

Cognitive Linguistics

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Cognitive linguistics has emerged in the last twenty-five years as a powerful approach to the study of language, conceptual systems, human cognition, and general meaning construction.

It addresses within language the structuring of basic conceptual categories such as space and time, scenes and events, entities and processes, motion and location, force and causation. It addresses the structuring of ideational and affective categories attributed to cognitive agents, such as attention and perspective, volition and intention.¹ In doing so, it develops a rich conception of grammar that reflects fundamental cognitive abilities: the ability to form structured conceptualizations with multiple levels of organization, to conceive of a situation at varying levels of abstraction, to establish correspondences between facets of different structures, and to *construe* the same situation in alternate ways.²

Cognitive linguistics recognizes that the study of language is the study of language use and that when we engage in any language activity, we draw unconsciously on vast cognitive and cultural resources, call up models and frames, set up multiple connections, coordinate large arrays of information, and engage in creative mappings, transfers, and elaborations. Language does not

"represent" meaning; it prompts for the construction of meaning in particular contexts with particular cultural models and cognitive resources. Very sparse grammar guides us along the same rich mental paths, by prompting us to perform complex cognitive operations. Thus, a large part of cognitive linguistics centers on the creative on-line construction of meaning as discourse unfolds in context.³ The dividing line between semantics and pragmatics dissolves and truth-conditional compositionality disappears.

Aspects of language and expression that had been consigned to the rhetorical periphery of language, such as metaphor⁴ and metonymy,⁵ are redeemed and rehabilitated within cognitive linguistics. They are understood to be powerful conceptual mappings at the very core of human thought, important not just for the understanding of poetry, but also science, mathematics, religion, philosophy, and everyday speaking and thinking.⁶

Importantly, thought and language are embodied. Conceptual structure arises from our sensorimotor experience and the neural structures that give rise to it. The structure of concepts includes prototypes; reason is embodied and imaginative. A grammar is ultimately a neural system. The properties of grammars are the properties of humanly embodied neural systems.⁷ Cognitive capacities that play a fundamental role in the organization of language are not specific to language. Such capacities include analogy, recursion, viewpoint and perspective, figure-ground organization, and conceptual integration.⁸

The stage was set for cognitive linguistics in the nineteen seventies and early eighties with Len Talmy's work on figure and ground, Ronald Langacker's cognitive grammar framework, George Lakoff's research on metaphor, gestalts, categories and prototypes,⁹ Fillmore's frame semantics,¹⁰ and Fauconnier's mental spaces.¹¹ Today, there are hundreds of scholars who work in this paradigm, and there is a huge amount of published research on the theories and their applications. The present short encyclopedia entry cannot do justice to the wealth of discoveries, empirical studies, and applications that have come out of this recent tradition. I give in the bibliography some indications of where to get a more detailed picture.¹² In the following sections, I outline some of the fundamental themes that run through cognitive linguistics.

I. Grammar and Cognition

The relation of grammar to cognition is studied in exquisite detail in the foundational work of Talmy (2000) and Langacker (1987, 1991). Talmy shows the great restrictions on the conceptual categories that grammatical systems actually specify. For example number, but not color, and within number, 'singular', 'dual', 'plural', but never 'even', 'odd', 'dozen' or 'numerable'. Topological reference ('across the sky,' 'across the table,') but not Euclidean reference. Multiplexing, states of boundedness and dividedness. Axiality, perspective (*The door slowly opened and two men walked in* vs. *Two men slowly opened the door and walked in*), sequentializing (*There are some houses in the valley* vs. *There is a house now and then in the valley*), viewing, and nesting.

Langacker shows how grammar imposes **trajector/landmark** organization on scenes and events (*The table is below the lamp* and *The lamp is above the table* express the same spatial relation with trajector and landmark reversed).

Profiling is another important construct of Langacker's cognitive grammar: the word *hypotenuse* evokes a right triangle and profiles a particular part of it: the same segment without the rest of the triangle is no longer a hypotenuse. In *I melted it*, **melt** profiles an entire action chain with causation and change leading to a liquid state. In *It melted easily*, only the change is profiled, although the causation is still evoked. In *It is finally melted*, only the resultant state is profiled, but the unprofiled change is evoked. Langacker analyzes in considerable detail the ways in which component structures are integrated through correspondences and elaboration to form composite structures: a phonological integration (e.g. the English *jar lid*) symbolizes the semantic integration of 'jar' and 'lid'.¹³

Other key aspects of conceptual structuring as reflected by grammar, and found in language after language,¹⁴ include **fictive motion** (*The blackboard goes all the way to the wall*), **event integration** (*The ball rolled in*, *The candle blew out*, *I kicked the door shut*), and **force dynamics** (*The ball kept rolling*, *He refrained from closing the door*), and the application of force dynamics to abstract reasoning and felicity conditions on speech acts.¹⁵

