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Citation Details

L. David Ritchie. (2008). X IS A JOURNEY: Embodied Simulation in Metaphor Interpretation. *Metaphor and Symbol*, 23, 174-199.

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X IS A JOURNEY:

Embodied simulation in metaphor interpretation

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[*Metaphor and Symbol*, 23](#), 174-199.

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Author's note: The author is indebted to Ray Gibbs, Jr., Molly Major, and two anonymous reviewers for many useful insights and suggestions; any remaining errors and omissions are of course my own responsibility.

Abstract

This essay compares simulation-based accounts of metaphor processing recently proposed by Gibbs (2006a) and Ritchie (2006), using examples of metaphors based on the metaphor vehicle “*journey*” from four different texts. From analysis of these different examples, it is concluded that simulation may come into play at different levels, depending on the metaphor and the context in which it is used. Further, it is suggested that the imaginative simulation of the object or action named by a metaphor vehicle, proposed by Gibbs, incorporates a partial subset of detail-level perceptual simulators. This leads to the proposal that the two models describe cognitive processes that operate at different levels or stages in the metaphor interpretation process, and that they might usefully be merged into a single more comprehensive model of embodied metaphor interpretation. The more comprehensive model provides a richer theoretical context for understanding how reuse and modification of a particular metaphor (Cameron, 2007) as well as the use of apparently different metaphors that activate similar simulations can influence comprehension, and how skilled orators can use these effects to accomplish complex communicative objectives (e.g., Blair, 2005; Obst, 2003).

X IS A JOURNEY:

Embodied simulation in metaphor interpretation

The idea that cognitive processes, including language and communication, are embodied has come to be widely accepted, but the meaning of “embodiment” and exactly how it is accomplished remains ambiguous. In recent work, Gibbs (2006a) and Ritchie (2006) have each proposed mechanisms for embodiment in metaphor interpretation. Both approaches are based on the idea of *simulation*, although applied at different levels or stages in the interpretive process.

Gibbs proposes simulation both in terms of listeners imagining the performance of bodily action described by language and as a mechanism to explain how listeners are able to draw inferences about speakers’ intentions by simulating the inner state of the speaker at the moment when an utterance is produced. Ritchie, drawing on Barsalou’s (1999; 2007) perceptual simulation theory of cognition, proposes that language, including metaphorical language, activates the partial simulation of multiple perceptual experiences associated with the metaphor vehicle. The perceptual simulation model emphasizes the simulation process at a relatively detailed level, in which a listener processing a metaphorical phrase might experience only *partial* simulations of moods or emotions detached from any particular experience, for example a shape, mass, or flash of color, the heft of an object or the feeling of a texture. Gibbs’s model emphasizes the simulation process at the relatively more global level, in which a listener experiences the event or object identified by a metaphor vehicle as a *gestalt*, as a coherent set of perceptions, or, at the even more global level of a speaker, the listener experiences the event or object as the

speaker experiences it, along with the speaker's experience of the communicative context within which it is relevant. Gibbs's model implies that perceptions associated with the state or action described by a metaphor vehicle are simulated as a package; the perceptual simulation model implies that a listener encountering a metaphor vehicle may experience simulations of only a small subset of these perceptions, based on relevance in the immediate context.

All three forms of simulation converge at a higher level of conceptualization, but they have different implications for our understanding of metaphorical language and communication processes more generally. This essay considers similarities and differences between these approaches, and how they might be merged into a unified approach. I begin with a brief conceptual summary of the approaches, in the context of underlying theories, including Conceptual Metaphor Theory (Lakoff & Johnson, 1980). I then apply each approach to several different texts that use the common metaphorical vehicle, *X IS A JOURNEY*. Finally, I consider the prospect for merging these approaches into a single simulation-based model of metaphor use and interpretation.

Simulation as embodied cognition.

Embodied cognition is often contrasted with amodal computational theories, in which mind and mental activities consist purely of logical operations that could be accomplished by a sufficiently powerful digital computer as readily as by a biological brain, with no detectable differences in outcomes (see Barsalou, 1999; 2007; Clark, 1997; Searle, 1993). Implicit in all theories of embodied cognition is the idea that the sensory and motor control processes of the living organism are fundamental to its cognitive activities. Clark (1997) carries the idea even further, arguing that the physical aspects of

the environment are also incorporated into cognitive processes, and that a large part of the peculiar genius of human beings is our ability to transform our physical environment in ways that facilitate and amplify our information-processing abilities.

Within cognitive linguistics, *embodiment* is often understood in a more limited sense, as implying that conceptual knowledge, including linguistic knowledge, is acquired, organized, and used on the basis of the body's interactions with the physical environment, and with the social environment as it is manifested in the physical environment. Because most of our conceptual and linguistic knowledge is based on bodily experience, using and processing language inevitably involves the activation of bodily knowledge stored in the neural systems of the brain; the particular biological organization and characteristics of the neural systems are often, but not always, included within the meaning of *embodiment*.

Conceptual Metaphor Theory (CMT). Lakoff and Johnson (1980) argue that experienced correlations within perceptual experience provide the basis for conceptual metaphors, and these in turn provide the basis for abstract conceptual thought. Commonplace expressions such as “a *warm* relationship,” “a *close* friend,” or “a *big* problem” all originate in and provide evidence of correlations between physical sensations (physical warmth and proximity, perceived size) and more abstract concepts (love, friendship, problem-solving). Metaphor is primarily conceptual, and the linguistic expressions we usually think of as “metaphors” are expressions or manifestations of underlying conceptual metaphors. Conceptual metaphors are expressed in coherent *systems* of linguistic metaphors; to use one of Lakoff and Johnson's primary examples, expressions such as “*win*” or “*lose* a debate,” “*attack*” or “*defend* a position,” and

“*undermine* an opponent’s argument” all manifest a single underlying metaphor, *ARGUMENT IS WAR*. According to CMT, when we use or encounter these expressions, we actually experience argument *as* war. It follows that a close analysis of systems of metaphors will provide insight into individual cognitive processes (Lakoff & Johnson, 1999) as well as social and cultural systems of belief (Lakoff, 1996).

Some of the bolder claims of Conceptual Metaphor Theory have been disputed on various grounds (see, for example, Barsalou, 1999; Haser, 2005; Howe, 2008; Keysar & Bly, 1999; Ritchie, 2003; Vervaeke & Kennedy, 1996). However, considerable evidence has been amassed in support of the basic claims of the theory (see Gibbs, 1994; 2006a; 2006b). At the very least it seems reasonable to conclude that the metaphorical correlations proposed by Lakoff and Johnson provide a basis for grounding some abstract concepts, as Barsalou (2007) recognizes; the accumulated evidence also supports the conclusion that the complex schemas associated with conceptual metaphors play a role in metaphor use and processing at least some of the time.

