

# Conceptual Metaphor and Abstract Thought

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David Ritchie (2003b) defended Lakoff & Johnson's (1980) theory of conceptual metaphor against criticism made by Vervaeke and Kennedy (1996). Though Ritchie modified theory of conceptual metaphor, he held fast to the idea that much of abstract thought depends on metaphorical projection from embodied experience. We argue therein lie reductionism's dangers, seriously misrepresenting abstract thought, and a straightjacket—an inability to account for significant cognitive phenomena that are often presupposed by the theory of conceptual metaphor. As an alternative to explanations relying on embodied experience, we propose a more cognitive account of pervasive mappings, e.g., of spatial relations onto other domains. We show our account fits well with procedural knowledge and procedural similarity, factors that Ritchie addressed. Finally, we suggest that conceptual blending theory, a theoretical foundation Ritchie favored for conceptual metaphor theory, cannot do the work he has hoped for.

Our purpose is to assess a lively and thought-provoking article by David Ritchie (2003b). Ritchie has developed a case in favor of cognitive linguistics, a widely influential school that many have suggested has developed effective novel tools “to understand individual and social cognition” (Paxman, 2003, p. 108), and “the primary role grounded and embodied meanings play in language comprehension” (Giora, 2003, p. 28). The school tackles fundamental problems about the literal and the figurative defined first and foremost by Lakoff and Johnson (1980, 1999). It has strongly affected linguistics, psychology, and literary studies (Gibbs, 1992, 1994, 2003; Wilson, 2002) showing, for example, very rapid and possibly automatic effects in experimental psychology studies that examine how one word, such

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as *head*, *leader*, *see*, or *understand*, can prime or be primed by others related to it metaphorically, in ways that may be culturally universal because we have similar bodies no matter what our culture. Gibbs (2003) noted how many expressions imply our vantage point, that is, our body's place in the world, and influence our comprehension thereby. Both Gibbs (2003) and Ritchie (2003b) have pointed out that embodiment theory may show how meaning is related to action and thereby help solve the "grounding" problem: how meaning (our comprehension) gets translated into activity (our bodily reactions). It also has implications for theology and political studies, for example. Its game is well worth the candle. We wish to narrow the focus here to consider Ritchie's (2003a, 2003b) particular contributions and a specific bank of proposed solutions to problems with the school we raised in Vervaeke and Kennedy (1996). Ritchie's proposals are ingenious, but we contend they are not sufficient.

## COGNITIVE LINGUISTICS AND OUR GOALS

Lakoff and his colleagues (Lakoff & Johnson, 1980, 1999; Lakoff & Turner, 1989) wrote a theory of conceptual metaphor in which much of abstract thought is actually generated by metaphorical projection from the domain of embodied experience. The theory has two big parts. The first, colorfully put, is this: Metaphors do not come singly, like hermits. They live in groups. Again colorfully, thought is not just abstract, rarified. Its anchor is a human body, in living experience. These are attractive hypotheses (as we know only too well, for our introduction and criticism of these ideas usually leaves our audiences wanting them to be true, and our criticism to be in vain).

More plainly, metaphors influence the bulk of our thought, the embodiment school suggests, in an implicit fashion. They are usually implied by what a speaker is saying rather than directly spoken. For example, Lakoff and Johnson (1980) nicely argued that formal argumentation is understood via a conceptual metaphor "*ARGUMENT IS WAR*," and that is why we say things such as "*he attacked my argument*," and "*he defended his position*" when we are discussing formal argumentation. Vervaeke and Kennedy (1996; see also Kennedy & Vervaeke, 1993) objected that the theory was unfalsifiable if possible groups of metaphors that might plausibly be linked to a common theme were the only evidence. The objection was that any metaphor about argument that did not fit the "*WAR*" theme would be used as evidence for another theme, such as "*WEIGHING*," "*TESTING*," or "*COMPARING*," so nothing would count as evidence against "*WAR*." In addition, we hazarded there was evidence that terms such as *attack* and *defend* were being used in a way that no longer seemed metaphorical.

Of course, evidence for and against a theory can be brought to bear from many avenues, so the fact that one line of evidence is a cul-de-sac is not the end of the dis-

cussion. Far from it. Finessing the problem we defined with rivalrous groups preventing falsification of a particular proposed group, Ritchie (2003b) responded by arguing for a more expansive interpretation of specific examples and for a more complex interpretation of metaphors. His steps need to be laid out, but first it will be useful for fellow readers to know our final goal.

Ritchie argued that our criticisms point out that the connection between explicit expressions and implicit metaphors can often be “interpreted in multiple ways” (Ritchie, 2003b, p. 126). This much seems like joining forces with our 1996 conclusion. It accepts that “both the level of generality at which implicit metaphors are to be identified and the family of metaphors to which a particular expression belong are indeterminate” (2003b, p. 130) and that such metaphors “have multiple and indeterminate roots” (2003b, p. 130). These are valuable alliances for our conclusions, yet Ritchie argues that these points do “not cancel the considerable evidence for the role of metaphor in conceptual experience and reasoning” (2003b, p. 130). We concur. It is precisely the extent and nature of this role that is under dispute. We accept that use of metaphor is widespread, and often metaphors influence thought. God is our shepherd, or father, or judge, some think, and reckon on consequences. Attention is a mental spotlight or a process demanding mental energy, some think, and discern implications. Programs have viruses and worms, alerting us to some kind of undue proliferation and horrid things spreading steadily, undetected. Let us see how we can characterize Ritchie in this domain.

