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On metaphoric representation

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Abstract

The article discusses claims that conceptual structure is in some part metaphorical, as identified by verbal metaphors like LOVE IS A JOURNEY. Two main interpretations of this view are discussed. In the first, a target domain is not explicitly represented but is instead understood through reference to a different domain. For example, rather than a detailed concept of *love* per se, one could make reference to the concept of a *journey*. In the second interpretation, there is a separate representation of *love*, but the content of that representation is influenced by the metaphor such that the *love* concept takes on the same structure as the *journey* concept. It is argued that the first interpretation is not fully coherent. The second interpretation is a possible theory of mental representation, but the article raises a number of empirical and theoretical problems for it. It is concluded that many of the data cited as evidence for metaphoric representations can be accounted for by structural similarity between domains.

1. Introduction

An intriguing view has recently arisen in cognitive science concerning the nature of mental representation. This view is exemplified by the following passages:

> ... most people think they can get along perfectly well without metaphor. We have found, on the contrary, that metaphor is pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature. (Lakoff and Johnson, 1980, p. 3)

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> The basic-level metaphors allow us to comprehend and draw inferences about these [emotion] concepts, using our knowledge of familiar, well-structured domains. (Kovecses, 1986, p. 117)

> In short, the locus of metaphor is not in language at all, but in the way we conceptualize one mental domain in terms of another. (Lakoff, 1993, p. 203)

> ... human cognition is fundamentally shaped by various poetic or figurative processes. (Gibbs, 1994, p. 1)

As these quotations indicate, some researchers in cognition and language have argued that mental representation is at least in part metaphoric. Rather than seeing metaphors as being solely or even primarily a linguistic phenomenon, they have proposed it as a mode of representation and thought. The reasoning behind this is that certain aspects of our knowledge are difficult for people to represent: They are overly abstract and complex, and therefore they are represented in terms of easier-to-understand domains, that is, metaphorically (Kovecses, 1986, p. 6; Lakoff, 1987, pp. 84–85; Lakoff and Johnson, 1980, p. 115). Thus, when we think about abstract ideas such as *inflation*, *the mind*, or *anger*, we use more concrete concepts, a process which "allows us to refer to it [an abstract concept], quantify it, identify a particular aspect of it ... and perhaps even believe that we understand it" (Lakoff and Johnson, 1980, p. 26).

The argument for metaphoric representation is often made as part of an argument for Cognitive Linguistics, as championed by Lakoff and his colleagues. However, I believe that the issue of metaphoric representation is an interesting and radical idea which deserves attention in its own right. Lakoff (1987) and Lakoff and Johnson (1980) present the use of metaphor in thought as just one part of an overarching theory of the nature of the mind. But their arguments about "objectivist metaphysics," generative approaches to linguistics and other controversial ideas may have drawn attention away from this specific claim. Therefore, in this article I will examine metaphoric representation as a theory of conceptual structure. I will not be addressing most of the other views of its proponents. Of those views, metaphoric representation has probably had the most direct influence on psychological research, through theories of idiom and metaphor comprehension (see Gibbs, 1992, Gibbs, 1993; Gibbs and O'Brien, 1990; Glucksberg, 1993; Keysar and Bly, in press). That said, however, it will be impossible to avoid mentioning other views expressed by Lakoff and Johnson (1980) or Lakoff (1987), because some of them are used to provide support for the notion of metaphoric representation.

The next section of this article will briefly review basic terminology and facts about linguistic metaphor. Then two notions of metaphoric representation will be described and criticized, in turn. Finally, I will draw some conclusions on how proponents of this view might address the problems raised in this article.

2. Metaphor

One disadvantage in discussing metaphoric representation is that it is necessary to discuss verbal metaphor. And as is well known, metaphor is one of the most difficult and intransigent problems in language. Indeed, even defining metaphor is by no means an easy task. For the present purposes, then, a minimal description (not really a definition) will have to suffice.

In verbal metaphor, there are usually two explicit parts: a *topic*, which is the entity being talked about, and the *vehicle*, which is the metaphoric material being predicated of the topic. (Some authors refer to these as the *target* and *source*, respectively.) For example, in *Lee is a block of ice*, Lee is the topic, and *block of ice* is the vehicle. The implicit connection between the two is often referred to as the *ground*. In this case, the ground is that blocks of ice have a cold temperature, and this is interpreted in terms of emotional unresponsiveness. More generally, the relation between temperature and emotion provides the ground.

In order for a sentence to be perceived as metaphoric, the vehicle cannot apply in a straightforward way to the topic. For example, *Lee is an attorney* does not (in this context) require any special ground for its interpretation. The usual, familiar meaning of *attorney* specifies a person with a particular profession, and since *Lee* is the name of a person, there is no inconsistency in calling Lee an attorney. However, *block of ice* literally means the solid, frozen state of the substance H_2O, and since a person is typically neither H_2O nor frozen, this predicate cannot be applied to Lee in a straightforward way. There must be some kind of mapping from the usual meaning of this phrase to the conveyed, nonliteral meaning.

It is not necessary that something have no literal interpretation in order to be interpreted as a metaphor, as has often been pointed out (e.g., Keysar, 1989; Morgan, 1979). For example, a (bad) rock 'n' roll song included the lyric "A guy could get pneumonia sitting next to you." Although this has a clear literal interpretation (perhaps the addressee had viral pneumonia), in the context of the song the metaphoric interpretation, again equating temperature with emotional properties, was much more salient. In that interpretation there was a mapping between the literal meaning (catching a disease) and the intended meaning (emotional coldness).

Although this brief description has not gone very far in defining metaphor, much less explaining how people understand it, it includes two points that will be important later. First, understanding a metaphor requires one to go beyond the literal, straightforward interpretation of the vehicle. In some sense, Lee is clearly not a block of ice, billboards are not really warts, encyclopedias are not really gold mines, and so on. Note that this claim does not assume any particular psycholinguistic model of how metaphors are understood. That is, although metaphors can be identified as different from literal sentences, this does not entail that metaphors are more difficult to understand or that literal language has priority (see Gibbs, 1984, Gibbs, 1994; Keysar, 1989; Ortony et al., 1978). My point is only that *Lee is a block of ice* and *Put a block of ice in the cooler* involve rather different interpretations of *block of ice*.

Second, the interpretation of a metaphor requires constructing a relation (the ground) or accessing a mapping between the topic domain and the vehicle domain (Black, 1979). In order to understand *Lee is a block of ice* and *Encyclopedias are gold mines*, coldness must be equated with emotional unresponsiveness, and the financial value of a gold mine must be related to the intellectual value of an encyclopedia. Unless this connection is made, the sentence appears anomalous or just false.

Although Lakoff and Johnson (1980) do not provide a detailed theory of verbal metaphor, their discussion seems to accept this kind of view. That is, in insisting that representations are metaphoric or metonymic, they are contrasting them with a more straightforward relation (called *direct understanding* by Lakoff and Johnson, 1980, pp. 176 ff.). (Henceforth I shall refer to Lakoff and Johnson, 1980, as "L&J.") Since the metaphoric relation is not direct, some kind of mapping is necessary. And in fact, much of L&J and Kovecses (1986) consists in spelling out the mappings behind various conceptual metaphors.

3. Two interpretations of metaphoric representation

As linguist and philosopher, respectively, Lakoff and Johnson do not provide a detailed psychological model of metaphoric representation, nor a process model for how such representations would be used in understanding and thought – at least, models of the sort expected in cognitive psychology. Nonetheless, they make constant reference to conceptual structure, thought and understanding (e.g., see the opening quotation). Most of the literature on metaphoric concepts focuses on representation, with little to say about process. Cognitive psychology has long held that both representation and process are necessary to define any psychological model, because it is the processes that transform the representations into overt behavior (Anderson, 1978). Thus, lacking an explicit psychological model of metaphoric representation, it will be necessary for me to make certain assumptions about how metaphoric representations are constructed and used. I have made what I believe to be plausible assumptions about processing, but without detailed discussion in most descriptions of metaphoric representation it is possible that I have missed other possibilities. In short, this article is about the psychological model I have derived from the writings of L&J (and others) rather than being about their own explicit models. However, it is surely incumbent on the proponents themselves to make such matters clear, and the lack of a detailed processing model is a problem with the view as a psychological account of conceptual structure.

I will describe two general interpretations of the claim for metaphoric representation, which I call the *strong* and *weak* versions. In brief, the strong version argues that some concepts are not understood via their own representations but instead by (metaphoric) reference to a different domain. We don't really understand emotions very well, for example, and so we think of them in terms of temperatures, which we do understand. The weak version does not claim that we

think of actual temperatures when considering emotions, but instead that we do have a well-developed conceptual structure for emotions (or whatever). However, the existence of systematic verbal metaphors in our culture has influenced the structure of our concepts so that they are consistent with the metaphor. That is, the structure of the domain of emotions has been influenced by the many metaphors relating emotions to temperatures.

