

CLARENDON LIBRARY OF LOGIC AND PHILOSOPHY

EVA FEDER KITTAY

METAPHOR

Its Cognitive Force and
Linguistic Structure

CLARENDON



PAPERBACKS

METAPHOR

ITS COGNITIVE FORCE AND
LINGUISTIC STRUCTURE

EVA FEDER KITTAY



CLARENDON PRESS · OXFORD

Oxford University Press, Walton Street, Oxford OX2 6DP
Oxford New York Toronto
Delhi Bombay Calcutta Madras Karachi
Petaling Jaya Singapore Hong Kong Tokyo
Nairobi Dar es Salaam Cape Town
Melbourne Auckland
and associated companies in
Berlin Ibadan

Oxford is a trade mark of Oxford University Press

Published in the United States
by Oxford University Press, New York

© Eva Feder Kittay 1987

First published 1987
First issued in paperback 1989
Reprinted 1990

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior permission of Oxford University Press

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out or otherwise circulated without the publisher's prior consent in any form of binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

British Library Cataloguing in Publication Data

Kittay, Eva Feder

Metaphor: its cognitive force and linguistic structure.—(Clarendon library of logic and philosophy).

1. Metaphor

I. Title

808 PN228.M4

ISBN 0-19-824246-8 (Pbk.)

Library of Congress Cataloging in Publication Data

Kittay, Eva Feder.

Metaphor: its cognitive force and linguistic structure.

(Clarendon library of logic and philosophy)

1. Metaphor. 2. Semantics. 3. Field theory (Linguistics) 4. Cognition. I. Title. II. Series.

P301.5.M48K58 1987 169 87-1596

ISBN 0-19-824246-8 (Pbk.)

Printed in Great Britain by
Courier International Ltd., Tiptree

**TO MY PARENTS,
SARA AND LEO**

ACKNOWLEDGEMENTS

THIS work has been a long time in the making, and there have been numerous persons who have offered extensive and invaluable help. The one individual who read and commented on the manuscript in its entirety—and read most parts of it many times over—whose generous encouragement and unstinting criticisms have made this a far better book than it would otherwise have been is Richard Grandy. I owe him a great debt of gratitude. Adrienne Lehrer is importantly responsible for a portion of the book. The specific employment of the theory of semantic fields for the analysis of metaphor would not have been possible without her collaboration. I am indebted to Malgorzata Askanas for her help in formulating the formal representations in Chapters 2 and 4 and for the many hours of discussion we have had on the issues dealt with in this book. I want to thank L. Jonathan Cohen for his interest in this work and for his useful comments. Colleagues and friends who have read the manuscript in part or in its entirety and have offered useful criticisms include Patricia Athay, Dan Hausman, Jeffrey Kittay, Keith Lehrer, William Lycan, Rita Nolan, Michael Simon, Neil Tennant, Mark Aronoff, Donn Welton, and an anonymous reviewer for the Oxford University Press; I also wish to thank Leofranc Holford-Strevens and the OUP Desk-editing Department, for their care in editing the manuscript. I owe profound gratitude to Lindsay Waters for his early and steadfast interest in and encouragement of my work.

Since my thinking about the question of metaphor began in the prehistory of my professional career in philosophy, I must express my gratitude to my friend and former teacher, Elfie Raymond. In her classes I first became aware of the importance of metaphor. I want to thank Peter Caws, who directed the dissertation that eventuated in this book, as well as Arnold Koslow, Charles Landesman, and Samuel Levin, who offered valuable suggestions which in time became incorporated in the present work.

A number of graduate students have been instrumental in this project. The graduate students in seminars in which I treated metaphor stimulated my thinking on a number of issues. For help in the preparation of this volume I want to thank Judy Russell for her assistance in collecting bibliographical material, and James Hatley and James Carmine for their thoughtful and diligent editorial assistance on various drafts of the manuscript. My thanks to the staff at the Department of Philosophy at SUNY, Stony Brook, especially Mary Bruno and Virginia Massaro for their support in various aspects of this project. Lorna Malloy, typist and friend, helped with putting the finishing touches to the manuscript.

