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A Comparison of Three Ways of Knowing: Categorical, Structural, and Affirmative

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This paper compares three ways of knowing: *categorical*, from a phenomenalist perspective involving abstraction of and classification by criterial attributes; *structural*, from J.J. Gibson's critical realist perspective involving the direct perception of reciprocal compatibilities (affordance structures); and *affirmative*, from Martin Buber's existential perspective involving the direct affirmation of unique existences (I-Thou relationships). The view expressed here is that knowledge is not acquired through categorical analysis, but rather through the unmediated affordance and affirmation relationships provided by structural and affirmative perspectives; categorical knowing, in contrast, may come after knowledge acquisition and modulate processes such as communication and analysis. A comparison is made between knowledge pertinent to the category of, the affordance structure for, and the affirmation of love.

There is a curious intersection between Martin Buber's existential analysis of I-Thou relationships and J.J. Gibson's critical realist concept of affordance structures (Buber, 1958; Gibson, 1966, 1979). In distinction to traditional phenomenalist conceptions of knowledge acquisition, Buber and Gibson propose that the epistemic act is relational and that it is possible to *know* another entity directly without mental mediation. Both theories hold that knowledge acquisition bypasses processes such as generic categorization because I-Thou or affordance structure relationships are *unique* reciprocities that do not qualify as tradionally conceived instances of an equivalence class. Yet such reciprocal relationships often generate the kind of knowledgeable behavior that presupposes accurate comprehension of the world.

Buber and Gibson's characterizations of relational knowing call into question traditional ideas that knowledge acquisition is necessarily based in analytic classification procedures (Bruner, Goodnow and Austin, 1962; Rosch, 1978). Their ideas also suggest that it may be useful to make a more precise analysis of different ways in which knowledge is acquired. This paper will compare three ways in which individuals claim knowledge of the world. The

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first method is through *categorical* knowledge—obtained by abstraction and generalization procedures that assign entities to identity and/or equivalence classes on the basis of their criterial attributes (e.g., an Italian maple [*Acer opalus*] [a] is a deciduous tree [b] grows 35—50 feet in height, and [c] has palate leaves). Categorical knowledge reflects a phenomenalist view of knowledge acquisition. The second method is through *structural* knowledge obtained by the direct perception of reciprocal fits or mutual compatibilities (affordance structures) which support an organism's intentional activities ("That structure affords shade"). Structural knowledge reflects Gibson's realist position on knowledge acquisition. The third method is through *affirmative* knowledge obtained by direct affirmation of another entity's unique existence ("I stand against a unique presence"). Affirmative knowledge reflects Buber's existential view of knowledge acquisition.

Buber and Gibson both acknowledge and characterize categorical knowledge. For Buber, categorical knowledge is entailed in I-It relationships where the subject has another subject for its object.[1] The subject perceives and judges that subject/object through mental representations (thoughts, images). These representations are "in" the perceiving subject and are projected onto the perceived subject. In effect, the perceiver responds to another subject, not as a complex particular, but by assigning that subject to an equivalence class on the basis of whatever attributes the perceiver chooses.

Gibson's position on categorical knowledge is similar to Buber's. Gibson believes such knowledge is "constructed" in the mind rather than detected in the world; it is projected onto the entities of the world by detached observers—rather than selected and used by intentional participants. From Gibson's point of view, categorical knowledge is organism-neutral in that it may apply over all organisms at all times but may be of primary interest to none. In contrast, Gibson considers structural knowledge organism-relevant because it is used by organisms to modulate their activities. Buber and Gibson both view categorical knowledge as projected *on*, rather than detected *from*, the world. Typical conceptions of knowledge acquisition, however, are commonly built upon theories of categorization (Bruner et al., 1962).

Categorial Knowledge

Bruner et al., (1962) have clearly defined categorical knowing:

> To categorize is to render discriminably different things equivalent, to group the objects and events and people around us into classes, and to respond to them in terms of their class membership rather than their uniqueness. (p. 1)

[1]In an I-Thou relationship this distinction dissolves because in such a relationship there are only subjects in the world. Objects are creations of the mind.

