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Categorization and Metaphor Understanding

Raymond W. Gibbs, Jr.
Program in Experimental Psychology, University of California, Santa Cruz

Glucksberg and Keysar (1990) have proposed a class-inclusion model of metaphor comprehension. This theory suggests that metaphors are not understood as implicit similes but are seen as class-inclusion statements in which the topic of a metaphor is assigned to a diagnostic, ad hoc category, whereas the metaphor's vehicle is a prototypical member of that category. The author claims that verbal metaphors are not simply instantiations of temporary, ad hoc categories but reflect preexisting conceptual mappings in long-term memory that are metaphorically structured. Various evidence from cognitive linguistics, philosophy, and psychology are described in support of this claim. Evidence is also presented that supports, contrary to Glucksberg and Keysar's position, the role of tacit conceptual metaphors in the comprehension of verbal metaphors in discourse.

Glucksberg and Keysar's (1990) recent article in this journal outlined a new theoretical approach to metaphor comprehension. Their theory differs from previous proposals in its suggestion that all metaphors are class-inclusion statements. Consider the metaphorical comparison *My job is a jail.* Glucksberg and Keysar argued that metaphors are not understood by converting them into similes (e.g., *My job is like a jail*). Instead, metaphors are exactly what they appear to be: class-inclusion statements in which the topic of the metaphor (e.g., *my job*) is assigned to a diagnostic category (e.g., entities that confine one against one's will, are unpleasant, and are difficult to escape from). In these statements, the metaphor's vehicle (e.g., *jail*) refers to a newly created category and, at the same time, is a prototypical exemplar of that category. This new category may not have a conventional name, but it is possible to use the name of a prototypical category member as the name for the category itself, as in the statements *My job is a jail* and *Cigarettes are time bombs.* The ad hoc categories that are referred to by verbal metaphors are structurally similar to ordinary taxonomic categories that have conventional names at the superordinate level, such as *food* or *furniture* (Rosch, 1978), as well as to ad hoc categories, such as "food to be eaten on a weight loss diet" (Barsalou, 1983, in press). Most generally, the class-inclusion view suggests that when metaphors are expressed as comparisons, they are interpreted as implicit category statements rather than as implicit similes that require recognition of some underlying similarity to be understood. The groupings that are created by metaphors induce similarity relations, and so the groupings are prior to the recognition of similarity.

Glucksberg and Keysar's (1990) work is significant because it acknowledged the important relationship between metaphor and categorization processes. However, their theory is limited as a theory of metaphor comprehension because it did not acknowledge the possibility that the vast majority of linguistic metaphors reflect underlying conceptualizations of experience in long-term memory that are already structured by metaphorical schemes. Most metaphorical expressions instantiate, sometimes in spectacular ways, preexisting metaphorical mappings in long-term memory whereby knowledge from a target domain is partially understood in terms of a dissimilar source domain. These conceptual metaphors are independent of language but motivate the meanings of many verbal metaphors and provide coherence to linguistic expressions that are traditionally viewed as individual exceptions, or in the class-inclusion view, as referring to temporary, ad hoc categories.

Even though Glucksberg and Keysar's (1990) discussion of their model did not specifically address the issue of whether conceptual knowledge in long-term memory is metaphorically structured, they claimed that conceptual metaphor, if it exists, does not play a role in the production and comprehension of linguistic metaphor in ordinary communicative contexts. My disagreement with this position stems from a consideration of the metaphorical nature of everyday thought as suggested by research in cognitive linguistics, philosophy, and psychology. I briefly describe some of the evidence on the metaphorical basis of thought and then argue how this view provides greater insight into metaphor understanding than suggested by the class-inclusion model.

The main point I wish to make in response to Glucksberg and Keysar (1990) is that metaphors do not simply arise out of temporary, ad hoc categorization processes perhaps to meet particular communicative purposes. Instead, metaphor is a fundamental characteristic of how people categorize and makes sense of their experience. Verbal metaphors, under this alternative position, reflect particular instantiations of metaphorical categorization schemes in long-term memory. I do not believe that the class-inclusion model is fundamentally incompatible with the alternative view on the metaphorical nature of everyday concepts. Each position may reflect different aspects

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Correspondence concerning this article should be addressed to Raymond W. Gibbs, Jr., Program in Experimental Psychology, Clark Kerr Hall, University of California, Santa Cruz, California 95064.

of the processes and knowledge used when verbal metaphors are understood. My aim is to clarify these differences and to suggest that by itself the class-inclusion model is incomplete as a theory of metaphor understanding.

