Entrevista con... /An Interview with...

Gilles Fauconnier

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The Ins and Outs of Human Cognition in the Construction of Meaning

Professor Gilles Fauconnier is a Distinguished Research Professor in the Department of Cognitive Science at the University of California San Diego. He is considered one of the most influential scholars of our age in language and communication. Fauconnier is one of the founders of cognitive linguistics through his work on pragmatic scales and mental spaces and the author of a number of books on linguistics and cognitive science, including *Mental Spaces: Aspects of Meaning Construction in Natural Language* (Cambridge University Press, 1994), *Mappings in Thought and Language* (Cambridge University Press, 1997) and *The Way We Think* (with Mark Turner, Basic Books, 2002). The extremely coherent framework on conceptual blending and mental spaces developed in his work has gained worldwide recognition. His recent research explores conceptual integration, compression of conceptual mappings, and emergent structure in language and beyond.

After having the honour and pleasure to invite and meet him in the Seminar "Mental Spaces and Conceptual Blending" that he conducted in the Applied Linguistics Department at the Universidad Politécnica de Madrid (Spain) in June 2008, Prof. Gilles Fauconnier has been as kind as to answer all the questions for this interview for *Ibérica*, the journal of AELFE. His words will surely receive the attention of many linguists in Spain, Europe and beyond, especially of those colleagues working in the LSP area.

Ana Roldán (AR): *A great deal of Languages for Specific Purposes (LSP) research is done on teaching and language learning. According to Conceptual Integration Theory, are there any cognitive factors that may boost or improve learning a foreign language?*

Gilles Fauconnier (GF): In learning a foreign language many (if not most) of our cognitive capacities are recruited. The aptitude for conceptual

integration is one of the necessary conditions for learning a language, whether native or not. In learning one's native language, a multitude of conceptual integrations are unconsciously built up and then firmly entrenched. They are so deeply part of our thinking that we take them for granted, in spite of their tremendous complexity. We have no easy conscious access to the vast networks that we come to master expertly. The challenge of learning a foreign language is to build integrations (at many levels) different from the ones we take for granted in our native language. For adults, the learning process, although still largely unconscious, involves explicit, conscious, and therefore effortful, construction of conceptual integrations that approximate those of the target language being learned. Teachers cannot teach this directly; they can only prompt students to engage in the novel constructions. But, as for the teaching of mathematics, awareness of the formidable cognitive task faced by the student will help the teacher give optimal guidance and understand where the students' mistakes or confusion may be coming from. To learn a new language, adults need to deconstruct the powerful entrenched conceptual integrations of their native language.

AR: *In a recent article with Mark Turner*[1] *you said that "The study of conceptual mappings, including metaphoric mappings, has produced great insights over the past several decades, not only for the study of language but also for the study of such subjects as scientific discovery, design, mathematical thinking, and computer interfaces". Do you consider that innovation in science and technology also depends on conceptual operations such as blending? Do you think that innovators are aware of bringing and integrating different inputs together? Can this be taught?*

GF: Yes, conceptual integration (aka blending), especially of the double-scope variety, has been shown to play a key role in scientific innovation performed by humans. Innovators can be made aware of some aspects of the integration processes that they master unconsciously. We don't know if conscious knowledge of this kind actually facilitates innovation. It certainly provides no general recipe for innovating, but it may give us useful tools for assessing innovative power after the fact. So, for example, mathematics has changed over the years: new notions of number (such as "irrational", "complex", "transfinite") have emerged through powerful conceptual integrations achieved cognitively and culturally by generations of mathematicians. This we can see and analyze in detail as we look back at the discoveries that were made, but the analysis does not predict subsequent advances or conceptual changes, because the realm of possibilities is immense.

AR: *You have shown that conceptual integration is essential in constructing meaning, and in addition to semantic features typical of LSP such as meaning shrinking and meaning extension, it seems that meaning creation in LSP has a lot to do with analogy. Do you think that conceptual blending theory would be a valid instrument to address research in LSP?*

GF: Yes, the conceptual blending framework provides a general way of addressing the multiple mappings and emergent structures involved in constructing wide arrays of meaning. This goes far beyond notions of shrinking, extension, or analogy, which are fairly superficial. Chapters 8, 11, 13 and 17 of WWT[2] offer detailed case studies of category extension and emergent meaning from this broader perspective. The generalizations offered by conceptual blending theory should be useful to LSP research, and it should allow for more precise and detailed analyses.