In categorical knowing objects are typically assigned to equivalence classes on the bases of the attributes they have in common (Bransford, 1979). This presupposes the abstraction of certain attributes from complex particulars and the classification of those particulars on the basis of those same attributes. Knowledge acquisition that is based on the abstraction of attributes, however, entails several logical problems. First, if attributes are the basis of knowledge acquisition, what criteria might one use to choose the appropriate attributes? Second, if one could abstract the appropriate attributes, how would one reassemble them into a meaningful whole? Third, how does one classify similar things whose attributes are not identical? Fourth, how does one classify similar things that have no discernable attributes in common? Fifth, how does one account for how individual attributes lose their own character once they are part of a larger whole? Let us consider each of these questions in turn.

The question of criteria for choosing attributes is often neglected in theories of categorization because the assumption is made that "defining" attributes are obvious. But is this so? Consider the fact that dinosaurs and kitchen tables have four legs, elephants and skyscrapers are big, and crows and bowling balls are black. Then consider that dinosaurs can be big, black, and four legged. Does this set of attributes make dinosaurs equivalent to bowling balls, crows, elephants, and skyscrapers? One problem with choosing the "right" attributes is that objects can be partitioned in many ways and attributes that are important to one person (and thus selected) may be overlooked by another. The issue of choice crops up in cognitive studies involving natural language because of the problems of cross-classification (McCabe, 1980). Even if one could extrude purportedly similar attributes from several complex particulars (in order to place them all in one equivalence class) those attributes would not be equivalent; their unique function when embedded in their own network of relationships makes them different in kind—they cannot simply be plucked out of those relationships to establish a generic resemblence.[2]

The second question asks, if one could abstract the appropriate attributes, how might one reassemble them into an integral whole. This problem is difficult to solve unless one *already knows* the whole entity under apprehension. Unless one knows this whole entity, one cannot know how the attributes fit together. But if one already knows that entity, by Occam's razor, why bother to abstract its attributes and reconstruct it?

Rosch and Mervis (1975) addressed the third question (of identical attrib-

[2]There is an alternate view to generic categories: members of categories are not related because they resemble one another but rather resemble one another because they are related (Gheselin, 1981). Natural categories have all been forged under the same physical constraints and may have attributes in common; but these common attributes are not based on resemblance. They are usually homologous (the result of common ancestry such as the fins of fish and the limbs of mammals) or analagous (the result of common conditions of development such as the wings of butterflies, birds and bats).

utes) by applying Wittgenstein's (1953) idea of family resemblance. They suggested that a subset of criterial attributes is sufficient to assign class membership (a prototypical category member is discernable as such because it shares the most attributes with the most category members.) Rosch and Mervis do not, however, provide an adequate answer to the more basic question of appropriate criteria. Rosch (1978) attempted to examine this question of criteria by discussing how "bundles of defining variables" in some way matched the correlational structure of objects in the world. But this does not tell us how we might know either such attributes or their correlations. Category theorists such as Bruner and Rosch approach knowledge acquisition as the abstraction and aggregation of attributes. Their approach is subtractive in that it reduces complex particulars to the simple characteristics of their generic type. As Cassirer (1953) pointed out, this "annihilation of particularity" results in a very curious epistemological conundrum:

> All the logical labor which we apply to a given sensuous intuition serves only to separate us more and more from it. Instead of reaching deeper comprehension of its import and structure, we reach only a superficial schema from which all peculiar traits of the particular case have vanished. (p. 19)

The fourth question suggests that there are instances of equivalence classes that have no common attributes. Attributes would therefore serve no useful purpose for certain types of knowledge acquisition. Visualize, for example, a snowman with lumps of coal for his eyes, nose, and mouth and a scarecrow whose facial features are made of harvest vegetables—carrots, potatoes, and turnips. Both gentlemen have versions of the category "face" but the membership of their particular faces in this category does not depend on their common features. It depends on the proportional geometric relationships between those features (McCabe, 1982a).

The fifth question addresses the issue that the properties of separate attributes are not always preserved when they are embedded in larger wholes. If these properties lose their own characteristics, how could they be abstracted? Consider the case of flow patterns and their dynamic similarity. Liquid flow patterns are a function of the attributes of density (inertial force) $\times$ speed (of flow) $\times$ size (of obstacles to flow around) $\times$ viscosity (of liquid medium) (McMahon and Bonner, 1983). These four attributes combine to produce flow patterns that can be summarized by one Reynolds number.[3] Patterns with the same Reynolds number look exactly alike (exhibit the same geometric pattern of laminarity or turbulence) even though the specific magnitudes of their constituent attributes do not keep their separate status but dissolve into a contribution to the pattern of the whole. Thus you obtain the same pattern from honey (highly viscous) flowing around a small obstacle

[3]A Reynolds number is composed from Newton's law of inertia and the law for shear stress for a Newtonian fluid.

quickly as you obtain from wine (considerably less viscous) flowing around a large obstacle slowly.