The Metaphorical Basis of Everyday Thought

There are at least four kinds of evidence that support the claim that metaphor is an important part of our conceptual system. This evidence comes from an examination of the systematicity of literal expressions, novel extensions of conventional metaphors, polysemy, and data from recent psychological research on the metaphorical roots of everyday language.

Systematicity of Literal Expressions

Consider the following fairly mundane utterances that are often used to talk about love and relationships: *Look how far we've come; It's been a long, bumpy road; We're at a crossroads; We may have to go our separate ways; Our marriage is on the rocks; We're spinning our wheels.*

Why are each of these expressions acceptable ways of talking about, and understanding, love relationships? All of these (and other) conventional expressions cluster together under one basic metaphorical system of understanding: Love is a journey (Lakoff & Johnson, 1980). This conceptual metaphor involves understanding one domain of experience, love, in terms of a very different, and more concrete domain of experience, journeys. There is a tight mapping according to which entities in the domain of love (e.g., the lovers, their common goals, the love relationship, etc.) correspond systematically to entities in the domain of a journey (e.g., the traveler, the vehicle, destinations, etc.). In a similar way, a different metaphorical conceptualization of love, love is a nutrient, motivates many other conventional expressions, such as *I was given new strength by her love; I thrive on love; He's sustained by love;* and *I'm starved for your affection.*

Various researchers have explored a large number of representative domains of human experience (e.g., time, causation, spatial orientation, ideas, anger, and understanding) to indicate the pervasiveness of various metaphorical systems in our everyday thought (Johnson, 1987; Kovecses, 1988; Lakoff, 1987, 1990; Lakoff & Johnson, 1980; Lakoff & Turner, 1989; Turner, 1987). Most theories of linguistic metaphor provide no reason for why literal expressions such as those presented above cluster in the ways they do. In general, metaphor theorists view these literal expressions as having little to do with metaphor, although they sometimes see such statements as reflecting different "dead" metaphors. However, it is not just arbitrary or accidental that we use, for example, *thrive, sustained,* and *starved* when speaking of love. We do so because a great deal of our conceptual understanding of love is metaphorically structured (e.g., love is fire, love is magic, love is a physical force). The hypothesis that knowledge in long-term memory may be metaphorically structured makes it possible to explain what until now have been seen as unrelated literal expressions.

Novel Extensions of Conventional Metaphor

A second, related source of evidence for the metaphorical nature of everyday thought is seen in the ways conventional metaphors are elaborated upon in poetry and conversation. For instance, poetic verse about love embellishes on more mundane ways of thinking about love experiences. A wonderful example of poetic verse that elaborates on the "love is a nutrient" metaphor is seen in a poem by Emily Dickinson (1951) titled *I Taste A Liquor Never Brewed:*[1]

I taste a liquor never brewed
From tankards scooped in pearl.
Not all the Frankfort berries
Yield such an alcohol.

Inebriate of air am I
And debauchee of dew,
Reeling through endless summer days
From inns of molten blue.

When landlords turn the drunken bee
Out of the foxglove's door,
When butterflies renounce their drams,
I shall but drink the more,

Till seraphs swing their snowy hats
And saints to windows run
To see the little tippler
From the manzanilla come!

Readers of poetry find great beauty in the ways poets elaborate on common metaphorical themes. Dickinson's (1951) poetic description of love as a "liquor never brewed" is an embellishment of the idea that love is a kind of nutrient, the same metaphorical mapping that motivates conventional expressions such as *I'm drunk with love.* Creative artists express unique instantiations of conceptual metaphors that partially structure our experiences. But it is misleading to assert that a creative poet like Dickinson has actually created a new, or ad hoc, metaphorical mapping between dissimilar domains when she has only made manifest some of the entailments that are suggested by a preexisting conceptual metaphor in long-term memory (i.e., love is a nutrient).

