technical term and thus the findings in this paper are restricted to the description of terminology. This objection is supported by statements from authors who argue that *cognitive linguistics*, the adjective-noun combination which will be investigated as an example for the frequent combination of *cognitive* with names of disciplines, has actually become a proper name (cf. Peeters forthcoming). However, there are a number of reasons why *cognitive* is improbable to be a technical term, besides the theoretical problems in distinguishing technical varieties from general language (Nabrings 1981: 150, von Hahn 1998: 378). Thus, firstly, *cognitive* does not belong to a single discipline, but, as the analysis will show, it is often used in combination with very many different disciplines, for instance, linguistics, psychology, neurophysiology, neuroscience, or computer science. Secondly, it is highly polysemous, and according to, for instance, Sager (1994: 13), terminology is, in contrast to the polysemy of general language items, defined by "permanent forms of reference." Sager (ibid.) goes on "terminological systems can be highly complex and be characterized by many features of artificial languages." Likewise, Abraham (1988: 868) describes a technical term as a lexical unit which refers to a defined concept within a particular discipline. With their evident polysemy, both *cognitive* and *cognitive linguistics* therefore do not seem to be part of a terminological system. Thirdly, *cognitive* occurs in very creative, nonscientific uses, for instance, as the name of a telephone company. These reasons cast doubts on the hypothesis that *cognitive* or *cognitive linguistics* are indeed technical terms; alternatively, one could assume that they are technical terms, but that then technical vocabulary is characterized by similar features as general linguistic items. Self-evidently, especially in the combination with the names of disciplines, a large amount of encyclopedic knowledge, i.e. domain-specific, knowledge is necessary to understand the differences between the readings of the item under consideration, yet there is no obvious dividing line between what may constitute a general language reading and a terminological usage of *cognitive*. Since linguistics uses little standardisation compared to other disciplines, the meanings of lexical items or their combinations are established similarly to those in general language. To conclude, since it is not clear whether *cognitive* is indeed a technical term, and it is finally unclear which consequences this distinction could have on the results of this investigation, in the following we shall focus on the observable properties of *cognitive*, in particular, its polysemy, irrespective of whether some of its uses may be regarded as terminological, and provide ways how to account for its different readings.

In the corpus analysis, the instances of the respective reading of the lexical item under consideration will be investigated by extracting its semantic properties. Now, determining what an utterance, and a lexical item, means, is a matter of interpretation. There are methods to support an analysis; for example, Cruse (1986, 1995) provides a number of test frames by means of which semantic relations can be tested. However, none of these methods for lexical semantics allows to decide for a lexical item in a particular context what it may mean. Here, interpretative methods developed for the analysis of text and conversation may be more useful. Conversational Analysis (henceforth CA), for instance, may teach us to attend to participant categories; that is, for the analysis of conversation, CA holds that speakers display their understanding of the previous turn to their communication partners, and that this understanding displayed is what provides the basis for the interpretation by the analyst: "But while understandings of other turns' talk are displayed to co-participants, they are available as well to professional analysts, who are thereby afforded a proof criterion (and a search procedure) for the analysis of what a turn's talk is occupied with" (Sacks, Schegloff & Jefferson 1974: 729). However, it is not only the understanding of the other person's speech that is interpreted by the respective speaker, but speakers also design their utterances so that the communication partner can understand it; in speech, self-repair, for instance, indicates the speakers' attempts to present an utterance in a most suitable way (Clark & Schaefer 1989: 267). Regarding polysemy, the task also includes avoiding ambiguities, and thus speakers will try to display their own understanding of the linguistic resources employed as clearly as possible. Correspondingly, as a method for the analysis it will be attempted here to determine which information the writers use to indicate to which reading of *cognitive* they are referring, that is, to display their understanding of the polysemous lexical item under consideration.

Secondly, text analysing methods will be used, since for the most part implicit information has to be taken into account. To get out such information, certain assumptions have to be made; for instance, it is taken here that if there is a conjunction of two elements x and y, x is not meant to be included in y (or the other way around). Likewise it is made use of implications by lexical material; for instance, if in a corpus instance it is claimed that x and y are combined, it is taken here that they have been looked at as distinct beforehand. Furthermore, if in a paragraph on the objectives of a research group, for instance, a number of areas are listed, these are taken to be aspects of the general interest described by the group. Consequently, logical, lexical, and textual relations will be used to determine what the meaning of a particular occurrence of a lexical item is. Ultimately, all interpretative methods are subjective, and the only criterion to evaluate judgements such as these is plausibility (cf. Taylor & Cameron 1987).

4 Example Analysis: The Adjective '*cognitive*'

The lexeme under consideration turns out to be very frequent: Searching the WWW for *cognitive* results in about 637200 - 639200 hits, depending on the search engine and the number of web pages indexed. To begin with, the contexts in which the adjective occurs are investigated. Since *cognitive* is an adjective, its closest context is constituted by the nouns with which it occurs and which it modifies. For the first 200 hits, an initial statistical analysis reveals the following combinations:

39%	general terms of research (e.g. studies, research, approaches) and the noun *science* (36%)
25%	specific names of disciplines and research directions, e.g. *linguistics*, *psychology*, etc.
18%	general terms describing states, processes, abilities (e.g. *state, process, disability*) and their representation (e.g. *architecture, levels, models*)
18%	others (for instance, *musings, marketing, creations*)

4.1 A Basic Frame of *cognitive* Processes, Abilities, and their Biological Causes

First of all, *cognitive* occurs in combinations such as *cognitive* states, *cognitive* processes, and *cognitive* mechanisms. Here, *cognitive* seems to single out particular states or processes as having to do with activities such as thinking, problem solving, speaking and understanding, i.e. with mental phenomena. For instance, in the introduction to a journal, *language and cognitive processes* become paraphrased as *mental processes* *and representations involved in language use*:

(1) Language and Cognitive Processes provides an international forum for the publication of theoretical and experimental research into the mental processes and representations involved in language use.

Which processes, however, are described as *cognitive* may vary between the authors; for instance, instances of what counts as a cognitive process are displayed in the following examples:

(2) Most psychologists today will agree that cognitive (thinking) processes are just as involved in our actions as are behavioral reinforcement schedules. (http://ttacs7.ttu.edu:8902/psy1300/outlines/faq/faq1-6.html)

While in the previous example, *cognitive* is paraphrased by *thinking*, example (3) also includes language and perception, among other mental phenomena. Example (4) instantiates cognitive processes by 'pictorial and conceptual thinking', example (5) includes also feelings and attitudes:

(3) Cognitive Processes: This course gives students an overview of research areas in cognitive psychology: language, knowledge representation, memory, perception and attention, computation and problem solving. (http://www.-jwoelfel.com/cognitive_processes.htm)

(4) The main reason of this research project is the analysis of human thinking. The possibilities of developing a method to measure and classify the change between the cognitive processes "pictorial"- and "conceptual" thinking shall be investigated. (http://www-bmti.tu-ilmenau.de/ebmti/research/-mifor_kog_proz.htm)

(5) Cognitive processes refer to thoughts and feelings. Changes in attitudes, feelings and and beliefs are cognitive processes. Cognitive processes can take place at the individual, group or cultural level. Changes in individual beliefs and in cultural values are both equally "cognitive processes."

