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### **New Approach to Metaphor Interpretation, Embodied Simulation**

#### **Abstract**

Understanding metaphorical expressions is one of the most critical parts of linguistic interpretation. This paper first gives a brief review of traditional metaphor interpretation according to which metaphor understanding depends on a person's mental lexicon. Cohering the meanings of abstract ideas together, a reader creates a well-formed mental model of the whole narrative. My claim in this paper is that people comprehend metaphors through embodied simulation where they imaginatively recreate the action they read or hear about. Imaginative simulation processes, which are fundamentally part of the embodied mind, guide many aspects of metaphor understanding. This process of building a simulation is constrained by the past and present bodily experience. In the paper I employ the term "image schema," that has been enjoying popularity among cognitive scholars, to decode the metaphor and create concrete understanding of abstract concepts. This paper demonstrates the examples of metaphors based on the metaphor vehicle "journey," we discuss "grief as a journey" claiming that people conceive of grief in terms of bodily actions. From the analysis of the different examples in the paper, it is concluded that simulation may come into play at different levels, depending on the metaphor and the context in which it is employed.

#### **1. Introduction**

Understanding metaphor, similarly to all aspects of language, requires listeners to draw inferences about speakers' possible communicative intentions in saying what they did. However, listeners can infer meanings that deviate from what speakers strictly intend to convey. Making an estimate of what speakers had in mind when talking is a critical part of linguistic interpretation. One way of inferring what speakers mean is to simulate what it must be like to be the speaker and have the particular thoughts he or she had at the moment of production.

According to many metaphor scholars, interpreting the discourse is primarily a matter of decoding the encoded meanings, presumably from a mental, phrasal lexicon, and then tying these meanings

together to create a well-formed mental model (e.g. a structured propositional network) of the whole narrative (Lan 2005, Kovecses 1986, Richard 1986). New generation of scholars, especially psycholinguists claim that part of our ability to make sense of the narrative, and its various conventional metaphors, resides in the automatic construction of a simulation whereby we imagine performing the bodily actions (Gordon 1986, Harris 1989, Currie and Ravenscroft 2002, Gallese 2003 Gibbs 2004). To be more specific, many metaphorical thoughts are embodied in the sense that arise from bodily experience as people imaginatively engage in as they speak. "Imaginative simulations are mental actions where one is not doing one thing to stand for another, but where one mentally engages in actions similar to those overtly referred to" (Gallese 2003: 98). For instance, when I imagine what it feels like to kick a ball, I do not engage in some other action, such as kicking a rock to do so. Instead, I mentally construct a scenario of my own body kicking a ball. This simulation is not abstract, in the way, for example, that a computer simulation of a hurricane mimics abstract elements of how a hurricane moves. Embodied simulations have a full-bodied feel to them, in the way that a person may experience actual sensations of movement when flying an aircraft simulator. People may not necessarily be aware of these sensations, even if research on ideomotor actions demonstrates that people often unconsciously move in similar patterns to others around them ( Knuf, Aschersleben and Prinz, 2001 ). Simulations are imaginative acts that are intimately involved with sub personal processes, ( Currie and Ravenscroft, 2002 ) and in most cases are performed automatically without significant conscious reflection. Of course, there are times when we will deliberately imagine engaging in some bodily recreation of something. Yet there is a variety of research showing that ordinary perception of action is equivalent to internally simulating it.

Embodied conceptual metaphors are critical to understanding many kinds of metaphoric language by arguing for the importance of embodied simulation in metaphor interpretation. Though, the complexity of metaphoric language makes it unlikely, in my view, that any single theory will be capable of explaining how verbal metaphors come into being, and how they are ordinarily produced and interpreted. The idea that embodied simulation is important to metaphor interpretation does not imply that these processes are unique to all metaphor, embodied simulation isn't the only way to interpret an abstract idea. Psycholinguistic studies have recently shown that simulation is critical to comprehending many types of non metaphorical language. An interesting point about metaphor understanding, however, is that people engage in embodied simulations to interpret many verbal metaphors that refer to physically impossible events, such as "moving forward through grief". "People's easy understanding of these metaphorical expressions through embodied

simulations is consistent with the idea that individuals readily conceive of many abstract topics in embodied metaphorical ways. Gibbs claims that imaginative simulation processes, which are fundamentally part of the embodied mind, guide many aspects of metaphor understanding”(Raymond W. Gibbs 2004: 48).