AR: *The same article*[1] *states that: "The message for all of us metaphor theorists is that we need to go far beyond the usual focus on cross-domain mapping and inference transfer. We need to face squarely the far greater complexity of integrations that lie behind observable metaphorical conceptual systems". According to this, would it be possible to explain better scientific and technical language by finding more networks and connections through conceptual integration analysis?*

GF: Undoubtedly, a deeper understanding of the rich networks that humans are capable of building helps to make sense of the emergent scientific and technical language. Scientists need language that simultaneously evokes existing conceptions while at the same time building new ones. Children learning "fractions", for instance, are easily confused by the non-intuitive properties of this new kind of number. The word "fraction" evokes two conceptual inputs, proportions, and partitions, which need to be integrated with the notion of number. But the novel "scientific" term, "fraction", applies to a new emergent structure (rational numbers), which the children must explore and master. The same is true of many scientific terms which are misunderstood or applied improperly.

AR: *Mental spaces are dynamic packages of information operating in practically any type of complex or simple communication. In the case of LSP, don't you consider that they are restricted (not open to everyone) and depend on knowledge and expertise?*

GF: Expertise in any domain is the ability to manipulate specialized conceptual networks. This is true of domains that are widely shared in a culture, such as the understanding of physical space, with spatial terms such as "on", "over", "across", "through", ... And it is equally true of domains

that are restricted to cultural subgroups, like chess, or basketball, or wine-tasting. Humans have the general capacity of building wide arrays of mental spaces in any situation (widely shared or more restricted). But specialized expertise and knowledge in a restricted group is precisely the capacity to build elaborate mental space configurations not available outside of the group. So, the same series of chess moves can be described to a beginner and to a grandmaster. Both are capable of moving the pieces on the board in accord with the description. But the grandmaster will "automatically", i.e. with little conscious effort, construct elaborate mental space configurations based on many other games and strategies stored and linked in his/her mind. As each move is described, the grandmaster will be predicting other moves, considering and evaluating alternatives, and so on. The beginner is not equipped to do any of this. So even though the beginner and the master both understand the positioning of the chess pieces, the mental configurations they come up with are vastly different. It may be said that they understand the same description very differently, and that the mental space networks available to the grandmaster are "restricted", i.e. not available to the novice.

AR: *As you say, it is amazing the human faculty to integrate and to create meaning through double-scoping networks. Nevertheless, can we explain why the human mind can be easily manipulated by ideology, media, etc.?*

GF: The fact that humans engage in elaborate meaning construction does not shield them from manipulation, on the contrary. Manipulation uses existing unconscious integrations and networks to trigger further integrations that humans are very good at doing (and like to do). The very solidity of these integrations (we perform them unconsciously at lightning speed) validates emerging belief. At the level of consciousness, we experience emerging belief as obvious and inevitable. Propaganda and manipulation rely above all on the rich existing networks that we possess unconsciously and live by in everyday circumstances. Their persuasive power derives in large part from the fact that we have no conscious access to the complexity of the manipulation, even though our mind/brains are its instrument.

AR: *What is your opinion of Critical Metaphor Analysis? Do you think that this emerging framework can benefit from Conceptual Integration Theory?*

GF: Metaphor analysis (including "critical metaphor analysis") is indeed very useful, and illuminates fundamental aspects of our thought processes.

However, the source-target inferential model turns out to be overly simplistic. It does not properly address the key issues of emergent structure and compression. This is where the deeper and more general framework of conceptual integration can help to forge more sophisticated and revealing analyses.

AR: *Integration networks are not static, they are dynamic structures and can be innovated continuously, do you believe that this might be a way to transmit ideology in our society? How can we be aware of this action?*

GF: My answers to the previous questions apply to this one as well. There is indeed a perpetual ongoing change in the dynamics of any culture and its internalization in the minds of individuals, even if the same language expressions continue to be used. The hidden complexity of our backstage cognition and its unconscious nature make it impossible to be aware in real time of what is happening. Only explicit analysis of the kind evoked in the preceding question, and applied to specific phenomena, can bring out some of the awesome mechanics of ideological transmission.