Besides denoting mental phenomena such as thinking, perceiving, or feeling, *cognitive* can also refer to biological processes, as the following example shows in which cognitive processes are instantiated by how the brain produces, for instance, speech:

(6) Connectionism is a way of modeling how the brain uses streams of sensory inputs to understand the world and produce behavior, based on cognitive processes which actually occur. This book describes the principles, and their application to explaining how the brain produces speech, forms memories and recognizes faces, how intellect develops, and how it deteriorates after brain damage. (http://www.oup-usa.org/docs/0198524277.html)

The following example shows that what the journal on *cognitive rehabilitation* is about is actually *brain injury rehabilitation*:

(7) The Journal of Cognitive Rehabilitation (JCR) launched its first issue at a world wide conference on brain injury rehabilitation in February 1983. ... a small newsletter addressing the interest of a small group of professionals who were in the beginning stages of organizing themselves for the advancement of new and better methods for brain injury rehabilitation.

Likewise, *cognitive brain imaging*, or even *cognitive imaging* in the next example can be paraphrased as 'brain imaging while mental processes, such as thinking, problem solving, etc. are going on.' For this combination, the reading 'having to do with something mental, for instance, with thinking' would not suffice to account for the emergent interpretation of*cognitive image*; the meaning of *cognitive* seems to include at least that there are processes related to thinking and possibly other processes that are going on. That these processes are considered to be neurological is evidenced by the fact that MRI scans are obviously seen as a suited method to investigate those processes, which indicates that the relevant interpretation of the processes in the example are as biological processes:

(8) By 'Cognitive Brain Imaging' (CBI) I mean any imaging techniques which looks at structures of and in the brain, with the purpose of understanding the mechanisms of the brain. ... The discussion is only about cognitive imaging. I consider only PET and MRI studies.

The following example from an introduction to a journal published by Elsevier summarizes the relationship between mental and biological processes; *cognitive brain research* is described here as the study of those neural processes which UNDERLY mental processes. The example furthermore provides another list of such processes:

(9) Cognitive Brain Research publishes original experimental studies of neural processes underlying intelligent mental activity and its disturbances. Areas of higher nervous functions of particular interest are perception, learning, memory, judgement, reasoning, language and emotion.

Besides denoting mental processes, *cognitive* may thus also refer to the biological processes which are taken to be involved in (or to underly) these mental processes.

The range of possible readings for the adjective under consideration becomes even broader when we consider combinations such as *cognitive computer science* and *cognitive engineering*; also in the *cognitive operations* described in the following example, *cognitive* denotes neither the thought- and reasoning-related processes of humans nor their biological basis but a corresponding model of such processes on a computer:

(10) Parallel Cognitive Processes by Interleaving: In order for an AIS agent to perform complex tasks such as integrating new data that it perceives

and reasoning about data it has already sensed it must be able to perform both reasoning tasks in parallel. The Dynamic Control Architecture formulates reasoning as a sequence of discrete cognitive operations that incrementally generate and modify explicit solution representations, thus it can perform two cognitive tasks at the same time by interleaving ... (http://krusty.eecs.umich.edu/cogarch3/AIS/AIS_Parallel.html)

(11) Cognitive modelling is central to the study of cognitive science. Many cognitive scientists are either actively engaged in creating new models or examining the implications of existing models. A computational model requires specification of every detail of design, forcing the cognitive modeller to face the implementation consequences of their cognitive theories. (http://www.psy.uq.edu.au:8080/CogPsych/ic320/)

In the latter example, those who design computer models are called *cognitive modellers*, that is, a *cognitive modeller* is someone who creates a computational model of his theories of cognitive processes.

Furthermore, *cognitive* is found in combinations with nouns like *architecture, levels, representations*, or *models*. Here, not just mental or biological processes are invoked by the lexical item *cognitive*, but it involves the view that there are complex structures which interact and cause the behaviour observable.

(12) A cognitive architecture is an integrated system capable of supporting intelligence. (http://ai.eecs.umich.edu/cogarch2/)

(13) The classical notion of cognitive architecture has served as a framework for studying cognitive activity. (http://www.ucs.usl.edu/ stf0297/draft.html)

The uses of *cognitive* discussed so far, which concern certain mental or biological processes and structures or their models, together make up only 11% of the 200 examples investigated in the initial statistical analysis. In further 7% of the examples investigated, *cognitive* is combined with nouns which describe problems or inabilities: *cognitive disability, decline, disorders*, or *impairment*; *cognitive decline*, as in example (14), can be paraphrased as the decline of the 'usual' mental capabilities. As example (15) shows, the 'normal' capabilities referred to may however also be conceptualised as physical:

(14) Sudden Cognitive Decline Not Part of Normal Aging: By testing older adults repeatedly for up to 15 years, researchers have shown that a sudden decline in mental ability is not a normal part of aging but can signal the onset of Alzheimer's disease. (http://mentalhelp.net/articles/aging1.htm)

(15) Smart Life News details the latest scientific research in the rapidly growing field of cognitive enhancement technologies and related topics of physicial health and well-being, including the latest treatment trends for Parkinson's, Alzheimers's, Down's syndrome, and age-associated mental impairment in normal, healthy adults.

