METAPHOR AS THE CREATIVE ORIGIN OF LEXICAL AMBIGUITY IN ENGLISH AND JAPANESE

Andrea Giles, Joseph F. Kess, and Chiharu Uda

Department of Linguistics
University of Victoria

1. INTRODUCTION

A metaphor is a word or phrase applied to an object or concept that it does not literally denote, in order to suggest a comparison with another object or concept. Psychology and linguistics have been particularly interested in metaphor of late, because of current research in linguistic performance and the processes involved in the comprehension of metaphor. Cognitive psychologists are concerned with when and why people use metaphors, and with how they understand them. The psychologist is concerned with the processes presumed to underlie their use and comprehension, and how, if at all, these processes differ from and are related to those involved in literal uses of language. The linguist, on the other hand, is concerned with the formal properties of metaphors and the semantic and pragmatic relations that they have to their literal counterparts (Ortony, 1980).

Using a metaphor himself, Paivio (1979) has suggested that for the student of language and thought, *metaphor is a solar eclipse*. An eclipse obscures the object of study while at the same time revealing its most salient and interesting characteristics when viewed through the right telescope. Here the object is linguistic meaning, with metaphor obscuring the literal and commonplace aspects of meaning, while permitting a new and subtle meaning to emerge. In this way, metaphor encourages semantic creativity, the capacity of language users to create and understand novel linguistic combinations that would in a literal sense be nonsense.

Similarity and relation are inferred in applications of metaphor. According to Paivio (1979:152), linguistic metaphor involves "the application of a word or expression that properly belongs to one context to express meaning in a different context because of some real or implied similarity in the reference involved". Similarly, Fraser (1979:176) has called attention to the analogic basis of metaphor, "an instance of the nonliteral use of language in which the intended propositional content must be determined by the construction of an analogy". It is not whether metaphors rest on semantically acceptable or unacceptable expressions; rather, the point is that, acceptable or not, the speaker *intends* the expression to be taken nonliterally.

Another feature of metaphor is the juxtaposition of referents not normally associated (see MacCormac, 1985). Lakoff and Johnson (1980:289) suggest that "the essence of metaphor is understanding and experiencing one kind of thing or experience in terms of another". Hoffman and Honeck (1980) describe metaphors as resulting in the creation of a perception or an image that need not be filled in with details, yet has rich potential for detail and symbolism. And for others like Fogelin (1988), figurative meaning arises through a mutually recognised mismatch of literal meaning with context.

The simplest way to characterize a metaphor is as a comparison statement with the comparative particles left out. This is, in fact, the traditional view of metaphor (Miller, 1979:227). Indeed, a metaphor is often seen as a type of analogy, or an implicit comparison. In contrast, a simile is an explicit comparison, and perhaps for this reason Aristotle saw the simile as a metaphor with a preface.

But what is the point of uttering metaphors which create ambiguity in their range of meaning? Unlike typical ambiguity, where ambiguity arises unintentionally, metaphors are produced with the intention that the extended range be recognised! The answer is that a metaphor makes us attend to some likeness, often a novel or surprising likeness, between two or more things. A simile overtly tells us, in part, what a metaphor gently nudges us into noting (Fogelin, 1988:54).

2. THE BASIS OF METAPHOR

Explanations for the basis of metaphor are divided into three types. Feature matching theories examine metaphor as if it were anomaly, and make sense of anomaly by computing a match of shared features to determine meaning. The assumption is that metaphor is first recognised as a comparison statement, with the features of the vehicle being compared to, or mapped onto, the features of the topic. Features that the topic and vehicle do not share are ignored and attention is focused on those features that could be shared and that might be salient to the comprehension of the metaphor. Such features would then be transferred from vehicle to topic and the metaphor would thereby be understood.

