

University of Zurich/Swiss Federal Institute of Technology Zurich

Seminar «Natural and Artificial Intelligence»

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# Primary Metaphor and Complex Metaphor

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## Contents

|   |   |
|---|---|
| Abstract.....   | 1 |
| 1 What Does «Metaphor» Mean?.....                               | 1 |
| 2 Primary Metaphor.....   | 2 |
| 3 Complex Metaphor.....   | 4 |
| 4 What Are Metaphors Good For?.....                             | 6 |
| 5 How Is The Metaphor Theory Related To Cognitive Science?..... | 6 |
| References.....   | 7 |
| Appendix A: Notation.....                                       | 8 |
| Appendix B: Graphical Overview Of Metaphor Building.....        | 8 |

## Abstract

This text is a recapitulation of the seminar lecture held on November 8, 2001 about «Primary Metaphor and Complex Metaphor». Its purpose is to serve as a (belated) handout as well as a simple introduction to the Metaphor Theory as presented and applied in Lakoff/Johnson 1999 and, to a lesser extent, Lakoff/Núñez 2000.

Some aspects of the original Metaphor Theory have been simplified or omitted not only in order to keep this text short, but also because they seem rather fuzzy and therefore do not really aid in understanding this theory.

### 1 What Does «Metaphor» Mean?

In everyday language, «metaphor» is used mainly as a purely linguistic concept. According to Webster's New Encyclopedic Dictionary, a metaphor is «*a figure of speech in which a word or phrase denoting one kind of object or idea is used in place of another to suggest a similarity between them (as in the ship plows the sea).*»

Therefore, one would think that it is very easy to live happily without metaphors. The research by Lakoff and Johnson, however, shows that quite the opposite is true: Whatever we think, say, or do is heavily influenced by metaphors – yet it is true that Lakoff/Johnson use this expression in a less limited way. They apply the term *metaphor* not only to linguistic phenomena but also to the «mental processes» which underly every utterance, action, or perception<sup>1</sup>. These processes structure our life down to the tiniest details, therefore it seems reasonable to say that without metaphors, our lives would be quite difficult.

To give an example of how a metaphorical concept influences both language and action, let's have a look at the term «argument». We might associate the following expressions with «argument»:

- Your claims are *indefensible*.
- He *attacked every weak point* in my argument.
- His criticisms were *right on target*.

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<sup>1</sup> However, since the majority of these processes are unconscious mechanisms which take place without our noticing them (and, even more important, without any scientific means to precisely measure or control them, at least for the time being), this seems to be a weak point in Lakoff and Johnson's argumentation.

- I *demolished* his argument.
- I've never *won* an argument with him.
- You disagree? Okay, *shoot!*
- If you use that *strategy*, he'll *wipe you out*.
- He *shot down* all of my arguments.

According to Lakoff and Johnson, the underlying metaphor which determines our thinking pattern when we reason about an argument, is «Argument Is War» (see Appendix A for notation conventions). Obviously, an argument can be compared to a fight with words, a verbal battle. When carrying on an argument, we may even act in a war-like fashion: we gesticulate, shout at the opponent, and in the end, if we get carried away, we may even start hitting each other – and after the argument, we feel like the winner (or loser).

Lakoff/Johnson also use this example to show that some metaphors are woven into a certain cultural context. Imagine a society where an argument is thought of as a dance rather than a war: The goal of an argument might not be to win but to achieve a well-balanced, aesthetical way of discussing. The participants would have quite different feelings about arguing; however, we might not recognize an argument as such because we don't associate dancing with arguing.

Note that a metaphor can be understood as a mapping function from a Source Domain into a Target Domain. In the example above, «War» is the Source Domain and «Argument» is the Target Domain.

## 2 Primary Metaphor

We are able to reason about highly complex and abstract things like *importance*, *similarity*, or *morality* without noticeable effort. According to Lakoff and Johnson, we achieve this using metaphors, i.e. concepts from other domains of our (embodied, sensorimotor) experience – we literally «grasp» an abstract idea. But how does this metaphorical thinking work?