Simulating bodily actions. Gibbs (2006a) argues that language interpretation involves embodied simulation in at least two senses. First, language automatically activates “construction of a simulation whereby we imagine performing the bodily actions referred to in the language” (p. 434). Second, understanding language requires listeners to draw inferences about the speaker’s communicative intentions, which can be accomplished by simulating the speaker’s experience and thoughts at the moment of the utterance. These two ideas are implicitly related inasmuch as simulating the performance of bodily actions implied by a speaker’s utterance is one way to simulate the speaker’s thoughts and experience.

The claim that listeners must consider and draw inferences about speakers' communicative intentions is defensible on logical grounds, *if* we assume that speakers and listeners actively use and maintain something like *common ground* (Clark, 1996) or a *mutual cognitive context* (Sperber & Wilson, 1986). However, an experiment by Barr and Keysar (2005) yielded evidence that communicators do not necessarily consider differences in common ground even when these differences are apparent. Subjects who were not visible to each other were required to communicate about the shape and orientation of visual images, and they quickly developed idiosyncratic terminology to describe the shapes. When one member of the team was replaced partway through the experiment by a new member who had not heard the preceding exchanges, the other subject tended to continue using the specialized terminology that had been developed during the first part of the session, in spite of the newcomer's lack of experience with it. A clear implication is that listeners are likely to consider speakers' specific knowledge *or* speakers' specific intentions only when something about the exchange is problematic, or perhaps when the outcome is of particular importance.

The assumption that listeners always consider speakers' communicative intentions, however, is not necessary to Gibbs's overall argument. There is ample evidence that humans, like other primates, are neurally capable of mirroring others' actions, and that humans *do* tend to mirror or echo others' communicative behavior during conversation (Barsalou, 2007; Decety & Grèzes, 2006; Gallese, 2003). Moreover, Gibbs produces extensive experimental evidence in support of the claim that inconsistencies between subjects' actions and words they are asked to process interfere with (and consistencies facilitate) language processing and comprehension. As only one

among many examples, a subject required to signal comprehension by *pushing* a lever will react more slowly to a verb that implies movement *toward* the subject than to one that implies movement *away*, strongly suggesting that motor control neurons consistent with the action of a word or phrase are at least partially activated during processing (Klatzky et al, 1989; see also, for example, Boroditsky & Ranscar, 2002; Glenberg & Kaschak, 2002; Zwaan, 2008). For an extensive review see Barsalou, 2007; Gibbs, 2006b). It seems reasonable to conclude that simulating the action (or state) associated with language plays at least *some* role in everyday language processing.

Perceptual simulation. Noting that the perceptual neural system aggregates (filters, combines, and summarizes) perceptual experience in convergence zones at ever higher levels of abstraction, up to the conscious experience of objects and action sequences as coherent entities (Damasio, 1989; Damasio & Damasio, 1994), Barsalou (1999) suggests that a *conceptual* neural system parallels the perceptual neural system at every level. Within the conceptual neural system, a huge number of *perceptual simulators* develop in long-term memory, each linked to particular feature and association areas. Any simulator can produce an infinite number of partial *perceptual simulations* of the associated concept. For example, a simulator associated with the concept of *cave* might in one context or situation produce a very limited partial simulation of the visual perception of darkness and the tactile perceptions of coolness and dampness, perhaps accompanied by emotional perceptions of claustrophobia-related panic. In a different context, the *cave* simulator might produce a more complete simulation of a dark, cool, slightly damp place, with the associated simulations of subdued echoes and emotional responses related to mystery as well as claustrophobia. In

yet another context the same simulator might produce a more detailed simulation of a large, open place dimly lighted by electric lamps, with stalactites, the sound of dripping water, muffled voices, and echoes, a musty smell, and so on. A simulator associated with the social category, *my significant other*, might produce a simulation of quiet conversation or a candle-lit dinner on one occasion, on another occasion might produce a simulation of love-making, and on yet another occasion of holding hands while walking in the park (Niedenthal et al., 2005).

Simulators can be activated by language, and language constitutes a powerful system for activating simulators. Conversely, both direct perception and simulations can activate language, and this process of activation plays a role in language production. Simulators interact with perception at every level; simulations may be compared with perceptual features as part of the process of recognition and identification, and simulators may fill in missing features of a perceived object. For example, the sight of a whole watermelon will, for most of us, activate a simulator that can fill in the color and texture of the flesh inside. If a wild animal is partially seen in the woods and tentatively identified as a deer or elk, the simulator may fill in details including body shape, antlers, and so on. The processes of recognition and filling-in are far from reliable, as is attested by countless hunting accidents every autumn.

In addition to the usual “five senses,” perceptions include *proprioceptive* and *introspective* awareness of internal bodily states, emotions and cognitive processes, including the logical comparisons between raw perception and perceptual simulation that constitute recognition, classification, and evaluation. Stipulating a complete set of simulators matching this extended range of perceptions, Barsalou (1999) demonstrated

that, in principle, all cognitive processes including abstract reasoning could be accomplished by way of simulations.

In more recent work, Barsalou has explicitly acknowledged the usefulness of a theoretical approach that combines perceptual simulators with amodal computational theories, and has begun to integrate the Perceptual Symbol Systems (PSS) with other approaches to cognition and language, leading to a more comprehensive theory of Language and Situated Simulation (LASS). LASS incorporates more conventional approaches to language processing along with perceptual simulations (Barsalou, 2007; Barsalou et al., 2007). When language is encountered, connections with other words and phrases (e.g. as modeled by Burgess & Lund, 1997 and Landauer & Dumais, 1997) are immediately activated, as are associated perceptual simulators. For simpler tasks, the superficial processing by means of associations between words may be sufficient, and the deeper conceptual processing by means of perceptual simulators may not be required. This helps explain findings, reported by researchers such as Kintsch (1998; 2007), Landauer (2007; Landauer & Dumais, 1997) and Louwerse (2007), that computer programs based on word-word association matrices perform at levels comparable to human agents on multiple-choice vocabulary tests, grading student essays, and many other language tasks. It also helps answer a principle criticism of the Latent Semantic Analysis approach advocated by Kintsch, Landauer and Dumais, and others in their group, by showing how language is grounded in perceptual and motor experience (see Landauer, 2007).

On the one hand, it is likely that words vary in the degree to which they activate perceptual simulators. As Landauer (2007; Landauer & Dumais, 1997) point out, many

words are encountered first, and often only, in reading and may not be grounded at all in embodied experience; these are unlikely to activate many perceptual simulators if they activate any at all. On the other hand, when a word or phrase activates other words that are closely associated in semantic memory, these may in turn activate perceptual simulators *in addition to* those activated by the initial word or phrase (Barsalou, 2007; Barsalou et al, 2007). Thus, depending on the requirements of the task and the cognitive resources available, these systems may operate independently or may interact in complex ways.