Comparison theories see metaphor as either analogy or a statement of similarity. Meaning is computed by analogy or by comparing the statement of similarity with salient features to determine meaning. Feature matching and comparison views share common notions in that meaning is derived through shared features. In contrast, interaction theories advocate that the ground is not an expressed similarity, but is rather a novel, hitherto unseen, relationship between topic and vehicle. Metaphor is comprehended through the interaction of concepts to create a new meaning.

3. METAPHOR: FUNCTION AND COMPREHENSION

The aspects of metaphor that have been of interest to researchers in psychology and linguistics may be organised under the areas of identity, function, and comprehension. That is, what is metaphor and how is it identified? How does it work? And how does it foster semantic creativity in language? And lastly, what is the difference between literal versus nonliteral language, and how does this distinction affect psycholinguistic processing?

Figurative language is extremely common, and may therefore have a psychological function. Many scholars have proposed that analogic and metaphoric reasoning form the basis of all cognition (see Miller, 1979; Sternberg, Tourangeau, & Nigro, 1979). In an ethnographic sense, figurative language is essential data in the anthropologist's analysis of the premises and values of an entire socio-cultural group. Figurative language extends to every problem of general language comprehension and semantic analysis-- that is, encoding, implication, inference, world knowledge, contextual constraints, imagery, semantics, the relation of language and perception, and so on, and therefore is important to communication and cognition.

Deciding whether a sentence is a metaphor, a line of poetry, a literal statement, intentional nonsense, or genuine anomaly cannot be done on the basis of the sentence alone, but requires accessing the store of world knowledge as well as discourse context. For example, *whole sentence metaphors*, like *The old rock was becoming brittle with age*, can be literal in one context and figurative in another, as in reference to either geology or to an aging professor (Reddy, 1979; Ortony, 1979b).

One factor in the interpretation of figurative language arises from imagery. Even an abstract metaphor (e.g., *A theory is a wish*) will act as an "invitation to perceive a resemblance" (Verbrugge, 1977). Metaphors result in vivid images because of their emotional content, often because of the bizarre or surreal character of the meaning they may suggest when taken literally. Thus, Paivio (1971, 1979) has argued that images themselves may be the medium for discovery of the figurative meaning, and are part of the comprehension process. These speculations fit nicely with psychological studies of learning that show how mental imagery seems to facilitate acquisition and retention of verbal material (Hoffman & Honeck, 1980).

How do metaphors work? Some scholars treat metaphor as an elliptical simile, attributing to it no significant cognitive function, while others clearly distinguish simile from metaphor, claiming that the latter plays a cognitive role not open to the former (Johnson, 1980:52). The latter may be illustrated by the semantic interaction view (see Black, 1962), which insists that the tensive element is fundamental to metaphor. It sees the metaphoric form of "A is B" as involving a semantic strain which results in novel meaning and the induction of insight. While not denying the limited truth of the comparison view (namely, that the metaphor "A is B" implies its correlative simile, "A is like B"), this theory goes beyond the former to claim a distinctive cognitive function, that the metaphor implies *more* than its correlative simile (Johnson, 1980). In the metaphor "A is B" (e.g., *Man is a wolf*), the system of associated features attaching to A interacts with that which attaches to B to produce an emergent metaphoric meaning. The associated features are just those things generally held to be true about the object, person, or event with which they are associated. The interaction of these two systems of implications results in the selection of appropriate features of one object that are then applied, in the same or some modified sense, to the other object. The "interaction" involved here is not merely the intersection of two sets to form a new intersect set; rather, it involves a mutual influence of one system of features upon another (Johnson, 1980).

For Black, then, a metaphor is a mechanism for imposing a categorical scheme from one domain onto another, and metaphors are thus generators of new meanings (see also Ortony, Reynolds, & Arter, 1978). The argument is that metaphor results from a cognitive process that juxtaposes two or more rarely associated referents, producing semantic conceptual anomaly and thus tension.

