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Environmental Psychology

Human Responses and Relationships to Natural Landscapes

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The purpose of this chapter is to present a thorough assessment of environmental psychology as a way to understand relationships between people and natural landscapes, and to describe how this knowledge can be applied to natural resource management. Environmental psychology seeks to clarify how individuals perceive, experience and create meaning in the environment. In part, it constitutes a branch of social psychology that studies individual behavior embedded in its large-scale social and ecological context, as well as actively defining and giving shape to that context. In addition, environmental psychology encompasses an interdisciplinary field of environment and behavior research that includes human geography and the design and planning professions (e.g., architecture, landscape architecture, urban and regional planning). The field grew out of controversies within psychology over the external and ecological validity of laboratory experiments, and the simultaneous emergence of an environmental movement within social science and the design and planning professions. Beyond the emphasis on environmental matters, an important reason for focusing on environmental psychology in natural resource management is that it is a particularly integrative and eclectic area within environmental social science.

Conceptualizing Human-Environment Relationships

Environmental psychology is distinct from other fields of environmental social science in its emphasis on the individual as the unit of analysis and its focus on mental and behavioral responses to environmental stimuli as its subject matter. What distinguishes environmental psychology from many other psychologies (and makes it particularly relevant to natural resource management) is that it takes a broad approach to conceptualizing both the stimuli (i.e., to include large-scale environments) and subsequent response (i.e., from immediate affective and behavioral responses to more extensive and enduring

understandings and relationships to places). This broader human-environment relationship is captured by the concept of environmental meaning or what is often understood as *perceptions, preferences, values, beliefs, attitudes* and so forth. Much of applied environmental psychology involves describing the range and diversity of meanings people associate with particular places and the factors that influence the formation of these meanings (Groat, 1995). This includes understanding how relatively tangible and objective properties of the environment shape and influence human responses, as well as identifying the emotional bonds and symbolic meanings people associate with specific landscapes or places.

Synthesis and Integration of Research

What follows is a presentation of research findings based on a framework presented at the 1994 International Symposium on Society and Resource Management (ISSRM) (see Williams & Patterson, 1996, 1999), based in part on Saegert and Winkel's (1990) review of environmental psychology. The framework identifies four paradigms for conceptualizing human-environment relationships: 1) adaptive, 2) goal-directed, 3) sociocultural, and 4) expressive. This section describes the basic features of each paradigm, how each has been or can be applied to natural resource management topics, and their respective strengths and weaknesses. The four paradigms are distinguished from one another based on how each conceptualizes environmental meaning. Building on Fournier's (1991) work, the paradigms vary in: a) the degree to which meaning is objective and verifiable through the senses (i.e., tangibility), b) the degree to which meanings are shared or highly individualized (i.e., commonality), and c) the degree to which meaning is associated with arousal, intensity, or depth of involvement (i.e., emotionality).

The Adaptive Paradigm

According to Saegert and Winkel (1990), the adaptive paradigm builds on the idea that biological and psychological survival motivates behavior. They describe the way psychological functioning has evolved to address three adaptive issues: 1) how organisms come to know the environment, 2) how organisms cope with stressful environments, and 3) how the environment functions as a restorative or therapeutic medium.

Two examples that address how organisms come to know the environment are Gibson's (1979) theory of ecological perception and the concept of cognitive mapping (Golledge, 1987). Accordingly, human perceptual mechanisms (e.g., sight, hearing) are adapted to facilitate functioning in an information or stimulus environment dominated by uncertainty. Understanding how individuals acquire information from the environment supports research on how the public responds to information in planning decisions, designing environments to enhance navigation and information acquisition, and environmental learning and interpretation (Kaplan & Kaplan, 1982).

The common approach in understanding how organisms cope with stressful environments is to look for direct *dose-response* linkages between specific environmental stimuli (i.e., the relationship between amount of exposure to environmental stimuli such as sound or temperature), and psychological functioning

and well-being. For example, a dose-response model was used to explain the impact of aircraft noise on wilderness experiences (Tarrant, Haas & Manfredo, 1995).

The stress paradigm is also a dominant theme in the crowding, conflict, and social carrying-capacity literature, in which the stressor stimuli are other people and/or their behaviors (Miller & McCool, 2003; Vaske & Donnelly, 2002). From the stress perspective, outdoor recreation has been studied as both a context within which people find opportunities to cope with daily stressors (Wellman, 1979), as well as a context in which people must adapt to stressors in the outdoor recreation environment (Iwasaki & Schneider, 2003).

Where the concept of stress portrays "the person as struggling against the environment to maintain health and well-being" (Saegert & Winkel, 1990, p. 450), the third area of research within the adaptive paradigm involves the natural environment as having an intrinsic capacity to promote healing and mental restoration (Kaplan & Kaplan, 1989; Kellert & Wilson, 1993). Accordingly, human responses to the environment are better adapted to natural stimuli, and therefore exposure to nature promotes well-being and affords an opportunity to recover from stress (Hull & Michaels,1995).

Following the restoration thesis, the adaptive view has been very influential in modeling aesthetic preferences for landscape features. Much of the research on landscape preference is premised on innate biological explanations (Ulrich, 1993; Ulrich, Simons, Losito, Fiorito, Mile & Zelson, 1991). Aesthetic models appear to tap important meanings of the landscape with considerable reliability, sensitivity and commonality (Daniel & Vining, 1983). Research supports that aesthetic responses can be sufficiently isolated from other meanings of the landscape to warrant some attempt to inventory them. Further, aesthetic types of meanings are tangible (in that they can be mapped onto the landscape using formal, psychophysical and psychological theories of scenic beauty), emotionally potent, and provide a common and valued basis for natural resource decision-making.