Context-Limited Simulation Theory (CLST). Ritchie (2003; 2006), while accepting the fundamental claims of Conceptual Metaphor Theory about the embodiment of everyday metaphors, has rejected the implications that encountering a metaphorical expression necessarily activates the full conceptual metaphor and that we necessarily always experience the metaphor topic *as* the metaphor vehicle (Lakoff & Johnson, 1980). Drawing on Barsalou's work, Ritchie suggests that, along with associated words and phrases, an array of perceptual simulators may be activated by metaphorical language. Especially in the case of frequently-encountered words or phrases, both the associated words and the activated simulators vary in the degree to which they are associated with and considered to be part of the commonplace or definitional meanings. When any word or phrase is encountered, the words and simulations that are not relevant in the present context, that cannot be readily connected with ideas already activated in working memory (Sperber & Wilson, 1986) may not be activated in the first place and if they are activated, are reduced in activation or suppressed altogether. Those words and simulators that are relevant in the present context will be more highly activated (Gernsbacher *et al.*, 2001;

Kintsch, 1998), and will produce context-relevant simulations that will attach to the topic as part of the meaning in this context.

In the case of metaphorical usage, both the words and the perceptual simulators that are most closely associated with the customary “definition” are more or less irrelevant in the current context, and are unlikely to become and remain very highly activated. Conversely, some of the words, and some of the simulations produced by the simulators associated with nuances of experience and activated by the metaphor vehicle are highly relevant in the current context. These definitionally less central but contextually more relevant words and simulations will be more highly activated and will become connected with the topic of the metaphor as part of its meaning in the current context. None of this necessarily involves active processing of the underlying conceptual metaphor. Thus, a phrase such as “*attack* her argument” is likely to activate perceptual simulations of emotional nuances such as hostility and anger associated with *attack*, regardless of whether a detailed *WAR* or *PHYSICAL CONFLICT* schema¹ is activated; other simulators associated with *attack* may or may not become and remain activated, depending on the overall context.

A primary criticism of Conceptual Metaphor Theory is that commonplace expressions can often be mapped onto any of a number of underlying conceptual metaphors, and that these mappings are consequently indeterminate. For example, Vervaeke and Kennedy (1996) point out that many of the expressions which Lakoff and Johnson (1980) associate with *ARGUMENT IS WAR* (“*win*,” “*strategy*,” “*victory*”) can as readily be mapped onto an alternative conceptual metaphor such as *ARGUMENT IS BRIDGE* (see also Haser, 2005; Howe, 2008). Semino (2008) shows that a more general

conceptual metaphor, *ANTAGONISTIC COMMUNICATION IS PHYSICAL CONFLICT* better explains the data. Ritchie (2003; 2004; 2006) proposes that these expressions are often connected in “*fields of meaning*” on the basis of similar sets of perceptual simulators they potentially activate. Particularly expressive metaphor vehicles often develop as *generic* metaphors (Tourangeau & Rips, 1991) that can be applied to a wide range of topics.

X IS A JOURNEY.

One familiar generic metaphor, “*X IS A JOURNEY*,” is used across many languages, and is applied to a multitude of experiences and processes, ranging from the human life-span to working a crossword puzzle (Feldman, 2006; Lakoff & Johnson, 1980). Gibbs (2006a) cites a highly evocative example from an essay by Obst (2003), “*GRIEF IS A JOURNEY.*” Other examples appear in Cameron’s (2007; Cameron & Stelma, 2004) analysis of metaphors from a series of reconciliation talks, Tony Blair’s spring 2005 address to the Labour Party at Gateshead (Ritchie, 2008) and the data from a focus group conversation among a group of scientists analyzed by Ritchie and Schell (2008). Since the metaphor is used in different ways, applied to a variety of topics, and developed to different extents in each of these texts, these texts collectively provide a basis for comparing various approaches to embodiment. In this section, I will analyze each in turn, and discuss how alternative concepts of simulation might be applied to each.

“*Grief is a journey*” Obst (2003) provides an elaborated and fully-developed example of the “*journey*” metaphor in an essay written for a web-page devoted to providing information and support for professional counselors and laypersons interested in the grieving process. Obst artfully exploits the metaphor both as a device to organize

her essay and as a vehicle for expressing several aspects of the grieving process. As such, this example tells us little about the *spontaneous* use of the “*journey*” metaphor in everyday conversation, but it is quite revealing about how a widely-known generic metaphor can be deployed as a rhetorical resource.

Obst begins by describing a *literal* journey, a vacation that is “*invigorating and full of adventure.*” She then mentions two metaphorical “*journeys,*” college, “*toward the goal of a career*” and a new relationship, “*filled with discoveries,*” before introducing the unifying metaphor, “*grief is a journey.*” Thus, Obst describes *life* itself as a series of “*journeys,*” some literal (vacations), others metaphorical; some goal-directed (college), others exploratory and open-ended. The more general metaphor, “*life is a journey,*” is never explicitly stated, but provides an implicit frame for the entire essay.

Obst returns to the “*journey*” metaphor repeatedly, weaving it around several other conventional metaphors. In the double-metaphor, “*getting over,*” grief is simultaneously a set of “*wounds*” (“*obstacles*” to health) from which we eventually “*recover,*” and an “*obstacle*” to continued “*progress*” along the “*journey*” of our life that we must “*get over*” before we can “*move forward*” again. In the fourth paragraph, grief is transformed from an “*obstacle*” or “*wound*” to “*get over*” into a “*deep, dark tunnel*” (which Obst contrasts with a “*cave*” that has no “*exit*”), something to “*get through.*” Finally, the possibility is raised, that the person we have “*lost*” may be preventing us from “*moving on*” because we are unable to “*let go.*” Obst raises this possibility only to deny it. Instead, she assures us that we can create a new relationship through which we can remain “*connected*” and, in effect, “*take the loved one with us*” as we continue along the “*journey*” of life.

Analysis of this essay in terms of Conceptual Metaphor Theory would be tricky, since Obst continually shifts the metaphoric mappings. Grief is mapped onto a series of conceptual metaphors – it is a “*journey*,” an “*obstacle*” on our life “*journey*,” a “*deep, dark tunnel*” we must “*pass through*,” “*wounds*,” a “*tyrant*” that “*oppresses*” us, then a “*murderer*” that “*strangles any joy*.” In addition to *grief*, other concepts including *life* and *learning* are also mapped onto “*journey*.” The result is a complex web of mappings that *could* be detailed and explained, but it would be a complex explanation, and it would not do much to explain why Obst chose this particular mélange of metaphors, or how grief could be experienced “as” so many different things in so short a span.

