

A Cognitive Approach to Semantics

by

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Most significant semantic theories of the last century propose a distinction between meaning in the language and the meaning that relates language to something outside: signifier and signified, denotation and connotation... Like cognitive linguistics in general, semantics has always focused on the patterns in which conceptual content is structured or organized in language.

Cognitive semantics (a redundant concept, in fact, since all semantics is cognitive) centers on content expressed in consciousness and in phenomenology- employing methods like introspection, as words differ in their access to consciousness; abstraction and comparison meant to reveal both the conscious contents and the less conscious aspects of semantic structure.

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Formal, Conceptual, and Cognitive Semantics

These are three of the most significant semantic theories of the last century, all of which are, first, fundamentally dualistic, as they constantly propose a distinction between meaning in the language and the meaning that relates language to something outside: signifier and signified, *Sinn* and *Bedeutung*, sense and reference, denotation and connotation, intensional and extensional, intralinguistic and extralinguistic... and probably other such pairs have marked semantic thought from Saussure, Frege and Russell onwards; whether referential (the relationship between symbol and referent is the source of meaning) or conceptual (concept or image covers the gap between signans and signatum), they all assumed this difference between inside and outside meaning, to be studied by semantics the former, and by pragmatics the latter; the “concept” remains an unexplained mental phenomenon, while the brain’s manipulation of concepts remains to be explained by diverse formalized models.

These concepts, however, seem to be left out in *formal semantics*, i.e. Chomsky and his students who developed the so-called truth-conditional school (among many other formal semantic schools); if they are not really left out, concepts are simply taken for granted, they are inexplicable and internalized. These researchers have developed a generative syntax, in which generative trees or nodes represent points of contact between or among two or more lexical items; interpretation of these contacts would result in the reconstruction of the deep meanings in a sentence; authors like Heim and Kratzer (1998, *Introduction to Formal Semantics*) fully formalized this approach by using rules of formal logic

— the so-called set theories (Wittgenstein) — to explain the logical relations between elements of a sentence; the truth-conditions in the title are provisions that allow semantic interpretations of the sentence. This approach has kept semantics at a very stable level methodologically and formally, but did not manage to account for such chapters as word meanings and the explanation of concepts.

Ray Jackendoff is the name most frequently associated with *conceptual semantics*, another branch of Chomskyan linguistics (see his main titles: *Consciousness and the Computational Mind*, 1987; *Languages of the Mind*, 1992; *Patterns in the Mind*, 1994). His main assumption is that semantics and meaning are located in a set of brain modules that are inherently different from those where syntax or phonology are located. In here one finds, first, conceptual primitives (building blocks of meaning) which, when combined result in the creation of all other concepts; there is then an inborn set of rules (Chomsky again) that the brain uses to operate all these concepts and this is what he means by conceptual grammar; his conceptual semantics is bound to explain the relationships between conceptual primitives and conceptual grammar: one may speculate that these primitives are the prototypes in cognitive grammar (object, event, action, condition, possession, property, location...). As distinct from Chomsky, however, and again closer to cognitivists, Jackendoff does not believe that syntax should be the main focus of linguistic research.

It may be easy to notice that conceptual semantics is more like a combination of formal and cognitive semantics, by accounting for the position of conceptual structure in an organization of brain modules and by refusing both lexicology proper and syntax as the main scopes of semantics; it basically represents a compromise between old contextualism and the new cognitive semantics. Cognitive semantics as such is often associated with the names of George Lakoff (and co-workers — Mark Johnson and Mark Turner among them) and Ronald Lanacker, especially in the 1980-ies; the meaning of individual concepts is made up of smaller units called prototypes, which give basic information on the concepts: the tree is a prototype (root, trunk, crown, shape) of beech, lime, birch, spruce, etc.; our knowledge of the world is the result of the combination of prototypes, though it is not clear whether this knowledge is innate or acquired or a combination of the two, since these prototypes often tend to be fuzzy. A number of prototypes can create complex concepts, among which one is that of metaphor, the basic conceptual process; but further down here more attention will be given to cognitive semantics and its representatives.

