

The Role of Comprehension in Metaphor Processing


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Bachelor of Arts, Victoria, 1984


A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS


in the Department
of
Linguistics

We accept this thesis as conforming
to the required standard


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UNIVERSITY OF VICTORIA

1990

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ISBN 0-315-62638-0

Supervisor: Dr. Barbara P. Harris

ABSTRACT

Psycholinguistic theories of metaphor comprehension are generally described in terms of one of three different sets of principles: feature matching theories which view metaphor as based on resolution of anomaly; comparison theories which view metaphor as based on computation of analogy; and interaction theories which view metaphor as based on interaction to create new meaning. These sets of principles share underlying variables that are manifested in traditional models such as semantic feature and semantic network theories. This thesis examines the comprehension variables of metaphor and the differing role these variables play in each theory.

This thesis repudiates semantic feature and semantic network theories of metaphor comprehension. This repudiation is based on problems attributed to selectional restrictions and appropriate activation of relevant meaning. Psycholinguistic theories of metaphor comprehension entail certain processing models: those based on serial processing and those based on contextual processing. Refutation of serial processing (see, for example, Gildea & Glucksberg, 1983), that which implies a detailed distinction between literal and nonliteral language, suggests that literal and nonliteral language can be accounted for in one general language comprehension model.

In place of these previous theories, this thesis posits a model of metaphor comprehension based on contextual and intentional interaction which emphasizes the capabilities of listeners. Listeners construct meaning from the information that is available to them in the context of the utterance via linguistic and extralinguistic cues. Thus, this model can accommodate indirect speech acts, such as metaphors, as well as conventional language use. Explicit violations of the given-new contract and violations of Gricean maxims combine to create implicatures (either as a contextual setting or as an implicit setting) that can be viewed as a metaphoric template for comprehension.

Overall, this thesis advocates a shift from a micro view to a more macro, all encompassing, view, a view which has import in the notion that metaphor is a viable and functional language act, the comprehension of which can be found in models for general language comprehension.

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ACKNOWLEDGEMENTS

I would like to thank my family for their encouragement and for their unflinching belief in me. I am especially indebted to my parents, Frederick and Elizabeth Giles, who always faithfully back me in any task I set out to do, for their continual love and support. I am also indebted to my sister and brother-in-law, Alison Giles and Barney Bonekamp, for their enthusiasm and interest in my work.

I am especially grateful to Dr. Barbara Harris and Dr. Joe Kess. Barbara Harris has gifted me with both kindness and friendship. As my Supervisor, she has guided and supported me with the generosity and grace for which she is famous. Joe Kess has provided me with both guidance and determination. As my Chair and Committee member, he has given me direction and purpose. To them both, I owe immeasurable gratitude.

I also wish to acknowledge the friendship and support of all those around me. A special word of thanks goes to all my fellow Graduate students: Pannakitti Parawahera, Michael McGovern, Suzanne Urbanczyk, Laura Proctor, Sandra Kirkham, Chiharu Uda, Erica Hofmann, Kimary Shahin, Judy Nylvek, Tadao Miyamoto, Evan Williams, Xue Ping, Kimiko Tsukada. My deepest appreciation goes to: Ron and Jennifer Verrall, Dawn Bates, Lucie Daigle, Darlene Wallace. Without the support and encouragement of my friends and colleagues, my experience as a Graduate student would never have been so pleasurable. My sincere thanks to all.

Chapter I

INTRODUCTION

1.1 Introduction

The problems of metaphor that have been of interest to researchers may be organised under four main areas: (1) What is it? That is, how may metaphor be identified and how does our comprehension of it differ from that of both literal and nonliteral speech? (2) How does it work? Under this heading fall all those questions concerning creativity in language, the distinguishing "mechanism" of metaphor, and the nature of its meaning. (3) What is the role of literal versus nonliteral language? That is, how does this literal/nonliteral distinction affect psycholinguistic processing. (4) What is its cognitive status? Intended here are the important questions of its role in various cognitive disciplines and whether it is reducible to literal discourse. This thesis will address these issues and will postulate a role for metaphor that is inextricably linked to context and general language comprehension.

The status of metaphor and other forms of figurative language has an analogous evolution with other aspects of psycholinguistic research. Comprehension studies and processing experiments on literal language have attempted to resolve issues on comprehension and cognition. Early research into literal language constituted a framework for cognition that allows nonliteral language no role. The comprehension and processing mechanisms of literal and nonliteral language were

considered to be independent of one another. More current research suggests that nonliteral language comprehension parallels literal language comprehension.

1.2 Overview

Figurative language is not so uncommon as it might appear. Psychologically, many scholars have proposed that analogic and metaphoric reasoning form the basis of all cognition (see Miller, 1979; Sternberg, Tourangeau, & Nigro, 1979). Anthropologically, figurative language can be essential data in an anthropologist's analysis of the premises and values of an entire social group (see Whorf, 1969). Therefore, it may be said that in its comprehension, figurative language involves every problem in 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.

Metaphor and discussions about metaphor are becoming increasingly a topic of interest in linguistics, philosophy, psychology, education, and other disciplines. Figurative language in general involves a host of distinct forms and engenders a host of important questions. Figurative language is pervasive and therefore is important to communication and cognition.

In what Reddy (1979) and Ortony (1979b) refer to as "whole sentence metaphors", one statement can be literal in one context and figurative in another. Consider, for example, *The old rock was becoming brittle with age*, in reference to either geology or to a professor emeritus. In order to interpret such figures of speech, one needs knowledge and contextual information. Indeed, whether a sentence is a metaphor, a line of poetry, a literal statement, intentional nonsense, or

genuine anomaly often cannot be decided on the basis of the sentence alone. In experiments in the 1970s on contextualism, it was widely assumed that psycholinguistic context did not generally influence meaning. But research on context-dependency has suggested a profound relationship: that the reality to be captured by psycholinguistic description is not what the meaning is, but what the comprehender might experience. The problem then becomes one of explaining how people constrain the possible meanings to arrive at particular interpretations. Figurative language highlights this problem (Hoffman & Honeck, 1980b).

One source of constraints for the interpretation of figurative language often arises from imagery. A metaphor can be abstract (e.g., *A theory is a wish*) but many metaphors act as an "invitation to perceive a resemblance" (Verbrugge, 1977). The psychologists of the Wurzburg school engaged in debate over whether metaphors were understood in terms of images or in terms of conceptual understanding. Later, the Gestalt psychologists emphasized the perceptual role of metaphors in problem-solving and creative thinking (for further discussion see Section 1.4.2 and 1.4.3).

Metaphors result in vivid images because of their emotional content and because of the bizarre or surreal character of the meaning they often suggest when taken literally. Thus, Paivio (1971, 1979) has argued that images themselves may be the medium for discovery of the figurative meaning—part and parcel 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, 1980b).

The question-- "What is the "mystery of metaphor"?"-- is simply that, taken literally, a metaphoric statement appears to be perversely asserting something to be what it is plainly known not to be. It appears that "absurdity" and "falsity" are the essence of metaphor; in their absence, one would have no metaphor but merely a literal utterance. More precisely, metaphor is a piece of discourse whereby its structure or form seemingly fails to conform to its meaning or function. So a metaphor user seems to "say one thing and mean" another (Black, 1979:21).

How do metaphors work? There are really only two kinds of basic theories-- those that treat metaphor as an elliptical simile, attributing to it no significant cognitive function; and those that clearly distinguish simile from metaphor, claiming that the latter plays a cognitive role not open to the former (Johnson, 1980:52).

It is a growing trend for a variety of disciplines to be interested in metaphor. In linguistics, an increasing concern with linguistic performance and pragmatics, and the nature of text, have resulted in attention being given to nonliteral usages of language. In psychology, especially cognitive psychology, the processes involved in the comprehension of metaphor are actively being pursued. That is, perceptual or Gestalt-oriented studies and similarity tests are currently important.

1.3 Definition

The standard dictionary definition of metaphor is that it 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. This definition is no doubt satisfactory for lexicographers, but it is not adequate for the purposes of psychologists or

theoretical linguists. The cognitive psychologist might be concerned with when and why people use metaphors, and when and 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 might be concerned with the formal properties of metaphors and the semantic and pragmatic relations that they have to their literal counterparts (Ortony, 1980).

Paivio (1979) suggests that for the student of language and thought, metaphor is a solar eclipse. It hides the object of study and at the same time reveals some of its most salient and interesting characteristics when viewed through the right telescope. The object is linguistic meaning. Metaphor obscures its literal and commonplace aspects while permitting a new and subtle understanding to emerge. Thus, metaphor highlights the phenomenon of semantic creativity, the capacity of language users to create and understand novel linguistic combinations that may be literal nonsense. Therefore, semantic productivity must be regarded as a salient design feature of metaphoric language.

Similarity and relation are implied in definitions of metaphor. According to one definition, 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" (Paivio, 1979:152).

Fraser defines a metaphor as "an instance of the nonliteral use of language in which the intended propositional content must be determined by the construction of an analogy" (Fraser, 1979:176). The point here is not whether or not there are

more metaphors which 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 definition of metaphor is the juxtaposition of referents not normally associated (MacCormac, 1985:1). Lakoff and Johnson (1980b:289) suggest that "The essence of metaphor is understanding and experiencing one kind of thing or experience in terms of another", whereas Hoffman and Honeck (1980b) 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 details and symbolism. For Fogelin (1988), figurative meaning arises, in general, through a mutually recognised mismatch of literal meaning with context.

These are all adequate definitions, but perhaps the simplest way to characterize a metaphor is as a comparison statement with the comparative particles left out. This is, of course, the traditional view of metaphor (Miller, 1979:227). Indeed, a metaphor is often defined as a type of analogy, as an implicit comparison, whereas a simile is called an explicit comparison. Aristotle, for example, called a simile "a metaphor with a preface" (Fraser, 1979:177).

But the problem is-- what is the point of uttering metaphors (these apparent falsehoods) which, unlike lies, are uttered with the intention that the falsehood 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 tells us, in part, what a metaphor nudges us into noting (Fogelin, 1988:54).

1.4 Historical Overview

1.4.1 Aristotelian View

Aristotle and Quintillian, a Roman rhetorician of the first century A.D., initiated the study of metaphor by classifying figures of speech. Seen in the phrase *figure of speech* is the Aristotelian distinction between it and that of *figure of thought*. From this distinction in modern rhetoric, has come the goal of some rhetoricians to come to an understanding of figurative language (Hoffman & Honeck, 1980b).

In his books *Poetics* and *Rhetoric*, Aristotle stated that he believed metaphors to be implicit comparisons, based on the principles of analogy, a view that translates into what is now called the comparison theory. Those who suppose metaphors to be replaceable by literal translations are followers of Aristotle. The Aristotelian version of the comparison theory says all that metaphor is really is a literal simile with the "like" or "as" deleted and the respect of the similarity left unspecified (Searle, 1979:93). Aristotle considered the use of metaphors as merely ornamental. Metaphor, in other words, are not necessary, they are just nice (Ortony, 1979a:3).

In *Poetics*, Aristotle defined metaphor as "the application of an alien name by transference either from genus to species, or from species to genus, or from species to species, or by analogy, that is, proportion" (Billow, 1977:81). By applying an alien name, Aristotle meant taking a word that usually denotes one thing and using it to describe another that it literally does not denote. The "thing" can be any object of thought, from physical referents to abstract ideas and feelings. By transferring a word in this way, the sentence is meant to do at least two things at once: the substituted word or phrase works to convey its own conventional deno-

tation, while the sentence as a whole works to signify something that is not conventionally denoted at all. These two aspects of the sentence are the literal and figurative meanings. The substitution is not arbitrary but based on a point of resemblance between the substituted word or phrase and its reference, which is either stated or implied by the sentence as a whole.

Fogelin (1988) asserts that, Aristotle notwithstanding, metaphors do not suggest similarities or make comparisons. He argues that metaphors differ from similes in only a trivial grammatical way: metaphors are similes with the term of comparison suppressed; they are elliptical similes. Fogelin points out that Aristotle, Cicero and Quintilian agree that metaphors provide an alternative way of expressing a simile by referring to something that literally refers to something else (Fogelin, 1988:26).

Aristotle treated metaphor under the art of rhetoric, as having a philosophically significant role in the skill of persuasive argument. With the rise of empiricism in philosophy in the 18th century, metaphor lost its philosophical respectability. According to the empiricist view, metaphors were classified as emotive utterances that make no truth claims, but serve only to express emotions, attitudes, and moods. This strong empiricist posture effectively eliminated metaphor from serious consideration as a vehicle of knowledge (Johnson, 1980).

1.4.2 Wundtian View

The re-emergence of interest in metaphors began with the rise of experimental psychology in the Wundtian tradition. Psychologists were trained as physical and medical scientists whose focus was primarily on the psychology of sensation and perception. The first experiments on metaphor were conducted in the early

1900s in the psychological laboratories of Karl Buehler and others of the Wurzburg school of thought. The Wundtian view was dubious as to whether psychology could be used to perform experiments on higher mental processes such as problem-solving and linguistic reasoning (Hoffman, 1984).

Most researchers were more interested in the nature of thought than in figurative language, but some sought to give "thought elements" the same respectability accorded sensations and images. As a member of the Wurzburg Group, Karl Buehler looked at aphorisms and proverbs in analogy experiments in which subjects were asked to provide a semantic match between two different proverbs. As recall of the first proverb, given the second proverb, was usually excellent, Buehler concluded that the proverbs had forced subjects to think, thereby producing an effective retrieval form (Honeck, 1980:26).

1.4.3 Gestalt View

The move away from Wundtian psychology was toward the mental testing movement and the gestalt influences of the 1930s. Gestalt psychology saw the study of perception and behaviour from the standpoint of an organism's response to a synthesis of stimuli. The concept of relation has been historically prominent with the gestalt view, being particularly relevant to the assumption that the comprehension of metaphor involves a special kind of relational perception or response (Paivio, 1979). Gestalt psychologists such as Heinz Werner and Solomon Asch examined metaphor as a development of language and cognition. Werner (1940) stated that all forms of nature differentiate perception, which included sophisticated forms of figurative language. There was a natural progression from Gestalt-influenced Werner's views to Solomon Asch's contributions to the study of meta-

phor. Asch (1958), like Werner, saw broader implications of figurative language, having examined its manifestations cross-culturally, developmentally, and in personal perception.

1.4.4 Neo-Behaviourist View

The next stage in the history of metaphor was that of Neo-behaviourism. Understandably, Behaviourists did not pursue the implications of figurative language, for to do so was to credit the language user over the stimulus. However, some Behaviourists have included metaphor in their field of study. In his *Verbal Behaviour* (1957), Skinner considered metaphor a matter of transferring an old reinforced response to a new stimulus.

The Skinnerian interpretation is based on the idea of generalization of verbal responses to properties of stimuli that happen to be present along with the salient discriminative stimuli when the responses were originally reinforced. This approach implies quite a different interpretation of the novelty of metaphoric behaviour than is the case in more traditional analyses. The response is not created by the speaker, it is simply controlled by stimuli through the mechanisms of generalization (Paivio, 1979:154). Skinner commented that "metaphorical extension is the most useful when no other response is available. In a novel situation to which no generic term can be extended, the only effective behaviour may be metaphorical" (Skinner, 1957:98).

By the mid-fifties, Behaviourism had loosened up enough to admit the views of researchers like Charles Osgood and Roger Brown. A typical example of a Behaviourist view of metaphor is from Osgood, Suci, and Tannenbaum (1957) as

"the process of metaphor in language as well as in colour-music synesthesia can be described as the parallel alignment of two or more dimensions of experience, definable verbally by pairs of polar adjectives, with translations occurring between equivalent portions of continua" (Osgood, Suci, & Tannenbaum, 1957:23). Brown (1958), on the other hand, emphasized the perceptual basis of the metaphor without necessarily referring explicitly to imagery suggesting that metaphoric extensions involve applying the vocabulary to sensations (that is, when words like "warm", "cold" etc. are applied to personality and social manners).

1.5 Traditional Views of Metaphor

Before the rise of current psychological and linguistic research on figurative language, rhetoricians and philosophers have held what could be considered traditional views of metaphor.

1.5.1 Philosophical View

The most positive, direct influence on current psychological research stems from the philosophical-rhetoric tradition. The major figures here are I. A. Richards and Max Black. Richards' ideas on metaphor are detailed in his *Philosophy of Rhetoric* (1936) where he distinguished that which is being commented on as the *tenor* (the topic), and that which is used to talk about the topic, as the *vehicle*. The implicit relation between the topic and vehicle, the semantic basis for the metaphor, was called the *ground*. The topic and vehicle do not necessarily correspond with the subject and the predicate in a sentence but can appear as any type of word. For example, in the metaphor, *A woman is a song*, "woman" is the tenor (topic), "song" the vehicle, and whatever woman and song share, is the ground (a

subject and predicate relationship) but in the metaphor, *The chairman ploughed through the discussion*, "the chairman" is the tenor (topic), "plough" the vehicle (not a subject and predicate relation).