If categorization depends upon separable and combinable attributes it may not serve knowledge acquisition. We may not categorize *to* know; we may categorize *after* we know something in order to create our own version of that thing for other purposes. The question then becomes, are categories a form of knowledge or do they serve some other function? One possibility is that categories are linguistic, not epistemic, and serve communicative functions. Another possibility is that categories serve analytic rather than epistemic functions and provide the raw materials for enterprises such as scientific investigation.

Knowledge acquired through abstracted and generalized common elements requires mental mediation that involves three things: (a) computation which is formal in nature; (b) internal representation; and (c) a perspective that is detached from the item to be known. For Bruner et al. (1962), categories "constructed by the act of specifying the intrinsic attribute properties required by members of a class" (p. 5), are specifically called *formal* categories. The fact that such knowledge is constructed rather than detected implies the detached status of the perspective from which these categories are conceived. Such detachment is traditionally equated with objectivity, a claim apparently inferred from the assumed separation between the observer and the observed. However, the object is not separate from the observer because it itself is constructed by that observer. But the accuracy of relational knowledge has also been questioned.

Perceptual Mistakes

In a recent provocative and thoughtful paper Ben-Zeev (1984) posited that knowledge based on direct relationships cannot account for "perceptual mistakes." He cited the incidence of illusions, particularly the Müller-Lyer illusion in which two straight lines of equal length that are embedded in two different configurations are perceived to be different in length. This view of illusion makes the unexamined assumption that the two target lines are separate attributes of the figures presented and can (a) be extracted from their contexts (the integral pattern of which they are a part) and (b) be compared on the attribute of length. Ben-Zeev, however, also claims that the criteria for perception are those which occur under normal conditions; in the case of the Müller-Lyer illusion he seems to discount the normal state of these two lines (as presented in different contexts) and makes a claim based upon their possible conceptually mediated disassembly and comparison.

While it is true that people make perceptual mistakes, it does not necessarily follow that these mistakes undermine the possibility of acquiring knowledge through direct relationships. This type of critique founders on the

assumption of optimality. It is only rational capacities that can bypass real world evidence and entertain the idea that perfection is possible. Ben-Zeev, for example, claims that his view of normal perception is compatible with evolutionary theory and that an organism's perceptual system evolves to enhance its survival. But phylogenetic history is strewn with extinct species. Nature is not always optimal. And nature plays tricks. Consider all the animals that use mimicry to seduce predators into believing that they are dangerous and should be avoided or that they are something other than what they are and should be ignored. Consider for example the walking stick that looks much more like a twig than an insect.

A further point is that from a relational point of view, specifically that of structural knowledge, people do not perceive "things"—they perceive affordances (structural properties specified by geometric patterns) that support their intentional activities. It is easy to fool both people and animals by using these patterns in deceptive ways. This is the basis of the hawk/goose phenomena where the information of interest to gallinaceous birds is the head/neck proportion that specifies predator. When Lorenz and Tinbergen (Tinbergen, 1951) simulated that head/neck proportion in a cardboard "hawk," they duplicated the appropriate species-typical information (McCabe, 1982b) and obtained the same response elicited from a real hawk.

Maturana, Lettvin, McCullough and Pitts (1960) obtained similar results with frogs. Frogs are tuned to respond to small, black moving objects because their major food is insects. If an experimenter simulates this object using the moving tip of a black rod, he or she is presenting the *same* information to a frog as that which specifies the fly. The frog is not making a perceptual mistake. The experimenter is deceiving the frog.

People, however, are not always so easily deceived. Frykholm and Runeson (1982), using a point light display technique, have shown that if videotaped actors (specified *only* by lights attached to their major joints) attempt to deceive perceivers by pretending to be the opposite sex, their deception is detected. Indeed, deceptive actions are also perceived. If an actor is lifting a box and pretends that the box is much heavier than it is, the perceiver can detect this deception as well. The geometric patterns revealed by the moving lights are specific to the perceptual event at hand; they specify exactly what occurs. Different genders as well as different actions generate *specific* patterns of movement. The source of these movement patterns is the underlying biomechanical structure of the mover. Men and women are structured somewhat differently and this difference is perceivable in their movement patterns (Cutting, Proffitt, and Kozlowski, 1978). If the actors described could imitate movement patterns accurately, then people, like the frog and the geese, would be more easily deceived. In any case, different actions transform biomechanical structures in accordance with the action's own movement style. Walking, for example, produces a different movement pattern than running (McCabe,

1982b; McMahon, 1983).

