

Evaluating Contemporary Models of Figurative Language Understanding

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The 7 articles in this collection describe new views of figurative language understanding. These articles differ in the types of figurative language they examine and address different linguistic levels (i.e., word vs. utterance) in the models proposed. Yet the articles make important claims about the use of contextual information in inferring figurative meaning and similarities and differences in processing figurative and literal language. These models are evaluated; places where the models conflict are noted; and ways these new ideas are improvements over more general, traditional theories of figurative language understanding are suggested. Several issues and topics are also raised that are not addressed in these articles but should be of concern to figurative language scholars.

The empirical study of figurative language understanding has always experienced an identity crisis. Unlike many topics in experimental psycholinguistics, such as syntactic parsing and lexical ambiguity resolution, where scholars generally agree on the main questions, figurative language scholars have pursued many avenues in their studies. For instance, some scholars view figurative language as just another kind of verbal material to explore when context affects default literal processing to create figurative meaning. Other scholars explore the pragmatic functions of figurative language, such as why people speak or write figuratively and the effects such language has on listeners or readers. Another difference is that some scholars propose broad theories that may apply to many kinds of figurative language (e.g., metaphor, metonymy, irony, proverbs), whereas others concentrate on the details of how a particular type of trope is interpreted (e.g., metaphor). A final group of scholars focus on the possible connections between figurative language and human

thought. These researchers see figurative language not just as special rhetorical devices for communication, but as reflecting pervasive figurative schemes of thought.

The collection of articles in this special issue of *Metaphor and Symbol* represent some of this diversity in figurative language research. I applaud the variety of topics explored in these articles and believe the models discussed are at the cutting edge of empirical research in psycholinguistics. Yet there are several recurring themes that cut across these different articles. Perhaps the most significant of these is that traditional views of figurative language understanding no longer account for the complexity of empirical findings seen in these recent psycholinguistic studies. My plan is to discuss these new ideas and offer some critical remarks in hopes of stimulating future research. I also briefly suggest several areas that deserve consideration in formulating new models of figurative language understanding.

GENERAL MODELS OF FIGURATIVE LANGUAGE UNDERSTANDING

The significance of these articles is that they contrast with several traditional models of figurative language understanding. These traditional models are quite general in that they attempt to account for people's understandings of many kinds of figurative speech. The most famous, and still controversial, of these views is the standard pragmatic model, best associated with philosophers Grice (1975, 1978) and Searle (1979). They proposed that figurative language deviates from normal literal speech and requires additional cognitive effort to understand. The standard pragmatic model assumes that understanding what speakers figuratively implicate in context demands pragmatic information that is more difficult to access than the semantic knowledge used to determine literal meaning.

The results of many psycholinguistic experiments have shown that the standard pragmatic model fails to account for the empirical evidence (see Gibbs, 1994; Glucksberg, 1998). Numerous reading-time and phrase-classification studies demonstrate that listeners and readers can often understand the figurative interpretations of metaphors, irony and sarcasm, idioms, proverbs, and indirect speech acts without necessarily having to first analyze and reject their literal meanings when these expressions are seen in realistic social contexts.

An alternative view of figurative language use suggests that people can comprehend the intended meanings of many nonliteral utterances directly if these are seen in realistic social contexts (Gibbs, 1994). This direct access view simply claims that listeners need not automatically analyze the "complete" literal meanings of linguistic expressions before accessing pragmatic knowledge to figure out what speakers intend to communicate. This view does not claim that listeners never access something about what the individual words mean (perhaps, but not necessarily, these words' literal meanings) during processing of what speakers im-

ply. Nor does the direct access view claim that people never take longer to process a figurative meaning than to understand a literal one. People may sometimes take a good deal of time to process, for example, novel poetic metaphors. Yet it is not at all clear that the additional time needed to understand some novel expressions is necessarily due to a preliminary stage in which the nonpragmatic, literal meaning for an entire utterance is first analyzed and then rejected.

Both the standard pragmatic and direct access models have received a good deal of attention in various psycholinguistic studies looking at figurative language processing at the word and utterance level (again, note how the direct access view was originally conceived at the utterance level only). All of the new models proposed in this collection are hybrids of these two general views, but with more specific understanding of the dynamics of figurative language processing.

IS FIGURATIVE LANGUAGE UNDERSTOOD DIRECTLY?