Richards also proposed the "tensive" view-- a view that emphasized the conceptual incompatibility between the terms in a metaphor (the topic and the vehicle), calling it the "tension". All metaphors give rise to metaphoric tension, which is a result of the conceptual incompatibility inherent in a metaphor when taken in its context. The comprehension of the metaphor requires the elimination of the tension, that is, the elimination of aspects of the meaning of words, phrases or sentences that when interpreted literally give rise to tension (Ortony, 1980).

A key word in Richards' analysis is "interaction", which he explains in terms of the relationship between the three concepts-- tenor (topic), vehicle, and ground. Thus, tenor and vehicle give us the ideas that need not be explicitly stated in metaphor. The sentence might be a vehicle, the vehicle and tenor may be reversible, and the ways in which they are used may be limitless. Obviously, therefore, the ground potentially shows a wide range of complexity. A variety of interactions may take place between the tenor and vehicle, from apparent random clash to obvious similarities to mutual selection of common features (Honeck, 1980).

Richards' ideas were refined by Black in the early 1960s. Within the terminology, there was a change to *focus* and *frame* from tenor and vehicle. In the metaphor, *The chairman ploughed through the discussion*, the focus is "ploughed" and the remainder of the sentence the frame. The frame extends the meaning of the focus, although the two sets of thoughts act together. From this, it is necessary to go on to ask what distinguishes a metaphoric statement from a literal one.

Black (1979) suggests that tacit knowledge of literal meaning induces the characteristic feeling of dissonance or "tension" between the focus and its literal frame and it is this tension which invokes a metaphoric interpretation. Here, in Black's viewpoint, a metaphor acts like a filter. In the metaphor, *Man is a wolf*, associations that are common to *wolf* are made to fit *man*, *man* thereby taking on new associations. The principle subject man is "seen through" the filter of the subsidiary subject, *wolf*. However, the filter can work both ways. The metaphor creates the similarity and is therefore an organisational schema for developing new meanings.

1.5.1.1 Substitution Theory

The bulk of Black's writing distinguishes and elaborates the "substitution" and "interaction" views of metaphor and Black (1962) identified three main theories, two of which are of the same kind. First is the substitution view where a metaphor of the "A is B" form (e.g., *Man is a wolf*) is nothing but an indirect way of presenting some intended literal meaning ("A is C") (e.g., *Man is fierce*). By the substitution view, all metaphoric expression is used in place of some equivalent literal expression. The metaphor remedies a gap in our vocabulary. This view makes metaphor merely a stylistic variant. The language user provides not the intended meaning but some function of it so that the interpreter must apply the function's inverse to recover the intended meaning. This has the effect of making metaphor a condensed similarity because the metaphor can be replaced by some equivalent literal comparison.

According to Ortony, Reynolds, and Arter (1978), for a long time, metaphors were considered to be merely the direct substitution of a nonliteral phrase for a

literal phrase that had exactly the same meaning. Black (1962), in discussing the substitution view, presented two reasons why it might be valid. The first reason was stylistic: metaphors served only an ornamental function. Second, metaphors were seen as useful in coining terms for new concepts, such as the *leg* of the triangle. This view allowed metaphor only a minor role in language.

1.5.1.2 Comparison Theory

The second theory is the comparison view where a metaphor of the "A is B" form is a means of indirection by which we get at the speaker's intended literal meaning "A is like B, in the following respects: . . ." (e.g., *Man is like a wolf, in being...*). According to this view, the meaning of the metaphor is a literal set of relevant similarities picked out by the context of the utterance. The comparison view, which can be traced back to Aristotle, is basically a substitution view, and consists of rendering meaning through paraphrase. Both views are types of comparison theory.

Since both the substitution and the comparison views see metaphor as a roundabout way for getting at the intended (literal) meaning, these views tend to treat it as a stylistic device, and deny that one could really mean what one says in uttering a metaphor. Thus the comparison theory (in either form) tries to circumvent the experienced semantic tension by interpreting metaphor as nothing but a way of comparing two things to see in what respects they are alike. The substitution view regards the entire sentence of the metaphor as replacing some set of literal sentences; while the comparison view takes the literal paraphrase to be a statement of some similarity or analogy, and so takes every metaphor to be a condensed or elliptic simile (Black, 1979). The interaction involves a shift in the

speaker's meaning-- and the corresponding listener's meaning-- in what both of them understand by words, as used on the particular occasion (Black, 1979).

A limitation of the comparison approach is that it treats metaphor in a one-sided fashion. According to this view, something is compared to some other thing in respect of that other thing's properties or characteristics. As far as metaphor in general is concerned, it is just as possible for one term of the comparison to modify the other as it is for the reverse procedure to take place (Levin, 1979). Comparison may figure as the basis on which the process of construal is carried out, but it itself cannot be that process. The process actually involved is one of transfer and amalgamation, where from the total range of elements associated with one term of the comparison, a subset is selected that is compatible or viable with elements of the other term (Levin, 1979).

Another limitation of the comparison approach is that it fails to distinguish between the claim that the statement of the comparison is part of the meaning, and hence the truth condition of the metaphoric statement, and the claim that the statement of the similarity is the principle of inference, or a step in the process of comprehending, on the basis of which speakers produce and listeners understand metaphor (Searle, 1979). Searle denies that, in the comparison theory, there need be any two objects for comparison. At its crudest, the comparison theory is just muddled about the referential character of expressions used metaphorically. Comparison theories generally treat the statement of the comparison as part of the meaning and hence as part of the truth conditions of the metaphoric statement.

According to Ortony, Reynolds, and Arter (1978), from antiquity to the present, the most widespread view of the nature of metaphor has been that it is essentially

a comparison between or juxtaposition of objects that are literally disparate. The exact nature of the comparison and the resulting implications concerning the use and comprehension of metaphor have varied from researcher to researcher. Some have argued, as did Aristotle, that metaphors are comparisons based on analogy or proportions. Other have argued that it is little more than implicit simile. Aristotle believed the command of metaphor to be a sign of genius, and the most important contribution that he made to the study of metaphor was to initiate the still prevalent idea that metaphors are comparisons. But at the same time, he seems to have underestimated the influence of metaphor on the nature of language.

Breal (1897/1964) took exception to Aristotle's implicit notion that the ability to use metaphor was an uncommon occurrence. Breal suggested that metaphor was a basic component of language use, rather than an ornament of language, a position that seems intuitively correct to any student of language use. For Breal, the use of metaphor is common among most language users and is an important vehicle for language change. Breal also made a distinction between "novel" and "frozen" metaphors. When discussing this distinction it is useful to think in terms of a continuum, with frozen or dead metaphor at one end and novel metaphors at the other. Frozen metaphors are defined as metaphors that at one time were novel but through consistent use have become integrated into the language. In contrast, truly novel or live metaphors constitute an original contribution to the expressive power of language (Ortony, Reynolds, & Arter, 1978).

Embler (1966) took Breal's thesis one step further suggesting that metaphor was not only a building block of language but also the essential transporter of meaning in language. Most researchers who follow the comparison theory define

metaphor as an implied comparison between two things of unlike nature that have something in common. Campbell (1975) presented a more complex theory of metaphor as comparison in which every metaphor is an implicit oxymoron. An oxymoron is a juxtaposition of two concepts that have opposite (as opposed to merely different or incompatible) meanings. For example, the oxymora, *bitter sweet* or *silent scream*, have opposite combinatory natures rather than opposed natures. Campbell further suggested that the power of metaphor comes from its inability to be paraphrased. Campbell also noted that the multiple meanings of metaphor and the intelligible presence of opposites in the same sentences provide difficulty for many theories of semantic processing.

1.5.1.3 Semantic Interaction Theory

The third theory is the semantic interaction view, developed by Black (1962), which insists that the tensive element is fundamental to metaphor, and 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 subject that are then applied, in the same or some modified sense, to the other subject-thing. 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).

Monroe Beardsley (1962) had a different semantic interaction view of metaphors known as the controversion theory. Beardsley's controversion theory states that the recognisable mark of a metaphoric statement is that *taken literally* it would have to count as a logical contradiction or an absurdity; in either case, something that is patently *false* (e.g., *Man is not a wolf*). The negation of any metaphoric statement can itself be a statement and hence possibly true if taken literally. The clash that triggers a figurative reading, or, generates figurative meaning, is not between the statement and the context in which it is used; instead, the clash lies within the metaphoric utterance itself. Thus, for Beardsley, an oxymoron becomes the model for metaphors. Beardsley suggested that we readjust the meaning of words: connotations that were candidates waiting to become criteria of meaning are elevated to that status, and old criteria are set aside (Beardsley, 1962).

An important difference in emphasis between Black's version and Beardsley's version is evident. For Black, a metaphor is a mechanism for imposing a categorical scheme from one domain onto another, whereas Beardsley takes tension or opposition to be essential to metaphors. For both, however, metaphors are meaning generators (Ortony, Reynolds, & Arter, 1978). The argument is that metaphor results from a cognitive process that juxtaposes two or more not normally associated referents, producing semantic conceptual anomaly, the symptom of which is

usually emotional tension. The conceptual process that generates metaphor identifies similar attributes of the referents to form an analogy and identifies dissimilar attributes of the referents to produce semantic anomaly. MacCormac (1985) denies the contention of the controversion theory of metaphor 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.

According to Searle (1979), the endemic weakness of the semantic interaction theories is the failure to appreciate the distinction between sentences or word meaning, which is never metaphorical, and speaker or utterance meaning which can be metaphorical. Semantic interaction theories usually rely on locating metaphoric meaning in the sentence or some set of association with the sentence.

One of the assumptions behind the view that metaphoric meaning is a result of an interaction between an expression used metaphorically and other expressions used literally is that all metaphoric uses of expressions must occur in sentences containing literal uses of expressions. This assumption seems false. It is not the case that every metaphoric use of an expression is surrounded by literal uses of

other expressions. Of course, most metaphors do occur in contexts of expressions used literally. But it is not a logical necessity that every metaphoric use of an expression occurs surrounded by literal occurrences of other expressions.

The most serious objection to the semantic interaction view is not that it falsely presupposes that all metaphoric occurrences of words must be surrounded by literal occurrences of other words, but rather that, even where the metaphoric occurrence is within the context of literal occurrences, it is not the case that the speaker's metaphoric meaning is a result of any interaction among the elements of the sentence in any literal senses of "interaction."

The interaction view approaches metaphor functionally rather than grammatically. Thus, instead of arguing that a metaphor is a simile without the word "like" or "as", a true metaphor, for the interactionist, is characterized by a "eureka" effect, as the elements blend and the new whole is recognised (Ortony, Reynolds, & Arter, 1978). This *eureka* aspect of metaphors may really be only the result of discovering what the real vehicle or topic of the metaphor is or, perhaps, discovering what the intended ground is. Whether or not this is the correct interpretation, the interaction view presents an interesting picture of the power and usefulness of metaphor. Figurative language, especially metaphor, is essential to creative thought. We cannot speak of new perceptions and insights about how objects or ideas fit together in a language that has only fixed meaning.

According to Ortony (1979a), it could be argued that these three most widely held theories of metaphor, the substitution view, the comparison view, and the interaction view, are all equally compatible, or incompatible, with the semantics and the pragmatics approaches. According to Levin (1979), in examining the com-

parison theory and interaction theory, we find what is important is that the basis of our understanding is that we are aware that certain properties have common attributions.

According to Searle (1979), if he were to diagnose the failures of the comparison view— it would be because it tries to explain metaphor as a relation between references, and the interaction view tries to explain it as a relation between senses and beliefs associated with references. The proponents of the interaction view see that the mental processes and the semantic processes involved in producing and understanding metaphoric utterances cannot involve references themselves, but must be at the level of intentionality, that is, they must involve relations at the level of beliefs, meanings, associations, and so forth.

According to Ortony, Reynolds, and Arter (1978), it would seem that one should reject those accounts of metaphor that trivialize it by assigning it an insignificant role in language and cognition. There are good reasons for rejecting simple substitution views. By the same token, views that are all-embracing have to be rejected, for they distinguish nothing. Ortony, Reynolds, and Arter's view is that metaphor is a pervasive, powerful, and necessary phenomenon that needs to be in both linguistic theory and psychological theory.

If metaphors have these features, then elements of both the comparison and the interaction theory come into play. On the other hand, it is by no means clear that metaphors are comparisons, although it is clear that they may involve comparisons. It is true that metaphors are sometimes used for the purpose of making or indicating a comparison, but on other occasions they may be used to engender a new way of seeing things, as the interaction views emphasizes. Thus, a more

cautious account of the relationship between metaphors and comparisons would be to invoke the making of comparisons as a component in the process of comprehending metaphors rather than as necessarily the end result of that process (Ortony, Reynolds, & Arter, 1978).

1.5.2 Linguistic View

The contribution to figurative language in linguistics begins with Leonard Bloomfield where in his 1933 book he sets the linguist's version of American Behaviourism. The goal of linguistics here was to isolate, segment, and classify the constituents of sentences. This immediate constituent analysis was to be carried out without regard to meaning. By 1965, Chomsky had approached the problems of meaning more comprehensively. Lexical rules now incorporated semantic features. However, these features were not free to intermingle. Special rules dictated which features were compatible. Unusual combinations of words within a sentence, such as *Misery loves company*, violated such rules. Metaphor was a matter of semantic deviance and because deviance did occur, metaphor was considered a performance problem-- a matter of language use (see Section 3.3.2 for elaboration).

The 1970s saw a renaissance in the study of figurative language. Figurative language provides an important perspective on a number of issues concerning linguistic understanding. As a strong claim, figurative language constitutes a serious challenge for theories of understanding. One dilemma in all this concerns the nature of figurative language itself. No general, commonly accepted criteria exist by which figurative language can be distinguished from nonfigurative language. It can be seen now that it is not so important to have a definitive theory of what

metaphor is, but, rather, a theory of how metaphor can be used as a measure in linguistic theory.

Most linguists have suggested that there must be some syntactic or semantic deviance within a sentence that cues one to the presence of metaphor. A more popular approach has been to characterize metaphor as constituting a violation of selectional restriction rules within a given context, where the fact of this violation is supposed to explain the semantic tension one experiences in comprehending any live metaphor (Johnson, 1980).

1.6 Conclusion

What is seen in the study of metaphor is a variety of views, some of which are mutually compatible and some of which are of a more contradictory nature. The substitution and comparison theories view metaphor as the comparison of similarity relations between topics and vehicles whereby meaning is transferred or transformed; the interaction theory views metaphor as based on the creation of new meaning. The interaction view does not compare the topic and vehicle for existing similarity but views each as interacting in a new way to create similarity between them. What is seen in all views is that metaphor is a normal and pervasive manifestation of new meaning in language.

Chapter II

REVIEW OF THE LITERATURE

2.1 Introduction

In spite of the lack of unanimity about the nature and function of metaphor, there is much research that has examined various aspects of the comprehension and production of metaphors both by adults and by children. This review of the literature is by no means exhaustive, but the research discussed is representational of topics of interest in metaphor theory.

2.2 Experimental Research

2.2.1 Pragmatics

Baker and Hacker (1984) assert that the analysis of metaphor is perverted by a widespread assumption that sentences-types are intrinsically either literal or metaphorical. But nearly any sentence can be given figurative uses, and many (though not all) utterances used metaphorically can also be used to make literal statements. A recognition that the literal/metaphorical distinction applies primarily to uses of sentences, not to sentence-forms would forestall the misguided search for 'metaphorical meanings' of words or sentences (Baker & Hacker, 1984).

When looking at metaphor within the context of a more general theory of pragmatics, the important point is that a metaphor involves the use of language.

As such, metaphor is not to be accounted for within the grammar of a language but is still intended to be a characterization of the language user's knowledge about how such sentences might be used in context to communicate intentions (Fraser, 1979).

Pragmatics attempts to explain how it is that a speaker can consistently exploit factors of the context of speaking, as well as the manner in which something is said, to convey to the listener an utterance meaning that differs from the literal meaning of the linguistic expression the speaker has used. There are several concepts in pragmatics that are important for metaphor. The first of these concepts involves the choices a speaker may make in determining how to convey the intended meaning. There is one major distinction, that of speaking literally versus speaking nonliterally. To speak literally is to intend to convey the literal meaning of the sentence uttered; that is, literally to mean what you say. On the other hand, to speak nonliterally (that is, figuratively) is to intend to convey *not* the literal meaning of the sentence uttered but, rather, some different meaning-- one that is related in some conventional way to the literal meaning (Fraser, 1979).

A second concept involves what it is that we convey to a listener when we say something. Searle (1969) argues that every sentence carries two sorts of information. It carries information that signals the intended propositional content, and it carries information that signals the intended speech act force (see Section 2.2.2). Searle's point is that metaphor is a matter of utterance meaning, hence a pragmatic problem, rather than a semantic one.