AR: *In your view, are there major constraints in cognitive operations? Which ones?*

GF: Any scientific theory is a system of constraints on the world. The law of gravity, for example, tells us how objects will fall, and thereby excludes other imaginable worlds where objects would fall differently or not at all. In that sense, cognitive operations are constraints on how the mind/brain can work, with different constraints for different species. This is what Searle called the constitutive principles of a theory (or of a game, or other social activity). Typically, in addition to these constitutive constraints, scientific theories also introduce governing constraints that add further limitations to the laws or operations discovered. The cognitive operations of conceptual integration have been divided in a similar way. There are constitutive principles defining certain operations, e.g. double-scope blending, compression of vital relations, or pattern completion in emergent structures. And then there is a long list of governing constraints (optimality principles), which drastically pare down the possible networks. They include seven principles of compression and other constraints such as Topology, Pattern Completion, Web, Unpacking (see Chapter 16 of WWT).

AR: *Is it right that analogy is one of the main operations in human thinking?*

GF: Yes, analogy is crucial to human thinking. But "analogy" is a vague term that we use in everyday life in all kinds of ways. Modern cognitive science

proposes precise psychological models of analogy. Such models have typically not taken into account conceptual blending, which makes them overly simplified, and incomplete. In my view, a more general cognitive notion is that of "conceptual mapping" and such mappings are used to construct integration networks of all kinds. The labels that we use in everyday language, such as "analogy", "similarity", "metaphor", apply to surface products. When we analyze these surface products in greater detail, we find that each one is constructed through a variety of conceptual mappings and integrations. It rarely fits a single one of the "ordinary" categories. These issues are discussed and exemplified in some detail in the article *Generalized Integration Networks*.[3]

AR: *Would you say that metonymy plays a distinct role from metaphor in conceptual blending? Are compression and decompression processes involved?*

GF: The term "metonymy" covers different kinds of mapping and compression. "Metaphor" is also not a unified notion: different kinds of conceptual blends correspond to what we might call metaphors in everyday language. Compression in integration networks gives rise to metaphor and metonymy, but in quite different ways. The overarching goal of compression and integration is to achieve HUMAN SCALE: an action scenario that involves few participants and takes place in a short time. In metaphors, this is typically done by using one integration input that is already compressed, and projecting that compression to the blended space. For example, a long protracted economic competition between corporations with thousands of people can be described as "Ford knocked out Chrysler". In the blended space, there are only two participants in a short round of boxing. The precompressed "boxing" input has been integrated with the complex economic competition. Metonymy compresses vital relations directly. For example, in "Nixon bombed Hanoi", a long chain of causal relations is compressed: Nixon making a decision, the decision being transmitted through a complex chain of command (officials, generals, officers, ...), the decision being implemented by individual officers, soldiers, pilots, and finally bombs being dropped. The compression yields a "human scale" event with only two participants, Nixon and Hanoi, and a single action (bombing). The vital relation compressed in this example is Cause-Effect. There are at least a dozen such vital relations (e.g. Part/Whole, Representation, Change, Identity). Notice that we don't call "Nixon bombed Hanoi" a metaphor. There is, alas, nothing figurative about it.[3]

AR: *In some disciplines such as architecture and publicity, for example, the interpretation of one image often requires associating (or dissociating) from different mental spaces. Is this an easy cognitive task? Do you agree with the saying "An image is worth a thousand words"?*

GF: Visual blends are very powerful, because they allow us to perceive simultaneously the most relevant input spaces and the blended space. Successful advertisers and cartoonists are able to convey a huge amount of information and inference with a single image, by prompting the viewer to instantaneously construct a vast integration network. This is also part of ideological manipulation, as discussed before. More generally, architecture, design, and art achieve spectacular integrations, which make up our esthetic experience, while satisfying specific practical goals, such as living and working in a building. In that sense, they associate, compress and decompress wide arrays of mental spaces. (See Mark Turner's book *The Artful Mind*, and examples in WWT, such as *Bypass*, *Toblerone*)[5].

AR: *Are conceptual networks related to frames and scripts?*

GF: Frames and scripts are frequent inputs to integration networks. Novel frames emerge in blended spaces, and can then themselves become conventional in a culture or subculture. In the metaphorical example of "Ford knocking out Chrysler", the familiar frame of boxing is used for one input, and a novel frame of corporations fighting is created.