If we look at the perceptual simulations associated with Obst’s sequence of images, the picture seems much clearer. By starting with a literal journey, an adventurous vacation, Obst activates expectancy, excitement, and happiness, simulations that are reinforced by comparisons to college and beginning a new relationship. Ending the opening sequence with beginning a new relationship is particularly telling, since the essay is all about the grief of the *termination* of a relationship by death. Opening with the upbeat, joyous simulations associated with *beginnings* and *discoveries* frames the essay in a positive and affirmative mood, primes *positive* emotions associated with “*journey*,” and lays the conceptual groundwork for the idea that death and grieving can *transform* rather than *terminate* a relationship. The series of metaphors leads the reader through all of the *negative* emotions, ideas, and bodily states associated with grieving, back to the positive, hopeful entailments of “*journey*,” of “*going somewhere*,” of activities “*filled with discoveries*.”

Once we analyze Obst's images in terms of perceptual simulation, the apparently confused tangle of mixed metaphors makes complete sense. Throughout the essay, her metaphors activate and juxtapose simulations of loss, pain, suffering with change, transformation, and hope. Grief is a "*wound*," activating simulations of pain and disablement or disfigurement, but we are "*recovering*" from it, simultaneously activating simulations of relief, restoration, and "*feeling better*." We are "*in the depths*" and "*in the dark*" but we are not in a "*cave, with no way out*"; rather we are in a "*tunnel*," that leads "*to the other side – to where we can begin again*." Even the analysis of "*filled with discoveries*" is more straightforward once we abandon the insistence that a "*CONTAINER*" metaphor must somehow be "*blended*" (Fauconnier & Turner, 2002) with an "*EXPLORATION*" metaphor and focus instead on the context-relevant simulations activated by these two metaphor vehicles and how they interact with the stream of simulations activated by Obst's sequence of metaphors.

At this point it is worth acknowledging a paradoxical element in analyzing perceptual simulations. Metaphors are often used to express nuances of thought and feeling that are difficult or impossible to express in literal language – that is why figurative language is necessary. The perceptual simulations activated by a metaphor like "*depths of a dark cave*" or "*filled with discoveries*" are complex and subtle; they will be experienced differently by each reader, and they defy simple labels. Unable to assign simulations to clearly labeled categories, as in a conventional content analysis, the analyst is left with two complementary tactics: Point toward the *potential* for activation of simulators and producing context-relevant simulations, and, in a text such as this, in

which metaphor is piled upon metaphor, point toward the association of very different metaphors with very similar simulations.

Gibbs (2006a) argues that the reader will imagine or simulate the bodily action or state described by the metaphor vehicles in Obst's essay. Given the vividness of most of these metaphors, it does seem likely that a person who is reading the essay with more than casual attention will imaginatively "*experience*" (as a more or less detailed simulation) many of these images – a vacation journey, a new relationship, recovering from a wound, being inside a cave or tunnel and looking for a way out. However, these bodily actions and states need not be simulated in much detail. The reader is not likely to smell the dampness of the cave, feel the hardness of the stone floor, or hear water dripping into a shallow pool in the depths of the cave, any of which might be activated by the use of a "*cave*" metaphor in a different context. Rather, those elements of the experience that are relevant in the overall context of the essay (and, for some readers, relevant in the context of a personal experience of grief) will become more highly activated and will be attached to the topic of *grief* while the less relevant simulators are suppressed. But the most strongly activated simulations will be the proprioceptive, introspective, and emotional simulations that are activated in conjunction with the visual, tactile, and motor control simulations. These subtle and intangible simulations remain activated even as the prose moves on to other images, other metaphors. The effect of the essay is accomplished by the activation, accumulation, and reinforcement of thought, experience, and emotion, and its interaction with the *overt* message conveyed in the more literal parts of the text.

In this instance, simulating the writer and recovering the writer's intention seems more important to the analyst, to the cognitive researcher and theorist, than to the general reader. Perhaps other grief counselors may need to draw reasonably accurate inferences about what Obst intended, but a person who is seeking solace from a recent loss may not find it either useful or necessary. For the grieving person, it seems that the intent of this essay is to "*lead*" the griever "*through*" a series of images that will "*show the way through*" the grieving process.

The meaning of Obst's essay, for the grieving person, is not to recover Obst's theory of grief. Rather, for the grieving person the meaning is found in experiencing a sequence of intense perceptual simulations that will connect with the experience of grief, and either alter or replace the perceptual simulations that previously dominated the sufferer's cognitive environment. Thus, the intention of this string of metaphors is to transform both the sufferer's *concept* of grief and the sufferer's present *experience* of grief. The reader of this essay will experience the simulations activated by the sequence of words and phrases directly, in the context of her or his own cognitive context, and not necessarily in the context of the *author's* cognitive context. Indeed, the author, her voice, and any sense of her communicative intention may disappear entirely as the reader engages with the series of powerful simulations she evokes.

That having been said, a language researcher (or another therapist) *might* wish to recover Obst's communicative intention. Experiencing the sequence of perceptual simulations activated by her language (literal as well as metaphorical), in the context of language theory and grief counseling theory and practice, would enable the reader to experience detailed simulations of the grief and counseling experiences on which Obst

bases her essay. Ultimately this more detailed simulation would provide the basis for vicariously experiencing the ideas and feelings Obst experienced as she wrote the essay – for simulating, in other words, what it may have been like to have been Obst, writing this essay, as suggested by Gibbs (2006a).

“Healing is a journey.” Cameron (2007) provides another example of a “*journey*” metaphor that seems at first glance similar to Obst. As Garrod (1999) notes, social interaction poses a particular challenge for language research. Cameron’s analysis makes an important contribution to our understanding of metaphorical language by showing how the structure of social interaction can interact with the pattern of metaphor use.

Cameron’s data come from transcripts of conversations between Jo Berry, whose father was killed by an IRA-planted bomb, and Pat Magee, who planted the bomb, was caught, tried, and convicted of the bombing, then released from prison in a general amnesty. After her father’s death, Berry decided that she wanted to understand the experience of the people who had committed this crime, to “*walk in the footsteps of the bombers*” and “*bring something positive out of it,*” if possible (line 94-95, from Cameron, 2007, p. 202). In this passage, she goes on (lines 99-104, p. 203) to say “*I saw very clearly that the – the end of that journey, would be, sitting down and talking to the people who did it.*”

Here, the “*journey*” is both literal (Berry traveled extensively through England and Northern Ireland) and metaphorical. As a metaphor it seems to apply both to Berry’s personal grieving process of coming to terms with the bombing and the loss of her father and the process of identifying and meeting up with the person or persons who planted the

bomb. Cameron (2007) organizes metaphors according to similarities among their vehicles into systematic metaphors, then analyzes the patterns of re-use, repetition, and transformation of these metaphors both to explicate the emotional, relational, and cultural work accomplished by Jo and Pat through use of these metaphors and to show how the metaphors themselves are transformed into rhetorical resources by this process (see Cameron & Stelma, 2004, for a detailed discussion of Cameron's method). Of particular interest for the present purposes is Cameron's analysis of the way the "*journey*" metaphor is combined with other metaphors, including "*healing*," "*bridges*," "*barriers*," "*connection and separation*."

