

# **IMAGINATION IN COGNITION: THE PURPOSE OF THE ARTS**

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## **The Problem and Purpose**

In this paper I present a view of imagination from a cognitive perspective. Like feelings and emotions, imagination is one of those prickly topics with a history of exclusion from the realm of the cognitive. My purpose is to portray the role of imagination in cognition, to explore its potential for developing knowledge, understanding and culture, and raise questions about its purpose in education.

The paucity of psychological studies of imagination is not the result of oversight. It was widely discussed in literary and philosophical circles throughout the 19th century. Its neglect throughout most of the 20th century reflects the constraining influence of positivism, a legacy from which we have yet to shake ourselves free. Behaviorists avoided the study of mental imagery and imagination because they did not have access to the internal experiences and sensations of individuals other than through the documentation of subjective impressions (Gardner, 1985, p. 324).

## Imagination in Philosophy.

For many years a bias ran through psychology which excluded mental imagery from the domain of the cognitive. Like Plato's bias against the arts, the imagination of the artist, (called by him inspiration) was suspect since artists were under the control of the muses and hence incapable of willing their own actions.<sup>1</sup> Lacking such control, artists could not be expected to have a knowledge of the source of their powers. They were merely instruments of the divine, not even to be regarded as the author of their creations. Genius was a gift from the gods - extra-human in origin!

By the seventeenth century Descartes established twenty-one rules for the direction of the mind as a defense against "the blundering constructions of the imagination" (Jones, 1952, pp. 662-663). Truth was neither to be found in the poetic allusions of literature nor in the fantasies of the visual arts, but in the certainties of logic, mathematics and geometry. Rationalism was thus born. A rationalist believed that the world consists of physical substances (bodies) and mental substances (minds), and that the rational mind, as a mental non-physical substance, was essentially disembodied.

Furthermore, the rationalist would say that what makes us human is our rationality which is of the mind, not the body. Reason may use the material provided by the senses, but it is not itself an attribute of bodily substance. If clear and distinct ideas could be formed about objects and events in nature, then these would likely reflect the structure of nature, herself. Nature is thus a rational world. In addition, the cognitive status of imagination is suspect since the images in the imagination have their origin in bodily and sensory encounters where they are subject to distortions and imperfections. Philosophers writing in the empiricist tradition, such as John Locke, were also wary of figurative speech as a devices that "are for nothing else but to insinuate wrong ideas, move the passions, and thereby mislead the judgment" (Lakoff & Johnson, 1980, p. 191).

By the end of the 18th century imagination fared somewhat better with Immanuel Kant recognizing it as a "productive faculty of cognition" (Kant in Hofstadter & Kuhns, 1964, p. 318). Using the faculty of imagination, the mind could create "another nature" from imagery given it by actual nature. Moreover, imagination could entertain. "When experience becomes too com-

monplace, we remold it." Kant also argued that imagination enables us to "feel our freedom from the laws of association that organize empirical experience, so that the material supplied by nature can be fashioned into something different, something which surpasses nature." Furthermore, imagination is creative; it brings intellectual ideas into movement, "thus enlivening the mind by opening it to the prospect of an illimitable field of kindred representations" (Kant in Hofstadter & Kuhns, 1964, p. 318)<sup>2</sup>.

Kant's view of imagination was insightful yet, in his view, the "real work of cognition" still took place in the formation of concepts. Concepts are products of our understanding, which is formal and rule governed, whereas our perceptions are bodily, material, and passive<sup>3</sup>. (Johnson, 1987, p. xxviii). Later in this paper I adopt Mark Johnson's revision of the Kantian account of imagination. By placing imagination on a contemporary epistemological footing grounded in a view he calls "experiential realism", Johnson avoids the mind-body dualism Kant had inherited from Descartes and which plagued him.

By late 19th and early 20th centuries, positivism made war upon the artistic imagination since it operated without rules or apparent rational intent. Moreover, there was no way to verify the reliability of artistic insight. Depth psychologists like Freud and Jung, though less constrained by positivism, explored and charted the subconscious regions of the mind, but in delving into the psychological basis for feelings and emotions, widened the gulf between the cognitive and the affective, 20th century philosophers like Ernst Cassirer postulated that the recollection of past events, and the anticipation of future events made use of symbolic processes that require imagination for their realization. "Symbolic memory is the process by which man not only repeats his past experience but also reconstructs his experience. Imagination becomes a necessary element of true recollection" (Cassirer, 1944, p.75). In John Dewey's view, imagination is "the generous blending of interests at the point where the mind comes in contact with the world, when old and familiar things are made new in experience" (1934, p. 267). Yet imagination remained a closed book in the psychology of behaviorism which was dominant throughout the first half of the last century.

## Psychological Studies of Mental Imagery

With the rise of the cognitive science perspective, the cognitive character of imagery and imagination became new candidates for psychological research, especially in work by Roger Shephard, Stephen Kosslyn and others (Shephard, 1978a; Shephard, 1978b; Kosslyn, 1980). In raising the issue of how to account for the existence of mental imagery, these psychologists began raising fundamental questions about the adequacy of computational models of mind first advanced in the cognitive sciences, and as a consequence their work has been a source of controversy (see Pylyshyn, 1973).