Fascinating linguistically and psychologically is the way in which language structures space. No two languages are ever alike in this respect, although the general principles remain the same. Each of us in his or her own

language carves out physical space in fantastically intricate ways, of which we are not aware. Deceptively simple looking prepositions like *in, out, over*, define elaborate networks of spatial meaning with hundreds of linked schemas, some of which are prototypical and central. Compare *The plane flew over the field, The post-office is over the hill, The log rolled over, The party is over, He had to do it over, He overlooked it, He looked it over, He oversaw it*. Remarkable work on this topic has been done by cognitive linguists¹⁶ and explicit computational models¹⁷ have confirmed the staggering cognitive complexity of the human capacity to structure space linguistically. Regier (1996), who built a structured connectionist model capable of learning subsets of such relations for different languages shows that many aspects of neurobiology, conceptualization, and general learning are at play.

II. Metaphor theory

A second strand of fundamental work in cognitive linguistics which interacts constantly with the first is the considerable development of metaphor theory over the last twenty years. Launched by Lakoff and Johnson (1980), this line of research rests on the key insight that far from being a rhetorical flourish, metaphor is basic and constitutive for all the thinking that we do, and that in the scheme of evolution, metaphor, based on source domains of human experience and neural connections to our embodied sensations, actions, and emotions, is what creates the possibility of 'abstract' reasoning, scientific and mathematical

thought, philosophical speculation, in other words language and culture quite generally. The mind is embodied and metaphor gives it the power that it has.

What the Berkeley research group discovered was that source domains were systematically used to structure target domains by means of metaphorical mappings. For example, our general way to talk and think about event structure is in terms of motion. In this metaphorical mapping, states are locations, change of state is change of location, causes are forces, purposes are destinations, means are paths to destination, guided action is guided motion, etc., etc. This is extensively reflected by the lexical and grammatical features of language we use to express event structure: *He **went** crazy. She **entered** a state of euphoria. The clothes are **somewhere between** wet and dry. The home run **threw** the crowd into a frenzy. She **walked** him **through** the problem. I've **hit a brick wall**. Do it **any way** you can. We're **moving ahead/at a standstill**.*¹⁸ This is not an isolated example; metaphorical structuring plays a crucial role in most of our conceptual systems, including all of the ones developed in science and mathematics.¹⁹ Nor is it a mere convenience offered by language. The structure and inferences of the source domain of motion are projected to the target domain of events and action in a systematic way that defines for us a rich conceptualization not present a priori in the target domain.

In the same way, time is typically conceptualized in terms of space and motion. In English, times can be "objects moving towards and then past a stationary observer," or "objects that are stationary with respect to a moving

observer": *The time will come/has passed. Christmas is approaching/is coming up. The summer just zoomed by. We're getting close to Christmas. We passed the deadline. We've reached the end of May already.*

The event structure metaphor illustrates the interaction of force dynamics with metaphor theory. Causes are forces, and moreover, if they operate on the landscape of "reasoning", they will *lead you* or *drive you to* correct or incorrect conclusions, *sidetrack* you, or *force you to* a certain opinion/*position*.

Conventional metaphors such as these can be extended and reextended to enrich conceptual understanding. Time can *fly* and *crawl* and *disappear*. In a line by Shakespeare, where Hector greets Nestor, Time becomes a moving person, who holds the hand of the venerable Nestor:²⁰

*Let me embrace thee, good old chronicle,
That hast so long walk'd hand in hand with time.*

III. Mental spaces and Conceptual integration

Mental spaces are small conceptual packets constructed as we think and talk, for purposes of local understanding and action. They are very partial assemblies containing elements, and structured by frames and cognitive models. They are interconnected and can be modified as thought and discourse unfold.

Mental spaces proliferate in the unfolding of discourse, map onto each other in intricate ways, and provide abstract mental structure for shifting anchoring, viewpoint, and focus, allowing us to direct our attention at any time

onto very partial and simple structures, while maintaining an elaborate web of connections in working memory, and in long term memory.