This process of building a simulation, one that is fundamentally embodied in being constrained by past and present bodily experiences, has specific consequences for how verbal metaphors are understood, and how cognitive scientists, more generally, characterize the nature of metaphorical language and thought. I should note at the outset that the argument made here in favor of embodied simulation is not intended as a comprehensive account of all verbal metaphor understanding. “Yet many aspects of metaphoric language appear to arise from, and continue to be grounded in, patterns of embodied experience and may be understood via cognitive simulations that are also fundamentally embodied” (Currie and Ravenscroft 2002:105).

My aim in this paper is to explore the claim regarding metaphor understanding through embodied simulation that is based on a person’s “bodily experience ”and describe some linguistic and psycholinguistic evidence that supports it.

## **2. The case for Embodied Metaphor**

It is our first step toward establishing the claim that many verbal metaphors are specifically interpreted in terms of embodied simulations. Simply put, one reason why people interpret many verbal metaphors through embodied simulations is because this metaphoric language is rooted in bodily processes that people may imaginatively recreate during their ordinary use of such language. For instance, “cognitive linguists have proposed that many of our concepts, including abstract ones, are grounded in, and structured by, various patterns of our perceptual interactions, bodily actions, and manipulations of objects” (Gibbs, 1994, 2004, Lakoff and Johnson, 1999). “Across many spoken and signed languages have revealed that a vast number of abstract ideas appear to be talked about, and possibly understood, in terms of embodied metaphor”(e.g. time, causation, spatial orientation, political and mathematical ideas, emotions, the self, concepts about cognition, morality). (Gibbs, 2004a; Lakoff and Johnson, 1999 ).

Cognitive linguists use “image schema” in order to decode the metaphor. The decryption of metaphor is associated with taking journeys, as we comprehend an abstract word or idea through many sensory modalities and the kinesthetic body that give rise to “image schemas” (e.g. SOURCE-PATH-GOAL), they are often mapped onto dissimilar domains to create concrete

understandings of abstract concepts. Accordingly, we can state that people conceive of emotional experiences like grief in terms of bodily actions performed upon concrete entities and spaces (1) moving from a source (2) along a path (3) toward a particular destination within the affective space associated with grief. I will offer analysis of some excerpts using the above-mentioned image schema so as to decode an abstract idea “grief as a journey,” also reveal the results of the experiments to strengthen our arguments in favor of embodied simulation.

Cognitive linguists have mostly characterized the activation of conceptual metaphor during metaphor understanding as a purely cognitive process. Thus, understanding the conventional phrase “Our relationship has hit a dead-end street” is partly accomplished through the activation of the conceptual metaphor LIFE IS A JOURNEY in long-term memory. This enduring chunk of metaphorical knowledge has a source domain (e.g. JOURNEY) that is grounded in the pervasive bodily experience, or image-schema, of SOURCE-PATH-GOAL. However, the entire process of accessing a specific conceptual metaphor during verbal metaphor understanding is mostly viewed as activating abstract, schematic, disembodied knowledge that is not tied to ongoing bodily action. (Gibbs 20014).

Consider an excerpt from an article, titled “Grief as a journey” on a popular internet website that provides information and support for professionals and laypersons (<http://www.helphorizon.com>).

“The loss of a loved one is not something that anyone ever “*gets over*”. We may “get used to” our loved one not being in our lives, but we never get over the fact that a piece of our heart will be missing forever.”

None of the metaphorical phrases employed in the excerpt are especially novel or poetic. Yet the various conventional expressions (e.g. “getting over” something in reference to an abstract entity) and elaborations of the basic grief as a journey theme (e.g. needing “directions, supplies, plans” etc.) nicely combine to form a coherent scenario of the grief experience, one which most readers can readily understand. And how does a reader understand an idea given in the excerpt? My claim here is the following, when a person reads a phrase “get over,” he doesn’t utilize mental, phrasal lexicon in his mind in order to create a well-formed mental model to understand the meaning, on the contrary, comprehension of the phrase is the act of processing the meaning of a metaphor or an abstract idea through a person’s “bodily experience.” Therefore, while reading a phrase, a reader resides in the automatic construction of a simulation and imagines performing the bodily action.

### **3. Methodology**

Our research relies on the studies of cognitive linguists according to which the activation of conceptual metaphor during metaphor understanding is characterized as a purely cognitive process. Based on this theory, interpretation of the metaphorical knowledge needs a source domain that is grounded in the pervasive bodily experience, or image-schema, of SOURCE-PATH-GOAL. The image-schema is often mapped onto dissimilar domains to create concrete understandings of abstract concepts. For instance, conventional expression “get over” is apprehended through the activation of the conceptual metaphor “Life Is a Journey”, what’s more, it forms a coherent scenario of the grief experience. To get more insight, we will try to decode the phrase-“get over” using an image schema. As we have already mentioned, cognitive linguists encode the meaning of a metaphor with an image schema -Source-Path-Goal, the above mentioned image schema gives us an opportunity to receive a full explanation of the metaphor. Moreover, changing the source into dissimilar domains gives more options for metaphor interpretation.