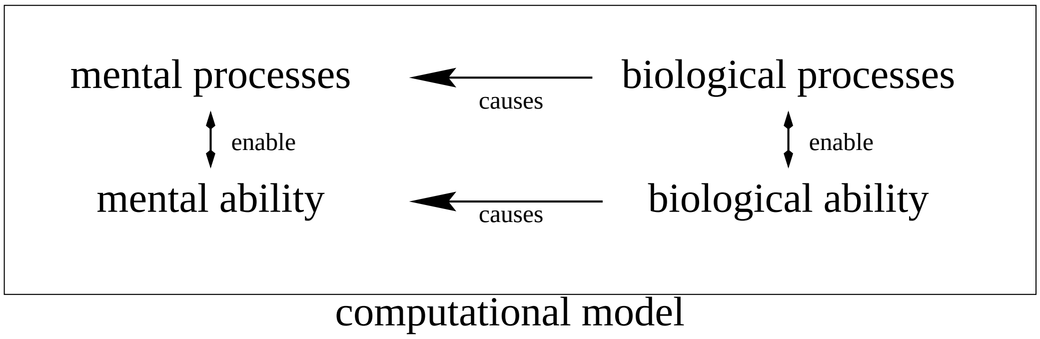

Figure 1: The Relationships between the Readings of 'cognitive'

To sum up the discussion so far, the adjective *cognitive* may display the following different readings, all of which refer to some varying selection of certain aspects of human behaviour:

- related to mental phenomena, such as thinking, problem solving, speaking, etc.
- related to biological processes underlying thinking, problem solving, speaking, etc.
- related to a (normal) mental ability to carry out thinking, problem solving, speaking, etc.
- related to a (normal) biological ability underlying thinking, problem solving, speaking, etc.
- related to a model of mental or biological abilities and processes such as thinking, problem solving, etc.[1]

Figure 1 shows the relations between the different readings; their interaction can be described as a linguistic frame, as "certain schemata or frameworks of concepts or terms which link together as a system, which imposes structure and coherence on some aspect of human experience" (Fillmore 1975: 123).

Regarding the procedures writers employ to point out which of these readings constitutes the intended interpretation, it is obvious that they do not spend much effort in distinguishing these readings; the ambiguity is usually resolved by means of procedures such as paraphrasing, for instance, in example (2), *cognitive* is disambiguated by means of adding in brackets the paraphrase *thinking*. Another procedure is the use of coordination constructions, e.g. 'cognitive enhancement technologies and related topics of physical health' in example (15). Furthermore, encyclopedic information can disambiguate the use of *cognitive*, for instance, the proposal to use

[1] This reading may of course be further disambiguated regarding whether mental or biological processes are modelled, and indeed there are different types of models; for instance, one type only attempts to model mental functions, another type also attempts to provide a model of the biological processes as well (cf. Smolensky 1988, for instance). For the discussion here, disambiguation up to this point may suffice.

MRI scans as a method to investigate cognitive processes points to a neurological reading of these processes; thus, world knowledge may help to identify the correct interpretation; finally, writers employ exemplification in order to display the intended reading of *cognitive* to their readers.

However, besides the fact that some disambiguation strategies can be identified, given the close connections between mental and biological processes, abilities, and their models which are obviously assumed by many writers, it does not seem to be of particular importance to the writers to make sure how exactely they understand *cognitive* in a given context. Thus, it may be asked whether these different readings are sufficiently distinct, since users do not seem to fear communicative problems in case the intended reading is not sufficiently clear; a test for distinctness is provided by Cruse (1995: 36), for instance:

(16) Mary was wearing a light coat; so was Sue.

This sentence should be "very unusual" if Mary had a coat light in colour while Sue's coat would be light in weight. Similarly, we can construct such an "identity-test" for *cognitive*:

(17) Theo studies cognitive phenomena; so does Brian.

This sentence should be 'unusual' if Theo is a philosopher and Brian a neurologist. Similarly, if Theo does IQ-tests, studying mental abilities, while Brian builds artificial neural networks, the same 'unusalness' arises. It can be concluded that the different readings identified are indeed sufficiently distinct, that writers however do not attend very much to their disambiguation. The reason for this may lie in the co-operativity of these readings, that is, "in contrast to antagonistic readings are discrete clusters of semantic properties which normally coexist and co-operate within the meaning of a word" Cruse 1995: 35). In antagonistic readings, the readings are in direct conflict with each other; since the readings of *cognitive* are however highly related, for instance a causal relation being supposed to hold between mental and biological processes, they do not constitute a conflict here, but co-operate with each other.

Correspondingly, Cruse's (1995: 37) test for antagonism does not work; he proposes for the homonym *bank* the following test:

(18) I love the banks of the Thames - Barclays, NatWest...

For *cognitive*, the test could be adapted in the following way, however, with a negative result since there is no zeugmatic effect:

(19) Theo studies cognitive phenomena: thinking, brain images, enhancement technologies...

Regarding the value of determining how language users themselves treat an instance of polysemy by means of pragmatic methods, it seems in accordance with the methods developed for items in isolation within the structuralist framework and their results (Cruse 1986, 1995). The results furthermore indicate that Pinkal's model according to which vagueness does not cause communicative problems, or, in our terms, does not initiate procedures by the speakers to avoid such problems, yet, ambiguity does cause such a linguistic behaviour, can be refined on the basis of the criteria of distinctness and antagonism proposed by Cruse: Distinct but co-operative readings are not treated by participants as possible sources of communicative problems. The criterion proposed by Pinkal (1980) thus distinguishes antagonistic versus co-operative readings, not necessarily ambiguity versus vagueness. However, Cruse (1995: 36) also argues that for an item to be FULLY ambiguous, its readings have to be both distinct and antagonistic. While his paradigm example for a lexical item with co-operative readings is *book*, Pustejovsky (1995: 153-156) treats *book*, for instance, as an instance of (logical) polysemy, which is according to Pinkal also a type of ambiguity and thus one of those phenomena which may cause communicative problems and which would make certain avoidance strategies by the language users relevant. While polysemy thus seems to include also co-operative meanings, the discussion supports Cruse's (1995: 36) point that ambiguity is a matter of degree, and that the dimensions of this continuity are discreteness and antagonism.

4.2 The Readings of *Cognitive* in Combination with Nouns Describing Research Directions

So far, we have found that the adjective *cognitive* can refer to different classes of objects in the world: to mental phenomena, but then also to biological causes of these mental processes, to their models in computer systems, and to an ability which is shared by 'normal' people. Which processes are considered to be *cognitive* and which are not, e.g. emotional or visual, may differ as well.

While the uses of *cognitive* discussed so far only make up 18% of the examples, it turns out that the largest part of the nouns which are modified by the adjective are the names of disciplines or research directions. Thus, about 36% occur with the noun *science*, further 3% occur with words which describe research activities in general: *studies, research, approaches.*

While example (20) suggests that cognitive science is the study of mental processes and possibly abilities, example (21) indicates that the whole spectrum of meanings for *cognitive* established above may be involved; thus while the inclusion of linguistics, for instance, may indicate that a mental process such as speaking may be the object of studies in cognitive science, the inclusion of computer science suggests that here aspects of computer modelling may be involved. Likewise, that physiology is part of the list suggests that also biological processes underlying the mental phenomena denoted by *cognitive* are the objects of study:

(20) Cognitive science is a multidisciplinary approach to the study of the human mind.

(21) Cognitive Science is an interdisciplinary field that has emerged during the past few decades at the intersection of a number of existing disciplines, in-

cluding psychology, linguistics, computer science, philosophy, anthropology, and physiology.

