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When love is not a journey: What metaphors mean☆

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Abstract

Lakoff (1987, 1993) has argued that the comprehension of metaphorical language is mediated by metaphoric correspondences that structure our understanding of abstract concepts. We take issue with the assumptions of this argument and discuss the lack of empirical support for several predictions that follow from it. As an alternative, we propose a 'minimalist' account of metaphor in which comprehension is conceived as a search for an 'attributive category' that is exemplified by the metaphor vehicle. © 1999 Elsevier Science B.V. All rights reserved.

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1. Introduction

How do people understand ordinary conversational metaphors such as *Sam is a pig*, *My job is a jail*, or *Our love has become a filing cabinet*? The traditional view in psychology, linguistics, and the philosophy of language treats such expressions as false and uninterpretable unless they are recast explicitly or implicitly into similes. For example, the assertion *Sam is a pig* is literally false, but if it is transformed into the simile *Sam is like a pig*, then it is true (Davidson, 1978). After all, any two things can be similar in any number of ways. The problem to be solved is how to specify the similarities between the two concepts that motivate the use of the simile. Is Sam like a pig in that both are vertebrates, or are there some other, more interesting grounds for the asserted resemblance?

Most readers would agree that being a vertebrate is not likely to be the intended similarity between Sam and a pig. The metaphor vehicle, *pig*, provides properties

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that can be attributed to the metaphor topic, *Sam*, but not just any properties. Following Grice's (1975) maxims on cooperation in conversation, only relevant and informative properties should be attributed to the metaphor topic. In the case of Sam and pigs, likely candidate properties would include filth, slovenliness, or gluttony, depending on the context of the utterance. In the case of love and filing cabinets, likely candidate properties would include business-like, organized, and by implication, a regrettable lack of passion and romance.

Where do candidate properties come from? One possibility is that metaphoric comparisons are understood via a feature-matching process, wherein the features of both the topic and vehicle are exhaustively checked against one another (Wolff and Gentner, 1992). Once matching features are identified, those that are relevant and informative can then be selected as the grounds for the comparison. This general model fails for the important case where the metaphor topic and vehicle concepts do not have any features or properties in common whatsoever. Consider, yet again, the vile accusation that *Sam is a pig*. For people who do not know the particular Sam referred to, there can be no mental representation of Sam that includes such properties as dirty, slovenly or gluttonous. On a simple property-matching model, the assertion that Sam is a pig cannot be understood because no relevant property matches can be found.

An alternative to property-matching is property attribution. For metaphoric comparisons, the vehicle term, e.g. *pig*, provides candidate properties that can plausibly be attributed to the topic, *Sam*. But how are these properties identified and selected? Consider how similarity assertions in general might be treated. If asked how oranges and lemons are alike, most people would reply that they are both citrus fruits. How are oranges and grapes alike? They are both fruits. Oranges and lamb chops? Both are foods. Oranges and llamas? Both are organic or alive. In each case, the similarity between the two concepts can be initially described in terms of membership in a common category. The more specific the category, the more similar the two concepts are to one another.

Metaphoric comparisons can be viewed in essentially the same way. When someone says that 'my job is like a jail', job and jail are cast into a common category, viz., situations that are confining, difficult to get out of, unpleasant, etc. How might such a category be named? Roger Brown (1958: 140) provided an answer: "Metaphor differs from other superordinate-subordinate category relations in that the superordinate is not given a name of its own. Instead, the name of one subordinate (i.e. the [metaphor] vehicle) is extended to the other". In the metaphor *My job is a jail*, the term 'jail' is used as the name of the superordinate category to which the literal jail and the metaphor topic, my job, both belong (see Fig. 1). Thus, metaphoric comparisons can be expressed as category assertions, and vice versa: *My job is a jail* and *My job is like a jail* are, for most intents and purposes, interchangeable (Glucksberg and Keysar, 1990). Note that this is not true for literal comparisons. Although copper is *like* tin, one cannot say that copper *is* tin.

In metaphors, the vehicle term thus has two potential referents: the literal referent (e.g., actual jails), and the category of things or situations that the metaphor vehicle exemplifies (e.g., situations that are confining, oppressive, etc.). When such a cate-

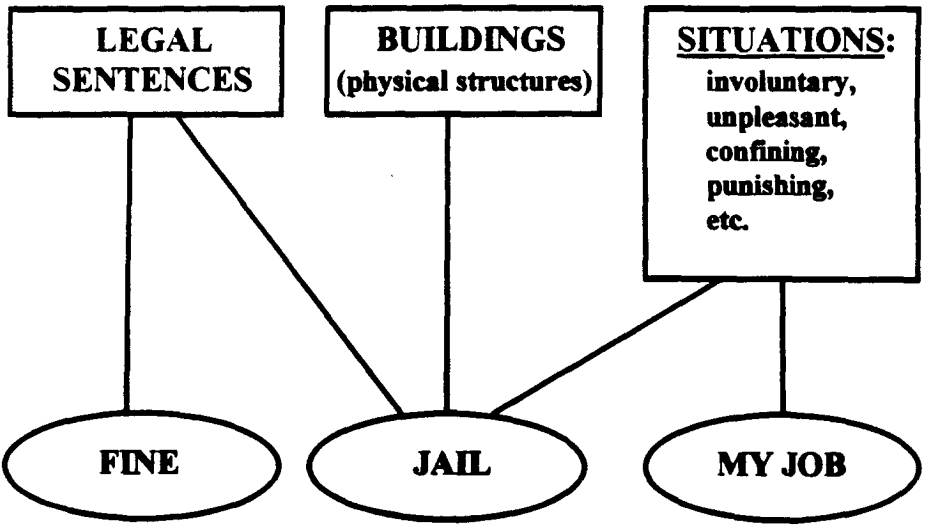

Fig. 1. Comprehension of the metaphor *my job is a jail* as a category-inclusion assertion.

gory is used to characterize a metaphor topic, it functions as an attributive category in that it provides the properties to be attributed to the metaphor topic. The category of 'jail' in its broadest sense is such an attributive category.

