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# COGNITIVE LINGUISTICS AS A METHODOLOGICAL PARADIGM

## 1. Cognition

### 1.1. Introductory Remarks

The word *cognitive* has become very in. We speak of cognitive grammar (Langacker 1987, 1999, Heine 1997), cognitive semantics (Allwood, Gaerdenfors 1999, Talmy 2000), cognitive pragmatics (Nemeth 2001) and, ultimately, cognitive linguistics. How is *cognitive linguistics* different from simply *linguistics*?

Contemporary literature suggests a variety of possible answers, but common to them all is an understanding that "languaging" is a cognitive *activity* (Clark 1996, Verschueren 1999), and since cognition is the essential functional feature of a living organism (Maturana 1970), cognitive linguistics is, naturally, concerned with the *human factor* and with *cognitive structures* categorized and represented in language (Fox, Jurafsky, Michaelis, 1999). This implies that language as an object of study should be analyzed along the following three dimensions: (i) language and the mind, i. e. knowledge and consciousness (Johnson-Laird 1983, Carruthers 1996, Lycan 1996, Wagman 1998, Brook, Stainton 2000), (ii) knowledge and mental structures, i. e. categorization and conceptualization (Rosch 1977, Smith, Medin 1981, Neisser 1987, Jackendoff 1992, Nolan 1994, Lamberts, Shanks 1997), (iii) information and the sign, i. e. the semiotic problem of meaning (Castañeda 1990, McGregor 1997, Keller 1998). Yet the

overall approach should remain holistic (Josephson, Blair, 1982) if we want to achieve an adequate understanding of natural language.

The mainstream cognitive science approach to intelligence is largely computational: intelligent performance is viewed as certain symbolic processes involving representations (Fodor, 1975, 1998; Newell, 1990; Pylyshyn, 1999; Fuchs & Robert, 1999 *inter alia*). These processes account for such cognitive capacities



as perception, language acquisition and processing, planning, problem solving, reasoning, learning, and the acquisition, representation, and use of knowledge (Lepore & Pylyshyn, 1999). The computational metaphor in today's cognitive science pervades everything, from philosophical psychology to applied tasks in natural language processing. This is only to be expected, since man has been under a spell cast by computer technology for quite some time now. Yet I believe it is time we took a more critical look at developmental prospects of computationally clad cognitive science. Does human mind really work like a computer?

It is not my intention to open a discussion here trying to find an answer to this rather impertinent question, since it would lead us astray from the topic of our main concern, which is *cognitive linguistics as a methodological paradigm*. I will only make a few remarks of a very general character, with the sole purpose of justifying, or at least making an attempt to justify, what will follow in the main body of this paper.

### 1.2. The Problem with Computational Metaphor

The holistic, or metaphysical approach consists in treating language as a natural biological phenomenon uniquely characteristic of the species *homo sapiens* (Bickerton, 1990; Pinker, 1995). Yet in the predominant cognitive paradigm language is, typically, defined as a sign system for categorizing, storing, retrieving, and processing information. Hence, according to Fodor, "meaning is information" (Fodor, 1998:12). It is not therefore surprising that Alan Turing's metaphor "thinking is computation" is routinely exploited in cognitively oriented linguistic research, forming the basic tenet of contemporary generativism *a la* Chomsky - Fodor - Jackendoff and leading to heated discussions about the nature of mental representations, concepts, categories and, ultimately, meaning (Chomsky, 1991; Jackendoff, 1996; Taylor, 1996; Deane, 1996; Garfield, 1997; Croft, 1998; Sandra, 1998; Cole, 1999 *inter alia*). As a result, to

quote Devitt & Sterelny (1999:4), “theoretical and conceptual chaos in the theory of meaning is striking”.