Is figurative language understood directly or indirectly? Most articles in this collection explicitly discuss this issue in regard to when context influences figurative language processing. They present new specific alternatives to the general models. One model, which has already received attention in the literature, is the graded salience hypothesis (Giora, 1997; Giora & Fein, 1999; Giora, Fein, & Schwartz, 1998; Peleg, Giora, & Fein, 2001/*this issue*). According to this idea, highly salient meanings of both words and phrases are automatically processed during the initial stages of figurative language comprehension. For instance, processing familiar metaphors (e.g., “*step on someone’s toes*”) should activate both their literal (e.g., foot) and metaphoric (e.g., offend) meanings, even when these metaphors are seen in inappropriate discourse contexts. Processing unfamiliar metaphors (e.g., “*Their bone density is not like ours*”) may only initially activate their literal meanings, as these are most salient. Different empirical studies, ranging from reading-time to word-fragment completion experiments, support this general account of people interpreting metaphors, irony, and jokes. The graded salience model stands as a hybrid view of figurative language processing in that it provides more flexibility in accounting for people quickly or slowly interpreting figurative language.

In this collection, Peleg et al. (2001/*this issue*) offer another test of the graded salience model by examining whether two separate mechanisms are involved in lexical ambiguity resolution. Their data indicate that context may sometimes select the appropriate meanings of ambiguous words (e.g., *bat*) before all of their individual senses are activated. Yet context does not inhibit salient but contextually unacceptable meanings (e.g., baseball in the sentence *The biologist wounded the bat*). Not surprisingly, context effects do not outweigh salient meanings when people read the beginnings of sentences, but may have a stronger effect at the end of sentences as more contextual information accrues. Peleg et al. claim that these data

support the idea that two mechanisms are at work during sentence processing. A linguistic processor produces the immediate activation of salient word meanings, whereas a contextual processor independently shapes the overall message.

The graded salience model has significant appeal as a general model of figurative language understanding because it may explain linguistic processing at both the lexical and phrasal levels. For instance, just as salient meanings immediately arise when individual words are read, the salient meanings of conventional or familiar phrases get immediately activated regardless of context (Giora & Fein, 1999). These different empirical findings make sense when considered independently, but they do not necessarily fit together. Thus, context quickly shapes the actual meanings people interpret for words they read, yet context does not work to constrain the meaning of an entire phrase until after the salient, and contextually inappropriate, meaning of that phrase has been understood. It appears that the contextually appropriate word meanings are ignored during some aspects of utterance interpretation (i.e., when the utterance meaning varies from the salient interpretation associated with some phrase). This discrepancy between what happens at the word and utterance levels suggests that there may not be a single contextual processor at work during linguistic processing, but that different kinds of contextual information shapes interpretation at different temporal points during on-line language understanding.

Although many theories assume that understanding an ambiguous word's meanings involves the activation of either one or several of its specific senses, Frisson and Pickering (2001/*this issue*) claim that the language processor initially accesses an interpretation that can be compatible with both a word's literal and figurative meanings. This underspecification model assumes, for example, that the initial meaning recovered when reading the verb *disarm* in any context is underspecified as to whether it refers to removing literal or figurative arms. Over time, however, the language processor uses context to home in on the word's appropriate meaning, where the homing-in process is faster when the preceding context is strong and slower when the preceding context is neutral.

Support for the underspecification model comes from several eye-movement studies. In one study, Frisson and Pickering (2001/*this issue*) examined people's processing of ambiguous verbs. Consider the verb *disarmed* in "*Mrs. Graham is quite certain that they disarmed about every critic who was opposed to spending more money on art.*" The use of *disarmed* reflects its subordinate, metaphorical interpretation (as determined by pretests). The eye-movement data showed that the processing difficulty with the subordinate sense of *disarmed*, relative to when the word was used in a literal, dominant sense (e.g., *After the capture of the village, we disarmed about every rebel and sent them to prison*), did not emerge until after the critical verb was read. Context reduces processing difficulty, but the difference again did not emerge until much after the verb was seen. Frisson and Pickering suggest that people did not initially access either specific sense or several senses for an ambiguous verb. Instead, readers initially recovered a general, underspecified mean-

ing for the verb and then created a further concrete instantiation of its meaning later on. According to the underspecification model, then, context does not operate to judge between different word meanings, but functions to change an underspecified or highly general meaning into a specific interpretation.

