Metaphors as a Bridge to Understanding Educational and Social Contexts

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Abstract: *Educational researchers and practitioners are frequently asking questions about how better to understand educational theory and practice. Through the years, they have employed a variety of both quantitative and qualitative methods to elucidate the world of education. In this article, the author explores the epistemological legitimacy of metaphor analysis as a viable means for qualitative educational inquiry. In so doing, he explores the concepts of the theory of abduction, educational research and social constructivism, categories of metaphors, and netaphorical analysis in educational research. In addition, a review of the literature on educational research that uses metaphor analysis as the primary methodology revealed five major themes.*

Keywords: *qualitative research, metaphors, educational research, social constructivism, metaphor analysis, metaphor theory, qualitative methodologies*

Citation
Jensen, D. F. N. (2006). Metaphors as a bridge to understanding educational and social contexts. *International Journal of Qualitative Methods*, *5*(1), Article 4. Retrieved [date] from http://www.ualberta.ca/~iiqm/backissues/5_1/pdf/jensen.pdf

Introduction

As far back as Plato, metaphors have been a common means with which to express an understanding of complex concepts. Plato (1945) gave us our first great educational and political metaphor as he took us on a personal and social journey into a world of caves and shadows (Halliwell, 1986). Metaphors have filled our language, literature, and art with erudite descriptions of society, relationships, spirituality, and culture. Metaphoric expressions have entered the very soul of our consciousness as we attempt to express our understandings of reality, whether through the realism of the Enlightenment or through the pastiche of postmodernism. One question to ask is whether metaphors have implications for understanding reality and social contexts. Therefore, the premise relevant to this article is whether metaphorical analysis has an epistemological and ontological basis for educational and social sciences qualitative research.

To develop a premise for metaphoric methodologies, in this article, I review relevant thought in the areas of the theory of abduction, educational research and social constructivism, categories of metaphors, and metaphorical analysis in educational research. The article ends with a summary of the theory presented.

The theory of abduction

Kuhn (1970) suggested that academic research has been influenced by two main paradigms of logical thought: deduction and induction. As stated in the *Collins English Dictionary* (Urdang, 1986), induction is

> a process of scientific reasoning by which a general conclusion is drawn from a set of premises, based mainly on experience or experimental evidence. The conclusion goes beyond the information contained in the premises and does not follow necessarily from them. Thus an inductive argument may be highly probable, yet lead from true premises to a false conclusion. (p. 779)

Deduction is defined as "the process of reasoning typical of scientism, whose conclusions follow necessarily from their premises. It is a systematic method of deriving conclusions that cannot be false when the premises are true" (p. 404). From this, positivists have stated that the rigors of science are found through deductive processes, whereas the creativity of science has been relegated to the inductive processes of logical inquiry.

In the late 1800s, Peirce (1992) added another element to the arena of academic inquiry. His philosophies of scientific inquiry suggested that logic could not be simply placed within the general spheres of deduction and induction. He suggested that there was a further element of inductive logic that could be added into the process of inquiry: the theory of abduction. This philosophy of logic had three essential parts that combined to give researchers another way of interpreting and understanding reality. Here are some examples from his philosophies that explore how logic is expressed through deduction, induction, and abduction.

> *Deduction*
>
> Rule: Humans die.
> Case: Socrates is human.
> ==========
> Result: Socrates dies.

Deduction is the most common type of logic. It is through this form of logic that modern society has come to legitimize science, because it reveals specific understandings about our world and reality. In de-

ductive thought, you begin with a rule: "Humans die." You then have a case in which you will hypothesize something about the rule to determine if it is true. If the results confirm the case, then the rule must be true. Basically, you use the rule to determine the results.

Induction

Case: Socrates is human.
Result: Socrates dies.
==========
Rule: Humans die.

Society and academic inquiry have used this logic to look for generalizable patterns that can be placed on society as a whole. As is inherent in the assumptions of this logic, it can lead to false generalizations, however. As is indicated in the example, you use the result to determine if the rule is true.

Abduction

Result: Socrates dies.
Rule: Humans die.
==========
Case: Socrates is human.

The theory of abduction suggests that inductive reasoning could be expanded. This form of inductive logic suggests that the idea of the "rule" could be developed as a "case" of something and not presumed to be a collection of variables that when applied to the logic of deduction or the generalizability of induction leads to a truth. As Bateson (1987) expressed,

> It seemed to me that indeed this was the way I did much of my thinking, and it also seemed to be the way the poets did their thinking. It also seemed to me to have another name, and its name was metaphor. (p. 45)

Bateson offered a vivid example of how the theory of abduction can be expressed through metaphoric thinking.

Syllogism of Grass

Rule: All men die.
Case: Grass dies.
==========
Result: Humans are grass.

The theory of abduction challenges models of inquiry to look at reality through different lenses and to look for unique similarities and characteristics that exist between different variables that have similar properties. Although the scientific logic of the result in this example can easily be disproved, the metaphoric logic creates a whole new level of possible understanding that exists on a more human social plane. On this level of understanding the world accepts that meaning can be derived through the study of metaphors.

This notion, as proposed by Peirce (cited in Houser & Cloezer, 1992), supports a multi-epistemological approach to educational and social sciences research. Peirce indicated, "We can conclude that methods are embedded in commitments to particular versions of the world (ontology) and ways of knowing the world (epistemology). This means that no method is self-validating, separable

from an epistemology and an ontology" (p. 13). In other words, method must be consistent with methodology, and metaphor analysis can be one of those methodologies.