The basic binary principle that underlies any computational script for intelligent performance is based on a rigid *tertium non datur* premise, that is, an assumption that human reasoning and decision-making is always of the kind “either or” and is governed by the laws of logic. Epistemologically, this approach is the cornerstone of traditional analytical philosophy with its ontological distinction between mind and body (Priest, 1991; Schlechtman, 1997; Kim, 1998). This distinction has borne methodological fruit whose relevance, it appears, has not yet been fully comprehended: positing different ontologies for mind and body leads to treating humans as physical entities which serve as vehicles for non-physical (mental) entities. However, these mental entities are housed in the



nervous system which is part of the body as a physical entity, and this fact has caused a lot of methodological confusion both among philosophers and linguists.

As a physical object, a human organism is of interest to us mainly because it is a container for the mind which gives it meaning or *signification*, but because, presumably, the body and the mind have different ontologies, it remains largely unclear how this signification actually comes about. There is obvious parallelism here between analytical treatment of humans and the concept of *sign* as it is defined in semiotic, for both are viewed as binary structures incorporating ontologically different constituents: we speak about the body of a sign and its meaning just as we do about humans, analyzing signs into physical entities (for instance, words of natural language as acoustic phenomena) and mental entities (meanings of words). As far as the theory of meaning or linguistic semantics goes, the implication here often is that the body of a linguistic sign is created for the purpose of providing a vehicle for meaning, which leads to an inevitable logical inference that meanings exist before signs. If we subscribe to this assumption, we are faced with the problem of defining meaning as a non-physical entity that exists prior to being assigned to a particular physical entity, such as linguistic sign, through which we become aware of its existence. Thus, we find ourselves in a vicious circle.

The computational metaphor on which almost all modern theories of cognition are built, is fraught at least with one grave danger of disregarding the problem of *emerging signification* of signs. Linguistic signs are treated as well-defined binary structures analyzable in terms of form (expression) and content; these structures are routinely used to convey information by making it possible for both the sender (speaker) and receiver (listener) to analyze them following a

certain mutually shared procedure into quants of meaning thus extracting semantic values encoded in signs. Such analysis, according to the computational theory of cognition and language, consists in a series of decisions sign users have to make in order to process the encoded meanings correctly (these decisions concern encoding on the part of the speaker, and decoding on the part of the listener). I do not claim to have much expertise in artificial intelligence, but it seems to me that the entire concept of AI rests on the premise that, basically, it is possible to develop an algorithmic script that would allow, through application of explicitly formulated logical procedures, to analyze all possible signs into a priori defined sets of values contained in them. No matter how appealing it may seem, such an approach fails to take into account the *experiential character* of semiosis as a sign generation process.

Just in the same manner as mind develops (emerges) simultaneously with the development of the body in the course of its functional interactions with the environment, meaning emerges in the course of an organism's functional



interactions with physical entities that constitute this environment. It would be wise to remember here that signs in general, and linguistic signs in particular, are epistemologically no different from any other physical entities or phenomena found in an organism's immediate environment. They may become signs, or they may not, and it all depends on whether in the course of routine encounters with them an organism vests them with *signification*, which is largely individual rather than social in nature. This significance may become socialized to a high degree as a result of humans' interactions with particular kinds of entities or phenomena in a perceptually and experientially shared domain, but it will never lose its individual "flavor". It follows from this that neither the set of all possible signs, nor all possible sets of semantic values can be well and exhaustively defined as long as one major factor has not been brought into the picture — *the human experiencer*.

It is highly probable that categorized human experience is patterned in a certain organized way predetermined by human biological makeup. However, it would be wishful thinking to believe that all the diverse lifetime experiences which surely cannot be identical to one another, are categorized following a limited well-defined set of categorization patterns, especially in view of the illuminating insights into categorization processes given by the theory of prototypes. This theory casts serious doubts on feasibility of binarism as a fundamental concept in understanding intelligence and how mind works, for this concept precludes the very possibility of considering another option for conceptualizing decision-making as an experience-governed

indeterminacy reduction procedure based on an assumption that rather than being "either or", it may be "both A and B, with C as a possibility".