One danger in the argument that our most abstract thought often has deep roots in embodied experience, via metaphor, is that the abstract matter (with many features, relations, and dimensions) is being reduced to a more primitive material (with fewer aspects and nuances). This is the problem of reductionism. Those who risk arguing from analogy often describe the subtle (e.g., politics of crowds) in terms of the simple (e.g., physical masses in an avalanche). Likewise, beauty might be related to attraction between magnets, with consequences for like and unlike poles pulling and pushing.

Although Ritchie resisted a fully reductionist thesis in which abstract thought is made strongly dependent on metaphorical projection from embodied experience, we argue that in fact he did not escape the problem. We conclude he endorsed an interesting version of a reductionist thesis and vigorously attempted to clarify and defend it. We argue that there are very good reasons to reject the reductionist thesis that ensues. The key implications we come away with form a viable and significant alternative to the claim that conceptual metaphor is based almost entirely on embodied experience. If we are on track, our alternative can account for some of Ritchie’s important insights, notably about the role of experience and procedural knowledge in metaphoric comprehension.

We hope cashing our promissory note about a useful alternative brings two extra benefits. First, the alternative does not fall prey to Ritchie’s well-motivated criticisms of theoretical circularity in many accounts of metaphor. Second, it succeeds

without recourse to a solution favored by Ritchie, namely “conceptual blending theory” (Fauconnier & Turner, 2002), which we argue misses some of what is needed in a theoretical foundation for metaphor comprehension.

### THE RITCHIE MODIFICATIONS

Ritchie modified the conceptual metaphor theory but nevertheless stated he “leaves the broad outlines of Lakoff and Johnson’s (1980) original account more or less intact” (Ritchie, 2003b, p. 143). A key element of this position is the idea that most abstract thought depends on metaphorical projection from embodied experience that is literal in the sense that it is directly understood.

What is dependency and what is direct understanding? We need an absolutely clear consensus on the dependency relation between abstract thought and the metaphorical projection from embodied experience. Ritchie found our 1996 characterization of this thesis as metaphors being said to govern abstract thought too strong (Ritchie, 2003b, p. 39), but Lakoff and Johnson (1999) have clearly stated that abstract thought is practically impossible without conceptual metaphor and that cognition is metaphorical in nature. Did Ritchie settle on a single view? Certainly Ritchie seemed to follow the conceptual metaphor line of thought when he “takes seriously Lakoff and Johnson’s (1980) proposal that abstract concepts ... are understood by metaphorical extension of immediate embodied (physical and social) experience” (Ritchie, 2003b, pp. 132–133). He tried to clarify his position by stating that “many of our abstract concepts are themselves shaped by structural metaphors” (Ritchie, 2003b, p. 139) and that this shaping involves two main processes. First, one will be unable to express ideas contradictory to such structural metaphors “without inventing new metaphors,” and the entailments of a metaphor “will become part of the meaning of the concept” (Ritchie, 2003b, p. 139). A favorable example for his case might be deists that fully believe God judges us at our every waking moment. He then stated that if our abstract concepts are shaped in this way by structural metaphors then “we do not have very many truly ‘literal’ ideas to express, beyond the basic ideas that are grounded in direct physical experience like, ‘I fell down,’ ‘I stood up,’ and ‘I ate a carrot’” (Ritchie, 2003b, p. 139). In fact, Ritchie explained the Lakoff and Johnson position as one in which “we actually experience the target concept in terms of the source” (Ritchie, 2003b, p. 138). He endorsed this claim and made creative proposals about the subtle term *experience* here, but in offering parries to our criticisms he thought the claim might best be subsumed under conceptual blending theory (2003b, p. 138), a point that we address in closing.

In short, although Ritchie resisted the claim that abstract thought is governed by metaphor, he claimed a very strong dependency relation in which abstract ideas are understood via metaphorical projection; these abstract ideas are shaped by meta-

phorical projection; we cannot contradict these structural metaphors except through other such metaphors; entailments from the metaphor generate meaning for the abstract concept; we do not have very many literal, especially abstract, ideas beyond those grounded in direct physical experience; and we experience the target domain in terms of the source domain.

We might sum up his position as: "Some abstract concepts are not due to embodiment etc., but many if not virtually all are." To this he added (we emphasize) appealing ideas, which we discuss later, about what shapes our experience of concepts or messages—the notion he describes as "experiencing the target concept."

