CHAPTER 4

INCLUSION WITH NATURE: THE PSYCHOLOGY OF HUMAN-NATURE RELATIONS

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Summary. *Human survival is directly tied to our relationship with the natural environment. Achieving a sustainable lifestyle depends on establishing a balance between the consumption of individuals, and the capacity of the natural environment for renewal. Yet, we often act as if we are separate from nature – as if we can get along without nature. Indeed, built environments serve as barriers between individuals and the natural environments in which they live. Offices, schools, homes, cars, restaurants, shopping malls, and many other built environments segregate people from nature. This chapter examines the implicit connection that individuals make between self and nature, and the impact of built environments on these implicit cognitions. A psychological model for inclusion with nature is presented, containing cognitive (connectedness), affective (caring), and behavioral (commitment) components. Implications for theory, design, and sustainability are discussed.*

We are all a part of nature. We are born in nature; our bodies are formed of nature; we live by the rules of nature. As individuals, we are citizens of the natural world; as societies, we are bound by the resources of our environment; as a species, our survival depends on an ecological balance with nature. Yet as individuals, societies, and a species, we spend our lives trying to escape from nature. We separate ourselves from the natural environment with clothes, cars, houses, and shopping malls. We build roads and cities to make for a more comfortable lifestyle. Indeed, we live our lives as though the natural

environment was something abhorrent – something that needs to be tamed and controlled. This paper explores the psychology of human-nature relations.

This paper examines three issues. First, I argue that people living in industrialized nations are largely alienated from nature. They spend only a small amount of time outside of built environments, and they tend to have romantic, idealized views of nature. Second, I examine the philosophical, sociological, psychological, and conservation literature on "inclusion with nature." There is a large, but loosely integrated body of literature that examines human relationships with the natural environment. Third, I sketch a psychological model of inclusion and summarize some relevant research on human-nature relationships.

HUMAN EXPERIENCES WITH NATURE

Many of our recent technological advances have served to separate people from the natural environment. Without technology, humans would be directly exposed to nature. Historically, they would have hunted, lived, traveled, and socialized in nature. Slowly across history, humans developed technology to protect ourselves from the elements of nature – clothes, fire, houses, boats, and so on. With separation from nature came protection, safety, and an increased comfort of living. Fast forward to the present day where many people in industrialized countries spend the bulk of their lives in built environments – houses, office buildings, cars, and stores. As Strong (1995) writes, "We can think of many other ways in which devices detach us from the environment. If cars do this to some extent, jets remove us even more. An exercise machine that imitates the movements of cross-country skiing detaches one from the trail experience" (p. 29). Continue this trend into the future, and it is easy to envision a time when nature, as we know it, no longer exists. Indeed, if one spends all of his/her life in built environment, what purpose does nature serve? Consider the following description of a family's trip to a zoo:

> Mom or dad (not both) rushes the kids into the car and gets on the interstate and drives 65 miles an hour to an Animal Safari Park. There they pay $10 per person and drive through taking snapshots through rolled-up windows with an instamatic camera. In just 45 minutes, they are back on the Interstate looking for a fast-food place for lunch. The only sense of wonder is what to do next. (Robinson & Godbey, 1997, p. 35)

The notion of being connected with nature is a psychological one. As outlined in the sections below, the extent to which an individual believes that s/he is connected to nature has cognitive, affective, and behavioral components. But an interesting place to begin is the amount of time that people spend in natural versus built environments. Although few systematic studies of this specific issue have been conducted, it is possible to approximate this using data from

the Americans' Use of Time Project (Robinson & Godbey, 1997). Although there are clear differences by age, gender, ethnicity, and occupation, our interest here is in a general pattern. Of the 168 hours in a week, 30 are spent in paid employment, 24 for family care (cooking, cleaning, traveling, shopping), 74 personal time (sleep, eat, groom), and 40 free time (TV, read, recreate, fitness, education). These numbers are similar to data from 1965 and from 1975, and to data from Western Europe. Of these activities, nearly all occur in built environments. The most likely place to look for time spent outdoors would be in the 40 hours per week of free time – perhaps walking, gardening, hiking, or recreating. In the data reported by Robinson and Godbey (1997), Americans spend only about 5 minutes per day in outside recreation. In 1975, the figure was 7 minutes per day. Men tend to spend more time in outside yard maintenance (about 1 hour per week). However, a number of other possible outdoor activities (gardening, walking) were not listed.

