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# On the cognitive dimension of metaphors and their role in education: a response to Molina Rodelo (2021)<sup>1</sup>

Sobre la naturaleza cognitiva de las metáforas y su papel en la educación: respuesta a Molina Rodelo (2021)

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## Abstract:

This paper offers an alternative reading of the cognitive dimension of metaphors. In contrast to Molina Rodelo's analysis (2021), the present model opposes the views held by the Conceptual Metaphor Theory (CMT) and The Mental Spaces Theory. I argue that metaphors are part of broader cognitive phenomena (embodied cognition) issued from the speakers' experience with the world. In other words, metaphors are not a by-product of sensorimotor experience, a simulation, as CMT claims. As a result, metaphors are construed as embodied units of sense for the shared reconstruction of experience.

**Keywords:** embodied cognition, concepts, essentialism, embodied metaphor, education, Conceptual Metaphor Theory.

### Resumen:

En este artículo de respuesta se ofrece una lectura alternativa de la naturaleza cognitiva de la metáfora. En contraste con el análisis propuesto por Molina Rodelo (2021), el presente modelo cognitivo se aparta de las definiciones existentes basadas en la Teoría de la Metáfora Conceptual (TMT) y la Teoría de los Espacios Mentales (*Mental Spaces Theory*). Se propone entonces una caracterización de la metáfora como construcción nacida de la cognición encarnada (*embodied cognition*) del hablante, la que, a su turno, tiene su origen en la percepción

misma del entorno. En otras palabras, las metáforas no son un subproducto mental de nuestra experiencia con el mundo físico, una mera simulación mental, como lo afirma la TMT. El resultado es una visión de la metáfora como repositorio de experiencias, actitudes y creencias accesibles a los participantes del acto comunicativo, gracias a su experiencia común con el entorno.

**Palabras clave:** cognición encarnada, conceptos, esencialismo, metáfora encarnada, educación, Teoría de la Metáfora Conceptual.

## Introduction

In an interesting paper on the potential pedagogical applications of metaphor research, Molina Rodelo (2021) introduces a cognitive reading based on the works of Lakoff and Johnson (1980, 1999). However, as we will see in the rest of the paper, the *Conceptual Metaphor Theory* (henceforth CMT, see section 2) is not impervious to criticism. The point to be made is that CMT research has not offered plausible empirical support to its claims regarding, for example, the existence of brain-based cognitive universals (Casasanto & Gijssels, 2015).

Expectedly, Molina Rodelo's analysis endorses an uncritical view of metaphor, which he conceives of as a discourse-oriented phenomenon occurring in instructed settings upon the "pillars of thought, language and pedagogy" (Molina Rodelo, 2021, p. 35). In this regard, according to the author, it is just in the academia where metaphors become meaningful as rhetorical devices for the construction of high culture. Molina Rodelo goes on to divide metaphors into two groups, namely "poetic" and "rustic" (Molina Rodelo, 2021, p. 36). It goes without saying that such an arbitrary classification, without any reference to, or interrelational coherence with cognitive theory, fails to provide a cogent underside to the discussion attempted by the author.

Along the same lines, it is unclear how using certain "metaphorical" expressions in instructed settings could eventually contribute to the comprehension of a topic. In the absence of such a clear distinction, Molina Rodelo's claims are bound to seem painfully easy to criticize. In particular, an example of a "classroom activity" taken from Pérez and Civarolo (2020, as cited in Molina Rodelo, 2021) runs out of wiggle room quickly, as it reveals that the use of the word "brilliant" ("brillante"), as a conceptual tool to refer to "intelligence," acts rather as a medium for the proliferation of beliefs and opinions regarding intelligence in general:

[...] students organized in communities of practice may interact with snapshots of brilliant people, in a type of activity defined by the model: I create-I problematize- I explore; they are asked to write a text using a metaphor that explains and supports a definition of intelligence, the meaning of being intelligent in the contemporary world, as well as the questions that the topic may motivate (p. 38).

It becomes glaring at this point that any cognitive intervention in the classroom requires some background knowledge. To put it another way: an excursion into a functional definition on the nature of “brilliance” as an attribute of certain individuals then leads to essentialist interpretations. Here we are brought to an important crossroads. Is the introduction of metaphors in the classroom a genuine and useful resource for reflection, or is it rather a potentially pernicious source of essentialist discussions?