Portions of the book have appeared elsewhere. Chapter 2 originated as 'The Identification of Metaphor', *Synthese*, vol. 58, No. 2 1984. Copyright ©1984 by D. Reidel Publishing Company. Reprinted by permission. Chapter 7 Section 1 is a revised version of an article co-authored with Adrienne Lehrer, 'Semantic Fields and the Structure of Metaphor', *Studies in Language*, vol. 5, 1981. Finally, portions of Chapter 3, Section 1 and Chapter 8, Section 2 are taken from 'A Reply to Davidson's "What Metaphors Mean"—Or Rearranging the Furniture of Our Minds' in *The Philosophy of Language*, edited by Max Freund (Costa Rica, University of Costa Rica Press, forthcoming). I should like to thank the editors and publishers for permission to reprint the materials here.

Financial assistance for the preparation of Chapters 2 and 4 was provided by a SUNY Awards Grant. The manuscript would have taken still longer to complete had the Department of Philosophy at SUNY, Stony Brook, not been so gracious in granting me time on leave.

To my family, Jeffrey, Leo, Sessa, and Margaret Grennan, I owe the greatest gratitude. Without their patience and support in all areas, truly, this work would not have been possible.

CONTENTS

Introduction	I
1 Towards a Perspectival Theory	13
2 The Identification of Metaphor	40
1 <i>Literal and Conventional Meaning</i>	40
2 <i>Locating Incongruity</i>	64
3 An Interlude Concerning Context: A Relational Theory of Meaning	96
1 <i>On the Very Idea of Metaphorical Meaning</i>	97
2 <i>A Relational Approach to Meaning</i>	121
4 Interpreting Metaphor	140
1 <i>Metaphor as Second-Order Meaning</i>	140
2 <i>The Metaphorical Function</i>	156
5 Some Alternative Approaches: A Critique	178
1 <i>The Predicate Transfer Thesis</i>	181
2 <i>The Linguistic Approach: Feature Addition and Deletion</i>	196
3 <i>A Critique of Atomistic Theories as Bases for a Theory of Metaphor</i>	205
6 Semantic Field Theory	214
1 <i>The Historical and Conceptual Basis of the Theory</i>	214
2 <i>The Structure of Semantic Fields</i>	230
3 <i>Semantic Fields and Word Meaning</i>	248
7 Semantic Fields and the Structure of Metaphor	258
1 <i>Displaying the Structure of Metaphor</i>	258
2 <i>Metaphorical v. Non-Metaphorical Transfers of Meaning</i>	289
Appendix: Extracts from Plato's <i>Theaetetus</i>	299

8 Concluding Remarks: Reference and Truth in Metaphor	301
1 <i>Metaphorical Reference as Anaphora</i>	303
2 <i>Epistemic Access and Metaphorical Truth</i>	311
Bibliography	328
Author Index	344
Subject Index	346

INTRODUCTION

Philosophy and Metaphor

THE study of metaphor has long been with us, and throughout its history it has had a stormy, tenuous, but tenacious affair with philosophy. Philosophy has, by turns, rejected and embraced metaphor, its suppliant. We can tell the tale from its inception in Greek philosophy. Plato, himself a master of metaphor, disdained the finery of eloquence. Aristotle, the more prosaic writer, gave metaphor its due—in his writings both on poetics and on rhetoric. Aristotle's treatment found its way into the classical and Renaissance texts on rhetoric. Plato's disapproval prevailed in the more strictly philosophical texts. Locke's denunciations of figurative language set the tone for the philosophical disregard for metaphor—a position in which rationalist and empiricist were united. Only those philosophers associated with the Romantic tradition paid much heed to its importance.

With the notable exception of the Romantics, thinkers regarded metaphor primarily as an enhancement of language, one in which either a substitution or an implicit comparison took place. To its detractors it was a mere embellishment, swaying the passions, 'seducing the Reason', as Gaston Bachelard wrote—while he himself used the figure, seductively, to damn it. To its champions, its lack of utility, its sheer capacity to delight, was the reason for its privileged place in language. Quintilian wrote: 'The ornate is something that goes beyond what is merely lucid and acceptable' (*De Institutione Oratoria*, 803. 61, trans. H. E. Butler). And Cicero relates that metaphor was first invented out of necessity ('it sprang from necessity due to the pressure of poverty'), but in the affluence of a mature language it became decorative and noble:

As clothes were first invented to protect us against cold, and afterwards began to be used for the sake of adornment and dignity, so the metaphorical employment of words began because of poverty, but was brought into common use for the sake of entertainment. (*De Oratore*, 3. 155, E. W. Sutton and H. Rackham.)