Not everyone agrees with this premise. MacCormac (1985) denies the contention that metaphors necessarily express falsity when interpreted literally. MacCormac proposes that metaphors possess a fluidity with respect to truth and falsehood, and further suggests that there is no reason to assume that the truth or falsity of a metaphor is an *either/or* matter. Consider, for example:

> *The brain is an enchanted loom where millions of flashing shuttles weave a dissolving pattern.*

While the identification of *brain* with an *enchanted loom* is a false assertion, the metaphor suggests an insightful way of looking at the brain rather than intentionally proposing a false assertion. Thus, metaphors can be understood as insightful and as conveying partial truth, without first understanding the metaphor as an intentional expression of falsity. In its favor, such an interaction view presents a dynamic view of the function of metaphor as essential to creative thought. We could not speak of new perceptions and insights about how objects or ideas fit together in a language that has only fixed meaning.

4. METAPHOR AS THE CREATIVE ORIGIN OF POLYSEMY

Inference and context are certainly involved in matters of literal meaning-- in resolving ambiguity, for example. With metaphor, there are two meanings, a literal one and a metaphorical one, and the listener is required to infer which one was intended. Morgan (1979) even suggests that metaphor is no different from any other kind of lexical ambiguity, with its duality of meaning.

But, in fact, there is an important difference. In the case of most lexical ambiguity, the relation between the two meanings is a coincidence of the language, so that the same two meanings might well be translated into separate sentences in another language. This is true except in the case of lexical ambiguity derived from metaphor, where one of the meanings of a word is derived in some way from the other. Metaphor can give rise to polysemy, a feature of lexical ambiguity which appears in one form or another in all languages and at all times (see Kess & Nishimitsu, 1990; Billow, 1977).

Polysemy occurs when a word has more than one meaning. Many words in a language have more than one meaning, and some very common words have a great many meanings. For example, English nouns and verbs like *thing* and *do* are of this type. In Japanese, words like *mono* and *suru* are examples of equivalents which are extremely common and which have a large number of meanings. There are other types of ambiguity in natural language, but lexical ambiguity is probably the most common and certainly the type of ambiguity that we are most aware of.

There are two types of polysemy, or lexical ambiguity, that find their origins in the metaphoric extension of the meaning of a word to a new, and in the first instance, related meaning. An example of one type can be seen in metaphoric extensions like the English *eye of the storm* or the Japanese *taifuu no me*, where the metaphoric extension is still transparent.

A second type ultimately results in an opaque polysemy, because the metaphoric extension is no longer transparent. An example of this second type of polysemy is found in the word *pipe*, with its meanings of a plumber's *pipe* and the meaning of a *pipe* for smoking. Both of these meanings refer to a longish, narrow opening for liquid, smoke, or gas to pass through, but the process of metaphoric extension has been lost as a readily available etymology. That is, to most users of English, the fact that the two words *pipe* are one and the same is no longer self-evident. Words like *pipe* are instead located in the category of lexical ambiguity which contains instances of unrelated polysemy, as for example, words like *port*, which have two completely unrelated meanings. A similar phenomenon occurs with Japanese, *kiseru* 'tobacco pipe' (originally from Cambodian *khsier*), which has a metaphoric extension with the meaning 'stealing a ride on a train with no ticket for the middle part of the way'. The connection between the two senses is not self-evident, but they both refer to something long, with the middle part void. In general, such transparency is

not as easily lost in Japanese, given the cues provided by the kanji characters, but such instances of polysemy do occur. Other examples include *mimi* 'ear', as in to *pan no mimi* 'the crust of bread', and *miso* 'bean paste', also meaning something like 'good point', 'charm', or 'knack'. The kanji character suggests that the latter is the result of metaphoric extension of the former, but the process is no longer transparent to most Japanese speakers. And the kanji can only offer direct clues in the written version of the words. The end result of this process is that modern language exhibits either opaque or transparent polysemy for those words which have undergone this metaphoric extension.