For instance, *causal essentialism* rests on the assumption that surface features are caused by underlying essences (see Newman & Knobe, 2018, p. 2), whereas *Platonic essentialism* operates on some idealized features bound together by features “embodying the same deeper value” (Newman & Knobe, 2018, p. 2). For example, in the context of Translation Studies, the essentialist ascription of properties to individuals, groups, or scientific traditions has been described in terms of *civilizational spells*:

If the Orientalist civilizational spell pictures the Westerner as a scientist (and therefore smarter and better) and the Asian as a mystic (and therefore dumber and worse), the Occidentalist spell tends to flip that value hierarchy on its head: The Asian is a mystic (and therefore more natural and authentic, and better) and the Westerner is a scientist (and therefore more alienated from nature, and worse) (Robinson, 2017, p. 37, as cited in Sakai, 1997).

As we can see, essences in translation have for the most part been addressed as an irreducible hierarchy of beliefs about the concepts used by some traditions to define and deal with reality according to some cultural rules.

Going back to the general topic of this paper, I intend to explore in the following sections some of the flaws and shortcomings of conceptual metaphors. As a gesture toward a solution, I suggest that a new conceptualization must be introduced, that of embodied metaphor, as a means to integrate the vastness of human experience with the physical world into the study of metaphor construction in pedagogical settings.

## Embodied metaphor versus conceptual metaphor

Lakoff and Johnson's *Conceptual Metaphor Theory* (henceforth CMT, 1980, 1999) is *amodal* (disembodied), "a metaphor in thought" (Gibbs, 2017, p. 3), by which the source of concepts is determined by representations created in the brain only: "Thought is physical. Ideas and the concepts that make them up are physically 'computed' by brain structures." (Lakoff, 2008, p. 18). On this view, conceptual knowledge is not considered as innately given, but learned (Jamrozik *et al.*, 2016; Kövecses, 2002, 2005, 2010). In addition, "root or conceptual metaphors [are said to] motivate our understanding and use of language in general" (Katz, 1998, p. 4).

A main consequence of this characterization is that abstract concepts are deemed to be "derived" from more concrete ones (hence, "death" can be conceptualized in terms of "departure" [source domain]). As a result, the role of the body is reduced to a mechanical simulation of experience with the world that can be further computed in the brain through dedicated *neural circuitries* (Gallese & Lakoff, 2005; Lakoff, 2008, 2014).

In contrast to the CMT, I argue that concept integration is not the result of domain integration, but the reconstruction of an event on the basis of experience *reenactment* (see Torres-Martínez, 2015, 2016, 2017, 2018a, b, 2019, 2020, 2021). This process is facilitated by a range of embodied metaphors.

Embodied metaphors are the result of sensory reenactment. In this sense, "to work *hard*" activates our experience with different types of gravitational pull; likewise, to say that finishing a task "took a *long* time" sees time as "distance". Embodied metaphors are not simulations of experience, nor do they require some sort of integration or domain mapping. In other words, embodied metaphors are sensory metaphors. This is evident in the case of, for example, *mixed metaphors*. In the example below (as cited in Semino 2016, p. 204) a conflicting domain represented by the verb "to defuse", usually associated with bomb disposal, is used along with the bizarre scene of an elephant standing in a room:

But there's no getting around the fact that Chappelle's sudden disappearance was pretty much bat-@#&% crazy, and though Murphy and Rawlings do their best to **defuse the big elephant in the room** (there's a mixed metaphor for you), I never quite escaped the feeling that this was just weird, and perhaps unnecessary.

Using the embodied concept formula, we obtain:

Concept (a type of person) = [Elephant → P (big-heavy threat) +C (room)]

The point to notice is that the bomb-disposal 1 (*source domain*) and the *confined-big-animal source domain* 2, become fused as a single event involving an agent whose presence must be dealt with by means of extraordinary resources (by other agents). On this account, the addition of conceptual structure “in thought” is replaced by a reading by which world knowledge with 1) force (to deal with the problem); 2) barrier (the person whose presence is a problem); 3) enclosure (the locus of the problem, that is, the room), and 4) path (the means to solve the problem) are summoned.

As can be seen, both the uncritical adoption of TMT, as well as the definition of what “thinking” is (without references or solid cognitive foundations) proposed by Molina Rodelo (2021, p. 41) undermine the credibility of any pedagogical proposal based on the cognitive.

## The problem with concept integration

Another concept adopted by Molina Rodelo (2021) is that of concept integration. According to the author, this mechanism hinges on the “coupling of two mental spaces projecting specific features onto a new blended space”. (2021, p. 42). The intuition guiding this formulation is that language is a symbolic system assembled in the bodiless brain through a series of computations. A good way to explore this is to analyze the notion of *analogy* (Fauconnier, 1997), central to the *Mental Spaces Theory*. According to Fauconnier (1997, p. 102), analogy rests on three main aspects:

- Domain mapping from a source onto a target;
- extraction of an induced schema (or frame);
- extension, fluidity, and reanalysis. (p. 102)

Domain mapping takes the conceptual structure from one event, for example, military strategy, and projects this content onto a target domain, for example, the operation of a cancerous tumor. In the words of Fauconnier (1997):

The fortress maps onto the tumor, the general onto the surgeon, the columns of soldiers onto the rays. To take the fortress is to destroy the tumor; to send small convergent columns from different directions is to direct weak rays of different orientation that will converge to the same body area (p. 102).