I agree that words are not always understood to their fullest extent when first encountered in reading. Yet it is unclear exactly what constitutes an underspecified meaning for any polysemous word. Although some linguists have attempted to specify the very abstract senses of several polysemous words (Groefsema, 1995), other advocates of this abstractionist, or monosemy, view claim that underspecified senses are so abstract as to be semantically unspecifiable (Ruhl, 1989). Most cognitive linguists reject the underspecification view precisely because they have failed to discover senses that are rich enough to capture the wide range of meanings (up to 100 for some polysemous words) many words possess (Gibbs, 1994; Sweetser, 1986).

The underspecification model does not assume that different linguistic processes must exist for different meaning products (i.e., literal vs. figurative uses of words) to arise during on-line linguistic understanding. In this way, the putative distinction between literal and figurative senses of a word is irrelevant, at least in terms of ordinary processing. Of course, the underspecification model only addresses figurative language understanding at the word level, and it is not clear how the underspecification model may be extended to account for understanding of speakers' utterances that are figurative at the phrasal or full-sentence level. In this way, the underspecification model is not contrary to the direct access view, as described previously. Similar to the graded salience model, the underspecification model embraces a modular view of linguistic processing, at least in the sense that lexical access is encapsulated from contextual effects.

A different model of figurative language understanding embraces the notion of constraint satisfaction, an idea that has gained much support in psycholinguistics and cognitive science. When people comprehend a text, or a figurative utterance, they must construct an interpretation that fits the available information better than alternative interpretations. The best interpretation is one that offers the most coherent account of what people are communicating, which includes information that best fits with certain other information and those that do not. In this view, understanding a figurative utterance requires people to consider different linguistic and nonlinguistic information that best fits together to make sense of what a speaker or writer is saying. Constraint satisfaction models are computationally efficient, and perhaps psychologically plausible, ways of showing how different information is considered and integrated in everyday cognition.

Katz and Ferretti (2001/*this issue*) argue that a constraint satisfaction model provides the best explanation for their proverb-understanding data. They employed a self-paced moving window paradigm to show that context affects people's immediate reading of familiar (e.g., "*Lightning never strikes the same place*").

twice”) and unfamiliar proverbs (e.g., “*Straight trees have crooked roots*”) that have both well-formed literal and figurative meanings. Familiar proverbs were understood more easily than unfamiliar expressions, and the speed-up in processing for familiar proverbs occurred as soon as the second word of the expression was read. But the first words of unfamiliar proverbs were read more quickly in contexts supporting their figurative, rather than literal, meanings. Yet the analysis of an unfamiliar proverb’s figurative meaning was not always complete when the last word was read. These findings do not completely support either of the general models of figurative language understanding, nor do they agree with the graded salience model (although some of the data are compatible with each view).

Katz and Ferretti (2001/*this issue*) suggest that a constraint satisfaction model accounts for this pattern of data by positing how different sources of information (i.e., syntactic, lexical, conceptual) compete for activation over time in parallel. Constraints interact to provide probabilistic evidence in support of various alternatives, with the competition ending when one alternative fits best. For example, when reading an unfamiliar proverb, people immediately focus on a literal interpretation because there is less competition from other sources of information supporting a figurative meaning. Similarly, familiar proverbs are easier to process than unfamiliar expressions because there is more information available from the context and the words in familiar proverbs to support a nonliteral interpretation. Katz and Ferretti propose several additional empirical tests of this constraint satisfaction view, and the findings here should be quite relevant in distinguishing between this view and the more traditional ideas of figurative language understanding.

The idea that different sources of linguistic and nonlinguistic information compete for activation and are ultimately integrated makes intuitive sense in explaining diverse aspects of figurative language understanding. Perhaps the greatest challenge advocates of this model face is to formulate precise experimental predictions that distinguish this view from alternative theories. Katz and Ferretti (2001/*this issue*) offer a strong argument for showing how this account explains several aspects of figurative language processing at the word, phrasal, and higher order textual levels. To some extent, the constraint satisfaction view provides the exact hybrid model needed to show under what circumstances figurative language is understood directly or indirectly.

A new entry in the psychological literature on figurative language use is the space structuring model (Coulson & Matlock, 2001/*this issue*). Following the work on conceptual integration, or blending, theory (Fauconnier & Turner, 1998), the space structuring model suggests that figurative language understanding involves complex mappings across four or more spaces in conceptual integration networks. Thus, understanding metaphor requires the coordination of conceptual structures beyond the traditional idea of a single mapping between source and target domains.