It was not until researchers' intentions moved beyond the natural world and into the psychological and social ones that the voices and deductive procedures and methodologies of positivism began to be questioned. It was in this realm of philosophical questioning where Sawada (1990) argued, "The incommensurability of the paradigm shift between quantitative and qualitative research methodologies deems the debate invalid. Each is its own paradigm, in its own sphere with its own assumptions. One is not better than the other, merely different" (p. 3). The basic notion here is that the legitimacy of one particular form of logic should not have precedence over another. Other forms of inductive thinking can also be valid means for understanding reality.

Kuhn (1970) also expressed ideas about multi-epistemological approaches to academic inquiry and supported the notion that knowledge in all sciences is an ongoing historical and social achievement characterized by change. In other words, logic is neither linear nor teleological. His philosophies further suggested that research is no longer about discovering a single, unchanging truth. Research is about co-creating reality through reflective questioning of historical, cultural, and political codes of community. It is within this paradigm of scientific inquiry that hermeneutics, interpretivism, postmodernism, phenomenology, and narrative inquiry began to flourish.

Educational research and metaphors

At the essence of all these methods is the assumption that research is a social activity and that the context of study is founded in human interaction. As such, it is essential that the methods of research closely align with the lived experiences of the participants, so how one perceives and understands education will affect the research methods selected. If, for example, I believe in behaviorist educational philosophies, then a positivistic research method is a relevant model of inquiry. This is because research into educational behaviors is well suited to a controlled research context, predetermined outcomes, generalizability, and measurable results. Historically, however, educational research and theory have been defined by the deductive voice. As was discussed in the previous section, current perceptions have opened up social science research to multiple realities, and these multiple realities work together to increase the interpretation of life, learning, and the organizational structures of educational institutions, for example.

Within this paradigm, shifts in educational research theory came about as academics began to ask questions about not only the research context, but also the research process itself. When it came to data collection and analysis, the issue was not just meaning, but whose meaning. "These substantive shifts in how teaching was viewed were accompanied by movements in research methodology that centered on the interpretive worlds that were being overlooked in traditional process-product research" (Freeman, 1996, p. 734). One of ramifications of this shift was that the realms of inquiry moved from external contexts to the internal world of educators. Researchers began to wonder why teachers did the things they did in classrooms, why students responded in the ways they responded, and why administrators made the decisions they did. Researchers attempted to analyze and access participants' perceptions, views, and understandings of their educational world. They found this shift difficult because the research context was difficult to measure under traditional research practices; as well, it was hard to know which method and theory to apply. Further to this, finding academically reliable ways to collect the data made this shift even more epistemologically complicated.

Looking at all the variables, it seemed as though the research path led scientists to the thoughts and perceptions of the participants. With this assumption, educational scientists turned to language as a credible means for revealing the inner world of educational practitioners. Some of the early work in this area (Beers & Bloomingdale, 1983; Byrd, 1977; Faunce & Wiener, 1967; Gallup Organization, 1969; Lewis, 1973; Payne, 1970; Regan, 1967)T revealed that the research process could gain a greater understanding of the educational world through accessing the thoughts and perceptions of teachers. Teachers were taken at their word, because those words were seen to represent their thinking. In other words, language provided the medium through which the external world could get a picture of the educators' internal world. Teachers and administrators could describe their perceptions in words to the researcher and the

researcher could then study and analyze those words for meaning. The researcher now had an academic foundation on which they could make sense of the educators' inner world through language.

A whole new door of educational analysis was opened up as researchers turned to the language of teachers, administrators, and students better to understand the world of education. Numerous qualitative methods appeared in a greater number of research projects and journal articles as the nature of educational research expanded and became more diversified. As well, this shift in educational research also changed the nature of the relationship between the researcher and the participant. In this paradigm of qualitative educational inquiry, reality was not definable and was not something that could be hypothesized. Instead, the participant and researcher co-created reality through reflective processes, of which narrative inquiry led the way in placing importance on voice and language as a means of revealing the participant's story and reality.

Two influential researchers who have furthered language and narrative as a valid means of educational inquiry are Clandinin and Connelly (Clandinin, 1985; Clandinin, Connelly, & Michael, 1986, 1989, 1996a, 1996b; Connelly & Clandinin, 1990, 1993; Connelly, Clandinin, & Helen, 1997). Their work revealed that language is a credible vehicle for collaboration between the researcher and participants in opening up new interpretations and understandings of education. Out of their work emerge co-constructed accounts of the educator's reality and working world. These narrative methods were able to shed greater light on the educator's inner landscape. Methodologically, narrative inquiry relies on language devices such as image, metaphor, simile, and description as means of data analysis, as these are the language tools most commonly used by participants to derive meaning from a complicated reality.

This is how metaphors begin to have epistemological and ontological validity as an educational research method. One of the underlying assumptions of any research endeavor, whether qualitative or quantitative, is that there is an attempt to understand better the environment being studied. In attempting to make sense of the research context, the researcher has the desire to improve it, change it, or know it better somehow. To achieve this, researchers and participants often draw on preexisting knowledge and practice to account for current experiences. This is exactly what metaphors accomplish. Metaphors enable the connection of information about a familiar concept to another familiar concept, leading to a new understanding where the process of comparison between the two concepts acts as generators for new meaning. Figure 1 provides an illustration of this idea.