With extensive use, a metaphor's meaning can become conventional. When this happens, heretofore non-lexicalized categories, such as disastrous military interventions, become lexicalized, as in the expression *Cambodia has become Vietnam's Vietnam*. Eventually, originally metaphoric meanings are listed as conventional word senses in dictionaries. For example, among the several senses of the word *butcher*, the Random House dictionary of the English language lists 'to bungle or botch; to butcher a job'. To understand such conventionalized expressions, knowledge of the lexicon would suffice. But what additional kinds of knowledge are needed to understand novel expressions, such as *Our love has become a filing cabinet*?

2. Knowledge sources for novel metaphors

What do people have to know about the concepts *love* and *filing cabinets* in order to understand what a speaker might intend by the assertion *Our love has become a filing cabinet*? From a minimalist communicative viewpoint, people must be able to infer the potentially relevant properties of both the metaphor topic (e.g., *our love*) and metaphor vehicle (e.g., *filing cabinet*). Because the topic and vehicle play different roles in metaphor, the kinds of properties relevant for each will differ. Metaphor topics are the given information in metaphorical assertions, while metaphor vehicles are the source of new information. Put most simply, the vehicle is used to characterize or describe the topic. Some property or set of properties of the metaphor vehicle is attributed to the metaphor topic.

For any given metaphor topic, certain dimensions of property attribution will be potentially relevant, while others will not. For the topic *our love*, dimensions such as duration (ephemeral vs. eternal), level of emotional arousal (dispassionate vs. passionate), and level of commitment (flighty vs. dedicated) could be relevant (among many others). Dimensions such as financial cost, size, or shape would be either irrelevant or non-applicable to the topic *our love*. To be relevant, a characterization on any particular dimension must be diagnostic in the sense of discriminating the particular metaphor topic from its cohort of plausible alternatives. Hence, a passionate love is importantly different from a dispassionate love, while an expensive love need not be importantly different from an inexpensive one. Relevance for metaphor topics thus might best be described at the level of dimension of variation rather than at the level of specific properties. On this view, metaphor topics provide affordances for description along relevant dimensions of property attribution.[1]

A metaphor vehicle, in contrast to a metaphor topic, must provide specific properties along just those dimensions that are relevant to a particular metaphor topic. The metaphor vehicle *butcher*, for example, can be used to attribute the general property of 'bungling' to a metaphor topic, but different topics would require different instantiations of bungling. Surgeons who are butchers cut human tissue in such a way as to produce a bloody mess, whereas a pianist who butchers a Chopin nocturne causes aesthetic rather than physical anguish. Metaphor vehicles that are prototypical or emblematic of the category that they refer to should be among the easiest to understand, provided that the metaphor topic is a relevant one. Thus, pianists and surgeons as well as skilled cabinet makers can butcher their respective jobs. Filing clerks, on the other hand, are not perceived as skilled workers, and thus *My filing clerk is a butcher* does not seem apt.

Understanding a metaphor thus requires two kinds of knowledge. First, one must know enough about the topic to appreciate which kinds of characterizations are interesting and meaningful, and which are not. To understand the surgeons–butchers assertion, for example, one must know that it is important for surgeons to be skillful and precise. Second, one must know enough about the metaphor vehicle to know what kinds of things it can epitomize. The most apt and comprehensible metaphor vehicles are prototypical members of the attributive category that they exemplify. Thus the literal *jail* is a prototypical member of the category of things or situations that are unpleasant, confining, difficult to get out of, etc. Conventional metaphor vehicles such as *jail* can be understood immediately, given a relevant metaphor topic. Understanding a novel metaphor vehicle such as *Our love has become a filing cabinet* may take some time because people must infer an attributive category that filing cabinets exemplify (e.g., organized and business-related matters).

According to this minimalist view, a metaphor vehicle may have different interpretations depending on the metaphor topic and on other contextual constraints. For example, the metaphor *A lifetime is a day* can be interpreted in at least two ways, depending upon the kind of thing that the vehicle *a day* is taken to symbolize. A day can symbolize a rather short time span, and so the lifetime-day metaphor can be

[1] This view shares essential properties with Black's (1962; 1993) interaction model of metaphor.

taken to mean that life is short. Alternatively, the vehicle *a day* can symbolize stages of existence, such that birth is morning, adulthood is high noon, old age is late afternoon, and death, night. This latter interpretation illustrates an alternative to our minimalist view, the maximally rich view proposed by Lakoff and his colleagues (e.g., Lakoff and Johnson, 1980; Lakoff, 1987; Lakoff and Turner, 1989). According to this view, metaphors are understood via systematic mappings between topic and vehicle concept domains. These mappings are presumed to be part of the human conceptual system. Whenever a metaphor is used, people automatically access the relevant conceptual mappings in order to arrive at the correct interpretation.

What might such systematic mappings look like? Consider the concept of love. Love is said to be conceptualized in terms of deep conceptual metaphors that assimilate the abstract concept of love to more concrete concepts such as containers or journeys. Thus we can speak of falling *in* love because one conceptualization of love is in terms of containers, and we can speak of our love going *off course* because love can be conceptualized as a journey (Lakoff, 1990; Lakoff and Turner, 1989). Within each of these metaphoric domains are systematic mappings between the properties of the source domain, in this case journeys, and the target domain, in this case love. Fig. 2 provides some examples of mappings between a source and target domain.