A more recent analysis specifically examined the amount of time Americans spend outdoors. The results were based on national survey data collected using a "time diary" approach. Across all categories, Robinson and Silvers (2000) found an average of 89 minutes per day spent outside. Among the predictors of time spent outdoors, men (M=146 minutes per day) spent more time outdoors than women (M=49 minutes per day), less educated people spent more time outdoors than more educated people, people living in rural environments spent more time outdoors than did those living in urban or suburban areas, and full-time employment correlated negatively with time spent outdoors. The difference in total time spent outdoors between the two samples is likely due to outside employment (e.g., agriculture, construction) which was included in the latter study. Across the national sample, 51% reported spending no time outside, 30% less than 1 hour per day, and 20% reported more than 1 hour per day outside (14% reported six or more hours per day). Taken together, the results from time use studies with adults show that more than half of the U.S. population does not spend any time outside (beyond the few moments required to move from one built environment to another), and very little free time is spent outside (about 5 minutes per day).

Compared with adults, children tend to spend more time outside (Robinson, 1972; Silvers, Florence, Rourke, & Lorimar, 1996). Silvers et al. (1994) examined time spent indoors and outdoors among children aged 5-12, in six geographically-diverse U.S. states. Overall, children spent just over 2 hours per day outside. Boys tended to spend more time outdoors than girls, and younger children spent less time outdoors than older children. As to be expected, children spent more time outdoors in the summer and spring, and on weekends more than weekdays. The bulk of the time spent outdoors (~50%) is spent in outdoor play and sports.

What emerges from the study of time usage is a lifestyle that is very separate from nature. We work, sleep, and recreate primarily in built

environments. What this means is that people have little primary contact with nature (Berry, 1977; Nabhan & Trimble, 1994). Such a lifestyle would seem, intuitively, to lead to a lack of understanding of nature. Indeed, many of us know very little about the plants or animals that share our communities – we live our lives apart from nature, segregated by choice. The following sections consider the philosophical and sociological literature on human-nature connectedness.

HUMAN-NATURE RELATIONS

In the past 50 years, a variety of authors have commented on the importance of human-nature relations. The conservation literature is replete with references to being *in touch with*, *connected to*, or *part of* nature, and many other references to *oneness*, or our *relationship* with nature. It would appear that each of these terms refers to a similar underlying construct, or at least a set of interrelated constructions.

Philosophical Foundations

From a philosophical perspective, we can talk about the value that people place on nature. Environmental ethics is an examination of the moral issues involved in human-environment relations. What value does nature have? An economic value, recreational value, aesthetic value, religious value? To what extent do we have a responsibility to a rock, tree, bird, or animal? For many in the Western tradition, the answer is none (Rolston, 1988).

In his classic book, Aldo Leopold (1949) outlined a view for a new land ethic. He suggested that humans need to consider the importance of the natural environment – of our dependence on nature. Rather than an ethic of dominion and control, humans need to learn to live in harmony with nature and to respect nature. In this new land ethic, human activity will be guided by the impact that it will have on the natural environment. In order for this to occur, we must know about nature: about ecology, about plants and animals, and about the effect that our behavior has on this ecology. At the core of environmental ethics is an implicit consideration of the similarities between humans and nature. As Leopold (1949) stated:

> "Darwin gave us the first glimpse of the origin of species. We know now what was unknown to all the preceding caravan of generations: that men are only fellow-voyagers with other creatures in the odyssey of evolution. This new knowledge should have given us, by this time, a sense of kinship with fellow-creatures" (p. 109).

To what extent are humans part of nature? The answer to this question ripples through any ethic. If humans are part of nature, if they are connected symbiotically with nature, then perhaps they have a responsibility to protect

nature. In contrast, if humans are not part of nature, if they are above or separate from nature, then they do not have a moral responsibility. Ethics in which people are seen as connected to nature will lead to values of stewardship and caring. In contrast, separateness from nature will lead to ethics in which nature is valued only to the extent that it benefits humans. Indeed, from this perspective, aspects of nature that are harmful to humans should be destroyed – wolves, snakes, poison plants should be destroyed. Since they don't have any intrinsic value, and pose a potential threat to people, they should be removed.