From an embodied cognitive perspective, the conceptual content of meaning is not immediately transposed from one domain to another for the simple reason that domain projection needs to first include embodied content that disambiguates the relation between a doer, an object affected by an agent’s action, the amount of energy needed to complete an action, etc. Clearly, the idea of domain mapping is

biased toward a topographical metaphor, whereby persons and objects are assigned specific roles (from a third person perspective, see a subsequent section) in a grid, reduces human action to role-taking routines that do not account for the whole host of senses and processes involved in an event (see the example cited by Molina Rodelo, 2021, p. 43). This deterministic view of cognition requires a third overarching abstract schema (a cognitive template or *frame*) that provides conceptualizers with a mind-reading device connecting a source and target situation: “The schema is a *frame* with *roles* that can be filled by elements of one or the other domain. The associated structures both fit the schema, and the schema specifies the mapping” (Fauconnier, 1997, p.103).

Finally, the schema is extended to another domain containing a similar structural configuration. This leads Fauconnier to the conclusion that conceptual information is akin to conceptual mapping which can be further used to construct *ad hoc* scenarios with similar spatial configurations and roles. Though this appears to be a simple solution to the puzzle of human conceptualization in terms of event construction, partition and mapping, it is not evident why conceptualizers would follow this specific strategy to cope with reality. Indeed, it is striking that the examples used by Fauconnier to explain his mental spaces theory reduce uncertainty to zero. In other words, agents seem to intuitively engage in mechanistic domain mapping and extension in order to go on with their lives without the need any clear inferential strategy other than mindreading heuristics: there is never a “right” answer to the mapping problem, although given contexts will favor some mappings over others, as a function of the goals pursued and in keeping with general heuristics favoring structural relationships over simple attributes (Fauconnier, 1997, p. 35).

In this sense, saying that concept construction can be reduced to mental spaces mapping is akin to saying that human beings are mysteriously endowed with mental capacities dictating them what role to assume once a situation has been identified in terms of another. Granted, this is an appealing, generalizable intuition. However, it is still deterministic and fuzzy.

The main problem here, is that agency is made to rest on discourse analysis (*Discourse Representation Theory*), a non-cognitive theory that “attempt[s] to account for the meaning of natural language sentences using only the mechanisms of formal syntax and set theory, without permitting any cognitive mechanisms” (Lakoff & Sweetser, 1994, p. xi). Expectedly, the idea that *presupposition inheritance* and *reference* can be dealt with by means of discourse semantic tools reduces the scope of action of humans to some formal rules of information exchange or pragmatic intent in specific examples. Long story short, Fauconnier’s approach is a discourse theory in disguise created as a response to formal logics, and that happens to have some resonance for some camps of brain-based cognitive research. Therefore, the problem it aims to solve is simply the way logical thinking can be accomplished without appeal to, for example, logical operators:

[T]he clause *The girl with the brown eyes has green eyes* is not contradictory because the two descriptions hold in different mental spaces. Fauconnier shows that this simple kind of solution can be extended to the full range of known problems of reference (Lakoff & Sweetser, 1994, p. xiii).

So, we see those flawed theories such as the ones reviewed thus far cannot be seamlessly introduced in classroom settings without a more in-depth analysis and refining.

## **On concepts, categories and the origins of scientific knowledge**

I concur with Molina Rodelo (2021) that there is a continuity between metaphor use, the emergence of concepts, the use of metaphors, and category formation. However, I oppose the idea that category formation is based on similarity relations only. My proposal is that category formation in the mind is a process of reality reconstruction whereby the action of the world upon natural kinds (entities in the world), humans included, produces some effects that can be accessed perceptually. The essence of natural kinds is thus to be found at the interface of cognition and some patterns of biological adaptation to the environment, including *phylogenetic extension* and *ecomorphological convergence*. Therefore, categories in the mind are formed as a result of the combination of perception, belief and the ways we connect with the world and other organisms. Seen in this light, concepts can be defined as a *set of animate (natural) and inanimate (natural or constructed, aka. “derived”) entities*, sharing a common embodied substratum that provides agent-conceptualizers with perceptual maps that can be retrieved also at an abstract level.

Here, it is assumed that: 1) different entities and events are represented not by different kinds of concepts, but by networks of functionally oriented concepts, and 2) that these concepts encode a probabilistic model of the environment.