These considerations of pragmatics highlight important issues in the psychology of figurative language-- context, speaker-listener roles (this, of course, sub-

sumes the writer–reader relationship), intention, inference, and so forth. They underline, not linguistic competence in the form of fixed rules for producing grammatical sentences, but mastery of the entire linguistic system in the service of saying what one wants to say in a way one wants to say it.

According to Ortony, Reynolds, and Arter (1978), metaphors serve many functions. They are vehicles for linguistic change. The emergence of dead metaphors in a language attests to the fact that there are gaps in what is, or was, literally expressible. Thus, one of the functions of metaphors must be to permit the communication of things that cannot be literally expressed. Metaphors permit the formulation and recognition of new relationships. In view of this, it is not surprising to find claims that metaphors are powerful in their capacity to relate new knowledge to old.

2.2.2 Speech Act Theory

More recent developments within the philosophy of language have also influenced theorizing about figurative language, specifically, the philosophy of “speech act” (Austin, 1962; Searle, 1969, 1977) and the theory of “conversational implicature”, or the Cooperative Principle, (Grice, 1975). By the standard version of the speech act view, a linguistic utterance can perform three functions— it can say something (its “locutionary force”), do something (its “illocutionary force”), and affect someone (its “perlocutionary force”). The theory focuses on the illocutionary functions performed by sentences in a context. In general, speech act philosophy views the primary communicative functions of language to be those of promising, warning, asserting, commanding, criticising, and so on, and shows how these functions can be realised in quite subtle, indirect, and elegant ways. This theory sug-

gests that figurative language might be treated as an (indirect) speech act since, clearly, figurative meaning is not completely specified by the literal utterance used to convey it (Honeck, 1980). With metaphor, we typically mean more than what we actually say and it is this "more" that really matters.

Searle's (1969) hypothesis that the speech act is the basic unit of communication, taken together with the principle of expressibility (that is, the principle that whatever can be meant can be said), suggests that there is a series of analytic connections between the notion of speech acts (what the speaker means, what the speaker intends, and what the listener understands) and what the rules governing the linguistic elements are. The hypothesis is that speaking a language is engaging in a rule-governed form of behaviour (i.e., talking is performing acts according to rules).

Nonliteral figures differ from one another in the way in which what is said is connected with what is intended. Metaphor communicates in an indirect way what might have been communicated directly in terms of the conventions of a language. Sadock (1979) suggests that nonliteralness is crucially important to the understanding of the way in which language functions as an integrated communicative system. Accordingly, the most important property of metaphor for linguistics is its nonliteralness.

Morgan (1979) also compares metaphors with indirect speech acts. A proper treatment of indirect speech acts belongs not in a theory of sentence meanings, but in a theory of acts, in particular in that subpart of a theory of acts that deals with the special case of communicative acts. The interpretation of metaphor Morgan argues for is one of overstatement. But clearly there is more to it than that.

The interpretation of metaphor is not just a matter of getting rid of it by turning it back into literal meaning; it is not just literal meaning in disguise.

According to Searle (1979), it is often the case that we use metaphor precisely because there is no literal expression that expresses exactly what we mean. Searle feels that metaphors are intrinsically not paraphrasable. They are not paraphrasable because without using the metaphoric expression, we will not reproduce the semantic content which occurred in the listener's comprehension of the utterance. The best we can do in the paraphrase is reproduce the truth conditions of the metaphoric utterance, but the metaphoric utterance does more than just convey its truth conditions. It conveys its truth conditions by way of another semantic content, whose truth conditions are not part of the truth conditions of the utterance. The expressive powers that we feel is part of good metaphor is largely a matter of two features. The listener has to figure out what the speaker means and the listener has to do that by going through another and related semantic content from the one which is communicated.

2.2.3 Cooperative Principle

Linguistic figuration differs from the general psychological tendencies to analogize and generalize, in that it is an aspect of social behaviour. For this reason it is governed by whatever natural or arbitrary principles govern other aspects of social interaction. Grice (1975) proposes that human linguistic communication is governed by what he calls the Cooperative Principle; a principle that reflects the fact that conversation normally takes place against a background of speaker and listener expectation to cooperate in communication (Ortony, 1980). Grice's (1975) Cooperative Principle describes certain norms that appear to constrain a speaker's

utterances and that a listener, in turn, implicitly assumes a speaker abides by. Paramount among these are the sorts of rules that Grice (1975) has called Cooperative maxims, rules that govern our interactions for our mutual benefit. Grice would trace the recognition of figurative or nonliteral language use to apparent violations of one or another of these principles.

Four maxims compose the general principle: the maxim of Quantity (i.e., be informative), the Maxim of Quality (i.e., be truthful), the Maxim of Relation (i.e., be relevant), and the Maxim of Manner (i.e., be precise). When the literal sense of an uttered monologue, sentence, phrase, or word is in apparent conflict with the Cooperative Principle-- seeming to be irrelevant, false, or lacking in justification-- the listener is forced to seek a figurative, but cooperative, intent behind the utterance. The production of figurative speech is then reflexively governed by the speaker's awareness of the listener's expectation of cooperative behaviour on the speaker's part (Sadock, 1979). For example, the metaphor, *The doctor is a chameleon*, if taken literally, would seem to violate the maxims of quality and relation. If one assumes that the speaker still holds to the Cooperative Principle, one can revise one's notions about the violation, and then work out an implicature which is not obviously false. Thus the speaker's exploitation of the implicit contract between speaker and listener yields metaphor (Honeck, 1980).

One of the chief points that emerges from Grice's theory is that while conversational postulates frequently *appear* to be violated, these violations are usually only apparent, and they occur often for very good reasons. Another way of making this point is to observe that speakers very rarely opt out of the Cooperative Principle. This means that when a listener encounters an apparent violation of a

conversational postulate, rather than assuming the violation to be real, the listener attempts to make sense of what has been said in such a way as to render the violation only apparent (Ortony, 1980).

When a comparison is used to convey information, the speaker is expected to find an object of comparison which provides a good match with the subject that is being compared to it (Fogelin, 1988). Even when the point of a comparison is to call attention to a likeness, the direction of the match must still go from object to subject, and hence the likeness claim will often be asymmetrical. Comparisons used to draw attention to similarities are still governed by Grice-like maxims concerning good fit. Figurativeness is a departure from the literal. The target speech act is produced in the respondent as part of a participatory response, rather than merely given to the respondent in the form of the speaker's direct speech act. The power of metaphor lies with those who can use this device in a creative and insightful way (Fogelin, 1988:93).

The psychological implications of a Gricean approach to metaphor seem clear enough. In the effort after meaning, a listener may recognise that something is contextually anomalous and that it cannot be sensibly literally interpreted in the context. The listener then must try to construct an interpretation that resolves the apparent violations of the postulates. And it is this context-dependency which is another important issue in metaphor theory.

2.2.4 Context-Dependency

Almost any sentence can be taken as metaphorical given the right context. As mentioned earlier, a classic example is *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 violates 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. According to the transformational grammar approach, anomalous strings are devoid of meaning. They were therefore used in the 1960s as controls for meaning in experiments that attempted to demonstrate the "psychological reality" of syntactical and transformational rules. Pollio and Burns (1977) found that if subjects are required to interpret anomalous strings, then memory for these strings is not significantly worse than memory for grammatical strings. What then distinguishes anomaly from metaphor? If one sets up a judgement task properly, one can induce subjects to distinguish metaphors from anomalous strings. One idea is that these types of strings should fall on a continuum of conceptual overlap. The realisation or awareness of metaphoric meaning depends on context and on individual differences in cognition (Hoffman, 1984).

Research confirms the notion that literal processing of figurative forms is a distinguishable mode. We have a bias to perceive figurative meaning, and attempts to get people to take nonliteral utterances literally can impede the smooth flow of comprehension. The presence of clarifying context can significant-

ly decrease the time it takes for a person to comprehend a novel metaphor. The more the context can be relied on, the lower the reaction time for novel metaphors and for novel proverbs (Kemper, 1981).

Perhaps a first requirement for something to be a metaphor is that it should be pragmatically, or perhaps better, contextually anomalous. This means that a literal interpretation of the expression, be it a word, phrase, sentence, or an even larger unit of text, fails to fit the context. The virtue of this requirement is that it permits the classification of one and the same expression as being a metaphor in some cases and not in others. What follows from this is that it is not linguistic expressions themselves that are metaphors, but particular uses of them. Thus, whether or not that sentence is a metaphor depends upon the context in which it is used.

The general point that needs to be emphasized here is that if something is a metaphor then it will be contextually anomalous if interpreted literally (except in rare cases of ambiguous expressions wherein one reading make sense literally and the other metaphorically, in which case the generalization is still true of the latter reading). Insofar as the violation of selectional restrictions can be interpreted in terms incompatible at the lexical level, such violations may sometimes be the basis of the contextual anomaly. Furthermore, it seems that the distinction between literal and metaphorical is one of degree, with there being many difficult borderline cases (Ortony, 1980).

At present, no sure criteria for identifying metaphor have been found. It does seem clear that our comprehension of an utterance as metaphorical relies upon our awareness of the total speech situation in which it occurs. We seem to inter-

pret an utterance metaphorically when to do so makes sense of more aspects of the total context than a literal reading would. Thus it appears that an adequate account of the identification and comprehension of metaphor must consider the role of the extrasentential and even the extralinguistic context of an utterance (Johnson, 1980).

2.2.5 Comprehension

Generally speaking, psychological models of language comprehension have only recently concerned themselves with metaphor. Perhaps the most notable exception is found in Kintsch (1974), who acknowledges that for any theory of language comprehension to be adequate, it must account for the comprehension of metaphor.

Kintsch (1972, 1974) integrated the linguistic view of metaphor as rule violation with ideas concerning semantic memory. For Kintsch, any semantically unacceptable sentence has metaphoric potential. Moreover, Kintsch appears to accept the substitution view of metaphor. The deviant sentence is interpreted, through inference, so that "an explicit comparison is being made, involving only semantically acceptable sentences and replacing the original unacceptable sentences" (Kintsch, 1974:37). Rejecting the notion of selectional restriction violations, Kintsch maintains that semantic anomaly is a necessary condition for metaphor. But not all metaphors are semantically anomalous. Consider the sentence:

Regardless of the danger, the troops marched on.

What determines whether this is a metaphor or not is the context in which it is used. In the context of an army marching to battle it is not likely to function as a metaphor, but in other contexts, such as the following, it is.

The children continued to annoy their baby-sitter. She told the little boys she would not tolerate any more bad behaviour. Climbing all over the furniture was not allowed. She threatened to not let them watch TV if they continued to stomp, run, and scream around the room. Regardless of the danger, the troops marched on. (Ortony, 1980:72).

Here, the whole sentence is metaphorical, not just a word or phrase in it, and it would be counterintuitive to insist that it was not a metaphor.

Contemporary memory theorists analyse comprehension of metaphor primarily as a problem of long-term, or semantic, memory (e.g., Kintsch, 1972). This is implicit in the idea that metaphor is a problem of meaning, which is based on long-term memory information associated with the terms of the metaphor. Comprehension accordingly involves the retrieval of such information from long-term memory.

2.2.6 Ambiguity

Inference and context are also 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) suggests that metaphor is no different from any other kind of duality of meaning.

But, in fact, there is an important difference. In the case of 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. But in the case of metaphor, one of the meanings is derived in some way from the other. Furthermore, the process by which the metaphoric interpretation is derived from the literal meaning, whatever the process is, cannot be just

some kind of formal linguistic operation on literal meaning, because as Searle (1979) points out, metaphor can be based not only on properties involved in literal meaning, but on associations, myths, and things we happen to know about the things referred to in the literal meaning. It is not really from the literal meaning that the metaphor is calculated, but from a complete understanding, an enriched sort of meaning with all the pragmatic gaps filled in.

According to MacCormac (1985), metaphor is a phenomenon that possesses an inherent ambiguity. According to Black (1979), analysis of a metaphor often neglects the ambience, tone, and attitude of the subsidiary subject. Since we must necessarily read "behind the words", we cannot set firm bounds to admissible interpretations: ambiguity is a necessary by-product of the metaphor's suggestiveness. The situation in cases of doubt as to how a statement is best taken is basically the same as that in other cases of ambiguity. And just as there is no infallible test for resolving ambiguity, so there is none for discriminating the metaphorical from the literal (Black, 1979).

According to Billow (1977), metaphor is an example of polysemy (the term given to the use of the same word in two or more distinct meanings), which seems to appear in one form or another in all languages and at all times. Whorf (1969) has proposed that because different languages express certain actions, emotions, and ideas in terms of diverse metaphors, metaphor itself influences both the perception and cognition of the language culture.

According to Stillings (1987), some theories of ambiguity state that the reading of an ambiguous sentence that is most successful in uniquely identifying a referent will be the one used. Within the domain of natural language processing, ambiguity

typically does not pose a problem for communication. It is considered that one manages to make sense of ambiguous sentences in ways that are consistent with real world knowledge. While real world knowledge is a pragmatic ideal, Stillings suggests that it does clearly bear on on how natural language is processed. The significance of pragmatics has caused many researchers to support a meaning-driven view of natural language processing. A meaning-driven approach states that the mapping between form and meaning can be accomplished with little recourse to grammatical information. In this approach, the semantic processing systems work in interaction with information about the context of linguistic discourse and real world knowledge.

2.3 Developmental Research

Ortony, Reynolds, and Arter (1978) note that developmental research into the comprehension of metaphors has become quite fashionable especially in the area of education. It is evident that in order to understand many school texts, children have to understand metaphors that occur in them. It thus becomes important to know whether there are cognitive constraints on the comprehension of metaphor by children. If there are, then one needs to understand the relationship between the literal uses of language that children can understand and the nonliteral uses that they perhaps cannot.

2.3.1 Dual-Function Studies

According to Ortony, Reynolds, and Arter (1978), the first and certainly the classic study is that of Asch and Nerlove (1960), who examined the development of dual-function terms in children. Dual-function terms were defined as words that can refer to either physical or psychological phenomena (that is, i.e., "cold water" versus "cold people"). The physical was held to be literal, and the psychological application was regarded metaphorical. Asch and Nerlove concluded 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. There are some problems with this study, however. First, it could be argued that the dual-function terms that Asch and Nerlove investigated are, in fact, ambiguous terms, having at least two distinct lexical entries. If this is the case, it would not be surprising to find that the psychological senses of them develop later, on the grounds that the domains to which they can be applied are less well understood by younger children. That the terms are not perceived as being related by children in fact provides some evidence for the ambiguity interpretation. Consequently, the findings may have little to do with the development of the capacity to understand metaphors at all. A second problem concerns the relationship between comprehending metaphors and explaining the basis of comprehension. To investigate cognitive skills by making demands on metalinguistic skills is not a very promising approach. That children cannot report how they understood something does not in itself justify the conclusion that it was not understood.

Lesser and Drouin (1975) verified Asch and Nerlove's basic findings concerning 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. As well, Winner, Krauss, and Gardner (1975) have documented an increasing ability, with age, to group together pictorial sequences which, together, embody a metaphoric concept.

2.3.2 Paraphrase Studies

Two studies which have examined in some detail the capacities of children to paraphrase various kinds of metaphor are those of Billow (1975) and 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. 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. With Billow's study it should be noted that the similarity metaphors, the proportional metaphors and the proverbs were substantially different with respect to difficulty on all kind of dimensions. It is clear that overall, the proverbs involved 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 were much more complex in structure than were the similarity metaphors, and they too involved more knowledge of various kinds. Good empirical work on the development of metaphoric understanding must control for pre-existing knowledge. The Billow study and the following study fail to do so.

Winner, Rosenstiel, and Gardner (1976) asked subjects ranging in age from 6 to 14 to paraphrase 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 "magical" 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 comprehension of metaphors. At the magical stage the interpretation is made literal by the mental construction of a suitable scenario, at the metonymic stage the terms of the metaphor are taken to be somehow associated, and at the primitive stage true metaphoric comprehension is partially 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. The results do not, however, establish that younger children cannot interpret metaphors properly.

2.3.3 Pre-school Children

When comprehension is tested by requiring the child to paraphrase a metaphor verbally, clear signs of metaphoric competence appear only in the pre-adolescent years. By adopting a more indirect approach, however, investigators have found evidence of metaphoric sensitivity earlier in life. Gardner (1974) conducted a study to determine whether the ability to make metaphoric links could be found in pre-school children. Gardner used polar adjectives to demonstrate the ability to comprehend metaphors. Gardner found that pre-school subjects were able, in most cases, to effect metaphoric matches, grouping elements together in the same way as adults do. The results showed a decrease in the number of errors made with increasing age. As well, Gardner concluded that pre-school children can handle metaphors as well as adults, provided that the contents of the metaphors lie within their experience.

Similarly, Gentner (1977) showed that pre-school children were as successful as adults at mapping one domain onto another remote one. For instance, children could designate, on a picture of a mountain, locations corresponding to nose, feet, and so forth, while preserving spatial relations in the process. Gentner concluded that her results weaken the position that young children lack metaphoric abilities, and are compatible with the hypotheses that such ability is present at the outset of language use. Milchman and Nelson (1976) found that even four-year-olds had some ability to group objects and interpret pantomimes in a metaphoric fashion, though the capacity to produce adequate verbal explanations increased with age.