Even very young children appreciate such metaphoric extensions in their early lexical items. For example, there is early exposure to dual-function terms, or words that can refer to either physical or psychological phenomena (that is, i.e., "cold water" versus "cold people"). The physical is held to be literal, and the psychological application is regarded metaphorical. Similar examples can be found in Japanese as well, though the correspondence between the two languages is not complete. *Tumetai* 'cold' and *atatakai* 'warm', for example, are used either in the physical or in the psychological sense in much the same way as in English. Incongruity occurs, however, in such words as *suzusii* 'cool'. It is mostly used only in the physical sense (except in the set phrase *suzusii kao* 'cool face', meaning 'innocent look'); the English loan word *kuuru* 'cool' is instead used for the psychological extension. Another example of incongruity, *amai* 'sweet' allows the psychological application, but in a different way from that of English; that is, it means 'too generous' or 'spoiling' and has negative connotations. Asch and Nerlove (1960) found that physical meanings of dual-function terms are invariably appreciated first, that a mastery of psychological terms emerge only in the middle years of childhood, that the dual property of the terms is realised last, and often only with prompting, and that the capacity to appreciate and produce good metaphors does not emerge until adolescence.

Lesser and Drouin (1975) verified these basic findings on dual-function terms and suggested, moreover, that words with tactile referents (i.e., "warm") are understood earlier in a dual sense than words with visual referents (i.e., "bright"). Kogan (1975, 1976), using picture-sorting techniques, discovered that as children reach the pre-adolescent years, they prove more capable of effecting the metaphoric link. Winner, Krauss, and Gardner (1975) have also documented that the ability increases with age.

Other studies have examined the capacity of children to paraphrase various kinds of metaphor (Billow, 1975; Winner, Rosenstiel, and Gardner, 1976). Billow (1975) presented children with proverbs and with two types of metaphor: similarity metaphors, which equate two similar terms (e.g., *Hair is spaghetti*), and proportional metaphors, which involve an analogic relationship among four terms, one of which must be inferred (e.g., *My head is like an apple without a core*). Billow attempted to show that the development of genuine comprehension of metaphor is related to the child's ability to deal with formal operations in the Piagetian sense. Billow found that the ability to understand similarity metaphors emerges first and is correlated with the acquisition of concrete operations; and that proportional metaphors, which require analogic thinking, are only understood at pre-adolescence. The similarity metaphors, the proportional metaphors, and the proverbs differ with respect to difficulty. For example, proverbs involve more complicated syntactic constructions, a greater proportion of relatively low-frequency words, and far more complicated demands on knowledge of the world. The increase in comprehension with age may merely reflect a greater probability of a prior acquaintance with more of the proverbs. Similarly, the proportional metaphors are much more complex in structure than are the similarity metaphors, and they too involve more knowledge of various kinds.

The same developmental process must also be assumed for the comprehension of the meta-phorical (idiomatic) expressions in Japanese. For example, *Asi ga boo ni naru* 'My legs have turned into sticks (because of too much walking)' is an instance of a similarity metaphor, and is easier to comprehend than such proportional metaphors as *Kaeru no tura ni mizu* '(Whatever you say to him), he is like a frog with water splashed over his face (and thus does not care at all)'. Another such proportional metaphor is seen in *Mimi ni tako ga dekiru* 'I have got a corn (callus) formed in my ear (from hearing the same story over and over again)'. Since *tako* 'callus' is homo-phonous with 'octopus', a form with which children are usually more familiar, the comprehension of this sentence can be further impeded.