In this view, concepts are continuous with their referents. On this reading, concepts cannot be defined as classes in the mind. Thus, it is argued that concepts such as “dog” are not simply constructed relationally (in terms of causes coming from within), that is, on the basis of specific causal links for the activation of prototypes (a reduced set of idealized tendencies), or exemplars (an extended set of stored examples). Rather, a set of dog-essences provide a unifying substance to different variations of the concept. So, though hyena may look like wolves or dogs, they are not related species, nor were *Thilacynes* big-jawed dogs. As a result, category assignation requires a predictive type of reasoning (the mind is projected onto the world in order to anticipate an outcome), rather than a passive, brain-centered one (the mind simply collects information from the environment and compares it with an existing internal model). So, we see that dog clade variation and diversity (identified deductively as a means to confirm a direct connection between



living forms) are variables accessible to a conceptualizer thanks to their sensibility to underlying processes producing functional specialization as a fixed variable overriding stochasticity. In other words, while stochastic (random) variation in nature produces different surface features, the conceptualizer's sensitivity to underlying processes (prior beliefs, in Bayesian terminology) is biased toward the recognition of some expected patterns (ecomorphological patterns).

In this sense, different types of concepts provide humans with a nuanced set of possibilities. While exemplars possess iconic properties (based on surface features), prototypes provide relevant statistical information for the confirmation of beliefs. Finally, theories capture the internal relations between entities and objects in the world.

Similarity is, then, not crucial for categorization, since being similar is also being different in many ways (also in multiple respects), which does not point to plausible answers regarding the nature of category assignation. So essences, belief and relations are the three components connecting similar events, entities and objects to a conceptualizer. This is, as we have seen, of paramount importance for the classification of concepts in terms of:

1. Essences, that is, the ecomorphological effects producing a set of properties such as "family resemblance".
2. Beliefs, that is, the theories capturing some important relations encoded in natural kinds (living organisms).
3. Relations, that is, the extension/exclusion of properties to/from other natural kinds.

## Metaphors in instructed setting or why Greek statues were not white

In this section, I shall focus on the analysis of the concept "rationality" in relation with our previous discussion on the connection between metaphor and essentialism. As we have seen in Section 1, the use of metaphorical language is often influenced by deep-seated values and beliefs. An interesting example of this is the widespread belief that ancient Greek and Roman sculptures were originally white. The status of *classical rationality and mathematical beauty* associated with white marble sculptures has given rise to an idealization of ancient Greek culture as *white and unitary*, which, too, has consolidated a number of cultural myths at the heart of the Western reasoning style. In this sense, it is not much of a stretch to assert that the rediscovery of polychromy (used to support *form* in classical statuary) has in many ways shaken the foundations of Western rationality. Indeed, painted marble sculptures reveal the contradicting combination of rationality and insanity as a unifying characteristic of the gods and their human makers. Thus, though immortal, gods epitomized eternal

human frailty and folly. And yet, godly looks were a requirement for the mortal hero (a prototypical impersonation of both godly and human features) to act upon the world. Therefore, Athena restores Odysseus to his godly looks, with *dark skin* and black beard, as she intends to reveal him as the true king of Ithaca:

As she said this, Athena  
touched Odysseus with her golden wand. To start with,  
she placed a well-washed cloak around his body,  
then made him taller and restored his youthful looks.  
His skin grew dark once more, his countenance filled out,  
and the beard around his chin turned black again.

(Homer, 2006, pp. 318-319)

So, we see that the concept of whiteness as a hallmark of Western culture has been constructed on a continuous transmission of misconceptions. This reveals, among other things, that complex concepts such as “white marble statues are classical”, are not the result of an evaluation of typicality (whiteness, marble) extracted from the long-term memory through a mapping of stored exemplars (leading to the construction of theories), but a conventionalized belief that, in turn, points to idealized values and reasoning styles that often impose the interpreter’s realities in order to explain phenomena.

## Conclusion

In this response paper, I have shown that Molina Rodelo’s (2021) approach falls prey to a dual deficit. In the first place, the paper endorses uncritically a number of concepts ushered by that CMT that have not been plausibly supported empirically. These have been in turn taken at face value as sources of pedagogical theorization. Secondly, the author embraces a similarity-led form of essentialism as the sole basis for categorization. The conceptual errors encoded in the theories supported by the author lead to an undue reduction of human cognition as a brain-only phenomenon. As we have seen throughout this paper, the search for cognitive universals requires a more refined theorization than that offered by the aforementioned authors. Moreover, it is clear that metaphors are not purely linguistic: event reconstruction is the result of the intervention of our biological memory which produces embodied concepts providing us with the tools to act upon the world in a predictive manner. At a more general level, the exploration of the potential benefits of the cognitive dimension of language in instructed settings is a multidisciplinary field of endeavor that can be impaired by the unreasoned use of cognitive jargon.

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