On the basis of these two examples, it may be concluded that cognitive science is the study of the whole range of those phenomena which can be called *cognitive*; that is, the combination between *cognitive* and *science* seems to inherit the functional spectrum of *cognitive.* Example (22) supports this observation regarding the readings mental phenomena, computer model of these phenomena and their biological causes.

(22) Using psychological experiments, computer simulations of models of the mind, and advanced brain imaging techniques, cognitive scientists try to look inside the head at the hidden world of cognition.

Besides the combination with *science* and lexemes such as *research* or *study*, an additional 25% of the adjective occur with the names of particular disciplines, such as *neuroscience, psychology, behavioural therapy*, or *linguistics.* Consequently, the main portion (64%) of the occurrences of *cognitive* are in combination with terms denoting general or specific research directions. However, contrary to the example above, the adjective *cognitive* in these combinations does not always seem to single out the object of study; while *cognitive psychology*, for instance, is defined in the following example as a study of certain mental phenomena, it is also called a particular *theoretical perspective*:

(23) Cognitive psychology is a theoretical perspective that focuses on the realms of human perception, thought, and memory.

Cognitive therapy, in example (24), similarly indicates that whatever *cognitive* means provides a certain perspective of how to approach psychological problems in therapy:

(24) Cognitive therapy teaches you how certain thinking patterns are causing your symptoms by giving you a distorted picture of what's going on in your life, and making you feel anxious, depressed or angry for no good reason, or provoking you into ill-chosen actions.

Likewise in a call for papers for the LAUD workshop 'Ten Years After' Cognitive Linguistics: Second Language Acquisition, Language Pedagogy, and Linguistic Theory, it is clear that whatever *cognitive* means, it is used to distinguish a certain research paradigm within linguistics and does not refer to the objects of study:

(25) Although cognitive linguistics can certainly be characterized as the most rapidly expanding linguistic paradigm of the last decade, the impact of this linguistic theory on research in language acquisition and foreign language teaching has no more than appeared at the periphery of CL ....

Which properties are involved in the perspective indicated by *cognitive* needs further investigation. One methodological possibility may be to see to which other research directions a particular discipline is contrasted; for instance, *cognitive therapy* is opposed to *behavior therapy* in the next example:

(26) Cognitive-behavioral therapy, or CBT for short, combines two very effective kinds of psychotherapy: cognitive therapy and behavior therapy.

However, in order to be able to discuss what exactely *cognitive* contributes with respect to a particular discipline, a large amount of knowledge of the discipline is necessary. For instance, regarding example (26) we would need to know what exactely the differences between those two approaches are. That is, encyclopedic knowledge is necessary here. Still, in order to determine the full semantic spectrum of *cognitive*, it should also be investigated what exactely its role is in combination with particular nouns which constitute names of disciplines.

The analysis will therefore proceed from here by focussing on a particular example. The example on which these aspects will be investigated further is *cognitive linguistics* because linguistics is the discipline to which this article contributes and for which most background knowledge among its readers can be assumed. Furthermore, because cognitive linguistics is a rather young research perspective, ubiquitous definitions and statements of purpose can be found both in the corpus under consideration, the world-wide web, and in expert texts on the topic. There should be therefore enough material to determine the semantic range of the expression.

4.3 The Meanings of *Cognitive Linguistics*

In the literature on cognitive linguistics, statements like "Cognitive Linguistics is not cognitive linguistics" (Peeters 1998: 300) can be found. This sentence plays with the polysemy of the expression, and our task now will be to determine what the adjective *cognitive* contributes to its different readings. That is, what can be expected is that the adjective-noun combination is as polysemous as its constituents; however, it will be shown that besides this polysemy the combination includes semantic properties which are far beyond the meanings to be arrived at compositionally, and that, in contrast to the polysemy of *cognitive*, writers attend to its ambiguity. Consequently, it will now be investigated what different uses the expression may have and which procedures the language users employ themselves in defining the meanings of the combination *cognitive linguistics*.

The first observation is that while the information about what *cognitive* may mean was indirect and had to be extracted by analysing the context carefully, for *cognitive linguistics* there are numerous definitions which allow the semantic analysis much more directly. The definitions which can be found often contain a general statement on the relationship between language and cognition, a list of main interests, and the names of prominent researchers of the respective area. Occasionally, also the hyperonym is mentioned.

For example, in a call for papers for the 4th International Cognitive Linguistics Conference July 1995 in Albuquerque, New Mexico, the organisers describe their aims and the scope of the conference in the following way:

(27) The International Cognitive Linguistics Conference offers a forum for research within the perspective of cognitive linguistics. This perspective subsumes a number of concerns and broadly compatible theoretical approaches that share a common basis: the idea that language is an integral part of cognition which reflects the interaction of cultural, psychological, communicative, and functional considerations, and which can only be understood in the context of a realistic view of conceptualization and mental processing. Topics of interest for cognitive linguistics include the structural characteristics of natural language categorization (such as prototypicality, metaphor, mental imagery, and cognitive models), the functional principles of linguistic organization (such as iconicity and naturalness), the conceptual interface between syntax and semantics, the experiential and pragmatic background of language-in-use, and the relationship between language and thought.

Thus, first of all, cognitive linguistics is called a *perspective*, i.e. *cognitive* does not specify the objects of linguistic investigation. Then, the common basis of cognitive linguistic approaches is described, namely that language is an integral part of cognition. Thirdly, typical interests of cognitive linguistics are listed (protoypicality, metaphor, imagery, etc.).

This view of what cognitive linguistics is about contrasts with what is written on the Welcome Page of the Cognitive Linguistics Section at the Faculty of Literature & Social Sciences, Yamagata University, Japan:

(28) Cognitive Linguistics is a subfield of cognitive science, dealing with old but not yet fully answered questions about our linguistic abilities: How can we speak and understand our own language, and for that matter, our second and third languages? It aims at making explicit the nature and origin of the "knowledge of language" every one of us has and the way we put it in use in our everyday linguistic environment. ... The theoretical backgrounds for these inquiries vary depending on your interest. The Linguistics Course covers the so-called Saussurian linguistics and the formal linguistics introduced by Noam Chomsky.

This description of cognitive linguistics is begun with a statement of the hyperonym, that is, of the scientific discipline to which cognitive linguistics is believed to belong. Then, again, research interests are listed, however, these interests are different from those from the example above. Furthermore, research perspectives within cognitive linguistics are identified by the names of Saussure and Chomsky.

Another view again is stated in an invitation to a workshop by the Australian Linguistics Institute at the University of Queensland July, 1998 in example (29); here, the hyperonym are the linguistic and behavioural sciences, and as in examples (25) and (27), it is understood as a particular ‘theoretically motivated approach’, that is, the function of *cognitive* seems to be to distinguish a particular research perspective from possible alternatives (in contrast, the relationship between the discipline and the modifying adjective in the case of *cognitive science* in examples (20) to (22) was to define the object of study).

