Metaphor and Analogy Revisited

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I. Matters Analogical and Metaphorical

Metaphor as a philosophical and interdisciplinary problem

THE TASK OF GIVING account of the nature of analogical information processing within scientific metaphors and metaphorical meaning transformation across diverse contextual and semantic fields is an interdisciplinary problem that has been taken up by linguists, psychologists, philosophers of science and a host of other intellectuals and intellectual disciplines. Hesse (1988a: 317-340), Rothbart, (1988: 377-399), Johnson (1987), Kittay (1987), MacCormac (1985) et al. have recently provided us with theories which have supplemented, modified, accommodated and clarified existing accounts of analogical understanding, and the mechanisms of meaning shift which take place when concepts are "displaced" (Schön, 1963) in and through metaphorical processes. On the whole these accounts are related to and dependent upon general metaphor theories of which so many are in circulation that various classifications have already been made. These theories attempt to understand the workings of metaphorical meaning change from the vantage point of either linguistics, semantics or philosophy of language. They attempt to explain meaning change and metaphorical and analogical meaning transformation on the basis of transactions between linguistic units, albeit words, sentences, sets of associated commonplaces, semantic fields or systems. Information-processing, analogical understanding and metaphorical meaning change have also been dealt with quite extensively in philosophy of science, psychology in general and cognitive science more specifically.

Current literature on metaphor provides the reader with a wide spectrum of taxonomies. These taxonomies differentiate according to disciplinary fields of interest, metaphor theories and diversity of positions concerning the so called "double language thesis" along the literal-metaphorical continuum. An initial global taxonomic distinction is one between metaphor in language in general, in cognition (specifically in model building in science) and the more basic "root metaphor" function of metaphors which operate in myths, religion and worldviews (Pepper, 1942;1982; Brown, 1977:87). In all these distinctions some notion of *analogy* is presupposed and inter alia three main sets of issues are addressed:

· *Linguistic issues*
- *Epistemological issues*
- *Ontological issues*

In the *linguistic issues* the pivotal point of discussion is the validity of the so-called "double language thesis" – with its distinction between literal and metaphorical language, an issue which is basic to most other discussions of metaphor in other contexts. This is a legacy from the Aristotelian tradition, which led to posing questions like: Is the double language distinction a radical or a relative and contextually conditioned distinction? Is literal language primary and metaphorical language secondary, or, is it exactly the other way round? The latter position would contend that it is warranted to speak of the "myth of the literal" and argue that "all language is

metaphorical." Do we have to maintain a logical distinction between the literal and the metaphorical, consigning the metaphorical to a symbolic, heuristic and decorative function only? Theories that attempt to answer some of these questions oscillate between two poles: the one position claiming that literal language is primary and the other defending the primacy of metaphorical language. A third position maintains a relativized literal-metaphorical distinction and argues that this is a fluxuating contextual distinction.

When *epistemological issues* are at stake then questions pertaining to the cognitive and truth claims and epistemic access of metaphorical knowledge to reality are debated. Epistemological emphases take issue with claims concerning the cognitive claims of metaphors and ask whether metaphor can be truth-bearing? If so, how? To these questions the classical view of metaphor had rather straightforward answers which were based on an Aristotelian ontology of natural kinds. Discussions about and modifications of theories of reference and meaning have given rise to diverse positions concerning metaphorical epistemic access to the world. Kuhn (1980;1993) and Boyd (1980:1993) represent contrasting positions with respect to this issue. Kuhn (1980:415-6) claims that metaphors are not only heuristic and pedagogic in science, but they are substantive and cognitive. He says "metaphor" refers

to all those processes in which the juxtaposition either of terms or of concrete examples calls forth a network of similarities which help determine the way in which language attaches to the world.

It is exactly this attachment to "the world" that poses the crucial third cluster of problems concerning metaphorical reference. These *ontological issues* pertain to *depiction of and reference to reality* and are interested in whether metaphorical reference requires some system of categories or natural kinds in order to substantiate the cognitive claims of metaphor and its claims to realism. In the ontological issues, instrumentalism (or idealism) versus realism is one of the central issues. This deals with questions such as: Does a realist, idealist or instrumentalist rendering do more justice to the role of metaphor in language, knowledge and science – i.e ontological access via the implementation of metaphor? A certain group of authors have argued that accounts of metaphorical and analogical meaning transformation need to be explained in terms of nonpropositional and pre-conceptual image-schematic structures (alternately described as "essences" (Leddy, 1995), or as "universally shared cross cultural source domains" [Johnson, 1995]). Davidson, (1978: 47), Searle (1988: 141-159), Ricoeur (1977;1978: 159), Johnson (1981: 200; 1988:26), Leddy (1995:213), and Boyd (1980 & 1993:481 ff.) all argue for some or other form of recognition of nonpropositional and multi-dimensional preconceptual structures that are basic to human experience of the world. They emphasize a more fundamental analysis of the nature of analogical reasoning and meaning transformation across diverse contextual fields. In much of the recent work on metaphor, arguments are proposed for a "new metaphysics" which will provide the "metaphysical picture required to account for the existence of deep conceptual metaphor..." (Johnson, 1995:161). Their arguments diverge on various fundamental points. The first is whether the standard logic-and-literal language view of language ought to be rejected or not. The second question is whether metaphorical reference and the cognitive claims of metaphor require the recognition of an ontology of "natural kinds" or "essences." Views also diverge about the question of whether the categories to which metaphorical "sort crossing" appeal are ontic givens or mere linguistic and social conventions or constructions.

Closely related to these issues are questions concerning the limits and boundaries of metaphor, what constitutes the parameters of meaning of metaphors, when are they abused and when do the violation and transgression of boundaries indicate metaphor becoming myth. In the original double language thesis, a fairly simple criterion was applied to identify the "abuse of metaphor" (Berggren, 1962): When metaphorical language was used literally it was seen as a form of illegitimate "sort crossing." Earlier metaphor theories claimed that the abuse of metaphor led to the development of myth (Turbayne, 1970; MacCormac, 1976;1981; Barbour, 1974; Berggren, 1962). "Abuse" was mostly defined as the "literal" use of language that actually had only

metaphorical (hypothetical) intent. Such theories of metaphorical abuse were often based on the double language thesis, argued that theoretical language was necessarily "literal" and that rhetorical devices such as metaphor were to be regarded only as scaffolding to be discarded after the building of a theory had been erected (Cf. Bunge, 1968). Theories that attribute metaphorical abuse to literalization (such as e.g. Turbayne, 1970) presuppose the double language thesis, choose for the primacy of the literal and often adhere to an Aristotelian type ontology of natural kinds. Mary B. Hesse, (1983 & 1984, 1985/6) emphasizes the metaphoricity of all language relativizes the distinction between literal and metaphorical language but rejects the notion of natural kinds or universals as ontological requirement for metaphorical grounding. The classical view of metaphor, that of Aristotle, is succinctly summarized by Hesse (1983:29, 30) as follows: there is a distinction between proper and improper naming, derived from the theory of natural kinds and essences; a metaphor is a word borrowed from an alien context; its use is therefore deviant. The reason for the particular word borrowed in metaphor lies in a resemblance or analogy of meanings. The metaphor is in principle exhaustively paraphraseable by finding the proper word or words, therefore the net information gained by metaphor plus the restitution of proper meaning is nil; metaphors have no cognitive but only decorative function.

The implications of the Aristotelian view have been worked out in reductionist theories of metaphor – the so-called comparison and substitution views – and are based on the assumption that the metaphor can be translated or reduced to its literal meaning without any loss of content. A related position is defended by Davidson (1978) and McCormac (1988:73) who all argue in favor of variations of the double language thesis and the recognition of the primacy of the literal. Rorty denies that metaphor has any cognitive significance but accepts that metaphorical utterances prompt ideas as other "unfamiliar noises" may do. Irreducibility theorists like Black, Ricoeur, Lakoff and Johnson, on the other hand, oppose such a move by arguing for the distinctive meaning of metaphorical language. This leads to another extreme, a different form of "reductionist" theory – the "primacy of the metaphorical" with Colin Turbayne (1970), George Lakoff and Mark Johnson (1980) and Mary B. Hesse (1984;1985/6;1986) as its most significant representatives. This development coupled with the attack on the reductionist theory in which the "literal" was regarded as the ultimate "grounding" of metaphorical meaning, forced the issue of the "grounding" of metaphorical meaning to the foreground.