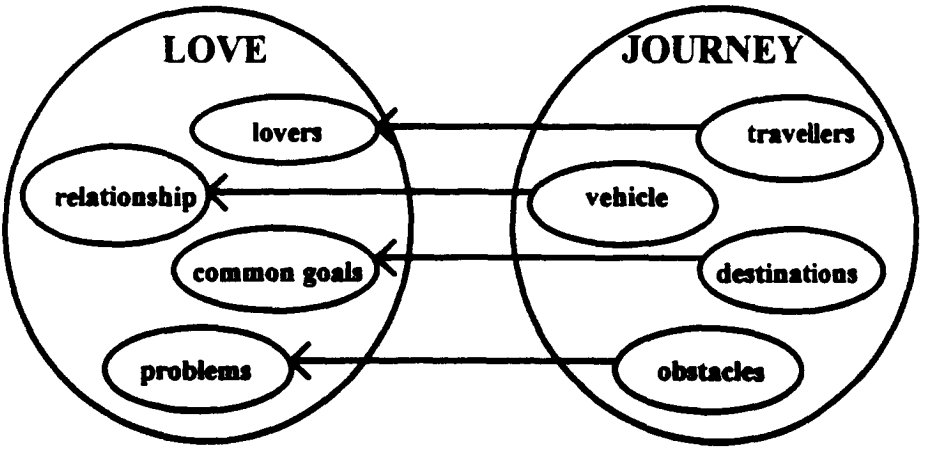

Fig. 2. Hypothetical mappings between the domains of 'love' and 'journeys'.

This set of mappings makes it possible for people to produce and to understand expressions that explicitly exploit those mappings. Examples of such expressions include: *Our relationship is at a crossroads*, *My marriage is on the rocks*, *Love is a two-way street*, etc.

How do the minimalist and maximalist views differ? First, our minimalist view does not assume that rich conceptual mappings between specific source and target domains are explicitly represented as part of our conceptual structure. Lakoff's maximalist view posits the existence of thousands of such mappings. Second, the mini-

malist view assumes that people actively construct interpretations of utterances in discourse, while the maximalist view assumes that most interpretations are retrieved from semantic memory. Third, the knowledge sources for the two views differ substantially. In the minimalist view, conventional attributive categories, e.g., *butchers*, may be retrieved from semantic memory, but different metaphor topics produce different and often novel instantiations of these categories. Furthermore, for novel metaphor vehicles people can construct novel attributive categories (cf. Barsalou, 1983, on construction of novel functional categories). For example, during the 1992 election campaign in the United States, George Bush could assert (with utter confidence that he would be understood) that an opposing candidate was *doing a Clinton*. From Lakoff's point of view, such expressions could only be understood if there were a relevant and accessible conceptual metaphor in semantic memory.

The first experiment to be reported here provides a preliminary test of these two positions. According to our attributive categorization view, a metaphor vehicle, in the context of a specific metaphor topic, acts as a cue for the speaker to infer or construct a relevant category to which both topic and vehicle belong, with the following important constraints. The metaphor vehicle must, to some degree, epitomize or symbolize that category. The metaphor topic, by virtue of being assigned to that category, is characterized along one or more relevant dimensions. Thus, the specific literal, taxonomic category of the metaphor vehicle can be quite irrelevant. For the love–filing cabinet metaphor, a relevant category for the metaphor vehicle might be 'organized and business-like things'. An irrelevant category might well be filing cabinets' superordinate category 'containers'.

On Lakoff's conceptual metaphor view, any metaphor that uses *filing cabinet* as a vehicle must employ abstract correspondences between 'containers' and the conceptual domain of the topic. As Lakoff (1993: 227–228) puts it: "The system of conventional conceptual metaphor is mostly unconscious, automatic, and is used with no noticeable effort, just like our linguistic system and the rest of our conceptual system". The only cue available for selecting an underlying conceptual metaphor is the metaphor vehicle itself. Thus, the semantic (literal) category of the vehicle concept is automatically activated in the form of source-to-target mappings that 'the system of conventional conceptual metaphors' provides.

We tested this hypothesis by asking college students to provide interpretations of metaphors that, on Lakoff's view, should be interpreted in terms of conventional conceptual metaphors. Specifically, we used metaphoric expressions that, theoretically, are rooted in the conventional metaphors LOVE IS A JOURNEY and LOVE IS A CONTAINER. Twelve undergraduates were given three metaphors to interpret and paraphrase: *Our love is a bumpy rollercoaster ride*, *Our love is a journey to the bottom of the sea*, and *Our love has become a filing cabinet*. The interpretations that we obtained for each of these expressions are provided in Table 1.

Consider first, the interpretations of *Our love is a bumpy rollercoaster ride*. Of the twelve interpretations, only one includes an explicit reference to or mention of a journey-related concept, the interpretation given by subject 6 (mood elevator). All twelve interpretations, including that of subject 6, mention either adventure/excitement, or instability in the form of alternating positive and negative aspects of *our*

Table 1
Three love metaphors and their interpretations

A. *Our love is a bumpy rollercoaster ride.*
1. We have our good days and bad days.
2. Although we might have highs and lows in the relationship, we're having fun while it lasts.
3. Our love varies a great deal, from extremes of joy and happiness to extremes of pain and sadness.
4. We have some really troublesome times, but they are countered by some terrific times.
5. We have good times and bad times together.
6. We are in a mood elevator that won't let us out on any floor.
7. Our love is full of ups and downs.
8. Our love is exciting, and not very stable.
9. Our love is full of fights and bad times, but accompanied with frequent high, exhilarating times.
10. There are good times and times [sic] in our relationship.
11. Our love has its ups and downs but is always exciting.
12. Our love determines whether life at the moment is up or down.