(29) Cognitive Linguistics, as a theoretically motivated approach to linguistic and behavioural science, encompasses research on a wide variety of linguistic and cognitive phenomena (including: syntax, semantics, discourse, ASL/Auslan (sign language), gesture, psycholinguistic and neurolinguistic data), and also has points of research contact with various other linguistics sub-fields – cf., socio- (cultural) and applied linguistics research, as well as computation research.

Furthermore, in example (29), linguistic and cognitive phenomena seem to be conceptualized as being distinct from each other, contrary to the claim made in example (27) that linguistic phenomena are an integral part of cognition. Otherwise, the examples given for the interests of cognitive linguistics are similar to those listed under the heading “what is linguistics?” on the webpage http://www.cal.org/ericcll/digest/-cal00001.html as areas of study of formal, socio- and psycholinguistics.

Concerning the hyperonyms of *cognitive linguistics*, like Yamagata University de Gruyter classify their journal as a contribution to cognitive science, in contrast to a description of the aims of cognitive linguistics on a web-page in Leuven where it is considered a branch of linguistics:

(30) Cognitive Linguistics. An Interdisciplinary Journal of Cognitive Science. (www.degruyter.de/journals/cogling/clnotes.html)

(31) Cognitive Linguistics happens to be the branch of linguistics which posits that there are fundamental links not only between general-purpose cognition (”concepts”, one might say) and the meaning of words, but also between such word meanings and the other aspects of language (e.g. sentence and dialogue structure, and the forms of spoken words). (http://onyx.arts.kuleuven.ac.be/-˜ezra/ezra/plan-sci.html)

Statements which describe the relationship between language and cognition are numerous, for example, in de Gruyter’s introduction of their journal:

(32) COGNITIVE LINGUISTICS presents a forum for linguistic research of all kinds on the interaction between language and cognition. Cognitive linguistics focuses on language as an instrument for organizing, processing and conveying information...

Here, language is looked at as an instrument for what obviously constitute examples of cognitive processes, while in the following example, the relation is specified as being rooted in our conceptual system:

(33) Cognitive Linguistics is a model of linguistic description which relates language to our conceptual world and our human experience. One of the basic tenets of this model is that grammatical categories and grammatical constructions are meaningful. The meanings associated with the grammar of a language are rooted in our conceptual system and our basic experiences. Consequently, grammar is part of cognition and makes use of the same cognitive principles that govern all our cognitive processes such as perception and thought. (http://www.enl.auth.gr/postling/ling2592.htm)

In an e-mail by Scott Delancey on March 20th 1991, the relation is specified as 'seek explanations for x in terms of y' where x are general linguistic principles and y are general principles of cognition:

(34) Though I'm sure everybody's (getting?) tired of the argument, I think it's worthwhile to point out that the term "cognitive", in the specific sense of describing approaches to linguistics that seek explanations for general linguistic prinicples in terms of general (= nonspecific) prinicples of cognition, has been in use for quite a while–the first published use that I know of being Lakoff and Thompson's paper in BLS 1 (1975 !!).

In an invitation to a theme session on 'computer models in cognitive linguistics', the organiser, David Powers, writes on July 18th 1997:

(35) Cognitive Linguistics is built on the hypothesis that language is an outgrowth of general cognition and not primarily a function of modules specific to language/speech. Metaphor is seen as a primary mechanism in Cognitive Linguistic theory, but how does it relate to general cognition and explain language as an emergent property? Since Piaget, Psycholinguists have discovered a tight relationship between child learning of language and ontology, but how concrete are the theories to explain the relationship? (http://www.vu.nl:8000/ICLC97/tspowers.htm)

This paragraph brings cognitive linguistics close to psycholinguistics; furthermore, the relationship between language and cognition is described as *outgrowth*.

Further suggestions include the following:

(36) I would think Cognitive Linguistics would mean precisely the examination of language in the context of general cognition. (20 Feb 91, David Powers)

(37) Cognitive linguistics is an approach to language rooted in cognition. That is, this view is that linguistic phenomena are inextricably linked with the rest of the cognitive apparatus and therefore the language system behaves in a similar way to other parts of our cognitive makeup and is influenced by them. There is no separate language facility; language is affected by our apprehension of the world around us. (http://www.dcs.shef.ac.uk/research/groups/-nlp/groups/cogling.html)

Taylor (1995) discusses the differences and commonalities of different approaches inside cognitive linguistics. In his comparison of two approaches which claim of themselves to be cognitive linguistic approaches, Langacker's and Bierwisch's, he proposes to interpret *cognitive linguistics* as a commitment to provide an adequate account "of the mental states and processes that cause the behaviour" without directly implying a particular research strategy. This is what he calls "the cognitive commitment" and what all cognitive linguistic approaches share (Taylor 1995: 4).

It can be concluded that cognitive linguistics assumes some kind of relation, for instance, causal, part of, explanatory, instrumental, between language and aspects of human cognition, that is, between linguistic structure and 'general principles of cognition', 'our conceptual world and our human experience', or cognitive processes such as 'organizing, processing and conveying information'. The interpersonal variability of the accounts of this relationship, however, is quite surprising; furthermore, cognitive linguistics is seen as a subdiscipline of linguistics, linguistic and behavioural sciences, or cognitive science.

In 1991, a debate was held on the LinguistList about the appropriateness of the name *cognitive linguistics* for the newly founded Cognitive Linguistics Association and the journal to be published by de Gruyter.[2] It was initiated by Vicki Fromkin with a comment that the term is quite unsuited; while her opinion is that using *cognitive linguistics* for a particular research direction is arrogant since other approaches may also be justifiedly called *cognitive linguistics*, another participant finds it misleading and over-general. Thus, the usage suggested for the new association seems to be more specific than it may be expected by the combination of the items *cognitive* and *linguistics* compositionally:

(38) I apologize for starting a discussion on 'terminology'. A rose is a rose is a etc.... I say this because not only do I recoil at what I consider an arrogant use of the term 'cognitive linguistics' (arrogant because it defines cognitive linguistics to exclude other views than their own) but at the pejorative connotation attached to the term 'formalisms' and 'formal linguistics' by various colleagues. (Vicki Fromkin, 25.3.1991)

(39) I agree with Vicki Fromkin that the name 'cognitive linguistics' is confusing in that it seems to encompass all linguists who consider themselves cognitive scientists. But there are plenty of precedents in the linguistic community for choosing misleading or over-general names for theories. (6 Feb 91, <rwojcik@atc.boeing.com>)

Daniel Everett, in a mail from February 13th, 1991, also rejects the term for similar reasons, but he adds that there is already a position which is also, like the new position which is about to be named *cognitive linguistics*, more specific than the study of the relationship between language and cognition in general but which is so well established that he regards the combination to be reserved for it:

[2] The URL for this discussion is http://linguistlist.org/issues/master.html#topics, the individual contributions are furthermore identifiable by the date.