The growing recognition of the metaphoricity of all language obviously requires a different explanation of and grounds for legitimate and illegitimate uses of metaphor (and metaphorical language). It opens up a host of epistemological and ontological questions concerning the reality depiction, truth and cognitive claims of metaphorical language both in science, religion and many other dimensions of human life. Phenomena like sort crossing, category mistakes, semantic conflation and metaphorical hypertrophy point to the fact that identification of deviant use of metaphor seem to presuppose not only the existence of the categorial system of language but also the existence of a stratified "reality" which functions as constraint on cognition, imagination, concept formation and lingual representation of reality. Whether this "reality" is a construction, the result of social conventions or the ontological ground of metaphorical reference, forms the basis for many debates in the vast array of interdisciplinary literature on metaphor.

In Philosophy of Science the ontological issues related to reference and reality depiction of metaphors are closely bound to issues of meaning formation and transformation in theory and concept formation. Here too, theories oscillate between the ascription of primacy to either the metaphorical or the literal or replaces the juxtaposition of both these types of "reductionist theories" with theories that attempt to incorporate all possible factors that contribute to meaning formation in the formation of scientific concepts at the heart of theorizing. In philosophy of science literature the "double language thesis" surfaces in the discussions concerning the distinction and opposition between observation and theory language – the so called "two tier view of science" – and the distinction between the context of discovery and the context of

justification. Under influence of positivist theories of language observational language is deemed "literal" whereas theoretical language is regarded as being "metaphorical."

Positivists traditionally have defended a position in which scientific terms are characterized by meaning invariance whilst the Feyerabend, Kuhn c.s. have defended variations on the theme of meaning variance – a concomitant of the recognition of the theory ladenness of all observation. Nancy Nersessian (1984a & b) defends a third positio[n] in which she argues that for a network theory of meaning which she claims will provide a better account of the actual processes of meaning formation and transformation which take place in scientific practice. She also argues for a cognitive-historical approach to the development of science (1992) and proposes the recognition of a context of "development" (Nersessian, 1992: 6, 41). With this she means the investigation of all historical and cognitive factors and processes which influence the development of science.

II. How literal is the Metaphorical and
how Metaphorical is the Literal?

Any discussion about the nature of metaphor inevitably elicits an account of what is regarded as "literal" because the standard view of metaphor, which is part and parcel of the "double language thesis" is based on a standard view of what is literal. Often the literal is regarded as being unproblematic whereas the metaphorical is assumed "deviant" and therefore in need of clarification. To accomplish this required clarification of the nature of the metaphorical meaning, a diversity of theories concerning metaphorical language, and the role of metaphor in cognition have been formulated. Yet, it is the often unquestioned notion of "literal meaning" that requires as much clarification as the notion of the metaphorical. Interesting positions questioning the restrictive linguistic understanding of both literal and metaphorical meaning and arguments in favor of the primacy of either the metaphorical or the literal have recently been developed and have given rise to new proposals and fertile discussions.

In this paper I propose to address two issues that are at the heart of many of the discussions. The first centres around two extreme positions with respect to the so called double language thesis, viz. the *semantic autonomy of the literal* on the one hand and the *primacy of the metaphorical* on the other. The second issue relates to the need to expand the restrictive linguistic understanding of metaphoricity in order to encompass the recognition of the "metaphorical" nature of reality, experience, cognition and language. I shall argue that the clarification of the ambiguity of the double language thesis can only be accomplished when both literality and metaphoricity are seen as cluster concepts that require disentangling and redefinition. This redefinition will have to involve broadening the restrictive linguistic interpretation of these terms and relating them to the phenomenon of analogy. This paper will attempt to address some of the current metaphor debates within restricted aspects of Dooyeweerd's theory of analogy that might shed light on issues raised in contemporary metaphor discussions. They include the following:

• 	To what extent does Dooyeweerd's notion of original (nonanalogical) and analogical concept formation shed light on the problems identified in the double language thesis and explain how metaphorical meaning shifts come about?

• 	How is "proper" use of metaphor determined and when and how does metaphorical abuse arise? This would require the identification of criteria which will enable the scholar to determine metaphorical hypertrophy (Weltman, 1973), when metaphorical "abstractions" are reified and at what point metaphors are out of bounds.

Two opposing sets of theses concerning the nature of metaphorical language can be identified in the current discussions concerning metaphor: In The semantic autonomy of the literal (Thesis I) it is argued that there is a clear distinction between literal and metaphorical language. Literal language is primary and metaphorical language is decorative and secondary. In this thesis it is assumed that it is possible to ascertain what "proper" and "improper" language use is and metaphor is seen primarily as a rhetorical linguistic device which makes no cognitive claims.

With respect to language in scientific theories it is argued that it is literal with direct reference to reality. Metaphorical language in scientific theorizing is regarded as suggestive, hypothetical, heuristic and instrumental until a theory is confirmed or corroborated. Metaphors transgress their boundaries when they are "literalized" and give rise to the formation of "myth." At the other extreme is Thesis II.

The metaphoricity-thesis (Thesis II) argues that all language is metaphorical and that the distinction between literal and metaphorical language is relative to the context in which a description is given. There is no hard and fast distinction between the literal and the metaphorical. Metaphor is not merely a rhetorical device utilized for decorative purposes, but mediates cognition in general and scientific theorizing in particular and lies at the heart of scientific concept formation. It also provides the frame to understand the displacement of concepts that takes place in scientific revolutions. An ostensibly "literal observation language" is extended, modified and replaced through the introduction of metaphorical models and metaphorical theory language. In actual fact the replacement of the existing theoretical vocabulary by another is merely the replacement of one metaphorically constituted set of theory terms with another. What distinguishes metaphor as an instrumental and/or heuristic device (often embodied in a hypothetical model) from theory-constitutive metaphors, is not the opposition between metaphorical and literal, but the fact that one obsolete or less successful (conventional metaphorical) theory is being replaced by another metaphorical redescription of the explanandum which claims to possess more problem solving potential or is more fertile in the suggestion of new avenues of research. Subscription to the tenets of Thesis II implies a different construal of what constitutes "literal" language and by implication also of the relationship between literal and metaphorical language. With the relativization and contextualization of the distinction between literal and metaphorical language and the redefinition of the "literal" as accepted, or conventional metaphorical language, the distinction between literal and metaphorical can not function as the ultimate arbiter to indicate the constraints which determine the boundaries of the use and abuse of metaphor. This position obviously also has consequences for any appeal to categories, natural kinds, universals and/or family resemblances as limits and boundaries of metaphorical meaning. When the double language thesis with its emphasis on the primacy of the literal is relativized, it makes it very difficult to maintain that myth formation is the result of the "literalizing" of metaphor unless some satisfactory account can be given about what actually is meant by "literalizing." It is the content and meaning of what constitutes "the literal" that is as problematic as the elusive notion of the metaphorical.

Against this background I shall argue that approaches attempting to explain the phenomenon of metaphorical meaning transfer and displacement merely on a logical, semantic or linguistic level are inadequate on two counts: In the first instance, analogy and/or metaphor – the "stuff" that lies at the basis of cognition and scientific theorizing – are not only logical and lingual states of affairs, but are more fundamentally or primordially rooted in the nature of reality and human experience. It is this "analogical" structure of reality which conditions the metaphoric character of human experience and cognition and that provides the basis for the ambiguity which the double language thesis captures. In the second instance metaphor needs to be distinguished from analogy and the differences between analogy and metaphor needs to be adumbrated on the level of language and semantics on the one hand and ontology on the other.