Metaphors have what Schön (1983) classified as a "generative" quality in that they operate as a process in which new perspectives on the world come into existence. For example, Morgan (1997), in his book *Images of Organizations*, took the generative capabilities of metaphors and applied them to organizations, thus adding new insights into how people both perceive and practice work life.

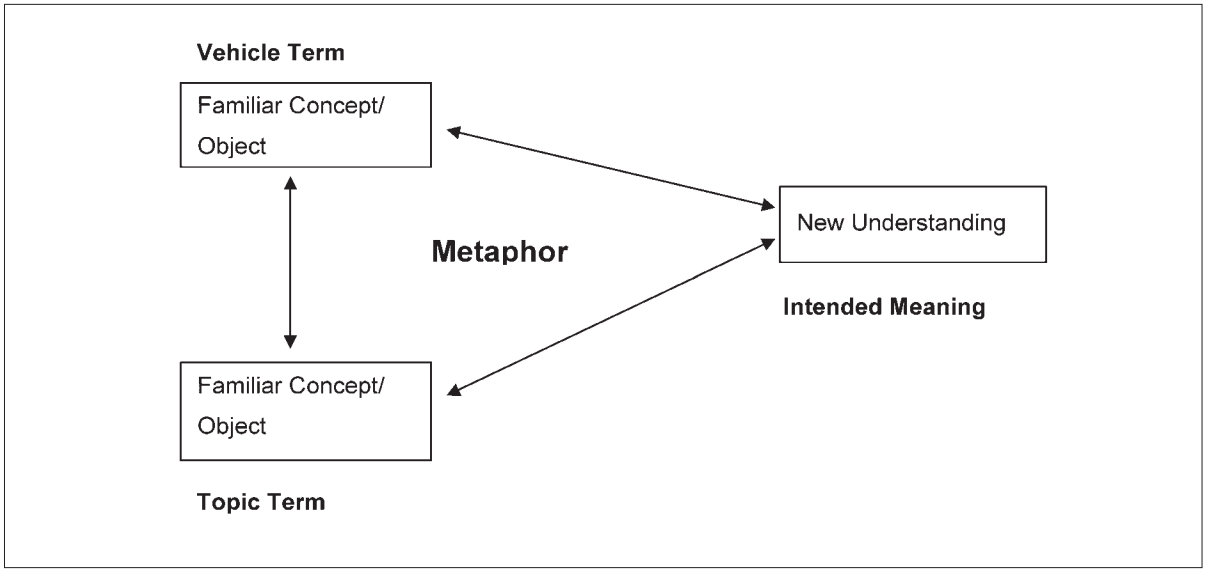

Figure 1: Metaphorical paradigm (Adapted from Lakoff & Johnson, 1980)

What makes the analysis of language and narrative unique as a method is that it requires active participation between the participant and researcher to find shared meaning. The interpretation of the participants' inner world depends heavily on language as a shared means of expressing that world. It further depends on the skills of participants to describe accurately their perceptions and the skill of the researcher to assess accurately that interpretation. Therefore, when participants make a metaphoric connection of their perceived educational reality with the actual educational reality, it now becomes the researchers' responsibility to rise to a similar interpretation based on the language used. This suggests that the conventional distinction between data gathering and data analysis blurs as the collection and interpretation of data become reflective and symbiotic.

The notion expands further, as the research process reveals that words are not expressions of participants but are instead expressions of participants' connection within a social system—their connection with the educational social system. Language data such as metaphors offer entry into those participants' relationship with their educational reality. The validity of that experience depends on the researcher's ability to study the language data as an expression of perception. Language and metaphors must be studied for how they are presenting the world rather than simply for what they say about that world.

Hermeneutic methods such as narrative inquiry have helped to elucidate that voices and language exist within the participant's social reality. Then, within this paradigm, researchers must realize that what they hear and understand is also a reflection of the participant's involvement in that educational reality. There is the base assumption that participants use language and all its devices for social reasons, because there is the root desire to have the participant and the researcher involved in the same social community. Thus, through metaphors, for example, the researcher is able to enter into the inner world of the perceptions, understandings, and experiences of the participants. As Greene (1994) stated,

> Metaphor is at the center of language and it is the cognitive capacity that allows human beings to construct alternative modes of being and to envisage what might be if things were otherwise. It is metaphor that enables us to make creative sense of what is around us and what we carry in our memories. (p. 456)

Language as a social system

Arising out of the Enlightenment, academic inquiry has focused on ideas and thinking. This has come about as a direct result of Cartesian philosophies that placed the mind central to epistemology and ontology. Only in the 20th century did powerful new metaphors begin to change the nature and direction of epistemology. It was during this revolutionary time in research that traditional facts became problematic, because the root metaphors that had anchored existing paradigms were no longer assumed as reality (Sawada, 1990). Russell (1956) and Wittgenstein () believed that the structure of language was the process through which meaningful thinking occurred.

In philosophic thought, language had been a dominant source of meaning and truth. Prior to the 20th century, though, meaning was found in the search for the historical origins of language. Within the framework of this new language paradigm, the meaning of language was found in its function as a system, not in determining where language came from. This language paradigm developed out of the formal school of linguistics called structuralism, of which Saussure (1959) is a prominent figure.