### REDUCING HIGH-FLYING IDEAS

The distinction between a dependency relation and the statement that abstract thought is governed by metaphor is unclear, except for the caution that not all are so governed, because a few are not. For the majority of thoughts said to be resting on embodiment, Ritchie's explanations amount to the claim that the target domain's meaning is generated and maintained by metaphorical projection from the embodied source domain. It is to this strong reductionistic thesis that Vervaeke and Kennedy have consistently responded (Kennedy & Vervaeke, 1993; Vervaeke & Kennedy, 1996). We have no quarrel with the idea that one can and often will understand some implications of a metaphor. For example, with the metaphor "*Dick is a pig*," we take it that some properties of a pig are projected onto the target Dick, and we then draw conclusions about his naughty behavior. However, we also argue that in this mapping and implication process the targets are active, not passive in the sense that our knowledge of what Dick might do constrains which animal we choose as a source and which properties from that source are mapped onto Dick. This must also be the case for conceptual metaphor generally.

For a metaphor to influence our thought, the target domain must have considerable premetaphoric structure to constrain the metaphoric selection of features (Glucksberg, 2001) and to attract the metaphor in the first place. The mapping processes from a source domain, like war, onto the target domain, such as argumentation, do not sample wars at random. It is crucial to acknowledge here that if the target domain were a conceptual blank slate, so to speak, then it is unclear why we would adopt or offer one metaphor over any other. Further, as Nelson Goodman (1972) famously noted, any two things are infinitely similar (even if the properties are merely that we are thinking of them now, that they have names, that they are both conceivable, that Ray Gibbs and David Ritchie appreciated them, that they are celebrated in *Metaphor and Symbol*, and the like). They share an infinity of properties, and the selection of which domain is going to serve in the source is therefore a very significant problem. Simply put, an unstructured target domain makes this selection process much too unconstrained, for any and all of its potential properties

could serve as targets for the source domain. We also take it that very many properties of the source domain are not ever mapped onto the target domain at any time, by anyone, for sensible reasons and also because it is logically impossible to take the time to transfer an infinite number of properties. This is not a flaw in metaphor but rather is absolutely necessary, by definition, precisely for the mapping to be metaphorical rather than a simple case of categorization or comparison. Many irrelevant properties do not get mapped, necessarily, by definition of the term *metaphor*. To make the embodiment claim and for there to be a conceptual metaphor thesis to entertain, this limit on properties must hold. If there are no properties that are not mapped, then we simply have a straight identity claim or a modified one such as a class inclusion statement.

### LIMITS TO TRANSFER

This point about limited transfer is important precisely because of cases of properties that are transferred to the extent that one can weaken a supposed metaphor so much that its status as a metaphor is very doubtful. For example, when Ritchie considered several of our most central criticisms of the claim that we think of argument as war, he conceded that it “is likely that our experience of both argument and war are grounded in the common experience of frustrated desires and the consequent conflict of wills,” and clarified this when he stated that “the processes of interpersonal competition and conflict are more basic than the processes of either war or formal academic argument” (Ritchie, 2003b, p. 133). Does this mean, however, that the underlying conceptual metaphor is that “*ARGUMENT IS INTERPERSONAL CONFLICT*”?

If this claim about argument is indeed an entirely sensible remark about formal argumentation in the context of, say, two-sided academic debate, the conceptual identity claim is no longer a metaphor but a literal class inclusion statement, namely, one of the politer forms of interpersonal conflict is some kind of formal argumentation as a debate. In this instance, the claim sets formal argumentation into the class of academic debate, which itself is part of the class of interpersonal conflict. The example can be written in indisputable form as follows: There is a category of formal argument that is a type of academic debate that is a kind of interpersonal conflict.

An intriguing implication follows from our example. If we recognize this claim about categories and “*CONFLICT*,” then a view of what it means to be basic to thought follows inexorably. The “basicness” of interpersonal conflict is not so much that it is “experienced first” (Ritchie, 2003b, p. 133) but that it is a more inclusive class than formal argumentation. The conclusion is that categorization, not embodiment and experience, allows us to establish what is basic, a root of a statement, and a necessary foundation of an idea.

Note that throughout this discussion literal aspects of the concept of argumentation, such as a class inclusion relation, have played a significant role in constraining the mapping process and even in the choice of the correct representation of the source domain. However, Ritchie resisted this point when he claimed that to “‘*attack*’ an opponent’s argument is to do something more than merely to ‘try to refute it,’” and that “something more is approximately the sense of conflict and no-holds-barred antagonism suggested by the metaphorical association with childhood name-calling and fist-fights” (Ritchie, 2003b, p. 137). (We note in passing that this is another criterion for being basic—early in child development. We caution many theorists, not only those of the embodiment camp, that young children express very abstract ideas such as desire in *I want*, nothing in *all gone*, failure in *uh oh*, tools of categorization in *all* and *some*, and many more. They do not simply build incrementally from concrete to abstract, but leap to some abstract ideas astonishingly early. We contend that human thought is impossible otherwise.) Yet if we asked someone what was involved in formally attacking another person’s argument, would they say name-calling and physical violence? If they mentioned only the attempt to criticize, refute, and disprove, would we claim they had misunderstood our meaning? Would they find the sentence “formal argumentation is not a fist fight” a contradiction? We strongly believe the answers to all these questions are negative. We draw the conclusion that some central implications of the generalization “*ARGUMENT IS INTIMATE CONFLICT*” fail outright and we suggest the conclusion that follows is we cannot subsume argument so. If we cannot, then the claim about “*ARGUMENT*” and personal antagonisms is at best a vivid, provocative metaphor that does not address the central properties of argumentation. It makes properties of the target salient (Giora, 2003). It does not constitute the basis for understanding argument.

