Reviews

Review of Ronald Langacker. *Cognitive Grammar: A basic introduction.* Oxford: Oxford University Press, 2008, 562 pp.

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Cognitive Grammar: A basic introduction, as the title suggests, is a one volume introduction to the theory of grammar known as Cognitive Grammar. Cognitive Grammar has been in development since the mid 1970s by Ronald Langacker, and is part of the wider movement known as Cognitive Linguistics.[1] Not only is Langacker widely considered to be one of the founding (and central) figures within Cognitive Linguistics, it is probably accurate to say that Cognitive Grammar is also the best developed and most influential theory of grammar within Cognitive Linguistics. Its status is such that many of the theoretical constructs developed by Langacker have been widely adopted by other theoretical, analytical and descriptive frameworks and perspectives within the wider cognitive linguistic movement. Some of these include notions such as active zone, trajector (TR), Landmark (LM), construal, domain, profiling, viewing arrangement and symbolic unit. Moreover, in addition to being a pivotal theoretical development within Cognitive Linguistics, Cognitive Grammar has been, and is, increasingly influential in a broader linguistic and cognitive science context.

In terms of the discipline of linguistics, Cognitive Grammar, by Langacker's own admission, was first perceived by a majority of linguists as representing a somewhat extreme vision of grammatical organisation. Indeed, the theory was dubbed an 'outrageous proposal' by various early

1. For book length introductions to Cognitive Linguistics see Croft and Cruse (2004) and Evans and Green (2006).

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reviewers. And, as Langacker acknowledges in the book, in so far as the theory provoked outrage it was indeed outrageous. Yet, linguistics as a discipline has moved, inexorably, in the direction of the 'outrageous' proposal that is Cognitive Grammar. There are various reasons for this including developments in cognitive and functional linguistics, the growth of linguistics—and the associated (and convergent) findings—in areas such as developmental psycholinguistics, neurolinguistics, pragmatics and (to some degree) sociolinguistics, as well as developments in cognitive science and cognitive psychology. Findings in these areas have generally been supportive of (or at least consistent with) the general perspective encapsulated by Cognitive Grammar.

Nevertheless, Langacker's achievement has been to provide a sophisticated, compelling and internally-consistent vision, an intuitively-appealing worldview where grammar is not modelled as an autonomous formal system, but rather one which reflects the basic human experience of moving, perceiving and acting in the world. In this, he has contributed to a reframing of the debate, such that today, for a great many language scientists, the central assumptions of Cognitive Grammar are not only seen as plausible, but obviously correct. As such, his intervention has played an important role in a change in mindset amongst language scientists, one which has taken place in the years that have intervened between the earliest publications of Cognitive Grammar in the late 1970s, and the present.

What then is the nature of Cognitive Grammar? In the most general terms, there is a threefold claim at the heart of Cognitive Grammar. Firstly, grammar is meaningful in its own right. This follows from the basic tenet, fundamental to Cognitive Grammar, that "nothing beyond symbolic structures need be invoked for the proper characterization of complex expressions and the patterns they instantiate." (p. 5). Banished from the Cognitive Grammar worldview are abstract rules that cannot be discerned by the language user in naturally occurring language. The units that make up the mental grammar are symbolic assemblies, consisting of conventional pairings of form and meaning. These are abstracted from language use (usage-events), giving rise to schematic representations which are entrenched in individual minds as cognitive routines. Hence, gone is the received distinction between, for instance, competence versus performance, a mainstay of formalist approaches to grammar. Grammar reduces to schematic assemblies consisting of a semantic element, a phonological element and a symbolic relation that links these two 'poles'. Moreover, the further, more radical, claim is that *all* grammatical phenomena are symbolic in this sense. That is, what have traditionally been referred to as grammatical markers, grammatical classes and grammatical

rules are modelled in terms of symbolic assemblies. One consequence of this, what we might term the Symbolic Thesis (see Evans and Green 2006), is that a principled separation between lexicon and grammar (or syntax) dissolves. In the Cognitive Grammar worldview lexicon and grammar form a gradation, the so-called lexicon-grammar continuum.