3.1. The strong version of metaphoric representation

In the strong version of metaphoric representation, some mental representation is metaphorical in the same sense that *Lee is a block of ice* is metaphorical: One thing is understood through its relation to another thing that is not truly (literally) the same sort of entity. L&J (p. 176) acknowledge that there are some things that are directly (nonmetaphorically) understood, via our immediate experience with our environment. But this is not true for all concepts: "many aspects of our experience cannot be clearly delineated in terms of the naturally emergent dimensions of our experience. This is typically the case for human emotions, abstract concepts, mental activity ... Though most of these can be *experienced* directly, none of them can be fully comprehended on their own terms. Instead, we must understand them in terms of other entities and experiences, typically other *kinds* of entities and experiences" (p. 177). Thus, the strong version of metaphoric representation takes the notion of understanding one thing in terms of another seriously. One reason for these metaphoric mappings is that an abstract concept becomes *grounded* through its relation to a more basic domain. Eventually, the mappings may lead back to sensorimotor or other bodily bases for concepts (L&J, Chs. 12–13).

For example, take the metaphor ARGUMENT IS WAR (L&J capitalize conceptual metaphors). This metaphor is evidenced by a number of common expressions (L&J, p. 4, italics in the original, indicating the metaphoric component):

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

In the strong view, our direct representation of arguments is a set of connections to another domain, which provides an interpretation of the entities in the *argument* concept. For example, the matter under dispute in the argument corresponds to the object (land, power) being fought over in a war. Each person is interpreted as a combatant; the arguments are weapons used to protect one's own view or to attack the opponent's; arguments in favor of one's position are viewed as defenses; arguments criticizing the other person's assumptions or position are viewed as offensive maneuvers; and so on. On this view, when I think about arguments, I use my knowledge of war to reason about and understand the argument.

When stated explicitly, the strong view may seem too extreme to describe anyone's view. Nonetheless, some of the strongest claims made for metaphoric representation seem to require this sort of representation. And, as I will argue below, some of the more recent discussions of metaphoric representation seem to include the strong view as one part of a more complex theory. Thus, this view merits further attention.

L&J make it clear on virtually every page of their book (and in the title) that they do not view metaphors as simply ways of talking about things: Metaphors are vehicles of thought. In fact, Lakoff (1993) argues that metaphor is really a conceptual mapping of a certain kind, and verbal metaphors are simply expressions of the underlying mapping – that is, the verbal metaphor is secondary. On the strong interpretation of their view, there is little structure to the metaphorical concept itself; instead, the structure comes from the "vehicle" concept. For example, people don't have independent ideas about the parts and events involved in an argument. Instead, what they have is a set of pointers to their concept of war. On the strong interpretation, it really is our concept of war that we use when thinking about arguments. Perhaps there are separate units for the components of an argument, such as the opponents, the positions, or the possible resolutions of the argument. However, if the concept is represented metaphorically, these components cannot be independently defined and represented. Instead, they must merely be linked to the appropriate element of the vehicle concept. In a real sense, then, one does not really understand an argument – one only understands war, and the understanding of arguments is parasitic on this concept. Similarly, Lakoff and Turner (1989, p. 62) say that the LIFE IS A JOURNEY metaphor shows that the "structuring of our understanding of life comes from the structure of our knowledge about journeys." This claim seems consistent with the strong view, as does the statement (L&J, p. 5), "*The essence of metaphor is understanding and experiencing one kind of thing in terms of another.*" (See also Lakoff, 1993, p. 206.)

3.2. The weak view of metaphoric representation

A different interpretation of metaphoric representation is that the metaphors have some influence on the representation of the topic concepts, but these concepts nonetheless have their own separate representations. That is, the metaphor may influence the structure of the topic concept, but the representation itself is not metaphoric.

For example, consider the metaphor ARGUMENTS ARE WAR. On the weak view, the concept of *argument* has its own representation, separate from that of *war*. The concept has some conceptual primitives and relations that are not the same as that of *war* – its parts are defined in their own terms rather than in terms of the metaphor. Nonetheless, one might argue that the prevalence of this metaphor in language and our thinking has resulted in the structure of the *argument* concept being similar to the structure of the *war* concept. Thus, the

metaphor has had some causal effect on the concept of *argument*, but the representation of the concept is not itself metaphorical. The critical difference between the strong and weak versions, then, has to do with independence of representation. In the strong version, I really do not have a well-developed concept of *argument* separate from *war* – when I think about arguments, I use my concepts of wars (I'm "understanding one kind of thing in terms of another"). In the weak version, I have a complete, separate concept of *argument* which I use to reason about arguments, but its content and structure have been influenced by my knowledge of war.

3.3. An alternative view

One problem in thinking about metaphoric representation is that a plausible alternative hypothesis is not readily found in L&J or Lakoff (1987). They primarily contrast their views with a collection of claims about metaphysics, language and the mind that they call "Objectivism." This monolithic view is one that many psychologists would not want to commit themselves to. Nonetheless, they may feel that L&J's strong views about metaphoric representation are not correct. Even when discussing metaphoric representation more specifically, Lakoff (1993) identifies its opponents (the "traditional" view) as having very extreme views, such as "All everyday conventional language is literal, and none is metaphorical. All subject matter can be comprehended literally, without metaphor" (p. 204). Although there may be people who hold these views, there seems to be considerable ground between this extreme position and the metaphoric representation view, and this middle ground is not addressed by proponents of metaphoric representation.

I will, therefore, propose an alternative hypothesis that could serve as a basis of comparison, *the structural similarity view*. On this view, there is no strong form of metaphoric representation – all concepts are directly represented. Furthermore, the prevalence of metaphoric ways of talking about certain domains does not generally reflect the influence of the metaphor on the representation (as in the weak version). Instead, the metaphors arise out of the similarity of pre-existing conceptual structures (plus a variety of discourse factors, discussed below). Metaphors such as ARGUMENT IS WAR arise out of the structural similarity of the concepts of arguments and the concepts of wars: The relations of the components of *argument* can be projected onto the relations of *war* in a coherent way (see Gentner and Clement, 1988). So, it is not superficial similarity that is at play here, but similarity of relational structure. This structural similarity permits people to construct understandable verbal metaphors. Those that are the most interesting or revealing "stick" and may become conventional ways of talking. Those that are unrevealing or poor correspondences do not stick and so do not become conventional.

A caveat is important here. The structural similarity view is not a theory of novel verbal metaphor. I am not saying that *Lee is a block of ice* means just that

Lee is similar to ice. The point of *Lee is a block of ice* is to say something about Lee, not just to point out a global similarity of Lee and ice (Camac and Glucksberg, 1984; Manfredi and Glucksberg, 1994). The structural similarity view says only that the "conceptual metaphors" identified by L&J can be explained by conceptual similarity without resorting to metaphoric concepts or mental relations.

The structural similarity view is not one that I am going to argue for in detail. My claim is that it is a plausible view that can account for much of the evidence about conceptual structure that has been used to argue for metaphoric representation. Because it does not make any claims about metaphoric representation (a notion that will soon be criticized), and because it does not claim a causal role for metaphors on mental representations, it seems to be a simpler hypothesis. As a result, if it cannot be rejected in favor of one of the metaphor views on empirical grounds, the structural similarity view should be preferred. There are no doubt other nonmetaphoric explanations of this evidence that deserve attention as well.

4. Strong metaphoric representation

The strong view of metaphoric representation does not seem easily tenable. Let us continue with the ARGUMENT IS WAR example. My knowledge of war contains a considerable amount of information, which is widely known in our culture. I know about specific wars, about the general events and subevents involved in a war, about some of the causes and consequences of war, about the combatants, weapons and battles involved in wars of different eras.

Suppose that my concept of *argument* were carried by a set of pointers to my *war* concept. My understanding of arguments would be indirect, through the parts and relations of the *war* concept. For example, the people arguing would have pointers to the combatants; the statements made in the argument would have pointers to the positions taken during battle; the result of the argument would have pointers to the outcome of the war (e.g., identifying winners and losers). In this way, we could explain why people say "I undermined her position," because her argument would be like a stronghold that could be literally undercut in a battle, physically weakening it. As in war, this would indicate a bad turn for my opponent in the argument.

If these pointers are like most other pointers described in theories of mental representation (e.g., Anderson and Bower, 1973; Collins and Quillian, 1969; Fahlman, 1979), then my concept of an argument would include a lot of incorrect information. For example, I might think that when people argue, they go to high locations, in order to shoot and kill their adversaries. I might think that napalm and missiles are typically used in modern arguments, and that the participants wear uniforms. I might think that the loser of the argument has to pay reparations to the winner, and so on. However, I can assure the reader that I do not think these things.