We can bolster our conclusion. Formal argumentation involves very many rules of how the conflict is to be done, and that is what distinguishes it very importantly from no-holds-barred antagonism. Formal argument is like a conclave of ancient Greeks, and antagonism is more like the marching Imperial Romans. So all that seems to remain of the something more that Ritchie mentioned is the sense of interpersonal conflict, like argument, often involving two people and perhaps involving a lot of serious effort and difficulty. After all, it can require a lot of work to try to refute someone’s argument (or one’s own). It is not something one just tries to do idly with every prospect of success. It can require attention and study, writing and revision, we know. Yet all of this, once again, seems to be driven by our nonmetaphoric understanding of formal argumentation.

Our sense of the inferential, conversational, and logical rules that constitute formal argumentation highly constrains which source domain is chosen for a metaphor, that is, interpersonal conflict rather than war per se, Greeks rather than Romans, editing rather than shouting, and which properties are mapped and which are not. So, this sense is importantly premetaphoric. It is in just this sense, surely,

that we can see a formal geometrical proof full of parallel lines and similar triangles as an elegant argument. The proof may be simple, but it is certainly rule following, and it is persuasive, not by personal force but rather by the features of a well-tuned accomplishment.

## NOVEL PROPERTIES

We have not exhausted the notion that the target domain is reached by the source by respecting proper restrictions. Ritchie very properly raised the issue of novel metaphors, by which we can mean the surprising and enlightening contradictions of an Oscar Wilde (XXXX; *bigamy is having one too many spouses, and so is monogamy*), today's search for *God as She*, and the phrases that allow new openings in science ("*black holes*," "*mind as computer*," and "*embodied cognition*" itself as a case in point). In this connection, surely there must be some sense of the abstract target domain if we are going to account for conceptual and theoretical innovation. If the sense that attracts metaphors we call premetaphoric, we might call the sense that attracts insights that can be expressed in metaphors transmetaphoric. Metaphors are fertile powers, but why?

"Wisdom begins and ends in wonder" is likely a new thought for many readers. They may notice how it points usefully and insightfully to the need for curiosity at the outset of an inquiry and for a truly satisfying conclusion at the close. They may spot a symmetry they never appreciated before.

In contrast, as a useful example in which the key insight allows something to be rejected, think of time as akin to a spatial extent. This is temptingly easy. It is interesting that Bergson (1903) famously criticized spatial metaphors for time. He repeatedly pointed out our sense of time, which he called *duree*, was seriously misrepresented by the "*TIME IS SPACE*" metaphor. More recently, Visser (2002) also argued that the spatialization of time is seriously misleading and helped to create the idea of inevitable fate in the ancient world. This is a handy example for our case, for the metaphor of time as space is a one that many serious contributors to metaphor theory outside of the embodiment school point to as a central conceptual metaphor (e.g., Gentner & Bowdle, 2001). Gentner, Bowdle, Wolff, and Boronat (2001, p. 242) wrote "some metaphors, such as space-time metaphors, become conventionalized as systems."

If the metaphor constitutes our understanding of the target domain, then how does a thinker such as Bergson or Visser come to recognize and reject it as an inadequate and at times a misleading metaphor? To begin with, two things must be understood separately and distinctly, as their own kinds of entities, with their own properties, for one to realize that one thing is the source of ideas for the other via metaphorical projection. Initial independence sets up the opportunity for metaphor. There is no chicken-and-egg problem here. Independence comes first.



Ritchie argued that perhaps a “field” of conceptual metaphors could get us around problems besting analyses of individual conceptual metaphors. However, to offer explanations of comparisons between pairs such as A and B, time and space, or God and judges in terms of multiple metaphors for A or time or God is simply to beg the question. Such a twist in the discussion from one key metaphor to many simply shifts the question to how we get beyond the first metaphor that generated the abstract domain to some other metaphor in a large set of pairs. At best it suggests that the intersection of the sets of pairs contains the crucial property (or array of properties). That notion of the geometry of intersecting pairs fails in the crunch, however. To establish an intersection with common properties, we have to establish the properties of each of the intersecting and contributing pairs. To do that we must establish the set proper to any one of the contributing pairs.

We have just denied that any one of the pairs on its own allows us to find relevant properties unless we have some premetaphorical understanding of the target domain. We hasten to caution that this is a minimum condition, in that other influences also would be required. For the moment all we need for the argument afoot is this: That which allows us to judge any existing conceptual metaphor as inadequate and which motivates and constrains the search for a new one is some idea about the target. Notice the puzzle here, if the only tools are an old metaphor and a new one. The new metaphor cannot be responsible ahead of time for all of this cognitive work (i.e., disdaining the old metaphor), and the old metaphor itself cannot be doing the work because it is being rejected as inadequate. So, conceptual metaphor does not actually seem to be doing most of the important work in conceptual innovation.