Based on the image schema and the fact that we comprehend an abstract idea kinesthetically, metaphorical references to getting over and through grief ,needing directions, supplies, plans and support from others in dealing with grief, being lost in the dark tunnel of grief and moving forward to the other side, are all understood by simulating what it must be like to perform these specific activities, even though it is, strictly speaking, impossible to physically act on abstract entities like the emotion of grief. We experience grief, in this case, as a process of moving through “affective space” in which we imaginatively encounter different physical obstacles and learn to overcome these in our ongoing emotional journey.

We should note that the idea of embodiment doesn’t only refer to literary texts, it can be used with all kinds of abstract ideas. The main essence of our article is the claim proving that while reading a phrase, a reader uses his bodily experience by imagining a visual scenario involving himself in the same situation.

Again, my concern here, for the moment, is to demonstrate that people recruit embodied metaphorical ideas in their creation and understanding of many verbal metaphors. I will then expand on this argument to suggest that the recruitment of embodied metaphors in some aspects of verbal metaphor understanding is done imaginatively as people recreate what it must be like to engage in similar actions.

### *3.1. Research participants*

I will continue to analyze some excerpts, and as I have promised we will reveal the results of the experiments to strengthen our arguments in favor of embodied simulation.

In order to find out how people understand the phrase “get over”, we made an experiment in International Black Sea University (on 20<sup>th</sup> June, 2016) where a number of students (15) and lecturers (20) were asked to explain the phrase “get over” and their perception while reading it. They had to define the phrase “get over” given on a piece of paper. The question was the following, how do you come to understanding of the phrase, through perception or with the help of synonyms and mental images?

Choose one of the three alternatives:

- 1 It is associated with taking emotional journey, being lost in the dark tunnel of grief and moving forward to the other side.
- 2 To recover, to be in a better physical condition, to be healthy.
- 3 It is associated with taking emotional journey, going through many difficulties, moving forward to the other side.

The experiment revealed the following, 80% of the participants associated the word with their own life, they conceptualized the phrase based on their own life experience. As we have already mentioned, we support the idea that the comprehension of metaphor resides in the automatic construction of a simulation whereby we imagine performing the bodily actions. In order to prove the above-mentioned, we suggested two alternatives, they could explain the phrase with the help of their mental lexicon or imagine the process of “getting over” through embodiment. In the first example, they were given the words or phrases associated with “getting over.” For example, to recover, to be in a better physical condition, to be healthy. The second and third alternatives referred to embodiment whereby the comprehension of metaphor was associated with “taking a journey,” going through the dark tunnel of grief stood for miserable experience whereas going through difficulties meant a less painful experience. The result was the following, for most of the participants the phrase was associated with “taking a journey, ”an ongoing experience. For some of them, the path from source to goal was full of obstacles ( going through the dark tunnel) as for the others it was an easy task (going through difficulties), their apprehension depended on the grief they had experienced in their life and the ways how they coped with it. Only 20% of the participants

chose the first alternative (which means that they used mental lexicon).

On the whole, the result of the experiment is the following, when we read a phrase “get over,” we don’t understand it with the help of the lexicon we possess in our mind but decode the meaning kinesthetically that momentarily gives rise to our own experience. While reading a phrase, we “take an emotional journey.” **The source** of “getting over” is grief, **the path**-obstacles we should overcome and **the goal** -final destination, after going through many obstacles we recover.

### *3.2 Instruments*

In order to strengthen my arguments in favor of embodied simulation, I will suggest the results of another experiment which was made in 2010 by psycholinguists Raymond W. Gibbs a professor of psychology at the University of California and Paula Lenz Costa Lima an associate professor in the Foreign Language Department at University Estadual de Ceara in Brazil. Psycholinguistics studies aimed to explore some of the implications of the ideas about embodied conceptual metaphors to see if people actually use bodily experiences when understanding different abstract concepts and the metaphorical language.