It seems clear that these pointers cannot be the usual pointers that are used to define a concept. For example, my concept of *dog* points to various attributes, such

as having fur, barking, having four legs, being a mammal, and so on. However, these pointers are taken as representing reality – I do believe that dogs are (normally) four-legged, that they bark, are mammals and have fur. What is it about the pointers from *argument* to *war* that prevent the drawing of incorrect inferences? If *argument* fits L&J's quotation given earlier, "The essence of metaphor is understanding and experiencing one kind of thing in terms of another," then my understanding of arguments should be via connections to the actual concept of war. And yet, many things I believe about wars I don't believe about arguments ... in fact, *most* things I believe about wars I don't believe about arguments, even though I concur with many of the correspondences that L&J point out.

One possible answer is that the pointers between *argument* and *war* are not in fact the usual sort of pointer – or perhaps, even talking in terms of pointers is somehow misleading. The connection here is not the same as that between *dog* and *fur* or *mammal*. Instead, perhaps the connection itself is metaphorical – a simple pointer or equation cannot capture the relation.

There is a serious problem with any account requiring metaphoric connections, namely how a metaphoric mental relation is to be interpreted. As pointed out earlier, any metaphor needs to be interpreted, because the connection between the topic and vehicle is not completely described in the metaphor itself. The statement that *Encyclopedias are gold mines* does not explicitly point out that it is the information in encyclopedias that is being related to the gold, and that the value of gold is being predicated of the value of that information. Nor does the statement explain what is irrelevant about the relation between topic and vehicle: It doesn't say that the electrical conductivity of gold is not being related to encyclopedias; it doesn't say that the fact that mines are underground is irrelevant. Nonetheless, in understanding the metaphor, most readers would make the valid attributions and not the invalid ones.

This lack of explicitness in relating the topic and vehicle causes no problem for a person understanding a verbal metaphor, assuming the person already knows a considerable amount about encyclopedias and gold mines. It becomes problematic, however, when it is taken as a model of mental representation. The obvious question is: who is interpreting the metaphoric link? Presumably there is no homunculus who knows enough about encyclopedias and gold mines to work out the correct interpretation of the metaphoric link. The link is supposed to represent the concept, so it can't require knowledge about the concept in order to work.

Another difficulty of the strong version of metaphoric representation is that parts of the metaphor will themselves be metaphorically understood in many instances. In understanding the ARGUMENT IS WAR metaphor, we would need to access information about the entities and events involved in war, and the metaphoric representation view argues that people, objects and events are themselves represented metaphorically. For example, if we represented that the people in the argument might get angry, then we would have to deal with many different metaphors for anger identified by Kovecses (1986) and Lakoff (1987). Thus, in understanding arguments, we would have to metaphorically reason about war,

which would require us to metaphorically reason about people, which might require us to metaphorically reason about their emotions, and so on. It is unclear how many embedded metaphors it is reasonable to expect people to be able to handle.

In short, the idea that *argument* is represented through a link (or links) to *war* simply does not seem to work. If the link is a normal one, as typically understood in cognitive psychology, then incorrect attributes of wars would routinely be attributed to arguments. If the link itself is metaphoric, then the theory seems to be appealing to a homunculus who interprets the metaphor. Thus, I conclude that the strong view of metaphoric representation is not theoretically coherent and should be rejected.

In conclusion, this strong view of metaphoric representation does not appear to be successful. However, it may be that a less ambitious version of the theory would do better. This is discussed in the next section.

5. The weak view of metaphoric representation

On the weak view of metaphoric representation, the representation itself is direct. That is, arguments are represented via symbols that stand for arguers (not combatants), claims (not battle positions), various argument parts (not battles), and so on. However, the content and structure of this representation is somehow causally influenced by the metaphor ARGUMENT IS WAR. It is not clear from L&J how this causal structuring would work – that is, how *war* is chosen as the vehicle for interpreting *argument*, and how it modifies the topic. My guess is that the causal factor is the hearing of idioms and collocations that embody these metaphors (in part, since they place so much emphasis on verbal expressions in their writing). For example, Barsalou et al. (1993, p. 56) suggest that hearing idioms can have longer-term conceptual effects: "For example, the exploding container metaphor [for anger] may lead speakers to believe that emotions reflect psychic energies in "regions of the mind," breaking forth from time to time to produce behavioral outbursts. In this way, the metaphorical level may provide intuitive theories about aspects of direct experience that remain unobservable." The question at issue, then, is whether such verbal metaphors cause or influence conceptual structure, as the weak view suggests, or instead reflect pre-existing conceptual structure, as the structural similarity view claims.

Unlike the strong interpretation of metaphoric representation, the weak one strikes me as a reasonable empirical claim. That is, although the specific causal link is not generally spelled out by proponents of metaphoric representation, it is possible to construct a psychological account of this sort that is not theoretically incoherent, as I argued that the strong view was. Thus, in this section, I will be considering the empirical evidence for the weak view, as well as specific arguments for and against it. I will argue that the evidence does not yet support this view very well, especially in relation to the simpler structural similarity theory described earlier.

5.1. Problems of circularity of evidence

As readers on this topic know, a large portion, perhaps the majority of the text of this literature (e.g., Kovecses, 1986; Lakoff, 1987, Lakoff, 1993; L&J) is taken up with examples of metaphors in everyday use. This is the primary source of evidence that the proponents provide for their position. There is a problem with this evidence, which can be explained by analogy to the Sapir–Whorf hypothesis. As is well known, the Whorfian hypothesis is that language influences thought by determining what categories and distinctions we make. However, critics of the Whorfian hypothesis have pointed out that much of the evidence given for it has been circular (e.g., Au, 1988). A parody of that evidence goes as follows.

> Whorfian: Eskimos are greatly influenced by their language in their perception of snow. For example, they have *N* words for snow [*N* varies widely – see Pullum, 1991], whereas English only has one, *snow*. Having all these different words makes them think of snow very differently than, say Americans do.
>
> Skeptic: How do you know they think of snow so differently?
>
> Whorfian: Look at all the words they have for it! *N* of them! They must make a lot of distinctions between kinds of snow that we don't, since we just call it all *snow*.

In this argument, the claim is made that language influences thought or perception. But the only evidence given for the claims about cognitive differences is linguistic, in this case the exact same evidence as was given for linguistic differences. So, the alleged *N* words Eskimos have for snow is both the predictor (a linguistic difference) and the predicted data (the cognitive difference). In the case of the Whorfian hypothesis, when perceptual or cognitive differences were tested more systematically, they seldom showed the clear differences that Whorfians had hoped for (e.g., Au, 1983; Heider, 1972; see Lucy, 1992, for a much more sympathetic view of the hypothesis).

The same kind of criticism could be made of the evidence for the weak metaphoric view, in my opinion. In L&J, a cultural metaphor is identified on the basis of various idioms and collocations, such as *I destroyed her argument; he lambasted me in class; she undermined my position.* Then a metaphoric representation is proposed on the basis of these data, such as ARGUMENT IS WAR. What predictions or consequences are derived from this metaphoric representation? In L&J, it is further idioms and collocations: *He can't defend against that argument*, etc. There is an absence of other psychological data given in support of this view. Lakoff (1993, pp. 205, 246) identifies five types of evidence for the metaphoric representation view: Four of them are linguistic,[1] and one of them is

[1] One type of evidence Lakoff provides involves reasoning or "inference patterns." But the evidence for this is apparently similarity of verbal metaphors across domains – again, linguistic evidence.

psycholinguistic experiments. Notably, none of them provides a nonlinguistic measure of conceptual structure. Standard theories of concepts have had implications for findings in induction, problem-solving, object recognition, conceptual development and memory, among other areas. It would be useful to see evidence for metaphorical concepts from these domains, in order to escape the linguistic circularity.

The reliance on linguistic expressions raises a problem of interpretation, as well. In recent work, Keysar and Bly (1995) have argued that once one understands an idiom, it is extremely difficult to interpret it in a different way. They demonstrated this by introducing "new" idioms to subjects – actually, archaic idioms whose meanings were not known to their subjects. They used such idioms as *the goose hangs high* to mean opposite things to different subjects, in this case, "things are going well" or "things are going badly." Then they asked subjects to evaluate the likelihood that the idiom could have the other meaning.

Once subjects had learned a given meaning for an idiom, they were less able to accept the possibility that it could have had the other meaning, regardless of whether that meaning was historically correct. Keysar and Bly argued that this demonstrates that part of our understanding of an idiom is a backwards-working rationale that attempts to make the idiom comprehensible. Thus, once you believe that *the goose hangs high* means "things are going well," you can arrive at a justification such as "there is a freshly-killed goose hanging in the larder, and so there will be plenty of food." This justification is incompatible with the opposite meaning, which then appears to be an unlikely interpretation.