In a nutshell, we need a theory about fertility, about possible new properties of old domains, a theory that tells us how to evaluate new metaphors. A metaphor is just one possible source of ideas, and it cannot evaluate itself. Unless there is a reason other than the metaphor itself to take the new candidate property seriously then there is, frankly, no reason to take it seriously. “*The atom is a solar system.*” Does that mean the third electron out has ice and snow caps north and south? Well, no. This is just a metaphor. (What is a “*bed pencil*”? Keane & Costello, 2001, offer many interpretations. The lesson is that the concept combination, like a metaphor, does not specify enough on its own.)

## METAPHORIC AND LITERAL

Just a metaphor? Undoubtedly a metaphor? There must be something that allows us to recognize that patterns of thought and speech to do with atoms and solar systems or God and shepherds are metaphoric in nature.

One possible response is that we directly understand embodied experience and only indirectly understand the target domain, and that is why we realize that these

patterns are metaphoric in nature. Something like this seems to be at work in Ritchie's account, because he clearly reserved the term *literal* for "basic ideas grounded in physical experience," (Ritchie, 2003b, p. 139) and often spoke of "immediate physical experience" (p. 130) or "direct physical and social experience" (p. 130). This is one reason why Ritchie rejected war as a basic source domain. He noted that given "the small number of people in the United States who have directly experienced war, it is not easy to see how *"ARGUMENT IS WAR"* can be grounded in direct physical or social experience" (p. 132).

Much theoretical work was done in Ritchie's presentation by terms like *direct* or *immediate*. However, it is simply not the case that the literal–metaphoric distinction maps onto the direct–indirect distinction. Much of our knowledge of elephants is indirect. We have very little direct experience of elephants; yet we know they are mammals, they have internal organs like hearts, they are mortal beings, they evolved from different kinds of creatures, and so on. All of this knowledge is very indirect, yet of course we seriously hesitate to call it metaphorical in nature.

One way out for Ritchie might be to argue that the difference is relative, that the source domain is just more direct than the target. However, it is also the case that the source domain can be less direct than the target domain. Grady (1999) points out "*death is a thief*" uses a source that may be understood indirectly. This "*thief*" source may not be a rich domain, so let us bring forward a domain understood relatively indirectly but used as a rich source. We have many expressions that point to a conceptual metaphor "*SOCIAL INTERACTION IS MAGIC*," for we say things like "*I'm under her spell*," "*she enchanted me*," "*I found her utterly charming*," and so on. However, given that magic does not exist, we as adults believe we cannot have directly experienced it (at best, simulations that we take to be entertaining pretense). Nonetheless, we as adults know these expressions are metaphorical. (Notice we stress here the idea of actually experiencing the real thing. Let us leave children or the naïve tricked by conjurers, Disney, or Graceland aside!)

The explanation of our sense of metaphoricity in terms of indirectness versus real contact with the real thing seems very inadequate. Surely a more plausible explanation is that we have a nonmetaphorical understanding of many of the target concepts that allows us to recognize metaphoric patterns that use these concepts.

There is a fine bonus to this account. Ritchie referred to fields of interseeded conceptual metaphors. His point was that several metaphors may be about the same thing. A bonus of the idea of nonmetaphoric understanding is that it would explain why we find certain statements to be very similar in import even when they are based on very different embodied source domains. For example, we find "*I see your point*," "*I grasp your point*," and "*I understand your point*" all very similar although the direct experiences of seeing, grasping, and standing under something are very different. It is as though they have converged on a common meaning. Once again, this is very difficult to explain if the abstract target domain is a blank slate

with very little independent cognitive power. However, a premetaphoric concept of understanding explains the aforementioned phenomena very well.

## ALTERNATIVES TO EMBODIMENT AND PROJECTION

The theory of directly understood embodied experience on which Ritchie relied aims to explain its effect on thought via metaphors. We have opened the door to alternatives. If so, we need to show they are not reductionist.

Let us consider a cluster of metaphors with subgroups. Many of the relevant metaphors are instances of a more general pattern of mapping spatial relations onto nonspatial relations. We have conceptual metaphors along the lines of “*TEMPORAL RELATIONS ARE SPATIAL RELATIONS*,” “*LOGICAL RELATIONS ARE SPATIAL RELATIONS*,” “*CAUSAL RELATIONS ARE SPATIAL RELATIONS*,” “*SOCIAL RELATIONS ARE SPATIAL RELATIONS*,” and “*EPISTEMIC RELATIONS ARE SPATIAL RELATIONS*.” Note how all the metaphors for understanding discussed in the previous section can be seen as instances of spatial relations mapped onto nonspatial epistemic relations. For example, the vision-based metaphor of understanding as seeing can be about how the simultaneity of spatial relations we perceive is similar to the relations between bits of information deemed to be all in play equally. They are all understood to be relevant in specific ways, we appreciate, but describe this as seen as simultaneous. One could explain all of this by talking about our experience of space being more embodied or direct than our experience of understanding, but we have seen difficulties with definitions in this approach. Further, one would be hard pressed to justify the claim that our experience of understanding was not direct. It is our very being, if *cogito, ergo sum*.