B. *Our love is a voyage to the bottom of the sea.*
1. Our relationship is not going to work – it's going to kill us both.
2. Our love presents new and exciting opportunities for us to discover ourselves and each other.
3. Our love is constantly revealing the hidden delights of an uncharted, unpredictable world.
4. Through our love, our deepest emotional natures have been revealed and understood.
5. Our love is mysterious and dangerous.
6. We're drowning in each other's problems.
7. We share experiences together that we have never had before.
8. Our love is exciting and dangerous.
9. Our love is a series of discoveries of the unknown.
10. Our love is dangerous and disastrous for us both.
11. We don't know where our love is headed.
12. We don't talk enough. We are always silent when we're together.

C. *Our love is a filing cabinet.*
1. Our love is too organized and staid; we have no spontaneity or originality.
2. Our love is open for everyone to see – there are no secrets between us.
3. Our love is orderly and able to be taken out or put away as desired.
4. Our love holds many memories.
5. Our love contains a lot of emotions.
6. We make love like accountants; we're just going through the motions.
7. We save all of our experiences together in our memory.
8. Our love is very organized and proper.
9. Our love is very straightforward and organized – we plan how much time to spend together, what to do, etc.
10. Our actions are perfunctory.
11. Our love contains everything that is important in our lives.
12. Our love is bland and business-like.

love. Clearly, journey-specific references are not explicitly present in the interpretations, nor is such material even implied, unless 'discoveries of the unknown' (subject 9) counts as a journey-related interpretation. For this metaphor, at least, journey-love mappings are not required for interpretation.

Perhaps such mappings were not used because the metaphor vehicle, *bumpy rollercoaster ride*, has a conventional meaning that does not entail any journey–love mappings. If so, then we might expect novel metaphors that explicitly contain a journey-related reference to automatically recruit relevant journey–love mappings. Consider, then, the metaphor *Our love is a voyage to the bottom of the sea*. This is not a conventional metaphor because the vehicle *voyage to the bottom of the sea* does not have a stock, conventional meaning. On Lakoff's conceptual metaphor view, people should automatically access journey–love mappings to understand the metaphor. If people do rely on journey-love mappings to interpret journey–love metaphors, they should certainly do so for this metaphor, because an explicit reference to journeys (i.e., the word *voyage*) appears in the metaphor. In addition, if journey–love mappings are accessed, then we should expect considerable agreement among people's interpretations. To the extent that people share common conceptual mappings, people's interpretations should be consistent with one another's. On our attributive category model, the vehicle *voyage to the bottom of the sea* does not exemplify any particular attributive category, and so we expected considerable variability in people's interpretations. As expected from the attributive category view, people's interpretations greatly varied, from 'it's going to kill us both' (subject 1) to 'our deepest emotional natures have been revealed' (subject 4). The inferential strategy for arriving at the interpretations that we obtained can be characterized as an attempt to answer the following question: What properties of the concept *voyage to the bottom of the sea* might plausibly be attributed to the concept *our love*? Among such properties are some that are relevant to the more general concept of journeys. Included among these are the properties mentioned in several of the interpretations we obtained: discovery, uncharted ... world, and the notion of where 'our love is headed'. At the same time, most of the interpretations made no reference to journey–love mappings of any kind, e.g., subject 12, 'we don't talk enough', presumably drawn from the belief that the bottom of the sea is a silent place. The variability of interpretations, together with the dearth of journey-related interpretations, provide no support for the hypothesis that people automatically retrieve specific source-target domain mappings in order to understand a novel metaphor such as the *love-bottom of the sea* example.

The third metaphor that we used to assess whether people automatically (and hence invariably) retrieve specific source–target domain mappings was drawn from the conceptual metaphor RELATIONSHIPS ARE CONTAINERS. According to Lakoff and Johnson (1980), expressions such as *falling in love*, *We are in this together*, and *She fell out of love with me* rely on container–relationship mappings where the relationship is conceptualized in terms of a container that can hold things such as emotions, and from which things can be removed. If people do rely on container-love mappings to interpret metaphors that allude to containers, then a metaphor such as *Our love is a filing cabinet* should be interpreted in container-relevant terms. In addition, for the reasons given above, interpretations should be consistent across people.

Alternatively, if people try to infer what sorts of things or situations the concept *filing cabinet* epitomizes, then one would expect some variability from person to person. Some people might infer container-like states of affairs, others might infer

that filing cabinets connote organized and business-like properties. The interpretations that we obtained are consistent with this expectation. The paraphrases listed in Table 1 do not reflect a single, invariant interpretation. Instead, there seem to be at least three clusters of interpretations: subjects 1, 6, 10, and 12 take the expression as a negative comment on the monotony and lack of passion in the relationship; subjects 2, 3, and 8 take it as a relatively neutral comment on the organized aspects of the relationship; and subjects 4, 5, 7, and 11 take it as a positive comment on the emotional experiences 'contained' in the relationship, consistent with the RELATIONSHIPS ARE CONTAINERS idea.