A study by Honeck, Sowry, and Voegtle (1978) led to a similar conclusion. Like Gentner, they argued that previous research had not satisfactorily demonstrated

children's inability to comprehend figurative language because the task demands in most experiments had been too complex. They argued that if less complex tasks were used, even young children might demonstrate some understanding of figurative language.

2.3.4 Developmental Progression

Most of the research discussed so far seems to suggest that although the ability to comprehend metaphors increases with age, there is some rudimentary ability quite early on. Developmental research into the comprehension of metaphor seems to be plagued with many and difficult problems. These problems include such things as inadequate control over pre-existing knowledge, inadequate control over difficulty of materials, over-reliance on metalinguistic skills, and the utilization of experimental tasks not clearly related to the comprehension of metaphor. There also seems to be an excessive concern with metaphoric uses of words, perhaps because researchers have relied on a working definition of metaphor as a word or phrase used to denote something that is not its ordinary referent. The metaphoric sensitivity traditionally identified in the pre-adolescent years can thus be discerned in early childhood, provided that simpler tasks and response measures, as well as more generous criteria for competence, are adopted.

The development of metaphoric understanding is universally considered to be a progression. Although there has been little systematic research in the development of metaphoric production, one study suggests that the trajectory of metaphoric production follows a U-shaped curve. Gardner, Kircher, Winner, and Perkins (1975) presented subjects ranging in age from 3 to 19 with incomplete vignettes and asked them to provide endings which they found pleasing. At no age was the

incidence of acceptable figurative language high; most subjects produced comparisons judged to be conventional. Two exceptions came at opposite ends of the age spectrum: college students and pre-schoolers proved more likely than the elementary children to produce endings which were considered imaginative. In fact, the pre-schoolers produced a higher number than any other group.

2.3.5 Literal Stage

The behaviour characteristic of subjects in between the pre-schoolers and the college students has also proved of interest. Not only have such subjects proved less likely on their own to produce acceptable figures of speech, but in studies of both understanding (Winner, Rosenstiel, & Gardner, 1976) and production (Gardner, Kircher, Winner, & Perkins, 1975), they have frequently resisted attempts to engage in figurative language. This attitude is considered a manifestation of a "literal stage"—a time when children are consolidating the literal meanings of words and the community definitions of categories and are reluctant to countenance any violation of these recent acquisitions. Consistent with this trend, Billow (1981) documents a decline in spontaneous metaphor in the early years; Pollio and Pollio (1974) have found a low incidence of novel figures of speech in the written compositions of third, fourth, and fifth graders; and Rosenberg (1977) has documented a reluctance on the part of most children in the primary grades to produce figurative language. However, Silverman, Winner, and Gardner (1976) and Winner (1975) found that at the end of the "literal stage" (at around ten years of age), subjects can rapidly learn to produce acceptable figures of speech in a simile-completion task. It can be tentatively concluded, then, that figurative language declines during the early years of school, that its incidence can be affected to some extent by

environmental facts, and that, with the advent of pre-adolescence, there is a gradual rise in the proclivity to use figurative language (Gardner, Winner, Bechhofer, & Wolf, 1978).

2.3.6 Renaming and Metaphor

Although metaphoric competence includes far more than the ability to call one object by the name of another, there is good precedent for considering renaming as the central operation in metaphor (cf. Aristotle, *Poetics*). During the second year of life, the child begins to engage in symbolic play, and activity characterized by the ability to use one object as if it were another. Wolf and Gardner (1979) found that ambiguous objects (e.g., wooden blocks), lacking an identity of their own, are more likely to be renamed at this stage than are familiar objects whose usual names must be suppressed. By the age of two or three, a new form of post-referential speech arises, one grounded in perceptual similarities rather than in common actions or functions. It seems legitimate to consider these instances of renaming-- where the child seems cognizant of the usual name of the object and nonetheless overrides it-- as instances of early metaphor.

At about the age of three, the child can explicitly describe the resemblance of one object to another. And by the age of four or so, the child can include both the topic and vehicle in utterances (Gardner, Winner, Bechhofer, & Wolf, 1978). It is possible that such explicit comparisons reflect a linguistic advance only. Rather than conceptualizing relations in a new way, the child may have merely attained the ability to encode them in appropriate linguistic form. However, particularly in the case of an explicit comparison between two objects, a cognitive advance seems involved as well: now the child is explicitly confronting the tension entailed

in mentioning two incommensurate elements in the same sentence, and may also be signalling to others a growing awareness that this description is an unexpected one. But even at this point, such constructions seem to be elicited only in the presence of the object; thus, they are not entirely decontextualized. Perhaps the pre-schooler differs from the adult less in the appreciation of the nature of metaphoric connections than in the kinds of metaphoric connections which are discerned, as well as in the degree of self-consciousness about the processes involved.

Pre-school children, restricted to a meager vocabulary, yet having much to say, must often over-extend a word, even though they may be at least partially aware that it does not legitimately apply to the domain or object under consideration. Their renaming seems at first to be based on functional connections; soon thereafter, children focus on perceptual attributes, particularly in the visual realm; by the time they start school, they often make synesthetic connections which draw from two or more perceptual modalities. Moreover, their metaphoric links become couched in more explicit syntactic frames.

Increasingly aware of dictionary definitions of words, children exhibit literal usage in their own speech. And by the same token, they exhibit a strong preference for literal expressions whenever a range of figures is offered to them. Perhaps if a child appreciates what words usually mean and how they are customarily organised, then the child can completely comprehend and appreciate the significance of intentional departure from established regularities.

2.3.7 Perspectual Domains

In the pre-adolescent years, it may be more than coincidental that a rebirth of interest in the metaphoric domain occurs shortly after the knowledge of the conceptual and lexical practices of the child's culture has been consolidated. Thus a crucial re-discovery of metaphor takes place. Children aged 10 or 11 are able to offer simple yet appropriate paraphrases of metaphor. They appreciate that connections can be affected across sensory domains, or between the psychological and the physical realms. Although metaphoric competence takes a significant up-turn in the pre-adolescence period, it is only with the advent of adolescence, and perhaps only with the attainment of formal logical operations, that metaphoric capacity is possible. No longer is the child restricted to a single comparison, nor to an approximate understanding of a metaphor; the child can now appreciate a variety of links between domains, hit upon the exact sense intended in a metaphor, and offer a detailed paraphrase of the figure.

Marks, Hammeal, and Bornstein (1987) suggest that synesthesia rests on a common, perhaps universal, core of cross-modal similarities—similarities that probably have their origins in childhood. Results indicate that children, like adults, appreciate resemblances between relatively abstract properties of visual and auditory experiences. Though there are some asymmetries, expressions describing auditory events often give visual meanings more readily than expressions describing visual events give auditory meanings: for instance, young children judge the noun *sunlight* to be much brighter than *moonlight* but not necessarily louder or higher in pitch, whereas *low pitched* is judged large, but *large* is not judged very low in pitch. So the understanding of synesthetic metaphors can continue to develop throughout childhood.

One end result of the extension of perception to language is the capacity, most clearly evident in adults, to interpret cross-modal expressions in a systematic manner. Semantic knowledge taps perceptual knowledge-- both kinds of knowledge entail graded levels of meaning. Several investigators (e.g., Billow, 1981; Mendelsohn, Robinson, Gardner, & Winner, 1984; Vosniadou & Ortony, 1983) have argued that the seeming metaphors of young children indeed are true metaphors, basing this claim on the evidence that children show intent in their metaphoric productions and that children recognise the breaking of conventional categories.

In the first few years of life, as the categorical differences among modalities sharpen, implicit similarities among abstract properties of perceptual experience in different modalities remain undisturbed, and children may "stumble onto" these similarities relatively early in life. Gardner (1974) has noted, for instance, that cross-sensory metaphors are among the easiest metaphors for young children to understand (see also Winner, Rosentiel, & Gardner, 1976). Metaphor grounded in psychological qualities, for instance, proves more difficult. Indeed, perceptual similarities seem especially important to young children, who often ground their interpretations of metaphors in perceptual properties (Vosniadou & Ortony, 1983). Well beyond the point at which they can understand conceptually based metaphors, children seem nonetheless to continue to prefer metaphors based in perception (Silberstein, Gardner, Phelps, & Winner, 1982).

2.4 Conclusion

Theory and research concerning the development of the production and comprehension of metaphors yield numerous opinions and contradictory findings. Most researchers agree that metaphor remains a viable and active variable that enlarges and enhances discourse. While most agree on this point, many researchers disagree as to its applicability in that the contradictory findings are largely due to varying experimental designs. Developmental research is hampered by problems concerning inadequate control over pre-existing knowledge, difficulty of the material presented, and over-reliance on metalinguistic skills. What is common to both adult and developmental research is the increasing awareness among researchers of various disciplines that the aspects of language which lie beyond literal denotation must be taken into account.

Chapter III

COMPREHENSION

3.1 Introduction

Psycholinguistic theories of metaphor have usually described its mode of operation in terms of one of three different sets of principles: those based on feature or attribute matching, those based on the resolution of analogy, and those based on a direct perceptual comprehension of relations expressed by the metaphor (cf. Pitts, Smith, & Pollio, 1982). These sets of principles share underlying variables which are manifested, in a variety of roles, in several comprehension models. For example, the concepts of shared features, or metaphors based on underlying analogy, appear, in a variety of guises, in comparison theories, interaction theories, and perceptual theories of comprehension which themselves rely on traditional comprehension models such as semantic feature models and semantic network models.

This chapter will examine the comprehension variables of metaphor and the differing roles these variables play in each theory. The theories themselves will be examined and contrasted. I will also rely on Richards' (1936) terminology of topic, vehicle, and ground.

3.2 Comprehension Variables

3.2.1 Similarity Statements

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 generalizations, 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 reference, and assesses the quality of the match between the subjects and the referents.

Similarity has been viewed by both philosophers and psycholinguists as a prime example of a symmetric relation. Indeed, the assumption of symmetry underlies essentially all theoretical treatments of similarity. Contrary to this tradition, Tversky (1977) provides evidence for asymmetrical similarities and argues 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.

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) notes that the approach whereby metaphors are reduced to similarity statements does not work, because it turns out that 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) proposes a model of similarity 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 whereas 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.

But there is 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). This seems naive. Sooner or later, 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 have agreed 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).

3.2.2 Anomaly

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 theorists (e.g., Kintsch, 1974) to identify metaphors as a special case of anomaly.

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 emphasis of the anomaly view is on the dissimilarity of the semantic features of topics and vehicles (cf. 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). As well, another problem with the anomaly view is that many metaphors do not involve any obvious anomaly (e.g., *The old rock was becoming brittle with age*). A metaphor may violate a pragmatic rule about context but does not necessarily violate a selectional restriction.

Pollio and Burns (1977) have noted that anomalous sentences, far from being ambiguous or nonsensical, seem quite meaningful. Although we are not always sure what the proper interpretation is immediately, we are sure there is something there because, as anomalous sentences are grammatical, we have learned to look for meaning where there is grammaticality; and because we are accustomed to metaphoric juxtaposition, we can deduce meaning.

Pollio and Burns' (1977) results indicate that subjects can paraphrase anomalous sentences (that is, find meaning). Anomaly seemed to be rendered comprehensible in one of two ways. If a subject chose to interpret each of the words in its ordinary (literal) sense, anomalous sentences were made interpretable in terms of an elaborate shift in the context of the sentence. Under this strategy, stories were invented in which the anomalous sentence could have been sensibly uttered. The second major strategy involved the use of figurative interpretation for one or more words in the sentence. 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.

3.2.3 Semantic Relatedness

Considerable emphasis has been placed on semantic relatedness in the metaphor comprehension 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 & Malgady, 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 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 (1989a), 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.

3.2.4 Metaphors as Analogy

Reasoning by analogy has been theoretically linked to metaphoric thought in terms of the ability to find appropriate relationships between analogic performance and aspects of metaphor comprehension. While there is general agreement that metaphor and analogy can be distinguished, it is commonly assumed that metaphor comprehension relies on underlying analogic thought. In other words, it is asserted that the comprehension and knowledge searches which arise in the interpretation of a metaphor are due to the creation of an analogy (Hoffman, 1985; Pitts, Smith, & Pollio, 1982; Pollio & Smith, 1980).

The concept of something new in terms of something old forms the basis for analogic thinking as well as for metaphoric thinking, and because analogic thinking has generally been thought to comprise a broader range of mental phenomena than has metaphoric thinking, some researchers have been inclined to view metaphoric understanding as a form of analogic thinking (e.g., Aristotle; Billow, 1975; Gentner, 1977; Miller, 1979; Sapir, 1977; Sternberg, Tourangeau, & Nigro, 1979). The notion that some metaphors are comparisons based on analogy derives from Aristotle. To understand a metaphor, the listener must recognise the particular analogic basis underlying it and complete the puzzle implied by the contrast.

Tourangeau and Sternberg (1981) in particular argue that analogic reasoning is especially important in finding relationships among concepts coming from dissimilar domains. That is, reasoning by analogy need not be involved in all aspects of metaphoric thinking, but only those in which semantic distances across different domains are involved. Trick and Katz (1986) in fact found that analogic reasoning was a potent factor in comprehending metaphors where the topic and the vehicle came from semantically distant (i.e., dissimilar) domains.

Tourangeau and Sternberg (1981) found that a theory of mental representation in metaphoric reasoning, patterned after a theory first applied to analogic reasoning, provided good prediction of metaphoric aptness. Billow (1975) found that many errors that subjects made in comprehending metaphors were identical in kind to errors made by children in comprehending analogies.

The view that metaphors are based on or are covert analogies suffers from problems. While analogies are statements of similarity-- similarity between relations of "objects" rather than objects themselves, if metaphoricity is a characteristic of similarity statements, one would expect analogies to vary in their degree of metaphoricity in just the same way that simple similarity statements do. Consider:

Lambs are to sheep as kittens are to cats.

Putting Al Capone in charge of the Federal Reserve is like putting a cat in charge of a canary.

Both are analogies, but the first is true, whereas the second is not. An important difference between statements of (analogic) similarity and simple similarity statements is that in analogies, the complex schema that are produced by two pairs of terms usually have to be constructed at the time of comprehension rather than retrieved from memory as already available schemata. This means that one would expect metaphors based on underlying analogy (proportional metaphors) to be more difficult to understand. This is, in fact, not the case (cf. Malgady & Johnson, 1976; Ortony, 1979a; Pollio & Smith, 1980; Searle, 1979; Verbrugge & McCarrell, 1977). Rather, metaphors based on underlying analogy have been found to be as easy to comprehend as those metaphors that are not based on underlying analogy.

3.2.5 Semantic Feature Models

The Aristotelian perspective, that interpretation of a metaphoric utterance is possible because of some sort of semantic "transfer" of meaning from vehicle to topic, is especially popular among theorists embracing a semantic feature approach to language comprehension. The traditional idea of semantic analysis provides a set of meanings for the individual lexemes of the language and then provides a set of rules of composition whereby the individual meanings of the lexemes are combined to form the meaning of the sentence. Meanings built up this way are the literal meanings of the sentence or discourse (as opposed to the conveyed meanings, what the listener understands upon hearing the sentence uttered in some context).

Proponents of semantic feature theory include Smith, Shoben, and Rips (1974) who proposed a model for semantic memory based on the semantic features of a word. Their semantic memory structure is composed of a series of semantic concepts, defined as sets, that include defining features and characteristic features. For retrieval, a two-stage process takes place. In the first stage, the instance and the target category are compared with respect to both defining and characteristic features. In the second stage, only agreement between the defining features is considered. For metaphor, Smith, Shoben, and Rips (1974) proposed that the features of the vehicle are transferred to the topic; and although semantic transfer risks transformation to a literal level of understanding, a metaphoric reading of the topic is construed as a transfer of certain vehicle-distinctive features.

The central assumption in semantic feature theory is that the semantic interpretation of a sentence is obtained by replacing its words with their dictionary

definitions and combining them according to the syntactic relations of the sentence. A dictionary definition is made up of a structured set of semantic elements which decompose the meaning of the word into its semantic constituents. As a word may have more than one distinct sense, the process of combining meanings is also sensitive to the constraints (i.e. selectional restrictions) that one word may place upon the meanings of the words with which it can be combined.

Available semantic theories of language comprehension do not capture the relationship between literal and figurative meaning. Consequently, figurative meaning cannot be derived by these theories as a composition of the literal meanings of the words. A good example of how figurative language violates compositionality is provided by idioms. *He let the cat out of the bag* cannot be interpreted as *He revealed some secret information* on the basis of the literal meaning of the component words. Thus, idioms seemingly defy structural analysis (Hoffman & Honeck, 1980b). As well, whole sentence metaphors are perfectly well-formed sentences that involve no selectional restriction violations. These are sentences that demand a metaphoric interpretation in some contexts, and a literal interpretation in others (for example, *Regardless of the danger, the troops marched on*). Another problem concerns some of the consequences of the view that the violation of a selectional restriction is a necessary condition for something being a metaphor. If this were the case there would seem to be no way to distinguish metaphor from semantic anomaly or falsehood. Semantic feature theory, as well, does not take into account the question of speaker intention-- the speaker must intend to use language metaphorically. And, linguistic communication involves not only a speaker but a listener. For the semantic feature theory, like the dictionary, metaphor operates exclusively at the lexical level (Ortony, 1980).