Keysar and Bly (in press) point out that the metaphoric representation view of idioms assumes that our intuitions about idioms and collocations correctly represent the cognitive analysis of these phrases. For example, when we hear *At that point, I blew up*, we can convincingly analyze this as an example of ANGER IS PRESSURE IN A HEATED CONTAINER. But Keysar and Bly argue that the metaphor may not in fact reveal the idiom's underlying representation. Instead, it may also be a backwards-working rationale, much like that devised by their subjects for *the goose hangs high*. If this is the case, then the conceptual metaphors that L&J identify may not be the underlying representations of the verbal expressions presented as evidence, but instead may be a post hoc analysis that is readily accepted, given our knowledge of the meanings of the terms.

This argument is not actually evidence against the metaphoric representation view (and see Gibbs, 1994, for an opposing view), but it does pose a problem for evidence given in favor of the view. That is, Keysar and Bly's data suggest that a metaphoric analysis of an idiom or other expression may be convincing even if it is not the underlying representation of its meaning.

The next sections of the article raise some theoretical and empirical problems of metaphoric representation, focusing on the weak interpretation.

5.2. Problem of multiple metaphors

One of the most interesting aspects of the literature on metaphoric representation is that it points out the diverse metaphors that we use in describing everyday

activities, without consciously realizing that a metaphor is involved. Much of the content of L&J is a listing of large numbers of metaphors for a domain. These collections of metaphors are indeed impressive, but they also raise a problem for the metaphoric representation view. In many cases, there are multiple metaphors for a given domain. Here are just some of the metaphors Kovecses (1986) provides for *love*:

LOVE IS A JOURNEY (p. 6)
LOVE IS AN OPPONENT (p. 98)
LOVE IS A UNITY (OF TWO COMPLEMENTARY PARTS) (p. 62)
LOVE IS A HIDDEN OBJECT (p. 97)
LOVE IS A VALUABLE COMMODITY (IN AN ECONOMIC EXCHANGE) (p. 95)
LOVE IS INSANITY (p. 91)

L&J also explicitly point out that there are often different metaphors about the same domain (p. 97). They give as examples:

ARGUMENT IS A CONTAINER
ARGUMENT IS A BUILDING
ARGUMENT IS A JOURNEY
ARGUMENT IS WAR

Although L&J have mentioned this phenomenon of multiple metaphors and included it in their account, it does not seem to actually be predicted by the underlying theory. For example, once one has understood *love* by conceptualizing it as a journey, it is not clear a priori why one would need to further conceptualize it as a battle or union or whatever.

L&J (p. 105) suggest that multiple metaphors "together serve the complex purpose of characterizing the concept of an argument in all of its aspects, as we conceive them" (see also p. 221). However, this explanation appears to be directly contrary to the spirit of the metaphoric representation view. The explanation assumes that there is an independent conceptualization of *argument*, and multiple metaphors are needed to characterize all of its aspects. If correct, then, metaphors are not serving as causal organizers of the domain but are operating after the fact to describe or characterize the directly-represented domain. (This issue will be discussed further in regard to the Invariance Principle below.)

There are other problems of multiple metaphors for a single domain. Suppose that the metaphor LOVE IS A JOURNEY has had a causal influence on our concepts of *love*. So, the lovers are conceived of as people taking a trip together toward a common destination, starting as strangers, having many experiences, and then ending the trip (perhaps living happily ever after). If this is a viable metaphor for *love*, then it is hard to see how there is also room for LOVE IS A VALUABLE COMMODITY. On this metaphor (Kovecses, 1986, p. 95), "a large part of the concept of LOVE is viewed as and comprehended in terms of commercial

transactions." Here, lovers are seen as "merchants exchanging goods," which are of equal value. But in a commercial transaction, the goal is to maximize profit, so the participants have opposing goals. This is contrary to the journey metaphor, in which lovers begin with the same goal and work in concert (i.e., they are going to the same place). There are other notable differences between these metaphors (e.g., the amount of time involved, the notions of progress and adventure in a journey but not in a commercial exchange). In short, it is difficult to see how these two metaphors could be simultaneously structuring the same concept. That is, hearing expressions like "We've come a long way" would tend to create one structure for *love*, whereas "I gave you my heart" would tend to create another. Since there are numerous metaphors for *love* in our culture (e.g., LOVE IS INSANITY, LOVE IS A SICKNESS), the confusion must be even worse than that described here. It may be that hearing a metaphor does have some effect on concepts like *love*, but it is difficult to see how multiple metaphors can result in a coherent conceptual structure.

One possible reply to this objection is that there are different concepts for the same thing – for example, one *love* concept for the journey version, another for the insanity version, another for the commercial transaction version, and so on. Lakoff's (1987) notion of *radial categories* might be an example of this. The challenge for this view would be to explain how these concepts are coordinated and used in thought and behavior. For example, how do people know which concept to use when no verbal metaphor is given in the situation? Or are all the metaphors used? If the metaphors are very different, how are conflicting inferences handled? Although one can imagine an account in which abstract concepts had multiple conflicting versions, clearly such an account would need to be explained in some detail.

Another possible way out of the multiple metaphor problem is to propose that the different metaphors address different parts of the topic concept. For example, LOVE IS A JOURNEY could influence the structure of the entire love relationship, whereas LOVE IS INSANITY could influence the representation of the lovers' mental states during one part of that journey (the initial, infatuation stage). Although this move might help reduce the problem of conflicting metaphors, it is still not clear that the metaphors don't conflict. If the participants in love are insane, then how can they enter into a commercial transaction? If they are sick, then how do they carry out a lengthy journey? Also, some metaphors seem clearly to be describing some of the same aspects of the concept (e.g., LOVE IS A JOURNEY and COMMERCIAL TRANSACTION both seem to cover the temporal events in a love relationship). A detailed analysis of such potentially conflicting cases would be helpful.

Perhaps as a result of considerations of this sort, later descriptions of the metaphoric representation view have attempted to constrain the metaphoric mapping in a way that might lessen the problem of multiple metaphors. Lakoff (1993, p. 215) proposes an "Invariance Principle": "Metaphorical mappings preserve the cognitive topology (that is, the image–schema structure) of the source domain [vehicle], in a way consistent with the inherent structure of the target domain [topic]" (see also Lakoff, 1990). That is, the nature of the metaphoric

mapping from arguments to war is constrained by the "inherent structure" of arguments. One way to interpret this principle is in terms of a skeleton analogy (George Lakoff has suggested this in a personal communication, though the following examples are my own). Each domain has a framework or skeleton that is directly represented – the inherent structure of the domain. This framework identifies the general structure of the concept (though in some cases, this is quite fragmentary), but it leaves many of the details blank, because they are difficult to directly conceptualize. The framework, then, is the direct representation, and the metaphors add the "flesh" to the skeleton by filling in information that is not directly represented – in many cases, the bulk of the content of the concept.

Perhaps the skeleton of *argument* includes the information that it is a verbal interchange between two people who are opposed in some way. This information is rather vague, and the metaphor ARGUMENT IS WAR supplies further specification of it. For example, the idea that people take "positions" in their argument would be inferred from the fact that positions are taken in battle. Other metaphors would provide different inferences. Different metaphors would be consistent to the degree that they would all be working from the same general framework (skeleton), but they could differ considerably in some of their implications (the flesh added to the skeleton).

Unfortunately, the Invariance Principle cannot simultaneously preserve metaphoric representation and solve the problem of multiple metaphors – two incompatible properties must be attributed to it in order for it to do both jobs. The skeleton is a direct representation, and so to the degree that it is involved in conceptual organization, the concept is not organized metaphorically (which is why it is said to often be minimal). The "flesh" added to the skeleton is an example of the strong view of metaphoric representation: The metaphor is filling the gaps in the framework by transferring information from the metaphoric domain to the topic domain. Thus, there is no direct representation of this metaphoric material, which results in the same problems as were raised for the strong view of metaphoric representation. In particular, what is to stop people from making inferences that are empirically incorrect about the target domain? That is, without more content in the *argument* concept, the ARGUMENT IS WAR metaphor would allow people to infer that guns are used, etc. In order to prevent this, the skeleton must be detailed enough to specify which inferences are permissible and which are not: No one infers that guns are used in arguments, because one already knows that they are not. However, this turns out to be simply a form of direct representation after all, since the inherent structure of the domain must be detailed enough to determine what can and cannot be said about the concept. That is, if the skeleton (or other literal information in memory) truly prevents the incorrect inferences, then the concept seems to be directly represented; if it cannot prevent them, then it is empirically incorrect. Thus, the skeleton needs to be both extensive (to prevent incorrect inferences) and minimal (to allow metaphoric mappings). If one does not assume that information is represented metaphorically, then this paradox does not arise.

In summary, if a concept is structured metaphorically, the presence of multiple, conflicting metaphors is a serious problem. References to "inherent structure" of

the target domain appear to require that it already be nonmetaphorically represented. If the notion that metaphors influence concepts is to be retained, then, a much more complete explanation will be needed for how conflicting metaphors are resolved.