The second general claim made by Cognitive Grammar is that grammar is an integral part of cognition (rather than being, for instance, a distinct, encapsulated module of mind). As such, grammar is key to understanding cognitive structure and function. Langacker argues that grammar emerges due to a range of general cognitive abilities. These include abstraction, schematisation, categorisation and the marshalling of attentional resources. For instance, the symbolic units that populate the individual's mental grammar are abstracted from use. In this, the language user takes advantage of general cognitive abilities such as abstraction and schematisation rather than relying on an innate 'language module' with hard-wired linguistic primitives. Moreover, the extracted symbolic units are then categorised with respect to one another, and further patterns abstracted in order to form more abstract schemas. This results in a mental network whereby symbolic units are categorised with respect to one another, involving prototypes and schema-instance relationships. A consequence of the claim that grammar consists of symbolic assemblies arising from usage events is that Cognitive Grammar takes a usage-based perspective and is hence a usage-based model. This tenet is sometimes referred to as the Usage-based Thesis (see Evans and Green 2006). Together, the Symbolic Thesis and Usage-based Thesis lend Cognitive Grammar its distinctive character, and have been particularly influential in related developments within the wider movement of Cognitive Linguistics.

The third claim is that the structure of grammar reflects fundamental aspects of embodied human experience. For instance, notions that are central to grammatical organisation (e.g. grammatical relations such as subject and object, and lexical classes such as noun and verb) relate to what Langacker terms conceptual archetypes. Archetypes, and the related notion of archetypal roles, are grounded in human action (and interaction) in and with the world. Archetypes relate to coherent experiential gestalts and include notions such as a physical object, a physical object in a location, an object in motion through space, a setting for an event, participants in an event, location, and energy transfer from one participant to another. Archetypal roles relate to the functions associated with particular archetypes and include the following experientially-grounded notions: agent, patient, instrument, experiencer, mover and so on. Cognitive Grammar claims that experientially-grounded archetypes function as the

prototype for clausal elements in grammar, and "are a major factor in their structural arrangement." (p. 355).

What then is the nature, and status of the present volume? *Cognitive Grammar* is the fifth book by Langacker addressing the theory of Cognitive Grammar. Yet it is different from its predecessors in a number of ways. The first two books, published in 1987 and 1991 respectively, formed a two volume set which sought to present the theoretical architecture of the theory, and apply it to various linguistic phenomena. These volumes are very densely written, and particularly for the neophyte, are somewhat inaccessible. Two subsequent volumes appeared which were essentially collections of articles by Langacker. These addressed various aspects and applications of Cognitive Grammar. The first of these, *Concept, Image and Symbol* appeared in 1991, with the more recent *Grammar and Conceptualization* appearing in 1999.

In contrast, the present volume is a single volume work conceived and written in order to provide a unified overview of the theory. Hence, the present work is the obvious choice for anyone looking for an initial grounding in the theory. The volume consists of 14 chapters divided into four parts entitled, respectively: *Preliminaries*, *Fundamentals*, *Structures*, and *Frontiers*. The first part, *Preliminaries*, which consists of three chapters, addresses the nature of grammar as symbolisation, and the semantic basis of grammar, in particular the conceptualist perspective adopted in Cognitive Grammar. The second part, *Fundamentals*, consists of four chapters and addresses core theoretical constructs. These relate to grammatical classes, constructions, and the presentation of Cognitive Grammar as a usage-based model of language. Part III, *Structures*, is concerned with application of the theoretical constructs introduced in parts I and II to a range of grammatical phenomena including nominal structure, clausal structure and complex sentences. The final part of the book, comprising two chapters, addresses the frontiers of research in Cognitive Grammar. In particular, the chapters focus on the relationship between grammar and discourse, and the dynamic and imaginative functions of language and cognition. Hence, while the book represents a fairly comprehensive overview of the theory and its research foci, parts I and II of the book would suffice for anyone seeking an introductory overview of the theoretical architecture and the theory's main claims and assumptions.

In addition to its value as a one volume overview, the book also better presents and refines a number of key ideas in Cognitive Grammar, rendering them more accessible. For instance, the presentation in part I of the book makes more explicit, than in previous work, the relative contribution of conceptual content and construal to grammatical meaning. In Cognitive Grammar construal is facilitated by grammar, and hence is a

function of language, while conceptual content derives from the encyclopaedic knowledge to which language, and in particular words, serve as points of access. An example of a theoretical notion that is revised relates to Langacker's taxonomy of types of construal, also known as focal adjustments. In the present work, Langacker identifies four broad classes of construal phenomena: specificity, focusing, prominence and perspective. The classification, to my mind, represents an advance on the classification presented in, for instance, the earlier *Foundations of Grammar I* (1987).