Cicero might have remarked that dress, no matter how elaborate it becomes, still serves basic needs and desires for warmth, protection,

etc.—so metaphor might serve a basic need even in the midst of an affluent language. Yet for Cicero, the remnant of utility would only tarnish the brilliance provided by metaphor: ‘there is another somewhat bolder kind that do not indicate poverty but convey some degree of boldness to the style’ (*De Oratore*, 3. 156). The society of metaphors is not classless, but aristocratic, mirroring the society from which this view sprang forth, where what is most valued is furthest removed from utility and need.

Today, metaphor is experiencing a revitalized interest within philosophy. If we cannot claim that ours is a period of blissful reunion, we can say that there are attempted reconciliation and compensation for centuries of neglect. The articles on the subject in professional philosophical journals and books bear testimony to something more than a mere dalliance. And the fervour, curiously, is most pronounced among analytic philosophers.

The new closer relation brings a new focus to the study of metaphor. Metaphor is plumbed not for its affective and rhetorical efficacy, but for its cognitive contribution. From our own work-centred perspective, if metaphor is to be prized, it must do work, and the work that most interests philosophers is that which is cognitively meaningful.

A Bow to Aristotle

But the greatest thing, by far, is to be a master of metaphor. It is the one thing that cannot be learnt from others; and it is also a sign of genius since a good metaphor implies an intuitive perception of similarity of dissimilars. Through resemblance, metaphor makes things clearer. (Aristotle, *Poetics*, trans. W. D. Ross, 1459^a 5–7.)

The argument can be made that Aristotle had already pointed out the cognitive importance of metaphor, particularly metaphor based on analogy. As an example, Aristotle chooses the phrase ‘sowing around a god-created flame’. The casting forth of seed-corn, he says, is called sowing, but the act of the sun casting forth its flames has no special name. The phrase emerges through an analogical transfer of meaning: ‘This nameless act (B), however, stands in just the same relation to its object, sunlight (A), as sowing (D) to the seed-corn (C). Hence the expression in the poet ‘sowing around a god-created flame (D + A)’. (1457^b 26–30.)

This act is nameless because it was not conceived as an act until the perception was so formulated by the metaphor. The metaphor was itself instrumental in having identified a *something* to be named. The

metaphor thereby provides us with a way of learning something new about the world, or about how the world may be perceived and understood. Where metaphor is used when a 'proper' name exists, Aristotle indicated yet another cognitive feature: it is a means of remarking on a previously unrecognized similarity. Aristotle speaks of the usefulness of an examination of likeness: ' . . . it is by induction of particulars on the basis of similarities that we infer the universal.' (Topica 108^b 7-10 trans. by E.S. Forster. Harvard UP 1966) 'Examining likeness' is useful for hypothetical reasoning because 'it is a general opinion that among similars what is true of one is also true of the rest'. Aristotle, believing similarity to be the basis of metaphorical transference, and granting to the perception of similarity an important cognitive role, saw in metaphor a conceptual tool of much power.

Aristotle most valued metaphor based on analogy, because he regarded analogy as important for reasoning. If two things bear an analogous relationship to one another, the analogy can be a basis for classification and selection different from those applied when two things possess a common generic name. This is applicable to the various fields of inquiry: to ethics as well as to science. In the latter, for example, it allows us to classify together such anatomically related things as 'a squid's pounce, a fish's spine, and an animal's bone'. Aristotle writes: 'It is impossible to find a single name which should be applied to pounce, spine and bone; yet the fact that these too have <common> properties implies, that there is a single natural substance of this kind.' (Posterior Analytica 98a 20-25, trans. by H. Tredennick, Harvard UP, 1966). In ethics, it allows us to produce arguments of the following sort: as sight is good in the body, so intelligence is good in the soul. Presumably, those metaphors that are based on analogy partake of the intellectual virtues Aristotle affords to analogy itself. None the less he warned against metaphorical argument.

Aristotle and the scholastic tradition relied on the coincidence of language and reality: distinctions in language were seen as capturing ontological distinctions (Ross 1981). Discerning analogical uses of language can help us to discern analogical states of reality. If we can perceive the analogical relations between intelligence and sight, then we can argue that the relations between sight and the body hold for relations between the intelligence and the soul.