Saussure (1959) proposed that as a system, language meaning is composed of the signifier and the signified. The signifier is the word that carries meaning, for example "dog." The signified is the concept or object to which the word refers. The combination of signified and signifier makes up a sign. The process that binds together signifier and signified to produce a sign is called signification. The essential concept for Saussure was that it is a mere relationship and has no real meaning outside the process of signification. This is because the choice of the sound of the signified is not imposed on the structure because of the signifier itself. For example, the animal dog does not determine the word *dog*.

This suggests an arbitrary relationship between the signifier and the thing that is signified. Saussure (1959) then proposed that signification must occur through collective learning. In other words, you will find the connection not in the meaning of the concept but in its use in social practice. To Saussure, language meaning appeared to be a product of a system of representation that was itself meaningless and

that functioned by an operational code of binary operations: signified and signifier. These two elements are further open to combination and substitution based on social practice and collective learning. For example, I can say, "Brian drove the car." In this sentence, the subject, verb, and the object have been combined to generate language meaning. I can also substitute the noun, verb, and object to continue to generate new meaning: "He drove the car," "They drove the van," and "She steered the car." What this indicated to Saussure was that language combination was not rigid and predefined but was interchangeable through processes of substitution.

Saussure (1959) believed that the processes of combination and substitution were highly complex and accounted for the symbolic use of language meaning as well. In other words, language use could move beyond literal meaning combinations and into nonliteral meaning combinations. It is at this level where the processes of combination account for the language devices of metonymy and synecdoche. Metonymy is when we use one thing or concept to refer to another that is related to it. Examples are when we say, "He's in music," meaning the music industry, or when we use *crown* to refer to royalty. Synecdoche is the other type of language combination use, and this occurs when we use the part to refer to the whole. Examples in this category are when we use *arm* to refer to a baseball pitcher or when we say, "I need some strong arms to help me," meaning a person with strong arms.

What separates this type of language device from metaphor is that the two things or concepts have to be related. In metaphoric usage, the two things or concepts do not have to be related. This is why metaphor fits into the language category of substitution, further enforcing the binary opposition theory proposed by Saussure (1959). What occurs in metaphor is a process of substitution that involves a perception of similarity leading to meaning, not an actual relationship, which is necessary for metonymy and synecdoche to generate meaning. One can see it happening in metaphoric expressions like "an erosion of morals," "the corporate ladder," or "the game was a pressure-cooker," At a literal level, the comparisons are not true, but instead, the comparisons acquire their saliency within the nonliteral level of language usage.

Within the realms of nonliteral theory, there is a strong link between language, perception, knowledge, and meaning to the point that language becomes a means to create and understand reality. Here is the point at which metaphoric theory bifurcates. In representational theory, language represents reality, and so it must be literal. In nonliteral theory, language functions as an open system and acts as a means with which to create reality. What is unique about metaphoric theory and interpretation is that the process of understanding is based on a saliency test, so instead of deriving language meaning through sentence combination level codes, meaning is derived through sentence substitution level codes. In other words, one substitutes word definitions to understand meaning with the qualities and characteristics that the words embody. From there, the listener must search for the degree of saliency that exists between the two terms being compared, so metaphoric theory does not deny the literalness of words but suggests that language meaning goes through social processes.

Take, for example, the well-known statement from the movie *Forest Gump* (Zemeckis, 1994):

Life	is	a	box of chocolates.
S	LV		SC – noun

At the semantic level, the subject complement (SC - noun) works to modify the subject (S) and draw a connection through the linking verb (LV) at a literal level. In other words, life = a box of chocolates. Syntactically, the sentence makes sense, because it maintains proper grammar rules. At a metaphoric level, the listener or reader begins to realize that the codes of literal language usage or combination theory do not apply, because life is not literally a box of chocolates, so the listener switches to substitution theories to deduce that this statement must be a metaphor. Here, we begin to see more clearly how the binary opposition theory comes into play in determining language meaning. If the sentence is not a literal statement of connection, because combination rules do not apply, then it must be a nonliteral connection, because substitution rules apply.

When the listener shifts to understanding the statement as nonliteral, then understanding the definitions of words no longer derives language meaning. Instead, the listener understands language meaning through looking at the qualities or characteristics of each word and then searching out the degree of sa-

liency that exists between the comparative concepts. The metaphoric resonance occurs when the characteristics of the words interact, not when the literal meanings interact, as they do in representational language use. This process further assumes that language operates within a system that is socially constructed.

Another example is provided to show how metaphoric theory depends on the socialness of language. This is an important process, because it aligns with the research epistemologies that assume participants' and researchers' interacting in a social reality with language data as a representation of that social reality. Figure 2 is adapted from Fawson (1994; Fawson & Reutzal, 1994) and the Salient Characteristic Analysis Technique (SCAT). This technique is relevant to metaphoric theory, because the processes of language analysis move from studying the literalness of language to interpreting the characteristics of language signifiers. Metaphoric meaning is enhanced when language is understood through analyzing the characteristics associated with words and not necessarily just the definitions of words.

This process requires an act of co-creation between the speaker and the listener. Each must work together to ensure that similar language meaning is derived after a metaphoric statement is made. Following this initiatory process, the next level of analysis is to look for the imbalance in the saliency between the base domain and the source domain. For example, in the metaphor, "This department needs to become more specialized," a university department is being compared to a machine that functions more efficiently through the specialization of work tasks. Here, the department is the source domain, and a machine is the base domain. The characteristics of the base and source domains must be identified to demonstrate the nature of the imbalance. As is evident with this metaphorical analysis approach, low saliency in the source domain and high saliency in the base domain is necessary for the metaphor to work.