One of the criticisms that has been levelled at Cognitive Linguistics as a self-conscious, intellectual movement is the observation that it fails to provide a unified analytic framework that researchers can deploy in order to address a range of linguistic and conceptual phenomena. Indeed, as Geeraerts and Cuyckens (2007: 4) note: "Cognitive Linguistics has not yet stabilized into a single uniform theory". While the emergence of a unified theoretical position may not be desirable—to my mind, the appeal of Cognitive Linguistics lies in its diversity, as represented by the range of distinct theoretical frameworks that populate it—it is nevertheless desirable that distinct theories are compatible in some sense. As I note elsewhere (Evans 2009: chapter 16), one of the, perhaps, most frustrating (and confusing) aspects of Cognitive Linguistics for the analyst is the use of distinct theoretical constructs across different theories which appear on the face of it, to be similar in nature. Constructs such as domain, frame, mental space and idealised cognitive model, for instance, are all cases in point. In the present volume, Langacker makes efforts, and is to be commended, for clarifying his understanding of these various theoretical constructs, incorporating them into his theoretical framework. Moreover, he attempts to provide a joined-up account of specific linguistic phenomena, for example discourse structure, by integrating insights from Cognitive Grammar with other cognitive linguistic accounts, notably Mental Spaces Theory (e.g. Fauconnier 1994, 1997). In general terms, the reader is likely to find extremely helpful the way in which Cognitive Grammar is consistently contextualised at various points throughout the book with respect to other theoretical developments within Cognitive Linguistics.

While the book, in view of the above, is extremely welcome, this doesn't mean all is plain-sailing. The book's subtitle is 'A Basic Introduction'. It is worth commenting, therefore, in what sense the book might be considered 'basic', and/or an 'introduction', particularly as Langacker explicitly claims that the book is accessible to (beginning graduate) students. While the book is considerably shorter than the two-volume *Foundations of Cognitive Grammar*, the present volume, at over 550 pages still represents a door-stopping tome. And while Langacker has taken considerable trouble to even more clearly introduce theoretical constructs,

and better justify and illustrate their rationale, resulting in a cleaner synthesis of ideas, this doesn't necessarily mean that the treatment is accessible to the non-specialist without further support. Indeed, Langacker often appears, to my mind, to be writing to his own very high standards of clarity, and hence primarily for his own satisfaction: the ideas are precisely specified to such a degree that any particular point is worked out in painstaking detail. Such a treatment necessarily requires careful clarification which entails, in this case, a complex and sophisticated battery of technical terms, careful and (often) lengthy elucidation, and (often) highly detailed line-drawings which approach an impressive (and sometimes bewildering) level of technicality. Hence, sections and chapters often tend to become over-long, at least from the perspective of an average student, and, are not for the faint-hearted.

Nevertheless, this is not necessarily a criticism. Ronald Langacker is a true intellectual giant, and one of the outstanding theoreticians of late 20th century/early 21st century linguistics. His research has contributed to an irrevocable sea-change in the way language scientists perceive and study grammar. And the precision with which he thinks and writes has provided language scientists with a far more profound understanding of the conceptual basis of grammar. Moreover, in this light, a single volume which *only* runs to 500-odd pages probably does count as a 'basic introduction'.

That all said, this does not mean that the book would be inaccessible to students if properly supported by other materials, for instance John Taylor's excellent textbook introduction *Cognitive Grammar*, and the various chapters on Cognitive Grammar in Evans and Green (2006). Moreover, the present volume provides students with a relatively concise overview of many of the key ideas that make up the Cognitive Grammar worldview. In the final analysis, this book represents an important, self-contained contribution by one of the most influential scholars in Cognitive Linguistics. It provides an authoritative and up-to-date single volume overview of Cognitive Grammar which will be essential reading for all (cognitive) linguists and practitioners of grammar. It also provides a useful one-stop introduction to Cognitive Grammar for scholars from neighbouring and cognate disciplines.

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Review of Giacomo Rizzolatti and Corrado Sinigagalia. *Mirrors in the brain: How our minds share actions and emotions*. [Translated from the Italian by Frances Anderson.] Oxford: Oxford University Press, 2008, 256 pp.

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Whenever you watch someone perform an ordinary action like reaching for a cup of coffee, motor areas in your own brain are engaged, as if you were the one doing the reaching (Filimon et al. 2007). Whenever you see one person touch another person, somatosensory regions in your own brain are activated, as if you were the one being touched (Keysers et al. 2004). And whenever you observe someone's face take on an expression of disgust after they have detected a foul odor, some of the neural structures that underlie the experience of disgust in your own brain are triggered, as if you were the unfortunate individual who smelled the awful scent (Wicker et al. 2003).