For example, if we say that *In reality, Richard Burton loves Elizabeth Taylor, but in the movie, he kills her*, we set up two mental spaces, one for reality and one for the movie; Richard Burton in reality has a counterpart (say Marc Anthony) in the movie, and Elizabeth Taylor in reality has a counterpart (say Cleopatra) in the movie. Connections between mental spaces allow access to elements in one mental space through counterparts of that element in other mental spaces (e.g. Marc Anthony via Burton). Mental spaces offer a general and elegant means of dealing with opacity, presupposition, counterfactuals, and tense and mood in language. Take for example the sentence *In 1957, the president was a baby*, appearing in a discourse where a base mental space with G.W. Bush as current president has been set up. *In 1957* sets up a new "1957" space. If we take *the president* to describe Bush in the base, its counterpart "Bush in 1957" will be accessed, and the sentence will mean that Bush was a baby back in 1957. If on the other hand, we take *the president* to describe "someone" in the new mental space of "1957", then that someone will be both a baby and a president in 1957. The sentence this time will mean that a baby was president in 1957. Multiple access possibilities of this kind allow the same sentence to prompt for different connection paths depending on what mental spaces have already been set up in context, and what counterpart connections are available. A wide range of puzzling reference phenomena fall out of this general underspecification of

connecting paths, for example the difference between *If I were you I'd hate me* and *If I were you, I would hate myself*, split reference as in *If Woody Allen had been born twins, they would have been sorry for each other*, or Sweetser's meta-metaphorical conditionals, such as *If the Ile de la Cité is the heart of Paris, then the Seine is the aorta*.

Behind the idiosyncrasies of language, cognitive linguistics has repeatedly uncovered evidence for the operation of more general cognitive processes. Mappings between mental spaces are part of this general organization of thought. Although language provides considerable data for studying such mappings, they are not in themselves specifically linguistic. They show up generally in conceptualization. A striking case of a general cognitive operation on mental spaces, that is reflected universally in the way we think, is conceptual integration.

Conceptual integration consists in setting up networks of mental spaces which map onto each other and blend into new mental spaces in various ways. In everyday thinking and talking, we use conceptual integration networks systematically in the on-line construction of meaning. Some of the integrations are novel, others are more entrenched, and we rarely pay conscious attention to the process, because it is so pervasive. In a conceptual integration network, partial structure from input mental spaces is projected to a new blended mental space which develops dynamic (imaginative) structure of its own.

For example, the counterfactual *In France, Watergate would not have done Nixon any harm* is intended to prompt inferences on the difference between the

American and French political systems. It requires the listener to construct input spaces for American politics and for French politics. One must establish a set of mappings between the input spaces and then project selectively into a blended space in which Nixon and Watergate are embedded into French politics. The imaginative emergent structure of that mental space (Nixon is not harmed, etc.) will provide insight into the political realities of the two countries.

Most aspects of human life, not just language, bring in conceptual integration networks. This remarkable cognitive capacity has been studied in a variety of domains, such as mathematics, action and design, distributed cognition, magic and religion, anthropology and political science. ²¹ It has been suggested that the capacity of conceptual integration evolved biologically to reach a threshold, double-scope creativity, that constitutes a necessary condition for the cognitively modern human singularities of art, creative tool-making, religious thought, and grammar.²²

SUMMARY

Cognitive linguistics goes beyond the visible structure of language and investigates the considerably more complex backstage operations of cognition that create grammar, conceptualization, discourse, and thought itself. The theoretical insights of cognitive linguistics are based on extensive empirical observation in multiple contexts, and on experimental work in psychology and neuroscience.²³ Results of cognitive linguistics, especially from metaphor theory

and conceptual integration theory, have been applied to wide ranges of non-linguistic phenomena.

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Footnotes

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- ¹ Talmy (2000), p. 3
- ² Langacker (1987, 1991).
- ³ Fauconnier and Sweetser (1996), Sweetser (1999).
- ⁴ Lakoff and Johnson (1980, 1999), Sweetser (1990).
- ⁵ Radden, Panther, Thornburg, Barcelona
- ⁶ Lakoff and Johnson (1980, 1999), , Lakoff and Núñez (2001).
- ⁷ Lakoff and Johnson (1999)
- ⁸ Fauconnier and Turner (1998, in press).
- ⁹ Lakoff (1987)
- ¹⁰ Fillmore (1982)
- ¹¹ Fauconnier (1985, 1994)
- ¹² Janssen and Redeker (2000), Tomasello (1998), Cuyckens and Geeraerts (to appear).
- ¹³ Langacker (1987, 1999), Van Hoek (1997).
- ¹⁴ Talmy (2000).
- ¹⁵ Sweetser (1990).
- ¹⁶ Lindner (1982), Brugman (1981), Herskovits (1986), Vandeloise (1991), Talmy (2000)
- ¹⁷ Regier (1996)
- ¹⁸ Lakoff and Johnson (1999).
- ¹⁹ Lakoff and Núñez (2001).
- ²⁰ *Troilus and Cressida* (iv. v. 202-3), cited in Gibbs ()
- ²¹ Zbikowski (in press), Hutchins (in preparation), Sorensen (2000), Lakoff and Nunez (2001), Liddell (1998), Turner (2001).
- ²² Fauconnier and Turner (2002).
- ²³ Gibbs (1994), McNeill (2000), Coulson (2001), Mandler (1992), Gentner (in press).