(40) I object, therefore, most strongly to the use of 'Cognitive Linguistics' in such a way as to indicate that any particular group has the inside track on this issue. Historically, of course, the term would 'belong' by rights to Chomsky's work and its offshoots since he is directly responsible for most of what is known as the Cognitive Sciences anyway.

Thus, these authors reject the introduction of this name for a new research direction because of a discrepancy between the potential coverage of the term and a more restricted usage by particular research directions, on the one hand, and because the combination seems to be reserved for another research tradition than the one proposed on the other. Likewise, Ungerer & Schmid (1996), in "An Introduction to Cognitive Linguistics", distinguish cognitive linguistics in their view from what they call the logical view of cognitive linguistics in which it is assumed that while "the logical rules and objective semantic features which generate language are stored in our memory, it seems only natural to claim that they are of a mental nature. This approach is therefore also 'cognitive' in the original sense of the word (i.e. 'related to knowledge'). However, it is not the kind of 'cognitive linguistics' the book is about" (1996: x-xi). Thus, while acknowledging that there are other kinds of linguistic approaches which can justifiably, and 'orginally', be called *cognitive linguistics*, they reserve the term for a particular research direction within cognitive linguistic approaches.

However, there are also contributions to the discussion which stress the commonalities between the two perspectives which are referred to by means of their most salient contributors. For instance, Don L.F. Nilsen writes on the 27th of February, 1991:

(41) It's interesting to note that Lakoff and Chomsky have taken such opposite positions re "Cognitive Linguistics" when they are both trying to do the same thing – use linguistic information to investigate the properties of the human mind.

Nilsen, therefore, takes the view that what *cognitive linguistics* means and what both research directions, the Lakoffian and the Chomskian, actually do, is to use linguistic information to investigate the properties of the human mind. This is, however, not exactely the definition of *cognitive linguistics* found in the examples (32) to (36) above in which, on the contrary, the research perspective was reversed, for instance, to study language in the context of cognition (e-mail from David Powers).

Besides discussing these terminological questions, discussants on the LinguistList have also attempted to find criteria for distinguishing these two research perspectives. One topic which came up during the discussion is the modularity issue, another one is the question of autonomy, which are evidenced in examples (42) and (43) by two mails from Michael Kac on February 6th and 28th, 1991:

(42) Re Vicki Fromkin's comment on cognitive linguistics: whatever position hou (sic!) take on the modularity issue (I suspect that the jury will be out on that one for some time), I think that Vicki is right in objecting to the use of

‘cognitive’ in the way some are using it. It brings to mind the tendency of linguists to use the word ‘natural’ in a special, technical sense according to which it means ‘my’.

(43) The debate that’s going on in Linguist doesn’t seem, in any event, to involve who is right on the issue of whether language is autonomous. It seems, rather, to involve a battle over turf: the antagonists appear to be arguing over who has the right to occupy the hallowed plot of ground called *cognitive linguistics*. That’s not a very worthwhile thing to have a fight over, it seems to me, though I sympathize with those who object to reserving the term ‘cognitive linguistics’ for the research program of only one group of combatants.

Gibbs, in the e-mail from January 31rst, 1991 that was the incident which provoked Vicki Fromkin’s challenge and the discussion afterwards, considers autonomy as a criterion to distinguish cognitive linguistics from other approaches, as the following example shows. It furthermore highlights the interdisciplinary nature of cognitive linguistics and its relations to other ‘cognitive disciplines’:

(44) This e-mail note describes the International Cognitive Linguistics Association, and presents details about the new journal “Cognitive Linguistics,” and this summer’s cognitive linguistics conference here at UC Santa Cruz. ... The ICLA has an explicitly interdisciplinary orientation, not only in the sense that cognitive linguistics tries to incorporate relevant research from other cognitive disciplines, but also because it hopes to highlight the contribution of linguistics to Cognitive Science. Within cognitive linguistics, the analysis of the conceptual and experiential basis of linguistic categories and constructs is of primary importance: the formal structures of language are studied not as if they were autonomous, but as reflections of general conceptual organization, categorization principles, and processing mechanisms.

Another distinguishing criterion is whether linguistic knowledge is considered to be innate, as it becomes clear from a mail by Arild Hestvik from February 24th, 1991:

(45) Another futile arm-chair debate about general intelligence vs. Innate linguistic knowledge is raising its head – let’s instead have the real arguments and *research* decide whether there is an innate language faculty or not. In the end that’s the important thing and not whether cognitive linguistics is a brand-name reserved for people who a priori have made up their mind one way or the other.

To sum up, the topics mentioned in the discussion are autonomy, modularity, and innateness of language as criteria to distinguish the different research directions; Gibbs (1996: 49) furthermore argues that:

(46) Cognitive linguistics is especially deserving the term *cognitive* not solely because of its commitment to incorporating a wide range of data from other cognitive disciplines, but because it (a) actively seeks correspondences between conceptual thought, bodily experience, and linguistic structure, and (b) because it seeks to discover the actual contents of human cognition.

Thus, cognitive linguistics in his view is content-oriented, and it focusses on the contents of the interaction between experience and linguistic structure in contrast Chomskian linguistics and to psycholinguistics, which are, according to Gibbs (1996), more interested in the architecture of the human mind than in the content of the linguistic categories.

Like Gibbs (1996), Peeters (1998, forthcoming) is also concerned with the relationship between cognitive linguistics and psycholinguistic findings; he argues: "Cognitive Linguistics has come a long and arduous way, but it has an even more arduous way to go: it must engage with this new form of God's truth, i.e. with psychological and with biological reality, the mind as well as the brain - in a way it has not done hitherto, or else risk being largely ignored, in spite of whatever fascinating facts of language it may be able to unearth." His underlying assumption is that "there is hardly anything more cognitive than an exploration of how language is processed in the brain" (Peeters forthcoming). In his opinion, cognitive linguistics only lives up to its name if it considers not only mental processes and states but also their biological causes.

Furthermore, some mails have been contributed to the discussion on the LinguistList which strongly indicate that cognitive linguistics is not only regarded as a particular perspective on research but that it is looked at as a particular research paradigm in Kuhn's sense, that is, it is considered as a sociological entity. For instance, George Lakoff writes in reply to Prof. Fromkin on February 7th, 1991, that establishing a new association and a new journal is essential for getting papers published which display a particular research perspective; consequently, defining this research direction and organising a relevant association and a forum for publication does not only serve to label a particular view about the relationship between language and cognition, it has also consequences for the work as a scientific community:

(47) Perhaps this is the only forum where such a discussion could take place across the cognitivist-generativist divide. It is impossible at the LSA, which has a conservative, generatively-oriented program committee and which has refused to permit paper sessions devoted to results in cognitive linguistics.