There have been three kinds of studies that have dealt with the topic of mental imagery: First, there has been compilations of anecdotal studies including self-reports of individuals whose significant scientific discoveries or artistic accomplishments were occasioned by strong acts of imaginative creativity. In particular, Shephard (1978a, 1978b) collected accounts of the imaginative activity of scientists. These provide dramatic portrayals of the role that mental imagery played in the thought processes that led these individuals to do their most important work, or make key discoveries.

Shephard cited Albert Einstein who reported that verbal processes did "not seem to play any role" in his processes of creative thought. In fact he maintained that his particular ability did not lie in mathematical calculation either, "but rather in *visualizing...effects, consequences and possibilities*". He performed what he called his *gedanken* or thought experiment where he imagined himself traveling alongside a beam of light at speeds of 186,000 miles per second. What he mentally "saw" did not correspond to anything "that could be experienced perceptually as light nor to anything described by Maxwell's equations, which described the relationships between the various forms of electromagnetic energy. It was these visualizations that prompted him to formulate the special theory of relativity" (Shephard, 1978a, 1978b).

A second approach to the study of mental imagery involved empirical studies, where the utilization of mental imagery was compared with ordinary perceptual activity (Shepherd and Metzler, 1971), or was contrasted with information presented in verbal, linguistic form (Kosslyn, 1983). Results obtained by Shephard and Metzler indicate that in many instances mental imagery is remarkably able to substitute for actual perception with subjects

seemingly able to make the same judgments about mental objects as they do about real objects encountered in perception. Johnson suggests that these studies of mental imagery offer empirical support for the presence of "image schemata" as a basis for imaginative thought (Johnson, 1987, p. 25). Kosslyn and his colleagues have also devised a comprehensive theory of what they call a "quasi-pictorial form of mental representation called imagery." According to Gardner, "this form of mental representation is as important for an understanding of cognition as is the more usually invoked propositional form" (Gardner, 1987, p. 327).

Kosslyn's position vis-a-vis "imagery" was contested by Zenon Pylyshyn (1973) and others<sup>4</sup>. Pylyshyn supports the view that cognition is principally a computational function denying any independent mental reality to imagery, claiming that "any mental image, schematic structure, or operation on them can be represented in propositional form" (cited in Johnson, 1987, p. 27). Johnson concedes that... of course we can describe images and schemata in propositional form, but the real issue concerns the cognitive reality of these in the first place. Gardner suggested, "the fact that computers can - and usually do - transmit information in only one symbolic form is no reason to assume that human beings do the same" (1987, p. 129) Indeed, his theory of multiple intelligences aggressively denies that limitation.

A third approach to the study of imagination is based on the linguistic work of George Lakoff who with Mark Johnson (1980) studied the cognitive foundations of such seemingly abstract mental activities as categorization and metaphor as observed in empirical studies of linguistic behavior. They maintain that there is a growing body of evidence for the existence of what they call "an image-schematic level of cognitive operations." Like Piagetian schemata these exist at a level of generality and abstraction that allows them to serve repeatedly as identifying patterns in a variety of experiences similarly structured in relevant ways. (Johnson, 1987 pp. 26-28). However, Lakoff and Johnson's (L&K) image schemata differ from Piagetian schemata in that they are structures based upon images derived "naturally"<sup>5</sup> from bodily and perceptual experience. Piaget's schemata, by contrast, tend to give rise to symbolic structures based on propositional content. Later, I stress the similarities and differences between these two types of schemata, one providing the

basis for propositional structures of the mind (Piaget) while the other extends the cognitive to embrace nonpropositional structures of knowledge as well, with the latter providing a basis for imagination employing such devices as metaphor.

## **Categorization in Cognition**

In what follows the groundwork is established for an a cognitive explanation of imagination. However, the reader might feel that it begins at some distance from the area of imagination since I begin with the topic of categorization. Categories in the formal sense are bound up with rules that define the conditions of membership or non membership of objects, events, or persons as the mind organizes and classifies these in like groups. In many ways these rules correspond with those of logical thinking and the operation of propositional forms of thought, which is not commonly regarded as fertile ground for the growth of imaginative thinking.

Categorization is also used in a second sense as when it refers to how people group things in the world of everyday, commonsense experience. Most people think of imagination in terms of the 19th century romantic definition - connoting artistic creativity, scientific discovery, invention, novelty and even day-dreaming. Such a definition has little to do with life in the everyday world, suggesting to tough-minded skeptics that it should have little to do with education, as well! In fact, Lakoff and Johnson were intent upon explaining how image schemata provide the foundation for such processes as, abstract reason, metaphor, narrative as components of the imaginative in cognition. Moreover, these occur across the whole gamut of human cognition - from life in the everyday world to the fine arts and the sciences.