Note also that our tendency to map spatial relations onto other domains extends beyond metaphor to the use of graphs and diagrams to represent all forms of information. The issue at heart here could simply be that one ordered set can be aligned one-for-one with another ordered set (Gentner et al., 2001). Indeed, the term *alignment* is spatial, though the crux here is just matching-up. There should be cognitive benefits to spatial alignment, or we fall prey to Goodman’s (1972) scolding that anything has many similarities with anything else.

What are the cognitive benefits of trying to convert information into a spatial format? Is the reason embodiment or advantages of the physical mode of representation? The mode in fact has several major benefits.

Spatial relations are multimodal and therefore allow for the integration of information from different sense modalities. This allows for converging lines of evidence when we examine some topic. In practice, spatial relations allow for the simultaneous representation of data that fosters the noticing of higher-order invariants and patterns that are easily missed when the information is presented

more sequentially. Simultaneous presentation of data lets us look back and forth and helps to reveal incoherence and inconsistency by making lots of pairs of bits of information copresent in working memory. Spatial relations are highly intersubjective, such that many a classical epistemologist made them the mark of objective reality. They can readily be used to orient an audience, as in *Look at the left corners of the table*. Notice how many of these features are used to assess the reality of our experience, and some are emphasized in the reality-monitoring literature (Johnson, 1985; Johnson & Raye, 1981). In conjunction with reality monitoring, also note that the conceptual operations involved in spatial reasoning are quite automatic, and therefore, following Johnson and Raye, the information processed in this manner would seem undemanding, and perhaps more realistic than fanciful. Pilots in computer-driven cockpits can have panels with spatial displays showing radar information about terrain, fuel levels, time to destination, injuries to the aircraft, and reliability of radio contact with home base for example. Because the displays are computer driven, they could be playful and arbitrary, for example varying features of a caricature of Mickey Mouse to code the same information for the pilot, if we desired. Using Mickey's ear size as an indicator of aircraft damage might seem fanciful, however, in contrast to a spatial column showing fuel reserves.

We suggest that spatial relations are used as a way of displaying information (objectively, physically, on screens, for example) to prime and trigger our reality-monitoring skills (attention, perceptual grouping, immediate memory) so that we can apply important procedural knowledge<sup>1</sup> (search skills) to assess information. Likewise, we can provide guiding metaphors in "an interpretive frame of reference" (Katz, 1996, p. 269) that will order information in salience (Giora, 2003) in our immediate memory and mental sketchpad, help determine relevance, and establish important connections within that information by reformatting it. Maybe part of what makes a metaphor useful is that it primes the interpretive, procedural sense (that we use to scan reality as well as metaphors) although not usually supporting a declarative conclusion of truth. That is, metaphors trigger guiding conceptual operations we would use in reality-monitoring but not a belief in the truth of the metaphorical statement. In sum, these operations transfer candidate properties from sources to targets (Glucksberg, 2001), tell us what is relevant and why (Chiappe & Kennedy, 2001), affect the order of salience of the properties of con-

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<sup>1</sup>Procedural knowledge and procedural similarity are not discussed much in the metaphor literature. This could be an oversight, because it is generally accepted that metaphor involves change or transfer of some kind between disparate domains. Empirical evidence from the problem-solving and insight literature shows that transfer of declarative content from one source domain to another target domain (Gentner & Landers 1985; Gick & Holyoak, 1983) is very poor even when seemingly obvious analogies are involved. In contrast, the literature on the facilitation of transfer by means of procedural similarity is very positive (Adams et al., 1988; Gick & McGarry, 1992; Lockhart et al., 1988; Morris, Bransford, & Franks, 1977; Needham & Begg, 1991). In fact, Gick and McGarry plainly averred that "it is the similarity of the processing induced by the acquisition and transfer tasks that is important" (p. 637).

cepts (Giora, 2003), and allow “structural re-alignment” (Gentner & Bowdle, 2001) of the relations between those properties so that we know how key properties belong to both the source and the target.

Perhaps this priming is indeed part of the aesthetic aspect of the experience of metaphor, to which Ritchie alludes when he describes metaphors affecting our experience of a concept. Perhaps this is what we mean when we say that a metaphor makes its target more vivid, or visual, or to stand out more in thought. Many authors have described metaphors as apt, but Ritchie notes they engender experiences, which is not quite the same.

Procedural knowledge is often ineffable (Schooler et al., 1993; Schooler & Melcher, 1995), and this may explain why we find it difficult to talk about the effect of a metaphor and why Ritchie’s notion of a significant change in experience of a concept deserves attention. Just as the experience of music is hard to put into words, when we hear “*Toronto is New York run by the Swiss*” a shift in our pro tem attitude to Toronto, New York, and the Swiss is invited. Some of the shift is explicit, some implicit. The properties that come to the fore are not well defined or precisely limited. Likewise, in general the set of properties pertinent to abstract entities for many people is difficult to express without relying on metaphor because much of this information is encoded procedurally. As Augustine famously noted, we know what time is until someone asks us. Our activities are greater in kind than just being explicit and outputting words. We can be primed to run, not just to think of the word run, to decide and not just to think of the word decision, to treat a phrase as ironic, not just to repeat words.