Not enough that founding a research discipline serves as a forum for a group of researchers with a particular view on the relationship between whatever *cognitive* means and language, Daniel L. Everett, on February 13th 1991, also argues that it has monetary advantages:

(48) ... nor does usurpation of a particular term of so much *emotive* value to many linguists as 'Cognitive' [help, K.F.] (emotive because calling something

'Cognitive Linguistics' instead of just 'Linguistics' implies that what others do is less relevant for cognitive concerns). Of course, I can understand why this term is so desirous - we all know that 'Cognitive' is more attractive to funding agencies and nonspecialist book-buyers than straight 'Linguistics'.

Another aspect which fits the picture that cognitive linguistics is treated as a paradigm in Kuhn's sense is the prominence of certain books. Kuhn writes in his Postscript to the second, enlarged, edition, in which he scetches "needed revisions", comments "on some reiterated criticisms" and directions in which his thought was developing at the time (1970: 174): "A paradigm is what the members of a scientific community share, and, conversely, a scientific community consist of men who share a paradigm" (1970: 176). Therefore, he argues that "Any study of paradigm-directed or of paradigm-shattering research must begin by locating the resonsible group or groups" (1097: 180). If we now attempt to answer the question of how writers succeed in conveying to their readers to which kind of cognitive linguistics they are referring, it is found that strikingly often in the instances found in the world-wide-web occurrences of *cognitive linguistics* are accompanied by the names of prominent representatives of the respective research perspective, for instance:

(49) The course will begin with the topic of aspect in both CL [cognitive linguistics, K.F.] and NTL, comparing CL approaches (largely Langacker's) with Narayanan's NTL approach. http://socrates.berkeley.edu:4247/F97/lx205.-html

The picture of a paradigm is supported by Peeters' (forthcoming) observation that "the Cognitive Linguistics movement as we know it today was born out of polemical opposition to Chomskyan linguistics." He furthermore writes that "it became the name used by one particular group of people to refer to the sort of work they were undertaking. It also became - quite naturally - the name used by others to identify that particular group of people." Thus, in Peeters' view and corresponding with Kuhn's definition of *paradigm*, it is not only a particular research perspective which *cognitive linguistics* denotes, but more importantly a group of people.

Besides the need for identifying the relevant members of the particular research group, Kuhn also argues that a paradigm is characterised by a specific body of literature: "A scientific community consists, on this view, of the practitioners of a scientific speciality. To an extent unparalleled in most other fields, they have undergone similar educations and professional initiations; in the process they have absorbed the same technical literature and drawn many of the same lessons from it" (1970: 177). Accordingly, in a reading list on cognitive linguistics (www.arts.kuleuven.ac.be/~ezra/ezra/-read-cl.html), there are titles (by Lakoff and Langacker) which are referred to as "the bibles":

(50) The "bibles":

Lakoff, G. (1987), Women, Fire and Dangerous Things. What Categories Reveal about the Mind, Chicago: University of Chicago Press

Langacker, R.W. (1987), Foundations of Cognitive Grammar. Vol. I: Theoretical Prerequisites, Vol. II: Descriptive Application, Stanford, CA.

This matches with Peeters' (1998) observation that in the book edited by Geiger and Rudzka-Ostyn (1993), 67% of the authors cited works by G. Lakoff and 74% cited works by Langacker. Furthermore, Kuhn argues that "each community ordinarily has a subject matter of its own" (1970: 177). Correspondingly, in most of the instances found in the word-wide web, the respective reading of *cognitive linguistics* is identified by a list of topics or relevant research questions; for instance, de Gruyter advertise their journal as being "devoted to high-quality research on topics such as:

- the structural characteristics of natural language categorization (such as prototypicality, cognitive models, metaphor, and imagery)
- the functional principles of linguistic organization (such as iconicity)
- the conceptual interface between syntax and semantics
- the relationship between language and thought, including matters of universality and language specificity
- the experiential background of language-in-use, including the cultural background, the discourse context, and the psychological environment of linguistic performance."

Similarly, the call for papers for the 6th International Cognitive Linguistics Conference in Stockholm in 1999 included this statement:

(51) This conference is a primary venue for presentation of new work in all aspects of cognitive linguistics and related disciplines. Some of the major areas to be discussed are: function and form; lexical and grammatical meaning; metaphor and metonymy as cultural and cognitive phenomena; relationship between language and thought; language change and grammaticalization; typology; polysemy and semantic fields; discourse analysis; language acquisition; conceptual structure; language processing, reference theory; literature and cognition. Contributions from the fields of neuro- and psycholinguistics, sign language research, bilingualism and cognitive science are also included.

These areas of interest are similar to those in example (27); so in accordance with the most prominent representatives of each research direction, there are particular topics which are typically associated with this research paradigm. These are the properties writers employ to make clear to which reading of *cognitive linguistics* they are referring.

To sum up, the analysis of the role of *cognitive* in combination with *linguistics* has yielded the following results: The ambiguity of *cognitive* between mental and biological phenomena influences the readings of *cognitive linguistics* in those cases where an account for results from neurological research is being demanded (for instance, Peeters forthcoming). When Peeters thus asks whether *Cognitive Linguistics* lives up to its name, he assumes mainly the biological reading of *cognitive.* Otherwise, the writers in the corpus investigated seem to agree on the mental-phenomena reading of *cognitive*; this reading may be specified as 'general principles of cognition', 'our conceptual world and our human experience', or cognitive processes such as 'organizing, processing and conveying information', for instance. In comparison with those examples of cognitive phenomena writers have provided in their definitions of *cognitive processes*, those mentioned in the discussion of *cognitive linguistics* thus differ slightly, focussing more on general organising principles than on functions such as perception, language, or thinking.

Thus, not the whole functional spectrum *cognitive* displays in combination with nouns like *model, architecture, decline* etc. is involved in the interpretation of *cognitive linguistics.* Nevertheless, this combination also exhibits polysemy: First of all, there seems to be a compositional meaning which can be paraphrased very generally as the investigation of language under the assumption that language and cognition are somehow related. However, most often *cognitive linguistics* was found to be used such that the relationship between language and aspects of cognition was conceptualised as more specific than that while writers did not agree on the particular nature of this relationship. In particular, there seem to be at least two basic research trends: One connected to the name of Chomsky, in which language is investigated in order to find out something about the human mind; research topics named are, for instance, syntax, semantics, discourse, sign language, and gesture. The other is connected to the names G. Lakoff and Langacker where the relation between language and cognition is such that general cognitive principles are taken to influence in some way the properties of linguistic structures. Typical research topics here are categorization, prototypicality, metaphor, mental imagery, cognitive models, iconicity and the experiential and pragmatic background of language-in-use. These readings are not inferable from the linguistic material.