Winner, Rosenstiel, and Gardner (1976) asked subjects ranging in age from 6 to 14 to paraph-rase metaphoric sentences such as *After many years of working in the jail, the prison guard had become a hard rock that could not be moved*. Winner, Rosenstiel, and Gardner hypothesized three levels of metaphoric understanding prior to mature comprehension. The first level is the "magi-cal" level, the second the "metonymic", and the third the "primitive metaphoric." Each of these levels, they suggested, can be regarded as a stage in the development toward the mature compre-hension of metaphors. At the magical stage the interpretation is made literal by the mental con-struction of a suitable scenario, at the metonymic stage the terms of the metaphor are taken to be somehow associated, and at the primitive metaphoric stage true metaphoric comprehension is par-tially present. The investigators found that only the adolescents could compare the guard and the rock reliably in a variety of dimensions. The results do suggest that older children are more likely to select or offer genuine metaphoric interpretations than are younger children. This study, and all the experimental results noted above, suggest that for children metaphoric polysemy exists, but that its origins are opaque until their metalinguistic abilities are more fully formed around the stage of adolescence.

5. METAPHOR: SIMILARITY OR ASYMMETRY?

Similarity has played a fundamental role in theories of knowledge and behaviour. It serves as an organising principle by which individuals classify objects, form concepts, and make generali-zations, and there is a close tie between the assessment of similarity and the interpretation of metaphors. In judgements of similarity, one assumes a particular feature space, or a frame of ref-erence, and assesses the quality of the match between the subjects and the referents.

Considerable emphasis has been placed on semantic relatedness in the metaphor comprehen-sion literature (Johnson & Malgady, 1979; Malgady & Johnson, 1976). In regard to the role of semantic similarity, there is much evidence that the number and saliency of features shared in common by concepts is a strong predictor of perceived metaphor goodness (e.g., Johnson & Malga-dy, 1979, 1980). However, a metaphor achieves much of its power by highlighting a similarity in otherwise dissimilar concepts (MacCormac, 1986; Ortony, 1979a, 1979b). This is often done by selecting a comparison from a semantically dissimilar domain (Kittay & Lehrer, 1981; Trick & Katz, 1986).

Marschark, Katz, and Paivio (1983) found semantic relatedness was also positively related to measures of figurativeness with their data indicating that high semantic relatedness is positively associated with the perception of a sentence as being easy to imagine and comprehend. Katz (1989), however, found that the preferred vehicle was one only moderately close (or similar) to the

topic in semantic memory. This finding is consistent with Kittay's (1982) suggestion that vehicles are chosen which maximize differences while at the same time highlighting similarities. As well, people tend to choose a vehicle to complete a metaphor in which the semantic distance between domains (i.e., the superordinate categories from which the topic and vehicle come) is less than the semantic distance on the more specific features shared by topic and vehicle.

Marschark and Hunt (1985) found semantic relatedness was not strongly related to recall, and when it was a predictor, the relationship was negative. Apparently, the semantic overlap between a topic and a vehicle may be important in arriving at an interpretation of a metaphor, but is less important for memory and may even interfere if the interpretation is too obvious. This contradictory evidence suggests that the relationship between semantic relatedness and metaphoric properties like figurativeness, are curvilinear rather than linear. That is, if semantic relatedness is too high, as in *A canary is a bird*, a sentence may be perceived as nonfigurative; if too low, as in *A turtle is a dance*, a sentence may be considered anomalous. The same holds true for the Japanese equivalents of these sentences; namely, *Kanaria wa tori da* and *Kame wa odori da*.

The most popular linguistic theory of metaphor comprehension is that of feature matching, which derives from the early work by Katz and Fodor (1963). Proponents of this view suggest that a metaphor is understood in terms of a process of matching features shared by the topic and vehicle of metaphor. Thus, to understand *Man is a wolf*, a listener would first derive the features of the vehicle (*wolf*) and of the topic (*man*). Those features that the topic and vehicle do not share would be ignored and attention would next be focused on those features that could be shared and that might be salient to the comprehension of the metaphor. Such features would then be transferred from the vehicle to the topic and the metaphor would thereby be understood.