The computational idea of thinking and, correspondingly, language is open to criticism. A more comprehensive view of language as a system of signs must also include the human "conceptualizer" and the world as it is experienced by him (Dirven & Verspoor, 1998:14). As soon as such view is accepted, information becomes the product of cognition as a biological function of a living organism (Maturana, 1978), the function of interacting with and adapting to the environment.

## 2. Language

As a natural phenomenon, language may be best described as a self-generating and self-sustaining continuum (environmental system) that serves as an interface between man as a living organism and the environmental niche he occupies (Maturana & Varela, 1980). It is through this interface that actual *in*-formation takes place as a process whereby an organism establishes a cognitive coupling with the environment. According to Varela (1992:8), "such in-



formation is never a phantom signification or information bits, waiting to be harvested by a system. It is a presentation, an occasion for coupling, and it is in this *entre-deux* that signification arises". This introduces an alternative concept of information accepted in autopoietic theory: by information is understood "the capacity of certain physical entities of presenting alternative configurations and consequently of exerting different actions in regard to other components or the whole system. Information is a macroscopic characteristic of a physical entity and its origin is energetic" (Moreno, Merelo, Etxeberria, 1992:66).

This understanding of information stems from the autopoietic theory premise that language as a sign system is not denotational, but connotational. To quote Maturana (1978:50), denotation

> "is not a primitive operation. It requires agreement consensus for the specification of the denotant and the denoted. If denotation... is not a primitive operation, it cannot be a primitive linguistic operation, either. Language must arise as a result of something else that does not require denotation for its establishment, but that gives rise to language with all its implications as a trivial necessary result. This funda-

> mental process is ontogenetic structural coupling, which results in the establishment of a consensual domain".

In other words, language is connotational rather than denotational, which means that there is no exchange of information via language in the traditional sense of the word.

The concept of consensual domain is crucial for understanding how language works, and it provides foundation for the basic tenet of autopoiesis: "everything said is said by an observer to another observer who can be himself or herself". Experimental data accumulated in the past decade highlight the role experience plays in such basic cognitive functions as perception, categorization, and conceptualization. It has been shown that background knowledge affects categorial decisions (Palmeri & Blalock, 2000; Gelman & Bloom, 2000) and acquisition of new concepts (Nelson et al., 2000; Matan & Carey, 2001), that meaning is specifically related to perception (Allwood & Gaerdenfors, 1999) which itself is influenced by categorization processes (Schyns, 1997; Albertazzi, 2000), and that object recognition and categorization is largely an on-going process, affected by experience of our environment (Wallis & Bülthoff, 1999). Data of this kind from different areas of cognitive research seem to converge on one common point bringing to light the importance of *consensually (experientially) shared environment as a cognitive domain of human interactions.*

The two biological priorities of an organism's existence are survival and reproduction. These existential imperatives depend on how well man can adapt to the changing world around him, how flexible and effective the adaptation mechanism is, that is, how well man can adjust to the environment. The more



relevant information (in the traditional sense of the word) he can access and process per time unit, the better are his chances to survive and reproduce. This, basically, explains the evolutional inevitability of information technology era man has entered.

However, human senses are functionally limited in their data processing ability inasmuch as their respective perceptual spaces are limited by human physiological makeup. We can see only so far, and we can hear only so much. Our limited vision and hearing set spatial and temporal boundaries for the cognitive domain of interactions with others. Yet due to language as an *empirical phenomenon*, these limitations are overcome. The sound matter of natural language as a cognitive interaction medium defies spatial limitations imposed by our imperfect vision, and the hard matter of the written sign helps fight the destructive time factor. Viewed empirically, language is nothing but *a specific consensual environmental domain that serves as*

*a cognitive interface with the world*. And this is as far as the computational metaphor goes with regard to language.

Being a natural environment of a kind, language, by definition, cannot be analyzed in terms of pre-existing meaningful entities subject to universal interpretation procedures: there will always be a residue of individual experiences, whose relevance and magnitude can vary considerably. At the same time, the universality of interpretation procedures to a large extent depends on the degree to which individual linguistic experiences in their entirety are shared. The lesser this degree, the more pronounced differences in interpretation which, ultimately, account for the diachronic process of linguistic change.