Three assumptions are made when theorists use formal procedures to construct knowledge about the world: Such knowledge is (a) objective, (b) neutral, and (c) rational. These assumptions, however, tend to contradict one another. Objective refers to the properties of a thing in itself independent of the thought of an observer. Rational, in contrast, refers to the mental processes or thought of such an observer. Neutral, of course, assumes that rational processes are unbiased with respect to objective properties. The problem with an epistemic trinity of objective, neutral, and rational processes is there is no neutral method that can match rational internal mental processes to external objective properties using formal methods. This is because formal methods are themselves rational mental constructions. There is no certain evidence that the manner in which a person or a group decides to compute and/or partition the objects of the world matches the natural properties of those objects—or whether we come to know the objects of the world through the parts into which we partition them. Since objects present themselves in their situated wholeness, why should we need indirect processes to perceive them? Why not apprehend them directly instead of using formal mediation that can bias our objective perspective?

From this view, accurate knowledge is not acquired through the rational construction of categories but rather directly through lived relationships. An alternative to categorical knowing is *relational* knowing. The two types of relational knowing discussed here are structural knowing rooted in the relation of reciprocal fit, and affirmative knowing rooted in the relation of direct affirmation of unique particularity. In distinction to categorical knowledge, the information specifying these two types of relational knowing is more akin to whole than parts, to formed content rather than to either form or content separately. Structural knowledge is specified by the abstract geometric patterns of reciprocal fit (Gibson, 1966, 1979; Turvey and Shaw, 1977) and affirmative knowledge is specified by unique wholes (Buber, 1958).

> Traditionally knowing implies knowledge and knowledge implies acquisition and then storage—presumably inside an organism (or even more localized in the organism's mind). In order to be stored, knowledge must in some way be represented. This conception of knowledge leads most readily to a conception of knowing as computation and knowledge as a set of categories that represents the environment. An alternative view is to treat knowing as a relational process (thereby avoiding the problem of treating knowledge as a "thing") and consider it an ongoing transaction that generates coordination between a participating organism and the relevant structures of its surround. (Balzano and McCabe, in press)

Relational Knowledge

For both Buber and Gibson the knowledge of interest is the *direct relationship*—and that relationship occurs in the *present*. For Buber specifically, two

people affirm one another or a person affirms another entity by standing in direct relationship to that other as one unit, an I-Thou unit. "The relation to Thou is direct. No system of ideas, no foreknowledge, and no fancy intervenes between I and Thou" (Buber, 1958, p. 11). Further, the I-Thou relationship is a meeting in the present.

> The real filled present exists only in so far as actual presentness, meeting and relation exists . . . the I surrounded by a multitude of "contents" has not a present only a past. If a man rests satisfied with the things that he experiences and uses he lives in the past. He has nothing but objects. But objects subsist in time that has been. The present is enduring. Objects are cut clear from relation and presentness—their life is in the past. (Buber, 1958, pp. 11-12)

For Gibson, two organisms or an organism and its ecosystem co-implicate and are mutually specified by one another. They form a reciprocal affordance structure which supports organism actions in the world. It is as though the structure of an organism fits the structures in its world the way a key fits its lock. This affordance structure is directly perceivable from the environmental array (as a reciprocal fit specified by invariant geometric patterns). For both Buber and Gibson, there are *not* two independent entities (identity categories) that in some way inter-act. There is only one reciprocal unit; that unit is the *relationship between* the two entities, how the purportedly independent characteristics of each entity provide reciprocal support. Both Buber and Gibson acknowledge separate units or categories of objects, animals, and environments. But both suggest that the knowledge one acquires to function in the world is not of the identity of these separate units but of the unique compatibility between these units and oneself.

Extrinsic vs. Intrinsic Measurement.