These examples illustrate just a few of the many ways in which mental simulations contribute to our reflexive understanding of each other's actions, sensations, and emotions. The basic idea is simple: By virtue of having common brain circuits and common sensorimotor and affective experiences, people can, so to speak, translate the sights and sounds of what other individuals do and feel into the language of their own actions and feelings. Research on this topic has been rapidly evolving during the past 15 years or so, and the functional and mechanistic aspects of mental simulations are currently the focus of intense investigation by scholars in many branches of psychology and neuroscience. In fact, right now so much attention is being devoted to this topic that new empirical and theoretical articles are appearing online in various journals almost every day.

This outpouring of papers can be traced, in large part, to the seminal discovery of mirror neurons in the early 1990s by Giacomo Rizzolatti and his colleagues at the University of Parma. As traditionally defined, mirror neurons are brain cells that significantly increase their firing rate not only when certain kinds of actions are executed by the self, but also when the same kinds of actions are seen being performed by someone else. Because these cells appear to neutralize the self-other distinction, they may ultimately shed light on many aspects of human intersubjectivity, such as imitation, mind-reading, and empathy. That, at least, is the hope of the majority of researchers who study mirror neurons, and it is why advances in this line of inquiry have captured the imagination of innumerable laypeople well outside the scientific community. After all, these days just about anyone who has even a passing familiarity with cognitive neuroscience has heard of mirror neurons, thanks to fairly detailed coverage in popular newspapers, magazines, and television broadcasts.

Mirrors in the Brain: How Our Minds Share Actions and Emotions was written (originally in Italian) by Rizzolatti himself, together with Corrado Sinigaglia, a philosopher of science at the University of Milan. Aimed at non-specialists who nevertheless have some background in basic neuroscience, the book provides a systematic overview of mirror neurons, with emphasis on the pioneering work of Rizzolatti and his colleagues. Although there are a few glitches in the translation (e.g. *saccadici* for *saccades*), the style is, for the most part, clear and accessible, and the main points in the text are well-supported by abundant figures, many of which are multicolored and include detailed captions. The first three chapters—"The motor system," "The acting brain," and "The space around us"—lay the groundwork for the subsequent treatment of mirror neurons by describing the functional-anatomical organization of the cortical circuits that subserve our visuomotor interaction with objects in peripersonal space, i.e. the space within arm's reach. The next two chapters—"Action understanding" and "Mirror neurons in humans"—reveal the intricacies of mirror neurons by reviewing neurophysiological experiments with macaque monkeys as well as brain mapping studies with humans; importantly, the latter studies employed a diverse array of techniques, including electroencephalography (EEG), magnetoencephalography (MEG), transcranial magnetic stimulation (TMS), positron emission tomography (PET), and functional magnetic resonance imaging (fMRI). Finally, the last two chapters—"Imitation and language" and "Sharing emotions"—consider a variety of issues involving the roles that mirror neurons might play in two major domains of human intersubjectivity: communication (both verbal and gestural) and the mutual understanding of feelings.

Mirror neurons were first discovered in a sector of the macaque ventral premotor cortex known as F5. This brain region contains what Rizzolatti and Sinigaglia (p. 46) call "a vocabulary of motor acts, in which the words are represented by populations of neurons. Some of these indicate the general goal of the act (holding, grasping, breaking etc.), others the manner in which a specific motor act can be performed (precision grip, finger prehension etc.), and lastly, there is a group that designates the temporal segmentation of the motor act in its elementary movements (opening and closing of the hand)." Roughly 20 years ago, some of the researchers in Rizzolatti's laboratory noticed—entirely by accident, so the legend goes—that a subset of these specialized F5 neurons discharged even when the animal was sitting completely still but happened to be watching someone else's actions. This fortuitous finding was nothing short of astonishing at the time, because the prevailing view in the neuroscience community was that the motor system was devoted entirely to the *production* of action and did not contribute in any way to the *perception* of action. More formal studies confirmed, however, that F5 neurons do in fact respond to certain types of movement regardless of whether they are executed by the animal or by a different agent. And this in turn eventually led to a veritable cascade of carefully controlled experiments with both macaques and humans, in Rizzolatti's laboratory and in many other laboratories worldwide.