If we insist that the analogical relations pertain to language and not to the things named, then analogical argumentation fails to rest on adequate grounds. In the chapters that follow, I shall argue for the

indispensability of analogical thinking for diverse areas of cognition, seeing it as importantly related to metaphorical thought. But I shall see the justification of the analogical and metaphorical in a validity tied not to ontological commitments but to their role in the formation of predictive and explanatory hypotheses. The hypotheses are, at once, generated metaphorically and analogically from current conceptualizations of the world. Through such metaphorical generation, current conceptualizations undergo transformations.

But the modern interest in the cognitive role of metaphor is one that Aristotle *almost* hit upon. In a negative appraisal,¹ he wrote that, as argumentation, metaphorical expression is always obscure because metaphor results in the same object being placed in two different genera, neither of which includes the other (*Topics*, 139^b 32–140^a2). If a genus is regarded as a perspective upon an object, metaphor results in the placing of an object in two perspectives simultaneously. From this juxtaposition results a reconceptualization, sometimes permanent, more frequently transient, in which properties are made salient which may not previously have been regarded as salient and in which concepts are reorganized both to accommodate and to help shape experience.

While we have credited Aristotle with an appreciation of the cognitive importance of metaphor, most developments of the Aristotelian tradition have treated metaphor as decoration or comparison. In either case metaphor is dispensable in favour of a plainer expression or an explicit statement of similarity.

The Romantic Heritage

Language is vitally metaphorical; that is, it marks the before unapprehended relations of things and perpetuates their apprehension, until words, which represent them, become, through time, signs for portions or classes of thought instead of pictures of integral thoughts: and then, if no new poets should arise to create afresh the associations which have been thus disorganized, language will be dead to all the nobler purposes of human intercourse. (P. B. Shelley, *A Defence of Poetry*, quoted in Richards, 1936, 90–1.)

The view of language and thought according to which metaphor appears as ornament or comparison requires a conception of mind as a passive receptacle of perceptions. These perceptions, when tidily

¹ This appraisal conflicts with what can be inferred from statements he makes regarding analogy and metaphor based on analogy.

brought together through proper rules of inference and logical deduction, result in knowledge only when not adulterated by the imperfect but indispensable vehicle of language. Instead, we need to understand language as an expressive medium, which as Ross (1981) points out, allows us to say that we think *in language*, just as the artist expresses herself *in paint*; that we understand that language is not merely a conduit (see Reddy 1979) for our thoughts. But it is the view of language as conduit that has prevailed—certainly within the philosophical tradition. Without acknowledging his complicity in the use of figurative language, Locke speaks of language as a ‘conduit’ that may ‘corrupt the fountains of knowledge which are in things themselves’ and even ‘break or stop the pipes whereby it is distributed to public use’.² Through the eighteenth and early nineteenth centuries, the view that metaphor was decorative, to be carefully and judiciously administered, dominated the texts of rhetoric. These were largely taxonomies of various stylistic modes, along with principles and precepts admonishing readers on the appropriate use of ornament.³

In a short treatise, *Essay on the Origin of Languages* (1781), Jean-Jacques Rousseau speculates that the first time a person sees a stranger in the distance his fear and awe of the stranger compel him to regard the stranger as a giant. Similarly, thought Rousseau, we invest our first perceptions with a magical and metaphorical nature whereby that which is perceived appears to incorporate a multitude of feelings and perceptions. All language originated in metaphor. Literal language is a pruning away and a rationalization of our figurative thought. Rousseau’s arguments may be naïve. Nonetheless, they foreshadow a view of language according to which metaphor could be treated as more than mere ornament.

The conception of thought and language necessary to move beyond a restricted view of metaphor requires an understanding of mind as active and creatively engaged in the forming of percepts and concepts

² Quoted in de Man 1979, 14. The accompanying view of figurative language can be gleaned from the following excerpted passage: ‘If we would speak of things as they are we must allow that . . . all the artificial and figurative application of words eloquence hath invented, are for nothing else but to insinuate wrong *ideas*, move the passions, and thereby mislead the judgment . . . they . . . cannot but be thought a great fault either of the language or person that makes use of them’. (*An Essay on Human Understanding* (1689) bk. 3, ch. 10, quoted in de Man 1979, 13).