Word meanings are represented as static long-term memories containing basic, literal semantic features. Sentence comprehension (for both literal and metaphorical sentences) involves comprehending such features and sets of features, and remembering is a matching of features or sets of features. These feature matching theories deal exclusively with the relation between a metaphoric topic and its vehicle, such as the similarity of topic and vehicle as assessed by the associative strength between them or the number of shared semantic features between them (Johnson & Malgady, 1979), the imagery value of the topic and/or the vehicle (Marschark, Katz, & Paivio, 1983), or the relative locations of topic and vehicle in a multidimensional semantic space (Tourangeau & Sternberg, 1981).

Tourangeau and Sternberg (1982) note that almost all theorists, including many who reject other aspects of the comparison view, assume that the ground of a metaphor consists of common category memberships, or a set of features, shared by a topic and a vehicle (Malgady & Johnson, 1976; Ortony, 1979b; Tversky, 1977; van Dijk, 1975). And they typically assume a transfer process to handle cases with an unfamiliar topic. The features of the vehicle are transferred to the unfamiliar topic, unless the transfer contradicts something known about the topic. This transformation view assumes that, whatever the surface form of the metaphor, the deep structure of the metaphor includes an explicit comparison between the topic and vehicle. Transformational or parsing mechanisms take the surface metaphor, producing a reading of its literal frame, and put the metaphoric elements themselves into a canonical form. Once the metaphor has been transferred into this standard form, the special comparison or transfer processes apply to the underlying comparison.

Malgady and Johnson (1976) assume that the meaning of a metaphor can be conceived of as an additive combination, or synthesis, of the underlying features which encode the meaning of each noun compared in the metaphor. The degree of constituent similarity, which may be influenced by the addition of adjective modifiers, will determine the integrity of the product. Highly similar but deviant constituents will be synthesized into a well-organised representation; consequently, subjects can readily interpret the metaphor and view it as a good figure of speech. Dissimilar constituents will ordinarily form a disintegrated representation which is difficult to interpret; hence subjects judge metaphor goodness on the one dimension of constituent similarity. In other words, the better the comparison, the better the metaphor.

Assuming that both the A and B terms of a metaphor consist of semantic features of the B item to A, Johnson and Malgady (1979) have shown that the degree to which people rate the topic and the vehicle as being similar, and the degree to which the topic-vehicle combination is rated along a metaphoric goodness dimension, is predicated by the overlap of properties.

Similarity has been viewed by both philosophers and psycholinguists as a prime example of a symmetric relation, and this explanation is normally extended to metaphor. But in contrast to this tradition, Tversky (1977) has provided evidence for asymmetrical similarities, arguing that similarities should not be treated as symmetric relations. Similarity judgements are an extension of similarity statements, that is, statements of the form, "A is like B". Such a statement is directional; it has a subject, "A", and a referent, "B", and it is not equivalent to say "B is like A". In fact, the choice of subject and referent depends, in part, on the relative saliency of the objects. We tend to select the more salient stimulus, or the prototype, as a referent, and the less salient stimulus, as a subject. Consider, for example:

The portrait resembles the person versus *The person resembles the portrait.*

Margarine tastes like butter versus *Butter tastes like margarine.*

Note that the same feature of directionality holds true for the Japanese equivalents of these sentences:

Sono syoozoo wa sono hito ni nite iru versus *Sono hito wa sono syoozoo ni nite iru.*

Maagarin wa bataa no yoo na azi ga suru versus *Bataa wa maagarin no yoo na azi ga suru.*

The directionality and asymmetry of similarity relations are particularly noticeable in metaphors. One says, for example, *Turks fight like tigers*, rather than *Tigers fight like Turks*. Tversky reported a number of experiments showing that, in general, people do not rate the similarity of the two terms in similarity statements to be the same for both orders.