An affordance structure mandates *intrinsic* rather than *extrinsic* measurement. Extrinsic measures (such as inches or wavelengths) are applicable primarily to separable attributes (such as size or color); they are used to compare and rank different entities on a particular commonly held attribute (e.g., how many inches around a tree limb might be compared to other tree limbs or how large a particular raccoon might be compared to the size of other raccoons). Since affordances constitute unique compatibility relationships, one cannot measure those compatibilities with standardized metric systems. For example, consider the extrinsic measurement obtainable with a ruler. Rulers can be used for problems involving linear distance. One can measure the cross section or length of tree limbs and then use these measures to compare one tree limb with another on these attributes. But you cannot measure the affordance those tree limbs provide as support for animals. In contrast, an intrinsic measure would relate a specific tree limb to a specific

animal. A small raccoon, for example, could perceive its own compatibility with a particular limb and decide to climb up on it and sit a while. A larger raccoon, happening by, might also perceive that tree limb and perceive that it would not support her weight. That particular tree limb has a unique and specific functional relationship to each raccoon: it is a relationship of reciprocal fit. The tree's criterial attributes, size and length, however, remain constant over both the small and large raccoon.

Perception of Reciprocal Fit

Organisms easily detect the intrinsic measures that specify reciprocal fit. Ingle and Cook (1977) placed a barrier between a frog and its food. The barrier included a set of variably shaped apertures through which the frog might jump to get to the food. The frog perceived the barrier and the apertures from a sitting position in which its body was taller than it was wide. When, however, it jumped, it chose to go through the aperture that best fitted its body shape in flight, more flattened and spread out. In short, frogs can gauge their variable fit through variably sized apertures.

In a similar vein, Hollings (1964) showed the remarkable ability of the praying mantis to gauge reciprocal fit. A praying mantis can correctly gauge the size of prey that will fit best into its mandibles. In itself this is not very interesting. But the praying mantis has a strange growth trajectory: it jumps from size to vastly different size without any intervening gradations. One might think that such a shock would disorient its perceptive capacities. But no, as soon as the mantis grows larger, it immediately goes after prey that fits its new mandibules.

An animal can also perceive different reciprocal fits with the same partner when the occasion is appropriate. Consider, for example, the relationship between a hermit crab and a sea anenome (von Uexküll, 1957). When deprived of its actinians the crab plants the anenome on its shell for camouflage. When the occasion changes and the crab is deprived of its shell, it responds to the anenome's soft receptive center and attempts to house itself inside the anenome. On another occasion, when the crab is deprived of food, it detects the food value of the anenome and eats it. The information detected on each of those separate occasions supports different needs and intentions and constitutes different affordances specified by different structural patterns. The categories of anenome and crab with their criterial attributes, however, remain constant across those occasions. Animals perceive and acquire knowledge of that part of the environment that is meaningful to them. The nature of categorical information may be the same across all organisms but it does not specify meaningful relationships. Categorical properties may be comprehended but they are not necessarily significant. Organisms tend to ignore properties that are irrelevant to their concerns, and if they are to

survive, their perceptual systems must be tuned to detect information central to those concerns. Meaningful information is more likely to come packaged in invariant geometric patterns that specify affordances. (For a fuller discussion of the concepts of invariant patterns and affordances see Gibson, 1966, 1979; McCabe, 1982b; Shaw, Turvey and Mace, 1982; Turvey and Shaw, 1977.)

People also perceive their fit to the structures of their world. Consider, for example, the act of walking up stairs. Warren (1984) has shown that people can perceive the most comfortable riser height for their own body-build from simply looking at photographs of stairs with different riser proportions. They can do this apparently by perceiving the relationship between the height of the riser and the ratio of their own eye height to their own leg length. Such a ratio reflects the optimal riser height for minimum energy use (caloric use) when climbing stairs. Thus, people clearly detect the fit of their own structure to the perceivable structure of the world around them. Because indoor stair risers commonly come in the standard height of seven inches (this average height offers the most comfort to the most people), it is not the case that people who choose other riser heights (from the photographs) as optimal for themselves have a memory of such unique risers, nor have they probably ever experienced walking up such customized stairs. Their ability to gauge their own optimal height appears to rest solely on their ability to perceive their own fit into both the novel and familiar world around them. An interesting point is that people can gauge the proportional pattern of stair risers as a function of their own fit with those stair risers without the benefit of standards extrinsic to their self/stair relationship. They do not need to use animal-neutral measurement grids such as rulers marked in feet and inches.