Consider the familiar metaphor “*Surgeons are butchers*” (see Grady, Oakley, & Coulson, 1999). One may argue that this metaphor, like all others, is explained in

terms of the projection of information from the source domain of butchery to the target domain of surgery. But this mapping alone does not provide a crucial element of our interpretation of this metaphorical statement, namely that the surgeon is incompetent. After all, butchers can indeed be as skilled at their job as surgeons are at theirs. Under a space structuring account, metaphoric meaning is captured by a blended space that inherits some structure from each of the input spaces. Thus, from the target input space for surgery, it inherits elements such as of a person being operated on, the identity of the person who is doing the operation, and the place where this all happens. The source domain butchery input space inherits information such as what a butcher does and his relevant activities such as using sharp instruments to slice up meat. Besides inheriting partial structure from each input space, the blend develops emergent content of its own, which arises from the juxtaposition of elements from the inputs. Specifically, the butchery space projects a means–end relation that is incompatible with the means–end relation in the surgery space. For instance, the goal of butchery is to kill the animal and sever the flesh from its bones. But surgeons aim to heal their patients. This incongruity of the butcher’s means with the surgeon’s end leads to an emergent inference that the surgeon is incompetent.

Like blending theory, the space structuring model appears to be a highly generalizable tool that can explain a broad range of linguistic and cognitive phenomena, especially those involving the emergence of linguistic meaning. Thus, metaphoric interpretations of novel poetic figures are constructed on the fly, emerging from blended spaces and not from the input spaces alone nor from some additive space that two or more domains have in common (i.e., the generic space). The space structuring model is especially useful in describing how different kinds of contexts set up different mappings that in turn influence whether, and how quickly, literal and figurative utterances are understood. In general, whether a metaphor is understood directly or indirectly is related to the complexity of mappings and conceptual integration processes. This flexibility in processing is clearly at odds with the tenets of the standard pragmatic view of figurative language use.

My concern with the space structuring model is that it remains unclear exactly what kinds of empirical data can falsify it. For instance, Coulson and Matlock (2001/*this issue*) present the results of an off-line feature listing study that demonstrate people create new features from the blending of different knowledge domains when reading metaphoric sentences. Of course, most theories of metaphor assume some sort of emergence between diverse knowledge domains that give rise to metaphoric meanings. In this way, Coulson and Matlock’s (2001/*this issue*) data are certainly consistent with the tenets of the space structuring model, but the data do not distinguish this view from many alternative models of metaphor. As suggested earlier, the challenge here is to find ways of making precise experimental predictions that show how this model is superior in different respects to alternative views.

Gentner and Bowdle (2001/*this issue*) propose a different model that partly explains whether figurative language is understood directly or indirectly. Their

model, titled the career of metaphor theory, proposes that metaphorical mappings between concepts from different domains can be accomplished through either comparison or categorization processes. This theory claims that there is a shift in the mode of mappings from comparison to categorization processes as metaphors become conventionalized. For instance, novel metaphors such as "*Science is a glacier*" involve base terms like *glacier*, with a literal source (i.e., "a large body of ice spreading outward over a land surface") but no relational metaphoric sense (i.e., "anything that progresses slowly but steadily"). People comprehend novel metaphors as comparisons, in which the target concept (e.g., "science") must be structurally aligned with the literal base concept (e.g., "a glacier"). In some instances, the comparison process may lead to the induction of a novel metaphor category (similar to the main claim of Glucksberg & Keysar, 1990).

On the other hand, conventional metaphors can be understood either by comparison or categorization processes. For example, the metaphor "*A gene is a blueprint*" has two closely related senses (e.g., "a blue-and-white photographic print detailing an architect's plans" and "anything that provides a plan"). The relations between these two senses makes the conventional base term polysemous (i.e., semantically related literal and metaphoric meanings). As such, conventional metaphors may be understood by matching the target concept with the literal base concept (a comparison process) or by viewing the target concept as a member of the superordinate metaphoric category named by the base term (a categorization process).

Various empirical studies support the career of metaphor theory. Conventional metaphors are processed more quickly than novel metaphors, and conventional metaphors are more asymmetrical than novel expressions (Gentner & Wolff, 1997). Moreover, conventional metaphors were understood faster when primed by base terms than when primed by target terms, whereas both base and target terms equally facilitate processing of novel metaphors (Gentner & Wolff, 1997), showing that conventional base terms compared to novel base terms have highly accessible metaphorical meanings.