Lakoff's position is that lexical items are conceptual categories which he calls idealized cognitive models (ICMs) or, elsewhere, radial categories, i.e. which radiate from a prototype. Any lexical item constitutes a single conceptual category that is made up of distinct but related senses, as in polysemy for instance; these related senses may be more prototypical or central and less

prototypical or peripheral. His example—which came to be written about over and over again—is “over” which prototypically means *above* when it relates to a spatial configuration (“over the rainbow”) or *control* (as in “power over him”). In his 1987 *Women, Fire, and Dangerous Things: What Categories Reveal About the Mind* or in an essay by Claudia Brugman and himself included in S. Small, G. Cotrell and M. Tannenhaus (eds), *Lexical Ambiguity Resolution* (1988) the demonstration is that one sense, that of *control*₂ is derived metaphorically from the prototypical meaning of *over*. In this way, any dictionary will give you quite a number (forty to fifty) distinct senses, so that potentially at least, there is a countless proliferation of distinct senses for each lexical item and there seem to be no clear methodological principles for establishing these distinct senses. However, more recent studies (like those in B. Smieja and M. Tasch, eds., *Human Contact Through Language and Linguistics*, 1997 or A. Tyler and Vyvyan Evans’s 2003 *The Semantics of English Prepositions: Spatial Scenes, Embodied Meaning and Cognition*) have shown progress in proposing realistic analyses of lexical categories.

From another perspective, earlier formal linguistics held that meaning is made up of a simple dictionary component and an encyclopedic component (on the basis of the modularity of mind), while cognitive semanticists would rather think that, since there is no principled distinction between competence and performance, or *langue* and *parole*, so there is no distinction between semantics and pragmatics, i.e. between core meaning and social meaning; semantic knowledge is knowledge of what words mean and knowledge about how words are used at the same time, and thus there is only encyclopedic knowledge, organized as a network. Moreover, encyclopedic meaning is born only in contexts of use which fundamentally guide this meaning; meaning potential becomes meanings only in various contexts, because lexical items are points of access to encyclopedic knowledge; rather than being containers of pre-set meanings, words selectively provide access to parts of the vast networks of meanings. And thus meaning is dynamic, as we acquire, in time, more and more knowledge about a certain lexical item.

On the basis of such assumptions, Charles Fillmore developed a theory of frame semantics (*frame* as a schematization of experience, represented in the conceptual level and stored in the long-term memory), while Ronald Langacker (1987, *Foundations of Cognitive Grammar I*) proposed a theory of domains (large knowledge structures outside of which concepts cannot be understood independently).

Mark Johnson (1987, *The Body In the Mind: The Bodily Basis of Meaning, Imagination, and Reason*) claims that at the cognitive level our embodied experience manifests itself in the form of image schemas. Metaphors themselves seem to be based on our bodily experiences and on the basis of these we form

pre-linguistic conceptual structures that he terms image schemas. There is thus a containment schema deriving from our experience of the human body as a container; this way, elements are either *in* or *out*, either inside or outside the container, so that containment is seen as limiting such forces as those that produce movement. And thus immediately appears a path schema, reflecting our experience of moving around or experiencing the movement of other entities (“life as a journey” is a favourite example, as points on a path are associated with temporal sequences). Moving around and interacting with other entities provide the suggestion for force schemas, such as compulsion, blockage, removal or restraint (*may* can thus be analyzed as permitting the removal of a barrier).

Polysemy itself can be described in terms of image schemas, and the preposition *over* (one underlying image schema to which various real-world situations are metaphorically connected in a systematic way—that can be coherently studied, therefore) comes as an example again (meaning *above-across*—flying over the hill-, *above*—over the mantel-piece, *covering*—over the hole, with each of these senses structured as a radial category with extensions from the central prototype). Finally, an image schema like the containment above can be extended metaphorically, so that the container is a visual field (he is out of sight), a state (he is in love), or an activity (he is out of the race). So all these image schemas—and many others—derive their substance from sensory-perceptual experiences of the human body.