The class-inclusion view provides for a different account of people's understanding of novel metaphorical comparisons. Consider the phrase *Our love is a dusty road traveled.* According to the class-inclusion model, this comparison assigns the topic *love* to a diagnostic category (i.e., paths that are long, difficult, frequently used, and generally unpleasant). In this metaphor, the vehicle *a dusty road traveled* refers to this ad hoc category and is a prototypical example of that category. Presumably, an identical categorization process operates each time people see class-inclusion statements of the form *a is b,* such as *Our love is a bumpy roller coaster ride* or *Our love is a voyage to the bottom of the sea.*

If verbal metaphors reflect ad hoc categorization, then each expression should reflect different metaphorical mappings between different source and target domains. Thus, the expression *Our love is a bumpy roller coaster ride* would constitute one metaphorical mapping and the phrase *Our love is a dusty road traveled* would create an entirely different metaphorical map-

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ping based on different ad hoc categorization processes (e.g., one ad hoc category representing the class inclusion of both love and roller coasters and another representing the temporary categorization of love and dusty roads). Even though each of these poetic statements convey slightly different entailments about love, both expressions are motivated by the same metaphorical scheme in long-term memory by which we partially structure our concept of love in terms of our knowledge of journeys (Kovecses, 1988; Lakoff, 1987; Lakoff & Turner, 1989). The class-inclusion model does suggest that permanantly established, conceptual structures are used to create ad hoc categories from which verbal metaphors arise. But Glucksberg and Keysar's (1990) position, similar to most views about metaphor, does not acknowledge the possibility that the conceptual structures in long-term memory are themselves organized, or constituted, by metaphor (e.g., our concepts of love, anger, death, and life). The class-inclusion view, consequently, is unable to account for the systematicity of both literal expressions and novel extensions of conventional metaphors in poetry and conversation.

Polysemy

A third source of evidence on the metaphorical nature of thought comes from recent studies on polysemy, words that have multiple meanings that are systematically related. Polysemous words are pervasive in language (97 out of the 100 most frequent words in English are polysemous). Traditional linguistic and psychological theories assume that the meanings of polysemous words can be captured by single, abstract senses. But there is much evidence that the meanings of polysemous words are related to one another in terms of family resemblances and that many of a polysemous word's meanings are motivated by the metaphorical projection of knowledge from one domain to another.

For example, the preposition *over* has more than 100 senses (Brugman & Lakoff, 1988). Some of these senses refer to specific physical schemas, such as the "above" meaning in *The bird flew over the house* and *The painting hangs over the fireplace,* or the "cover" meaning in *The board is over the hole* and *The city clouded over.* Other senses of *over* are figurative and exhibit the metaphorical projection of knowledge from a physical domain to a nonphysical or more abstract domain. For instance, *She has strange power over me* extends the "above" sense via the very common conceptual metaphor control is up, lack of control is down. Two different metaphors apply to *Sam was passed over for promotion.* The first, control is up, lack of control is down, entails that the person who passed over Sam was in control of Sam's status. The second common metaphor that applies here, choosing is touching, entails that because there was no physical contact between the person in control and Sam, Sam was not chosen. Both of these independently existing conceptual metaphors motivate why we can easily use *over* to refer to nonphysical domains of experience.

One might argue that the different meanings of polysemous words are really arbitrarily defined (the homonymy position) or just based on metaphors that are no longer part of our everyday thinking. Consider the following simple expressions: *I see what you mean; That's a very clear argument; What's your outlook on this project; The argument looks different from my point of view; Let me point out something to you in her argument;* and *Tell me no more, I've got the whole picture.*

Literal examples such as these are often seen as classic cases of dead metaphors. But these expressions are representative of metaphorical systems of thought that are very much alive. In particular, we conceptualize and talk about intellectual activities in terms of vision (i.e., understanding is seeing) and this partially motivates why we talk about understanding or knowing in terms of seeing things. This metaphorical mapping of our knowledge about human vision onto the domain of understanding or knowing is not temporary, or based on ad hoc categorization processes, but is very much a part of our conceptual structures in long-term memory.