It is not entirely clear how semantic feature theories can cope with figurative variability, as well. For figurative forms such as metaphors and proverbs, a variety of meanings can be perceived that any one feature description may fail to encompass. In sum, the semantic feature approach which is fixed, static, and unalterable appears to be unable to deal with metaphor, to distinguish figurative senses of words, and to show how a word can have multiple meanings in a single figure of speech.

3.2.6 Semantic Network Models

Semantic network theories consider the mental lexicon to take the form of a network that links words according to the semantic relations between them. The central assumption is that the lexicon should be treated as a network that interrelates representations of lexical items by a variety of inferential links. For example, "man" is related by an "is a" link to "human". Many critics feel there is a lack of machinery between the meaning and reference of expressions, as it is not obvious how the distinction between the meaning and reference should be captured within a semantic network.

Network theories are more process-oriented than structure-oriented (e.g., Collins & Loftus, 1975; Collins & Quillian, 1969, 1972; Quillian, 1968). They say nothing about the internal structure of the concepts that constitute the nodes of a semantic network. Rather, they concentrate on the consequences of a spreading-activation mechanism for moving about within such a network. The basis of the spreading-activation process is the notion of an intersection, namely, a node that is connected to and is consequently activated by two or more of the concepts in the input string. An intersection has to be semantically close to the originating

nodes in order to avoid every node in the network being an intersection of every set of originating nodes (cf. Collins & Loftus, 1975).

MacCormac (1986) notes that the semantic network model of Collins and Loftus (1975) envisions the semantic memory as a vast network of concepts interrelated to each other through propositions. Some of the nodes (concepts) are superordinate to a particular node, whereas others are subordinate. One can enter the network at the point of naming a concept; memory activation spreads from that node to adjacent nodes so that when one utters the word *robin*, one immediately knows that a robin is also a *bird* (superordinate) and possesses *wings* (subordinate). These ordered relations can be arranged in a hierarchy.

One outstanding problem of network models, such as those proposed by Collins and Quillian (1972) and Norman and Rumelhart (1975), is the difficulty they encounter in explaining asymmetries in semantic relationships. Network theories fail to account for the asymmetrical nature of metaphors. Using Verbrugge and McCarrell's (1977) example *Billboards are warts on the landscape*, it can be observed that it means something entirely different from *Warts are billboards on the landscape*, yet a spreading-activation mechanism would result in the same intersection for both, even though the grounds of the two metaphors are rather different. Thus the predictions made by network models are counterintuitive.

One shortcoming of the research cited is that the locus of a metaphor is assumed to lie in a word, or perhaps an expression, within a sentence. From the perspective of novel and creative metaphors, the semantic network theory is too rigid. It is necessary to adopt a less restrictive account of what a metaphor is.

3.3 Comparison Theories

The idea that metaphors are merely covert comparisons, or analogies, has dominated philosophical approaches to the problem for a theory of metaphor and has begun to take hold in cognitive psychology and psycholinguistics. This view, which is the standard Aristotelian one, has been proposed as the basis for a psychological treatment of metaphor comprehension (Kintsch, 1974; Miller, 1979).

Metaphors characteristically pose comprehension problems: either they assert something that strains the listener's truth assumption, or they seem to bear no apparent relation to the listener's conceptual context. This problem is reduced if there is a resemblance between the listener's concept of reality and what the speaker has uttered. Miller (1979) views finding a resemblance as a process of paraphrasing the metaphor as a comparison statement.

The supposition that metaphors are comparisons is implicit in the view of Kintsch (1974) in that (necessarily semantically anomalous) metaphors are reinterpreted as semantically acceptable (explicit) comparisons, and in the view of Miller (1979) that the (only) difference between a simile (to which a metaphor can be reduced) and a literal comparison is that in the latter, the basis of the comparison is "obvious."

The most popular theory of metaphor comprehension is that of feature matching, which derives from the early work by Katz and Fodor (1967). 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). Ortony (1979b) assumes 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 one dimension-- 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.

According to Tversky's (1977) statement of semantic feature theory, the meaning similarity between any two stimuli or concepts is a function of the semantic features they share and the features that are distinctive. The salience of particular features can also make a difference. Experiments in which subjects rate the simi-

ilarity of various items (countries, drawings of faces, pairs of nouns) show that the order of the two terms in a comparison influence similarity ratings (McCloskey & Glucksberg, 1976; Rosch, 1977; Tversky, 1977).

Ortony (1979a) applied this theory to metaphors. The ground of a metaphor becomes the sets of features shared by topic and vehicle. As opposed to literal comparisons, metaphor occurs when there is a salience imbalance in the topic and vehicle sets: low salient features of the topic are highly salient for the vehicle. As the metaphor is comprehended, the salience of the features in the ground is enhanced.

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 an 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 problem with these comparison theories of feature overlap that makes them inadequate to account for this asymmetry and directionality is that they lack any principles or mechanisms for discourse processes. To deal with how people interpret utterances, discourse principles, such as the conventions for marking given and new information (Clark & Haviland, 1977), as well the Cooperative Principle (Grice, 1975) are necessary (see Chapter Four for elaboration). Camac and Glucksberg (1984) argue that the meanings of metaphors cannot be studied only at the level of word meaning or simple word interactions. Rather, sentence and dis-

course contexts can alter the selection and transfer of semantic features or relations.

Other criticisms of the comparison view include the problem that common category membership often provides too little basis for a nonliteral comparison (Tourangeau & Sternberg, 1982). Ortony (1979b) counters by suggesting that only salient features of the vehicle and nonsalient features of the topic are involved yet the common category or feature shared by the topic and vehicle is often itself shared only metaphorically.

Verbrugge and McCarrell (1977) note that an increasing number of researchers have come to believe that semantic feature classification is inadequate for explaining the flexibility and precision of ordinary language. One idea behind the dissatisfaction is the belief that the underlying criteria for word use is not sharply defined; the criteria are "fuzzy" and abstract. Testing whether an abstract statement of the ground of a metaphor could be an effective prompt for recall, Verbrugge and McCarrell (1977) demonstrated that a verbal paraphrase of the ground of a metaphor could prompt recall of the entire metaphor. For example, *Billboards are warts on the landscape* was successfully prompted by *are ugly protrusions on a surface*. The results demonstrated that an abstract statement of the implicit ground of a metaphor was sufficient to remind a person of the metaphor at some later time.

These results do not support models written in the framework of semantic feature theory or semantic network theory as these models would need to propose how the vehicle enhances the saliency of one or more of the topic's features. The Verbrugge and McCarrell study is important because in demonstrating that the

ground of a metaphor can indeed be abstract and non-feature-like, it blocks feature comparison and network theories of metaphor comprehension.

Regardless of specific representation assumptions, feature matching models of metaphor comprehension assume that metaphors are first recognised as comparison statements, and then the features or attributes of the vehicle are compared to, or mapped onto, the features of the topic. The simple forms of such models fail because they cannot account for two of the most salient characteristics of comparison statements, be they literal or metaphoric: the selection of relevant features, and the asymmetry of directional comparisons.

In sum, the research on metaphor and semantic theories indicates that subjects show a great deal of agreement in their judgements of the meanings of metaphors and the semantic similarity of topic and vehicle. The asymmetry in meaning as a function of topic-vehicle order is not paralleled by effects in reaction time tasks, effects that would be predicted by feature theory. Such prediction may not apply to metaphors that appear in their natural contexts. In contrast with literal language, the very phenomenon of metaphor suggests that the semantic base (whatever it is) is highly flexible, dynamic, and context-dependent. The issue is not really one about the necessary sequences of processes, but one of how people (and situations) constrain meanings to arrive at interpretations. However, it seems unlikely that comprehension must always involve whittling away at words feature by feature.

3.4 Interaction Theories

Comparison theorists emphasize the similarity of the topic and the vehicle; some anomaly theorists, by contrast, stress their dissimilarity. Interaction theorists (Black, 1962, 1979; Richards, 1936; Verbrugge & McCarrell, 1977) try to stress similarity and dissimilarity equally. The interactionist view differs from the comparison or the anomaly views as it emphasizes both similarity and dissimilarity of topic and vehicle as means of highlighting analogous and parallel features rather than ones literally shared (Tourangeau & Sternberg, 1982). Interactionist models maintain that the ground is not an expressed similarity but rather emerges as a novel, hitherto unseen, relationship between topic and vehicle. This position denies the simple positive or negative relationships between semantic relatedness and other metaphors features implicit in the other approaches. Rather, it predicts curvilinear relationships between relatedness and measures of metaphoric goodness, degrees of metaphoricity, and ease of metaphoric interpretation.

Interaction theorists argue that the vehicle of a metaphor is a template for seeing the topic in a new way. This reorganisation of the topic is necessary, because the characteristics or features of the vehicle cannot be applied directly to the topic; the features that the topic and vehicle share are often only shared metaphorically. When we interpret metaphor we do not compare the topic and the vehicle for existing similarities, but view each in a new way to create similarity between them. The topic and vehicle interact in the sense that the presence of the topic incites the listener to select some of the vehicle's properties, thus inviting the listener to construct a parallel construction that can fit the topic, which in turn induces parallel changes in the vehicle.

The interaction view has been criticised on the grounds that the notion of interaction is too vague and itself too metaphoric (Black, 1979; Searle, 1979). Although equally vague about how to characterize interactions, Verbrugge and McCarrell (1977) found evidence leading them to conclude that it is not sufficient to assume that "the topic is 'passively' schematized by salient properties of a vehicle domain: The topic and the vehicle terms *interact* in specifying the ground" (Verbrugge & McCarrell, 1977:528). Clearly, their most important finding was the high level of recall for the relevant abstract grounds, which seems to suggest that the subjects did indeed infer the implicit ground of a metaphor when they attempted to understand it. These results indicated that neither the topic nor the vehicle alone can be viewed as the dominant, meaning-giving component of a metaphor. The two must interact to produce the relevant ground. Verbrugge and McCarrell stated that they had found "several indications that the vehicle plays the major role in guiding the comprehender toward a resemblance. Schemata in the vehicle domain tend to be the predominant source of constraints by which the topic domain is interpreted" (Verbrugge & McCarrell, 1977:527).

Tourangeau and Sternberg (1982) share Verbrugge and McCarrell's (1977) view that in interpreting a metaphor, we infer an abstract ground for it, that this ground can serve as a basis for recalling the metaphor, and that the ground does not consist of shared features, previously associated with the topic and vehicle. Instead, the ground is something new, produced when the vehicle domain guides a novel schematization of the topic domain. It is Tourangeau and Sternberg's contention that features are not simply transferred wholesale from the familiar vehicle to the novel topic. The features are selected for their relevance to particular domains.

Further, the process of "transferring" features across domains often requires that the features themselves be transformed.

Tourangeau and Sternberg's domain interaction theory (1982) is based on the notion that metaphors are implicit analogies, and that metaphor comprehension proceeds in a manner similar to that observed in comprehending analogies. According to the domain interaction theory, metaphor comprehension involves the correlation of two systems of concepts from diverse domains. The model is as follows: The domain of the vehicle serves as a template through which the domain of the topic is viewed. A common within-domain factor is found that gives sense to the relative position of topic and vehicle with their respective domains. Both similarity and dissimilarity are important in metaphor comprehension according to this model: the similarity between relative positions of topic and vehicle within their respective domains and the dissimilarity between the domains.

Two parameters of metaphor structure are repellent, between-domain distance (the dissimilarity of the categories to which the topic and vehicle belong) and superimposed within-domain distance (the dissimilarity between topic and vehicle on the relevant dimension that the categories share). Tourangeau and Sternberg predict that comprehension of metaphors would be facilitated when either between-domain or within-domain distances are minimized. Appreciation of metaphors is also predicted to be enhanced when superimposed within-domain distances are minimized. However, appreciation is predicted to be improved when the between-domain distances are relatively large. The Tourangeau and Sternberg (1981) study provides only limited confirmation of the theory.

This domain interaction theory proposes that full understanding of a metaphor requires more than understanding the isolated meaning of the words of a metaphor. Complete comprehension also requires knowing where these terms fit into their perspective domains. Tourangeau and Sternberg (1982) provide evidence for the domain interaction view by demonstrating that the similarity between the domains of concepts related in metaphor contributes to metaphor aptness. Their argument is that the most apt metaphors are those in which the topic and vehicle come from moderately distant (or dissimilar) domains. Thus the best metaphors are those in which the topic and vehicle terms are very similar but the semantic domains are different (though not too different; aptness deteriorates once the domains become so disparate that no common grounds can be found on which to base a metaphor). General support for this model has been observed in the earlier Tourangeau and Sternberg (1981) study, and Trick and Katz (1986).

Tourangeau and Sternberg (1981) propose that outside their domains, features may lose their literal sense or change their meaning. In interpreting a metaphor, we see one concept in terms of another by construing features or dimensions that apply within the domain of the first concept (the topic) to those that apply within the domain of the second concept (the vehicle). Most metaphors, however, occur in a context; this context can determine the relevant domains. Aptness of metaphors relates positively to between-domain distance, negatively to within-domain distance, and not at all to overall distance. Thus, metaphors are perceived as more apt to the extent that their terms occupy similar positions within domains that are not very similar to each other. Tourangeau and Sternberg suggest that aptness increases with the degree of similarity within domains but decreases with

the similarity between the domains themselves, contradicting Malgady and Johnson's (1976) contention that the better the comparison, the better the metaphor.

Trick and Katz (1986) tested whether the domain interaction approach to the comprehension of metaphor would be supported when greater control was placed on verbal ability or item familiarity. Tourangeau and Sternberg's (1981) model permits two strong assumptions. First, the within-domain and between-domain distances inherent in a metaphor should be of prime importance in how the metaphor is comprehended. Second, people who differ in analogic reasoning ability should also differ in the efficiency with which they can comprehend metaphors.

Trick and Katz (1986) note that their results are for the most part consistent with the findings of Tourangeau and Sternberg; the major discrepancy is the finding of higher comprehensibility with greater between-domain distance. Individuals talented in analogic reasoning are more responsive to between-domain distance when making comprehension and aptness ratings. Analogic reasoning ability was generally less important for either comprehending or appreciating metaphor that differed on within-domains factors. It can be concluded that analogic reasoning ability plays a minor role in the comprehension of within-domain characteristics. In any event, the observation that analogic reasoning is important-- at least in comprehension between-domain information-- confirms the importance of inductive reasoning in the comprehension of metaphors and in a more general way confirms the basic domain interaction model.

3.5 Perceptual Theories

Another approach to the understanding of metaphor is best termed perceptual (or gestalt). In this view, a listener sees and understands a metaphor immediately without the necessity either of resolving the nonliterality of the statement or of rearranging elements to solve an implicit analogy. Here, the assumption is that understanding the relationship between two or more words that are figuratively related can best be described as a perceptual process in which the relevant points of agreement are experienced as directly and immediately apparent. For this type of analysis, one "sees" rather than "interprets" a figure, and comprehension takes place without requiring any special inferential process.

A factor implicated in metaphor comprehension, according to the perceptual theory, is the referential concreteness of the concepts involved: some concepts refer to tangible objects and events, whereas other concepts are more abstract. There is some evidence to suggest, at least in the comprehension of metaphors, that vehicle concreteness has special status. Rating studies that have employed both poetic metaphors (Katz, Paivio, & Marschark, 1985) and nonliterary metaphors (Marschark, Katz, & Paivio, 1983) indicate that sentences are more likely to be judged as metaphorically meaningful as the vehicle becomes easier to image. In contrast, topic imagery does not provide incremental predictability of the ratings. These results are consistent with the notion that imagery plays some role in metaphor comprehension and at least contradicts the claim of Riechmann and Coste (1980) that imagery is a "tangential phenomenon." Katz (1989a) notes that the preferred vehicle differs as a function of referential concreteness of the topic: the chosen vehicle is one that is closer to the topic in semantic distances when the

topic comes from a concrete domain than when it comes from a more abstract domain. The importance given to vehicle concreteness can be taken as general support for those who accord imagery a special role in metaphoric thought.

Katz, Paivio, and Marschark (1985) found that subjects judged "better metaphors" as those that can be labelled as being more interpretable. This is consistent with the perceptual model of Johnson and Malgady (1980), according to which a good metaphor is analogous to a good figure in a Gestalt sense. Malgady and Johnson's (1976) notion that perceptual, Gestalt-like principles underlie the comprehension, entails that metaphor goodness is closely related to the semantic relatedness of topics and vehicles. At the same time, however, the Gestalt position suggests that goodness would also be a function of the ease with which a metaphor can be assigned a single, holistic interpretation (Malgady & Johnson, 1976). Marschark, Katz, and Paivio's (1983) data did not support this contention, finding that increasing numbers of interpretations led to better metaphor rating.