The career of metaphor view, similar to some of the other new models proposed in this special issue, has fairly complex predictions about whether metaphors are processed directly or indirectly. Gentner and Bowdle (2001/*this issue*) argue that reading-time differences for conventional and novel metaphors does not imply that conventional metaphors are understood directly, whereas novel metaphors are interpreted indirectly. Understanding both kinds of metaphors involves structural alignment of the target and base representations. Mappings between a target and a metaphor category, as in conventional metaphor, will require less cognitive effort than mappings between a target and a literal base concept, as in understanding novel metaphors. This idea also explains empirical findings that conventional metaphors are easier to comprehend than conventional similes, because similes promote alignment between a literal base concept with a target. Thus, conventional

metaphors are processed as direct categorizations, and conventional similes are comprehended as direct comparisons.

Finally, the career of metaphor view also explains something about the role of established metaphorical mappings (i.e., conceptual metaphors) during verbal metaphor understanding. Many linguists, and some psychologists, argue that many abstract concepts are metaphorically structured and represented as such in long-term memory. Some research suggests that many common figurative phrases are understood by accessing these more global cross-domain mappings (Gibbs, 1994; Gibbs, Bogdonovich, Sykes, & Barr, 1997). But the career of metaphor model hypothesizes that large-scale domain interactions should be reduced when people understand expressions that are more conventional, contrary to the findings of Gibbs et al. (1997) on immediate idiom comprehension. Of course, as Gentner and Bowdle (2001/*this issue*) emphasize, anything that increases the salience of the domain-specific sense of the base term relative to the domain-general sense will facilitate comprehension, such as when a conventional figurative expression is embedded in a discourse context that links the target and base domains in some way (e.g., Nayak & Gibbs, 1990).

The career of metaphor view is highly specific to metaphor and may not easily apply to other kinds of figurative language, such as metonymy and irony. But this view makes the important claim that understanding figurative language directly or indirectly requires inferential work, an idea that fits nicely with the general tenets of the constraint satisfaction model. In fact, all of the models proposed in this collection of articles fit within the broad umbrella of the constraint satisfaction view. The graded salience model emphasizes the importance of salient meanings in figurative language processing; the underspecification view highlights how contexts work to define words' appropriate, specific meanings; the space structuring view shows how many knowledge domains interact to create novel figurative meanings (with these blending processes perhaps being defined in terms of constraint satisfaction); and the career of metaphor view embraces satisfaction of fit in aligning base and target terms (see Gentner & Clement, 1988).

In summary, understanding whether figurative language is processed directly or indirectly may best be explained in terms of very flexible models that specify the exact dynamics of how different linguistic and nonlinguistic sources of information interact to create figurative meanings. This idea does not imply that there is, or should be, a single general model that necessarily explains all aspects of figurative language processing. We need to be careful in not assuming that theories proposed to explain one kind of figurative language use (e.g., metaphor) necessarily apply to explaining other instances of figurative language interpretation (e.g., irony or metonymy). But there may be a general scheme, such as that of constraint satisfaction, that provides global parameters for theories of both figurative and nonfigurative language interpretation.

WHAT IS LITERAL MEANING?

One of the difficulties in figurative language research is that scholars often compare processing of metaphor, irony, idioms, proverbs, and so forth against comprehension of literal language without specifying what constitutes literal meaning. Many scholars have noted the ambiguity in ideas about literal meaning (Gibbs, 1994; Gibbs, Buchalter, Moise, & Farrar, 1993; Lakoff, 1986), with some arguing that it makes little sense to continue referring to a single type of meaning as “literal” (Gibbs, 1994, in press). Moreover, cognitive linguists and psychologists have argued that many expressions typically referred to as literal actually are grounded in metaphoric and metonymic thought (Gibbs, 1994; Lakoff & Johnson, 1999).

A provocative article in this collection that adopts a reverse stance on the figurative grounding of literal meaning argues that figures of speech are rooted in literal language (Chiappe & Kennedy, 2001/this issue). They note that literal language is indispensable for classification and for expressing similarity. Under this literal base model, classification forms are used when the topic and vehicle terms share many properties (e.g., “*Limes are like lemons*”), whereas similarity forms are employed when the topic and vehicle terms share few common features (e.g., “*Education is a stairway*”). Chiappe and Kennedy present several rating studies that support these predictions. As such, these findings are inconsistent with traditional views that metaphors are elliptical similes.