Several studies have attempted to identify the ethical issues and values pertinent to environmental issues (cf. Clayton & Opotow, 1994). Opotow (1994) has argued that our views of nature, and our behavior toward nature, are influenced by our scope of justice. *Scope of justice* refers to the psychological boundary within which our understanding of fairness applies. If a person or object is included within our scope of justice (also referred to as our moral community), then concerns about rights and fairness apply. If instead, a person or object is outside of our scope, then moral considerations do not apply. Indeed, objects that lie outside of our scope of justice are viewed as expendable, irrelevant, and undeserving. "An exclusionary, anti-environmental perspective, exemplified by the "wise use" movement, asserts the preeminence of humans and values human economic and recreational activity over the well-being of the nonhuman natural environment" (Opotow, 2000, p. 478).

Sociological and Anthropological Extensions

Environmental ethics examines the value that people place on nature, and the moral issues that result from the ways in which people interact with nature. But to what extent are these ethics shared across people? At a fundamental level, the extent to which a group of people believe that they are connected to, or separate from, nature is an essential part of culture.

In his *Green History of the World*, Clive Ponting (1991) chronicles the changing relationship between humans and the natural environment: from ancient hunting and gathering societies, to the emergence of complex societies, the industrial revolution, the continuing struggle for food and energy, and the overuse and pollution of the natural world. At the core of these historical transitions has been the relationship between humans and their natural surroundings. "One of the fundamental issues addressed by all traditions is the relationship between humans and the rest of nature... Are humans an integral part of nature or are they separate from it and in some way superior to it?" (p. 141). Ponting argues, and demonstrates quite convincingly, that from this core belief flow religious beliefs, morals, and the appropriate ways for humans to use plants and animals. The development of increasingly powerful technologies, coupled with a view that humans are separate from the natural environment, has led to overconsumption and a lack of concern for the

biosphere (except to the extent that it impacts humans). See also Brown (1995). As Hertsgaard (1999) states, "Many Americans and Europeans, especially those living in cities, have grown so distanced from the natural world that they seem to think that they could live without it" (p. 25).

Dunlap and his colleagues have argued that beliefs about the relationship between humans and the natural environment are "primitive." Beginning with his work with Kent Van Liere in 1978, Dunlap has attempted to measure the development of a New Environmental Paradigm. In comparison, the Dominant Social Paradigm emphasizes growth, a resilient nature, and human dominion over nature. The environmental movement has pushed for a new worldview, a new paradigm about the relationship between humans and nature in which humans are seen as part of nature. The New Environmental Paradigm scale (and its recent revision) measures these beliefs. For reviews of research using the NEP scale, or theoretical extensions of NEP theory, see Milbrath (1984), Olsen et al. (1992), or Dunlap et al. (2000).

At a Psychological Level

At the heart of the discourse on human-nature relations is the recurring theme about a *relationship* with nature. Philosophers talk about this in terms of ethics, or morality. Sociologists talk about culture, values, and the ways in which societies interact with nature. Conservationists talk about land ethics, and the experiences that result from encounters with nature. But at the core is the individual, and his or her understanding of his place in nature.

What do psychologists have to say about this connection? Unfortunately, very little. As Kidner (2001) points out, psychologists have devoted very little attention to the study of our relation to the natural world.

> Destruction of the natural environment is due to human behavior; so one might, on the face of it, expect that psychology, which has defined itself as the science of human behavior, would be able to offer a powerful and far-reaching analysis of our relation with the natural world. If so, one would be sorely disappointed. (p. 44)

Even the psychological discipline of environmental psychology is devoted almost entirely to an examination of the effects of environments on human behavior, and not the reverse. Kidner (2001) proceeds to show the limits of current psychological theories, and the changes that are needed to develop a psychological model of human-nature relations.

Ecopsychology is an emerging psychological perspective that attempts to articulate human-nature relations (Gomes & Kanner, 1995; Roszak, 1995; Winter, 1996). The ecopsychological literature provides a rich theoretical foundation for understanding psychological inclusion (cf., Roszak, 1995). However, ecopsychology tends to be experiential, and not scientific. The field focuses on "healing the split between planet and self" (the subtitle of Winter's

1996 book on ecological psychology). As reflected in this subtitle, ecopsychologists tend to be therapists, and not scientists. The following sections build on the foundation laid by Kidner (2001) and others (Rozack, Gomes, & Kanner, 1995; Roszak, 1992; Opotow, 1994; Dunlap et al., 2001) in an attempt to sketch the beginning of a scientific psychological model of human-nature relationships.