³ Accounts of exemplary English and French studies are given respectively by I. A. Richards and Paul Ricœur. Richards (1936) criticizes Lord Kames’s *Elements of Style*. Ricœur (1978*b*) discusses the 19th-cent. French rhetorician Pierre Fontanier.

and in unifying the diversity of the given. For Coleridge, language is not a conduit but an expressive medium for artist and thinker alike, the ground for the work of the imagination. For Coleridge, the imagination is: 'The power by which one image or feeling is made to modify many others and by a sort of fusion to force many into one . . . combining many circumstances into one moment of thought to produce that ultimate end of human thought and human feeling, unity' (*Biographia Literaria* (1817), ch. 2). Metaphor is the linguistic realization of this unity. Metaphor or, at least, metaphor shaped through the imagination, does not record pre-existing similarities in things; rather, it is the linguistic means by which we bring together and fuse into a unity diverse thoughts and thereby re-form our perceptions of the world. Symbols such as a national flag, a crest, an object with ritualistic significance, an iconic and conventionally used representation, also involve such fusion. A unification is also achieved, in a different way though, through the dreamwork Freud calls 'condensation'. What we call metaphor achieves this fusion in a characteristic manner, one which I hope to describe in later chapters.

The conception that rejects the position that metaphor is ornamental, or an implicit comparison, entered contemporary analytic philosophy through the discussions of Max Black. Black put forward the interaction theory of metaphor, which asserted that metaphors have an irreducible meaning and a distinct cognitive content. Black borrowed heavily from I. A. Richards, who in turn was a student of Coleridge. Hence the lineage of current discussions of the cognitive import of metaphor is traced back to that Romanticism, tempered with Kantianism, epitomized by Coleridge.

From Romanticism to contemporary analytic philosophy appears to be a leap across an abyss.⁴ The logical positivism to which analytic philosophy is the legitimate, if rebellious, heir had little use or interest in metaphor. Why this new happy union of philosophy and metaphor?

Metaphor and Analytic Philosophy

In turning away from logical positivism, analytic philosophers have become impressed with the importance of metaphor. Curiously those

⁴ Nietzsche has been an important figure in reviving the interest in metaphor in the continent. His work, especially 'Über Wahrheit und Lüge im außermoralischen Sinne' taken from his Notebooks of the early 1870s (translated into English in Nietzsche, 1979), is central to Derrida's (1975) treatment. But Nietzsche's work has had a limited impact on analytic philosophers.

areas most closely aligned with positivism, philosophy of language and philosophy of science have been most struck. According to the verificationist principle of meaning, the cognitive meaning of a sentence was its method of verification. The doctrine condemned metaphysics and much traditional philosophy to live outside the borders of cognitive significance. Metaphorical language was, of necessity, similarly excluded. If we wanted to ascertain the meaning of Romeo's 'Juliet is the sun' (*Romeo and Juliet*, 1. ii. 3), we should determine its truth by checking if Juliet was a celestial body around which planets orbit—the sentence would obviously be false. But, of course, Shakespeare had no such thing in mind when he wrote the line. Some metaphors would fare still worse. It is not clear that there would even be a method of determining the truth or falsity of Wallace Stevens's line 'Moisture and heat have swollen the garden into a slum of bloom'. ('Banal Sojourn', l. 4). Without a procedure to determine its truth, the sentence would be judged to be not false but meaningless. This is not to say that it might not be decorative or evocative and have some sort of *emotive meaning* but it could have no *cognitive meaning*. It could in no way enhance our knowledge of the world. The exemplars of verifiable statements were to be the statements of scientific discourse, the paradigms of cognitive activity. The object of philosophy was to be the systematic presentation of the logical syntax of science. The object of philosophy of language was the construction and investigation of formal languages in which the pristine verifiable statements of science could be stated and studied.