We learn about the natural world through our senses, through the multiple sensations of sights and sounds, warmth and coolness, roughness and smoothness, tastes and smells. We also learn within a social world though mediations with family members, peers and the community at large. Our understanding emerges from these encounters. With experience our world picture becomes increasingly diverse and to control this vast enumeration of things, we organize it by categories, by samenesses and differences, friends and foes - even by likes and dislikes. It is the power to select - to include and

exclude. We organize our world on the basis of common attributes.

It is more efficient to learn about groups of things by their shared characteristics than by each in isolation. Categorization involves thinking about things in terms of commonalities, not about the uniqueness of individual cases. This action is mostly automatic and unconscious, giving rise to the view that objects and events in the world come in natural kinds. However, categories are cognitive achievements, not properties of the world as such. They emerge from the mind's effort to organize what is given in perception in its effort to secure meaning. Were it not for the capacity to categorize, we would soon become "slaves to the particular."<sup>6</sup>

Categories are also used to group things and people, and serve as a basis for social behavior. Jokes about women drivers or mother-in-laws assume that members of these groups share common (in these cases pejorative) characteristics. Such categories and their affective loadings are built into everyday language; they can disseminate sexist or racist stereotypes. These are negative applications of categorization. On the constructive side, the commonsense classification of birds, flowers and fish into groups of like things provides the basis for organizing knowledge used in everyday affairs and in the school curriculum.

## **Classical Categories and its Alternatives.**

We tend to assume that the category groupings we form in our everyday affairs offer reliable representations of things as they are in the world, leading to a reliable view of reality, itself. Lakoff explains:

From the time of Aristotle to the later Wittgenstein categories were thought to be well understood and unproblematic. They were assumed to be abstract containers with things either inside or outside the category. Things were assumed to be in the same category if, and only if, they had certain properties in common, and the properties they had in common were taken as defining the category. (Lakoff, 1987, p. 6)

**Wittgenstein's family resemblance categories.** Yet, Ludwig Wittgenstein (1953) began realizing that people do not necessarily organize experience by

classical modes of categorization, that often they tend to devise alternative systems to circumvent the constraints imposed by such categories. He exemplified this with the concept. There is no single collection of properties that all games share, and thus it is impossible to devise a definition that includes all things called games that simultaneously excludes non-games. What unites games as a category is what Wittgenstein called family resemblance. According to Lakoff, "...games like family members are similar to one another in a wide variety of ways. That, and not a single, well-defined collection of common properties is what makes them a category" (Lakoff, 1987, p. 16). Moreover, people in everyday life are not troubled by this lack of a definition. We have no difficulty recognizing the objects and events called games.

**Art as a category.** In like fashion Morris Weitz (1956) argued that *art* as a concept also functions as a family-resemblance category, in that none of the existing definitions of art cover all cases of art. Art also has extendable boundaries as new media and styles come into being and as new works are created.<sup>7</sup> When art was defined as formal order, the curriculum featured the study of formal principles stressing elements and principles of design, but when art was defined as the expression of the artist's feelings, creative self-expression was prevalent. When Weitz suggested that these definitions were, at best, argued for recommendations to view art from a particular vantage point, art educators began recognizing the possibility of multiple perspectives in the curriculum. This change from a traditional, classical conception of categorization to a family-resemblance system, began surfacing in proposals for eclectic curricula open to various ideas about what can be art.<sup>8</sup>

**Prototype based categories.** In classical theory categories share a collection of common properties possessed by all category members, where these attributes define the category. Consequently, no member of a set would have any special status (Lakoff, p. 40). Yet in the early 1970s Eleanor Rosch began identifying certain effects she called *prototype effects* within categories like *color, birds or chairs*. When people were asked to group colors that seem to belong together, they would put all the reds together, all the blues etc. But, if asked to select the best or most typical example of red or blue, most people could readily do that as well. These optimal color selections act like specific prototypes often based upon family resemblance by which individuals



mark their experiences of colors. Since prototypes suggest that some members of a group are more representative of the category than others, the idea of prototypes is at variance with classical theory where all cases should have the same standing as exemplars of the category.

Prototypes revealed another facet about categorization. Lakoff (1975) found that individuals use modifiers or "hedges" to circumvent the rigidity and inflexibility of classical categories. The expression "par-excellence" is one such hedge, while another is the expression "strictly speaking" as can be seen in the following example: For people living in the temperate zones of North America, the robin represents the prototype of the bird "par excellence," since it most nearly typifies the attributes of birds likely to be known there. On the other hand penguins or chickens are less likely to enjoy that status. "Strictly speaking" they are also birds but are less prototypical cases of the bird family. Thinking often has to shake off the mental straight-jackets imposed by categories.