A metaphor helps to structure pertinent properties in the desired order of salience, we suggest, and this structure helps to translate only part of that information into a more declarative format. A few properties are available in explicit form, but many properties are salient, although some we take as relevant and sense reasons for the difference. (If we could not make the relevant–salient distinction, we would not be able to tell the difference between a faux pas and a bon mot.) This difference between features available to be spoken and features changed in relevance and salience is surely key to the idea of the experience of being exposed to a metaphor, especially an effective, novel one. What is active in our comprehension, but only implicit, can shape what Ritchie calls “an experience.” There would be a role for what we can state immediately, in this experience, but what is implicit may play a crucial, necessary role.

The work in construing salient and relevant properties is not the metaphor constructing the abstract target from a tabula rasa, or making the abstract concrete, but linking largely procedural knowledge from one abstract domain (such as space or love) to another domain (such as time or God) to set properties in order of significance, structuring information for evaluative and expressive purposes.

In this connection, it is worth noting that the ability to solve insight problems is best predicted by perceptual restructuring abilities such as picture disambiguation

and figure-ground disembedding (Schooler et al., 1993) as well as the ability to notice invariants in information representation (Kaplan & Simon, 1990). Both of these findings point to the spatial aspects of insight problem solving that we discussed earlier in connection with conceptual metaphor. We offer these references as aids in understanding what procedural knowledge entails. We do not think the visual skills or spatial skills are precise, elemental cognitive entities out of which procedures are built. We take it that the skills are quite modifiable from time to time, by instruction, by experience, by the purpose of the moment, or by the observer's grasp of the task at hand. For example, figure-ground is a set of options at a border (Kennedy, Juricevic, & Bai, 2003), not a compulsory percept.

Our theoretical speculations on priming and procedural knowledge, rather than easily expressed lists of properties, are triggered by Ritchie's emphasis on embodied experience as a key part of the conceptual metaphor theory. In these speculations, however, we have tried to highlight several factors involving theory of cognition and conceptual metaphor that do not rely on the temporal or other priority of matters of the body, sensorimotor behavior, or the directness of embodied experience. In our story, reasons that depend on information formatting (e.g., in spatial displays) and processing (e.g., procedural knowledge) play a key role.

## COGNITIVE RESPONSES AND COGNITIVE CONTENT

Ritchie also discussed a procedural side to metaphor in his explanation of the role of experiencing concepts and expressions (Ritchie, 2003b). He took an unusual tack, with which we sympathize, although we suggest it needs fixing up, because he went perilously far. He noted that many metaphors may not be based on a similarity of declarative content but on a similarity of what he called "cognitive responses." He discussed the "*Juliet is the sun*" metaphor, but he pointed out that there "are not qualities common to a young woman and the sun that could possibly define a superordinate category, and none are needed" (Ritchie, 2003b, p. 141). Instead, what the metaphor "brings to the fore is the kind of emotions, comparisons, and expectations they each arouse" (p. 141). What is involved is not a mapping of properties from source to target but "correlated cognitive states" that link similar "cognitive responses" (p. 141). He went on to discuss the Glucksberg et al. (1992, p. 578) account of the metaphor "*my job is a jail*." Ritchie claimed that the similarity is not between jobs and jails but between "our responses to these situations" (Ritchie, 2003b, p. 142). In fact, he stated that "the sense of incapacity to change a situation, nullify a social or emotional commitment, or find the answer to a problem or puzzle is almost impossible to express except through some metaphor associated with bondage or confinement" (p. 142). Note how Ritchie's account relies on a procedural sense of an incapacity to perform some, usually cognitive, action,

and how that procedural knowledge is practically ineffable unless it is associated with a spatial metaphor.

To a degree, Ritchie's account supports what we've been claiming. However, we stop at a major intersection and take a different path. Our friendly amendment is this. We suggest it is too strong to insist that no declarative similarity is involved in such metaphors. In our account, declarative information about shared properties is present, and it is reordered and reformatted through its interaction with procedural transfer, thus giving us a different experience much as a new view brings properties freshly into the foreground.

Ritchie might object to our contention, because he has argued some such accounts of metaphors are circular. In Ritchie (2003a), he argued that explanations of declarative similarity in terms of shared properties can fall into circularity. He pointed out that "jobs do not ordinarily share any of the qualities that define a jail" (Ritchie, 2003a, p. 50). Instead the "sense of confinement and constraint is wholly metaphorical," and jobs "do not share the qualities that define jails in any literal sense, but only in a sense that is already metaphorical" (2003a, p. 50). A reliance on such "common properties" to explain metaphor therefore results in a circular explanation (2003a, p. 50). This is a good point in that there is equivocation in explanations that involve such purported common properties. However, the equivocation is present not just in the theoretical explanations but also in participants' reports of what they find in common between the target and source in metaphors (see Chiappe & Kennedy, 2001). The pattern is pervasive and almost transparent, which indicates a very significant interaction between procedural and declarative similarity. This is a significant psychological phenomenon that needs further examination. It is also the case that not all of the shared properties are equivocal in this manner. Jails typically literally involve an authority figure that can punish the prisoner, and jobs typically literally involve an authority figure that can punish the employee. So, a model that deals with the interaction between declarative and procedural similarity is quite likely to provide an adequate explanation of metaphoric comprehension while avoiding the charge of circularity.