An important part of the literal base model is the assertion that “In literal language, we say that an object belongs in a category when it possesses many if not all of the properties associated with the category. When the object only has a few of those properties, we use a similarity statement to express the relation” (Chiappe & Kennedy, 2001/this issue, p. 264). Figurative expressions temporarily ease the restrictions placed on their literal forms (e.g., by shifting references toward less essential properties of the topic term). For instance, figurative phrases other than metaphor, such as the hyperbolic statement “*She’s faster than a speeding bullet*,” loosen some of the constraints we know about humans and speeding bullets. The literal base model appears to have greater application than just explaining people’s preferences for similes and metaphors.

The literal base model resembles in many respects the idea proposed by Sperber and Wilson (1985–1986) that metaphor and other figures of speech can be profitably examined as examples of “loose talk.” I believe there is some merit to both views and that Chiappe and Kennedy’s (2001/this issue) data reflect important aspects of how metaphors and similes are both instructions to find relevant common properties of topic and vehicle terms. But the claims that metaphorical language only loosely resembles speakers’ thoughts or concepts ignores the possibility that such language may be direct reflections of metaphorical concepts (Gibbs, 1994; Lakoff & Johnson, 1999). Thus, people may stereotypically view concepts such as “journeys” as being a significant part of their idea of “love,” which is precisely

why people find it easy to think of, and speak of, love as a journey (e.g., "*My relationship is a dead-end street, We are just spinning our wheels,*" etc.). The metaphorical structuring of many fundamental concepts is not secondary to their literal base but essential to the very creation of the concept in the first place (Gibbs, 1994). In this way, at least some parts of figurative meaning do not necessarily rest on a literal base but are rooted in figurative concepts.

Despite my reservations about the literal base model, Chiappe and Kennedy (2001/*this issue*) deserve much praise for explicitly trying to define literal meaning. I prefer that scholars not assume a certain kind of meaning be viewed as "literal" just because it appears to contrast with other forms of figurative language. The very idea of "literality" carries with it many assumptions about default meaning and processing that are simply unwarranted and not experimentally verified. For the moment, I urge scholars to perhaps distinguish "figurative" from "nonfigurative" or even "direct" meaning without embracing some standard of meaning or language as being most prototypical. At the very least, psycholinguists would do well to openly address their views of literal meaning whenever they set up experimental contrasts between figurative and literal meaning.

Despite the problems associated with defining literal meaning, many scholars continue to study how literal meanings are ignored during figurative language processing. One new proposal suggests that interpreting metaphors, for instance, involves the basic cognitive mechanism of suppression (Gernsbacher & Robertson, 1999). Suppression may provide a mechanism to attenuate irrelevant aspects of source domain information during metaphor interpretation. Thus, understanding the metaphor "*Lawyers are sharks*" requires that shark attributes such as swimming, living in the ocean, having fins, and so on should be suppressed, which enhances relevant attributes such as tenacity, ferocity, and aggressiveness. Evidence in support of this claim was shown in studies where participants were faster to verify the statement *Sharks are tenacious* having first read the metaphor "*Lawyers are sharks*" than when they first saw *Hammerheads are sharks* (Gernsbacher & Robertson, 1999). Reading the metaphor "*Lawyers are sharks*" also slowed people's verification of the statement *Sharks are good swimmers* compared to when they first read *Hammerheads are sharks*. This pattern of findings shows that metaphor understanding requires both the suppression of irrelevant attributes in the source domain and enhancement of the appropriate ones.

Gluckberg, Newsome, and Goldvarg (2001/*this issue*) present in this collection several new studies to better understand how metaphor-irrelevant information is inhibited during metaphor processing. They examined whether the differential accessibility of relevant and irrelevant information obtained in the Gernsbacher and Robertson (1999; also see Gernsbacher, Keysar, & Robertson, 1995) study is due to active inhibitory processes or the result of post-comprehension controlled strategic processing. Using the same stimuli as studied by Gernsbacher et al. (1995), but employing slightly different probe items, Gluckberg et al. found evidence of suppres-

sion for literal metaphor-irrelevant materials following metaphor interpretation. However, they found no evidence to support the idea of active metaphor enhancement. The failure to find evidence in favor of metaphor enhancement may be due to participants' minimal processing of the metaphors they read, and thus metaphoric meaning may be enhanced under other conditions. But the data clearly emphasize the importance of inhibitory mechanisms in figurative language processing.