In this admittedly preliminary set of data we find no evidence that people automatically and invariably draw upon fixed sets of domain-to-domain mappings in order to interpret metaphors. This conclusion holds whether a metaphor vehicle is highly conventionalized, e.g., *rollercoaster ride*, or is novel and unfamiliar, e.g., *filing cabinets*. While people are undoubtedly capable of producing, storing, and recognizing analogies between conceptual domains, analogical reasoning (of the sort assumed by Lakoff) is apparently not a necessary step in metaphor comprehension. As evidenced in our paraphrase data, the rule of parsimony in interpretation obviates the need for a cumbersome (and potentially misleading) process of analogical access.[2]

3. Conceptual analogies and idiom comprehension

In drawing this conclusion concerning the role of conceptual analogies in discourse, we do not intend to deny the possibility that useful analogies may be available in semantic memory, and may underlie the use and comprehension of some types of expressions. In particular, one common type of idiom might very well draw upon pre-stored interdomain mappings, namely, idioms that seem to represent underlying metaphorical conceptions of such abstract entities as anger, fear, sadness, and happiness, among others. Anger, for example, can be conceptualized in any one of several specific ways (Lakoff, 1987; Lakoff and Johnson, 1980). One conceptual metaphor for anger is that of a heated fluid under pressure. Idioms that seem to reflect this conceptual metaphor include *flip your lid*, *let off steam*, *blow your top*, and *get hot under the collar*. An alternative conceptual metaphor for anger is that of animal-like behavior, as reflected in such idioms as *bite someone's head off* and *jump down someone's throat*. When people encounter an idiom such as *blow his top* in a conversation, is the conceptual analogy of anger as heated fluid under pressure (a) available and (b) accessible? By availability, we mean that a conceptual structure

[2] If a speaker were to utter 'our love is a filing cabinet' with the intention of conveying despair over her staid, business-like love affair, then the automatic retrieval of the RELATIONSHIPS ARE CONTAINERS analogy could potentially mislead the addressee. Like subject 5, the addressee might understand the speaker to mean that the relationship 'contains' her passion. Since conceptual analogies are automatically and unconsciously retrieved (according to Lakoff), the influence of discourse context cannot repair this state of affairs. We will return to the problem of context in the conclusion section.

is represented in semantic or long term memory, and could be retrieved under some, but not necessarily all, circumstances. By accessibility we mean that a conceptual structure is not only available, but can be accessed in a particular context to participate in either production or comprehension processes (for a fuller discussion of the availability–accessibility distinction, see Higgins et al., 1977; Srull and Wyer, 1979).

By definition, the availability of a conceptual structure is context-independent: it is either stored in memory or is not. Again by definition, the accessibility of any specific conceptual structure is context-dependent. Any given item in memory may be accessible in one context, but not accessible in another. For example, if there is a conceptual analogy of anger-as-fluid-under-pressure in semantic memory, then this conceptual structure is available. It may be accessible in some circumstances but not in others. For example, it may be accessible and used when people have the time to make considered, deliberate judgments. It may, however, be inaccessible, and therefore not used, in ongoing speech comprehension and production when people do not have the time for such judgments.

According to Lakoff (1993), conceptual analogies that underlie common idioms such as *blow one's top* are not only available, they are also automatically and hence invariably accessed during comprehension, regardless of task or context. This is a strong processing claim, one that places extremely narrow constraints on how people interpret linguistic expressions across the entire range of possible contexts, from casual small talk to painstaking textual analysis. Are people so tightly constrained that the surface form of a linguistic expression invariably controls the human cognitive processing system?

There is some evidence that people can recognize analogical relations between idioms and their discourse context when given the time to make reflective judgments. Nayak and Gibbs (1990) asked college students to judge the appropriateness of idioms in specific contexts. The students were given short narratives such as the following (emphases added):

"Mary was very *tense* about this evening's dinner party. The fact that Bob had not come home to help was making her *fume*. She was getting *hotter* with every passing minute. Dinner would not be ready before the guests arrived. As it got closer to five o'clock the *pressure was really building up*. Mary's tolerance was reaching its limits. When Bob strolled in at ten minutes to five whistling and smiling, Mary ...

... *blew her top*".

... *bit his head off*".

In this story, the protagonist's (Mary's) anger is described in terms of increasing pressure and heat – 'making her fume', 'getting hotter', 'pressure was really building up', etc. The story is thus stylistically consistent with idioms that could instantiate the concept of anger as heated fluid under pressure – in this case, *blew her top*. The following scenario was constructed to be consistent with an alternative conception of anger, that of animal-like behavior (emphases added):

"Mary was getting very *grouchy* about this evening's dinner party. She *prowled* around the house waiting for Bob to come home to help. She was *growling under her breath* about Bob's lateness. Her mood

was becoming more *savage* with every passing minute. As it got closer to five o'clock, Mary was *ferociously angry* with Bob. When Bob strolled in at 4:30 whistling and smiling, Mary ...

... *blew her top*".

... *bit his head off*".

Here, the description of Mary's behavior in animalistic terms – 'prowled', 'growling', 'savage', etc. – is consistent with idioms that instantiate animal-like behavior, such as *bit his head off*.

Consistent with the hypothesis that the analogical information in idioms is available and accessible when people have time to make deliberate judgements, the students rated analogically consistent idioms as more appropriate than comparable but analogically inconsistent idioms. Thus, *blew her top* was rated as more appropriate as a completion when anger was described in heat and pressure terms, and *bit his head off* as more appropriate when anger was described in animalistic terms.

On the basis of this finding, Nayak and Gibbs (1990) concluded that readers not only have relevant analogical information available, but that readers also use this information to facilitate idiom comprehension. The differences in appropriateness ratings are taken to reflect the relative difficulty subjects had in interpreting the competing idiom completions. Idioms in story contexts that were matched for analogical information were considered easier to interpret than idioms in contexts using a different conceptual analogy. The appropriateness ratings, on this account, directly reflected ease of interpretation.