Before discussing the results of the experiment, we should note that cognitive theorists have proposed that spatial elements of bodily experience (such as up/down, near/far, inside/outside) are very important for our understanding of both the world around us and of more abstract concepts (including time). Dannenberg, in her work on plot, has shown how useful these core concepts can be in analyzing how space is constructed in different narratives (Hilary P. Dannenberg, 2009: 157). Of particular importance, as she suggests, are Johnson’s path and container, and her own additional concept of the portal (whether a door or a window). Thus according to Dannenberg “we can conceive of plot as a metaphorical network of paths, which either converge or diverge, of goals which are either reached or blocked. More literally, our image of a work can involve the paths of the protagonists around their world, bringing together time and space to shape a plot. Sometimes the plot of a narrative may be even more directly associated with a path, as in pilgrimage narratives. The concept of the container is necessary to our understanding of inside and outside. Containers may be rooms, houses, vehicles, or entire cities and are important factors in the three-dimensionality of narrative space” (Hilary P. Dannenberg, 2009: 170)

In the above mentioned experiment, the scholars used an idea of a container, more precisely, one set of experiments investigate how people’s intuitions of the bodily experience of containment, and

several other image schemas, which serve as the source domains for several important conceptual metaphors (e.g. ANGER IS HEATED FLUID IN THE BODILY CONTAINER), underlie speakers' use and understanding of American idioms like 'blow your stack', and 'flip your lid.' These studies were designed to show that the specific meanings of idioms arise from the source to target domain mappings of the conceptual metaphors from which these expressions arise and maintain their currency in the language. "Most importantly, these metaphorical mappings preserve the cognitive topology of their image-schematic source domains such as when the schema of SOURCE-PATH-GOAL or CONTAINMENT is mapped onto the emotional experience in phrases like "moving through grief" or "blowing your stack" (Gibbs 2010) .

Participants in the first study were questioned about their understanding of events corresponding to particular bodily experiences that were viewed as motivating specific source domains in conceptual metaphors (e.g. the experience of one's body as a container filled with fluid from ANGER IS HEATED FLUID IN THE BODILY CONTAINER). For instance, participants were instructed to imagine the embodied experience of a sealed container filled with fluid, and then asked something about causation (e.g. "What would cause the container to explode?"), intentionality (e.g. "Does the container explode on purpose or does it explode through no volition of its own? "), and manner (e.g. "Does the explosion of the container occur in a gentle or a violent manner?") of possible events within this source domain. People were remarkably consistent in their responses to the questions, and agreed, for example, that the cause of a sealed container exploding its contents out is the internal pressure caused by the increase in the heat of the fluid inside the container, that this explosion is unintentional, and occurs in a violent manner.

### *3.3 Data collection and analysis*

We will continue to decode an abstract concept "anger" and the ways of its understanding through a person's bodily experience. The research is based on linguistic and psycholinguistic studies proving that patterns of embodied experience may be understood via cognitive simulations that are also fundamentally embodied. Thus, an important methodological element of the research described in this section is the strategy to independently assess people ' phenomenological intuitions about their bodily experiences and use this information to make empirical predictions about individuals' understanding of metaphorical expressions.

Let's compare the anger idioms "blow your stack" and "get angry" with each other.

Sally was preparing for a big dinner party.

She had to do a great deal of cooking.

Her husband was supposed to help, but was very late getting home from work.

When her husband strolled in 10 minutes before the party whistling and smiling,

**Sally blew her stack**

or

**Sally got very angry.**

Are people's understandings of these idioms structured by readers' own experience. Our answer is – yes. To test this possibility, we can ask some people how they comprehend “Sally blew her stack” and “got very angry.” Despite the fact that both of them express anger, their apprehension is completely different. When people understand anger idioms, such as “blow your stack”, “flip your lid”, or “hit the ceiling, ”they give significantly higher agreement ratings to the causation, intentionality, and manner statements as all of them are associated with being furious, enraged; there is no other option.

(a) Sally blew her stack because she was under a great deal of pressure

(causation)

(b) Sally blew her stack without intending to do so (intentionality)

(c) Sally blew her stack in a forceful manner (manner)

People gave their ratings of agreement to each of these statements, on a 7-point scale (with 7 meaning ‘ strong agreement ’ and 1 meaning “little agreement” ). Given that people read the same story in both the metaphoric and literal conditions, any difference in their ratings reflects their conceptual understanding of last phrase read. The prediction was that people would give higher ratings of agreement to the three statements having read the idioms than the literal paraphrases, precisely because of their tacit understandings that these idioms were motivated by embodied conceptual metaphors. Not surprisingly, when people understand anger idioms, such as “blow your stack”, “flip your lid” , or “hit the ceiling” , they gave significantly higher agreement ratings to the causation, intentionality, and manner statements when they read idioms. This suggests that when people read idioms like “blow your stack” they inferred that the cause of anger is internal pressure,

that the expression of anger is unintentional, and is done in an abrupt violent manner. People did not draw these same inferences about causation, intentionality, and manner when comprehending literal paraphrases of idioms, such as “get very angry”, primarily because people can “get very angry” in many ways without experiencing heat it depends on their personal experience, how fiercely or mildly they can “get angry.”