Debates concerning the cognitive status of analogy and metaphor alike are interminable and typically inconclusive. Analogy is continually treated principally as a conceptual and propositional structure that can be sententially represented, whereas an account of analogy must take into consideration that it is more than merely a conceptual, propositional and sentential phenomenon. Analyses of metaphorical meaning transfer and analogical relationships solely on the basis of concepts, language and semantic contents inadequately meet the challenge of providing a criterion of demarcation between the metaphoric and the nonmetaphoric in different

contexts and do not explicate the criteria which could function as parameters and constraints of metaphorical meaning. This obviously points to the need for an account of the ontological grounding of metaphorical meaning and meaning transfer. I believe the embryo of such an account is present in Dooyeweerd's philosophy and with it the potential to resolve some of the dilemmas found in the current discussions concerning metaphor and analogy. Because Dooyeweerd's philosophy does not address the issues of literality and metaphoricity explicitly, I intend to deal with some recent discussions concerning these issues in order to provide a setting and a context within which issues common to the Reformational tradition and current discussions concerning metaphor can take place. The first discussion pertains to the thorny entanglement of the multiplicity of meanings of the literal.

"Literality" as a cluster concept

Lakoff (1986:294, 296) sees *conventional literality* as one of the many-sided meanings of the cluster concept "literal," which he argues is a "...heavily theory-laden term." In this cluster he also distinguishes three other senses of the word literal: *subject matter literality directly meaningful language* not understood, even partly, in terms of something else and *truth conditional literality,* i.e. language capable of "fitting the world" and referring to objectively existing objects. He elaborates this notion of conventional metaphor by distinguishing between a *primary* domain in which a word has its primary sense and the *conventional* metaphorical domain where, although a word or expression is being used "metaphorically," the word or expression is of a *conventional nature* and as such has acquired a *qualified* metaphorical meaning (i.e. "literal"). E.g. the expression "He passed away" has its *primary meaning* in the source domain of space and its *conventional metaphorical meaning* in the realm of life and death. But because this has become such a conventional way of speaking about death, it is regarded as *literal* (Lakoff, 1986:294). In Lakoff's (1986) argument he seems to have replaced the literal-metaphorical distinction with the distinction between two types of (literal) meaning, *primary* and *conventional* meaning. Lakoff's distinctions introduce important new elements in the discussion: the recognition that the notion of *literal* is a heavily theory-laden term and a cluster concept and the understanding that conventional metaphoricity is a typical form of literality. This untangles five(!) possible notions of the literal:

1.
    "Literal" referring to the *primary domain of meaning*;
2.
    "Literal" referring to a *conventional metaphorical meaning* which has acquired literal meaning through having become conventional (Lakoff's "Literal 1");
3.
    "Literal" referring to the conventional language ordinarily used in *subject matter* (Lakoff's "Literal 2");
4.
    "Literal" referring to *directly meaningful language* (Lakoff's "Literal 3");
5.
    "Literal" language capable of *fitting the world* (Lakoff's "Literal 4").

In a later work (1989:117) Lakoff and Turner elaborate the notion of "conventional metaphor" (launched in 1986 by Lakoff) and discuss what they believe to be the misconceptions at the root of traditional views concerning literal and metaphorical language. One of these fundamental misconceptions is what they call the "theoretical concept of literal meaning" which depends upon a prior notion of "semantic autonomy" (Lakoff and Turner, 1989: 110, 111). There are two variants of the notion of semantic autonomy: "Conceptual autonomy" and "nonconceptual autonomy." Concepts are cognitive in nature and have meaning, whereas words and phrases are

meaningful only through the concepts they express. They say: "Concepts are semantically autonomous if they are meaningful completely on their own terms." Such semantically autonomous concepts are seen to be independent of metaphor. *"Nonconceptual autonomy"* assumes that words and phrases in a language get their meaning via what they designate in the world, not via human cognition. Semantically autonomous linguistic expressions are independent of principles of rhetoric.

The authors argue that "The Literal Meaning Theory" is about ordinary conventional *language*, and not about *concepts*. This language is regarded as semantically autonomous and forms the basis for metaphor. They (1989:114, 5) summarize the literal meaning theory as follows:

– If an expression of a language is (1) conventional and ordinary, then it is also (2) semantically autonomous and (3) capable of making reference to objective reality.
– Such a linguistic expression is called "literal."
– No metaphors are "literal."

In this theory objective reality is "... taken to have an existence independent of human understanding" (Lakoff and Turner, 1989:115). Within this so called "Literal Meaning Theory," "literal" is applicable to all ordinary, conventional language that meets conditions 1, 2 and 3. These ostensibly common sense notions are based on philosophical views concerning meaning, truth and language that require language to be seen as semantically autonomous, reflections of objective reality and thus not metaphorical. Lakoff and Turner (1989:115) speak of the "Autonomy Claim" and the "Objectivist Claim" in this respect. The former implies that all expressions meeting condition 1 also have to meet condition 2 and the latter that all expressions meeting condition 1 also meet condition 3. The "Objectivist Claim" entails that all conventional expressions in a language are semantically autonomous and that no expression can be understood, in whole or in part, by metaphor (Lakoff and Turner, 1989:117). It denies the fact that meaningful statements are only meaningful relative to a framework in terms of which reality is seen. Their "theory of conventional metaphor," on the other hand attempts to explain the fact that understanding and reasoning relies upon a conceptual system which includes an inventory of structures of which schemas and metaphors are established parts that have become conventionalized, i.e. "...cross-domain conceptual mappings that are automatic, unconscious, and effortless" (Lakoff and Turner, 1989:112). For the authors, metaphors are conceptual in nature and are mappings from one conceptual domain to another.

Lakoff and Turner (1989:113) address the question of how metaphorical understanding is possible through the "Grounding Hypothesis." It states that metaphorical understanding is grounded in nonmetaphorical understanding, i.e. in a source domain of concepts or aspects of concepts that are semantically autonomous. Such semantically autonomous concepts are not a direct mirror of a mind-free external reality (1989:119). They distinguish between conventional concepts or aspects of concepts that are "primarily grasped through metaphor" and are therefore not semantically autonomous (love, thought, time, purpose, etc) and concepts or aspects of concepts that are semantically autonomous. Such semantically autonomous concepts form the source domain of a metaphor (Lakoff and Turner, 1989:113). The term "literal" could still be used to designate this, but then it ought to be liberated from the shackles of the "Literal Meaning Theory" with its dependence on the "Autonomy and Objectivist claims."

Lakoff and Turner (1989:117) recognize the existence of different conceptual domains and in an earlier (1986) discussion, Lakoff introduces the notion of a *primary domain of meaning*, a notion which also surfaces in proposals of authors discussing related issues in this field (Cf. Rothbart's proposal of "conceptual vectors," 1988:377-399). This is an attempt to clarify the distinction between the literal and the metaphorical by reconceptualizing various nuances of the notion of the literal to accommodate some qualified notions of the metaphorical within its range

of meaning. Lakoff replaces the literal-metaphorical distinction with another, viz. the distinction between primary and secondary senses or domains. In this view the literal-metaphorical distinction of the primacy of the literal is given up and replaced with the recognition of a diversity of source domains, which do not claim privileged literal status, but can function as primary or as secondary source domains depending on the context within which they are used.

   Moreover in current literature dealing with these issues there is a recognition that so called "literal descriptions" too, are stratified and categorized (Hesse, 1984). Literal descriptions, as Leddy (1995:207) argues, assume the ability to understand one thing as *an instance of a certain (same) kind*. It assumes the ability to identify/classify the world. In this respect literal language is obviously as contextually differentiated as metaphorical language. In metaphor, on the other hand, we understand *something in terms of a different kind*. Leddy (1995) thus argues that the fundamental constituents of our world and experience are metaphoric. He calls them *essences*, qualifies them as being "metaphoric" and claims they exist at an ontological level prior to the split between object and subject and prior to clear distinctions between substance, attribute and function. He argues that essences should not be confused with natural kinds, and sees them more like Plato's forms than Aristotle's understanding of essences. These essences, he claims, are not merely discovered, they are also constructed and are "... patterns in the world-as-experienced." These essences are themselves metaphoric. He agrees with Ricoeur (1977) that it is the ambiguity of this preconceptual level of human experience to which metaphors refer. From the fact that literal language is as dependent on classification and categorization as metaphorical language is it follows that metaphoricity, too, is a cluster concept!