Inclusion With Nature

A psychological analysis of inclusion focuses on the understanding that an individual has of her place in nature, the value that s/he places on nature, and his/her actions that impact the natural environment. Drawing on a large body of social psychological literature, it is possible to sketch a broad psychological model for understanding environmental inclusion. The model draws largely from work on relationships (Aron & Aron, 1991; Berscheid & Reis, 1998; Sternberg & Barnes, 1988), as well as research on the self (Markus, 1977; Markus & Kitayama, 1991). Inclusion with nature has three core components: connectedness, caring, and commitment.

Connectedness With Nature. Many of the philosophical and sociological theories about human-environment relationships use the term *connectedness* to describe the extent to which individuals believe that they are part of the natural world. Although it is often used in a broader context, the core of a connection with nature is cognitive. *Connectedness refers to the extent to which an individual includes nature within his/her cognitive representation of self.*

There is a sizeable psychological literature on the cognitive representations of self. The term self is used to refer to a range of constructs, but for our purposes, *self* is a person's thoughts and feelings about who they are (cf. Brown, 1998; Baumeister, 1998). Self knowledge is organized in hierarchical cognitive structures, known as self schemas. For example, a person may have a schema of self that includes physical characteristics (e.g., brown hair), social identities (father, professor), and leisure activities (e.g., hiking, basketball). These self schemas serve to organize our social experiences, and to provide a coherent understanding of who we are.

Research has also demonstrated cultural differences in the structuring of self knowledge (Markus & Kitayama, 1991). Western cultures tend to emphasize an independent self: the focus is on the individual, people should express their own uniqueness, and success involves distinguishing oneself from others. In contrast, the self in many other cultures (e.g., Asian, south American, African) is interdependent. The focus is on the collective, people are expected to attend to others and to fit in, and individualism is discouraged. This distinction between independent and interdependent selves also applies to close interpersonal relationships.

An important part of an interpersonal relationship is a deepening sense of interdependence with another person (Berscheid & Reis, 1998). A key piece of interdependence involves the cognitive representation of self. Aron et al. (1991, 1992, 1999) have argued that in close relationships, the cognitive representations of self and other become integrated. That is, the schematic representation of self and other overlap with many shared qualities. Taken to the extreme, self and other become one.

This is the central aspect of inclusion with nature. Individuals who define themselves as part of nature have cognitive representations of self that overlap extensively with their cognitive representations of nature. In contrast, individuals who do not define themselves as part of nature will not have overlapping schemas of self and nature. These cognitive representations are measurable using cognitive methodologies, and serve as the fundamental aspect of human-nature relations.

Caring for Nature. The second dimension of inclusion is an affective one. Given that a person feels a sense of connection with nature, to what extent do they care about nature. One of the central aspects of a close relationship is a feeling of intimacy – the feelings of closeness and affection in a relationship. Intimacy involves a sharing of oneself with another, and a deep level of knowledge about the other. This knowledge about the other person produces a feeling of closeness, and caring for the other (Aron et al., 1997; Hatfield & Rapson, 1993). Although intimacy typically develops through a process of self-disclosure, it seems an easy extension to suggest that people can have a sense of intimacy, or at least caring, for an animal or place.

Recently, Kals, Schumacher, and Montada (1999) have argued for the importance of emotion in understanding environmental attitudes and behaviors (see also Kals & Degenhardt, this volume). The authors introduce the construct of emotional affinity, which reflects an individual's emotional bond with nature. Based on questionnaire data, the authors report strong correlations between emotional affinity and a number of proenvironmental behaviors and commitments (correlations ranging from r=.49 to r=.60). Emotional affinity, they argue, results from positive interactions with nature, and from spending time with nature. Their data showed that spending time in nature (four measures) explained 39% of the variance in emotional affinity. The analogy to interpersonal relationships used above applies here: just as the relationship between two people becomes more intimate as they spend time together, so too does our relationship with nature.

Commitment to Protect Nature. The third dimension of inclusion is behavioral. Given that a person has a sense of connection with nature, and that they care for nature, are they motivated to act in the best interest of nature. In interpersonal relationships, commitment is the strength of one's intention to

continue the relationship. It is a person's willingness to invest time and resources into the relationship.