Gluckberg et al. (2001/*this issue*) rightly comment that their view of literal inhibition during metaphor processing does not distinguish between the comparison versus the categorization (or attributional) accounts of metaphor comprehension (see Gentner & Bowdle, 2001/*this issue*). At the same time, the idea of inhibition for literal, or metaphor-irrelevant, aspects of meaning fits in well with the idea of constraint satisfaction discussed earlier. I should mention that some scholars now maintain that there may be less of a need for cognitive mechanisms that override metaphor-irrelevant, or literal, meanings during understanding of some kinds of metaphors (Grady, 1997). For instance, the conceptual metaphor "*THEORIES ARE BUILDINGS*" motivates many meaningful linguistic expressions such as "*The theory needs to be buttressed*" or "*The foundation for your theory is shaky.*" But some aspects of buildings are clearly not mapped onto the domain of theories, which is one reason why it sounds odd to say "*The theory has no windows.*"

An interesting solution to this problem suggests that conceptual metaphors are not the most basic level at which metaphorical mappings exist in human thought and experience. Grady (1997) argued that the strong correlation in everyday embodied experience leads to the creation of "primitive" or "primary" metaphors. For instance, consider the following two primitive metaphors: "*PERSISTING IS REMAINING ERECT*" and "*STRUCTURE IS PHYSICAL STRUCTURE*," and "*INTERRELATED IS INTERWOVEN*." These two primitives can be combined to give rise to compound metaphors that have traditionally been seen as conceptual metaphors. But the combination of these primitives allows for metaphorical concepts without gaps. Thus, combining "*PERSISTING IS REMAINING ERECT*" with "*STRUCTURE IS PHYSICAL STRUCTURE*" provides for a compound "*THEORIES ARE BUILDINGS*" that nicely motivates the metaphorical inferences that theories need support and can collapse and so on without any mappings such as that theories need windows.

This view of the embodied basis for metaphorical thought and language solves the "poverty of mapping" problem often noted for conceptual metaphor and other theories (Grady, 1997). There is no need to posit specific mechanisms that override parts of source to target domain mappings in primitive metaphors because of the positive correlation in embodied experience between the source and target domains (Grady, 1997). It is likely that some aspects of metaphor understanding require specific cognitive mechanisms, such as suppression or inhibition, to prevent irrelevant interpretations from arising, but other instances may not demand this kind of inhibitory processing. Grady (1999) described two types of metaphors that may require different types of processing along the lines suggested here (e.g.,

correlation vs. resemblance, where the resemblance metaphors are closer to the types studied by Glucksberg et al., 2001/this issue). Once again, paying close attention to the cognitive (and embodied) foundation for metaphoric language offers important insights into possible constraints on figurative language processing.

OTHER CONTEMPORARY MODELS

It is impossible in a collection of seven articles to have every major view represented on how people understand figurative language. There are two other views, one old and one new, that deserve mention here.

The first view may be called the figurative thought model, which essentially claims that people's abilities to understand different types of figurative language is tied to different modes of figurative thought (Gibbs, 1994). For instance, much experimental research demonstrates that people's metaphorical understanding of different ideas and events influences their ability to make sense of why various idioms, proverbs, euphemisms, conventional metaphors, and novel metaphors all have particular figurative meanings. Moreover, the fact that people metaphorically conceptualize different knowledge domains (such as viewing the concept of anger in terms of metaphors like "*ANGER IS HEATED FLUID IN CONTAINER*" and "*ANGER IS ANIMAL BEHAVIOR*") influences immediate idiom comprehension (Gibbs et al., 1997). Other empirical studies reveal how people's recurring embodied experiences shape their metaphorical understandings of different abstract ideas, which constrains their interpretations of various conventional metaphoric discourse (Gibbs, Lima, & Francuzo, in press). Together, these studies emphasize the importance of established patterns of metaphoric thought in the use and understanding of different metaphoric language.

I do not see these studies as contradicting any of the models proposed in this collection of articles. Instead, my belief is that established patterns of figurative thought constitute another significant source of information in on-line figurative language processing. Although the empirical work in favor of the figurative-thought model has focused mostly on metaphor, this general view may easily be extended to other types of figurative thinking, including metonymy, irony, oxymora, and so on. Thus, people's ability to quickly understand some ironic statements may be due to their ironic conceptualizations of events. The more that a discourse situation reflects ironic thinking, the easier it will be for people to immediately comprehend speakers' ironic remarks as having specific figurative meaning. In fact, this possibility provides one reason for the different empirical findings in the literature on speed of understanding ironic statements (contrast Gibbs, 1986a, 1986b, with Dews & Winner, 1999; Giora & Fein, 1999). Future studies should continue to explore the connections between figurative thought and figurative language understanding.