To clarify, high saliency means that the characteristics are closely related to the object or concept. Low saliency means that the characteristics are not closely related. Therefore, referring back to the figure, if you reverse the order of base and source domain, the metaphor will not work: "This specialization needs to become more departmentalized."

Up to this point, we have come to understand that language functions as a system and that language meaning is derived through social processes. As a system, structuralism suggests that language operates through binary opposition processes such as combination/substitution and metonymy/metaphor. Within this binary opposition paradigm, combination and metonymy interact at the representational level, where language functions as a literal or near-literal description of reality. On the other hand, substitution and metaphor interact at the nonliteral level, where language can function to create reality. In this paradigm, there are two subtheories that account for how metaphor functions to create reality: the interactionist theory of metaphor and the constitutive theory of metaphor (Tarsitani, 1996).

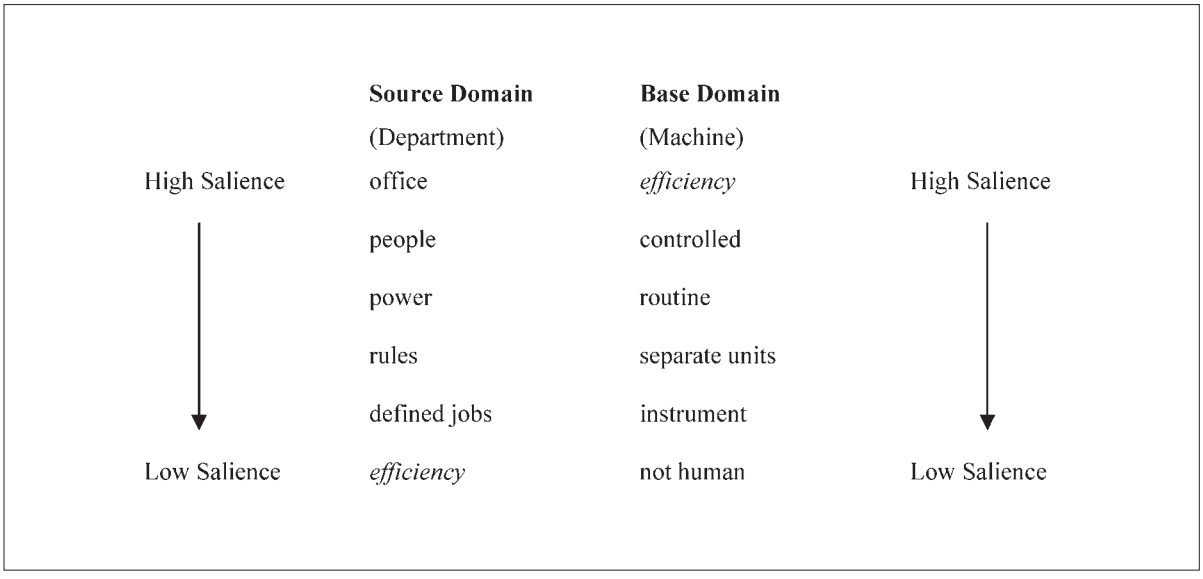

Figure 2: Salient Characteristic Analysis Technique

Before we can obtain an accurate understanding of how these two theories work, it is necessary to describe in more detail the elements of a metaphor. As discussed earlier, a metaphor is the combination of one familiar concept or object with another familiar concept or object. These two components have been given different terminology by different writers, of which the more common ones are base domain and source domain (Fawson, 1994), and vehicle term and topic term (Goatly, 1997). For consistency, the latter terms will be used throughout the remainder of this article. The topic term is the object or concept that is being described. The vehicle term is the object or concept that is being used to create a link or an analogy between the vehicle term and the topic term. Goatly added another element to metaphors, which he classified as the ground term. The ground term helps to define, categorize, or label the similarities that exist between the vehicle and topic terms. The ground term is not a necessary element of a metaphor and is optional. Consider the metaphor "That person drives like a wild animal." Here, "that person" = the topic term and "wild animal" = vehicle term. The effort is not to describe the vehicle term better but to get a clearer picture of the topic term through the linkage. By creating an association between the vehicle term and the topic term, it is hoped that a new awareness or understanding of the topic term will be raised.

In this particular metaphor, the association of the salient characteristics between the topic and vehicle terms is left up to the listener. In other words, the listener must determine how "the driver" and "the wild animal" are metaphorically salient. This leaves the metaphor open to a broad spectrum of interpretation and misinterpretation. To help clarify the saliency, a ground term can be added to the metaphor: "That person drives like a wild animal. He's out of control." Now, the characteristic of being out of control, which is a perceived salient characteristic of a wild animal, is linked to the person's driving.

The interactionist theory of metaphor suggests that both the vehicle and the topic terms are describable in literal language. From there, the metaphorical operation consists of a description of the topic term in words normally used in connection with the vehicle term. This process further assumes that there is some kind of analogy or similarity between the two terms and that, on the basis of this similarity, there are properties or characteristics in the vehicle term that find their correlate in the topic term. This leads to the philosophy that the metaphor is not only a comparison between the two terms but it also creates a semantic resonance between them. In other words, this semantic resonance is the result of the interaction that occurs between the topic and vehicle terms, hence the interactionist theory of metaphor. This theory further suggests that the interaction between the vehicle and topic terms creates the metaphoric similarity, making it possible to see new features of the topic term, so the primary purpose of metaphors in interactionist theory is to generate an alternative perspective for viewing and understanding certain characteristics of the topic term.