For Gibson, the information which specifies the reciprocal fit for relationships is *between* animal and tree, frog and aperture, mantis and prey, and person and stairs; both the organism and the tree, aperture, prey, or stairs are co-implicated and the specification of interest is a function of their structural compatibility, not their individual attributes. Reciprocal specifications are scaled to organism structure and detectable directly from surrounding structures by organisms seeking supports for their activities (McMahon, 1983; Shaw, Turvey and Mace, 1982).

Affirmative Knowledge

Buber (1958) contends that one can have both an I-It and an I-Thou relationship to a structure such as a tree. Buber suggests that he can look at a tree as a picture, classify it as a species, dissipate it and perpetuate it in number, or even "subdue its actual presence and form so sternly that I [Buber] can recognize it only as an expression of law . . . those in accordance with which the component substances mingle and separate" (p. 7). From an I-Thou perspective Buber suggests that, "It can, also come about . . . that in consider-

ing the tree I become bound up in relation to it. The tree is now no longer it. I have been seized by the power of exclusiveness" (1981, p. 7). Buber does not have to give up any categorical knowledge to effect this relationship, he simply *unites* it all and stands in direct relation to the whole tree.

> Everything belonging to the tree is in this: its form and structure, its colours and chemical composition, its intercourse with the elements and the stars, all are present in a single whole. The tree is no impression, no play of my imagination, no value depending on my mood . . . let no attempt be made to sap the strength from the meaning of the relation: relation is mutual . . . . I encounter no soul or dryad of the tree, but the tree itself. (1958, pp. 7-8)

In this encounter, Buber affirms the tree's existence as it is in itself. He makes no judgment and assigns no category. From total affirmation of the tree total knowledge of the tree is possible. Buber is attempting to characterize knowledge *qua* knowledge, not knowledge about something. And this knowledge accrues to relationship and meeting. Buber realizes that relationships in the world can be two-fold, the world to be met and the world to be used. Here Buber's I-Thou and Gibson's affordances diverge; Gibson's theory is one of knowledge of reciprocal specifications that support action and Buber's system is one of knowledge of unique being that supports affirmation.

To recapitulate, in contrast to Gibson's type of relational knowledge, Buber's relational knowledge affirms existence rather than function. While categorical knowledge specifies components, structural knowledge specifies the reciprocal form of functional relationships, and affirmative knowledge specifies primary and unique wholes, total beings. While categories are abstracted and applied, structural reciprocities are detected and used, affirmations are chosen and met.

Experiencing

A primary difference between categorical knowledge on the one hand and structural and affirmative knowledge on the other hand is revealed by Buber's interpretation of the act of experiencing. From Buber's view, when you experience something it is "in" you and thus already in the past. You confront that thing from an internal source and that source must, of necessity, already be constituted in order to provide the experience. That thing then becomes an object of your experience. The present does not yield experiences, only meetings and relationships. An experience must be extruded from the incarnate whole present and internalized. By the time it is internalized it has already occurred and belongs to the past: people only experience that which belongs to things as objects. They extract and accumulate facts about things. "But the man who experiences has no part in the world. For it is 'in him' and not between him and the world that the experience arises" (1958, p. 5). For Buber,

experiencing is like categorizing—a distortion of the lived present.

Gibson maintains that perception of the affordance structures of the environment is direct and immediate. Environmental structures are not experienced as a set of objects but lived in various relationships. Knowledge of things is directly given in the present situation. There is no need to invoke concepts about or experiences of identities of things to proceed accurately through daily life. In fact, it is often the products of these mental processes that obscure the real world by providing a screen of past experiences, imagined possibilities, and generic categories (that may have no actual real-world counterparts) between a person and his or her world.

To attempt some clarification of this categorical/real world disjunction let us consider and compare the category of, the affordance structure for, and the affirmation of the most difficult human endeavor, love. The phenomenon of love is a good candidate for such an analysis because it can be considered a concept about a relationship, a reciprocal relationship itself, or, in contrast to most other things, it can more easily fulfill the tenets of an I for a Thou.

Three Ways of Knowing With Respect to Love

The categorical information that specifies love is at the onset rooted in a metaphor of questionable reality, "falling in love." If one falls in love, it is, of course, the category of love that one has fallen into, not a relationship to another. As long as people maintain a categorical approach to love, their love object may simply be the prototype of this category (based on his or her "bundle of defining attributes"). This may appear to trivialize the issue but I think not. Individuals often list the attributes of their own feelings and of their loved one's characteristics when describing their love. Often these characteristics are projections that do not survive the test of time. People wake one day to realize they are experiencing that person as quite different than they first thought them to be. This may be because they originally experienced their own a priori category for love with its own criterial attributes. They then projected this a priori view on the person at hand. The attributes they listed might even have some intersection with those of the person they loved (e.g., blonde, attractive, rich); but attributes do not necessarily provide the reciprocal support necessary for affording comfort or the affirmative support necessary to affirming one's existence without judgment or exploitation.