**Basic level categories.** Akin to prototype based categories are what Roger Brown had earlier called "basic level" categories (Brown, 1958; 1965, pp.317-321). Like Rosch, he found that there are levels of membership within categories. To exemplify, when children learn about flowers as a category they may be involved in such actions as planting, picking and smelling the blossoms. At the same time they learn that they are called flowers, mentally establishing them as a class of living things. Later learning may add knowledge of more kinds of flowers, like roses and that flowering plants are members of a larger group called the plant kingdom. However, in this instance the basic level is that of flowers. Basic level categories seem to have the following characteristics as summarized by Lakoff:

- they are learned in conjunction with distinctive actions such as smelling flowers;
- they are learned earliest, when things are first named;
- they are at the level at which names are shortest or used most frequently;
- basic level categories are "natural" levels of categorization.

The "naturalness" of the basic level is attributed to physical bodily actions that are undertaken while the category is being established mentally (Lakoff,

1987, pp. 32-33).

According to Lakoff, with additional learning the category becomes more elaborate and proceeds upwards to form a "superordinate level" made up of generic categories. Thus, the plant kingdom becomes the all encompassing category that supersedes flowers. Categorization can also proceed downwards to form "subordinate" levels of categories e.g., the various varieties of roses, for example. Categorization at the sub and super levels are less likely to be learned in conjunction with natural actions, and for this reason these additional levels are what Brown called "achievements of the imagination" (Lakoff, 1987, pp. 32-33). They extend and elaborate the flower category. As a whole, the basic level of a category acts like Rosch's prototypes described above.

## Some Implications.

Work on categorization in philosophy, linguistics, and psychology has challenged the classical conception of categories where the categories of the mind were thought to fit the categories of the world, where they operate like innate (a priori), formal ideas built into the mind. In his day Kant believed this was the case. Currently, it is becoming clear that categories are structures of knowledge abstracted from multiple experiences that are largely perceptual in character, and that they are "natural" in the sense that they arise from distinctive actions of the body such as grasping, touching, or seeing. And though abstract, they are not disembodied.

Second, Lakoff and Johnson (L&J) have observed and documented the fact that "the categories of our everyday thought are largely metaphorical and our everyday reasoning involves metaphorical entailments and inferences, [hence] ordinary rationality is imaginative by its very nature." (Lakoff and Johnson, 1980, p. 193). They add,

Metaphor is one of our most important tools for trying to comprehend partially what cannot be comprehended totally: our feelings, aesthetic experiences, moral practices, and spiritual awareness. These endeavors of the imagination are not devoid of rationality; since they use metaphor, they employ an imaginative rationality (Lakoff and Johnson, 1980, p. 193).

In their early work (L&J) they coauthored a book they call *Metaphors We Live By*, (1980) in which they began to elaborate a theory of knowledge that could account for the way the mind operates in circumventing the limits of formal categorization by developing "basic level" and "prototype categories" and by the creation of meaning through the use of metaphor. In the course of this work they have explored the role of image-schemata as a structure of knowledge that provides the foundation for a conception of cognition in which the imagination plays a pivotal role in developing the power of *categorization*, reason, prepositional and nonpropositional forms of thought through the application of metaphor and narrative.

All subjects utilize these forms of cognition though it is likely that prepositional reasoning is more likely to be experienced in philosophy, physics and mathematics than in the arts whereas it is principally in the arts where one encounters metaphor and imagination. When metaphor appears in the language of scientists, it is likely to remain hidden as seen in the illustration which follows: Notice that these statements rely on the metaphor that *theories are buildings*:

Is that the *foundation* for your theory ?

Quantum theory needs more *support*.

You'll never *construct* a *strong* theory on those assumptions.

I haven't figured out what *form* our theory will take.

Here are some more facts to *shore up* your theory.

Evolutionary theory won't *stand* or *fall* on the *strength* of that argument.

So far we have only put together a *framework* of the theory.

He *buttressed* the theory with *solid* arguments (Johnson, 1987, p. 104).

Each of these expressions are clear and unproblematic underscoring the point that the theory-are-buildings metaphor is meaningful. In fact, members of the scientific community would not likely discuss it as a metaphor!

The discussion of Marc Chagall that follows demonstrates how metaphor plays a different role in the arts.

**Chagall's clocks.** In several of Chagall's paintings done around the 1920s, a recurrent image is a winged clock that could be seen in flight. We know literally that clocks neither fly, nor do they have actual wings enabling them to do so. This is common-sense reality-based knowledge. Why then,

does this image appear in his paintings? Is the winged clock a reference to the folk metaphor *time flies*? Is it Chagall's way of commenting on the passage of time, perhaps his remembered youth in Russia? The winged clock also suggests that we are looking into a fantasy world in the artist's imagination, where natural laws are suspended. Some writers on Chagall have referred to the clock as being emblematic of the beating of the human heart, the ticking away of life. There is no way to be sure which of these interpretive conjectures is tenable.

For this reason such works of art open what David Perkins calls a "reflective intelligence" (Perkins, 1994). The winged clock has become an object for thought, for interpretation. The metaphor is active. It enlivens cognitive activity. The point of these illustrations is to show that metaphors are likely to work covertly in scientific discussions while in the arts they are active.