One notable line of research on behavioral commitment is the research on Willingness to Pay (WTP). Typically in WTP studies, participants are asked to indicate the maximum that they would be willing to pay to contribute toward a specific cause. In the psychological approach, WTP measures what the individual would be willing to contribute to a collective effort. For example, "At most grocery stores, paper towels cost about 85 cents per roll. How much extra would you be willing to spend for a roll of paper towels made from recycled paper products?" This question, taken from Guagnano, Dietz, & Stern (1994) is very specific; other WTP questions can be very broad, asking about global warming or water pollution (Kahneman et al., 1993).

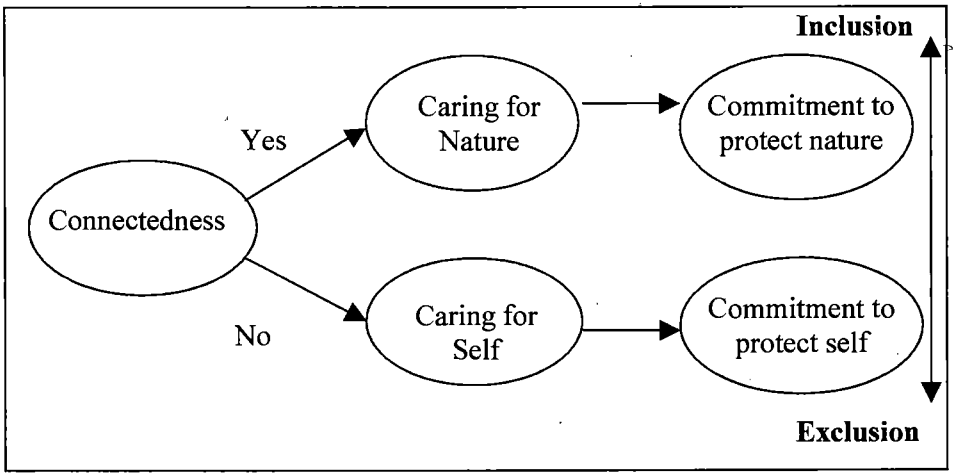

Figure 1. *Connectedness, caring, and commitment – the core components of inclusion*

A second systematic approach to measuring proenvironmental commitment is Kaiser's General Ecological Behavior scale (Kaiser & Biel, 2000; Kaiser, Woelfing, & Fuhrer, 1999). The GEB scale consists of a number of proenvironmental behaviors of varying levels of difficulty. For example, purchasing recycled paper products is relatively easy in the United States, while other behaviors like installing solar energy systems on our homes are relatively difficult. Because the scale incorporates the difficulty of the behavior in the assessment, it can be used across contexts. For example, riding public transportation to conserve gasoline is relatively easy in Washington DC, but difficult in Los Angeles. The scale allows for a general assessment of an individual's commitment to act in proenvironmental ways.

Connectedness, Caring, and Commitment. The three core components of psychological inclusion outlined above provide a general framework for understanding human-environment relations. But there also appears to be a causal connection between these three constructs. Commitment for protecting the environment cannot occur in the absence of caring. Likewise, it would seem that caring is unlikely to occur in the absence of connectedness. What I am proposing is a causal sequence shown in Figure 1. Beliefs about the extent to which one is a part of nature are primitive beliefs – the core element that leads to caring, and more specific sets of attitudes. Caring, in turn, leads to a commitment to act – intentions on the part of the individual to act in ways that protect the natural environment. Note the striking similarities between the model shown in Figure 1, and Batson's (1988, 1991) empathy-altruism model for helping behavior.

Recent authors have suggested that a lack of inclusion could be associated with specific environmental behaviors in situations where the actions are perceived to benefit self. However, these behaviors are not the result of a commitment to protect the environment. Rather, they are a commitment to help the self. When inclusion with nature is low, the individual then cares more about self than about nature, and commitment to act is focused on benefiting self. Examples would include recycling for money, conserving energy when rates are high, purchasing fuel efficient cars to save on gas costs.

MEASURING INCLUSION

In the preceding sections, I have sketched a basic psychological approach for understanding human-environment relations. But to this point, I have presented little empirical evidence. How can we measure inclusion? Are connectedness, caring, and commitment correlated? Do they predict more specific attitudes or actions? There are several measurement approaches that have been developed by psychologists to measure aspects of inclusion.