One of the interesting consequences of the idea that long-term memory is, at least partially, metaphorically structured is that it helps explain how the related senses of polysemous words, such as *see, point,* and *look,* come to acquire the meanings they do over historical time. Many cases of diachronic semantic change have been examined to show that the nature and direction of these changes can be explained by means of culturally shared metaphors (Sweetser, 1990). In particular, Indo-European languages tend to borrow concepts and vocabularly from the more accessible physical and social world to refer to the less accessible worlds of reasoning, emotion, and conversational structure. With few exceptions, words in Indo-European languages meaning "see" regularly acquire the meaning "know" at widely scattered times and places. Traditional theories of diacronic linguistics provide no reason for the same kinds of meaning change repeatedly occurring throughout the history of Indo-European languages. However, one can easily explain such changes in terms of conceptual metaphors. In the case of *see* words, there is a widespread and ancient conceptual metaphor that understanding is seeing, which is part of the more general mind-as-body metaphor (Sweetser, 1990). Because this metaphor exists in the conceptual systems of Indo-European speakers, the conceptual mapping between seeing and knowing (i.e., seeing is understanding) actually motivates why words meaning "see" eventually extend their meaning to "know." The understanding is seeing metaphor, along with most other conceptual metaphors, actually motivates word meanings to change to become polysemous in regular ways that make sense to us as speakers.

Psychological Evidence

A different source of data on the metaphorical nature of thought comes from experimental work on the psycholinguistics of idiomaticity. Traditional theories presume that idioms, such as *flip your lid* and *blow your stack,* have arbitrary meanings because their figurative interpretations cannot be predicted from an analysis of their individual parts. However, recent psychological data suggest that the meanings of idioms are not arbitrary, but can be explained in part by independent conceptual metaphors. For instance, both *flip your lid* and *blow your stack* are specific instantiations of conceptual metaphors: The mind is a container, and anger is heated fluid in a container (Gibbs & O'Brien, 1990; Gibbs & Nayak, 1991; Lakoff, 1987; Nayak & Gibbs, 1990). These conceptual metaphors provide

coherence to many idioms with similar figurative meanings and to many literal expressions (e.g., *My anger welled up inside me* and *I got a rise out of him*).

One way of experimentally assessing the possible role of conceptual metaphors in motivating idiomatic meaning has been to examine people's mental images for these phrases. Gibbs and O'Brien (1990) reported the findings from a series of studies demonstrating that people's mental images for idioms are constrained by different conceptual metaphors. For example, people's images of the idioms *blow your stack, flip your lid,* and *hit the ceiling* share similar characteristics such that stacks are blown, lids flipped, and ceilings hit because of internal pressure that causes the involuntary release of some substance upward in a violent manner. We argued that the consistency of meanings for different idioms with similar figurative interpretations comes from the constraining influence of conceptual metaphors that provide part of the link between an idiom and its figurative meaning. On the other hand, people's mental images for nonidiomatic phrases, such as *blow your tire, flip your hat,* or *hit the wall,* are much more varied because these phrases are not motivated by preexisting conceptual metaphors.

Other research has shown that the metaphorical description of emotion concepts like anger (e.g., anger is animal behavior and anger is heated fluid in a container) in discourse contexts facilitates people's speeded understanding of different idiomatic phrases, such as *bite your head off* and *blow your stack* (Nayak & Gibbs, 1990). More recent studies have shown how the specific entailments of idioms reflect the source-to-target-domain mappings that preserve the cognitive topology of the source domain (Gibbs, in press). Participants in these studies were questioned about their understanding of events corresponding to particular source domains in various conceptual metaphors (e.g., the source domain of heated fluid in a container for the metaphor *anger is heated fluid in a container*). For example, when presented with the scenario of a sealed container filled with fluid, the participants were asked about something about causation (e.g., "What would cause the container to explode?"), the 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 violent manner?").

Overall, the participants were remarkably consistent in their responses to the various questions (78% when averaged across the different source domains and questions). To give one example, people responded that the cause of a sealed container exploding is the internal pressure caused by the increase in the heat of the fluid inside the container, that this explosion is unintentional because containers and fluid have no intentional agency, and that the explosion occurs in a violent manner. More interesting, though, is that people's intuitions about various source domains map onto their conceptualizations of different target domains in very predictable ways. Thus, other studies showed that when people understand anger idioms, such as *blow your stack, flip your lid,* or *hit the ceiling,* they inferred that the cause of the anger is internal pressure, that the expression of anger is unintentional, and that it is done is an abrupt violent manner. These data show how the metaphorical mappings between source and target domains in long-term memory preserve critical aspects of their source domains (i.e., their cognitive topology), mappings that directly influence people's understanding of idioms. Therefore, it makes sense that the conceptual metaphors underlying the meanings of, say, certain anger idioms (e.g., the mind is a container and anger is heated fluid in a container) entail specific inferences about the causes, intentionality, and manner of how the anger is conveyed.