## **Cognitive Structures in Piaget's Theory of Development**

L&J's concept of *image schema* underlies the basis for their theory. However, to understand this concept, I compare it with Jean Piaget's concept of the schema. Schemata are not new in theories of cognitive development and have been a principle object of investigation by Piaget and others. For Piaget, cognitive development begins when infants begin to recognize certain regularities in their experience. Increasingly, they come to rely on the memory of prior encounters, the actions which initiated them and the resulting responses as providing a reasonable guide for future actions. Piaget attributed the growth of this ability to the formation of specific cognitive structures called schemata. He used this concept to help explain why individuals develop relatively stable, even predictable responses to stimuli. Schemata are symbolic structures that organize events perceived by the mind. They are abstract structures that summarize information from many different cases, but tied to these structures is the awareness of particular operations or actions undertaken by the mind to understand what is given in perception. Piaget describes the development of these cognitive structures as becoming increasingly mentalistic, abstract, and less dependent upon the senses. Their cognitive operations become less physical and more formal as the organism matures. Cognitive development also precedes through several stages

marked by changes in these structures. In his "formal operations" stage, Piaget describes the mind's power to organize symbolic structures in logical and scientific propositions that describe, explain, and reliably predict events in nature. Schemata as conceived by Piaget evolve into logical, scientific and propositional structures. His main work consisted of tracking the evolution of these structures from the first actions undertaken by the infant, like the grasping of objects, to the formation of abstract symbolic structures, comprised of numbers and letters which, though meaningless in themselves, are understood as representations of the actual world.

Piaget did *not* discuss the possibility that schemata might take the form of mental imagery resulting from perception. Indeed, he did not regard perception as a form of intelligence, but rather defined it in terms of the actions or operations the mind takes on its perceptions in order to understand them (Flavell, 1963, pp. 31-33).

The function of cognitive development in the Piagetian view was not to produce intellectual understandings that offer a more reliable view of reality "but to produce more and more powerful logical structures that permit the individual to act upon the world in more flexible and complex ways." Flavell's description of Piaget's schemata also describe these structures, as kinds of concepts, categories, or underlying strategies which group together a collection of distinct but similar actions (1963, pp. 54-55). Of importance is that these structures in their early phases include sequences of actions undertaken by the infant to explore and understand its environment.

### **Lakoff and Johnson's Image Schemata.**

Though L&K do not discuss Piaget directly, their philosophical explorations and work in linguistics attempts to characterize meaning in terms of *embodiment*, that is: in terms of pre-conceptual, bodily experiences (Lakoff, 1987, p. 267). They postulate a kind of schema that begins with images and bodily experiences acquired directly in perception<sup>9</sup> as providing the foundation for categorization, abstract reason, prepositional and nonpropositional forms of thinking, metaphor, and narrative. Meaning is embodied directly in the percepts acquired in experience and does not have to await additional actions put forth by the mind to comprehend its experience. Johnson exemplifies this

with the image schema of *balance* as giving rise to a structure that applies to many instances of *balanced* phenomena. Initially, balance acquires meaning through experiences where we orient ourselves physically within our environment. We live in a gravitational field and resist the pull of gravity as we learn to maintain our equilibrium. He writes:

It is crucially important that we see that balancing is an *activity* that we *learn* with *our bodies* and not by grasping a set of rules or concepts. First and foremost balancing is something we do. The baby stands, wobbles, and drops to the floor. It tries again, and again, until a new world opens up - the world of balanced erect posture (Johnson, 1987, p. 74).

The image schema of balance is acquired by activities like learning to stand and walk, experiences which are learned in the course of development often before there are words to name or describe them, hence their non-propositional character. Once established they are potentially available for metaphorical elaboration so that balance can refer to such things as a balanced personality, a balanced equation in mathematics, the balance of justice in the workings of the legal system, etc.

In the case of *balance*, for example, we saw how certain very abstract concepts, events, states, institutions, and principles (such as psychological states, arguments, moral rights, and *mathematical* operations) are metaphorically structured as entities or physical events. And it is by virtue of metaphorically imposed structure that we can understand and reason about the relevant abstract entities. It is the projection of such structure that I am identifying as the creative function of metaphor, for it is one of the chief ways we can generate structure in our experience in a way we can comprehend (Johnson, 1987, p. 98).

## Metaphoric Projection.

L&K claim further that higher order, rational thinking can be accounted for through extensions of these image schematic structures by *metaphoric projection*. The existence of these structures of imagination not only sug-

gests that imagination is cognitive but is likely the foundation of cognition. To understand the nature of these structures and their actions, I describe the structure of metaphor as posited by Lakoff.