Metaphoricity too, is a cluster concept
At least, the following four meanings are entangled in the various uses of metaphor:
•   The recognition that there are nonpropositional and pre-conceptual experiential structures which form the basis for metaphorical meaning and are "metaphorical" in nature.
•   The fact that experiential gestalts of this kind are in turn based on the nature of reality which has a fundamentally "ambiguous" nature.
•   The primacy of the metaphorical-thesis with its inherent assumption that all language is metaphorical.
•   The central role that analogy plays on all three levels mentioned.
These four theses already demonstrate the need to diversify the manner in which "metaphor" is used. Both metaphor and analogy are often conceived of as pervasive modes of understanding and are regarded as the main structures by which we are able to have coherent, ordered experiences. Davidson (1978), Searle (1988:144), Ricoeur (1978) and Johnson's emphasis on the role of nonrepresentational and nonpropositional image-schematic structures, which function as experiential constraints in information-processing and metaphorical meaning transformation, pose various questions: What are these capacities and structures? How do they condition and constrain meaning transformation? What are their relationship to universals, if any?
These theses and the consequences of the positions that argue for them pose important questions to Reformational Philosophy. Many of these problems impinge on issues in the philosophy of Herman Dooyeweerd which have been developed extensively, the most relevant being his theory of analogies and the analogical concepts of the special scientific disciplines.

Metaphorical reference
When it comes to the question of the realistic interpretation of what metaphors refer to, Kuhn parts ways with Boyd by arguing that he does not believe that nature only has one set of "joints" to which scientific terminology approximates closer as time proceeds. Kuhn (1980:418-9) chooses for a more Kantian position when it comes to the issue of realism in science. Boyd (1993:484) develops his initial (1979) position concerning the epistemic access to the "joints" of reality with the introduction of the notion of "homeostatic property cluster kinds" (1993); natural

kinds that are context (Boyd, 1993:483) or discipline or interest relative (Boyd, 1993:531). It is Boyd's (un-objective) qualification of (objective) context independent natural kinds that leads Kuhn to state that Boyd undermines his own position. This pivotal issue concerning the actual existence and recognition of such states of affairs as grounding for metaphorical reference also surfaces in the views of others. I have chosen the positions of Mary B. Hesse and H.M. Collins to demonstrate some of the underlying issues at stake in these discussions.

In opposition to traditional views of metaphor which resorted to some grounding in natural kinds or universals, Mary Hesse "anchors" metaphorical reference in the semantic network of the language. She rejects the Aristotelian theory of universals (which she calls the "absolute theory") which views metaphor as the transposition of a name that properly belongs to something else (Hesse, 1984:28; cf. also 1988b) and resorts to Wittgenstein's notion of irreducible "family resemblances" and to the *conventional* nature of judgements concerning similarities and differences as an alternative. The "absolute theory" would imply that the metaphor is in principle exhaustively paraphrasable by finding the proper word or words, therefore the net information gained by a metaphor, plus the restitution of proper meaning is *nil* – implying that metaphors have no cognitive but only a decorative function. The implication of the "family resemblance" account of universals on the other hand, is that, strictly speaking, *no meanings are univocal.* The rules underlying the correct applications of meanings and underlying meaning relations must be sought. She concludes that the extensions of meaning that occur in metaphor are only the more striking examples of something going on all the time in natural language and that if we wish to understand the process and judge its significance, it is to the elementary examples implied by the existence of family resemblance classes that we should first look. This is what she has in mind when she says: "All language is metaphorical."

She argues that the threat posed by various forms of relativism following the work of Kuhn and Feyerabend, has led to the undermining of the belief in the reality of laws of nature and their corresponding universals. She says: "Radical revolutions of theoretical language call into question the possibility of reaching or even converging upon the ideal theory-language with its "correct" classification of universals and hence laws, and if there is no convergence, may this not be because there are no ideal natural types?" (1984b:6). She settles for a weaker form of realism (some would argue, for *anti-realism*) when she says that meanings of predicates in scientific language grow in dynamic interaction with culture and experience; terms do not correspond to universals, Hesse claims.

A far more extreme position with respect to the issue of the ontological grounding of reference is that of Harry Collins' (1985) so called *Empirical Programme of Relativism* which is an extreme example of the social constructivist position. Collins claims:

It is not the regularity of the world that imposes itself on our senses but the regularity of our institutionalized beliefs that imposes itself on the world.... The locus of order is society. (Collins, 1985:148)

He argues the natural world has a small or nonexistent role in the construction of scientific knowledge, but concludes that because of the fact that there are groups, societies and cultures, there must be large scale uniformities of perception and meaning (1985:5). He wants to develop his EPR as a sociological solution to the problem of induction (1985:6). Collins' position, too, is a Wittgensteinian one in which he anchors rules in language games and language games in social forms of life and ultimately concludes that habitual perceptions are wholly a matter of convention. Collins' thesis is that scientific consensus is in principle indistinguishable from any other sort of persuasion of people to believe in a political, ideological or religious system, or even to believe for purposes of their own class or personal or professional advancement. Central to these projects is the concern for a satisfactory account of how changing languages and displaced concepts can give account of the order perceived in and experienced by all in the same common reality. Both the social constructivist and metaphoricity-of-all-language theses provide a challenge to the idea that there are universally constant categories or kinds that condition concept

formation.

Mary Hesse (1986), who certainly does not have too much sympathy with the realist position (she often calls herself a "moderate realist," when accused of being "anti-realist"), counteracts Collins' position with an appeal to the regularities of the psycho-social natural world. She says:

There is a perfectly good explanation of why science exhibits order, namely that it reflects something of the order of the natural world. (Hesse, 1986)

In her exposition of the family resemblances and the way in which the recognition and learning of these resemblances takes place, she appeals to notions such as "the same experience...," "shared assumptions," "the same physiology," "the same cultural expectations," "irreducible perceptions" that are a function of "our physiology and its commerce with the world." Elsewhere (1988:113) she talks about the "...objective order in the psycho-social-natural world in which we all live (which) is more various and multifaceted than our culture recognizes – *more* various, but not *infinitely* various so that any old classification will do for any given social purpose." In spite of her recognition of "objective realities" to which language is related she opts for a "moderate" realist position. Her motivation is clearly the fact that our knowledge of these objective realities is limited, seldom definitive and always open to correction. By and large this is an assumption usually shared by anti-realist thinkers, yet it would be possible to subscribe to this same fact and still be sympathetic to a realist position. McMullin (1984, 35) e.g., maintains such a position. She contends that the threat posed by various forms of relativism following the work of Kuhn and Feyerabend, has led to the undermining of the belief in the reality of laws of nature and their corresponding universals. Elsewhere she does acknowledge the fact that the social habits acquired by scientists do reflect the order in the world. She (1988) argues for a socialized epistemology with a reconciliation of various philosophical positions, but is not willing to agree with Collins that all inductive regularities are purely conventional.

This extensive overview has served to situate the main issues concerning metaphor and analogy discussions in the current literature and to provide a contemporary backdrop to discussions concerning metaphor and analogy in Reformational philosophy.

III. How Analogical is the Metaphorical and the Literal?

Metaphor in reformational philosophy

Dooyeweerd does not pay much attention to metaphors or the role they might play in the discovery of modal analogies. He also does not pay much attention to the mediating role metaphors play in cognition and theoretical models and theories. On the contrary, references to metaphor in Dooyeweerd's philosophy are sparse, predominantly of a disparaging nature and usually made in the context of the discussion of the fundamental role played by analogies (NC-II, 1955:55, 64). One such reference is found in his discussion of the South African philosopher H.G. Stoker's analysis of the so called "substance concept" (NC-III, 1969:68ff). Metaphors, Dooyeweerd then argues, can be the expression of the aesthetic imagination. They have no other role to play than to evoke a visionary picture of nature. He did not appreciate the role of metaphor in theorizing and contrasted the "visionary world of the poet" with the imperative faced by the philosopher to explain the exact theoretical meaning of the concepts he uses.