Also in *Women, Fire and Dangerous Things* George Lakoff proposes the theory of Idealized Cognitive Models as he takes off from Eleanor Rosch and her co-workers’ (1978, *Cognition and categorization...*) research on human categorization; her theory is based upon the idea of *prototypes* according to which categories are structured or graded, in that natural lexical *category* structures have prototypical members that fit the respective category better than others: *bear*, for instance, fits better the category of mammal than *whale*; so categories have central and peripheral members, rather than simply being defined in terms of members and non-members; otherwise, categories have fuzzy boundaries and these asymmetries between category members are described as typicality effects.

Lakoff takes one step further and, while admitting that classical categories structured by necessary and sufficient conditions may exist, there are also *generative categories* (by applying the principle of similarity as a rule one may generate a whole category from a prototype) and *radial categories* (the community of language users establishes variations upon the prototype *teacher* so that teacher may be a man or a woman, it may be both older and younger than the students, it may refer to a teacher in a classroom, but also to some kind of spiritual leader and so on). These prototype effects can be largely explained by the effects of idealized cognitive models—domains described as relatively stable mental representations that guide the processes of categorization; relatively stable as they

may or may not fit reality as in the example of *teacher* above. Typicality effects may also occur in particular instances, such as when an exemplar stands for a category, and we think then of metonymy, or metonymic idealized cognitive models; but this is already another section.

Once again Lakoff—together with Mark Johnson this time, in their 1980 *Metaphors We Live By*—propose the revolutionary view that metaphor is far from being a simple stylistic or rhetorical figure: it is, rather, the basis or foundation of human thought; or, even closer to truth, it is both a form of figurative language use (Politics is a circus) involving the identification of resemblances, by causing a transference of properties from one source domain (circus) to a target domain (politics), and a process that is central to language and thought (in which case there can be no distinction between literal and figurative language).

On the other hand, cognitive semanticists take the view that concepts are both metaphorical and non-metaphorical, the latter allowing for grounding of metaphorical concepts; moreover, being more or less conventionalized, metaphors may apparently cease to be metaphors and pass into literal language, while others may be continually extended. Another feature of metaphor is its systematicity in that it sets up a systematical mapping between the two concepts rather than implying a single point of comparison or identification. In the often used metaphor of “life as a journey,” the mapping can occur at *quite a number of levels* (“*The baby is due next week*”; “*He is getting on*”; “*He is gone*”; “He comes of age”...). Plus there are many other concepts that appeal to the same kind of mapping or transfer: “Sleep is a journey”; “School or college is a journey”; “Every day is a journey”—*Long Day’s Journey into Night*, for instance).

Asymmetry or irreversibility is another metaphorical feature, by which is meant that metaphors are uni-directional: you cannot say that journey is a life or that circus is politics, unless you mean to make a very specific point. This may point to still another feature of metaphor, namely its being based upon abstraction, i.e. the concrete performances of clowns and other actors or animals in a circus are used to characterize the more abstract processes of political life. This is also related to a linguistic tendency of shifting from the physical to the mental domain, as in *to see* for *to understand*, for instance.

A more detailed analysis that this one would have to focus on Lakoff and Johnson’s two central assumptions associated with cognitive linguistics in general and cognitive semantics in particular; they are the embodied cognition thesis (to which we have already referred) and the thesis that semantic structure reflects conceptual structure; the conceptual domain of vertical elevation, for instance, provides the terms for the conceptual domain of quality, as in “He got a really high mark in...”

Conceptual metonymy is also central to human thought and language, argue Lakoff and Johnson; again, the traditional trope or linguistic device is regarded as

conceptual in nature; like metaphor, metonymy is motivated by physical and causal associations, traditionally expressed in terms of contiguity: “The blue had disappeared” (one is looking at a crowd). Here and elsewhere can be illustrated the main distinction between *metaphor and metonymy*, i.e. *the latter is not a cross-domain mapping, but it simply allows one entity (hat) to stand for another (person) because both the source and the target concept coexist within the same domain; metonymy is based upon conceptual proximity or contiguity: both the hat (vehicle) and the person (target) belong to the same crowd domain.*

Meanings of sentences and meaning constructions, holds Gilles Fauconnier (*Mental Spaces*, 1985 and *Mappings in Thought and Language*, 1997), can be derived from mental spaces; there are *base spaces* as cognitive structures in the minds of interlocutors which describe reality as it is known and understood by both speaker and listener; and there are *built spaces* (as one can see, metaphors abound in these very theoretical constructs) which address hypothetical worlds. So one can think (with Fauconnier) of two processes, in which, first, mental spaces are *built*, and, second, *mappings* between these spaces are established; thus there are in our minds distinct conceptual areas or regions that, as we think and talk, are activated individually or collectively; it is obvious that mental space formation and the mappings among various such spaces can result in an unlimited number of meanings.