Cameron suggests that the "mixing" of metaphors by Berry and Magee is not a problem because the coherence of metaphor topics "guides the choice and interpretation of metaphorically used words and phrases" (Cameron, 2007, 209). As with the mixing of metaphors in Obst's essay, I would suggest that coherence is *also* provided by the activation of similar and complementary perceptual simulators, linked together both psychologically and culturally in "*fields of meaning*" (Ritchie, 2003; 2004; 2006).

In lines 883-892 (Cameron, 2007, p. 209) Pat, discussing his own "*journey*," says, "but when you start *losing sight* of the – the – the fact that you're also harming a human being, you *lose sight of that*, or ignore it, or you *find* it easier to ignore it, that's always *had a price*, and some way, well *down the line*, you know, you're going to *come face-to-face* with that *price*." It seems very likely that both Pat and Jo would recognize these as metaphors if they considered the question, but there is no reason to suppose either of them processed these phrases as conceptual metaphors – unlikely, that is to say, that they processed the schemas associated with the vehicles beyond the context-relevant

perceptual simulations these (and other semantically-connected words) activate. If schemas associated with the metaphor vehicles (a lookout on watch, purchasing something on credit, a railroad or subway passenger, or two people meeting on the street) were activated at all, they would have been suppressed or disregarded, because only the associated introspective and emotional simulations are relevant in this context. These introspective and emotional simulations combine into a powerful and complex simulation of ideas and emotions that connect readily with the contents of working memory and would be difficult to express in any other way.

“Lose sight of,” for example, resonates not only with the plight of a person attempting to keep an eye on something difficult to see, but also with a person becoming blind. A person who *“loses sight of”* another person’s humanity is both derelict (how can one lose sight of something so important?) and flawed. *“A price to pay”* is similarly resonant: People are called not only to pay for expensive items they have already enjoyed, to *“pay the tab,”* but also to *“pay the piper,”* and ultimately *“pay for their sins.”* Merely identifying and labeling the metaphors in terms of systematic or conceptual metaphors does not suffice to explain the expressive power of these metaphors in the contexts in which they appear. It is important to reiterate here – it is as unlikely that Jo and Pat actively processed schemas associated with *“pay the piper”* or *“pay for one’s sins”* as it is that they actively processed conceptual metaphors such as *“MORAL OBLIGATION IS FINANCIAL DEBT.”* The point is rather that repeated use of familiar expressions such as *“pay for,” “pay the price,”* and *“a price to pay”* in various contexts forges connections between these linguistic expressions and a complex set of perceptual simulators, only some of which will be relevant in any given context.

Another example of “mixed” metaphors comes in lines 1906-1913 (p. 205), when Pat says “but certainly you – ha – you know, totally *come along that long journey*, you know, you – you’d *reached some conclusion, put a line under the past.*” “*Put a line under something*” originates as an accounting practice of drawing a line under a set of accounts to mark a place at which they are in balance, hence require no further attention, and it has been generalized as a metaphor for completion of many different sorts of event sequences. Similarly, “*reach a conclusion*” is also a double metaphor, directly referring to a process of logical reasoning, itself based on a metaphor, “*reasoning is a journey.*” What ties *all* of these expressions together is their common linkage to a set of perceptual simulators related to a sense of effort, process, and change culminating in satisfaction and completion. From the perspective of perceptual simulation, these are not “mixed” metaphors at all – the simulators they activate are entirely compatible, fully relevant to the current contents of working memory both individually and collectively.

This passage also illustrates, again, the point that the systematic or conceptual metaphors underlying metaphorical expressions need not be noticed by either speakers or listeners. Both Pat and Jo probably knew, or would have realized if asked, that “*reach a conclusion*” and “*draw a line under*” are metaphorical expressions, but it is not necessary to assume that *either* of them considered or experienced the underlying conceptual relationships to a journey, logic, and an accounting convention. Because of their everyday use in a variety of communicative contexts, these and other metaphorical expressions are capable of activating complex and subtle perceptual simulators *without* need of activating the schemas associated with the metaphorical vehicles, and if those

schemas are activated, everything beyond the relevant perceptual simulators will be irrelevant in context, so will not be activated, or at most will be weakly activated.

Consistent with Gibbs's conceptualization, many of the metaphors in the reconciliation data seem to lend themselves to simulating the complete action identified by the vehicle, for example, "*draw a line under.*" Even here, the simulation is likely to be sparse, limited to a visual and motor perception of drawing and seeing a line that has been drawn. It is also possible that less central simulators, that are not essential to the speaker's meaning but do not contradict anything in the context, might remain activated. Thus, when Jo speaks of "*building bridges,*" both she and Pat may actually *see* a partial schematic simulation of a bridge (Barsalou, 2007).

In contrast to Obst's essay, throughout much of the reconciliation dialogue it *does* seem important for both Jo and Pat to understand the other's communicative intention, since that is in large part their purpose for engaging in the conversations. As Gibbs suggests, this understanding very likely does involve an imaginative reconstruction of what it must be like to be the other person, experiencing those thoughts and uttering those words. Indeed, there is evidence, sprinkled throughout the segments of dialogue Cameron reproduces, of precisely this sort of mutual imaginative reconstruction, and as Cameron shows, the participants' use, repetition, and modification of key metaphors contributes powerfully to that mutual imaginative reconstruction.

In a conversation of this sort, both participants are probably *also*, simultaneously, attempting to understand their *own* communicative intention. That is to say, Jo's and Pat's communicative intentions may not always be clear even to themselves until partway through an utterance, or even until the utterance is complete and the other person has

reacted to it. As speakers and writers, we are often an audience to ourselves (Clark, 1996, Ch. 1), and we may not experience the full implications of our utterances until someone else points them out to us, or reacts in a way that disconfirms our expectations. When that happens, we may passively accept the hearer's interpretation, challenge it, or modify our initial intention (Clark, Ch. 2 & 5. In an intensely emotional interchange of this sort, the speaker is especially likely to be an audience to herself, and the perceptual simulators activated by her words (including but not exclusively metaphorical) may facilitate her *own* reconstruction of her communicative intention as much as they facilitate the other person's.