In the constitutive theory of metaphor, the speaker uses the metaphoric association because he or she perceives that existing language is not capable of adequately describing the topic term or that the listener does not possess the necessary language to understand the topic term. To adjust for the perceived inadequacies of language, the speaker shifts to the metaphoric processes of accommodation and assimilation. Piaget (1937) determined that these two processes come into action as we attempt to link our language with our experience or environment. As he conceived it, assimilation occurs when an unknown element of our experience or environment is made understandable to us by assimilating it into existing knowledge structures called schemata. Accommodation occurs when we actually change existing language meaning in response to changes in the environment or knowledge about experience.

For example, I might see two animals performing a social act that I have never seen before. Because I have never seen it before, I do not have the proper language to account for what is going on. At this point, I can use metaphor to deal with this discrepancy between my understanding and the actual act itself. I might say, "Those two animals are doing a funny dance." What I have done is assimilate this experience (the animals' social act) into an existing schema that I know (dancing). In applying the salient characteristics of dancing to the social act that I see before me, I am attempting to describe my perception of what the two animals are doing. In other words, I see the two animals face to face, moving in coordination in some kind of pattern. The two animals are probably not dancing, but with the existing language schemata available to me at this point in time, it is an accurate metaphorical assimilation.

Now, let us say that a naturalist happens to come by as I am watching these two animals. The individual explains to me that the two animals are performing a mating ritual. Furthermore, this ritual is performed in the exact same way by all animals within this species, so scientists now classify it as a mating

dance. Because I now have accurate information that has changed my knowledge about the world, the metaphor can now be accommodated into a new schema and can now be the basis for assimilation processes with future similar experiences.

Hence, metaphoric theory suggests that language is a social act and that understanding language as a system gives that language meaning. What is important about this is that it matches with the conceptions of qualitative educational research methods, which suggest that participants use language as a means through which they describe their perceptions about their social reality, and also that language, as a description of the educational social reality, is an accurate and viable means of accessing that world. Based on this discussion, it now becomes clearer how language, research, and metaphoric theory merge together on an epistemological praxis.

Categories of metaphors

In attempting to apply the theories of metaphor to the epistemologies of academic inquiry, we must understand the different categories of metaphor and also understand their significance to educational research. There are four general categories of metaphors: active, inactive, dead, and foundational. Active metaphors carry metaphoric saliency between the topic and vehicle terms. An example is "This school is a real melting pot." In this metaphor, the topic term of multiculturalism is being linked to a large cooking pot (vehicle term), where things can be melted down and blended together in a harmonious mixture. The reason that this is active is because the listener easily understands the salient characteristics of both terms and can determine the metaphoric resonance between them. Furthermore, in active metaphors, the topic term must be interpreted through the vehicle term. The saliency between the topic and vehicle terms is made difficult, because the vehicle term carries multiple literal definitions. This makes it difficult for the listener to know which salient characteristics to apply to the topic term. This homonym effect greatly weakens the metaphoric resonance. Take this metaphor as an example: "The car race ended in a massacre." In this metaphor, "car race" is the topic term and "massacre" is the vehicle term. The problem with this metaphor is that *massacre* has multiple meanings. One literal meaning is that of massive death incurred during battle. The other meaning is that of a great victory over the opposition in a game. Therefore, the listener might apply the salient characteristics of the first meaning and believe that there was a big accident at the end of the race, with many people being injured and killed, or he or she might apply the salient characteristics of the second meaning and believe that the victor won by a huge margin over the rest of the competitors. It is clear here that the difference in language meaning is great, and this makes the resonance inactive.

The third general category is dead metaphors. Dead metaphors have lost resonance, as the saliency between the topic and vehicle terms are now inaccessible because of a lack of knowledge or experience with the characteristics of the vehicle term. In essence, the statement has been accommodated into our language schemata, and we perceive the statement no longer as a metaphor but as a common expression, colloquialism, or idiom. For example, "Working downtown is a real rat race." In this example, the topic term "working downtown" is associated to the vehicle term "rat race." The salient characteristics of rat race are busy, fast-paced, confusing, and so on. What makes this a dead metaphor is that when listeners hears "rat race," they automatically associate it with the terms listed above. The association of the term to scientific studies in which rats were placed in mazes has been lost. In other words, the original resonance of the vehicle term has passed out of our experience.

The fourth category has been termed foundational metaphors, or "deep surface" metaphors (Schön, 1983, p. 149). A deep metaphor is a metaphor that defines the centrally important features of the concept being studied. Schön indicated that deep metaphors form the basis on which all subsequent surface-level metaphors are formed. In the metaphorical talk used to describe organizations, we have gone beyond the generative state, and the saliency has been incorporated into our thought processes. For saliency to exist, the listener must approach the metaphor with some preexisting knowledge, and the listener must be able to identify the shared characteristics between the topic and vehicle terms (Fawson & Reutzal, 1994). The result is that we no longer need a ground term to enhance the metaphorical connection between the topic term and the vehicle term. When this occurs, the metaphor becomes foundational and becomes a natural

expression of our perceptions regarding organizational practices. For example, an organization as a machine is a foundational, or deep, metaphor.

Metaphorical analysis in educational research

Knowledge of these categories of metaphors has helped to guide and frame the ways in which metaphors have been studied in educational settings. A general search of the ERIC databases yielded 1,129 studies having metaphors and metaphor analysis as the central method for the study. A more detailed search of the literature in this area revealed five dominant themes as to how metaphorical analysis has been used in educational research. Note that these themes are not presented in order of importance or frequency. The themes are representational of the work in this genre of educational research.