The mental space construction is possible because all linguistic expressions contain meaning potential, i.e. building instructions that can be exploited differently in different discourse contexts, which means that meaning construction is always context-bound. These linguistic units that either favor the construction of a new mental space or shift attention back and forth between older mental spaces are called *space builders* (prepositional phrases, adverbs, subject-verb combinations...). The elements that mental spaces contain are either pre-existing entities in our conceptual system, or entities constructed for the purpose, and once one such mental space is constructed (deliberately by the speaker and in the form of a hypothetical scenario by the receiver) it gets to be linked to other mental spaces established in the discourse; this way, as the discourse unfolds, mental spaces grow into networks with more and more components and links. Fauconnier distinguishes here between the focus space of the speaker, where meaning is constructed, and the viewpoint space, from which these can be accessed.

All possible meaning potentials are reflected by grammar in a restricted set of frames and space types, which can be used by the human mind to organize the unlimited number of situations encountered in real life; the role of context is again essential in determining meaning and grammatical categories are flexibly used to provide appropriate cognitive configurations (though there seems to be no easy way in which contexts can be included in semantics).

In their 2002 book *The Way We Think* Fauconnier and Turner extend this (sketchily presented) theory of mental spaces into one of *conceptual blending*; this is supposed to be central to the way we think as meaning construction is viewed as depending on the integration of information from across mental spaces: the focus now is on creativity, on how, for instance, new metaphors come into being, so that conceptual blending can be applied in such areas of human activity as scientific research, religion, art, rituals, and, obviously, literature; all complex symbolic activities may be based upon our ability to perform conceptual integration or blending.

The basic process is that of establishing an integration network consisting of four spaces: two input mental spaces, a generic space (serving to identify correspondences between the input spaces), and a blended space containing the new structure; the process is then that of compressing the conceptual distance between the elements of the input spaces identified by the generic space and turning the whole thing into a new product (almost a chemical reaction under pressure); this has even been applied to the study of the development and cognitive structure of mathematical systems (George Lakoff and R. Nunez, *Where Mathematics Comes From*, 2000).

Leonard Talmy's two-volume *Toward a Cognitive Semantics (I. concept Structuring Systems and II. Typology and Process in Concept Structuring*, MIT Press, 2000) shows him as "one of the most original theorists of language" (Mark Turner), who fundamentally demonstrated that linguistics in general and semantics in particular is a method for discovering the way we think (otherwise, the main assumption of cognitive science, too). A consistent presentation of this remarkable achievement would require much more than a few pages, so we shall confine ourselves, for our present purposes, to Talmy's own outline in the "Introduction."

His main view, far from being anti-traditional, is that language conforms to a fundamental design feature, and is divided into two subsystems: a grammatical subsystem consisting of "closed" classes and including grammatical categories and subcategories, grammatical relations, word-order, patterns and other complex grammatical constructions, syntactic structure, and complement structures; and a lexical subsystem, consisting of "open" classes of linguistic forms, including ideophonic, adjectival, verbal, and nominal roots; the grammatical subsystem generally provides cues for their *structure*, while the lexical subsystem provides cues for their *content*. The main assumption here is that each language as a cognitive system—among such other cognitive systems as perception, reasoning, affect, attention, memory, cultural structures, and motor control—has some structural properties that are uniquely its own, some other properties it shares with one of more other cognitive systems, and some fundamental properties it shares

with all other cognitive systems (studied by cognitive science, whose ultimate aim is to understand the general character of conceptual structure in human cognition).