But in philosophy we are not concerned with the visionary world of the poet. Here we are obliged to explain the meaning of our words in their theoretical use, and this meaning is bound to the theoretical dimension of our temporal horizon, although this theoretical dimension points beyond and above itself to the pre-theoretical and supra-theoretical dimensions. (NC-III, 1969:68)

Analogy, on the other hand, is one of the core notions of Dooyeweerd's philosophy. With respect to the multidimensional meaning of the analogical concepts of the special sciences, his concern was the recognition of the underlying ontological structures which conditioned their nature and meaning. These irreducible structures, he argues, are not metaphorical in nature because the concepts employed to designate them are unique and original and cannot be replaced by literal

paraphrase or substitution (NC-II, 1955:64-5). Analogy is indicative of ontic states of affairs and clearly distinguished from metaphors which he regarded as typically lingual (aesthetical?) in nature. In his discussion of the analogical use of the fundamental concepts in the different branches of science, he points to the fact that the relation of analogy – as he understands it – must be investigated within the cadre of the modal structures of meaning, which are determined by this modal order (NC-III, 1969:58-9). In the description of this state of affairs, the lack of uniform terminology in the different languages and the linguistic ambiguity of words that may also have a metaphorical sense, he argues, present a real problem. In his discussion of the original and analogical use of the term "space," he enumerates different ways in which this term is implemented in various disciplines and then states that the variety of qualifications which this concept undergoes in various disciplines is ultimately related to the fundamental meaning-moment of space, extension. Then he proceeds: "If it were a metaphor, the term in its scientific use could simply be replaced by another word or by a combination of terms without any spatial significance" (NC-III, 1969:64-65). This can not be done in the case of analogical concepts. In *De analogische grondbegrippen en hun betrekking tot de structuur van den menselijken ervaringshorizon* (1954:171, translated by Robert Knudsen), he denies that the fundamental analogical concepts are in any sense metaphorical in character. Metaphors are seen as ambiguous usages of terms, whereas analogies refer to the ontological coherence of the diversity of meaning. The significant role that metaphorical constructs do play in the process of uncovering these analogical moments is not dealt with or utilized in Dooyeweerd's account of the nature of science – his theory of the *Gegenstandsrelationship*. Neither does he address the relationship between metaphors and analogies in general or the analogical basis of meaning transfer in metaphorical language.

Although he did not refrain from employing metaphorical language in his own systematic philosophical exposition, (the image of the prism for the notion of time for example and his earlier use of the law-organism as an indication of the coherence (Henderson, 1994:171[)] he advocated a definite discontinuity between ordinary and theoretical language. For Dooyeweerd metaphor belongs to the realm of the language of pre-theoretical experience whereas the language of theorizing is far more rigorous both in precision and in meaning.

From these references it can be inferred that Dooyeweerd held a reductive theory of metaphor, one in which it would be possible to either replace the metaphorical expression by another or else reduce it to some literal paraphrase. The point he wants to make in this argument is not one concerning the nature of metaphor in the first instance, but one concerning the nature of the ontic analogies that are foundational to all language *in casu* metaphorical language. The analogies, he argues, are not mere linguistic phenomena, but are the expressions of the intermodal coherence of reality. The innovations introduced into metaphor theory by I. A. Richards (1936) and later refined by Max Black (1962;1980) et al. which generated the "interactive" theories of metaphor, were either not known to him or else not regarded as relevant to the problems he was addressing at the time.

In these cursory notes on metaphor in Dooyeweerd's philosophy there are also indications of what is generally called the "double language thesis" with its distinction between literal and metaphorical language use, and also traces of the substitution theory of metaphorical language. Many of the problems raised in recent discussions concerning the double language thesis and the various theories of metaphor are at first glance not explicitly or implicitly dealt with in his philosophy. Yet, Dooyeweerd's philosophy does provide an interesting framework for addressing many of the issues at stake in the metaphor debates found in the literature and it can also be enriched by the important research into the nature of metaphor found in recent scholarship. Many issues addressed in the contemporary discussion (cf. Schon, 1963; Johnson, 1981;1987;1988; Lakoff & Johnson, 1982) of metaphor have already indirectly been dealt with

in the Dooyeweerdian philosophical perspective and the continuation of this tradition by Seerveld, Strauss, Hart and others.

The distinction between the "original or nonanalogical sense" of a modality and the analogical moments or analogical use of concepts as discussed in Dooyeweerd's philosophy, provides an important framework for a discussion of issues related to the literal-metaphorical distinction. He distinguishes between the analogical (secondary) and nonanalogical (or foundational or original) use of language (Dooyeweerd, 1954:2). Analogies are a pregnant expression of the coherence and interrelatedness of the diversity of reality. Because these analogies either are original in some other aspect of reality or refer to another modality *they can not be understood literally*. Analogical moments are (interactions?) relationships between ontic domains that bring about a displacement of focus in the primacy or dominance of one domain by another.
They:

> manifest themselves in all of these aspects (and) presuppose a deeper root-unity in the central sphere of our existence in which all modal differentiation of meaning must be directed concentrically to the absolute Origin of all meaning. (Dooyeweerd, 1954:21)

He says:
Within the temporal horizon of human experience analogy is the expression of an unbreakable coherence of meaning in an irreducible diversity of meaning. Both presuppose a deeper unity of meaning in the religious centre of human existence. And that unity of meaning in its turn is simply the creaturely expression of the divine unity of the Origin, which transcends all diversity of meaning and thus every analogy and which exclusively is Being. There is no analogical concept of being that would be able to embrace both the creature and his Divine Origin. Analogy is exclusively of creaturely nature. (Dooyeweerd, NC-II, 1955:57; 1954:21 translated by Robert Knudsen)

In Dooyeweerd's philosophy analogies express the coherence of the diversity of reality, which in turn are indicative of the meaning character and religious nature of reality, i.e. its deepest relationship to its Origin and Unity. The key word here is the notion of "coherence" which constitutes the basis for the analogical interrelationships of the various aspects of reality. Coherence presupposes diversity and analogy presupposes both. In Dooyeweerd's philosophy both coherence and diversity are inextricably related to the religious nature of reality: the fact that the fullness of meaning comes to expression in the coherent diversity and it, in turn, refers to the fullness of meaning. These insights have been refined in work done by others in the Reformational tradition.

Strauss (1988: diagram 3; 1989:136) distinguishes between metaphors and analogies on the following basis: *Metaphors* are linguistic in nature and are *entitiary analogies* that pertain to similarities and differences between *entities* in reality, whereas similarities and differences between *aspects* of reality are indicative of *modal analogies* that come to expression in the elementary analogical concepts of the sciences (Strauss, 1988: Sketch 3). Metaphors can be substituted by other metaphors, but modal analogies can only be replaced by synonyms. Hart (1984:156) calls modal analogies "ontological metaphors" or "unavoidable analogical structures" and asks whether "semantic metaphor is a pointer to ontic analogy." It is this question and the possible relationship between metaphor and ontic analogies that requires further exploration. More specifically it raises the question of how the distinction between literal and metaphorical language and reference should be positioned in this debate.

Methodologically the defense of the recognition of some account of the stratified nature of reality in order to understand metaphorical meaning, meaning transformation, metaphorical misbehavior and metaphorical hypertrophy can be approached from various angles: *A transcendental argument* will assume the existence of such basic level categories a priori and proceed with the argument from the "top down." An *empirical approach*, on the other hand will

phenomenologically analyze empirical phenomena in order to demonstrate the existence of such experiential categories, a "bottom-up" approach, as it were. A combination of approaches are methodologically called for here. In order to adumbrate the thesis that science deals with the hidden structures conditioning the experiential gestalts characteristic of human experience and reality in general and that it is exactly these structures which determine the limits of meaning, it is imperative to follow both avenues. Let us start with the empirical approach.