Theme 1. Educational studies within this theme involve attempts to raise awareness of the modern metaphors that have legitimized social processes along patriarchal and hierarchical voices of power and politics. These types of studies, in a larger perspective, support postmodern philosophies in questioning societal and cultural structures that seek to legitimize the center and marginalize the periphery. Most of the metaphors in these studies look for dead or foundational metaphors. Relevant research in this area includes that by Armstrong (1997); Browne, Hiers, and Quinn (1998); Brunner (1997); Mazzei (1997); and Mullen (1997).

For example, Armstrong (1997) looked at how culture influenced the teaching and content of environmental education. Findings from the study showed that metaphors were a dominant means for transmitting culture and ideology and that these metaphors continued to promote stereotypical perceptions of the inequalities between social classes, ideology, and resource use.

In another study, Mazzei (1997) used ethnographic methods to look at how silence could be probed as a filter through which to understand metaphors present in and absent from conversations. Findings from the study conducted with White female participants revealed that omitting information from conversations on race was deliberate and based on dominant metaphors that legitimize White-maleness. Furthermore, because whiteness continued to be construed as the norm, it was rendered silent in the discussion. Participants tended to identify themselves not by race but, rather, by their identity as White women. Mazzei went on to stress that research into these kinds of metaphors could open up the possibility of multiple meanings in silences, leading to new areas for research.

Theme 2. Another dominant theme emerges from studies that attempt to raise an awareness of metaphoric usage within an educational setting that will lead to change in educational practice, policy, and/or roles. These studies tend to focus on active metaphors. Relevant research in this area includes that by Carr (1997), Chapman (1997), Clarken (1997), Jones (1997), Peel and McCary (1997), and Phillips (1998).

In one such study, Clarken (1997) explored how metaphors could be used to improve the understanding of the roles and responsibilities of teachers. Through an analysis of the data, five dominant metaphors revealed that teachers see themselves as parents, gardeners, prophets, pearl oysters, and physicians. Clarken went on determine that by using metaphors and visual images, teachers could arrive at a deeper understanding of their various roles and responsibilities as educators.

In a similar context, Chapman (1997) completed a study that focused on three teachers and their ways of teaching problem solving. In the process of the study, analysis revealed that participants unconsciously constructed personal metaphors such as community, adventure, and game that became the basis of their conceptualization of problems. The researcher suggested that this type of metaphor analysis could be promising in enhancing mathematics teacher education and in problem-solving research.

Theme 3. Another theme of educational research using metaphors as the primary focus emerges from studies that developed techniques and procedures for measuring, understanding, and interpreting the use and instruction of metaphors in educational and literary writing. Studies under this theme explore all four general categories of metaphors, because they are prevalent in writing. Relevant research in this

area includes that by Bishop and Cates (1996), Deignan, Gabrys, and Solska (1997), Hitchon (1997), Mate and Malicky (1990), Roshkow (1988), and Rudden (1994).

For example, Rudden (1994) studied how instruction in metaphor influenced the revision processes of third and fifth graders through the analysis of pre- and posttreatment writing tasks. Analysis of the data showed that instruction increased the usage of metaphors in the students' writing samples and that it improved the students' ability to perceive common experiences differently. Furthermore, students enjoyed metaphoric writing expressions over the literal.

Realizing that we live in a multicultural society, Roshkow (1988) studied how cultural experience and world knowledge affected the comprehension of metaphors in literature. The study was based on the premise that students would encounter difficulty in interpreting metaphors when their cultural schemata were insufficient or inappropriate to ensure comprehension. The findings showed that students had difficulty comprehending metaphoric expressions that had cultural, regional, and societal specific overtones. Through specific instructional and pedagogical strategies, this problem could be partially overcome thus increasing reading comprehension.

Theme 4. Educational research studies that fit within this theme explore the usage, implementation, and/or analysis of educational metaphors in student, school, and institutional writing. These studies also explore all four general categories of metaphors. Relevant research in this area includes that by Elford (1996), Godina (1995), Gottfried (1997), Herbst (1997), Johnson-Sheehan (1997), and Rosenfeld and Bhusan (1995).

For instance, Elford (1996) developed a conceptual framework for the analysis of performance indicators based on a discrepancy model of evaluation using three primary metaphors: mechanical, medical, and economic. Elford proposed that the Alberta plan for performance indicators in the postsecondary sector were seen as reflecting an economic metaphor of performance that connotes the message that fiscal effectiveness is more important than educational effectiveness. Furthermore, the mechanical metaphor is dominant within the writing of the performance indicators, suggesting a failure to consider the value of student outcomes. The study concluded with the recommendation that closer detail to the types of metaphors used in educational policy writing can assist in promoting positive relationships between policy makers and educators.

Rosenfeld and Bhusan (1995) studied the problems that can arise when chemistry students fail to recognize the metaphorical status of certain models and interpret them literally. Findings from the study indicated that literal interpretations of metaphoric models caused the students to form misleading perceptions of chemistry-related phenomena. The authors suggested that this problem could be lessened if instructors helped students to recognize and understand the metaphoric intention of the models presented in their textbooks.