One of the most controversial aspects of metaphor comprehension involves the role assigned to mental imagery. Some argue (Paivio, 1979) that imagery, especially of the vehicle, plays a critical role in the comprehension of novel metaphors. Others see the role of imagery as secondary to a primary conceptual analysis (e.g., Riechmann & Coste, 1980). Hoffman (1985) notes that research on imagery and metaphor comprehension has shown that inference-making occurs during metaphor comprehension and that inferences influence learning. Verbrugge and McCarrell (1977) found subjects could recall metaphors by statements of their implicit ground. Similarly, Honeck, Riechmann, and Hoffman (1975) were able to cue the recall of proverbs by a statement of the implicit ground. These studies

show that inferring or creative discovery of the conceptual ground of the metaphor occurs during comprehension and influences memory for the metaphor.

The conclusions drawn from the perceptual theory research indicate that imagery is important for figurative comprehension, contradicting the conclusions of Riechmann and Coste (1980) and Honeck (1973a) whose results indicated that imagery is relatively unimportant for figurative comprehension. Research has demonstrated that subjects report using images to encode metaphoric sentences (Harris, Lahey, & Marsalek, 1980), that imagery is a useful mnemonic for comprehending and remembering metaphors (Billow, 1977; Honeck, 1973a; Verbrugge, 1977), and that imagery can prompt metaphor recall (Marschark & Hunt, 1985).

3.6 Conclusion

Traditional theories, such as the substitution, comparison and interaction views posit that some similarity between the topics and vehicles of the metaphor is fundamental to comprehension. These traditional theories have a common theme: the underlying similarity derives directly from relations between the individual concepts in a metaphor. The substitution and comparison views treat metaphor as an arbitrary or ambiguous substitute for a hidden meaning; each view postulates special mechanisms for reconstructing the underlying conventional meaning. The comparison view emphasizes, indeed takes its definition from, the similarity of the topic and the vehicle. Other theorists have taken the dramatically opposed position that metaphors are defined by the obvious dissimilarity between the topic and vehicle and the anomaly that results when the two are linked (Beardsley, 1962; Campbell, 1975).

Black (1962, 1979) has successfully argued that the substitution and comparison views are incomplete, since they do not tell us how we are to compute the meanings of any given metaphor. Almost any two objects are similar in some respect, and what is needed is a theory that specifies how we are to select the relevant similarities between the topic and the vehicle in each metaphoric statement. Furthermore, there are many cases where there is no basis for computing the similarity between the topic and the vehicle, yet we are able to understand the metaphoric assertion.

Both analogy and feature theories of metaphor share many common assumptions. For example, both assume a comparison between the subject and the vehicle of a metaphor, with one or more characteristics of the vehicle becoming associated with the subject. Both also assume additional information-processing stages in the production and comprehension of a metaphor over and above that necessary for literal understanding and use. Each describes metaphor as different from and less immediate than, ordinary language use and comprehension.

A fundamental problem of feature matching models in general is that many metaphoric comparisons seem to involve properties that are not present in the listener's mental representation of the topic concept at all until the metaphor is uttered and understood. A successful comprehension theory must be based on the recognition of salient and relevant properties of a predicate that can sensibly or plausibly be attributed to the subject of comparison. Feature matching models, then, may serve as models of comparison statement assessment or verification. They cannot serve as the bases for models of comprehension of such statements, be they literal or metaphoric.

The bulk of research on metaphor comprehension has concerned the semantic relatedness of topics and vehicles (Malgady & Johnson, 1976, 1980), their imaginability (Paivio, 1971, 1979; Verbrugge, 1977), metaphor goodness (Johnson & Malgady, 1980), feature saliency (Katz, 1982; Ortony, 1979a; Tversky, 1977), individual differences and general analogic reasoning skills (Trick & Katz, 1986), and a variety of other interpretability measures as playing important roles in metaphor comprehension.

The problem with feature matching or comparison or interaction models is that they do not deal with units larger than the word or word pair, and hence cannot provide a mechanism for choosing just those features that are intended by the metaphor-- or, more precisely, the metaphor user. Camac and Glucksberg (1984) have suggested that two strategies enable one to account for both the asymmetry in feature attribution and the problem of feature selection: first, a listener must observe the fundamental conventions of discourse and assume that any given utterance is intended to be informative (Grice, 1975); second, the conventions for marking given and new information must also be followed (Clark & Haviland, 1977).

This describes a fundamental weakness of comprehension models in general: the level of analysis is purely at the word or word-pair level. It does not include the discourse level. People speak in order to communicate information. The conventions and principles for accomplishing this purpose are part and parcel of the mechanisms for understanding individual units of discourse, including both literal and nonliteral comparison statements. Any account of language comprehension that does not include such discourse level mechanisms will necessarily be incomplete and inadequate. The following chapter suggests how context can play a role

in metaphor comprehension. Metaphor comprehension must be treated in terms of discourse processes that make use of various sources of information.

Chapter IV

PROCESSING

4.1 Introduction

The most popular processing model for metaphor comprehension describes it in terms of a multistep, inferential process operating over an underlying set of elements such as semantic features, images, word feature associations, and analogical propositions. These serial processing models (Clark & Lucy, 1975; Searle, 1979) assume that figurative comprehension begins with a listener's attempt to make literal sense of the utterance currently under consideration. For this class of model, the usual assumption is that the interpretation of a metaphor is undertaken only when an initial literal analysis has failed to produce a sensible reading. The second-order interpretative act required to bring about comprehension has been described in terms of semantic transformations (Searle, 1979) or principles derived from an analysis of propositions (Clark & Lucy, 1975; Kintsch, 1974; Miller, 1979). What is common to all analyses is that metaphoric comprehension is always seen to involve a second-order cognitive act based on an initial (logical) evaluation of the figure.

This chapter will first examine serial processing and then will turn to contextual processing as the only processing model of metaphor comprehension which adequately captures all salient characteristics and features of metaphor comprehension and interpretability.

4.2 Serial Processing

4.2.1 Two-Stage Models

Recent research on comprehension processing models began as a reaction to the theoretical assumption that linguistic meanings are stored in the head as fundamentally literal things based on reference and perception of properties. This assumption considers that metaphor comprehension requires inference-making processes. First, an input metaphor is comprehended according to the usual semantic rules and meanings. When this analysis fails, as it must in the case of metaphor, then some special process or processes are invoked to derive the intended figurative meaning on the basis of the rearrangement or transformation of the stored literal meaning of the words involved. This theoretical scheme is called the "two-stage" model of metaphor comprehension (cf. Harris, 1976).

When modern researchers began studying metaphor, they were not exactly certain about which methods would work, but they were fairly confident about this two-stage processing model of metaphor comprehension. The earlier formulations of this theory were presented by Clark and Clark (1977) and Kintsch (1974). According to these descriptions, the comprehension process involves a comparison of each utterance to its context, and then the plausibility of the utterance is determined given the pragmatics of its having been uttered. For idioms, indirect requests, and metaphors, the resulting reading is anomalous, and this recognition of anomaly triggers a special subprocess involving some form of semantic feature matching in which the usual (literal) word meanings are transferred or transformed. This second, special process would then yield an interpretation of the intended (nonliteral) meaning. According to Miller (1979), the initial literal comprehension

process yields anomalous readings causing the metaphor to be reconstructed as an analogy in which the intended (nonliteral) comparison is stated explicitly.

As most theories of language comprehension deal only with a single, literal level of meaning, the two-stage process theory was a specific testable hypothesis about metaphoric comprehension: that comprehension occurred, first, by understanding the words in a literal way; and next, by using that literal meaning to construct the intended metaphoric interpretation. Evidence for such a two-stage comprehension process for other types of nonliteral language was obtained by studying conversationally-conveyed requests (Clark & Lucy, 1975) and unfamiliar proverbs (Brewer, Harris, & Brewer, 1977). It was considered that because metaphors are often semantically anomalous with respect to their utterance context, the comprehension of metaphors should be especially slow relative to semantically comparable literal utterances. Furthermore, the two-stage process implies that comprehension of the literal meanings of metaphors always comes first.

Harris' (1976) test of the two-stage processing model of metaphor indicates that there is no difference in the time required to initiate a paraphrase of metaphoric or nonmetaphoric sentences and no evidence for two-stage processing in the comprehension of metaphors. Harris suggests that the difference for results between metaphors and other nonliteral uses of language occurs because a metaphoric sentence is anomalous at the literal level and the metaphor itself may include from one word to the entire sentence in varying degrees, whereas proverbs and conversationally-conveyed requests have two nonanomalous and discrete meanings at the level of the whole sentence. Consider, for example:

Look before you leap.

a. Literally: Look before you leap.

- b. Metaphorically: Think before taking action.

It's cold today.

- a. Literally: It's cold today; that is, the temperature is low.
- b. Indirectly: It's cold today; that is, please shut the window.

Verbrugge (1977) questioned whether it makes sense that we first try the standard meanings of the elements of a metaphor, only seeking a figurative sense if the first effort leads to logical inconsistencies, or a contradiction of some prior knowledge. The fact that we seldom notice the potential ambiguity of such sentences is, although not necessarily compelling, an argument against such two-stage models. It is also counterintuitive to assume that some interpretations (the literal) proceed in a direct and automatic manner, while other interpretations (the figurative) must invoke special cognitive inferential processes which have no formal role in linguistic theory. More current research on idioms and indirect requests has shown clearly that the two-stage hypothesis is false for these forms of nonliteral language. Their nonliteral meaning is comprehended rapidly and the literal meaning may not be processed at all during comprehension (Gibbs, 1983, 1985).

4.2.2 Three-Stage Models

According to the three-stage model, comprehension of certain categories of nonliteral language such as metaphors occurs in three stages. These stages proceed in the following order: first, an individual constructs a mental representation of the literal interpretation of a word or phrase; second, the individual tests this interpretation against the context to determine its plausibility and appropriateness. If it is plausible and appropriate within the context, it is accepted as the intended

meaning. However, if it is not deemed appropriate, it is rejected as the intended interpretation; third, if rejection occurs, a new interpretation is derived from the literal meaning, and the intended nonliteral or metaphoric meaning is attributed.

The three-stage processing model of nonliteral comprehension (Clark & Lucy, 1975; Grice, 1975; Searle, 1979) has been invoked to account for the results of experiments demonstrating longer processing times for metaphors. Clark and Lucy (1975) found that nonliteral language required longer processing times than literal language. However, since the three-stage model postulates that it is the context against which literal meaning must be tested to determine the figurative interpretation, and since Clark and Lucy provided no context, their findings cannot be considered definitive with respect to the three-stage model. Clark and Lucy's (1975) experiment on the comprehension of indirect requests indicated that indirect requests are comprehended more rapidly in their appropriate contexts suggesting that the indirect meaning is computed first. Gibbs (1979) using the Clark and Lucy (1975) format but with paragraphs that could induce either the literal or the indirect meaning found that the fastest comprehension occurred for the indirect meanings in the contexts that fit the indirect meaning suggesting that there could be equivalent processing mechanisms for literal and nonliteral comprehension.

The processing model tested by Clark and Lucy (1975) lends itself fairly readily in application to the comprehension of metaphors. Indeed, such a model has been proposed as a quite general one for the comprehension of language that superficially fails to cohere with the surrounding context. This proposal was made most notably by Grice (1975) (see Section 2.2.3), who argued that linguistic interactions are governed by an implicit convention, the Cooperative Principle, whereby utter-

ances are normally sincere, relevant, appropriately precise, and clear. Grice proposed that sometimes one or more of the maxims might appear to be violated but that, in reality, they rarely are. Apparent violations are resolved by a listener through a variety of inferential strategies.

Searle (1979), working in the same paradigm as Grice, addressed the problem of metaphor explicitly. Searle argued that the comprehension of metaphor involved the listener's determining the utterance meaning from the sentence meaning, given that the latter is judged to be defective. He argued that the difference between an indirect speech act (cf. Clark & Lucy, 1975) and a metaphor is that in the former the speaker means both the literal meaning and the conveyed meaning, whereas in the latter, only the conveyed meaning is intended. Searle's treatment requires that the listener determine that the sentence meaning is defective. Consequently, the listener must process the literal meaning of the sentence first so that this determination can be made. Then, when the listener fails to comprehend the sentence in context, it becomes necessary to seek some alternative meaning, presumably on the basis of the literal meaning.

Brewer, Harris, and Brewer (1977) used novel proverbs to examine processing stages. Specifically, they wanted to test the hypothesis that proverbs are first understood on a literal level before they can be comprehended on a figurative level. The results supported the hypothesis. Although the results supported a literal-first stage theory, Brewer, Harris, and Brewer (1977) pointed out that no single approach to the problem of proverb comprehension is likely to capture all its salient aspects. Kemper (1981) found that with enough contextual support, novel proverbs will not necessarily lead to longer comprehension latencies which, in

turn, reflect the need to make time-consuming inferences during the reading of the proverb.

Three important claims follow directly from this three-stage processing model of comprehension. First, literal interpretation has unconditional priority. The literal meaning of an utterance is always derived, and is always derived before any other meanings can be. Second, which follows from the first, people require a triggering condition, namely, a defective literal meaning, before they search for a nonliteral meaning; hence, metaphoric meaning is optional. Third (which also follows from the first), because additional inferential work must be done to derive nonliteral meanings that are contextually appropriate, metaphoric meanings should require both more and different contextual supports for their derivation. These three claims are not supported in the literature (cf. Gibbs, 1984; Gildea & Glucksberg, 1983; Glucksberg, Gildea, & Bookin, 1982; Keysar, 1989). This leaves metaphoric comprehension as essentially identical to literal comprehension.

Another assumption from this sequential three-stage model is that comprehending the nonliteral meanings of utterances requires more time and effort than comprehending literal meanings. This is not the case (cf. Ortony, Schallert, Reynolds, & Antos, 1978). The consensus seems to be that nonliteral expressions are not necessarily more difficult or time-consuming to understand than are literal expressions. Both the familiarity of the expressions and their contextual support play important roles.

As well, this serial processing model asserts that context is brought into the interpretation of a metaphor after some initial, literal parse of the sentence has occurred. Testing this, both the Ortony, Schallert, Reynolds, and Antos (1978) and

the Inhoff, Lima, and Carroll (1984) results suggest that people need not first analyse the literal meanings of metaphoric utterances before deriving figurative interpretations. Similar results have been found in other experiments that have examined the influence of context on the comprehension of metaphor (Gerrig & Healy, 1983; Gildea & Glucksberg, 1983; Harris, 1976), idioms (Gibbs, 1980, 1986c; Ortony, Schallert, Reynolds, & Antos, 1978; Swinney & Cutler, 1979), slang (Gibbs & Nagao-ka, 1985), indirect speech acts (Gibbs, 1979, 1983), sarcasm (Gibbs, 1986a, 1986b), and proverbs (Kemper, 1981).

4.3 Contextual Processing

4.3.1 Evidence

The serial, three-stage comprehension model implies a principled distinction between the literal and nonliteral meanings of utterances. Literal meanings are derived automatically, and nonliteral meanings are derived only optionally. The term *automatic* here does not mean that the understanding is not effortful. Instead, it means that a fluent speaker of a language has no voluntary control over whether or not an utterance will be understood. The serial model of metaphor comprehension asserts that metaphoric meaning, unlike literal meaning, is understood only optionally—whenever, and only whenever, an automatically derived literal meaning fails to make sense in context.

This view seems wrong. Intuitively, it seems quite difficult, if not impossible, to inhibit our understanding of simple and transparent statements such as, *Some salesmen are bulldozers*, even though such statements are literally false. Furthermore, it seems not to matter at all whether such statements are plausible in con-

text or not. Both the literal and the nonliteral meanings seem to be comprehended without conscious effort or explicit inference. Gildea and Glucksberg (1983) and Glucksberg, Gildea, and Bookin (1982) have shown that some types of simple metaphors are understood nonoptionally. Instead, they are understood automatically--not in the sense that metaphoric processing does not stress cognition, but only in the sense that processing is initiated by appropriate linguistic and semantic inputs without the subject's control. A second implication of such sequential models is that a nonliteral interpretation is optional because it requires a triggering condition such as the violation of cooperative maxims. However, Glucksberg, Gildea, and Bookin (1982) have shown that the computation of metaphoric meaning is not optional in this sense. Instead, metaphoric meaning seems to be computed even when the task requires only literal interpretations.