Values. One line of research that may be tapping into inclusion are studies of values, and of the relationship between values and environmental attitudes. Several recent studies have used Schwartz's (1992, 1994) values inventory (Karp, 1996; Schultz, 2000; Schultz & Zelezny, 1999). The consistent finding from this research is that self-transcendence values are positively correlated with general environmental attitudes. Schultz and Zelezny (1999) found this relationship to hold across a 14-country sample. Self-transcendence values reflect a focus on principles that are not directly tied to self. In contrast, self-enhancement values reflect a valuation of self, above others, and above nature. See also Stern et al. (1995, 2000).

Paul Stern and his colleagues have advanced a Value-Belief-Norm theory for environmental concern. The VBN theory suggests that an

individual's concern for environmental issues is a function of valuing nature, an awareness that the valued object is being harmed, and an ascription of responsibility to self. Stern and his colleagues have argued that different value orientations underlie different attitudes. That is, a person who values self will be concerned about environmental issues only if harm is perceived as coming to self, and s/he ascribes responsibility for this harm to self. Elsewhere, I have suggested that these value orientation may reflect a fundamental difference in inclusion (Schultz, 2000).

Moral Choices. Another line of research in which something akin to inclusion are measured is studies of moral choices. Clayton (2000), and others (Syme & Fenton, 1993; Opotow, 1994) have used scenarios that describe an environmental conflict, and asked participants to rate the importance of various principles. For example, in a scenario about logging and the conflict over logging old growth forests, some ethical principles might include: a responsibility to future generations, making sure people get what they need, or human responsibilities to other species (to name just a few). Responses to these principles seem likely to reflect an underlying sense of inclusion, although little research has directly examined this.

New Environmental Paradigm. Dunlap's work on the New Environmental Paradigm (NEP) scale was summarized above. Essentially, the NEP scale attempts to measure individual differences in the extent to which people believe that humans are a part of the environment, or whether they are separate from the environment. A considerable amount of psychometric work has gone into the scale, and the research has found it to predict a number of other attitudes about environmental issues and also self-reported behaviors.

Environmental Attitudes Scale. Thompson and Barton (1994) have developed a scale to assess specific ecocentric attitudes, as distinguished from anthropocentric attitudes. Theoretically, both sets of attitudes are related to concerns for environmental issues: anthropocentric attitudes are based on the effects that environmental problems have on humans, whereas ecocentric concerns are based on an intrinsic value of nature.

Environmental Motives. In my own work, I have attempted to identify the general structure of concern for environmental issues (Schultz, 2000, 2001). Following Stern & Dietz (1994), I sought to identify concerns rooted in a person's values. What emerged was a clear finding that environmental concern has three correlated factors: egoistic concerns which are focused on valuing self, altruistic concerns which are focused on valuing other people and future generations, and biospheric concerns which are focused on valuing nature. Subsequent research has found biospheric concerns to be a good predictor of

self-reported environmental behavior, and to be strongly correlated with scores on the NEP scale and with ecocentric attitudes. The findings have been found to generalize across cultures (Schultz, 2001). I have argued that biospheric attitudes reflect a greater level of inclusion with nature, while egoistic attitudes reflect a separateness from nature.

Inclusion with Nature in Self. In an attempt to directly assess inclusion, I have modified a scale developed by Aron et al. (1991, 1992) to assess closeness in interpersonal relationships. The scale consists of a series of overlapping circles, with the labels "Self" and "Nature." Participants are asked to select the image that best describes their relationship with nature. The item, shown in Figure 2, has been found to be reliable across time, and to correlate positively with biospheric attitudes, scores on the NEP, ecocentrism, and self-reported behavior.