These brief responses provide a rough, nonlinguistic profile of people’s understanding of a particular source domain concept (i.e. heated fluid in the bodily container). A significant part of this knowledge comes from people’s own metaphor understanding of their bodies. Thus, people do not need to understand the physics of how heated fluid behaves in sealed containers out in the external world to have some intuitive, and embodied, understanding of why anger is sometimes metaphorically characterized as heated fluid in a container.

My claim is that understanding what many words and phrases mean requires that listeners engage in an experiential/embodied simulation of the described situation. Consider, for example two different headlines to news articles posted on the internet: “Parrot prodigy may grasp the concept of zero” and “Journalists who grasp the concept of courage” (<http://www.nationalgeographic.com/news/2005/07/07/05> and <http://www.ohio.com/old/ohio/2005/11/13/news/editorial> respectively). Both headlines describe a physical action of grasping in the context of abstract entities that are impossible to physically touch or control (i.e. the concepts of “zero” and “courage”). At first glance, it seems odd to associate the notion of grasping with nonmaterial ideas. But cognitive linguistic research has, again, shown how people ordinarily conceive of abstract concepts in physical terms and can apply various embodied actions to these objects/concepts as a result. For example, concepts are not physical objects that can be touched, held on to, juggled, dropped, and so on. When hearing “grasp the concept” listeners engage in, or imagine engaging in, a relevant body action, such as grasping, that facilitates metaphorical construal of the abstract notion of “concept” as a kind of physical entity, such that concepts can indeed be things that are grasped, held on to, dropped, misplaced, chewed on, and so on. “Conceiving of abstract entities as physical objects enables people to perform mental actions on these objects as if they possessed the properties of real-world, concrete, physical entities.” (Gibbs 2004) In this way, partial reenactment of sensorimotor processes related to “grasping” underlies conceptual knowledge, reasoning, and linguistic understanding.

Finally, my thesis that many kinds of metaphors are understood through embodied simulations adopts a wide view of embodiment. Critical brain areas (e.g. motor cortex) are likely recruited during ordinary linguistic processing of both metaphorical and non metaphorical language. But as

importantly, people's intuitive, felt, phenomenological experiences of their own bodies shape large portions of metaphoric thought and language use.

#### **4. Results and conclusions**

The present article describes some empirical research in support of the idea that metaphor understanding allows us to imaginatively project ourselves into other people's minds and worlds. My primary claim here is that this imaginative engagement arises from metaphor understanding not as an after-the-fact reaction to metaphor, but as a fundamental part of how we ordinarily interpret metaphorical meaning. People may create embodied simulations of speakers' messages that involve moment-by-moment "what must it be like" processes which make use of ongoing tactile-kinesthetic experiences. More dramatically, these simulation processes operate even when people encounter metaphoric language that is abstract, or refers to actions that are physically impossible to perform. Understanding abstract events is constrained by people's embodied experience as if they are immersed in the discourse situation, even when the events can only be metaphorically realized. "This interpretation of the various findings presented above is congruent with a body of emerging evidence in cognitive science showing intimate connections between perceptual/sensorimotor experience and language understanding" (Pecher and Zwaan, 2005).

The above studies employed a novel methodology, the experiments here investigated people's reflections about the abstract ideas they read and comprehend through embodiment. This novelty suggests new interpretation of figurative language and reveals the fact that fiction is closely tied to embodied simulation.

The paper describes our research project which is still in progress, according to which we are going to provide additional behavioral evidence on embodied simulations in metaphoric language interpretation.

The assorted results of the new studies described in this article do not necessarily generalize to all kinds of metaphor. Although many metaphoric phrases refer to bodily activities and sensations, there are other types of metaphoric language that bear little relation to the human body, or have source domains that are not linked to embodied experiences. For this reason, embodied activity has not been demonstrated for all aspects of metaphor comprehension. Nonetheless, bodily activity provides a major source for metaphorical concepts and the language people use to refer to these ideas. Simulated body movement may be critical for many aspects of metaphoric language understanding. Under this latter possibility, people's bodily experiences of handling physical

objects may be used in creating, and maintaining elaborate conceptual representations for many abstract concepts.

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