My aim in this section was to review just some of the evidence in cognitive science on the metaphorical basis of everyday thought. This evidence suggests that verbal metaphors do not simply reflect temporary, ad hoc categories, but more permanent metaphorical categorizations of experience. But do conceptual metaphors influence comprehension of verbal metaphors?

Do Conceptual Metaphors Influence Comprehension of Verbal Metaphors?

Glucksberg and Keysar (1990) did not discuss in any detail the conceptual view of metaphor proposed in this article, but they did reject the idea that people use conceptual metaphors when understanding novel metaphorical utterances. They considered this possibility by asking people to describe what someone might mean by the statement *A lifetime is a day,* a verbal expression that reflects one conceptual metaphor about life underlying many common expressions, as well as various poetic comparisons, such as Dylan Thomas's (1953) plea to his dying father: "Do not go gentle into that good night / Rage, rage against the dying of the light." Only 25% of the 18 participants in their study gave any indication of some sort of elaborated conceptual analogy between dawn and birth, dusk and old age, or night and death; 75% gave simpler paraphrases of the metaphor, such as "A life is short." Thus, even with a direct statement of the lifetime is a day conceptual metaphor, people do not necessarily see the mappings between parts of the day to stages in a person's life. Glucksberg and Keysar argued on the basis of these findings that conceptual metaphors do not always bear on the comprehension of verbal metaphors.

Asking people to describe the meanings of conceptual metaphors such as *a lifetime is a day* may not be the best way of investigating whether these conceptual structures motivate our ordinary comprehension of verbal metaphors. My previous research has shown that people can easily match idiomatic phrases to the conceptual metaphors that underlie these phrases' figurative meanings (Nayak & Gibbs, 1990). In a similar manner, I recently presented 16 people with the metaphor *A lifetime is a day* and asked them to check off from a list of 16 phrases those statements that best reflected the meanings of this metaphor. Of the 16 statements, 8 reflected entailments of the conceptual analogy (e.g., *birth is dawn, maturity is noon, dusk is old age,* and *night is death*), and 8 statements reflected more superficial paraphrases of the metaphor (e.g., *life is short, life has 24 parts,* and *life is one mark on a calendar*). On average participants checked off 7 statements as being related to the meanings of *A lifetime is a day.* Of all the statements selected by the participants, 83% reflected entailments of the underlying conceptual analogy between different parts of the day and different parts of a person's life. These findings indicate that people can readily recognize the relationship between verbal meta-

phors and the underlying conceptual metaphors in long-term memory that motivate their meanings.

One of the examples that Glucksberg and Keysar (1990) considered in some detail is *Some marriages are iceboxes.* I recently asked 18 people to describe their mental images for this verbal metaphor to see if people's metaphorical conceptualization of relationships constrain their understanding of this phrase (cf. Gibbs & O'Brien, 1990). In their descriptions, 84% of the participants reported some image of a large freezer (varying in size from a large refrigerator up to a walk-in freezer) with a married couple sitting or standing in a frozen position. When specifically asked, 88% of the participants stated that the couple did not enter the freezer voluntarily, 94% suggested that the couples were quite unhappy to be there, 74% suggested that each spouse was unhappy with the other person, and 79% claimed that the couple could not easily get out of the freezer. These specific descriptions of people's mental images for *Some marriages are iceboxes* reflect the constraining presence of the conceptual metaphor *relationships are containers.* This same metaphorical mapping between dissimilar knowledge domains also motivates the meanings of other verbal metaphors (e.g., *My marriage was a hellhole* and *My relationship was a jail cell*), in addition to numerous conventional expressions (e.g., *We felt trapped in our relationship, We needed more space in our marriage, I got out of that affair, I was dumped by my husband,* and *I found myself in an adulterous affair*).