Compiling the research work of other cognitive scientists, Lakoff/Johnson hope to explain the metaphorical mechanisms with the *Integrated Theory of Primary Metaphor*, which consists of four parts:

- Johnson's Theory of Conflation
- Grady's Theory of Primary Metaphor
- Narayanan's Neural Theory of Metaphor
- Fauconnier and Turner's Theory of Conceptual Blending

Christopher Johnson's *Theory of Conflation* states that connections between subjective emotions and sensorimotor experiences develop during early childhood. For example, affection is typically correlated with the warmth of being held – an infant repeatedly feels the emotion and the sensorimotor experiences at the same time, which leads to conflation or «undifferentiated experience». During a later phase of differentiation, the two domains (affection and warmth) that have been linked together are separated out, but the cross-domain associations persist and form the mechanisms for metaphorical mapping. These metaphors are called *Primary Metaphors*. In the example, the child would think of affection in terms of warmth as in «a *warm* smile». Another example is «a *close* friend», where there exists a metaphorical mapping from the domain of affection to the domain of the sensorimotor experience of being held closely to a person.

Joe Grady's *Theory of Primary Metaphor* states that Complex Metaphors (see chapter 3) are «molecular» constructions of «atomic» parts, the Primary Metaphors. The construction process is called *conceptual blending* and is further explained in its proper theory by Fauconnier and Turner (see below).

Srini Narayanan's *Neural Theory of Metaphor* explains that the associations created during the phase of conflation are actual neural connections between the involved brain regions.

Gilles Fauconnier and Mark Turner's *Theory of Conceptual Blending* states that distinct domains can be coactivated (similar to Johnson's Theory of Conflation) and that under certain conditions new cross-domain associations can be established. Thus, novel «blends» of previously separate metaphorical domains come into existence: this is the creation of Complex Metaphors.

As a simplified example, the conflated experiences a young child has when big things, e.g. the parents, dominate the field of vision or exert major forces (and are therefore recognized as being important), lead to neural connections between the brain regions for «importance» and «size». These physical associations persist even after childhood and are responsible for the Primary Metaphor «Important Is Big», which we use e.g.

in the expression «Tomorrow is my *big* day».

It should be clear now that Primary Metaphors are highly embodied. They depend directly on our interaction with the environment and the shape of our body. We acquire Primary Metaphors automatically and unconsciously, simply by interacting with the world.

This does not rule out the existence of non-metaphorical concepts, however. We use a vast system of literal concepts like Spatial-Relations Concepts<sup>2</sup>. All basic sensorimotor concepts are literal. Even concepts of subjective perception can be literal: for example, «these colors are *similar*» is literal, while «these colors are *close*» is metaphorical.

### 3 Complex Metaphor

According to Grady's theory, Primary Metaphors can be combined to larger structures, the so-called Complex Metaphors. Most of these «molecular» structures are stable and therefore determine an important part of our conceptual system. Thus, whatever we think, say, or do, is influenced by Complex Metaphors – they even structure our dreams.

As an example, let us have a closer look at the Complex Metaphor «A Purposeful Life Is A Journey». In our culture, a person is supposed to have a purpose in life. One who cannot give his life a proper meaning seems *lost* or *without direction*, he doesn't know *where to turn*. The structure of the Complex Metaphor «A Purposeful Life Is A Journey» can be described as consisting of

- Primary Metaphors: Purposes Are Destinations, Actions Are Motions
- Cultural Belief: People are supposed to have purposes in life, and they should act so as to achieve those purposes.

The metaphorical version of the Cultural Belief is

- People are supposed to have destinations in life, and they should move in such a way as to reach these destinations.

Combined with the fact that

- A trip to a series of destinations is a journey,

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<sup>2</sup> as explained by Raphael Bianchi in his presentation on «The Cognitive Unconscious and the Embodied Mind», November 1, 2001.

these two Primary Metaphors and the Cultural Belief result in a Complex Metaphor (consisting of four sub-metaphors):

- A Purposeful Life Is A Journey
- A Person Living A Life Is A Traveler
- Life Goals Are Destinations
- A Life Plan Is An Itinerary

This metaphorical mapping allows us to reason about life (which can be rather difficult) in terms of traveling, making it easier to grasp: Just as a journey requires an itinerary, a purposeful life needs to be planned carefully; there may be obstacles (difficulties) in the way (of life), which need to be avoided or removed; one should always know where he/she stands (in life); etc.

Note that most Complex Metaphors cannot be «proven» experimentally, e.g. that there is no direct connection between a purposeful life and a journey. Does this mean that there is no grounding for this metaphorical mapping? No, because it is constructed of Primary Metaphors which *are* grounded. This demonstrates an important property of Complex Metaphors: The grounding of the whole is the grounding of its parts.