For Lakoff a metaphor must have three parts: a source domain, a target domain, and a source to target mapping (1987, p. 276). To understand the metaphor we would have to see how these elements are intellectually connected to each other. In many of L&J's examples, the source domain is usually grounded in some aspect of pre-conceptual, or basic level bodily experience. Lakoff illustrates this with a metaphor based upon the image schema he calls "more-is-up, less-is-down." This is seen in expressions like, "The crime rate keeps *rising*," "The number of books published each year keeps *going up*," "That stock has *fallen* again" (Lakoff, 1987, pp. 276-277). In each example the source domain is verticality while the target domain is quantity. Verticality serves as a good source domain since it is directly understood in our bodily experience of gravity. *More* is understood as *up* because "...when-ever we add more of a substance say water to a glass - the level goes up. When we add more objects to a pile, its level rises. Remove objects from the pile or water from the glass and the level goes down." Thus, verticality and quantity become linked together through common structural correlations that permit verticality to represent quantity. Lakoff concludes:

...schemas that structure our bodily experience *pre-conceptually* have a basic logic. Pre-conceptual structural correlations in experience motivate metaphors that map that logic onto abstract domains. Thus what has been called abstract reason has a bodily basis in our everyday physical functioning. It allows us to base a theory of meaning and rationality on aspects of bodily functioning (Lakoff, 1987, p. 278).

Metaphors establish connections among objects and events that are seemingly unrelated, and they are encountered in all studies as well as the arts. Metaphoric projection is the means through which abstract thought arises. This is important because it explains how abstract thinking in human cognition can emerge from bodily and sensory experience. Lakoff and Johnson's main claim is that image-schemata, which emerge from bodily sensations and perceptions, can reach the mental, epistemic, or logical domains in cog-

nition. What is typically referred to as higher order thinking, the larger understandings that are called abstract and disembodied reason, have their beginnings with the formation of image schemata in bodily experience.

In particular, Johnson described *image schemata* as nonpropositional structures of imagination, a concept he derived from Kant's *Critique of Pure Reason*. Kant elaborated a theory of imagination based on four divisions, called *reproductive imagination*, *productive imagination*, *imagination as a schematizing function*, and finally *creative imagination* (Kant, 1997, pp 273-274). Johnson's work is derived mainly from his interpretation of imagination where schematizing plays the pivotal role. Image schemata are further described as "embodied patterns of meaningfully organized experience" e.g., structures of bodily movements and perceptual interactions.

It is here where differences between Johnson and Piaget arise, in that for Piaget *actions* are *operations of the mind* that work on the perceptions it receives as opposed to *actions of the body* like learning to walk. Since Piaget's schemata are of the mind; they lead to the formation of propositional structures, whereas the image schemata of interest to Johnson, are *of the body*, though in Johnson's metaphysical conception the body and mind are undivided.<sup>10</sup> Though Piaget's understanding of the cognitive was more dynamic than the Kantian view with its innate mental structures, it still tended to portray the course of development as journey away from the sensory foundations of knowledge. Despite his early training as a biologist he, like Kant before him, conceived of the mind's formal operations as being less dependent if not entirely separate from the body.

By contrast, Johnson and Lakoff's intellectual journey reveals a basic level of bodily and perceptual experience as the foundation of cognition and the source of meaning. Like Piaget they also sought to provide an alternative to the Kantian view that higher-order logical structures emerge "a priori as the universal essence of rationality" (Johnson, p. 99), and argue that such higher-order cognitive structures emerge from our embodied, concrete experience. They extend the definition of cognition to include traditional propositional schemata Piaget but also include image-schematic, nonpropositional structures.

The Kantian conception of imagination was problematic because it divid-



ed the mind into a physical or material side governed by strict deterministic natural laws, which included our bodily being, including sensations, and feelings, while on the other side of the mind, was the formal realm of the understanding. This gulf separated understanding from perceptual experience, the mind from the body in a dualism that went back to the rationalism of Descartes, and which survives in Piaget's tendency to separate thinking from feeling. However, schematic imagination as conceived by Kant had the potential to bridge this gap. Johnson adds:

I would suggest that though Kant could never admit it, that his remarkable account of imagination actually undermines the rigid dichotomies that define his system, showing very powerfully that they are not absolute metaphysical and epistemological separations. Hence imagination is a pervasive structuring activity by means of which we achieve coherent, patterned, and unified representations. The conclusion ought to be, therefore, that imagination is absolutely essential to rationality, that is, to our rational capacity to find significant connections, to draw inferences, and to solve problems. Kant, of course, pulls back from this conclusion because it would undermine the dichotomies that underlie his system (Johnson, 1987, p. 168).

Kant's problem disappears when we deny the alleged gap between understanding, imagination, and sensation. Johnson asks, "what if, following the consensus of contemporary analytic philosophy, we deny the strict separation of the formal realm from the material?" If we were to regard these as poles on a continuum, there would be no need to exclude imagination from the cognitive. Kant recognized a vast realm of shared meaning structure in imagination but could not bring himself to grant this dimension cognitive status.

## **Toward a Theory of Imagination**

Johnson suggested that "an adequate account of meaning and rationality (as well as of understanding and communication) awaits a comprehensive theory of imagination. Such a theory would complement and influence our present

theories of conceptualization, propositional content, and speech acts. In its broadest sense, it would provide a comprehensive account of structure in human experience and cognition (1987, p. 171). He then listed several features of what a cognitive account of imagination would entail some of which are listed below:

*Categorization.* By this he means not the classical view of categorization but a view that describes the way human beings actually "break up their experience into comprehensible kinds." Prototypical categorization is preferred over types that seek sets of necessary and sufficient conditions (p.171).