A common reality: precondition for communication

Let us begin with two arguments from practical everyday experience. The first deals with cross cultural communication and the second with the phenomenon of sort crossing and category mistakes which is found in most languages. Cross-cultural communication of even the most trivial and elementary nature presupposes common standards of rationality albeit only the common acceptance of rules of inference and logic; moreover communication itself presupposes that core criteria like truth and validity are not context-dependent and variable, but universal and fundamental (Lukes, 1970: 208; Jarvie, 1975: 351). Lukes (1970: 209, 210) argues that the existence of a "common reality" is a necessary precondition for our understanding of a foreign language and that there should at least be some clarity concerning the basic distinction between truth and falsity before any attempt at understanding and translation could be made. It follows that a foreign language must minimally possess criteria of truth (as correspondence to reality) and logic, which we share with it and which simply are criteria of rationality. To understand the utterances of an alien culture with a radically different language, we need to be able to relate these utterances to the world. This requires a "bridgehead" with the radically different culture which at least assumes that perception of everyday objects is the same in both cultures and that the manner in which predication and denomination of these distinct objects would take place would be similar to the one used in our own culture. This bridgehead would imply that even though we don't understand the foreign language, we assume that trying to conceive of a culture with a language which did not have conceptions of negation, identity and non-contradiction is an absurdity (Cf. Lukes, 1970; Hollis, 1970; Nielsen, 1974).

This argument is based on the assumption that the world commonly shared by diverse cultures has a universal and commonly recognizable structure which presents itself to the participants of diverse cultures in a common way. This causal structure of the world or the "joints" (Boyd, 1980: 408), can be approximated in diverse cultural languages. This argument in favor of cultural universals is not motivated by the imperative to establish correspondence between culturally localized beliefs and opinions and alleged culturally transcendental answers (cf. Jarvie, 1975: 347), but to argue that human experience and knowledge is universally conditioned by the same basic structural givens. This also becomes apparent in the phenomenon of sort crossing and category mistakes.

The mere possibility of speaking about category mistakes rests on an assumption that the world we deal with is in some way categorized. Whether these categories are socially constructed and the result of culture and convention or whether they are representative of deeper and more fundamental universal structures of the world, both views imply that categorization is basic to logic and language and that so called category mistakes can only be identified on the basis of the acceptance of some notion of a stratified reality. The grounding of these strata in social convention often becomes apparent in the examples of language use in e.g. a thesaurus. But basic to the conventionalized categorizations of language are underlying ontological constraints. Lakoff and Johnson have provided us with many examples from everyday life.

They (1980:19, 117, 118; 1982: 193ff) argue that metaphors are conceptualized as experientially basic gestalts; are products of human nature and form multi-dimensional structural wholes. Some may be universal, while others will vary from culture to culture. The types of experience analyzed by Lakoff and Johnson include inter alia, spatial, physiological, psychological, mental, social, political, economic and religious experiences. They suggest that the concepts which

appear in metaphorical definitions are those that correspond to these natural kinds of experience. Johnson (1987: 30) has elaborated these insights by arguing that meaning understanding and rationality are constrained by nonpropositional "image-schematic" structures such as e.g. temporal and spatial orientation which arise from our bodily experience and which are metaphorically projected and extended in order to understand reality. It is the origin, nature and functioning of these structures, which constrains metaphorical and analogical understanding that he explores in *The Body in the Mind* (1987) and in "Some constraints on embodied analogical understanding" (Johnson, 1988: 25). The account he develops of a variety of examples show that there are common structures of imagination that emerge from our constant bodily functioning (1988: 33). In his *The Body in the Mind* (1987: 42-48) Johnson explores the way in which patterns of typical experiences of force work their way into the system of meaning and into the structure of expression and communication. The main evidence for the efficacy of these image-schematic gestalt structures, is a demonstration he provides from the way such a structure constrains and limits meaning as well as from patterns of inference in human reasoning. Sharing Johnsons' assumption let us examine some empirical examples from everyday experience and from social science which illustrate the contextual qualification and differentiation of an image-schematic structure.

Reductionism, antinomies and absolutization

In Dooyeweerd's philosophy reductionism, antinomies and conceptual distortions are closely related to the fundamental religious nature of reality. This religious nature of reality which relates every aspect of the world to its Ultimate Ground, is the basis which makes it possible to determine any form of absolutization of the relative. In Dooyeweerd's philosophy distorted conceptions of reality are constrained by two related poles: The given order of diversity and coherence of creation rooted in a Unity and deeper Root' and Identification of the diversity is a presupposition of any careful analysis of reality. It is the existence of a cosmic order with its diversity and coherence that unmasks antinomies and guides theorizing. Dooyeweerd (NC-II, 1955:334) says:

The cosmic order passes an internal judgement on the theoretical absolutizations of immanence-philosophy, which invariably result in internal antinomies.

Sphere universality, the expression of the coherence of the diverse modalities, explains the apparent success of the various absolutizations in Immanence Philosophy (Dooyeweerd, NC-II 1954:331). The absolutizing of a synthetically grasped modal aspect is the source of all -isms in the theoretical image of reality (Dooyeweerd, NC-II 1955, :46, 47) and leads to the reduction of all other aspects to such a modality which in such a case is seen as the common denominator of all aspects of reality. The religious Unity and Fullness of Meaning being the only Absolute sets limits to any form of absolutization because it determines what is relative.

Analogical concept formation for Dooyeweerd is closely related to the basic Ground Idea and theoretical perspective operating in a discipline. Concept formation expresses an underlying Ground Idea and is indicative of the answers formulated to the transcendental questions concerning diversity and coherence of reality and its relationship to unity and the Origin. A careful analysis of the analogical concepts, Dooyeweerd (1954:8) argues, is fruitful and necessary, because it preserves us from false problematics in philosophy as well as in the special sciences. Absolutizing of any one aspect of experience reflects in concept formation and is the result of a lack of insight in the integral coherence of all aspects and the distinction between the original nuclei of meaning and the analogical moments of a modality. Seen this way absolutizing has a deep religious and spiritual root, is indicative of faulty or distorted analysis of reality and will be apparent in concept formation. Criteria to determine the limits and boundaries of legitimate and illegitimate use of metaphor are obviously important in the discussion of the issues raised above. These limits could be ontological, cognitive, lingual, aesthetic, semantic and/or conventional.

One way access is gained to the structure of reality is through scientific developments which gradually theoretically disclose the manifold analogical moments of reality. Dooyeweerd's analysis of the modal structure of reality was closely related to the prevailing scientific knowledge of his day. The parameters of a theory provides the conceptual framework through which our theoretical grasp and understanding of the hidden structures of reality are formulated. The intuitive and pre-theoretical understanding of the diversity and coherence of reality is deepened by such theoretical activity. But if the theoretical grasp is often a tentative approximation of these structures – as all science inevitably is – and is mediated through the displacement of concepts characteristic of scientific development, then the results of scientific analysis of reality can hardly serve as modal criteria for the judgement of antinomies, reductionism and absolutization. Moreover the meaning of scientific concepts and metaphors are contextually determined. If contexts change, meaning shifts takes place. This transposes the problem to a higher level – the meta level of the determination of the "context" of contexts. Dooyeweerd's transcendental critique assumes the existence of an ontological frame of reference and categorial system which makes it possible to identify reductionism, antinomies and absolutizations. But if the disclosure (visibility) of the contours of this system is the result of transcendental empirical analysis which is dependant on scientific developments, how can it in turn function as a criterion to determine derailment in concept formation?

Positively, Dooyeweerd argues that all human experience is conditioned and constrained by preconceptual and prelinguistic basic level ontic categories which determine the boundaries between analogical and nonanalogical meaning. Any attempt at diagnosing metaphorical hypertrophy (internal ideological derailment) of science necessarily has to appeal to some philosophical interpretation of these ontic boundaries. The vagaries of the "force" concept in the history of science is a case in point.