Throughout their discussion, Rizzolatti and Sinigaglia concentrate on mirror neurons in the inferior frontal lobe and the inferior parietal lobe. This is because the book presents Rizzolatti's own historical perspective on the field, and his team's research efforts have focused mainly on mirror neurons in these regions. It is noteworthy, however, that cells (or voxels) with mirror properties have also been found in an impressively large number of other frontal and parietal areas of both the macaque brain (e.g. Raos et al. 2007; Evangeliou et al. 2009) and the human brain (e.g. Gazzola and Keysers 2009). Determining the full extent of the mirror neuron system is thus an ongoing empirical process, and much more work remains to be done.

Rizzolatti and his colleagues have consistently argued that the function of mirror neurons is to facilitate or enhance the comprehension of perceived actions by mapping them directly onto the corresponding motor programs in the observer's own behavioral repertoire. This interpretation is clearly expressed in several places in Rizzolatti and Sinigaglia's book. For example, "it can be said that these neurons are primarily involved in the *understanding of the meaning of 'motor events', i.e. of the actions performed by others*" (p. 97, emphasis in original). There is most likely some degree of truth to this notion, but pinning down the precise ways

in which motor resonance or simulation contributes to action recognition has proven to be very challenging, and a substantial amount of debate surrounds this issue. For instance, even though rhesus monkeys are biomechanically incapable of throwing objects in an overhand manner, they can nevertheless predict quite accurately the outcomes of overhand throwing actions that they see humans perform (Wood et al. 2007; see also Wood and Hauser 2008). Furthermore, even though focal brain damage can selectively impair a person's knowledge of how to use tools (e.g. forks, hammers, combs etc.), some individuals with this type of apraxia can nevertheless discriminate between correct and incorrect uses of tools when they see the objects being manipulated by other people (Negri et al. 2007). Findings like these are important because they indicate that it is not necessary to have exact motor representations of observed actions in order to understand them. Still, proponents of simulation theories of action comprehension could respond by pointing out that, as demonstrated by several studies of expertise effects (e.g. Cross et al. 2006; Aglioti et al. 2008), possessing exact motor representations does significantly deepen, in measurable ways, one's appreciation of the corresponding actions when they are perceived. Rizzolatti and Sinigaglia make essentially the same point in the following passage in the Preface (p. xii): "From elementary acts such as grasping to the more sophisticated that require particular skills such as playing a sonata on a pianoforte or executing complicated dance steps, the mirror neurons allow our brain to match the movements we observe to the movements we ourselves can perform, and so to appreciate their meaning. Without a mirror mechanism we would still have our sensory representation, a 'pictorial' depiction of the behaviour of others, but we would not know what they were really doing. Certainly, we could use our higher cognitive faculties to reflect on what we have perceived and infer the intentions, expectations, or motivations of others that would provide us with a reason for their acts, but our brain is able to understand these latter immediately on the basis of our motor competencies alone, without the need of any kind of reasoning."

Readers of this journal will no doubt be especially interested in what Rizzolatti and Sinigaglia have to say about possible links between mirror neurons and language. This topic has attracted a great deal of attention because, as noted above, mirror neurons were first identified in the macaque area F5, and this area is the homologue of Broca's area in the human brain. Drawing upon related ideas proposed by scholars such as Corballis (2002) and Arbib (2005), Rizzolatti and Sinigaglia develop and defend a "gestural origins" theory of language. In particular, they propose an evolutionary scenario characterized by the following major sequential stages: the formation of a repertoire of predominantly mimetic

gestural "proto-signs," anchored in the mirror neuron system for grasping; the emergence of a bimodal "proto-language" consisting of both manual gestures and oral sounds; and finally the appearance of a communication system in which speech plays the primary role and gesture plays a secondary role. The authors acknowledge that this is "just a speculative hypothesis" (p. 164). However, there is increasing behaviorial and neuroscientific evidence for a tight connection between speech and gesture (for a recent review see Willems and Hagoort 2007), and further support for the view that language originated in various forms of pointing and pantomiming comes from empirical research on the gestural and vocal communication of great apes and human infants (Tomasello 2008). Additional work will undoubtedly shed more light on the complex, and controversial, relations between language and mirror neurons (e.g. see the special 2009 issue of *Brain and Language* devoted to this topic).

Overall, Rizzolatti and Sinigaglia's book provides an excellent introduction to one of the most captivating research domains in contemporary cognitive neuroscience. It should be of interest to all scholars who are curious about how mirror neurons might contribute to some of the most sophisticated forms of human social interaction.

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