5.3. Polysemy

L&J include a vast number of examples of metaphors in their discussion. However, a number of them may strike the reader as not being metaphorical at all (italics in the originals):

Inflation has gone up.
Get *up*. Wake *up*.
You're *wasting* my time.
Her ego is *fragile*.
The ship is *coming into* view.
We'll just have to *go our separate ways*. [about a relationship]
He *ran out* of ideas.
He's *seeking* his fortune.

(There are even more examples in Kovecses, 1986, that are said to be metaphorical or metonymic, which are not so on my reading, such as: She couldn't *contain* her joy; He *flushed* with pride; After winning the race, he walked to the rostrum *with his head held high; He was smiling* proudly after the race; His criticism *hurt* her pride.)

These examples are meant to illustrate conceptual metaphors such as INFLATIONS IS A THING and PEOPLE ARE CONTAINERS. Why is *Inflation is rising* a metaphor? (I've slightly changed their *Inflation has gone up* example, simply to be able to refer to the verb *rise* rather than the compound verb *go up*.) L&J (p. 171) provide the following analysis: "a. We view inflation as a SUBSTANCE (via an ontological metaphor). b. We view MORE as being oriented UP (via an orientational metaphor). We understand the *sentence* in terms of the same two metaphors." Presumably, this metaphor exists because inflation is an abstract concept, which can more easily be thought of as a physical object carrying out familiar physical activities, like rising. In this analysis, L&J do not consider the alternative view that this sentence is not metaphoric and is understood via the literal meanings of the words.

It should be noted, though, that the same kind of evidence is normally taken by linguists as evidence of polysemy, the fact that words have a number of related meanings. Ruhl (1989), for example, considers numerous examples of uses of the verb *hit*. He finds both physical and nonphysical uses of the verb that seem semantically related (e.g., *I didn't mean to hit you; The bird hit the window; I'm really hitting the books now; When the truth hit me, I couldn't believe it.*). There are two strategies that one could take to deal with such data (Cruse, 1986;

Sweetser, 1986). One (Ruhl's choice) is to argue that *hit* is simply unspecified as to physical or nonphysical contact; the word meaning is abstract enough to encompass both uses. The other strategy is to allow *hit* to have two related semantic entries, one physical and one nonphysical. One could take either approach in explaining the *Inflation is rising* example. Perhaps the meaning of *rise* is general enough to encompass physical increases in the vertical dimension as well as other increases. Or perhaps *rise* has two (or more) entries distinguishing these two kinds of increases. These explanations are not ad hoc accounts designed just for these putative metaphors, as they are necessary to explain many other examples of polysemy, such as *chicken* used to refer to an animal and some meat, and *book* used to refer to an object and a text.

L&J assume (rather than explicitly argue) that the real meaning of *rise* is physical rising, and any other kind of increase is a metaphorical meaning. This assumption turns out to be much the same as their theory of concepts applied to language; namely, it says that only simple physical experiences can be directly encoded in linguistic meaning, and nonphysical or abstract relations must be expressed via metaphor. Thus, their claim that *Inflation is rising* is metaphoric is basically an assumption of their theory, rather than evidence for it.

L&J appear to recognize the danger of this argument, because they spend considerable space (in Chs. 18 and 27) addressing it. They first consider an alternative they call the Homonymy Argument, which says that their examples do not constitute metaphors but instead reflect the fact that words can have different, unrelated meanings (like *bank* or *calf*). L&J rightfully dismiss this view of their examples, because it does not predict why it is that the words have the meanings they do. Although it is plausible that *bank* is a homonym, it is not plausible that *destroy* simply happens to include meanings that apply to battles and arguments, or that *rise* by coincidence can apply to physical and nonphysical movements. The two meanings appear closely related.

However, this argument does not address the possibility that words like *rise* are polysemous, and that the different meanings are related by similarity. Thus, *Inflation is rising* may not be metaphoric. L&J argue that this is unlikely, because such words do not have inherent structure that could be related by similarity. They consider the concept *love*: "Here the objectivist must not only bear the burden of claiming that love has inherent properties similar to the inherent properties of journeys, electromagnetic phenomena, and sick people; he must also claim that love is sufficiently clearly defined in terms of these inherent properties so that those similarities will exist" (p. 215). The argument that *love* does not have its own structure is not quite fair, since it criticizes a position that L&J (p. 105) themselves embraced when explaining why it is that the same domain has so many metaphors (see previous section). There they said that the reason that there are so many metaphors for *love* is that they were needed to account for all the ways that we think of love. Thus, it is inconsistent for them to argue that polysemy cannot be explained by similarity of the meaning of *love* to some aspect of journeys, etc.

In fact, the use of *rise* to refer to both physical and nonphysical increases can be explained by the similarity of the two meanings, combined with well-known rules

about polysemy. Nunberg (1978, Nunberg (1979) argues that the same word can have multiple meanings if speakers can rely on listeners being able to recover the intended meaning, given the usual use of the word. (I am simplifying considerably here; see also Clark, 1991.) That is, given one sense of *rise* to indicate physical movement, can I infer the use that means a nonphysical increase, given the sentence and discourse context? In this case, since I know that inflation cannot physically rise but that it can certainly increase, it is possible to derive the intended nonphysical meaning. Metaphor does not seem necessary to explain this example. Of course, the similarity here is not of superficial features but of underlying relations (i.e., an entity undergoes a change such that its value on a dimension increases). If we needed to carefully distinguish physical and nonphysical rising, we could have separate words in English to encode this distinction. However, it is generally quite obvious in context which kind of rising is intended, and so the cost in adding vocabulary is apparently greater than the need for greater accuracy in this case.

In summary, a number of the "metaphors" that L&J and others identify may well not be metaphors at all. One might claim this about the ARGUMENT IS WAR case, for example. It may well be that *attack* is simply unspecified for physical or verbal attack, and so its meaning applies equally well to both (Ruhl, 1989). Perhaps the verbal attack is just a less typical example of the same concept (Coleman and Kay, 1981). Or it could be that both meanings are represented in the lexicon. If any of these are true, then much of the evidence that L&J adduce may not in fact provide evidence for metaphoric representation. Of course, this kind of polysemy is an important and interesting topic in its own right, and one might well want to investigate how it is represented and processed in language use. However, that is a different topic from metaphoric representation, and it does not seem obvious that metaphor will be necessary to account for it.

5.4. Motivation for metaphoric representation

The primary motivation that L&J and Kovecses (1986) give for the necessity of metaphoric representation is that the source domain is too difficult or abstract for people to grasp directly.[2] As already noted, Lakoff (1993, p. 244) argues that metaphor is the main way in which people understand abstract concepts. In such cases, a metaphoric mapping to an already-understood domain can help us to understand the more complex domain.

In his review of Kovecses (1986), Ortony (1988) points out a problem with this

[2] George Lakoff has objected to this description of the reason that some concepts cannot be directly represented. Rather than some concepts being 'difficult,' the problem is said to be that the nature of the experience cannot allow direct representation. When the experience is not sufficiently well-structured, metaphor is needed to structure it. I do not understand the notion of experience (as opposed to concepts) being well or poorly structured, nor do I understand how their theory predicts that *anger* is not well structured while *container* and *war* are. Thus, I shall continue to use the neutral term 'difficult' to describe concepts that cannot be directly represented.

view. Kovecses focuses on the metaphoric structuring of emotion concepts, a topic also considered at length by L&J (e.g., their discussion of *love*) and by Lakoff (1987). However, Ortony points out that the emotions that are structured by these metaphors have generally been experienced by children much earlier and more extensively than the domains that are said to structure them. Since the experiential basis of thought is a tenet of the metaphoric representation view, it is extremely puzzling why it is that emotions are not directly represented via our experiences of them, and are instead represented in terms of warfare, journeys, insanity, sickness, animal behavior, pressure in closed containers, and so on. That is, every child has experienced anger, but it is unlikely that the child understands the physics of pressure in closed containers that leads to the expressions *he flipped his lid; the pressure built until he exploded; he couldn't hold in his anger anymore*, and so on. Ortony asks whether it isn't more likely that the child learning these expressions can understand them through his or her experience of anger, rather than through the physics of enclosed containers. This criticism applies to a number of other metaphors cited in favor of the metaphoric representation view, for example, ARGUMENT IS WAR, LIFE IS A GAMBLING GAME (L&J, p. 155), PROBLEMS ARE PRECIPITATES IN A CHEMICAL SOLUTION (L&J, p. 148), etc. If one has little understanding of problems, it seems unlikely that one would have a good enough understanding of precipitates in a solution for this metaphor to be helpful.