Complex Metaphors can be composed not only of Primary Metaphors, but also of other Complex Metaphors. For example, there is a «Love Is A Journey» Metaphor, which is constructed similarly to the «A Purposeful Life Is A Journey» Metaphor. It consists of the following metaphorical mappings:

- Love Is A Journey
- Lovers Are Travelers
- Their Common Life Goals Are Destinations
- A Relationship Is A Vehicle (this is a Complex Metaphor, which consists of the Primary Metaphors «A Relationship Is An Enclosure» and «Intimacy Is Closeness»)
- Difficulties Are Obstacles To Motion

This Complex Metaphor can be found in expressions like «look how *far* we've *come*», «we can't *turn back* now», «the relationship is not *going anywhere*» or «we may have to *go our separate ways*».

#### 4 What Are Metaphors Good For?

Probably the most essential thing about conceptual metaphors is their importance for reasoning. The example «Love Is A Journey» allows us not only to simply map words from the Source Domain «Journey» to the Target Domain «Love», but also to reason about love using concepts from the world of traveling.

In addition, we are able to quickly understand novel expressions thanks to this mechanism. When we encounter a song lyric such as «We're driving in the fast lane on the freeway of love», we have an instantaneous feeling of understanding this rather abstract image. (Uncousciously) using the «Love Is A Journey» Metaphor, we may come to the following «translation» of the song lyric: Lovers in a love relationship make a lot of progress in a short time, and even though there may be the danger of wreckage and getting hurt, the speed of the relationship is stimulating. This shows that novel metaphors can use the same mapping mechanism as previously established Complex Metaphors.

Metaphors also help us understand idiomatic expressions like *spinning one's wheels* or *off the track* – unlike traditional linguistics, which has treated idioms as random combinations of expressions, Metaphor Theory shows that idioms are systematically motivated by metaphorical mapping and certain conventional images.

#### 5 How Is The Metaphor Theory Related To Cognitive Science?

Not all Cognitive Scientists accept the Metaphor Theory. Many stick to the traditional opinion that concepts are not metaphorical but literal, and disembodied rather than embodied. Therefore they reject the assumptions made by Lakoff and Johnson.

Some postmodern philosophers even deny that Cognitive Science can have results which build a foundation for criticizing particular philosophical views. According to them, Cognitive Science can be the basis neither for critique nor for alternative theories. Lakoff/Johnson try to counter these reproaches by embedding the Metaphor Theory into existing theories.

There are two main approaches to Cognitive Science:

- First Generation (established in the 1950s and 1960s)
- Second Generation (evolved in the mid-1970s)

*Cognitive Science of the First Generation* is all about «Thinking = Symbol Manipulation». Symbols are internal representations of objects of the external world. The mind is understood as some kind of abstract computer program that happened to be executed by the brain, but could very well be run on another «device». Thus, First Generation Cognitive Science is based on a priori assumptions like Functionalism (disembodied mind) and Literal Meaning.

On the opposite side, there is *Cognitive Science of the Second Generation* which states that the mind is highly embodied and sensorimotor influence is central for reasoning.

Lakoff and Johnson criticize the Cognitive Science of the First Generation for its many inadequacies. For example, it doesn't rely on empirical evidence. The disembodied approach creates an unbridgeable gap between «objects» which are «out there», and subjectivity, which is «in here». This separation is an artificial construct, for we are never separated from reality. Therefore, Lakoff/Johnson adhere to the Second Generation of Cognitive Science, because its foundations are not a priori assumptions but empirical evidence.

## References

Lakoff, G. and Johnson, M. (1980). *Metaphors We Live By*.

Chicago/London: The University of Chicago Press. [ISBN 0-226-46801-1]

Lakoff, G. and Johnson, M. (1999). *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought*.

New York, NY: Basic Books. [ISBN 0-465-05674-1]

Lakoff, G. and Núñez, R. E. (2000). *Where Mathematics Comes From: How the Embodied Mind Brings Mathematics into Being*.

New York, NY: Basic Books. [ISBN 0-465-03771-2]

*Webster's New Encyclopedic Dictionary* (1995). New York, NY:

Black Dog & Leventhal Publishers Inc. [ISBN 1-884822-20-7]



## Appendix A: Notation

To simplify things, Lakoff/Johnson propose and use the following two conventions for labeling and describing metaphors:

- the form of a regular sentence (Similarity Is Closeness) when used as the name of the metaphorical mapping
- the form of a mapping function (Closeness → Similarity) when the metaphor's structure is stressed

Note the reversed order of Source and Target Domains.

## Appendix B: Graphical Overview Of Metaphor Building