AR: *You frequently give seminars and courses all over the world; do you believe that there are independent lines of thought in linguistics nowadays or on the contrary they are somehow connected?*

GF: Unfortunately, the many lines of thought in linguistics (and in psychology or cognitive science) are difficult to reconcile, let alone unify. My own work deals with "backstage cognition", the "dark matter" of semantics, that operates unconsciously in our minds, and is prompted but not directly reflected by overt language structure. What my collaborators and myself look for are the many ways in which language prompts for the cognitive construction of elaborate meaning in context. Traditionally, the focus of linguistics has been quite naturally (even if perhaps mistakenly) on the visible grammatical structures, and their variation across the world's languages. Of course, even within the traditional paradigm, there are very different lines of thought which seem hard to reconcile. What linguists do have in common is their deep appreciation for the formidable hidden complexity of language and its usage. This complexity is not apparent to humans in everyday life: our

brains are built to hide from us the multiple linguistic layers of cognitive complexity, so that language seems to describe the world directly and straightforwardly. In itself, this is a desirable feature of our conceptual systems, parallel to our ignorance of how we walk, grasp, or push: we just do it, and thankfully do not have to think consciously of the brain and motor system that make our actions possible.

AR: *Professor Fauconnier, you are fluent in various languages, do you consider that this fact might have had an influence on your understanding of meaning?*

GF: It certainly helps to know more than one language in order to appreciate the relative arbitrariness of patterns that we feel are essential. But I know several monolingual scholars who have given us key insights into the nature of language and thought.

AR: *You are not only an eminent linguist but also an engineer and a mathematician. In your opinion, has your education shaped your work production?*

GF: Fields like cognitive science have developed in order to cut across the boundaries of traditional disciplines. Typically, researchers in fields that aim to be interdisciplinary have backgrounds with diversity, and this is certainly desirable. For me, familiarity with the kinds of generalizations and abstractions found in mathematics was very helpful and did indeed shape my work production. It encouraged me to look beyond the apparent structures of language for deeper generalizations about human thinking.

AR: *Why are you interested in studying the origin of language, do you find any connections with language acquisition in children?*

GF: So many linguists and philosophers have been tempted to speculate about the origin of language that in 1866, the powerful *Société Linguistique de Paris* forbade research on this topic. What Turner and I noticed is that "double-scope blending" is necessary for the activities of modern cognitive humans, such as art, science, technology, religion, and language, and that there is no evidence for it in other species. This prompted us to develop a detailed hypothesis for the biological emergence of double-scope integration and its underlying key role in making human thought and language what they are. Human children are born with this capacity, and taking it into account sheds light on the amazing learning abilities of infants and children (see Williams, 2005[6]).

AR: *Finally, are you preparing any new publications on cognitive linguistics? Would you like to add something else?*

GF: I continue to write on the general themes evoked above. The lectures I gave in Beijing in 2008 are being published under the title *Cognitive Construction of Meaning*. The mysteries of causal compression are one focus of my current work.

[Interview received January 2010]

NOTES

[1] Fauconnier, G. & M. Turner (2008). "Rethinking metaphor" in R. Gibbs (ed.), *Cambridge Handbook of Metaphor and Thought*, 53-66. New York: Cambridge University Press.

[2] WWT: Fauconnier, G. & M. Turner (2002). *The Way We Think*. New York: Basic Books.

[3] Fauconnier, G. (2009). "Generalized integration networks" in V. Evans & S. Pourcel (eds.), *New Directions in Cognitive Linguistics*, 147-160. Amsterdam: John Benjamins.

[4] See my papers:

Fauconnier, G. (2005). "Compression and emergent structure" in S. Huang (ed.), *Language and Linguistics* 6: 523-538.

In press: "Causal Compressions".

[5] Turner, M. (ed.) (2006). *The Artful Mind: Cognitive Science and the Riddle of Human Creativity*. Oxford: Oxford University Press.

The Bypass: WWT, page 67.

Toblerone: WWT, page 135.

[6] Williams, R. (2005). *Material Anchors and Conceptual Blends in Time-telling*. Ph.D. dissertation. University of California San Diego.