One possible response to this problem is to say that although children may experience emotions, life, problems, and arguments before they experience pressurized containers, gambling games, chemical solutions, etc., they may not *understand* or know how to conceptualize the former. Thus, the metaphors may aid the formation of representations or reasoning in abstract domains. This assumption would need empirical support, as it is not at all clear that war, say, is easier for children to conceptualize than arguments are (see footnote 2). There is evidence that 3- and 4-year-old children can reason about emotions to some degree (Wellman, 1990, Ch. 6), so any metaphoric domains that influence initial understanding of emotions would have to be acquired before then.

If children learn the structure of a domain in part through idioms and collocations expressed in language (e.g., through hearing military terms applied to arguments), then a problem is that children may not understand such expressions. Much work finds that children's comprehension of verbal metaphors is quite poor until 8–10 years of age (e.g., Reynolds and Ortony, 1980; Winner et al., 1976). In particular, children do not understand the psychological meanings of concrete adjectives like *hard*, *deep* and *cold* until 8 or 9 years of age (Asch and Nerlove, 1960). Perhaps of greater concern, Ackerman (1982) found that children have great difficulty understanding even common idioms in a neutral context (one that does not provide clues about the meaning of the idiom). First- and third-graders (6–8 years old) could not paraphrase the idioms correctly, nor did they respond above chance on a comprehension question. Such evidence raises two problems. First, if children do not understand the verbal collocations that express the underlying metaphors, it is unclear how the collocations could be influencing

conceptual structures. Second, if concepts of emotions and other abstract ideas are metaphorical, then it should not be difficult for children to understand verbal expressions of that structure.

Kovecses (1986, pp. 117–118) notes this problem through a related phenomenon – when emotion terms are metaphorically applied to concrete events, such as a *raging storm*. He points out that since emotions were hypothesized to be too abstract to be directly understood, emotion terms should not be used to structure concrete concepts like *storms*. To explain this phenomenon, he proposes a process of "secondary metaphorization," in which an abstract domain, once it is metaphorically structured, can then "be used to structure and understand *further* the physical domains that were originally employed to structure and understand the abstract ones" (p. 118). (He does not explain why, on his view, the physical domains should need further structuring.) This proposal results in there being no metaphors which could contradict the metaphoric representation view, since any domain can now be used to understand another, through primary or secondary metaphorization. (His proposal does not seem to have been adopted by other proponents of metaphoric representation.)

5.5. Metonymy

Up until now I have been discussing metaphoric representation of the sort *Lee is a block of ice*, in which the topic, Lee, is interpreted in terms of a different domain, such as frozen water. There is a different nonliteral trope that has also been identified as being a possible source of metaphoric representation, namely *metonymy*. In metonymy, something is referred to by virtue of a related attribute or part. For example, in *The White House is studying the report*, it is not a building that is studying the report – the United States executive branch of government is being referred to by the building in which the president lives and works. Similarly, the baseball manager who says *We need Boggs's glove back in the field* is really referring to Boggs's fielding ability, rather than to his actual glove.

Lakoff (1987, p. 77) argues that "Metonymy is one of the basic characteristics of cognition. It is extremely common for people to take one well-understood or easy-to-perceive aspect of something and use it to stand either for the thing as a whole or for some other aspect or part of it." Examples of the *White House* sort are a main evidence for this claim. If this claim were only a linguistic one, then it might not be problematic. However, Lakoff's intention seems to be to extend metonymy to representations of concepts as well (see Lakoff, 1987, pp. 84–85). The problems raised above for metaphoric representation seem to be even stronger for metonymic representation. Most problematic is that there is usually no mapping of properties between the target domain and the metonymic domain. For example, although a baseball fielder is associated to his glove, the properties of the glove are not similar to the properties of the fielder. If we understand the concept of a baseball glove, we won't thereby be able to understand the concept of a fielder (e.g., the fielder isn't made of leather, doesn't have a worn spot in the middle, doesn't require oiling, etc.); similarly, knowing a lot about the actual White House

won't lead to correct knowledge about the executive branch of the US government or the presidency. Thus, although metonymic expressions are extremely common in speech, metonymy does not seem to be a candidate for a nonliteral form of conceptual representation.

Lakoff (1987) argues that another form of metonymy occurs when people treat an entire category of objects by thinking of a single prototypical subcategory. For example, he suggests that the concept of *mother* relies on the stereotypical example of a mother who normally conceives and gives birth to the children, then staying at home to care for them. Although there are many mothers who have only some of these features, the prototypical case may greatly influence our thinking of mothers in general, and other subcategories may be defined in terms of it. Even if this is a case of metonymy (which is not clear), it seems that it is fully consistent with usual theories of concepts that have identified what makes examples prototypical (e.g., Barsalou, 1985) and that have argued that prototypes are used in thinking about the entire category (Rosch, 1975). No nonliteral thought processes or representations seem called for here.

There is a weaker claim for metonymy, made by Gibbs (1994, Ch. 7), which seems much more feasible. Gibbs points out that metonyms may influence the way that a concept is accessed, and therefore may influence what one thinks about when activating that concept. For example, by referring to *Boggs's glove*, one does not simply access one's concept of Boggs, but instead emphasizes the information about him as a fielder (as opposed to a batter, father, etc.). Metonymic ways of referring to a person might make more salient some characteristics than a different way would.

Further empirical work is needed to investigate how such metonymic expressions influence the way people think of objects and people. Such influences do not seem, however, to require nonliteral concepts. In fact, as Gibbs (1994) points out, familiar models of events (scripts and schemata) have already provided mechanisms by which entire mental structures can be evoked by referring to a related object, location or event (e.g., when one says *I went to a restaurant* to explain that one has eaten dinner – see Schank and Abelson, 1977). Exactly how metonymic references in language are understood is a fascinating question, but "metonymic concepts" may not be required as part of the explanation.

5.6. Linguistic and psycholinguistic evidence

There is a considerable amount of literature discussed by the proponents of metaphoric representation that I have not touched on here. This is largely because I do not see much of this literature as directly addressing issues of conceptual structure, as opposed to questions of linguistic theory or language processing. I refer here to work on metaphor and idiom comprehension, syntax, semantics, linguistic change and poetic metaphor (see Gibbs, 1992, Gibbs, 1994; Lakoff, 1987; Lakoff and Turner, 1989; Sweetser, 1990). However, since this work is often said to provide support for metaphoric modes of representation and thought, I will briefly address some of it here.

One very active line of research is in the comprehension of idioms that are proposed to reflect underlying conceptual metaphors (e.g., Gibbs, 1993; Gibbs and O'Brien, 1990; Nayak and Gibbs, 1990). According to this work, many idioms are understood by virtue of conventional conceptual metaphors such as ANGER IS PRESSURE IN A CLOSED CONTAINER (see Glucksberg et al., 1993, for an opposing view). For example, Gibbs (1992) showed that when a paragraph was consistent with the underlying metaphor for an idiom, subjects rated it as more acceptable and read it faster than when the paragraph was inconsistent in some way. In one experiment, subjects were asked to explain the reason that fluid might escape a closed container (e.g., increased pressure). Then Gibbs wrote scenarios that included or contradicted this reason. Subjects found a metaphor like *Mary flipped her lid* to be more acceptable in the scenario that included this reason (e.g., a scenario that talked about increased psychological pressure). From such evidence, Gibbs concluded that the underlying metaphor is involved in interpreting the idiom.

Not all researchers accept this as evidence for conceptual metaphors. Stock et al. (1993) suggest that the meaning of the idiom may be more consistent with one scenario than another, even if it is not metaphorically structured – for example, to *flip one's lid* means to lose control of one's anger, even if there is no underlying metaphor of pressure in a closed container. Thus, scenarios that include aspects of the idiom's meaning or plausible inferences from it will be more consistent with it. However, it seems to me that regardless of whether this counterargument is correct, the claim of metaphoric *concepts* may not be necessary to explain Gibbs and colleagues' data. Their claims are about idiom representation and processing, and so this may be a matter of how a set of linguistic expressions are represented – not more general knowledge of how *anger*, say, is understood. It is possible that when people hear idioms such as *She flipped her lid* or *He hit the roof*, they interpret these in part through a conventional way of talking about anger. That is, such idioms could reflect linguistic conventions about how to talk about anger (perhaps motivated by conceptual similarity), rather than reflecting metaphoric understanding of anger. Exposure to such conventions could well influence how people create and interpret idioms, even if they do not conceptualize anger (nonlinguistically) in terms of pressure in a heated container. Thus, I would argue that findings on idiom comprehension are not direct evidence for conceptual structure, though they may well be critical to understand language processing.

Another enterprise that has been cited as supporting the idea of metaphoric representation is semantic analyses of individual lexical items or semantic fields, such as Brugman and Lakoff's analysis of *over* (Lakoff, 1987, pp. 416–471), and Sweetser's (Sweetser, 1990) analyses of historical change of word meaning. The latter is of particular interest, because it also addresses issues of polysemy that were raised earlier. For example, Sweetser documents that words related to vision often have meanings related to mental comprehension (as in *I see your point*; mental *discernment* and *perception*; arguments that are *opaque* or *transparent*). Similarly, words related to audition often have meanings of comprehension and obedience. She argues that words with meanings related to mental activity often

originally had meanings based on sense perception (see the section on asymmetries, below).