“Forward not back.” A third example comes from a speech by Tony Blair to the 2005 spring conference of the Labour Party at Gateshead (Ritchie, 2008; see also Cameron, 2006). The Labour Party had chosen as its election slogan ***“Forward not back,”*** implying a strongly *negative* interpretation of ***“back”*** (consistent with the widely-used *PROGRESS* metaphor). Blair faced considerable discontent within the party, primarily due to his active support of the Iraq war, also fueled by discontent over several domestic policy decisions widely perceived as contrary to traditional Labour principles. With a general election looming, Blair needed to mollify or silence the malcontents, reassert his leadership of the party, and unify the party for the coming election.

The Labour Party theme, ***“forward not back,”*** taps into a commonplace spatial and orientational metaphor. As a political election slogan, ***“forward”*** activates perceptual simulators such as satisfaction and happiness associated with motion toward a desired goal; conversely, ***“back”*** activates simulators of frustration and disappointment associated with motion away from a desired goal. However, ***“back”*** is also commonly used in a

number of other ways, and activates a number of other perceptual simulators, in addition to those associated with “*progress*” or lack of it.

In the first few minutes of Blair’s speech it is possible to count at least five distinct uses of the “*back*” metaphor, some of them apparently contradictory. “*Back*” first appears in an ambiguous context, carefully set up by an extended description of the recent physical and economic improvements in Gateshead and Tyneside. After listing these improvements Blair declares, “*I’m back.*” Here, “*back*” is used in a primarily geographical sense, and activates simulators associated with a familiar “*home-coming*” narrative. The emotional resonances of welcome, of family and friends, of comfort are reinforced by the immediately following phrase, also very short: “*And it feels good.*” This geographical and emotional use is reinforced by its repetition in the next line, “*Back in the North East,*” and the “family and friends” resonance of the homecoming narrative is emphasized by thanking “the people from Sedgefield who gave me the chance to serve in Parliament.” Immediately, this geographical use of the vehicle, “*back*” is extended to a second metaphorical sense, “*Back with the Labour Party,*” immediately repeated as “*Back with a relentless focus on the job...*”

Blair then introduces a second ambiguous metaphor, closely related to the first: “In this second term, in particular after September 11th, events have sometimes *taken me far from home.*” “Events have *taken me*” activates simulators associated with a lack of volition that is echoed in later passages. The implication of geographical movement in “*far from home*” is *literally* true, inasmuch as Blair has traveled to the United States and to other European capitals on various missions related to the War on Terror generally and to the Afghanistan and Iraq wars specifically. But, at least in the views of Labour Party

dissidents, it is also *metaphorically* true, inasmuch as his focus has been distracted from traditional Labour concerns of economics and social justice by his apparent preoccupation with the unpopular war.

In these four statements, the metaphor vehicle, “*back*,” is used in three distinct ways, all positive, all contrasting with the *negative* implications of “*back*” in the Labour election slogan. Taken together, these three uses of the same metaphor vehicle implicitly acknowledge that Blair has been “*away*,” not only from Gateshead, Tyneside, and Sedgefield, but also (metaphorically) from the central concerns of the Labour Party with the “*job*” of “*delivering* better lives for Britain’s hard-working families.” By asserting that he is “*back*,” Blair tacitly admits that he has “*been away*” from the party as well as from the homespun values exemplified by his description of his “*tour of the country*.”

Blair uses one more *positive* sense of the “*I’m back*” metaphor to accomplish the transition from the past (the party’s past accomplishments as exemplified in local redevelopments, his own preoccupation with terrorism and Iraq) to the immediate future: “It is good to be *back in a fight* with the Tories.” Then, shifting for the first time to a *negative* use of “*back*,” Blair informs the listeners that the Tories have a strategy to win power, not by entering at “*the front door*” but “*by the back*.” This use of “*back*” activates schemas associated with violation of household entry customs and even outright burglary. But then Blair uses “*back*” in two metaphors that re-instate *positive* perceptual simulators: “Where we have *lost* support, we *go out* and try to *win it back*.” Then, “Where we have *lost* old friends, we try to persuade them to *come back to the fold*.” (Here, there is a resonance with Blair’s own “*return*” to his Sedgefield and Labour Party “*home*.”) Following a group of other metaphors (see Ritchie, 2008, for detailed

discussion), approximately ten minutes into the speech, Blair finally introduces the party's election slogan, with its negative use of "*back*": "do we go *forward* with Labour, or *back* to the Tories?"

So we have Blair going on a "*journey*" far from his Labour roots, then "*coming back*." We have disillusioned Labour supporters who are to be persuaded to "*journey back to the fold*," and we have the Tories, who would enter power "*by the back door*" and take the nation on a "*journey back*" to the undesirable "*place*" where their policies previously had the nation. In each context a different set of perceptual simulations is relevant, hence remains activated. In spite of the seeming contradictions among Blair's many uses of *back*, sometimes literally and sometimes as a metaphor, overall coherence is accomplished by the *order* in which these various perceptual simulations are activated and their accumulating effects on the cognitive context. Examining the perceptual simulations activated in and relevant to each specific context enables us to see how an overall coherence is accomplished, and how the apparent self-contradictions within the speech (and, some of his critics would argue, within Blair's policy positions) are resolved through the sequencing of perceptual simulations.

Returning to Gibbs's (2006a) approach, many of the colorful metaphors used in the Blair speech may activate detailed simulations. Certainly Blair's homely little "*marital spat*" metaphor is likely to precipitate a detailed script in most hearers' minds. Indeed, many of the metaphors used in this speech seem to have been chosen largely for their ability to activate detailed action schemas in his audience. It also seems likely that most of his listeners will indeed have been engaged in attempting to recover his communicative intentions. But "communicative intentions" may have a slightly different

meaning here: Given the political situation in which the speech was given, most of Blair's listeners were probably engaged in the *meta-communicative* task of second-guessing his broader strategic purposes, in addition to or even in lieu of the more straightforward *communicative* task of reconstructing his immediate state of mind, "what it must be like to be Tony Blair uttering these phrases in this particular place and time."

"Talk is a journey." The final example comes from a conversation among a group of scientists, in the overall context of a day-long interactive meeting between scientists working on an environmental remediation project and various members of affected communities (Ritchie & Schell, 2008; Weber & Schell, 2001). Early in the scientists' conversation, the facilitator introduced the "journey" metaphor in her instructions: "Well what we're going to try to do is *head toward* this chart here *in about* twenty minutes. So what we want to do is *see* if we can *work through* um, who we are...." Since the chart was located at one end of the room, "*head toward*" is potentially both literal and metaphorical. "*Work through*" suggests that identity is a "*place*," possibly an "*obstacle*" that requires effort to "*get through*." During the introductory phase of the conversation, two other conventional phrases associated with the "journey" metaphor also appear: "I *hasten to point out*," and "*there you go*." The "journey" metaphor appears in reference to the conversation itself several more times during the process of the conversation, for example, "I'm *wandering all over the place* here," "it *goes back* to your comment," and "if you *go around* this table."