Before closing the discussion of the different readings of *cognitive*, it has to be mentioned that the investigation presented here is all but complete. What has been left out in this investigation are, for instance, eliptical uses of *cognitive*, such as a discussion of *cognitive group* where *cognitive* defines the research interests of the particular group, or cases like example (52) in which it is not clear what *cognitive* means and how its meaning is related to the other readings discussed:

(52) Cognitive Marketing Inc. is a full-service marketing and communications consultancy in Rochester, New York, specializing in the design and development of objectives-driven Internet programs for business and non-profit organizations.

Likewise the use of *cognitive* as the name of a telephone company has not been addressed here, and what its meaning in this usage could be can only be speculated about. The focus in this investigation however was not so much on a complete description of *cognitive* which considers all of its uses possible, but on an exercise in determining which the procedures are by means of which writers display to their readers to which reading of *cognitive* they refer. These will now be discussed in the final section.

Regarding our hypothesis made in section 4.1, that distinct but co-operative readings are not attended to by the writers but that discrete and antagonistic readings are, the tests for antagonism proposed by Cruse (1995) should yield positive results for *cognitive linguistics*. Accordingly, in this test, *cognitive linguistics* can not mean either Lakoffian or Chomskian style linguistics but it only works well with the compositional meaning of *cognitive linguistics* which indeed embraces all of these approaches:

(53) Theo studies cognitive linguistics – Chomsky, Lakoff, Langacker, Edelman, ...[3]

Similarly, zeugmatic effects arise in the following sentences for all other readings than the compositional one:

(54) Theo studies cognitive linguistics: categorisation, prototypicality, iconicity, and Chomsky's books.

(55) Chomsky and Lakoff are my favorite cognitive linguists.

(56) Lakoff studies cognitive linguistics; so does Chomsky.

As the latter test shows, the readings are also distinct, and they are antagonistic regarding the Lakoff- or the Chomsky-interpretation of the term, however, not with respect to the compositional cover term.

To summarize, there is a compositional meaning of cognitive linguistics, and writers attend to it. There are at least two further meanings of it, and writers attend to presenting their understanding of it by means of the three procedures mentioned above. These readings are discrete and antagonistic.

5 Conclusion: Pragmatic Methods for Lexical Semantics

This investigation has focussed on some basic meanings of *cognitive*, that is, as describing mental phenomena, abilities, and their models, and as biological processes, abilities, and their models. Then its meanings were investigated which it may get in combination with a noun which denotes a particular discipline; the example was *cognitive linguistics*. Here it was found that, contrary to the use of *cognitive* in other contexts and combinations, writers attend to its disambiguation very much, and that the procedures they use to display their understanding of the combination were related to the concept of *cognitive linguistics* as a paradigm in Kuhn's sense.

[3]Edelman is one of the researchers Peeters (1998) proposes as prominent researcher of the neurologically oriented cognitive linguistics he would prefer.

Most striking is here also which procedures are not employed; within the different specific research traditions, at least with respect to the one referred to by the International Cognitive Linguistics Association, the journal *Cognitive Linguistics*, or the conference organisers of the International Cognitive Linguistics Conferences, no consensus about the specific relationship between language and aspects of cognition seems to exist; furthermore most statements about cognitive linguistics do not make use of procedures like discussing the essential assumptions of the theory, for instance, the autonomy and the modularity issue, innateness, or content versus architecture orientation. Instead, names of prominent representatives, topics of interest and sometimes a very general statement about the nature of the relation between language and cognition are used to display to which reading the writers attend.

These results regarding the writers' attention to signalling the intended interpretation of the combination now also provides information what the aspects are which are of interest to language users; while the different research directions named *cognitive linguistics* are essentially different in their theoretical assumptions regarding the relationship between language and aspects of cognition, their main disambiguation procedures concern the social aspects of these research views: Whom to read and to cite, what constitutes a topic and what are the basic tenets. Self-evidently a lexicon, whatever its uses, does not only have to represent what is attended to; however, the information at which properties language users are oriented can support lexical analyses by means of the approaches proposed discussed in section 2; for instance, researchers, experts (cf. Putnam 1975), are likely to decide on the question whether a given article contributes to cognitive linguistics or not on the basis of the same criteria as found as those to which writers attend, and thus the truth conditions of *cognitive linguistics* would have be defined along these criteria. Likewise, regarding the inferences which are based on the lexical properties of sentences, for some readings of *cognitive linguistics* the hyperonymical information would have to be coded in the lexical entry according to what the writers have been found to believe to be the hyperonym, especially in those cases in which the head principle of the adjective-noun combination does not work; thus, cognitive linguistics is not necessary a type of linguistics but in some readings has been described as subdiscipline of cognitive science and of the linguistic and behavioural sciences.

Similarly, the contrast relations to other lexical items may also orient at the ways cognitive linguistics is opposed to other linguistic disciplines in the corpus instances investigated: by means of prominent researchers, relevant topics and a rough statement about the relationship between language and cognition. Also an account of speakers' understanding may make use of what the language users really attend to. And finally, an account which describes the compositional aspects of meanings refers to the emergent meaning, and the method proposed here can assist in determining this meaning.[4] Thus, the methods proposed can support previous approaches to lexical meaning and provide clues as to which information constitutes the understanding

[4]However, two of the readings of the adjective-noun combination in the current example are not compositional and thus do not have a direct impact on the meaning aspects described for *cognitive* in such an account.

of a lexical item.

Furthermore, it was found that in the discussion on the appropriateness of the employment of this combination as a name for a particular research perspective, writers, and especially those contributing to the e-mail discussion, were also oriented at the compositional meaning of the combination. Thus, the combination of the adjective and the noun are obviously also analysed according to their original contributions plus their rules of combination (cf. Fischer 1996) and irrespective of the more specific meanings the combination may have and of which the writers seem to be well aware. This finding supports compositional accounts of natural language semantics.

Finally, theoretical distinctions, such as Cruse's dimensions along which ambiguity can be analysed as well as Pinkal's taxonomy can be substantiated by means of results from a corpus-based analysis of the participants' categories involved in language usage.

Pragmatic methods from the analysis of conversation are therefore useful in supporting lexical semantic analyses by providing evidence for speakers' attention to compositionality, by displaying their understanding of the relevant readings and thus providing the researcher with content information on their understanding, as well as by contributing to theoretical distinctions between different types of semantic indeterminacy.

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