## 3. Grammar and Cognitive Processing

### 3.1 What Grammatical Theory Should Be About

If we accept the above definition of natural language as a consensual domain of cognitive interactions, then in virtue of it being a sign system, we are necessarily faced with the issue of *informative sign value* relevant for distinguishing between two basic kinds of data input that affect such interactions.

As a sign system, natural language operates on two levels of knowledge representation: the level of text (discourse), and the level of linguistic units that add up to produce a text. The resulting informative value of a text largely depends on the informative value of its constituents. The traditional approach to language grammar attempts to provide an explicit set of features of meaning allegedly associated with a given form. Within the mainstream cognitive paradigm, these features are viewed as an assembly of concepts we have about



the world, which are acquired through natural language and with the help of language. The outcome of this acquisition process is the sum total of our linguistic experiences, of our "romancing the language" — not as a system in a structuralist sense, but as a natural environmental domain inseparable from any other non-linguistic aspect of man's existence. Thus grammar is viewed as a system of categorized patterned cognitive experience (Bod, 1998).

With this in view, the principal objective of a grammatical (morphological) theory should be the explication of the relationship between linguistic structures and cognitive concepts be-

hind them. A basic set of such concepts ought not to be very large or essentially different from language to language as the phenomenology of cognition is largely independent of racial or ethnic factors. Grammatical categories should not be treated as if they were purely semantic (in the traditional sense) categories, because morphology is a means of encoding *cognitive* experience via conceptualization and categorization, that is, *in*-formation.

The most important issue in natural language processing is that of the source to which a given text-level concept (e.g., the concept of present time) can be traced. Because "everything said is said by an observer", the ultimate point-of-reference for any concept, however complex, associated with any linguistic structure regardless of its complexity, is *sensory data input.* The two data bases mentioned above are formed by two kinds of input that may be described, following Goldsmith & Woisetschlaeger (1982), as *phenomenological* and *structural*.

"Phenomenological input" refers to anything that allows to establish direct connection between two reactions to sensory stimuli, of which one is caused by a physical entity (such as object), and the other by a linguistic entity (such as word). (Of course, it is understood that a linguistic entity itself is a kind of physical entity, and it certainly complicates the picture, but for the present moment this consideration may be disregarded.) "Structural input" refers to sensory (auditory) experiences generated by verbal stimuli (discourse) whereby connection is established between sensory stimuli both of which are caused by linguistic entities. Due to intrinsic circularity of language as a cognitive phenomenon, the boundary between phenomenological and structural input is not rigid or clear-cut, and this poses a serious problem for machine processing of natural language.

For example, it is a well-known fact that word-processing software products with grammar-checking utilities do not provide a comprehensive content-oriented analysis of grammatical structures used in the text. Although the alternative use of indexicals may considerably affect sentence / paragraph / text meaning, there does not seem to be a technical solution to the problem of automated content-sensitive monitoring of grammar encoding in natural language processing as long as the traditional semantic paradigm prevails in the interpretation of grammar.



The two-level processing of data accounts for the difficulties software developers are only too familiar with: adequate processing of discourse (structural input) implies proper handling of categorized (and, consequently, specifically structured at the first level of conceptualization) phenomenological input, that is, the cognitive semantics of each linguistic item, which is based

on experience. Unless language processing software products become capable of managing the encoding of cognitive experience, grammar checking utilities will remain what they are — mechanical tools for tracking formal errors. Consider the following sample text:

> *The Statue of Liberty is standing on Liberty Island in New York Bay. It will have been built in the last century and is being a symbol of freedom to millions of immigrants going to America.*

Run through Corel WordPerfect Grammatik, it appears to be perfectly correct, though none of the verbs used in it are in the grammatically correct form. Ideally, a grammar checking utility should be able to yield a processed grammatically correct text such as follows:

> *The Statue of Liberty stands on Liberty Island in New York Bay. It was built in the last century and has been a symbol of freedom to millions of immigrants coming to America.*

The fact that this does not happen only proves that there is no basic understanding of how grammar works in relation to knowledge representation.