Related metaphors appear throughout the scientists' conversation. For example, the participants discuss "an *approach to* decision-making," "the way you *approach* a problem," "the basis for *approaching* truth," and an "*approach to* going after intractable

contamination.” (Here, within the general “*journey*” metaphor, is another generic metaphor, “*approach*,” used with respect to four very different topics.) One of the participants, talking about stakeholders, wonders what “*obstacles* they have to us applying this technology in the field.” On the subject of communicating science to members of the general public, the facilitator asks if the participants “have an interest in *moving beyond* communication.” In discussing the potential for scientific input into important policy decisions, one participant notes that “we *go by dead reckoning* much of the time.

“*Approach*,” “*obstacle*,” and “*move beyond*” are conventionalized phrases and as such can be processed purely through their semantic connections to other words (Barsalou, 2007), but they may well activate perceptual simulations of associated bodily actions, and participants may well have experienced a simulation of associated bodily movements, as suggested by Gibbs. “*Dead reckoning*” is more interesting – it refers to a cognitive process in which a ship’s or aircraft’s position is estimated on the basis of a previous known position, extended according to course, speed, and wind and air currents over the elapsed time. In navigation, the cognitive process is usually expressed and stored externally as markings on a chart (see Clark, 1997), but it is unlikely that a person who has never computed a position by dead reckoning would have a schema that included either visual or cognitive details. For a person lacking navigational experience, “*dead reckoning*” could *only* be processed by way of links to other language.

Not surprisingly, some of the most interesting applications of the “*journey*” metaphor come when the scientist participants are discussing science itself and their roles as scientists. Talking about the application of basic biological knowledge to development

of a new detergent, one of the biologists remarks, “so that *takes from* the science, *through* the technology, *to* the everyday daily life.” From the form of this comment, it appears that the “*journey*” metaphor was consciously chosen, and used *as* a metaphor. In a couple of other examples, when talking about the expectation for community outreach and education activities in addition to their primary duties as scientists, participants refer to the need to “*extend yourself beyond* the description of your work” and their “willingness to *go the extra mile*.” These are also conventional metaphors that appear to have been used deliberately *as* metaphors. Even if simulations of physical movement (“*going*”) are not activated, it seems likely that simulations of physical extension (“*extending yourself beyond*”) and physical distance (“*extra mile*”) are activated.

As with Cameron’s (2007) reconciliation data, the scientists’ conversation is such that every participant would have been motivated to recover each speaker’s communicative intention. Moreover, since half the participants were members of a team who interact daily with each other, they were well equipped for the cognitive and imaginative task of simulating each of the others’ subjective experiences as they spoke. Both of Gibbs’s concepts of simulation seem applicable to these data, along with the more limited concept of partial perceptual simulations. The scientist data also resembles Cameron’s data in that the use of metaphorical language is embedded in a spontaneous, unscripted conversation and thus provides an opportunity to examine metaphor use and comprehension in a particular situated social interaction (Ritchie & Schell, 2008).

Summary: Each of these examples is different: Obst’s essay and Blair’s speech are both artful and highly polished, but they differ dramatically both in audience and in social and cultural functions. The reconciliation data come from a public presentation of

an intensely personal private encounter; this is the closest of these examples to intimate conversation, although it was enacted before a microphone (in a radio interview) for a public audience, and consequently offers the best opportunity for addressing Garrod's (1999) point about the importance and difficulty of considering the influence of social interaction on language use. The scientists' focus group, in the context of a public meeting, is intimate only in the sense that about half of the participants know each other well, but it is entirely spontaneous. We can assume that metaphors and the interactions among metaphors are deliberate and highly structured in the Obst essay and the Blair speech; in the conversations we may infer that any observed structure either emerged from the structure of language itself or was generated "on the fly" by participants as they reacted to their own and others' use of language.

Each of these examples could be analyzed by identifying and grouping together the conceptual metaphors, then detailing the metaphorical entailments, or by identifying systematic metaphors on the basis of similarities among vehicles (Cameron, 2003; 2007; Cameron & Stelma, 2004), then looking for interactions of these systematic metaphors with each other and with the overall structure of the discourse. Both approaches are useful, as Cameron's (2007) analysis of the reconciliation conversations illustrates. However, as is evident from close examination of each text, neither approach captures the full social and cognitive effect of the metaphors in their communicative contexts. To accomplish that richer understanding of the metaphors, we also need to look beyond classifications and thematic groupings and examine the simulations that are activated by the metaphors.

Simulation.

As Gibbs (2006a) observes, the complexity of metaphoric language is such that no one theory is likely to explain the entire range of metaphor use and interpretation. Yet there is a growing body of evidence that much of language comprehension, including metaphor, involves embodied experience and embodied simulations of embodied experience. These considerations raise two sorts of challenges for communication theory: first, to explain *how* embodied experience is processed and simulated, and how the processing and simulation of embodied experience contributes to language use and comprehension, and second, to incorporate these insights in a coherent way into research based on actual communication interactions.

The analyses presented in the foregoing suggests a robust concept of *simulation* that may range across several levels of detail, from a subtle muscle contraction the individual is scarcely aware of or a fleeting emotion that barely registers, to a detailed imaginative reconstruction of the experience of being lost in a dark cave, all the way up to a reader's empathetic imaginative reconstruction of a writer's experience at the moment when she develops the cave metaphor. It seems apparent that we can experience a small subset of simulations activated by a metaphor vehicle without experiencing the full object or event described or named by the vehicle, or we can experience a more coherent, but still very restricted simulation of the vehicle as a conceptual entity. As some of the extended metaphors developed by Obst and Blair illustrate, we can also be led to construct an elaborate simulation of a metaphor vehicle, complete with simulations of several perceptual modalities (the sight and sound of smashing crockery, in Blair's "*marital spat*" metaphor). If we *do* experience a fuller simulation of the object, it is likely to reinforce and strengthen the context-relevant partial simulations: If a reader

fully processes the “*cave*” metaphor in Obst, imagining *being in* a cave will strengthen the context-relevant experiences of isolation and darkness.

Incorporating Gibbs’s (2006a) proposals with a more detail-level concept of simulation drawn from Barsalou’s (1999; 2007) perceptual simulation theory of cognition creates a three-level model of cognitive simulation. At the most detailed level are the simulators, in the conceptual neural system, of discrete elements of perception. These are usually organized in complex schemas, which may be more or less richly developed. For example, anyone who has ever owned a housecat has a rich and complex *cat* schema. By contrast, most of us have rather sparse *marmot* schemas. A *cat* schema includes neural connections to hundreds, even thousands, of simulators – for various shapes and qualities of cats, qualities of cat fur, sounds cats make, smells associated with cats, behavioral traits, and veterinarian bills. For a familiar and complex concept like *cat*, our schemas may be so large and complex that no more than a small portion of the full schema is likely to be activated at any given time. When all or some subset of the associated simulators are activated, those that are not relevant to the pre-existing contents of working memory are usually suppressed (Gernsbacher et al, 2001).