Multivocal, analogical concepts

In the history of personality theory in psychology the notions of "system," "motions" and "forces and fields" are borrowed from the scientific vocabulary of physics to explain psychological functioning. These "forces" are different from Newtonian forces. The terms are imbued with meaning transferred from the dominant Maxwellian theory of physics which replaced that of Newton (Schön, 1963: 156). The terms were borrowed from the physics of the time and can be attributed to the dominant root metaphor of natural science which functioned indirectly as a projective model for new theories. The above mentioned terms plus terms such as "dynamic," "field" and "energy" pervade the writings of Gestalt psychologists like Kohler and Koffka; dynamic social theorists like Lewin and dynamic psychiatric theorists like Sullivan, Horney and Fromm-Reichman (cf. Sullivan, 1964; Lewin, 1959). These writers have displaced to the mind the dynamic field physics of the late nineteenth and early twentieth centuries. Schön (1963:157ff) gives an excellent exposition and comparison of the different ways in which Bentham and Lewin are influenced by the models provided by respectively Newtonian physics and Maxwellian physics. This becomes quite clear in their divergent use of the term "force." This multivocality of the concept "force" also comes to the fore in ordinary language expressions of a metaphorical nature, such as: "the force of an argument" or "the movement has spent its force...." It is clear that in the everyday language expressions the term "force" can be replaced by any other without doing violence to the meaning of the expression.

In the gradual development of the "force" concept it was imbued with changing connotations within different theoretical contexts. Analysis of the shifts in the conceptual structure of the force metaphor in Michael Faraday's work shows it to be representative of a transition from a mechanistic to a dynamistic understanding of matter. Faraday's injunction and strong emphasis on the literal reading of the two books of nature leads him into a dynamistic understanding of matter and of reality. Dynamism designates the view that all phenomena of nature, including matter, are manifestations of force. Such a view of force as could be described as "metaphoric

hypertrophy." In all three examples mentioned the term force is used metaphorically. It illustrates that our everyday experience of the world is dependent on the notion of "force" with its related notions of energy and dynamism, but also that this basic experiential notion can be imbued with diverse scientific connotations.

The question these developments confront us with is at what point(s) one is justified in speaking about absolutization: When Faraday's use of the force concept approximates the parameters of what is later called "field theory" it is obviously already "growing out of" the confines of the mechanistic theory. Moreover his use of the force concept tends towards dynamism. When is it justified to speak of absolutizing?

IV. Metaphors: More to seeing than meets the eye

When it comes to their role in scientific theorizing it is important to distinguish between "theory-constitutive metaphors," i.e. metaphors that propose a model and metaphors which are the linguistic projections of such a model (Soskice, 1985: 102). Now it is argued here that the theory-constitutive metaphors acquire their heuristic function from the fact that they actually provide access to what is often called the "hidden structures" behind phenomena they claim to explain. Certain types of "metaphors" linguistically approximate deeper level ontic structures which are called fundamental analogies. It is these fundamental analogies that scientific theories aim at approximating by means of their use of analogies and metaphors. One could say these are the "hidden structures" of reality which scientific theories attempt to explain by developing explanatory models based on analogies and formulated in metaphorical language.

In the classic theory of metaphor there was always a reticence to equate metaphor with what was regarded as "proper analogy" (Burrel, 1973: 260). Ample reference to and evidence of the fact that some metaphors are actually more "necessary" than others (Ortony, 1975: 45-53) is found in metaphor literature. Some authors point to specific types of analogical relationships that are of such a nature that they cannot be ignored; that they have to be acknowledged. As such they are presupposed by all the other above mentioned types of metaphors.

In both everyday knowledge and science it is not possible to rid ourselves of the analogical or metaphorical usages which Hart (1984: 156) calls *functional metaphors, functional analogies or ontological* "*metaphors.*" This means that a distinction has to be made between unavoidable analogical structures (Hart, 1984: 156) or proper analogies and their *linguistic* articulation by means of metaphors. The fact that analogies lie at the heart of a theory is well established (Harre, 1978: 171; McMullin, 1984: 30). What is argued here is that it is not just any analogy that will fulfill this function, but that it is primarily the "fundamental analogies" which are uncovered by the fruitful metaphor of a fertile theory. The concrete analogies from which a theory often departs, retroductively provide the heuristic access to the hidden structures which science attempts to uncover in its attempts at structural explanation. It is argued here that these hidden structures are approximated by the discovery of the fundamental analogies. A basic idea concerning the nature of these fundamental analogies are at the heart of the conceptual apparatus which a theory utilizes to explain reality.

Conceptual novelty which provides some epistemic access to hitherto unknown domains and to successful structure mapping, is an articulation of a whole series of expectations about the manner in which certain aspects of the world do behave or function. The systems, objects or items covered by a certain new concept share overlapping similarities. In the case of scientific concept formation these "family resemblances" are instances of "functional analogies" (Hart, 1984) which point to basic and underlying ontological analogies. In the approximation of these functional analogies scientific imagination is the vehicle for creative opening up of novel insights into the structure of the world and also for the disclosure of new meaning; meaning which often is not already contained within the semantic network of the language systems utilized to conceptually formulate the anticipated similarities. It is impossible to ignore these "metaphors"

in scientific theorizing.

Metaphors that function in poetic or literary discourse or in everyday language refer to concrete entities and can often be replaced by other, striking metaphors without loss of meaning. The type of metaphors utilized in scientific theorizing and argument *have* to make use of the above mentioned ontic analogies. No theory can do without metaphorical references of this nature. Most probably this is what Ortony (1975) refers to as "necessary metaphors." Metaphors often function as the vehicles of the fundamental analogical concepts of the specific sciences; i.e. those fundamental concepts without which the practitioners of a discipline cannot theorize at all. These fundamental analogical concepts refer to the "structural joints" of reality. To the extent that theories developed on the basis of these concepts approximate these "joints" the metaphors mediating this approximation are scientifically "apt," "fitting" or suggestive. This becomes apparent when a revolutionary scientific innovation introduces a new root metaphor into the scientific terminology of a discipline.

The literal and the metaphorical revisited

If we return for a moment to the example of the multivocal term "force" referred to above, we can now attempt to integrate the various strands of the argument concerning metaphor, analogy, fundamental analogy and contextual fields. The multivocity of the term raises the question, whether there is a specific context in which the meaning of the term force could be seen as "literal?" If this cannot be determined how would one know when the concept is being used incorrectly? Is there an original uncontaminated context in which one would be warranted to claim that the concept only has a literal meaning? The answer is unequivocally: "No!" Yet, given the manifold possible metaphorical uses of the concept, the question arises whether it would not be more fitting to claim that concepts are often "at home" within the meaning radius of a certain semantic (and ontological) field and that one has no other option than unpacking the range of possible meanings of such a concept in an analogical way. Such a semantic home base cannot be termed "literal" because the term "force" can also be meant literally in all the other possible analogical modes in which it functions. When the police use force to quell an uprising, or a politician develops a forceful argument, both expressions employ "force." In its original meaning is the term (non-)analogical – literal? In the two expressions the term is used metaphorically but both expressions refer to literal states of affairs, i.e. the fact that the police are literally using force is literally true and the fact that the argument is forceful is also literally true within the context of argumentation.

Let's look at another example: "space." This concept has an original meaning in the realm or context of the physical world, but harbours a host of meanings in it, which can be utilized in a metaphorical manner in other contexts. *Physical* space, *biological* "Umwelt" (*living space*), *personal* space (in the psychological sense of the word), economic *outlets* for goods and the *area* of legal jurisdiction are all terms imbued with meaning from the original "literal" context of space, yet they receive their meaning or qualification from the specific context within which they are utilized. Although the original nonanalogical concept of space is being used metaphorically in each one of these contexts, the meaning of the expressions in each context is actually literal. Such a view does not commit one to a theory of the primacy of the literal with the metaphorical as deviant or parasitical on the literal. It does however imply that language can hardly be used in any other way than metaphorically, and that metaphoricity requires the recognition of the stratification of reality. Such a claim could be construed as being an argument in favor of the primacy of the metaphorical. To some extent it is, yet there is an important proviso: Acknowledging the cognitive claims of metaphor and its pervasiveness throughout the fabric of language does not rule out the possibility of "literal" meaning of metaphors. But "literal" now means: belonging to a specific realm of reality even though articulated in language borrowed from another. Emotional growth is literally an emotional phenomenon, even though it is being metaphorically described in terms of an analogy to biotical growth.