Every time we use language we, without being aware of it, process information depending on different cognitive values assigned to linguistic structures, which is to say, *we speak about what we observe* and *we speak about what we just know.* In the first case, we operate on the level of individual knowledge (phenomenological input), in the second case, we operate on the level of commonly shared (social, cf. Russell, 1963) knowledge (structural input). Commonly shared knowledge, normally, is existential experience of thousands of generations crystallized with time into a system of beliefs about the world, which define the optimal behavioral pattern of individuals. This pattern conforms in the best possible way with the biological imperative of survival of human species as a whole and has very little to do with the so-called "scientific" world view.

A consistent account and analysis of morphological structures within a given language should be based on the assumption that linguistic world view and scientific world view are different cognitive systems, and the latter cannot be drawn upon to conceptually explicate the former. A good case study to illustrate this claim is a contrastive cognitive analysis of aspect in such morphologically different languages as Russian and English.

### 3.2 Verbal Aspect as an Illustration

The general theory of verbal aspect has long been dominated by the traditional semantic account of aspect in Russian where verb stems form what appears to be classical binary oppositions PERFECTIVE (PF) - IMPERFECTIVE (IMP). However, there is a profound lack of agreement on what the actual meanings of these forms are. One of the most acclaimed interpretations of aspect meaning is that based on the notion of "boundedness" as the idea of completeness (exhaustion) of the temporal manifestation of the action as expressed by the verb (Bondarko, Bulanin, 1967). Thus, the meaning of the Russian PF is defined as the totality of the action expressed by the verb, whereby the action is viewed as a spot-like, non-continuous event that reaches its bounds and whereupon a certain result of this action is obtained. The meaning of the IMP aspect is usually associated with the idea of continuity and linearity of the action in its occurrence, without any reference to the action's bounds per se, and with its processual and generic-factive function (Xrakovsky, 1990).

This semantic approach was adopted by Indo-European linguistics and is reflected in the classification of verbs according to different aspectual classes (Vendler, 1967), or so called Aktionsarten. However, the whole controversy about the nature and meaning of aspect seems to have been based on a fallacy. As was pointed out by Miloslavsky (1989), "the paradox of the current situation in linguistics is that aspect as a specific set of features of the verb lexeme is singled out strictly and consistently on exclusively grammatical grounds (i. e. combinability and paradigmatic relationships. - *A.K.*). However, all the efforts of scholars have been directed at presenting aspect in such a way as if it were a category defined on strictly semantic grounds". As a result, the traditional semantic account of aspect as a grammatical category fails to achieve its goal of explaining *what aspect is really about*.

As I have shown elsewhere (Kravchenko, 1990, 1992, 1995), rather than reflecting "boundedness" as a secondary-level superficially imposed conceptual construct, verbal aspect both in Russian and in English has to do with cognitive processing of phenomenological input, whereby descriptions of events are categorized differently depending on the source of information about the event. The basic aspectual distinction on which the grammar of aspect is built is DEFINITE (source of information) - INDEFINITE (source of information), and it is no surprise that the functional makeup of aspect in Russian and English is strikingly similar. Both in

Russian and in English, the aspectual system is basically tripartite, reflecting three relevant modalities for knowledge acquisition depending on the kind of available evidence: events are grammatically



categorized as *directly observed, inferred based on observation*, or *unspecified as to a possible source of information* (Kravchenko, 1997).

A functionally comprehensive approach to grammar, when grammatical phenomena are viewed as language-specific patterns for categorizing species-specific cognitive experience, allows to find much in common between different languages as far as cognitive processing is concerned. This means that Universal Grammar (in the cognitive rather than morphological sense of the term) is not a fiction, but something feasible and attainable — as long as the traditional semantic paradigm in linguistic analysis gives way to what has been lately referred to as "cognitive semantics", or experientially based theory of meaning.