*Schemata.* He cites the need for a comprehensive theory of schemata, i.e., "general knowledge or event structures. We need to survey the basic kinds of schemata, to see how they can be developed metaphorically, to investigate their complex interrelations, and to explore their connections with prepositional structures" (p.171).

*Narrative structure.* When it comes to explaining how humans make sense of their world "there must be a central place for the notion of narrative unity. Not only are we born into complex and communal narratives, we also experience, understand, and order our lives as stories we are living out" (pp. 171-172).

## **Interpretations as Narratives.**

Although Johnson identifies the structure of narrative as one of the components in a comprehensive theory of imagination (1987, pp. 171-172) he does not elaborate how the capacity for narrative is related to other features of imagination such as metaphor. But narrative structure does share certain common features with metaphoric structure, in that they have a source point in human experience where they originate with some kind of problem or situation. Jerome Bruner uses the term "trouble" to identify the starting points in many narratives (Bruner, 1996). A typical narrative will open with a phrase like:

"I was walking down the street, minding my own business when..."  
The action unfolds leading to a breach, a violation of legitimate expectancy. What follows is either a restitution of initial legitimacy or

a revolutionary change of affairs with a new order of legitimacy (Bruner, 1996, p. 94).

There is also a target point (some kind of resolution, outcome, or moral of the story), and finally there are pathways that map the intervening connections.

Narrative in Bruner's view is also a disciplined mode of thought for constructing the present, past and possible human conditions (Bruner, 1996, p. 100). Narratives don't provide explanations, but rather, lead to understanding, which is defined as "the outcome of organizing and contextualizing essentially contestable, incompletely verifiable propositions in a disciplined way" (p. 90). The narrative mode of meaning-making tells us a story of what something is about. "Understanding, unlike explaining, is not preemptive. One way of constructing the fall of Rome narratively does not rule out other interpretations." "Some narratives about 'what happened' are simply righter, not just because they are rooted in factuality, but because they are better contextualized, rhetorically more 'fair minded' and so on" (pp. 90-91).

Bruner also identified the broad implications of narrative in education, decrying the tendency in schooling to treat them as mere decoration rather than a way, perhaps the best way, for individuals to construct meaning.

It has been the convention of most schools to treat the arts of narrative - song, drama, fiction, theatre, whatever - as more "decoration" than necessity, something with which to grace leisure... Despite that, we frame the accounts of our cultural origins and our most cherished beliefs in story form... Our immediate experience, what happened yesterday or the day before, is framed in the same storied way. Even more striking, we represent our lives (to ourselves as well as to others) in the form of narrative (p. 40).

The importance of narrative for the cohesion of culture is as great very likely, as it is in structuring an individual life...."trouble narratives" appear again in mythic literature and contemporary novels, better contained in that form than in reasoned and logically coherent propositions. It seems evident, then, that skill in narrative construction and narrative understanding is crucial to constructing our lives and a "place" for ourselves in the possible world we will

## Relevance to Art Education

For most people the term imagination "connotes artistic creativity, fantasy, scientific discovery, invention and novelty" - having little or no correspondence to the everyday world of occurrences. Such beliefs are holdovers from 19th century romanticism. Johnson was intent upon explaining that image schemata, metaphor, and narrative as components of the imaginative in cognition operate across the whole gamut of human cognition and, as such, are not limited to the arts.

But since he so thoroughly implicates imagination as the quintessential component of higher forms of cognition including abstract reason, it has unmistakable implications for the arts as well, as places where metaphoric leaps of imagination are prized for their power and aesthetic excellence. Moreover, in the arts, the experience, nature, and structure of imagination should become the principle object of study. This happens in activities where individuals create works of art but imagination comes into play in the interpretation of works of art as well. Deepening the wellspring of the imagination and the role it can play in the creation of personal meaning and in the transmission of culture becomes the point and purpose for having the arts in education.

Making a place for the arts neither means giving oneself over to the ornamental fringes of knowledge nor to the abandonment of the hard facts of reality. Indeed, quite the reverse is true. For example, before a metaphor can become active in the learner's mind - *as a metaphor!* - he or she must understand the underlying reality or context where the metaphorical nature of the image or expression is active.

Let me emphasize this point once more that the arts are places where the constructions of the imagination can and should become the principle object of study, where it is necessary to understand that the visual image or verbal expression are not literal facts, but are embodiments of meanings to be taken in some other light. It is *only in the arts where the imagination is encountered and explored in full consciousness* - where it becomes the object of inquiry. As it exists in the sciences it is likely to remain hidden.