One other view, not represented in the present collection, suggests that some aspects of figurative meaning are understood as part of what speakers say and others as part of what speakers implicate (Gibbs, in press). Several empirical studies have demonstrated that people do not associate a purely semantic, literal meaning with what speakers say, but view both what speakers say and implicate as being determined by enriched pragmatic knowledge (Gibbs & Moise, 1997). These findings contradict the traditional pragmatic theory that figurative meaning is only associated with what speakers conversationally implicate. Several linguists now argue that the nonliteral meanings of certain indirect speech acts (e.g., “*Can you pass the salt?*”), metonymies (e.g., “*The buses are on strike*”), and ironies (e.g., “*You’re a fine friend*”) are understood as part of our interpretation of what a speaker pragmatically says, called “explicatures” (Groefsema, 1992; Papafragou, 1996), and not derived as conversational implicatures. This idea is consistent with the empirical findings that some forms of figurative meaning may be understood rapidly without effortful inferencing.

For example, the expression “Can you pass the salt?” may be interpreted as an action without entailing that a listener must recover that an indirect request for action has been made (e.g., for the addressee to actually pass the salt to the speaker). This analysis does not simply mean that the expression “Can you pass the salt?” is completely conventionalized and understood without any analysis of the words’ meanings. Instead, when hearing “Can you pass the salt?,” the listener interprets the utterance as representing thoughts that are relevant to the speaker and will therefore immediately instantiate that some action is being requested given the pragmatics of the situation (Groefsema, 1992). In this view, inferring an indirect or nonliteral meaning does not demand a more elaborate process of conversational implicature to arrive at speakers’ intended meanings.

To take another example, the context-appropriate meaning of an ironic remark, such as “You’re a fine friend,” is completely captured by understanding what the speaker pragmatically said. The listener only need recognize how a speaker’s utterance reflects another thought attributed to somebody else (Papafragou, 1996). Recognizing that what a speaker says echoes some other thought or previous utterance conveys the speaker’s attitude of amused rejection for this thought. All of the assumptions needed to infer this aspect of speaker meaning are understood as part of what is said (or as explicatures). There are certainly cases of irony that demand further elaboration of what speakers say to infer their intended communicative messages. For instance, if I say to a passenger in my car “I love drivers who signal before turning” right after some other driver has cut in front of me without signaling, the listener will likely need to expand on what I have said to correctly infer my ironic meaning.

In general, then, there may not be a simple rule that determines which kind of figurative language is understood as an explicature and which as an implicature. Yet there is sufficient pragmatic information, perhaps part of people’s deep background knowledge, that allows them in some cases to quickly infer some figurative

meanings without having to apply very local, contextually specific, pragmatic information. This possibility certainly fits in with the empirical results showing that people can easily comprehend many kinds of figurative language (Gibbs, 1994). In other cases, understanding what is implicated by a figurative expression is accomplished by virtue of our recognition of what speakers pragmatically said. Many of the novel proverbs studied by Katz and Ferretti (2001/this issue) may also be understood in this manner. On the other hand, understanding the intended meanings of many metaphors and idioms is accomplished in spite of what these expressions specifically say. For example, our understanding of the metaphorical expressions "*The old rock was brittle with age,*" stated by one student to another in reference to an elderly professor, might not require that we first determine out what the speaker specifically says. Instead, the normal process of referential assignment when reading the phrase *the old rock* prompts people to quickly seek an alternative figurative meaning that makes sense in the discourse situation.

Some empirical work on understanding the pragmatics of what speakers say and implicate are consistent with the above theory (Hamelin & Gibbs, 2000), but there has not yet been any research on pragmatics in understanding of what speakers say and implicate by their use of different aspects of figurative speech. Understanding something of how different aspects of pragmatics interact with different linguistic information may provide essential clues to characterizing people's on-line comprehension of pragmatic meaning to suggest that some aspects of figurative language are understood as part of what speakers say, whereas others may be understood as part of what speakers implicate in specific discourse contexts. This new idea may also have an important role in addressing the processing complexities in understanding figurative language.

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