Theme 5. The final metaphorical analysis theme dominant in the literature on qualitative educational research characterizes studies that look at how participants use metaphors to describe existing educational states. These studies tend to study dead and foundational metaphors but can include an analysis of active and inactive metaphors. These studies explore research contexts at the organizational, classroom, student, and learning level. Relevant research in this area includes that by Bibik (1997), Dooley (1998), and Karbach (1997).

The teaching context has been a much-studied area, and now metaphorical analysis has helped to increase understanding of this complex practice. Bibik (1997) investigated personal teaching metaphors as a means of determining teachers' beliefs about teaching. One hundred four teachers were asked to respond to the question, "A teacher is like…". Analysis of the resultant data revealed seven metaphors, with the teacher being perceived as parent or protector and group leader as dominant metaphors. In turn, these metaphors were found to guide and frame student-teacher relationships. Bibik concluded that an understanding of one's personal metaphor for teaching would assist in reflection about one's practice. This awareness could then help to increase the effectiveness of teaching.

Another example of this kind of educational research would be Dooley's (1998) study of a preservice teacher's images and metaphors about teaching and learning to see how they affected classroom instruction and behavior. The study showed that the participant came into the practicum with misleading and false metaphors regarding what it meant to be a teacher and what kind of teacher the

participant wanted to be. Data from journal entries, observations, and interviews indicated that examination of internal metaphors encouraged the participant to reflect on prior beliefs, assumptions, and approaches to teaching. This reflective process helped the participant to understand how his root metaphors were causing problems in instructional planning and implementation. The study also helped to show that language analysis was an essential tool to help the participant bridge the gap between philosophy and practice.

Summary

What all this indicates is that metaphors are a valuable research tool for gaining new insights into education practice and theory. As Bredeson (1996) commented,

> Since language is our means to communicate direct experience, meaning, and understanding, it becomes important to analyze which metaphors communicate individual experiences, perceptions, and social organizations called schools. Metaphors permit us to expand opportunities for assessing multiple and paradoxical images and realities in organizational life and to assess the relationship between thought and action. (p. 5)

Metaphors open up the educational world before us in new ways that researchers are just beginning to discover. They can be a means through which to see the good, the bad, the positive, the negative, the myths that limit growth, and the ideas that expand possibilities. "Metaphors put forward proposals for another way of looking at things and of grasping inchoate intimations of possibilities. They help us to strive better towards grasping the visions and truths and attempting to share in them" (Aspin, 1984, p. 23).

Beyond this, metaphorical analysis has two overriding characteristics: its rhetorical function and its reference to theory (Elliot, 1984). In their rhetorical capacity, metaphors have a central role to play in qualitative educational research because, by their mere nature, they can stimulate imagination, arouse feeling, and prompt action and change. "An educational metaphor is not an image which presents a concept, however, but a concept with which another concept, that of education, is identified" (p. 45). In their second capacity, metaphors acquire their real evocativeness when they are linked to theory. In this realm, morality, politics, metaphysics, epistemology, and ontology converge on an academic praxis to add insight to educational reality. This is clearly evident in the metaphorical educational studies presented in the previous section.

Lawton (1984) added a third and important dimension to metaphorical inquiry, and that is its link to practice. He suggested, for example, that metaphors have had a direct impact on the way in which education is understood and practiced. One such metaphor is the "objectives" metaphor. This metaphor describes education as an expression of behaviorist psychology, and perceives participants within education as machines. This metaphor dominates educational practice by enforcing strategies associated with testing and measuring the output rather than attempting to improve the quality of the input. As he stated,

> Many metaphors have a direct influence on practice. The objectives metaphor has the effect of limiting objectives and converting education into a closed process rather than an open-ended experience. Curricula tend to become rigid and geared to measurement rather than development. (p. 85)

Browne, Hiers, and Quinn (1995) also recognized the effect that metaphors can have on educational practice. They focused on the factory and consumer metaphor that is used within higher education. The factory metaphor defines the university as an assembly line. Like products, students go down the assembly line, with teachers as workers squirting into them knowledge from different disciplines. The result of this process is unified products that are the same. Related to the factory metaphor is the consumer metaphor, which affects practice through an educational philosophy that is based on the distinction between needs and desires and who is best to make those distinctions and choices. Thus, market philosophies that are inherent in the consumer metaphor sugarcoat the more important educational responsibilities of civic

duty and democracy. Browne and colleagues argued that the immediate wants associated with the consumer metaphor fail in an educational system that is based on long-term benefits.

What is important to note is that metaphor assumes a central position in educational theory and practice. It is not a mere linguistic device for adding color to dialogue. It is a salient feature of our thinking and our discourse about education. Because metaphoric theory sees language as a social act, and because educational epistemologies see research as a social act, metaphor and research are inextricably linked. As such, metaphors enable us to analyze a greater consciousness of the implications of the theory and practice that is employed in education. The relevancy for educational realities is that our educational world has become complacent of the metaphors that dominate educational discourse and perception. As Taylor (1987) stated,

> An unreflective use of metaphor is indeed dangerous. When there is no longer any awareness of the saliency, when the machine or the consumer no longer offer useful aids to reasoning but acquire the status of literal truth, then much is at stake. (p. 8)

In reflecting on the premise of this article, there is an epistemological basis for using metaphors to better understand the social contexts of education theory and educational practice. The hundreds of studies already conducted using metaphor analysis as their primary methodology support this notion and have legitimately invited readers into new educational worlds that we might not have seen otherwise and have thus expanded theory and offered us directions for improving practice.

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