Ortony (1986) has also observed that reducing metaphors to similarity statements does not work, because the kind of similarity statements to which metaphors can be reduced are themselves metaphoric. But there is little doubt that judgements of similarity constitute a fundamental ingredient of cognition and cognitive development. Similarity is a powerful tool for constructing new representations from old ones, largely because it enables properties of one object to be inferred from properties of another. Ortony (1986) thus proposes a complementary model of simi-

larity called the "salience imbalance model". The model is a variant of Tversky's (1977) contrast model, but unlike Tversky's model, it predicts the asymmetry that is evidenced in metaphors. Tversky explains asymmetries in judged similarity by arguing that in similarity judgements, subjects tend to focus on the A term more than on the B term. In the imbalance model, the salience of the intersection is computed in terms of the salience of each element relative to the second term. With this model, a literal comparison (e.g., *Margarine is like butter*) can be viewed as one in which the two concepts denoted by the terms are likely to share many features, at least some of which are of relatively high salience for both. In contrast, a metaphoric comparison (e.g., *Man is a wolf*) can be viewed as a similarity statement in which the shared attributes tend to be of high salience for the B term but of relatively low salience for the A term. Because the salience of the intersection is determined by the salience of the shared properties of the B term, the measure of saliency should be relatively high.

One important feature of the imbalance model is that the asymmetry of any similarity statement (metaphorical or literal) can be due to a difference in the salience of (at least some) properties in the intersection -- a difference that is caused by term reversal. This account is different from that of the contrast model where the salience of the intersection cannot change as a result of a reversal.

There is also disagreement about how much similarity is good for a metaphor. First, there are those who argue simply that the greater the resemblance between two things, the better their metaphoric comparisons (Johnson & Malgady, 1979; Malgady & Johnson, 1976). But as many researchers have pointed out, (Ortony, 1979a; Tourangeau & Sternberg, 1981; Tversky, 1977; Verbrugge, 1980) one must acknowledge the fact that in general "*liquid*" makes a poor metaphor for "*water*", because the two are literally too similar. Most agree that a moderate degree of similarity makes a good metaphor (Ortony, 1979a; Tourangeau & Sternberg, 1981; Tversky, 1977).

A number of theorists have argued that the topic and the vehicle play asymmetrical roles in metaphor (Ortony, 1979a, 1979b; Sternberg, Tourangeau, & Nigro, 1979; Tversky, 1977). Tourangeau and Sternberg (1982) go so far as to suggest that because metaphors make assertions, not comparisons, they are asymmetrical. The strongest evidence for asymmetry comes from studies in which the task allows the participants to learn that the topic-order is being varied. Studies in which metaphor topic-vehicle order is inverted have confirmed the idea that the reverse-order sentences are regarded as poorer metaphors (Connor & Kogan, 1980; Malgady & Johnson, 1980; Verbrugge, 1980) and take more time to comprehend (Gerrig & Healy, 1983).

Camac and Glucksberg (1984) went beyond the level of the semantic features of individual words and isolated sentences to explain the internal semantics of metaphors. They wondered whether the comprehension of novel metaphor relies on previously known associations, as in the semantic feature set-overlap notions of Ortony and Tversky. It has been claimed (e.g., Black, 1962; Richards, 1936) that metaphor involves the creation of new meanings or associations, rather than the combination or recombination of old meanings or associations. Psycholinguists have typically used semantic similarity judgement tasks, finding that "good" metaphors tend to be those with moderately similar topics and vehicles, even when the topic and vehicle terms are rated in isolation from their metaphor sentence contexts (Malgady & Johnson, 1980; Marschark, Katz, & Paivio, 1983; McCabe, 1983). However, it might be the case that the comprehension of metaphor produces the similarity (feature overlap), rather than the other way around (Camac & Glucksberg, 1984).