Considering that species survival depends on successful mating and raising of young to maturity, the notion that knowledge of who one might love is based on abstracting criterial attributes gives one pause. No list, no matter how extensive or elegant, will establish such an identity class. Attributes do not contribute to the kind of knowledge that supports establishing and maintaining a loving relationship. Lists of criterial attributes are rarely applicable to particular people. Such attributes bring unrealistic criteria to bear on

a relationship. From an evolutionary point of view this method of choosing mates might be considered less than adaptive.

Let us then consider a more functional approach, the detecting of reciprocal fit for mating and companionship which involves a unique compatibility with another person. How can one describe the information that specifies such an affordance structure? On the most basic level, one can detect the dynamic geometric patterns (such as those isolated in experiments using point light displays) which specify gender (Cutting et al., 1978) and ensure our ability to distinguish men from women—even when they are pretending to be the opposite sex. The same type of geometric information also specifies people's actions and intentions—including deception (Ekman, Friesen and Scherer, 1976; Frykholm and Runeson, 1982)—and supports the perception of social relationships.

In addition, the more specific information for mutual support and companionship is available in the pattern of information that specifies relational (as contrasted with categorical) love events. Affordance structures for relational love events exist and are detectable, for example, when both parties are present and helpful when needed, fill each other's sexual needs, support one another's values and endeavors, and act in such a way as to create a compatible unit.

Each relationship has, of course, unique requirements and goals. Structural compatibilities are intrinsic to the relationship itself. Such compatibilities can only be acted; they cannot be categorized and judged because there are no accurate extrinsic criteria that are useful in measuring intrinsic reciprocity (although the cognitive urge to do so is constant). If one introduces extrinsic category judgments into love relationships these relationships may collapse. By definition, the category of love is generic; it applies to no "particular" and can only serve as an unfillable irritant that converts a possible relationship into an attribute-calling battleground. One might characterize this problem as the ultimate category mistake.

To counteract the questionable effects of mental processes on love relationships, individuals often advocate "utilizing" feelings rather than concepts. There is a hidden paradox here. Buber (1958) states it well: "Feelings dwell in man; but man dwells in his love . . . love is *between* I and Thou" (p. 14). Feelings, like thoughts, are internal experiences, the products of categorization and judgment. Feelings reflect what has already been: "She did not look at me—I feel hurt; no one calls me—I feel lonely." The statement rarely reverses: "I looked at her so coldly, I discounted our relationship; I never call anyone—I remain outside any relationship." When we think in categories we are cut off from direct contact and relationship. Consequently, we do not detect the available affordances in our world nor affirm another noncategorically and thus stand in an I-Thou relationship to them.

In Buber's (1958) depiction the love relationship is simply affirmative.

> No aim, no lust, and no anticipation intervene between I and Thou. Desire itself is transformed as it plunges out of its *dream* into the appearance. Every means is an obstacle. Only when every means has collapsed does the meeting come about. (pp. 11-12)

Buber goes on to enlarge the I-Thou relationship to the possibility of loving all people.

> Love is responsibility of an I for a Thou. In this lies the likeness of all who love, from the smallest to the greatest and from the blessedly protected man, whose life is rounded in that of a loved being, to him who all his life nailed to the cross of the world, and who ventures to bring himself to the dreadful point—to love all men. (p. 15)

This analysis of relational knowing, both structural and affirmative, is not limited to relationships of love or even to relationships between individuals. To know anything as it *is* one cannot make it into one's object; one must stand in direct relationship to it. To stand in direct relation is the original epistemic act; to categorize is to analyze what one already knows and then use those analyses as linguistic categories and stored memories. It is not unlike the difference between understanding basic principles and acquiring content through rote learning. Re-assessing our capacities to know, as well as the kind of knowledge that is important to us, could have major implications for many of our core concerns and activities. If we consider mutual compatibilities, intrinsic measures, direct detection, and affirmation of real world people, objects, and events, our view of the nature of knowledge and what it means to acquire knowledge may change. And in changing, may generate a new view of the world.