Talmy considers at the outset three approaches to the analysis of language: the *formal* approach, that does not seem to have addressed the overall conceptual organization of language, but rather the structural patterns exhibited by various aspects of linguistic forms, i.e. the study of morphological, syntactic, and lexical structure; the *psychological* approach has examined language from the perspective of perception, memory, attention, and reasoning, while also addressing concerns of the formal and conceptual approaches (semantic memory, associativity of concepts, structure of categories, contextual knowledge, and inference generation); the *conceptual* approach addresses the question of how language structures conceptual content, i.e. the processes and patterns in which conceptual content is organized in a language by conceptual categories (space, time, scenes, events, entities, processes, location, motion, force, and causation), ideational and affective categories (attention, perspective, intention, volition, affect, and expectation) and by the interrelationships of conceptual structures; “overall..., cognitive linguistics seeks to ascertain the global integrated system of conceptual structuring in language” (p. 3). But cognitive linguistics, like the psychological one, also addresses concerns of the other two approaches above.

Very much like cognitive linguistics in general, semantics has always focused on the patterns in which conceptual content is structured or organized in language. Since cognitive semantics (a redundant concept, in fact, since all semantics is cognitive) centers on content expressed in consciousness and in phenomenology, the first method of cognitive semantics is *introspection*, as words differ in their access to consciousness; introspection is frequently accompanied by *abstraction* and comparison meant to reveal both the conscious contents and the less conscious aspects of semantic structure. The overall methodology of cognitive semantics includes such other procedures as the controlled manipulation of the linguistic material, analyses of introspective reports by others, analysis of discourse or corpora, crosslinguistic diachronic analysis, assessment of context and cultural structure, experimental techniques of psycholinguistics, impairment studies of neuropsychology, the instrumental probes of neuroscience (p.5).

The trajectory of volume I is from core aspects of conceptual structure in language, to conceptual structure in nonlinguistic systems; it sets forth, in various chapters, the pattern of concept-structuring in language and examines the schematic system of configurational structure, the distribution of attention, force and causation, all these making up the fundamental conceptual structuring system of language. Volume II analyzes the relation of concept structuring in language to typology and process; “cognitive processes can be heuristically understood to operate over three time scales” (p.8): the short-term scale (current on-line

processing), the mid-term scale (developing over some period of one's lifetime), and the long-term scale (across the succession of an individual's judgments).

The researcher tackles eight main and subordinate themes: examination of event structure (much attention paid to motion and location, manner and cause); general schematic structuring of space and time, plus the objects and processes occurring in them (thus, spatial structure and temporal structure that often overlap); the framing event (a co-event relates to another in a large macro-event); causation (a large causative situation, again, that contains a causing and a causal event, including such other elements as agency, intention, and volition); force dynamics (covering the range of relations that one entity can bear to another with respect to force); the structure of event complexes that consists of constituent events in a particular relationship; the figure-ground relations (one event relates as figure to another event as ground, with metaphor as a typical example); and the patterns of the overt linguistic representation of these complexes.

The outcome is the concept of schematic systems, which are four in number: *configuration* (certain linguistic forms in a portion of discourse organize a referent situation in terms of configurational structure), *perspective* (linguistic forms that specify where one is to locate one's perspective point from which to regard the referent situation), *attention* (linguistic forms that specify the particular distribution of attention that one is to pay to the structured situation from one's adopted point of view), and *force dynamics* (linguistic representation of force interactions and causal relations occurring between entities within the structured situation). Besides these conceptual domains and concept-structuring systems, Talmy considers a number of four organizing principles: the centrality of schematic structure; the closed-class system of language is its most fundamental and comprehensive conceptual structuring system (and this is closed-class semantics or "semantics of grammar"); a third principle is that the same ideational complex can be represented in terms of alternative conceptualizations (conceptual alternativity, i.e. the cognitive capacity to construe an ideational complex in a variety of ways); and fourth—the parallelism between the linguistic representation of spatial structure and that of temporal structure (nouns—space, and verbs—time are both represented by linguistic forms that are often the same).

Finally, once again, "the ultimate aim of this enterprise is to understand the general character of conceptual structure in human cognition" (p.17), where language plays a central role; and, appropriately enough, Mark Turner's evaluation: "The publication of this work is a monumental landmark in the history of the study of grammar and semantics" (in *Language: Journal of the Linguistic Society of America*, 2000).

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