There are, however, at least two competing interpretations of these data. First, the appropriateness ratings may not be the product of ease of comprehension at all, but rather the outcome of post-comprehension decision and judgment processes. After all, people might readily notice the relation between pressure-words in a text and the semantic content of an idiom such as *blow one's top* in situations designed to motivate such an analysis. If the subjects in the Nayak and Gibbs' (1990) experiment did recognize relations between textual elements and the idiom choices, then their choices may have been based simply on a preference for stylistic consistency. Second, the data may not even implicate deliberate choices at all. As Kreuz and Graesser (1991) have pointed out, the ratings data may be entirely attributable to simple lexical priming rather than to stylistic consistency *per se*. Words such as *prowled*, *growled*, and *savage* are semantically associated with the word *bite*, as in the idiom *bite one's head off*. There is substantial evidence that the inferences readers draw during text comprehension can be strongly influenced by lexical priming (e.g., McKoon and Ratcliff, 1986; Potts et al., 1988). Thus, even if there were no conceptual analogy in semantic memory underlying the meaning of the idiom *bite one's head off*, the relationship between the words in a text and the words in an idiom could influence subjects' appropriateness ratings.

In view of these problems, we decided to replicate the Nayak and Gibbs study, but with appropriate controls for lexical priming (Glucksberg et al., 1993: experiment 1). In their original materials, only the central protagonist in a story could be the referent of target idioms. We used these original materials as part of a replication of the Nayak and Gibbs study. However, we also used two other item types. The first was an other-person referent version of the original story, in which the hypothetical con-

ceptual analogy information referred to the original protagonist, but the target idioms referred not to that protagonist, but instead to some other person. Thus, if Mary were to be described as 'fuming' in a particular scenario, then the target idiom *blow one's top* would refer to another person in that scenario. If idiom appropriateness judgments are simply a function of which kinds of idiomatically relevant concepts are most accessible in a given context, then the specific referent of the target idiom should make no difference. Thus if anyone in a story is described in 'fuming-anger' terms, then anyone else in that context would tend also to be described in those terms. To control for lexical priming per se, we used a third type of scenario in which a situation or state of affairs, rather than any person, is described by words relevant to an idiomatic conceptual analogy, e.g., the wind 'roared'. Such non-person descriptions should not evoke any specific emotion concept such as anger, and so should not elicit analogically consistent idiom judgments, unless the lexical items themselves prime such judgments. The target idioms referred invariably to a person in the scenario, e.g., 'she bit his head off'. If lexical priming were the only effective variable, then subjects' judgments of idiom-story appropriateness should not be affected by an idiom's referent. Even when events or situations are described, say, in animalistic terms, subjects should judge that animal-consistent anger idioms are more appropriate than idioms based on other metaphors for anger.

To summarize the logic of our replication, if judgments of idiom appropriateness are based on the specific emotion attributed to a specific protagonist in a given context, then analogically consistent idioms should be chosen as most appropriate only in the original-person referent condition. If people base their choices instead on the basis of which emotion concepts are most accessible in memory in a given context, then there should be no difference between the original and the other-person referent conditions. Either of these two patterns of results would be consistent with the claim that people can use conceptual analogical information for idiom interpretation when such information is available. However, if readers' idiom preferences can simply be primed by the words in a story context, then the same idiom preferences should be exhibited in all three types of stories. People should, for example, choose animal-behavior idioms to describe an angry person even when the story uses a word such as 'roar' to refer not to anger, but instead to the sound of the wind. This latter result would support Kreuz and Graesser's (1991) contention that Nayak and Gibbs' findings are simply an artifact of lexical priming.

Table 2
Percentage of target idiom selections by referent condition

Original Person	Other Person	Non-Person
69.4 %	60.2%	50.9%

Our results were clear. As the data in Table 2 indicate, people preferred idioms that were analogically consistent with story texts. Thus, when any person in a story is described as fuming, then anger idioms that are consistent with heated fluid under

pressure, such as *blow one's top*, are preferred to inconsistent idioms. The particular person or persons involved do not seem to matter all that much, suggesting that the effective mediating factor is the general kind of idiom involved, not its specific referent. In contrast, when words such as fuming are used to describe non-person entities, such words presumably do not activate person-relevant concepts such as anger. This in turn implies that the choice patterns in our person-referent conditions were not an artifact of lexical priming per se.

The results of our replication support the claim that people can recognize the relations between an idiom's analogical underpinnings and discourse context. The question remains, however, as to whether this analogical information is retrieved automatically as a part of the normal reading comprehension process. In order to answer this question, we adapted the stories used in the idiom-choice experiment for a reading-time task (Glucksberg et al., 1993: experiment 2). People read the stories, one line at a time, and a story could end either with an analogically consistent or an analogically inconsistent idiom. If conceptual analogies are automatically accessed during reading, when considered judgments about the text are not required, then analogically consistent idioms should be read faster than inconsistent idioms.

We used two of the idiom-story types, those in which the idiom referred to a story's original protagonist, and those in which the idiom referred to another person. Based on the results of our idiom choice experiment, we would expect that analogically consistent idioms would be read more quickly than inconsistent idioms irrespective of referent condition because specific kinds of anger should be activated in both conditions. The original- vs. other-person referent comparison serves as a manipulation check because switching the topic or focus of a story in mid-stream should disrupt performance (Garrod and Sanford, 1988). Garrod and Sanford found that reading times were slowed when a story topic shifts in a text. If reading times in our task are not affected by a switch from original- to other-person referents, then this would indicate that our dependent measure (reading time) is simply not sensitive enough to detect differences in comprehension difficulty.