Ritchie (2001a), in contrast, argued that circularity in theories of metaphor can best be avoided by adopting either conceptual metaphor theory or conceptual blending theory. Ritchie (2001b) further argued that conceptual metaphor theory may probably be subsumed under conceptual blending theory (Coulson & Matlock, 2001; Fauconnier & Turner, 1998, 2002). However, conceptual blending theory does not really provide a good explanation for conceptual metaphor and therefore fails as a theoretical framework for analyzing conceptual metaphor.

In conceptual blending theory "the conceptual structures of two or more 'input spaces' (e.g., topic and source) are selectively combined into a new separate 'blended' mental space (the metaphor)" (Ritchie, 2001b, p. 138). So, for example, "*men are wolves*" (Gentner & Bowdle, 2001) "combined the schema of men who are single-minded and emotionally uninvolved in pursuit of sexual gratification

with a pre-existing schema of wolves as heartless and vicious predators” (Ritchie, 2001b, p. 138).

We have some serious reservations about this account as an explanation rather than an analogy. The status of the main theoretical entities, the mental space and the blended space, may be metaphoric, and if not is then unsatisfactorily unclear. Coulson and Matlock described a mental space as “a temporary container for relevant information about a particular scenario as perceived, imagined, remembered or otherwise understood” (Coulson & Matlock, 2001, p. 299). They further described a blended space as one in which “incompatible information is brought together to generate inferences that can be projected to other spaces” (p. 299).

Our problem here is uncertainty about how this works and whether it is a loose description of a problem, like a good first stab at characterizing a problem, rather than an actual explanation. If it is in fact an explanation, we are not sure what components of the description are explanatory and which are loosely descriptive. We are not sure what this aims to explain because the principles that govern admittance into containers are not clear. Likewise, it follows that we are not sure that we see the rules that govern how information can leave a container.

Invoking relevance information from any possible information source to govern entry and exit of properties is simply to say that any information can enter a container because all information is potentially relevant to something. This is fine as an interesting description of the problem but is in fact nonexplanatory, because mental space theory can explain everything and thereby really explain nothing. This is probably what is behind Gibbs’s worry that with conceptual blending theory “it remains unclear exactly what kinds of empirical data can falsify it” (Gibbs, 2001, p. 323). To us it looks that, in principle, nothing could so falsify it. Even Ritchie noted that he was “not yet convinced that it represents more than a useful metaphor for a poorly understood neurological process” (Ritchie, 2001b, p. 138; see also Ritchie, 2004, for further discussion and reservations).

Perhaps this blending theory is yet another instance of a provocative mapping of spatial relations onto epistemic relations, in which case the charge of circularity is not avoided. If we remove the spatial metaphor, it is not clear what distinguishes a blended space from the ad hoc category emphasized in theories such as Glucksberg (2001) and Chiappe and Kennedy (2001).

## BLENDING MEN AND WOLVES AS WEREWOLVES

A problem with the blending scheme is that it is unclear what is going on in such a conceptual blending. For example, when one claims that men are wolves does this mean that one now thinks of men as having sharp teeth and claws? One cannot rule this out, because a blended space combines incompatible information. Invoking intuitions of this not being relevant is to shift the burden of explanation to these in-



tutions. Also, why does the blending of the two spaces not serve to highlight that men are animate, mammals, eat meat, are mobile, and have eyes, because these are all important properties shared by men and wolves? Or highlight things that cannot be blended such as writing and reading? If the blended space is the creation of a third new concept that is distinct from the concept of men or wolves, then it is not clear what governs what this new concept is. Because it combines features of men and wolves, it is not clear why it would not be the concept of a wolf man or werewolf, or the kind of talking wolf that appears in fairy tales.

A clear account is needed of how this blend can distinguish all the various red herring possibilities from the relevant one. An infinite number of errors of understanding could result from combining potentially incompatible information from perception, imagination, memory, and understanding.

All of these problems point to the conclusion that conceptual blending theory really does not add much of significance to what is valuable in Ritchie's own position, and it is questionable that it will do the theoretical work he hopes it will.

## CONCLUSION

Ritchie's account of the conceptual metaphor theory is a very sophisticated account, and he made some very good points concerning circularity in theoretical explanations of metaphors and the procedural aspects of metaphorical comprehension. However, we still feel that he endorsed a reductionist claim regarding abstract thought, and we object to this position as inadequate for explaining many cognitive phenomena that point to the need for premetaphoric and independent abstract thought. We argue that some of this may be procedural in nature, and the pervasive mapping of spatial relations onto other relations may be designed to trigger very important procedural skills and to provide a declarative vocabulary for said knowledge. We argue that procedural similarity probably plays a significant role in metaphor comprehension and that it probably interacts with declarative similarity. We note that current attempts to provide noncircular explanations of metaphor in terms of conceptual blending theory do not seem successful.

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