The schema-level simulation proposed by Gibbs, the imaginative simulation of the condition, entity, or action identified by a metaphorical word or phrase, is composed of an assembly of detail-level perceptual simulators. Thus, when Blair describes a marital spat, the listener would experience a simulation of a perception of a spouse (probably the wife) throwing dishes, complete with the sounds of breaking porcelain. These simulations can be more or less detailed, depending on the context – but they vary

likely do *not* include the color of the thrown crockery or the pattern of the wallpaper over the kitchen sink.

At the higher level conceptualized by Gibbs, the listener simulates the person speaking, or at least the relevant parts of the speaker's experience at the time of the utterance, as part of apprehending the speaker's communicative intentions. This higher-level person simulation would seem to involve a complex of lower-level simulations, including simulations of the metaphor vehicles used by the speaker as well as simulations of the speaker's perceptions of the context and so on. Again, these would, logically, be composed of detail-level perceptual simulations based on some relevant sub-set of the listener's knowledge about the speaker, supplemented by the listener's own ideas about the current context. Taken as a whole, the idea of simulations is capable of explaining much of what is interesting about metaphor use and interpretation, and of providing a powerful basis for future research on communication.

Implications and Directions for Future Research

The analyses presented in the foregoing focus on metaphorical language use, but the claim that language at least some times activates complex perceptual simulators, along with the related claim that the context-relevant simulators become attached to the topic and become part of its meaning in the present discursive context, suggests implications that go beyond the analysis of metaphor use and comprehension. It seems very probable that evocative language may activate complex simulations, including simulations that are not directly associated with the "conventional meaning" of the words and phrases, and these may have important effects on the "cognitive context," whether the language is used in a literal or metaphorical way. Indeed, it seems likely that

metaphorical uses may sometimes convey *less* simulation-based meaning: Compare the literal phrase “My wife has recently *divorced* me” to the metaphorical phrase “his theories are entirely *divorced* from any sense of everyday reality.” The literal use, in the context of an actual conversation, would activate a much larger and more complex set of emotions and thoughts than would the metaphorical use. Accordingly, it may not be nearly as important to determine whether a particular usage is intended and understood metaphorically as it is to determine the extent to which speaker and hearers actively processed the potential associated simulators.

By the same token, it may not be important to identify which among the possible conceptual metaphors underlies a metaphorical phrase: More important, again, is to assess the simulations that were or may have been activated. As the two versions of the same spoken metaphor, “*tow* the line” and “*toe* the line” illustrate, very different underlying conceptual metaphors can sometimes activate very similar simulations and convey very similar meanings (Ritchie & Dyhouse, 2008).

Barsalou’s (2007) suggestion that, at least in some tasks, language is processed only by means of its connections with other language, and not necessarily at the deeper conceptual level of perceptual simulators, leads to a parallel question about metaphors. Idioms are sometimes processed as lexicalized language units, sometimes processed as metaphors, complete with activation of perceptual simulations (Glucksberg, 1993; 2001; Ritchie & Dyhouse, 2008). It seems likely that other, less conventionalized metaphorical phrases may also be, some times, processed in a surface, “merely linguistic” way, and that metaphorical phrases generally may be processed both through connections with

other language and through the perceptual simulations they activate. All of this raises several questions for future research.

First, what aspects of a communicative situation influence the extent to which expressive language, including metaphors, is processed (1) at the surface level, primarily in terms of its relation to other language elements, (2) at a deeper conceptual level, with partial activation of a handful of perceptual simulations, or (3) at a very deep conceptual level, with complete activation of a complex schema? Barsalou's suggestion is based on experimental tasks, but Cameron's (2007) research suggests that the structure of the discourse context itself may have a strong influence on the way language is processed. Participants' degree of involvement in the communicative interaction probably has some influence, and individual traits like "need for cognition" (Cacioppo & Petty, 1982) may also be involved. Conversely, what difference does it make for the progress of a conversation and the construction of meaning whether a phrase is processed deeply in terms of perceptual simulations or more shallowly in terms of connections to other elements of language? If a metaphor activates connections to other language as well as direct simulations, the associated language might activate additional simulations: Researchers need to be alert to interactions among the various simulations activated by the metaphor and by the associated language as well as to the direct effects of these simulations on the cognitive context and on social interactions. And what difference does it make if participants in a conversation experience very different simulations?

The extensive experimental research literature described by Barsalou (2007), Gibbs (2006a; 2006b), and others, a sampling of which I have cited, makes a strong case for the involvement of perceptual simulation in language processing, and provides some

evidence of particular simulation activation. But, as I noted in the foregoing, it is no trivial task to identify the simulations activated for a particular person in a particular situation by a metaphor or other expressive language. Some evidence is usually available from surrounding language use (Cameron, 2007), and close examination of non-verbal elements of a conversation, when they are available, would help validate interpretive claims about simulations of emotions. Other techniques such as thought-listing might usefully be explored. These and related methodological issues require further investigation and development.

Finally, Cameron's (2007) research suggests an important direction for continued investigation of the way figurative language is patterned in conversation (e.g., repeated, developed, or transformed). Cameron points out that the conversation she investigated is remarkable both for its emotional intensity and by virtue of the courage, honesty, and insight of the participants, and suggests that her approach may not necessarily apply to conversations of a different sort. In forthcoming work I hope to show that an extension of Cameron's approach can illuminate conversation and social interactions in various social contexts, beginning with a more detailed analysis of the scientists' conversation discussed in the foregoing (Ritchie & Schell, 2008), and continuing with analyses of "peer-group conversations" (Gamson, 1992), in which acquaintances discuss issues of shared interest or concern. Future research will also continue to develop the implications of Cameron's insight that patterns of metaphor use and transformation can illuminate the relational and cultural processes involved in a situated conversation (see for example Ritchie, 2008).

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¹ Lakoff & Johnson have been criticized by several theorists, beginning with Vervaeke and Kennedy (1996) for their apparently arbitrary claim that this and other metaphorical phrases are necessarily based on a single “root” metaphor (see also Haser, 2005; Semino, 2008; Ritchie, 2003; 2006). Indeed, for many metaphors, it appears that different people may access quite different underlying conceptual metaphors, with no apparent detriment to their mutual understanding (Ritchie, 2006; Ritchie & Dyhouse, 2008). As I will argue later in this essay, the simulators approach renders the question of which is the “correct” underlying conceptual metaphor much less relevant.