According to the comparison hypothesis, the metaphoric relation between topic and vehicle is comprehended by means of a feature matching operation, whereby a listener or reader estimates the degree to which the semantic features of the two nouns in question overlaps. The greater the feature overlap, or semantic similarity, the better and more interpretable the metaphor. But feature matching theories are not rich enough to account for metaphor comprehension. The problem with these theories is that they ignore a critical characteristic of metaphors: they are asymmetrical. Clearly, a nondirectional feature matching and comparison process cannot account for asymmetries (e.g., *The butcher is a surgeon* vs. *The surgeon is a butcher*) in property features (cf. Camac & Glucksberg, 1984; Glucksberg, 1989). To say that a butcher is a surgeon is quite different from saying a surgeon is a butcher. The force of these statements does not lie in any pre-existing or arbitrary association or relationship between the concepts (or words) *surgeon* and *butcher* (Camac & Glucksberg, 1984). Instead, it lies with the influence of the speaker's intended meaning-- in one case to make a positive statement about a butcher, and in the other to make a negative statement about a surgeon. The force of directionality in asymmetrical relations applies as well to the Japanese equivalents of these sentences: *(Sono) nikuya wa gekai da* 'The butcher is a surgeon' versus *(Sono) gekai wa nikuya da* 'The surgeon is a butcher'.

Traditional views of language comprehension adhere to the assumption that textual constraints ensure effective communication between speakers and listeners (e.g., Anderson & Bower, 1973; Kintsch, 1974). According to this assumption, word meaning is constrained in the sense that words are presumed to have relatively fixed features, properties, or markers that distinguish them from other words, and sentences are presumed to be the sum or amalgamation of these relatively fixed lexical entries. This approach to language comprehension, however, leads some theorists to identify metaphors as a special case of anomaly. For example, Kintsch (1974) supposes that all metaphors are necessarily semantically anomalous, proposing that a metaphor is recognised as an anomalous input string and is therefore converted into an explicit comparison. The anomaly view emphasizes the dissimilarity of the semantic features of topics and vehicles (Campbell, 1975). Normally, selectional restrictions are said to be violated when predicates do not fall into the exclusive category ranges determined by their subject. But as Kintsch himself observes, this mechanism suffers from an inability to distinguish metaphors from uninterpretable nonsense and irrelevant falsehoods. Furthermore, it is by no means clear that every metaphor can be readily converted into an explicit comparison. This explanation implies that metaphors represent an exceptional or infrequent phenomenon in everyday language. Such an interpretation, however, is not supported by recent studies (Pollio & Burns, 1977; Pollio & Smith, 1979) and the fact that metaphor and figurative language is as common as its literal counterpart. And when one considers the inventory of lexical items in the vocabulary of a language, it becomes obvious that most words have a range of meaning instead of a single referent, and that this semantic range is the result of extension. The conclusion that must come out of all this is that any semantic theory which sees figurative language as a problem to be explained away and refuses it equal footing with literal language must surely prove inadequate.

6. CONCLUSIONS: METAPHOR VERSUS POLYSEMY

Almost any sentence can be taken as metaphorical given the right context. Recall our earlier sentence: *The old rock was becoming brittle with age*. In the context of a geology class, the sentence is perfectly logical and literal: it is nonredundant and grammatically acceptable. However, if uttered in reference to a professor emeritus, the sentence suddenly becomes a metaphor and vio-

lates semantic rules. Context-dependence is an aspect of figurative language that makes one hard-pressed to distinguish the metaphorical from the literal in any reliable way. Technically, metaphors are anomalies since they violate the rules for putting word meanings together. But in many instances, metaphors are no longer anomalous uses of word meaning in their limited semantic range. The extension of the semantic range now becomes the range itself, and the lexical item can now be said to be polysemous if the extension was based on a metaphoric extension. The realisation or awareness of metaphoric meaning then depends on context and on individual differences in etymological origins of the word's meanings. Such examples of polysemy will no longer even be considered to be metaphoric because they are no longer contextually anomalous. The original distinction between literal and metaphorical is then one of degree, with intermediate and borderline cases which only reflect metaphoric origins in semantic shifts.

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