Related to this is the question whether the acceptance of such contextual fields is not merely an argument in regress. Perhaps this could be solved by arguing the simple claim: "All metaphors are analogies, but some metaphors are more analogical than others!" By this is simply meant that both literal and metaphorical meaning presupposes the primacy of the analogical nature of the ontological constraints. The ontological analogies are indicative of such contexts, which qualify broad spectra of reality and are structures within which all entities in reality function. The implication of such a view for semantics is that each irreducible, incompatible yet multivocal context conditions and constrains the boundaries of literal and metaphorical meaning. It also illustrates the interrelatedness of the various dimensions of reality and the necessity to determine criteria concerning the contexts in which these concepts are legitimately employed. Their presence in an alien context does not necessarily point to theoretical distortion, but they do present the potential for such distortion. "Legitimate" and "alien" contexts point to the fact that language users have a pretty clear notion of what constitutes transgression of contextual boundaries and constraints. One is tempted, at this point, to agree with Searle (1988:155) that one's only access to "the Background" seems to be via the breakdowns in human behavior and experience. Perhaps the mythologizing of metaphor is one such a breakdown experience...

The mythologizing of metaphor

Both normal experience and sophisticated scientific experience require criteria in terms of which it would be possible to determine "semantic conflation" (Spragens, 1973: 41). In scientific theorizing this is important in order to avoid becoming the victims of the situation, "metaphors become myths" (Turbayne, 1970: 28). Perhaps the most convincing argument in this respect is one which argues that if, for example, the identification of aberrations such as ideology was merely a conventional matter, it would be extremely difficult to protest against ideologies! From very ordinary, everyday mistakes to the identification of ideology, human beings make judgements on the basis of categories and classifications, which can not merely be conventional in nature and sociologically determined. The upshot of the argument is that ideology critique requires some theory of universals, which are the stable backdrop against which judgements concerning distortions, abberations and ideology can be made.

As stated above, the question these developments confront us with is at what point(s) one is justified in speaking about absolutization: When Faraday's use of the force concept approximates the parameters of what is later called "field theory" it is obviously already "growing out of" the confines of the mechanistic theory. Moreover his use of the force concept tends towards dynamism. Faraday's force concept was already transgressing the boundaries set by the mechanistic conception (cf. Nersessians, 1984). In terms of the ontology of Herman Dooyeweerd, his dynamic understanding of force tends toward dynamism. Without the contribution his development of the force concept made to the understanding of matter, it would in principle not have been possible (later on) to distinguish the kinematic from the physical modality.

It is especially the problem concerning the *literal dynamistic* interpretation of *force* which presents us with many problems. What does a "literal" reading actually mean? Obviously it presupposes the distinction between literal and non-literal or metaphorical. How could a literal and metaphorical reading of a mechanistic understanding of force be distinguished and how would it differ from a literal and metaphorical reading of a dynamistic understanding? The argument presented here claims that a comparison of the two force schemata will show that it is the role of the positive analogies awarded priority status in the semantic field of the metaphor which determine its legitimate or illegitimate "literal" reading. If one argues that the particulate understanding of matter represents a "literal" understanding of force, then the introduction of the new notion of force is a new "metaphorical" representation based on a pictorial representation in which the *lines-of-force analogy* plays a basic role. In this analogy a different analogical element is given priority status.

In his quest to understand the nature of this irreducible force and under the influence of his metaphysics Faraday later dissolves matter into force and works with the identity of matter and lines of force. The nonliteral analogy or metaphor is transposed into a literal similarity: Matter is (like) moving physical lines (of). This notion of the "lines of force" is laden with a meaning which in principle excludes the possibility of it being material in nature, yet his metaphysics prescribes both reality and particularity to the notion. The attributes of the image (of the lines of force) are projected onto the notion of a "field." The image of the "lines of force" is a conveyance metaphor (MacCormac, 1988:46) that provides Faraday with a means of selecting terminology with which to discuss and reason about the phenomena and to communicate his interpretation of them to others. The concrete analogies he chose to describe the type of action he had in mind were "line-like" phenomena such as rays of light and heat, rings in water, and conduction through wire. The line-like phenomena acted like "curves" which he interpreted as the "motion" of the lines. Because this movement manifested itself "in space" outside (and inside) matter, Faraday concluded that there is *only* force; that matter is *nothing but* force. Faraday thus focuses on one *property* of matter, viz. force, represents it with a spatial image endowed with the characteristic of movement; observes that this property is present in and outside of matter and concludes that this property is the all pervasive physical reality. This gives rise to the *identification of matter and force* and the obliteration of the distinction between an entity (matter) and (one of) its properties, force. Faraday "reified" the curved lines of force: Matter IS moving, curved lines of force in space. In terms of Thesis I this would mean the "literalization" of the metaphor. In terms of Thesis II this would be the replacement of one metaphorical construction with another. But let us finally return to the question of the literal. According to Thesis I (the semantic autonomy thesis), there is a *literal* understanding of force which is the criterion applied to determine the deviancy of the use and/or abuse of metaphor. According to Thesis II force is a multivocal concept which is always used metaphorically, albeit at times in a conventional sense. So, when Faraday is working within the confines of the Newtonian theory, force is a conventional metaphor within the mechanistic framework. Once the parameters of his theory start moving towards the more dynamic field theory the force concept acquires a different emphasis.

The change of focus in the underlying analogy chosen by Faraday gives an indication of a subtle transition in the regulative principle at work in the generation of meaning of the force concept. The literal reading of nature through the mechanistic and particulate concept of force is replaced by a dynamic understanding of matter via a new metaphorical focus of "force." The injunction to read force literally in this case leads to an overextension of the force metaphor. It could be concluded that Faraday was victimized by the literal reading of the metaphor of force, so that his force concept is in actual fact a form of *metaphorical hypertrophy* (Weltman, 1973) brought about on the one hand by his deep religious convictions, but also mediated by the scientific control beliefs central to his metaphysics.

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uffice it however, to mention but a few: Monroe Beardsley (1967: 285 286); Scheffler (1979); Eva Feder Kittay (1987:23); Rothbart (1988); Johnson (1981).

[n]he important debate between Nancy Nersessian and Jarret Leplin (1991:678-686) about this issue is not incorporated here, but could provide significant insights in the issues at stake here.

'ty ties in with the discussion between Boyd and Kuhn (1980;1993) concerning the existence of some form of natural kinds and also with the Hesse-Rorty discussion about universals. (Cf. Hesse, 1985/6).

othbart (1988:389) argues that most scientific vocabulary can be relationally defined in terms of distinct structures of lexemes, or conceptual vectors, the pragmatics of which are determined by the needs of the language community, the history of conventional meanings and the circumstances of linguistic usage rather than by fixed essentialist stipulations.

[)]y thanks to referees of my original Philosophia Reformata article from which parts of this text have been taken, for pointing this and various other issues out (Cf. Botha, 1988).

t is interesting that recent literature (Leddy, 1995:205-222) also argues for the existence of so called "metaphoric essences" that are both discovered and constructed or actualized in human practice. These essences have normative and empirical aspects that are "...not only mutually irreducible but also inseparable" (Leddy 1995:215). This ambiguous character of the essences come to expression in the "to be" or "is" and "is not" that is captured by a metaphor.

ee Strauss, 1972 and Botha, 1971 for discussions concerning the various interpretations of the Root in Dooyeweerd's philosophy.

die (1975: 39) too, refers to the distinction between epiphors and diaphors, and argues that diaphors are more fundamental, root, and "necessary" metaphors which are frequently not recognized metaphors at all because of their absolute fundamental function of organizing experience.