Table 3
Mean reading times by analogical consistency and referent condition

	Consistent	Inconsistent	Combined
Original Person	1902	2073	1988
Other Person	2372	2274	2323
Combined	2137	2174	

Again our results were clear (see Table 3). Mean reading times were reliably slower in the other-person referent condition (2323 msec) than in the original-referent condition (1988 msec). This finding indicates that our reading time measure is sufficiently sensitive to detect differences in comprehension difficulty. In contrast to switching story referents, analogical consistency had no discernible effect on reading times. The mean reading times for analogically consistent and analogically inconsis-

tent idiom completions were 2137 msec and 2174 msec, respectively. Within the original-person referent condition, the mean reading times for analogically consistent and inconsistent idioms were 1902 msec and 2073 msec, respectively. The difference between these two conditions is 171 msec, roughly half the magnitude of the 335 msec difference between the mean original- and other-person reading times. The effect of analogical consistency within the original-person referent conditions did not approach significance, t_s (31) = 1.38, p >.16; t_i (15) = 1.01, p >.26. These results replicate Gibbs (1992), who reported a similar failure to find effects of analogical consistency on comprehension performance as measured by reading times.

The absence of any main or interaction effects involving analogical consistency, together with a robust effect of referent version, suggests that even when a specific conceptual analog for an emotion is available in a story, that conceptual analog is not automatically accessed during idiom comprehension. Persons in a story may be described, for example, as being angry in the hot and fuming sense, yet this did not facilitate the comprehension of an analogically consistent idiom such as *blow one's top* relative to a different and analogically inconsistent idiom such as *bite one's head off*. As far as the reading times indicate, anger is anger. Our subjects apparently did not take advantage of any conceptual analogical consistencies between story elements and idiomatic expressions when comprehending those expressions. In short, these data provide no support for the claim that conceptual analogies are automatically accessed during idiom comprehension.

4. Conclusions

Earlier in this article we argued that nominal metaphors make use of attributive categories. Conventional attributive categories, such as *butchers*, can be retrieved from semantic memory. Novel attributive categories, such as *filing cabinets*, can be created *de novo* during conversations. The contrasting view offered by Lakoff and his colleagues is that metaphor comprehension is made possible by the availability and automatic accessibility of both generic-level and specific-level interdomain mappings.

With respect to generic-level mappings, we remain agnostic, if somewhat skeptical. People do talk about states in the same way they talk about locations (e.g., 'I have *gotten through* graduate training'), purposes in the same way as destinations ('We have *made it* to *our goal* of finishing this paper'), events in the same way as actions, and so forth. Do these linguistic similarities reflect a conceptual system in which states, purposes, and events can be understood metaphorically in terms of locations, destinations, and actions? Perhaps, but as Jackendoff and Aaron (1991) have pointed out, such a claim rests on a definition of metaphor that is so broad that it loses its traditional denotation. The term 'metaphor' is usually reserved for comparisons involving conceptually distinct entities: e.g., the concepts 'love' and 'journey' can be distinguished from one another, even though they share similarities that could motivate expressions such as 'Our love has been an exciting journey'. In contrast, the source entities involved in the so-called generic-level 'metaphors' are, *a*

priori, proper subsets of their respective target entities: performing an action is a type of 'event', reaching a destination is a type of 'purpose', and being in a location is a type of 'state'. It is not clear what it would mean to metaphorically understand a superset (events) in terms of its proper subset (actions), any more than it would make sense to say 'All birds are canaries'. Whether the 'events' domain and 'actions' domain stand in metaphorical relation, as opposed to a thematically parallel relation, remains an unresolved question.

With respect to specific-level mappings, such as LOVE IS A JOURNEY or LOVE IS A CONTAINER, we again remain agnostic as to whether or not such mappings are part of the human conceptual system. The more specific question that we address in this paper is whether the conceptual analogical mappings described by Lakoff and colleagues provide the basis for metaphor and idiom interpretation. We argue that there is no good reason to suppose so, and very good reasons to suppose not. First, we found that there was no necessary relation between hypothetical specific-level mappings and the interpretations that people generate for metaphors that, *prima facie*, are instantiations of specific-level mappings (e.g., *Love is a bumpy roller coaster ride* or *Love is a voyage to the bottom of the sea*). Second, a critical problem for the mapping hypothesis has yet to be solved. How are people to identify those cases in which a specific-level mapping is relevant? The literal, semantically autonomous taxonomic category of a metaphor vehicle is an insufficiently determinate cue for retrieving a relevant mapping, as reflected in the variability of interpretations for novel metaphors such as *Love is a voyage to the bottom of the sea*, on the one hand, and by the virtual absence of journey-related interpretations for a conventional metaphor such as *Love is a bumpy rollercoaster ride* on the other. Equally problematic are such expressions as *Boys will be boys*. It is quite unclear what specific or general level mappings might be relevant for metaphors of this form, i.e., *An X is an X*. As in such expressions as *Cambodia has become Vietnam's Vietnam*, the referents of the repeated term are different. The first use of the term 'boys' refers to a specific entity (young male individuals), the second 'boys' to a class of entities that the specific entity epitomizes (people who engage in reckless, brash behavior).