When a different group of 14 people were asked to describe their mental images for the phrase *We felt trapped in our relationship,* 85% described a couple in a room (ranging in size from a small closet to a bedroom), 78% reported that the couple was not getting along with each other, 92% claimed that the couple wanted to get out of their room, but were unable to do so (77%). These data are remarkably similar to those obtained for *Some marriages are iceboxes,* again because of the similar conceptual metaphor that motivates the meanings of these different assertions.

Finally, another group of 13 people were asked to describe their mental images for the phrases *Some marriages lack affection.* The participants' mental images for this phrase were, not surprisingly, much more varied that for the other expressions. Only 39% of the participants' responses to specific questions reported that the couple's behavior was involuntary, 53% suggested that the couple was unhappy, and only 42% claimed that the couples could not change the situation. These data contrast with the mental images reported for *Some marriages are iceboxes* and *We felt trapped in our relationship* because *Some marriages lack affection* is not motivated by the similar conceptual metaphor *relationships are containers.*

These data suggest that people's comprehension of verbal metaphors makes use of underlying conceptual metaphors from long-term memory, conceptual structures that motivate the meanings of figurative phrases such as *Some marriages are iceboxes* in the first place. Glucksberg and Keysar (1990) agreed that certain contexts may set up conceptual structures that can facilitate metaphor comprehension, but they dismissed the possibility that these conceptual structures could be based on the metaphorical mappings of dissimilar source and target domains. As mentioned earlier, metaphorical descriptions of various emotion concepts in discourse contexts clearly facilitate people's understanding of idiomatic phrases that are motivated by similar kinds of metaphorical mappings (Nayak & Gibbs, 1990). Glucksberg and Keysar also noted that the context for understanding verbal metaphors such as *Some marriages are iceboxes* might presuppose cultural norms about marriages without relying on any specific conceptual metaphors. Yet many cultural norms are partially constituted by metaphorical concepts. For example, ethnographic researchers have documented that people's cultural models for marriage in America are structured by a small set of metaphors (Quinn, 1987). The metaphorical nature of cultural norms provides an important reason why many discourse situations may facilitate understanding of verbal metaphors that express similar mappings of source and target domain information.

Determining the role that conceptual metaphor plays in the ordinary understanding of verbal metaphor might ultimately depend on how psychologists and linguists define understanding. The data I have presented suggest the possibility that people make sense of many figurative expressions because of their metaphorical knowledge in long-term memory. But my investigations of how metaphors make sense in having the meanings they do only examine people's interpretation of figurative expressions. My findings do not necessarily bear on the possibility that people ordinarily, automatically instantiate preexisting metaphorical mappings in long-term memory during the immediate, on-line processing of verbal metaphors. More sensitive on-line experiments are clearly needed to establish the conditions under which people ordinarily activate conceptual metaphors during metaphor comprehension. One hypothesis is that people use preexisting metaphorical mappings when they reflect on the meanings of verbal metaphors, but they do access this metaphorical knowledge in long-term memory during the immediate, on-line processing of linguistic metaphors. Another possibility is that people comprehend metaphorical statements by instantiating conceptual metaphors from long-term memory at the same time they engage in ad hoc categorization. Although there is evidence to suggest that people use their underlying metaphorical knowledge to interpret verbal metaphors, other ad hoc categorization processes may still contribute to metaphor understanding in the way that Glucksberg and Keysar (1990) suggested.

Conclusion

My claim in this article is that the class-inclusion view of metaphor understanding does not properly acknowledge the role of metaphor in everyday cognition. Metaphorical expressions are not simply the result of temporary, ad hoc categorization processes. Instead, and more powerfully, metaphor is a fundamental scheme in long-term memory by which people makes sense of their experience. Metaphorical concepts in long-term memory explain why many verbal metaphors seem so apt (i.e., are consistent with our experience) and are so easily comprehended. Psycholinguistic theories have not yet acknowledged the constraints that permanently established conceptual metaphors place on people's comprehension and appreciation of both mundane and novel metaphorical expressions. The challenge for Glucksberg and Keysar is to reconcile their class-inclusion model with the evidence suggesting that conceptual

metaphors exist and influence metaphor understanding. Proponents of the conceptual metaphor view face the challenge of showing exactly how and when tacit metaphorical knowledge is used in the on-line processing of verbal metaphor. Finally, the challenge for experimental psychologists is to find other empirical methods that can assess how, and to what degree, conceptual categorization is determined, and perhaps constituted, by metaphor.

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