Sweetser (1990) interprets these very interesting phenomena in terms of metaphoric structuring of mental events that she calls the Mind-as-Body Metaphor (p. 28). However, she also observes that "these connections are not random correspondences, but highly motivated links between parallel or *analogous* areas" (p. 45), and she provides a compelling analysis of these domains that reveals considerable similarities between our concepts of vision and of comprehension. Thus, vision is one of our primary ways of acquiring information, and in seeing something clearly, we are able to form an accurate representation of it. This has an obvious parallel with nonvisual mental activities of comprehension, in which one attempts to understand a fact or situation by constructing an accurate representation of it. Furthermore, just as vision can be directed to some degree by focusing the eyes on different locations, mental processes may be focused through attention on various facts, leading to different *perspectives, viewpoints*, etc.

The comparisons that Sweetser (1990) draws out between disparate domains provide an intriguing explanation for polysemy of current vocabulary and for historical change of word meanings in related domains. However, these comparisons do not seem to be metaphoric in the sense described here. That is, her analysis reveals underlying structural similarities between different domains, just as I am proposing. Sweetser points out (correctly, in my view) that traditional feature and logical-referential approaches to semantics cannot explain the patterns she observes. However, her analyses are perfectly consistent with a cognitive approach to polysemy based on literal, rather than metaphoric, similarity. Similarly, Lakoff's (Lakoff, 1990, Lakoff, 1993) analysis of the meaning of a proverb is a good example of how structural similarity can explain the use of a verbal trope.

In summary, these other linguistic and psycholinguistic data do not seem to require metaphoric representation in order to be explained. Furthermore, one must be careful in drawing direct inferences from linguistic phenomena to conceptual structure. For example, idioms about anger such as *she bit my head off* may not directly reflect metaphoric representation of the concept of *anger*. Of course, one might well hope that linguistic patterns can be related to underlying conceptual structure. But there must be independent evidence for such structure, rather than the linguistic data providing the main evidence, which raises the problem of circularity.

6. The structural similarity alternative

Earlier I identified a view that I called *Structural Similarity*, which might serve as a competitor to the metaphoric representation view. Briefly, this view argues that concepts such as *love, journey, disease, insanity, anger*, and so on, are represented separately, with their own structures. The existence of idioms relating love to journeys or anger to insanity results from the structural similarity of these

domains. That is, salient aspects of a love affair can be brought into correspondence with salient aspects of a journey. Although not all aspects of both can be directly related, there is enough correspondence for the relation to be meaningful. It is worth reemphasizing that it is the *structure* of the concepts, rather than superficial properties, that are similar on this account. Although I do not find it necessary to adopt a specific theory of similarity (theories of similarity are undergoing considerable development at this time), the structure-mapping theory of Gentner and colleagues would certainly do well in explaining these relations (see Falkenhainer et al., 1989; Gentner, 1983; Markman and Gentner, 1993). The critical difference between the structural similarity and the metaphoric representation views is that the metaphoric view claims that the metaphoric relations serve to structure the topic concept. That is, the LOVE IS A JOURNEY metaphor caused our *love* concept to have a certain structure. On the structural similarity view, the domains of *love* and *journey* are separately represented and *journey* did not causally influence the structure of *love*.

A fair question to ask is whether this view can avoid the problems that I have raised for the metaphoric representation view. I will argue that it can. First, it obviously avoids the serious theoretical problems that the strong metaphoric view engendered. No metaphoric links are proposed, and the problem of incorrect metaphoric inferences simply does not arise. Further, the structural similarity view does not have a problem with multiple metaphors for a single domain. For a complex concept such as *love*, it is not surprising that there are different kinds of correspondences that can be made to it. Each metaphor type simply picks out different aspects of the concept's content. (In the same way, a pet dog can simultaneously be similar to a wolf, a pet hamster or a statue of a dog – each in a different respect.) The journey metaphor takes a broad view of an entire love affair, including both participants. The insanity metaphor takes a much narrower view, focusing on the emotional reactions of one of the participants, during the initial, infatuation period of a relationship. Because the concept of love is assumed to have a representation independent of the metaphors, there is no problem with different metaphors picking out different aspects of the concept.

This multiplicity of similarities between domains has in fact become an important phenomenon in recent discussions of similarity. For example, Medin et al. (1993; see also Markman and Gentner, 1993) showed that a single stimulus could be viewed as similar to two incompatible stimuli. In one of their stimuli (see their Figure 1), a hand-like figure was ambiguous between having three or four "fingers." When subjects compared it to an unambiguously three-fingered figure, they identified it as having three fingers but differing in shape; when they compared it to a four-fingered figure, they identified it as having four fingers, but differing in the size of the fingers. In short, simple similarity comparisons often cause an item to be interpreted differently, depending on what it is being compared to. Thus, the existence of multiple different metaphors applied to the same domain is consistent with a similarity-based explanation. The problem with the metaphoric representation view arises when it assumes that the metaphor *causes* the structure of the concept, and it does not explain how those potentially incompatible causes can be coordinated to result in a coherent structure.

The next problem I raised for the metaphoric representation view was that some of its examples could be due to polysemy rather than metaphor. This issue simply does not arise for the structural similarity view, because it does not need to claim that *Inflation is rising* or *He's seeking his fortune* are metaphoric. The structural similarity view also does not have problems with metaphors in which a concrete domain is described in terms of a more abstract domain (see next section).

In summary, although the structural similarity view is a bare-bones explanation of the metaphoric data provided by L&J, it seems to do quite well in accounting for the general phenomenon, and it avoids almost all of the problems raised for metaphoric representation. As I stated above (see the section on polysemy), L&J's arguments against such a structural similarity view are not very compelling. For the most part, they amount to a restating of the metaphoric representation view (e.g., that some concepts do not have sufficient inherent structure to support similarity relations). There is a decided lack of discussion in L&J or Lakoff (1987) of specific nonmetaphorical models of conceptual structure and similarity. Such a detailed discussion is necessary before the weaker structural similarity view can be rejected in favor of a much stronger, more complex, metaphoric representation view.

6.1. The asymmetry problem

As just mentioned, the structural similarity view does not fall prey to Ortony's (Ortony, 1988) criticism that in some cases the more complex domain is used as the vehicle rather than the topic of the metaphor. Since the structural similarity view doesn't claim that one domain is understood in terms of the other, it isn't bothered by cases such as ARGUMENT IS WAR, where the metaphoric vehicle seems to be less conceptually basic than the topic. However, this flexibility can also be used to criticize the similarity approach. That is, there is a definite pattern of directionality to the conceptual metaphors discussed in this literature, whereas (the argument goes) similarity should be symmetrical. For example, why are there so many expressions describing love in terms of a journey, and hardly any that describe a journey in terms of love? Why aren't there idioms relating war to arguments? After taking a critical hill in a battle, one could say "Their premise has been found to be incorrect," yet this does not seem to be a reasonable expression. Although there are exceptions, abstract domains seem to be described in concrete terms more than vice versa. Sweetser (1990) also argues that there is a tendency for concrete words to take on more abstract meanings over time. This asymmetry has been taken as reflecting underlying conceptual structure-arguments must be understood in terms of war, and not vice versa. Similarity does not explain such asymmetries, according to this criticism.

There are two problems with this argument. The first is that similarity is not in fact symmetrical. In his classic 1977 article, Tversky discussed violations of symmetry at some length, and his contrast model has mechanisms by which asymmetries can be handled. One form of asymmetry that has been well documented is that a less typical item seems similar to a typical item, but not vice versa. For example, one might say that a very talented college basketball player is

similar to Michael Jordan, but one would not say that Michael Jordan is similar to the same player. Asymmetries can also be found in behavioral measures of similarity, such as patterns of confusion in perceptual identification (Tversky, 1977). Thus, asymmetry per se does not rule out an explanation based on similarity, as similarity is not inherently symmetrical.

The second point is that asymmetries in metaphor may well reflect discourse or conceptual differences other than metaphoric representation. One simple reason for why there are metaphors based on LOVE IS A JOURNEY but not JOURNEY IS LOVE is that people wish to talk about love much more than they wish to talk about journeys. Love is a very complex, salient and interesting topic, and a wide variety of metaphors and collocations have arisen as a result. Furthermore, people use metaphors for complex socio-emotional reasons (see Gibbs, 1994, p. 124 ff., for an interesting discussion), and it is likely that such reasons will be operational in some domains more than others. For example, one may feel the need to use a denigrative metaphor in describing a failed love affair more than in describing a wrong turn off the freeway. Thus, the asymmetry may well be partly due to such discourse considerations.[3]

Another possible explanation for asymmetry may be that more complex domains are often harder to describe than simpler domains. Sweetser's (Sweetser, 1990) argument that word meanings take on abstract meanings over time may reflect a natural progression from concrete to abstract meanings. It is not surprising that a language might have a word meaning "to see something" before it has a word meaning "to comprehend a point,"[4] so that words describing the former could be co-opted to describe the latter. More generally, it is very simple to use a single, concrete word to describe a simple concept such as *chair*; it is not surprising that a wider variety of expressions have arisen to describe different aspects of love, insanity, life and other complex domains.