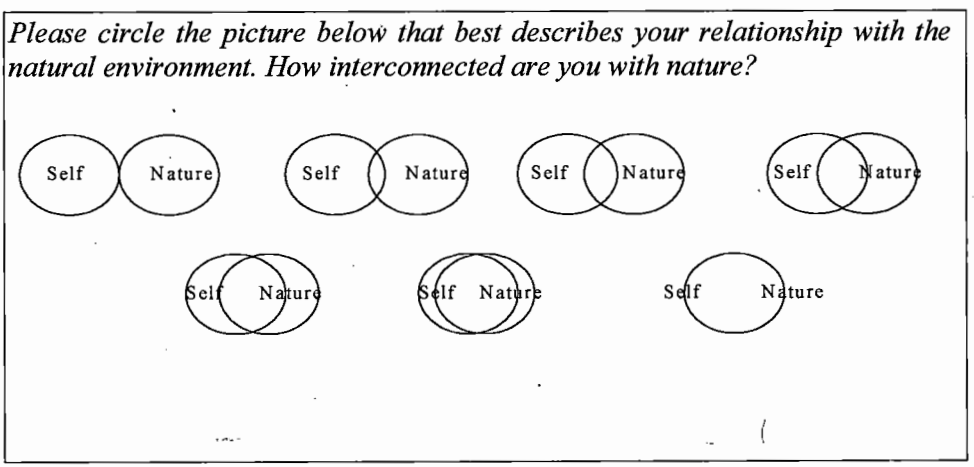

Figure 2. *Inclusion of Nature in Self (INS) Scale*

Implicit Associates Test—Nature. Most recently, we have begun to examine the cognitive structure of self and nature, using a modified Implicit Association Test (Greenwald, McGhee, & Schwartz, 1999; Greenwald & Farnham, 2000). In this computer-based procedure, participants are presented with a word, and their task is to identify whether the word is natural or built, self or other. The categories are then combined (self-nature, other-built), and then reversed (self-built, other-nature). By examining reaction times to various combinations of categories, it is possible to assess the implicit connection that an individual has between self and nature.

INCLUSION AND SUSTAINABLE DEVELOPMENT

Many authors have argued that a psychological connection with nature will be required to achieve sustainability (Clayton, 1998; Freyfogle, 1998; Gore, 1991; Kidner, 2001; Strong, 1995, Taylor, 1986). Consider the following quote from Tarnas (1991):

> Only the experience of connectedness will save the earth – and us with it. Any attempt, however grandiose and with however much commitment to its cause, will fall short if it does not have at its root the transformation of human experience in which human thinking knows connectedness as such and itself with that.

Such a perspective suggests that sustainability can only be achieved by increasing the psychological connectedness between individuals and the natural environment. Given the research summarized above, we might speculate about approaches to promote inclusion (Schultz, 2000).

But is it the case that inclusion is required for sustainability? The research suggests that greater inclusion is associated with greater concern for the welfare of plants and animals, more caring for nature, and a higher rate of behaviors intended to lesson the impact of human behavior on the natural environment. But it also seems that less inclusion could lead to sustainability. From the framework sketched above, fostering a greater sense of inclusion is one way to move toward sustainability. But is it the only way?

I mentioned above that researchers have suggested that less inclusion could lead to specific proenvironmental behaviors, when the behavior benefits self. It seems plausible that there is a path to sustainability through egoism. In order for this to occur, one assumption is necessary: *the quality of human life would decrease without nature*. People low in inclusion can be concerned about environmental problems, they can be concerned about plants and animals, and they can act in a proenvironmental manner, but only in situations where they perceive a benefit for self. If destroying nature has a detrimental effect on themselves, then people with low inclusion will be motivated to achieve sustainability. A person low in inclusion will not care about a pine tree, s/he will not know about the tree, and s/he will not be motivated to protect the tree – unless the tree fills an irreplaceable function that benefits the individual.

Although such a path to sustainability is possible, it seems unlikely. The reason is people's belief in technology. The core assumption for the low-connectedness path to sustainability – that nature benefits self – has typically not been made because technology can fill nature's role. If a tree or forest generates oxygen that I need to survive, and that function can only be performed by a forest, then a low-inclusion person would want to protect it. But the oxygen-generating function of trees can be replaced by technology. Similarly, if safe food can only be grown on unpolluted land, then a low-inclusion person will be motivated to protect the land. But again, this function

can be replaced with an artificial solution. Indeed, it is difficult to identify an aspect of nature that benefits humans that cannot be replaced with technology, at least partially. For this reason, I am left with the conclusion that the only sure path to sustainability is through inclusion – individuals must believe that they are a part of nature.

FUTURE DIRECTIONS

In this chapter, I have attempted to sketch a broad model for human-nature relationships. The core of this model is inclusion – the degree to which an individual believes that s/he is a part of the natural environment, cares for the environment, and is committed to protecting the environment. I have argued that connectedness leads to caring, and that caring leads to a commitment to protect nature. I have further argued that the only sure path to a truly sustainable society, one in which the needs of humans are balanced with the needs of nature, is through inclusion.

But how do we promote a psychological inclusion with nature? Indeed, such a belief is a fundamental shift from the current state of affairs in North America, Western Europe, and many other industrialized nations. What will it take for people to recognize that they are integrally connected with nature? By acknowledging the importance of inclusion for achieving sustainable development, future research can begin to answer these questions.

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