Glucksberg, Gildea, and Bookin (1982) found, as well, that the quality of a given metaphor can be affected by the quantifier that is used, in that a metaphor inference effect was found with those metaphors that were rated "better" (e.g., *Some surgeons are butchers* vs. *All surgeons are butchers*). Glucksberg, Gildea, and Bookin (1982) considered it likely that both the goodness and familiarity of a metaphor can contribute to the relative transparency or comprehensibility of a metaphor statement. The more transparent or comprehensible its figurative meaning, the more likely it will be that the meaning "leaps out" and hence the more difficult it will be to judge literally false. They found, generally, that people can no more easily refuse to understand figurative statements than nonfigurative statements. In this sense nonliteral comprehension is automatic. People do not seem to have the option of ignoring metaphors.

Glucksberg, Gildea, and Bookin (1982) also questioned the validity of the three-stage model, reasoning that if metaphoric meaning was accessed simultaneously with literal meaning, the two processes must be governed by the same cognitive operations. Their results indicated that when meaningful metaphoric interpretations of literally false sentences were available, it took significantly longer to decide that the sentences were, in fact, false, in a literal sense. From these results they concluded that subjects process both literal and nonliteral meanings of sentences simultaneously.

In sum, Glucksberg and his colleagues conducted research supporting the conclusion that comprehension of metaphor is similar to the comprehension of literal sentences and does not require the postulation of special stages (cf. Gildea & Glucksberg, 1983; Gildea, Glucksberg, & Bookin, 1981; Glucksberg, Gildea, & Bookin, 1982; Glucksberg, Hartman, & Stack, 1977). These series of experiments found that if a figurative meaning was available, comprehension of it was unavoidable, hence the task of responding to its literal truth or falsity was more difficult and thus slower. All their experiments demonstrate that metaphor can be understood very rapidly and that the comprehension of nonliteral meaning is not optional. Their findings refute the classic serial processing theory and parallel the findings on idioms: forcing people to take metaphors and idioms literally will interfere with comprehension.

Ortony, Reynolds, Schallert, and Antos (1978) have shown that the serial processing model does not explain normal processing strategies when people understand metaphor in appropriate social and linguistic context. They propose that a listener or reader uses an already constructed representation of what has gone

before (the context) as a conceptual framework for interpreting a target sentence. In many cases the interpretation is unproblematic; the listener can predict what will be conveyed and the target sentence is used to confirm an already formed hypothesis about its meaning. In other cases, however, this fairly automatic, predominantly top-down strategy is not possible. For example, without conceptual support to guide expectations, the inferential processes entailed by the stage model may have to be made quite deliberately. Thus, their view is that whether or not a target sentence requires a relatively large amount of processing time is a function of how easily it can be interpreted in the light of conceptually determined expectations rather than a function of its nonliteralness.

The results from their experiments suggest that the process of first interpreting a sentence literally, then determining that such an interpretation does not fit the context, and finally comprehending the intended figurative meaning does not always seem to underlie the interpretation of figurative language. They found that subjects take more time to understand utterances used metaphorically (e.g., *Regardless of the danger, the troops marched on*) than those used as literal statements, when these are read in short story-contexts. However, when subjects read these same sentences in longer story-contexts, there was no difference in the time it took subjects to process metaphorical and literal statements. If people actually computed the literal meaning of the metaphor before deriving its nonliteral interpretation, then the subjects should have taken longer to comprehend the metaphoric expressions than the literal ones. Another important finding was the relationship between context type and context length; targets requiring a metaphoric interpretation under conditions of minimal contextual support took longer to

be understood than those requiring literal interpretations. Thus the serial processing model hypothesis is not supported, and in some cases nonliteral uses of language might be processed faster than literal.

Thus, using different experimental techniques, Ortony, Reynolds, Schallert, and Antos (1978) and Glucksberg, Gildea, and Bookin (1982) attempted to demonstrate the equivalence of processing mechanisms for literal and metaphorical comprehension and to repudiate the three-stage model. Similar findings have been reported for understanding other kinds of metaphor (Inhoff, Lima, & Carroll, 1984; Keysar, 1989; Pollio, Fabrizi, Sills, & Smith, 1984), idioms (Gibbs, 1980, 1985; Ortony, Schallert, Reynolds, & Antos, 1978; Swinney & Cutler, 1979), indirect speech acts (Gibbs, 1979, 1983), and proverbs (Kemper, 1981). Contextual factors have been shown to affect how rapidly readers can interpret both figurative and literal sentences (Gerrig & Healy, 1983; Kemper, 1986). Indeed, the figurative meaning of common metaphors, idioms, and proverbs may be automatically and rapidly determined (Estill & Kemper, 1982; Gildea & Glucksberg, 1983; Glucksberg, Gildea, & Bookin, 1982; Swinney & Cutler, 1979). In some contexts, literal sentences are no more rapidly interpreted than figurative ones (Gibbs, 1980; Inhoff, Lima, & Carroll, 1984; Kemper, 1981; Ortony, Schallert, Reynolds, & Antos, 1978). Even in the absence of context, subjects presented with anomalous sentences that may be potentially interpreted metaphorically will attempt to do so (Fraser, 1979; Pollio & Burns, 1977).

Much of the recent research on metaphor comprehension has revolved around the issue of whether it activates cognitive mechanisms that are qualitatively the same as those used for literal processing. Assertions that metaphors and literal sentences are processed "using the same cognitive and inferencing machinery"

(Glucksberg, Gildea, & Bookin, 1982) are given support by research showing that metaphors require the same processing times as literal sentences (Ortony, Schallert, Reynolds, & Antos, 1978), or that metaphoric meaning is accessed simultaneously with literal meaning (Glucksberg, Gildea, & Bookin, 1982). Such results are taken to imply that understanding metaphor occurs through processes that operate in parallel (Gildea & Glucksberg, 1983).

Confirmation for literal/nonliteral processing equivalency is found in research concerning other nonliteral utterances. It appears that people are biased towards comprehending the indirect meaning of indirect requests when the requests are presented in the appropriate context. In other words, indirect requests are not necessarily processed literally before their indirect meaning is processed. However, processing of literal and indirect meaning may occur in parallel, as Gibbs (1983) found that people may never analyse the literal meanings of an indirect request. It appears that it is not obligatory to analyse a literal meaning of a nonliteral speech act; that is, a number of investigators have shown that people do not first process the literal meanings of expressions before determining their conveyed, figurative interpretation (Gibbs, 1980; Ortony, Schallert, Reynolds, & Antos, 1978; Swinney & Cutler, 1979). A similar bias may be in operation for idioms. Bobrow and Bell (1973) found that there was a bias towards perception of the nonliteral meaning of idioms. Bobrow and Bell hypothesized that idioms are stored as lexical items in a separate "mental dictionary." Once one has gained access to the dictionary, comprehension of idiomatic meaning is rapid and direct. Their findings were confirmed by Ortony, Schallert, Reynolds, and Antos (1978).

Further support for a nonliteral bias hypothesis comes from research by Swinney and Cutler (1979). Going beyond a generalization that people are biased towards perceiving the nonliteral meaning of idioms, Swinney and Cutler further hypothesized that people ordinarily comprehend both the literal and nonliteral meanings of idioms during processing. Glass (1983) also found evidence that idioms are recognised as meaningful faster than literal phrases. Thus, interpreting idioms literally seems to interfere with comprehension; people cannot ignore nonliteral meanings of idioms. Like Swinney and Cutler, Glass (1983) concluded that comprehension of idioms always involves the retrieval of both literal and figurative interpretations from the "mental lexicon". Gibbs (1980) found, too, that results indicate faster comprehension of the idiomatic meaning in the contexts that fit the nonliteral interpretations suggesting that idioms are first analysed for their nonliteral meaning and that people may be automatically biased towards the nonliteral meanings of many indirect requests and idioms, even when these expressions are used in literal contexts (Gibbs, 1980, 1983, 1984).

4.3.2 Summary

Overall, the research on the comprehension of nonliteral speech acts shows a remarkable degree of agreement. Such nonliteral forms are comprehended more rapidly than one would expect if each word were literally processed. The experimental evidence suggests that people do not analyse every input for its literal meaning. Comprehension does not even appear to be the simultaneous processing of literal and nonliteral meanings-- the literal meanings of metaphors, idioms, and indirect requests may not be processed at all during comprehension. The unanimity of results for metaphor comprehension compared with other nonliteral

speech acts is highly suggestive in that it establishes metaphor as a useful and functional language act and refutes the paradoxical Aristotelian notion of metaphor. Rather than supporting a notion that the nonliteral meanings are special and require special elaborative processing, comprehension of these nonliteral speech acts can be accounted for in terms of factors that are known to be involved in general language comprehension.

4.4 Contextual Comprehension

4.4.1 Implication for Comprehension

Several problems for a comprehension theory of metaphor have been identified. Each of these difficulties is not easily handled by any of the existing theories, and demands an account of metaphor which is more context-dependent and sensitive to the presuppositions and mutual knowledge shared by speakers and listeners in using metaphor. The first difficulty is that not all metaphors are of the "A is like B" or "A is B" form. Other kinds of metaphoric utterances, such as oxymoron and irony, demand just as much theoretical explanation of their metaphoric meanings as do utterances that are more closely related to simile. A second problem is that many metaphors do not violate selectional restriction rules. In these cases, understanding the meanings of the metaphor does not involve creating similarity between them (e.g., *The old rock was becoming brittle with age*). For many metaphors there are no semantic features that need to be overridden to produce a metaphoric interpretation. Instead, the metaphoric nature of these utterances comes from their relation to a specific pragmatic context and not from any specific properties of the utterance itself. Finally, even if a metaphor does not

violate selectional restriction rules, and is in the "A is like B" or "A is B" form, it is not clear how the salient characteristics of the A and B (or topic and vehicle) terms are determined. Even in the work of Ortony (1979a, 1979b) and Tversky (1977), there is no general consensus on how one determines which semantic properties of A or B are salient.

If research into the comprehension of natural language is to have validity, it is necessary to go beyond these more traditional research topics and to extend the investigation of nonliteral uses of language, which, together with literal uses, constitute the whole range of linguistic communication. Metaphors lead us to experience the world in novel ways. By causing a reorganisation of our conceptual frameworks they institute new meaning.

Recent research concerning the role of context in the interpretation of language has contributed to researchers' preference for contextualistic processing models of language comprehension. These models emphasize the generative capacities of listeners rather than properties of text and as such are able to accommodate the flexible word use that is characteristic of metaphoric expressions. For the contextualist, meaning is derived from the coincidental movement of representational events. Listeners construct meaning from the information that is available in the linguistic and extralinguistic context. By drawing on the immediate availability of linguistic and extralinguistic cues, contextualist approaches can accommodate indirect speech acts such as metaphors, as well as conventional language use, with the same comprehension model.

Moreover, this view of meaning agrees with evidence concerning the processing equivalence of metaphoric and literal utterances, because both forms depend

on the listener's construction of an interpretation from contextual information. Consequently, contextualists need not postulate an additional processing stage. This approach allows for the reintegration of metaphor into the mainstream of language comprehension. Metaphors, as with other linguistic forms, are interpreted in relation to the cues available in the contextual event.

4.4.2 Discourse Strategies

It is nearly impossible to state conclusively what a metaphor "means", and to say that a metaphor has been "understood," without reference to the speaker who produced the metaphor and the sociolinguistic context in which it was done. Otherwise, listeners could go on endlessly drawing all sorts of inferences about what a metaphor *might* mean. What is needed here is some recourse to what speakers' intentions are in using metaphors. Many studies have demonstrated that people cannot avoid interpreting the intentions behind a speaker's utterance, and will make false recognition responses to the pragmatic implications of a sentence, even when told to focus on the words themselves (cf. Harris & Monaco, 1978).

Communicative constraints involve the pragmatics of "speech acts" (Austin, 1962; Grice, 1975; Searle, 1969). According to speech act theorists, communicative constraints are derived from the speaker-listener relationship in which the speaker's intention to convey information is regarded as the basis for intimating a particular communicative act. In speaking a language, the speaker attempts to communicate things to a listener by means of getting the listener to recognise the speaker's intention to communicate just those things. Understanding metaphor can be viewed, not simply as dividing a sentence into its A or B, or topic and vehicle, parts, and then inferring a ground that relates them, but as identifying the

goals the speaker had in making the utterance. This intentional approach to comprehension states that utterances are comprehended with reference to the knowledge, beliefs, and suppositions shared by speakers and listeners. Listeners can determine which aspects of the A and B terms are salient, and which of the possibly innumerable meanings a metaphor has, by consulting this information which constitutes the common ground between speakers and their addressees (cf. Gibbs, 1987b).

All metaphors can be assumed to be comprehended against some presupposition about common ground or shared information. This view of comprehension provides some necessary constraints on what it means to say that a metaphor has been understood. When a speaker says something to a listener, the speaker only intends the listener to interpret what is meant within the limits of their common ground. Clark and Carlson (1981) call this the *intrinsic context* of the utterance, and all other aspects of knowledge and the situation are *incidental context*. By focusing on the intrinsic context, a listener should be able to interpret what a speaker says without having to first examine the putative literal meanings of metaphorical utterances (Gibbs, 1984).

Context can establish a conceptual frame of reference for a metaphor and when the context is sufficient, metaphor comprehension can be as rapid as comprehension of literal sentences. Inhoff, Lima, and Carroll (1984) speculate that the context primes a processing strategy, not a given meaning and the strategy that is activated tends to remain active for a brief time. According to this notion, there are processing strategies, not separate special time-locked processing stages. Metaphor may be special, but not in the way envisioned by the classic serial pro-

cessing theory. Metaphor is often intended to convey various indeterminate, non-proportional meanings, recovery of which is constrained by the context of shared beliefs held by speakers and listeners. It is only the products of comprehension, not the process, that give rise to the observation that metaphor is a special part of everyday language use. (cf. Gibbs & Gerrig, 1989).

Pragmatic ambiguity is involved in what Miller (1979) refers to as a recognition problem. For any given utterance, a listener must recognise the communicative function of that utterance— whether it is a question, a request, or an assertion. The recognition of a speaker's intentions in making metaphoric statements is the primary aim in understanding the meanings of metaphors. The meanings of metaphors are inextricably tied to speakers' intentions in making metaphoric statements. The "click of comprehension" or the *eureka effect* associated with understanding metaphor cannot be reduced to a specification of the ways in which the terms of a metaphor contrasts, interact, or compares, and so forth, but must be seen as a recognition of speakers' intentions in using the words they do. This requires that speakers and listeners coordinate what they mutually believe and know, in order to determine which of the potentially innumerable meanings associated with a metaphor are actually authorized and intended.

For a metaphor which is too general to be unambiguously interpreted (e.g., *Regardless of the danger, the troops marched on*), additional information is needed to determine just what aspect of the vehicle is intended. Context can provide disambiguation, applied unconsciously and automatically. The apparent ease with which people seem to use contextual information to disambiguate metaphors suggests that nonliteral comprehension mechanisms share important functional prop-

erties with literal comprehension mechanisms or strategies. At a general level, mechanisms such as Grice's (1975) Cooperative Principle and the convention for marking given and new information (Clark & Haviland, 1977) are strategies that may provide contextual disambiguation. At a more specific level, figurative language may present nothing more unique than a special case of pragmatic ambiguity (cf. Gildea & Glucksberg, 1983).

Such an emphasis on the role of common ground and intentions in determining the meanings of metaphors partially explains the paradoxical feeling that metaphors are somewhat indeterminate in what they possibly could mean, yet at the same time also have specific content. Metaphors can be deliberately ambiguous, in that a speaker can wish the listener to recognise a specific intention, but does so through their recognition of any number of possible inferences. This does not mean that the inferences and the speaker's intentions can be separated, with the meanings of the metaphor being the main cue to the speaker's original intentions. Such a view creates the illusion of a choice between alternative notions of what it means to understand. But there is no choice. The speaker's intention is already present at every moment of interpretation. The psychology of metaphoric transformations is unlimited in this way, constrained only by the pragmatic, communicative purposes of the speakers who use metaphor.

4.5 Conclusion

It would be safe to say that the classic serial processing model has been repudiated. The refutation of the serial processing model has prompted researchers to make two related claims about metaphor processing (Gibbs, 1984; Ortony,

Schallert, Reynolds, & Antos, 1978; Rumelhart, 1979). First, comprehension does not take place in distinct stages; that is, metaphor interpretation does not follow after an obligatory literal analysis. Second, identical cognitive processes drive the comprehension of both literal and metaphorical utterances.

Metaphorical and literal interpretation are functionally equivalent in comprehension. First, metaphoric meanings are computed in an obligatory manner during reading. Just like literal meanings, they provide an interpretation when they make sense in context. Second, metaphoric interpretations do not take on an implied simile form. Like literal interpretation, they need not require a transformation. Therefore, models that assume that literal interpretations in comprehension have priority, specifically, models that assume that metaphorical interpretation occurs only as a secondary or optional stage, are inappropriate. While such models may be useful for philosophical, linguistic, or computational accounts of language, they do not adequately describe the way people actually use figurative language.