### 4. Semantics and Pragmatics

On the one hand, traditional semantics tries to come up with feasible conceptual frames and schemata for describing what is believed to be the structure of meaning of a particular linguistic item. On the other hand, in doing so it draws on the already existing conceptual inventory (represented by text-level knowledge) using it for explaining the core concepts represented by particular linguistic structures used to generate the text, and so on in recursive order ad infinitum. Consider the following as an illustration of the “vicious circle” principle traditional semantics goes by.

In “Webster’s New World Dictionary” the temporal meaning of the word *present* is defined as “existing or happening now”, whereas *now* is defined as “at the present time”. *Time* is defined as “duration”, *duration* is defined as “continuance in time”, and *continuance* is defined as “duration”. So it does not actually matter what is defined by what, as a circle has no starting point as a synchronic entity. Yet, if we view this circle as a diachronic entity that results from a certain kind of meaningful human activity, it always has a beginning, but where it lies only he knows who creates the circle. This necessarily brings into the picture the sign user and everything that relates both to signs and people with their unique experiences who use them.

Semiosis as an experientially grounded sign-creating activity cannot but incorporate all kinds of data accessible for processing, therefore semantics as the study of meaning cannot do without the study of data processing mechanisms and principles of conceptual categorization which are largely experiential. Thus, the meaning of the word *present* cannot be fully explicated without taking into account the cognitive concept of *presentness* as 'being before one's senses', just as the temporal meaning of *past* brings forth a spatial frame for 'remembered perception' as opposed to 'current perception' in case of *present*. But once the



cognitive structures behind these basic temporal terms have been identified, the entire concept of time takes a new perspective resolutely straying away from traditional semantics and the scientific world view. But the inertia of tradition is heavy, and it certainly takes time to make up one's mind and move out of the old house one has spent a lifetime in.

I believe no one today will deny that *pragmatics underlies semantics* in a sense that we cannot hope to understand what meaning is if we do not understand *the function* of meaning first. What is, then, the function of meaning?

An object or phenomenon has meaning when our interaction with it affects the dynamic state of balance with regard to the environment we find ourselves in and with which we are in a state of mutual causality. At the same time, to claim that the meaning of a linguistic sign is nothing but its use (Keller, 1998) is to overlook the obvious, mainly, that signs are used in virtue of their being signs as a kind of identifiable (i. e. categorized) objects with a recognized function which is to represent other objects outside the consensual domain of interactions. This representational function stems solely from experience which determines the representational potential of a sign for a given user.

If, however, one emphasizes the interactional features of language as a joint activity (Clark, 1996) which consist of the continuous making of linguistic choices from a wide and unstable range of variable possibilities in a manner which is not rule-governed, but driven by highly flexible principles and strategies, it is only natural to ask, following Verschueren (1999), how communication in this case can still be possible. Looking for an answer, we turn again to the autopoietic premise about the connotational nature of language: communication is still possible for the only reason that *it is not exchange of information in the traditional sense*, it is *cognitive interactions in the course of which human behavior is orientationally, and not definitively, modified*. This modification can only be orientational because it relies on the degree of coincidence between representational potentials of a sign for each individual sign user. The

more shared empirical (including linguistic) experience the communicants have, the less indeterminate the possible significance of a sign will be for the addressee. But it will never be identical to the possible significance of the sign for the speaker.

### 5. Conclusion

It was not my goal to review all the current developments in the field of cognitively oriented linguistic research. I have only tried to outline a general direction in which cognitive linguistics is heading at the turn of the century, and thus suggest a revised understanding of cognitive linguistics as a methodological paradigm. In the



context of what has been said above, the goal of cognitive linguistics as a science may be defined as follows: *to understand what language is and what language does to ensure the predominance of homo sapiens as a biological species*. This makes cognitive linguistics a biologically oriented empirical science.

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