Having learners understand the imaginative as ornamental devices like metaphor, used mainly by artists and poets, is of secondary importance. I lean more toward activities where the learner comes to an understanding of the world referred to in works of art, and the role that the artist's imagination plays in constructing that world and giving it meaning. Moreover, an art education that fails to recognize the metaphoric character of meanings in the arts is without serious educational purpose.

## **Implications for General Education.**

Cognition entails more than meaning stated in propositional forms; it takes nonpropositional forms as well. Yet schooling for most students occurs within a curriculum where knowledge is experienced as a series of isolated, random facts. This compartmentalized curriculum reflects a long tradition in Western philosophy, which in large part is the consequence of a divided mind. On one side is cognition proper, the province of reason, conceptualization, logic and formal prepositional discourse. On the other is the bodily, perceptual, material, emotional and imaginative side of our nature.

"The most significant consequence of this split is that all meaning, logical connection, conceptualization and reasoning are aligned with the mental or rational dimension, while perception, imagination and feeling are aligned with the bodily dimension. As a result both nonpropositional and figuratively elaborated structures of experience are regarded as having no place in meaning and the drawing of rational inferences." (Johnson, 1987, p. xxv)

These polarities have reified themselves into structures of consciousness. If thinking is cognitive, then its contrary, (feeling), is noncognitive. If cognition involves the use of verbal and mathematical symbols to construct rational or formal propositions, then perceptual imagery is taken to be nonpropositional and hence noncognitive. This schism relegates half of mental life to the lesser realm of affect.

Moreover, this structure of belief has become the structure of the curriculum. Science was placed in the cognitive domain while the arts were dispatched to the domain of feelings and emotions. To be sure the arts were

highly praised as sources of wonderment, amusement, delight, as embellishment or beautification - (icing on the cake), but rarely were they taken to be active sources of insight, knowledge, or understanding. Education should have as its ultimate purpose the maximization of the cognitive potential of individuals through the use of the imagination - in all subjects to be sure but certainly in the arts.

The arts are educationally important when they equip individuals with the relevant tools to fashion their lifeworlds. The tools or cognitive strategies that are entailed in this learning process include imagination as a schematizing function, and its extensions by metaphoric projection. Metaphor, in particular, constructs linkages that enable us to understand and structure one domain of knowledge in terms of the knowledge in a different domain, thus to establish connections among seemingly unrelated things. The subjects which give play to these aspects of cognition should lie at the core of the curriculum where they can become bases for understanding.

We may have multiple forms of cognizing (propositional vs. nonpropositional) but in my view these do not stand in opposition to each other. Rather, both emerge from the same common source, the basic level of experience originating in bodily and perceptual encounters with the environment including culture. The reason why the hunches of the scientist or the imagination of the artist can be intuitive is that they reach an undivided world, the world that the physicist David Bohm calls "the implicate order," a world beyond dualisms that divide the body from the mind, thinking from feeling, or individuals from their social world. The building of lifeworlds requires access to such sources as represented and extended symbolically in thinking, feeling, and willed action. Such building is, in the final analysis, an "achievement of the imagination."

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1. Plato's attack of the doctrine of inspiration appeared in the dialogue known as *The Ion*. He also opposed the reliability of art as a source of knowledge in *The Republic* because a work of art is a double imitation, i.e., an imitation of an imitation. There was also a third argument against the arts, namely that such works violate public decorum by arousing socially unacceptable passions.
2. These statements on imagination were taken from Kant's later work *The Critique of Judgment*. The structure of imagination is given in the *Critique of Pure Reason*.
3. The senses were thought to be passive since they are receivers of sensations. Whereas the mind was thought to be active in its knowledge-seeking.
4. A detailed account of this controversy can be found in Gardner, H. (1987) *The minds New Science: A History of the Cognitive Revolution*.
5. The term "natural" was coined by George Lakoff to refer to images derived directly from the senses as opposed to experiences mediated by verbal or other forms of symbolic representations. See p. 27 in Johnson's, (1987). *The Body in the Mind*.
6. I attribute the expression to Jerome Bruner.
7. Answers to the question, "what is art?" were traditionally thought to be true defini-



tions, in the sense that they were advanced as covering all cases of art. Weitz argued that "what is art?" is the wrong question, that a more appropriate one would ask "what sort of concept is art?" or how is it being applied in a given context?

8. For example, Laura Chapman's widely used text *Approaches to Art Education* adopted an eclectic stance. My "Conceptions of Teaching" paper traced a succession of orientations in art education that were prominent throughout the twentieth century.
9. Image schemata should not be confused with the images we recall from prior perceptions. Rather they are structures that be common in various remembered images. Johnson exemplifies with one he calls "compulsive force" in which structural similarities between a jet airplane being forced down the runway, forces acting upon continental plates, and (metaphorically) being forced by to join the PTA, are found to be similar.
10. Both Lakoff and Johnson reject what they term the myths of objectivism and subjectivism in favor a metaphysics they call experiential realism. See Chapter 11 in Lakoff's *Women, Fire and Dangerous Things*. See also Chapters 25 to 28 in Lakoff and Johnson's *Metaphors We Live By*.