It is now fairly clear that people are biased towards comprehending the nonliteral meanings of metaphors, indirect requests, and idioms. Nonliteral meaning can be compelling and immediately accessed. Alteration of the natural comprehension scenario (i.e., contexts that promote a literal interpretation of an idiom or metaphor) will disrupt the comprehension process and yet lead to good recall and recognition performance. Most evidence shows that there is no special metaphor comprehension process, and that effects are due to subjects' strategies rather than to stages of processing. These results also serve to identify the importance of contextual settings, rather than properties of text, in comprehending conventional and metaphoric expressions.

In normal discourse, people do not generally make explicit decisions about the truth values of sentences. Instead, as each segment of spoken discourse or text is processed it is integrated with prior discourse in order to form a coherent text representation. The time needed to accomplish this depends on a number of factors: comprehensibility of the sentence itself, coherence with prior text, and so on. Any given sentence can be coherent with prior text either literally or metaphorically.

Keysar (1989) notes that metaphors may not take longer to process, but they still require different processes for comprehension. Gildea and Glucksberg (1983) have argued that readers seem to use everyday discourse strategies in the laboratory; principles such as Grice's (1975) cooperative maxims and Clark and Haviland's (1977) given-new contract may be ingrained strategies that are rarely, if ever, inhibited. Comprehension by context presupposes world knowledge about common ground and shared information. It also presupposes the relationship of mutual need between a speaker and a listener in order to facilitate meaningful communication. This recognition of mutual need highlights the interaction between a speaker and listener and it also underlies the relationship between context, shared knowledge, and purpose in communication.

Chapter V

CONCLUSION

5.1 Overview

Figurative language is pervasive in all forms of discourse, so pervasive that one is often hard-pressed to distinguish metaphor from literal truth, from symbols, from archetypes, from myths. In linguistics, philosophy, and rhetoric, even theories of the meaning of metaphor are themselves based on metaphorical notions of what meaning is: a metaphor is regarded as an "ornament" of language, a "puzzle" to figure out, a "mask" of the truth. Current research on metaphoric language has most of its conceptual roots in the material surveyed in the previous chapters. A significant shift in recent thinking is the recognition that metaphor plays a cognitively significant role in several disciplines. Ten years ago the legitimacy of metaphor in linguistic theory was vigorously debated; now metaphors are so widely accepted as proper cognitive devices that the issue has shifted to the question of how they can best be described in an adequate explanatory account. It has been presumed to be an interdisciplinary interaction between philosophy and psychology. The new discipline often called "cognitive science", combining philosophy, psychology, linguistics, and computer science, best represents this approach.

Studies during the 1960s were almost bereft of experimental analyses on figurative language. The reasons for this dry period are not hard to find. The fervour that accompanied the assimilation of generative-transformational linguistics by

psychology produced a bias toward the confirmation of linguistic constructs. In general, psycholinguistic researchers were concerned with the "psychological reality" of these constructs and focused on syntax and to a lesser degree on semantics in the guise of deep structure. In general, language structure was analysed at the expense of nonlinguistic knowledge and pragmatic context. During this time metaphors were treated as agrammatical, part of the set of nonsentences relegated to nonanalysis because they could not be generated by a theory or because they were excluded by selectional restrictions. The isolation of linguistic structure from linguistic function effectively prevented recognition of the importance of figurative language.

During the 1970s, empirical activity became distributed across a wide spectrum of categories. Adult memory processes and developmental trends, individual differences, applications to education, and analyses of metaphor within the artificial intelligence framework had just begun. The precise reasons for this flurry of activity are difficult to identify. Within the psycholinguistic tradition, the early 1970s saw a move toward an emphasis on communicative performance as opposed to linguistic competence. Thus, the inadequacy of purely deep structural descriptions of memory for linguistic inputs became clear, as did the role of context in the complete comprehension of these inputs. The role of semantic and pragmatic factors in language acquisition, the need to invoke complex inferential mechanisms, and the dissatisfaction with merely linguistic explanations led to the need to incorporate greater flexibility in these models of linguistic understanding.

Figurative language phenomena may serve to expand our conceptualizations in two ways. First, the total field of the figurative utterance becomes more salient.

This field involves the delicate integration of word sense, syntactic form, pragmatic context, speaker–listener relationship and goals. Second, figurative language involves disengagement from or suspension of typical modes of experiencing. It has an “as if” quality. This quality places it alongside a variety of other human acts, such as role playing, body language, gestures, pretending, and play.

The growing trend for a variety of disciplines to be interested in metaphor is a result of its pervasive nature in language. The pervasiveness of metaphor and its importance to communication and cognition is demonstrated in that the comprehension of figurative language involves every problem in general language comprehension: from semantic analysis, encoding, contextual restraints, implications, and inference to world knowledge, imagery, and the relation between language and perception.

5.2 Synopsis

Metaphors seem to be special for fundamental reasons having to do with their structure. First, metaphors have a topic, something that is being talked about. The topic is usually, though not always, in the subject phrase of the sentence. The topic may be implicit or explicit. In the case of an implicit topic, an inference may be needed (based in part on contextual information) in order to determine what it is that the metaphor is about. Another structural component of a metaphor is the vehicle. This is the part of the metaphor that makes a comment about the topic, the thing that is used to talk about the topic. The remaining aspect of a metaphor is always implicit— this is the ground of the metaphor, that is, the underlying semantics of the meaning similarity of the topic and the vehicle.

The conceptual framework for metaphor is special, as well, being divided generally into two types. Comparison theories assert that metaphoric utterances involve a comparison or similarity between two or more objects, and semantic interaction theories claim that metaphor involves a verbal opposition or interaction between two semantic contexts, that of the expression used metaphorically, and that of the surrounding literal context.

Metaphor theory has its modes of operation based in terms of one of three different sets of principles: those based on feature matching, those based on analogy resolution, and those based on gestalt measures of perceptions. All three sets of principles share underlying variables. For example, judgements of similarity consist of assuming a frame of reference and assessment of quality of match between the subjects and the referents. Similarity is often considered a symmetric relation; contrary to this, metaphor theory assumes asymmetric similarities based on the relevant saliency of subject and reference. Directionality is an embedded feature of asymmetric relations; that is, the force of meaning is dependent upon the choice and direction of the subject and the reference. Most researchers agree that a moderate degree of similarity makes for a meaningful metaphor. As well, metaphor is considered anomalous, as violations of selectional restrictions occur when vehicles do not fall into the feature ranges predicted by their topic. Also, analogy is considered important, especially in determining relationships among concepts from dissimilar domains. Semantic feature models require interpretation based on replacing words with their dictionary meaning. This decomposition of dictionary meaning does not work for metaphor as a word may have more than one distinct sense and, consequently, decomposition does not capture the rela-

tionship between literal and figurative meaning. Similarly, semantic network models cannot account for asymmetric relations of metaphors and activation of inappropriate nodes of meaning.

Metaphor comprehension theories are divided into three groups. The first group are feature matching theories which examine metaphor as if it were anomaly. These theories make sense of anomaly by computing a match of shared features to determine meaning, assuming that metaphor is first recognised as a comparison statement, the features of the vehicle being compared to, or mapped onto, the features of the topic (see Section 3.2.5 and 3.2.6). For feature matching theories, a listener would derive the features of the vehicle and the topic. The 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 vehicle to topic and the metaphor would thereby be understood.

The second theory is the comparison view which sees metaphor as either analogy or a statement of similarity. Here, 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. But these models fail because they cannot account for two important characteristics of comparison statements (be they literal or metaphorical): the selection of relevant features and the asymmetry of directional comparisons (see Section 3.3).

The third theory is the interaction view. Interaction theories advocate that the ground is not an expressed similarity but rather is a novel, hitherto unseen, rela-

tionship between topic and vehicle. Here, metaphor is comprehended through the interaction of concepts to create a new meaning. The interaction of concepts is not based on similarity or shared features but based on a new created meaning; hence, while interaction may be based on underlying analogy, it may not be based on analogy via comparison but on analogy via creation of meaning (see Section 3.4).

These views entail certain processing models; those based on serial processing, and those based on contextual processing. The serial processing model for metaphor comprehension describes it in terms of a multistep, inferential process operating over an underlying set of components such as semantic features, analogical propositions, and images. For serial processing, the usual assumption is that interpretation of a metaphor is undertaken only when an initial literal analysis has failed to yield a sensible reading. Serial processing has a variety of implications, all of which are refutable. These implications include the notion that a literal interpretation has unconditional priority; that is, literal meaning is always derived and is always derived first. As well, people require a triggering mechanism (e.g., a defective literal meaning) implying that metaphoric meaning is optional. Also, comprehension requires added inferential work which, in turn, suggests longer processing times and greater difficulties in comprehension.

Serial processing models assert that context is brought into the interpretation of a metaphor only after an initial, literal reading of the utterance has occurred. This assertion is not supported by the literature (see Gildea & Glucksberg, 1983; Glucksberg, Gildea, & Bookin, 1982; Ortony, Reynolds, Schallert, & Antos, 1978). Research has shown that listeners need not first analyse the literal meaning of an

utterance before deriving a metaphoric meaning. These implications of the serial processing model suggest a principled distinction between the literal and nonliteral meanings of utterances. This is wrong. Research has shown that metaphors are comprehended rapidly, easily, and nonoptionally suggesting that the comprehension of metaphor is similar to the comprehension of literal sentences and hence does not require the postulation of special stages. The research on the comprehension of nonliteral speech acts shows a great deal of unanimity establishing that metaphor is a viable and functional language act, the comprehension of which can be found in models for general language comprehension.

5.3 Discussion

Since these theories are inadequate, I would like to posit a model based on contextual and intentional interaction. A contextualistic processing model of metaphor comprehension emphasizes the capabilities of listeners rather than the reliance on structural features of text and as such is able to accommodate the generative nature of metaphor. A contextualist view sees meaning as derived from the coincidental juxtaposition of interpretive events. A listener's construction of an interpretation depends on contextual information. Listeners construct meaning from the information that is available in the context via linguistic and extralinguistic cues. By drawing on the availability of these cues, contextualist approaches can accommodate indirect speech acts, such as metaphors, as well as conventional language use, within the same comprehension model. A contextualistic processing model of metaphor comprehension remains, as yet, theoretical, its formalization being beyond the scope of this thesis.

An intentional approach to comprehension, one which relies on speaker-listener intentions, suggests that utterances are comprehended with reference to the knowledge, beliefs, and suppositions shared by speakers and listeners. Context establishes a conceptual frame of reference for metaphors and with sufficient context, metaphor comprehension can be equivalent to that of literal comprehension. The apparent ease with which listeners use contextual information to disambiguate metaphors further suggests that nonliteral comprehension strategies share important functional properties with literal comprehension strategies. Contextual processing implies the use of comprehension strategies rather than stages of processing.

Explicit violations of the given-new contract (that is, deliberate violations that are meant to be noticed by the listener as an integral part of the interpretation of the utterance) and violations of Gricean maxims combine to create implicatures (either as a contextual setting or as an implicit setting) that can be viewed as a metaphoric template for comprehension. A metaphoric template for comprehension based on the interaction of violations between the Cooperative Principle and the given-new contract can build a contextual setting or an implicit setting which can be a frame of reference for comprehension. These violations require an interaction between real world knowledge and general language comprehension.

The Cooperative Principle is a social contract. A violation of a Gricean maxim draws the listener to make a conversational implicature. The listener assumes the speaker is still being cooperative and therefore must have meant something by the explicit violation. The agreement between speaker and listener in given-new contracts is similar to the Cooperative Principle, in that with the given-new contract,

speakers and listeners have an implicit agreement about how information that is known to the listener, and information that is novel to the listener are to appear in utterances. Speakers try, to the best of their ability, to make the structure of their utterances congruent with their knowledge of the listeners' mental world.

The implicatures or inferences drawn from metaphoric utterances are often the very purpose of metaphoric meaning. The meanings of metaphors are inextricably tied to the speaker's intention in making metaphoric statements. This requires that speakers and listeners coordinate what they mutually believe and know, in order to resolve which of the potentially infinite meanings associated with a metaphor are, indeed, intended.

Comprehension by context presupposes world knowledge about common ground and shared information. It also presupposes the relationship of mutual need between a speaker and a listener in order to expedite meaningful communication. This recognition of mutual needs highlights the interaction between a speaker and a listener and it also underlies the interrelationship between context, shared knowledge, and general language comprehension.

5.4 Implications for Further Research

Communication, in any form, remains impoverished without metaphor and those theories which see nonliteral language as a problem to be explained away and refuse it equal footing with literal language are inadequate. Available theories of language comprehension do not readily capture the relationship between literal and metaphoric language. A fundamental problem of most of these comprehension models is that they do not include discourse level analysis.

A levelling of the distinction between literal and nonliteral language combined with discourse level analysis suggests a variety of avenues of investigation in psycholinguistic research. For example, the re-integration of nonliteral language into models for general language comprehension has implications for a host of experimental variables including those that comprise memory and inferencing studies, creativity, the nature of stored knowledge, and encoding. Additional research is required to ascertain how people organise and apply the strategies involved with these variables. As well, research into child language development must parallel adult strategy studies. Research is also needed for the re-integration of pragmatics into semantic theory.

There is much potential for contextual applications to discourse-oriented models based on figurative meaning. As well, further examination of context-driven processing models of comprehension coupled with additional exploration of speech act-driven applications to other nonliteral forms of speech could prove interesting. An investigation of a greater role for context in comprehension, one that suggests that context may be a function of comprehension instead of a variable of comprehension, could be profitable. Comprehension based on contextual implicatures to generate meaning rather than on the decomposition of features to generate meaning could profit from an intentional approach. Furthermore, it is tempting to characterize the relationship between metaphor and contextual comprehension as a unit of organisation in discourse. The contextual comprehension model in itself may prove valuable in clarifying many questions concerning other forms of nonliteral language.

Such questions include the validation of the nondistinction between literal and nonliteral in other forms of figurative language. That is, proverb and idiom studies have many contradictory findings in common with each other. To challenge previous studies in light of the role of intentions in discourse could be fruitful. The distinctions between literal and nonliteral, figurative and nonfigurative, and direct and indirect, could be compared and contrasted. While these pair divisions are themselves examinable, it is my contention that a general language comprehension model can accommodate these in a more general framework that looks merely at two distinctions: perhaps literal and indirect.

5.5 Conclusion

We have seen in the preceding chapters a developing history for metaphor in linguistic theory. A question remains about the future status of metaphor in linguistic theory. We have seen the refutation of semantic feature and semantic network theories. This refutation is based on the problems attributed to selectional restrictions and appropriate activation of relevant meaning. The implications of this refutation are manifold. A general restructuring and reanalysis is necessary in regard to comprehension theories based on these premises. Decomposition of meaning as a facilitation of comprehension is repudiated. The move from a micro view to a more macro, all encompassing, view has import in the notion of a general, and comprehensive, language model.

We have seen that there is no principled distinction between literal and nonliteral communication. From this, metaphor in linguistic theory can be viewed as a testing case against which all other models must be examined. A comprehension

model that only works for literal, or direct forms of discourse is meaningless. The role metaphor will play is as a test for comprehension. If a model of comprehension can accommodate metaphor as well as or as easily as nonmetaphoric discourse, then such a comprehension model is adequate. The move toward comprehension models based on context and intention may provide the framework against which meaning may be measured.

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APPENDIX A
FIGURATIVE EXAMPLES

1. The old rock was becoming brittle with age.
2. A theory is a wish.
3. A woman is a song.
4. The chairman ploughed through the discussion.
5. Man is a wolf.
6. bitter sweet
7. silent scream
8. The brain is an enchanted loom where millions of flashing shuttles weave
a dissolving pattern.
9. Misery loves company.
10. The doctor is a chameleon.
11. Regardless of the danger, the troops marched on.
12. Hair is spaghetti.
13. My head is like an apple without a core.
14. After many years of working in the jail, the prison guard had become a
hard rock that could not be moved.
15. The portrait resembles the person.
16. The person resembles the portrait.

17. Margarine is like butter.
18. Margarine tastes like butter.
19. Butter tastes like margarine.
20. Turks fight like tigers.
21. Tigers fight like Turks.
22. A canary is a bird.
23. A turtle is a dance.
24. Lambs are to sheep as kittens are to cats.
25. Putting Al Capone in charge of the Federal Reserve is like putting a cat in charge of a canary.
26. He let the cat out of the bag.
27. Billboards are warts on the landscape.
28. Warts are billboards on the landscape.
29. The butcher is a surgeon.
30. The surgeon is a butcher.
31. Some surgeons are butchers.
32. All surgeons are butchers.
33. Look before you leap.
34. It's cold today.
35. Some salesmen are bulldozers.

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University of Victoria Graduate Student Society Travel Grant	1988

Publications:

Giles, Andrea R. (1988). A Metrical Analysis of the Lillooet Stress System: Preliminary Work. *Working Papers of the Linguistics Circle of the University of Victoria* 7(1), 25-40.

Giles, Andrea R. (1989). A Metrical Analysis of the Lillooet Stress System. *Proceedings of the Western Conference on Linguistics*, California State University, Fresno, October 14-16, 1988.

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Title of Thesis: **The Role of Comprehension in Metaphor Processing**

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September 6/90
(Date)