References

Balzano, G., and McCabe, V. (in press). Event cognition: An overview. In V. McCabe and G. Balzano (Eds.), *Event cognition: An ecological perspective.* Hillsdale, New Jersey: Erlbaum Associates.

Ben-Zeev, A. (1984). What is a perceptual mistake? *The Journal of Mind and Behavior, 5,* 261-278.

Bransford, J.J. (1979). *Human cognition.* Belmont, California: Wadsworth.

Bruner, J.S., Goodnow, J.J., and Austin, G.A. (1962). *A study of thinking.* New York: Basic Books.

Buber, M. (1958). *I and Thou.* New York: Charles Scribner's Sons.

Cassirer, E. (1953). *Substance and function.* New York: Dover.

Cutting, J.E., Proffitt, D.R., and Kozlowski, L.T. (1978). A biomechanical invariant for gait perception. *Journal of Experimental Psychology: Human Perception and Performance, 3,* 357-372.

Ekman, P., Friesen, W.V., and Scherer, K.R. (1976). Body movement and voice pitch in deceptive interaction. *Semiotica, 16,* 23-27.

Frykholm, G., and Runeson, S. (1982). *Kinematic specification of dynamics as an informational basis for person and action perception : Expectation, gender recognition, and deceptive intention.* (Report no. 324). Uppsala, Sweden: Uppsala University Psychological Reports.

Gheselin, M.T. (1981). Categories, life and thinking. *The Behavioral and Brain Sciences, 4,* 269-311.

Gibson, J.J. (1966). *The senses considered as perceptual systems.* Boston: Houghton-Mifflin.

Gibson, J.J. (1979). *An ecological approach to visual perception.* Boston: Houghton-Mifflin.

Hollings, C.S. (1964). The analysis of complex population processes. *Canadian Entymologist, 96,* 335-347.

Ingle, D., and Cook, J. (1977). The effects of viewing distance upon size preference of frogs for prey. *Vision Research, 17,* 1009-1019.

Maturana, H.R., Lettvin, J.Y., McCullough, W.S., and Pitts, W.H. (1960). Anatomy and physiology of vision in the frog (*Rana pipiens*). *Journal of General Physiology, 43,* 129-175.

McCabe, V. (1980). Memory for meaning: The effect of implicit beliefs on recognition. *Dissertation Abstracts International, 41,* 1547B.

McCabe, V. (1982a). The perception of universals: A theory of knowledge acquisition. *Synthese, 52,* 495-513.

McCabe, V. (1982b). Invariants and affordances: An analysis of species-typical information. *Ethology and Sociobiology, 3,* 79-92.

McMahon, T.A. (1983). *Muscles, reflexes and locomotion.* Princeton, New Jersey: Princeton University Press.

McMahon, T.A., and Bonner, J.T. (1983). *On size and life.* New York: Scientific American Library.

Rosch, E. (1978). Principles of categorization. In E. Rosch and B.B. Lloyd (Eds.), *Cognition and categorization* (pp. 27-48). Hillsdale, New Jersey: Erlbaum Associates.

Rosch, E., and Mervis, C.B. (1975). Family resemblances: Studies in the internal structure of categories. *Cognitive Psychology, 7,* 573-605.

Shaw, R.E., Turvey, M.T., and Mace, W. (1982). Ecological psychology: The consequences of a commitment to realism. In W. Weimer and D.S. Palermo (Eds.), *Cognition and the symbolic processes* (Vol. 2, pp. 159-226). Hillsdale, New Jersey: Erlbaum Associates.

Tinbergen, N. (1951). *The study of instinct.* New York: Oxford University Press.

Turvey, M.T., and Shaw, R.E. (1977). The primacy of perceiving: An ecological reformulation of perception for understanding memory. In L.G. Nilsson (Ed.), *Perspectives on memory research: Essays in honor of Uppsala University's 500th anniversary* (pp. 167-222). Hillsdale, New Jersey: Erlbaum Associates.

Uexküll, J. von (1957). A stroll through the worlds of animals and men. In C.H. Schiller (Ed.), *Instinctive behavior* (pp. 5-80). New York: International Universities Press.

Warren, W.H. (1984). Perceiving affordances: Visual guidance of stair climbing. *Journal of Experimental Psychology: Human Perception and Performance, 10,* 683-703.

Wittgenstein, L. (1953). *Philosophical investigations.* New York: MacMillan.