However, it was clear that science made use of 'models'. These models must be understood as extended metaphors—not literally true, but useful representations of the phenomena which often led to fruitful theoretic conceptions and new empirical discoveries. Examples such as the billiard-ball model of gases or the wave models of sound and light were cited as demonstrating the importance of models in the construction of scientific theories. The positivists' response was to say, in a fashion analogous to granting metaphors an emotive meaning distinct from a cognitive one, that models had a merely heuristic value for science. That is, they were valuable for guiding discoveries in science—but then discoveries could be guided by almost anything: dreams, fortuitous findings, a random remark. Models contributed nothing essential to the activity of science itself—an activity to be characterized by the justificatory procedures which uniquely characterized it. Hesse (1966), however, argued persuasively that models were crucial to give theories real predictive power. They figured not just

incidentally in the context of discovery, but also in the context of justification. Models appeared to play a cognitive role in science, and yet they, like the metaphors of our language, were obviously false or unverifiable.

We now recognize that the verificationist principle sins against itself—that it cannot itself be verified. And positivists' efforts to show that the statements of science were verifiable led to the unproductive programme of reducing theoretical statements to observation statements. In philosophy of science, the thrust was to look at the activities that scientists were engaged in, to examine the history of science and to look at the 'context of discovery'. In philosophy of language the first turning away from positivism was an interest in the ordinary languages people actually spoke rather than in the formal languages of logic and 'reconstructed science'. The very notion of meaning itself became suspect, and the later views of Wittgenstein were condensed in the motto, 'Don't look for the meaning, look for the use'. The move toward the analysis of ordinary language and its various uses, the questioning of the notion of the 'given', the breakdown of the synthetic-analytic distinction, the insistence on the theory-ladenness of observation terms, and progress in linguistics in formulating precise ways of representing the underlying structure and processes of natural language have all created a favourable climate for an inquiry into metaphor.

In addition, metaphor has a bearing on related issues which have begun to occupy philosophers of language and science: creativity in language and science; paradigm-shifts in the history of science; and change of meaning. In language studies, transformational grammar as formulated by Chomsky challenged the view of language as a set of sentences and sought instead to see it as a rule-governed activity in which each speaker exhibited creativity in the production and comprehension of ever new sentences. At first transformational grammar ignored one of the most creative aspects of language use, the use of metaphor. That is now changing and there is great interest among linguists to account for metaphor. The Kuhnian revolution in the philosophy of science provides further incentive to study metaphor, for the notion of a paradigm seems itself, tantalizingly, to be a root metaphor. The interests of linguistic philosophers and philosophers of science converge again on the question of change of meaning. When one theory replaces another in a paradigm-shift, do the terms of the second theory which are carried over from the first theory change in meaning? Because metaphor is itself a kind of change

of meaning, some of the interest in metaphor has been generated by the interest in change of meaning. Furthermore, if, as Hesse (1966, 1974, 1980), Wartsfky (1979), and others have argued, models are integral to scientific theories and to the construction of theories, then the philosophy of science calls for an adequate theory of metaphor. We need such a theory to understand the source and the status of scientific concepts and theories.

A final, but vitally important, consideration has come from the joint attempts by philosophers and cognitive scientists to develop models of mind which can be tested by, and can guide, the development of artificial intelligence. The creative functioning of the human mind—its active sorting of informational input such that it can influence and alter its environment in new, unexpected, and yet suitable ways—poses some of the major challenges to philosophers of mind interested in the capacities and limits of artificial intelligence. Can we construct models of mind that allow for the use of metaphor? Is it possible to understand metaphor so that it becomes amenable to the development of artificial intelligence? To what extent can metaphor be given a computational realization? The answers to these questions require a theory of metaphor. Such a theory will advance our understanding of cognitive and creative processes.

The demise of positivism and the concerns raised today provide a climate favourable to the investigation of the cognitive efficacy of metaphor. The criteria by which metaphor was dismissed as meaningless or non-cognitive are themselves now thought questionable. Moreover, new efforts to articulate a semantics and a philosophy of science are committed to providing theories of language as ordinarily encountered, and science as generally practised. That is, there now exists a recognition of the importance of explaining the *prima-facie* meaningfulness of metaphorical language and the *prima-facie* importance of models for science. But theories of language which have gained currency have not as yet been able to accommodate metaphor. Today the intellectual atmosphere is attentive to the importance of metaphor; metaphor continues to present a challenging problem for current semantic theories and theories of cognition.

When science is seen as a human activity rather than as the repository of ultimate truths, and cognition generally is seen as the creative shaping of our conceptions of the world, the creative imaginative play of metaphor is seen as characteristic not only of poetry, but also of science. When language is seen not only as the medium of making