The critical problem here is that any thing may have any number of literal or metaphorical taxonomic memberships, of which only some (or one) will be relevant when a thing is referred to. Recall our discussion of category-based, literal similarity at the paper's beginning. When a quarter is compared to a dollar, its status as currency is likely to be accessed. When a quarter is compared to a frisbee, this 'currency' status is irrelevant; 'round object' status *is* relevant and thus highly accessible in this context. With respect to metaphor, the problem for theorists is how to specify which categorical memberships of the topic and vehicle are accessed to create the 'ground', or interpretation. The metaphoric ground cannot uniquely be determined, contrary to Lakoff's claim, from a single taxonomic category that is identified by the metaphor vehicle (e.g., *rollercoaster ride* and *voyage to the bottom of the sea* instantiate the superordinate category 'journeys'). Why? Because there are no *a priori* grounds for determining which set of interdomain mappings are relevant. The alternative that we propose, attributive categories, is a workable solution to this problem. If a metaphor vehicle exemplifies a category to which the metaphor topic can be

assigned in an interesting way, then people will take that category as the ground of the metaphor. If a metaphor vehicle does not exemplify such a category, then interpretations will vary considerably, or may even fail.

Consider an example used by Lakoff (1993), *Heather is a time bomb.* Lakoff claims that this expression is understood via our understanding of anger as something that can explode: ANGER IS HEATED FLUID UNDER PRESSURE ('under pressure' implies a container). On this view, the meaning of the metaphor is derived from a stored correspondence between the degree of anger and the degree of pressure and/or heat. Since a time bomb creates a high degree of heat and pressure when it explodes, the corresponding degree of anger attributed to Heather is high. This mapping of heat and pressure properties is guaranteed, Lakoff argues, by the principle of 'invariance': "metaphorical mappings to the topic preserve the image-schematic structure of the source domain" (Lakoff, 1990: 54). In the case of time bombs, then, the invariance principle ensures that a time-bomb's status in the category of 'entities that give off heat and pressure' will invariably be accessed and mapped to the target domain (Heather).

But consider the expression *Diabetes is a time bomb.* Here, time bombs' status in the 'heat and pressure' category is irrelevant, while the notion of 'something bad happening at some unknown time' that time bombs exemplify is relevant and thus accessed. On our attributive category view, the expression *time bomb* does not automatically activate the mapping from heated-fluid-under-pressure to anger. Instead, time bombs are taken to exemplify anything that has very bad effects inevitably but at some unknown time in the future. Uncertainty, inevitability, and disastrous outcome seem to be the quintessential properties of time bombs at the most general attributive category level. How these properties of the attributive category are instantiated depends on the metaphor topic and the discourse context. People who are 'time bombs' may anger easily and violently, or they may be disastrously error prone. Diseases that are 'time bombs' take their toll at an unknown time in the future. Public policies may be 'time bombs' if their effect on society is unpredictably disastrous. In each context, the properties of an attributive category are realized in a different way. The fact that different contexts can yield varying metaphorical interpretations is a clear violation of the invariance principle. These arguments, together with our data on how people interpret conventional and novel metaphors, lead us to conclude that metaphor comprehension does not require the retrieval of numerous interdomain mappings from semantic memory. Even in domains where the etymology of conventional expressions suggests a systematic analogy (e.g., idioms for anger), there is no evidence that people routinely activate such analogies during comprehension. In situations that warrant contemplation and analysis, such as the study of poetry or creative writing, people may recognize and/or utilize conventional analogies of the sort Lakoff has described. Analogical retrieval in these situations is conscious and deliberate, *not* unconscious and automatic. Our idiom choice experiment demonstrated that people can utilize a conventional analogy to make deliberate judgments about the fit between an idiom and its discourse context. Our reading time experiment demonstrated that the analogical fit between idiom and context can be of no consequence in the comprehension process.

In closing, we would like to remark on the scope and application of theories of figurative language. The 'attributive category' theory we have described here is primarily concerned with discourse-level processing: non-contemplative, speeded, maximally-efficient language processing, in which material that may be 'available' in semantic memory is not routinely or automatically accessed if it is not required for the task at hand. As such, we do not offer our view as a theory of poetic or literary interpretation, although we believe that an art-form level theory should be compatible with a theory at the discourse-level.

A discourse-level theory is also different in scope and application from a theory of thought, which we take Lakoff's 'conceptual metaphor' theory to be. Again, these two types of theories should not be incompatible. One should complement, or at least be coherent with, the other. Cognitive theories of communication and thought are currently in a nascent, somewhat amorphous state. In the flurry of theorizing, what is often obscured is the need for theories that can distinguish between discourse-level and conceptual-level phenomena. As an example of such phenomena in the metaphor domain, consider the distinction between comprehensibility and aptness in the following statements:

'Not all of Einstein's ideas were gold.'
'Not all of Einstein's ideas were platinum.'

The meaning of both statements is clear: Not all of Einstein's ideas were valuable. The statements arguably involve the same conceptualization (in terms of precious metals) of ideas. In Lakoff's terms, both expressions may be said to invoke the conceptual metaphor IDEAS ARE COMMODITIES (Lakoff, 1987). Although they are easily and similarly understood, only the first statement seems apt. On the attributive category view, this difference in aptness is due to a discourse principle such that aptness is determined by how emblematic the vehicle is of its attributive category. Gold is a prototypical member of this category; platinum, although in fact more costly than gold, is not a typical member of this category, at least not in North American culture. The discourse principle operates separately from the (hypothesized) conceptual principle, and most importantly, *cannot be derived from it.*

It is not possible to derive the domain of discourse from the domain of thought and conceptualization. Nor is it, for that matter, an easy business to derive the domain of thought and conceptualization from discourse, as investigators of Whorf's linguistic relativity hypothesis have painfully discovered (Brown, 1958; Glucksberg, 1988). In many respects, Lakoff's attempt to characterize the structure of abstract concepts solely on the basis of linguistic data bears unfortunate similarities to Whorf's endeavor. We do not deny that the domains of discourse and conceptualization must interact in some systematic, yet-to-be-understood fashion. However, the domains are distinct and will require independent theoretical elaboration and development.

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