In summary, although there may be an asymmetry in conventional metaphors, this in itself is not evidence against the similarity explanation. Of course, a complete account of why we have the verbal metaphors we do will require spelling out the discourse factors alluded to, but that will be necessary whatever theory of conceptual structure one has.

6.2. Arguments against the similarity view

L&J (Ch. 18) argue against a view that is somewhat similar to the structural similarity view, which they call "the abstraction theory," because it claims that

[3] For example, it has been noted that college students have developed hundreds of slang metaphors for activities such as vomiting and sexual activities. However, it seems that the best explanation for this is in terms of social factors, rather than underlying conceptual metaphors such as VOMITING IS PRAYING, VOMITING IS SPEAKING, etc.

[4] Although Sweetser (1990) shows convincingly that current words that have meanings related to vision also tend to have meanings related to abstract mental activity, she presents less evidence that their historical predecessors were not polysemous in the same way. Thus, it is not always clear what the historical progression is.

concepts are abstract enough to include both metaphoric and nonmetaphoric uses – that is, arguments and war are indeed similar at an abstract (but not metaphoric) level. One of their arguments raises an interesting point that deserves some attention.

This argument is that the abstraction view "does not seem to make any sense at all with respect to UP–DOWN orientation metaphors, such as HAPPY IS UP, CONTROL IS UP, MORE IS UP, VIRTUE IS UP, THE FUTURE IS UP, REASON IS UP, etc. What single general concept with any content at all could be an abstraction of HEIGHT, HAPPINESS, CONTROL, MORE, VIRTUE, THE FUTURE, REASON and NORTH and would precisely fit them all?" (pp. 107–108). That is, L&J are arguing that no similarity can capture all of the metaphoric correspondences they have identified, except in an ad hoc manner. However, note that the structural similarity view does not claim that the exact same concept is present in all of these, but rather that a correspondence can be made between these dimensions and *down–up*. The correspondence may be somewhat different in each case. Furthermore, the literature on dimensional adjectives does give suggestions for similarities across seemingly different dimensions (e.g., Clark, 1973; Cruse, 1986, Cruse, 1992; Lehrer and Lehrer, 1982; Murphy, 1995). For example, the positive directions (up, more, tall, hot) are typically perceptually more salient than or evaluatively preferred to the negative directions (down, less, short, cold).

More importantly, the metaphoric representation view does not provide any better an explanation for all these metaphorical comparisons, why happy is up rather than down, and so forth. This view is caught in a dilemma. If it admits that there is a similarity between the domains that explains these metaphors, then metaphoric representation may not be needed to explain the linguistic data – the domains are similar. But if it denies that there is any independent similarity, then it cannot possibly explain why there is this set of metaphors and not some other set – it can't explain why all these things are UP either. L&J's argument against the abstraction view would then apply to their own metaphoric representation view. In short, metaphoric representation must argue that the metaphors are essentially arbitrary (which seems prima facie implausible), or else that there is independent similarity to the concepts, which is exactly what the alternative view proposes.

7. Conclusion

7.1. Possible future directions

Although the strong view seems untenable, the weak metaphoric representation view is an interesting one; it is not implausible that the hearing of certain collocations over and over might have some effect on the way we conceive of certain entities or events. I have proposed the structural similarity view because it is a much simpler view that appears to account for the present data. For the

metaphoric representation view to make a stronger case, I suggest that the following three points need development.

First, a more precise model of metaphoric representation must be constructed. It is not now clear how it is that conceptual metaphors are supposed to be learned by members of a culture or even how directly-represented structure is acquired. A more detailed psychological model of conceptual representation is needed, which would explicitly address puzzles such as multiple metaphors structuring the same concept. Until a more explicit model is constructed, it will not be clear what is meant by metaphoric representation, or if it is even possible to realize it.

Second, the empirical base for the theory must be expanded beyond linguistic phenomena. As I pointed out in my analogy to the Whorfian hypothesis, there is a circularity here, such that linguistic data are used to identify metaphors, but the main concrete predictions the theory makes are about similar linguistic and psycholinguistic data. Since the theory is about conceptual representation, the kind of data familiar to cognitive psychologists should be predicted as well. That is, predictions about memory, problem solving, induction, measures of conceptual structure (such as typicality and categorization), learning and performance should become more central to the theory.

Third, I would suggest that the proponents of this view contrast it with a specific, reasonable alternative hypothesis. The arguments in L&J and Lakoff (1987) against the Objectivists are not always relevant. Most cognitive psychologists do not identify with this position, which L&J attribute to them willy-nilly. Furthermore, some of the arguments L&J give against nonmetaphoric views are only valid for the full Objectivist position, not the much more modest positions that many psychologists might hold. For example, in the same volume as Lakoff (1993), Gentner and Jeziorski (1993) argue that analogy and metaphor are widely used in scientific thought (which seems similar to Lakoff's view), but they do not appear to use metaphoric representation as L&J describe it. Thus, there appears to be room for agreement with much of what L&J have discovered without embracing their entire theoretical apparatus. If the proponents of this view were to address such specific, alternative psychological accounts of their data, rather than the monolithic Objectivist view, they would make contact with more cognitive psychologists.

7.2. Caveat

The goal of this article has been to evaluate the concept of metaphoric representation. It is possible that these arguments might be taken more broadly, as providing a critique of metaphor, or of other aspects of the theory presented by Lakoff (1987), for example. However, this article is not intended as a critique of that entire paradigm. In particular, I have not addressed many of the arguments Lakoff (Lakoff, 1987, Lakoff, 1990) provides for Cognitive Linguistics, in which general cognitive principles are used to explain a wide range of linguistic phenomena. So far as I know, there is no need for metaphoric representation in order to carry out the Cognitive Linguistics program. Of course, the article hasn't

endorsed that position either. However, the structural similarity explanation seems to have much in common with some of the Cognitive Linguistics work in semantics, in which word meanings are related to conceptual structures.

A caveat is also in order for the structural similarity view. This view is a claim about relations among conceptual structures (e.g., that the concept of *argument* bears certain similarities to the concept of *war*). This view is *not* intended as a theory of verbal metaphor, semantic change, idiom comprehension, and so on. My claim is that, to the degree that such topics have implications for conceptual structure, those implications do not require nonliteral concepts or conceptual relations; structural similarity will suffice. However, that is not to say that structural similarity suffices as an account of idiom comprehension, etc. – there are obviously additional discourse and psycholinguistic factors that need to be included in a complete account.

7.3. Benefits of the metaphoric representation debate

Although the notion of metaphoric representation has come in for criticism in this article, it seems fair to point out a number of issues that authors in this area have raised that have not been addressed in the mainstream concept literature. Thus, this dispute may have the advantage of generating empirical research in some new areas. First, it is true that abstract concepts have not received as much attention as they need. Although there has been research on "superordinate" object concepts such as *furniture* and *animal* (e.g., Markman, 1985; Murphy and Wisniewski, 1989), there has been much less on the abstract concepts that are often discussed in the metaphoric representation literature, such as *love, causality, life*, event structure and temporal concepts. It may be that the controversy over metaphoric representation will spur further research on these topics. However, it should also be noted that there is considerable research on some abstract domains that is not discussed by proponents of the metaphoric representation view, such as work on emotions (Ortony et al., 1988; Russell and Fehr, 1994), goal-derived categories (Barsalou, 1991), the mind and mental concepts (Wellman, 1990), and scientific concepts (Gentner and Stevens, 1983).

Second, the work on metaphoric representation has at the least provided a new source of data about the similar conceptual structures of different domains. That is, on both the metaphoric representation view and on the similarity account I have suggested, it is the case that consistent patterns of idioms and collocations reflect similarity in underlying structures of different domains. Noticing that terminology used in spatial relations is also used in very similar ways in temporal relations is informative about how the two domains are structured (e.g., Clark, 1973). Thus, even if I disagree that metaphoric representation is required to account for the phenomena described here, I agree that patterns of metaphors and idioms provide descriptive evidence that the two domains are structured similarly. These patterns provide a source of data that has not much been used in cognitive psychology. More generally, the work on metaphoric representation raises the possibility of

close connections between linguistic phenomena and conceptual structure, which is a topic that surely deserves further attention.

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