Overall, the adaptive paradigm is particularly relevant because it focuses on highly valued outcomes such as health and well-being, an understanding of the compatibility of the environment with fundamental human needs, and the real and perceived control mechanisms for effective coping (Saegert & Winkel, 1990). However, by treating the person as a biological and psychological individual, and the environment as naturally given, studies following the adaptive paradigm fail to place their data in the larger context of political, social and economic factors that structure the environment and distribute power and control within society. It privileges biological reality while ignoring the social construction of that reality through active, interpretive and behavioral engagements with the environment.

The Opportunity Structure / Goal-Directed Paradigm
What Saegert and Winkel (1990) refer to as the *opportunity structure* or *goal-directed* paradigm is perhaps the most widely applied environmental psychology approach in natural resource management. It constitutes the psychological equivalent of the commodity paradigm that has historically guided resource management. In contrast to the adaptive paradigm, humans are viewed as rational decision-makers rather than respondents to biological imperatives. Emphasis is given to how people

process information in arriving at a decision, action or evaluation.

In natural resource management, the social science of goal-directed behavior is quite well-developed, drawing a great deal from social psychology and microeconomics (Manfredo, 1992; Manning, 1999; Peterson, Driver & Gregory, 1988). Consequently, psychological theories related to attitude formation, motivation, and decision-making are prominent within the opportunity structure paradigm. Examples can be seen in such natural resource applications as choice and behavioral modeling (Louvière & Timmermans, 1990), recreation motivation (Driver, Brown, & Peterson, 1991), recreation satisfaction (Williams, 1989), non-market economics (Peterson et al., 1988), and studies of environmental attitude-behavior relationships (Manfredo, 1992). In sum, this paradigm is popular within natural resource management because it is well-suited to the rational, instrumental and commodity-oriented traditions of resource planning.

The advantage of the goal-directed approach is that it supports psychological models of individual choice that can be integrated with non-market approaches to resource valuation (Peterson et al., 1988). Inherent in this paradigm is the notion that environmental settings are theoretically interchangeable (i.e., substitutable), even reproducible, given that the replacement provides a similar combination of goal-fulfilling attributes. Psychological responses (e.g., satisfaction of behavioral and economic needs) are understood as instrumentally dependent on specific properties of the environment. This amounts to thinking of resources as a means rather than an end (Gee, 1994), which works well for commodities and services (e.g., timber) that are relatively generic, homogeneous and substitutable.

At the same time, however, this approach makes tenuous assumptions of the rationality and volitionality of the individual, provides limited understanding of the socioeconomic and sociocultural (e.g., class, race) forces influencing opportunity structures and individual goal orientations, reduces environmental meanings to behavioral utilities, and generally ignores the symbolic environment. Ignored are the intangible meanings attached to a given landscape, which are not necessarily determined by the resource uses or activities that occur there. Over time, as people recognize that resources and landscapes become places filled with their own histories, they begin to assign unique meanings to them. Some meanings associated with an environment do not derive so much from how it can be used, but simply what it represents symbolically. *Meaning*, instrumentally defined, fails to adequately address the more emotional, symbolic, and spiritual benefits of values and how these are socially produced.

The Socio-cultural Paradigm

The *sociocultural* approach reflects a conceptual shift away from predominantly stimulus-based (i.e., adaptive) and intrapersonal (i.e., goal-directed) explanations of behavior toward those that view place and landscape meanings as socially-constructed within the cultural, historical and geographical contexts of day-to-day life (Greider & Garkovich, 1994; Williams & Carr, 1993; Williams & Patterson, 1996). Rather than viewing the person as an autonomous individual having survival needs or instrumental goals, the person is viewed as a social being who seeks out and creates meaning in the environment (Saegert & Winkel, 1990). Investigations of these social and symbolic

environmental meanings have their origins in phenomenological studies of human-environment relations, including sense of place within human and cultural geography (Relph, 1997; Tuan, 1977), place attachment within psychology (Altman & Low, 1992), semiotic analysis within architecture and environmental design (Rapoport, 1982), and community identity (Cuba & Hummon, 1993) and politics (Kemmis, 1990) within sociology. From a sociocultural perspective, for example, the same forest landscape can symbolize ancestral ways of life, valued commodities, or essential livelihood to different groups of people (Greider & Garkovich, 1994). Thus, an environment acquires varied and competing social and political meaning through its association over time with particular activities and groups.

An early example of applying the sociocultural perspective to natural resources was Lee's (1972) examination of public parks as repositories of meanings that symbolized intergroup relationships. He found that neighborhood parks often constituted local territories defined by its users as belonging to them informally through familiarity and knowledge. In contrast, the meanings of regional parks and wildland settings were more often governed by formal rules of ownership and use; rules that were perceived by ethnic minorities as White, middle-class and exclusionary.

Similarly, Brandenburg and Carroll (1995) examined symbolic and expressive meanings of a popular river drainage and found that stakeholders from the most nearby community often exhibited strong attachment to the drainage and a desire to protect it regardless of their multiple use values. Stakeholders in more distant communities, who were rarely involved directly in the use of the drainage, valued it in terms that reflected the orientation (e.g., utilitarian, preservation) of their dominant social group. Moreover, locals who expressed personal affection for the place in private interviews exhibited quite different attitudes at public meetings when among members of their ostensibly more utilitarian-oriented neighbors.

The main advantage of the sociocultural paradigm is the recognition that environmental meanings extend well beyond biological imperatives and individual goal-oriented constructions, to include the ways in which meaning is socially structured. Though much of the research focuses on the social use of the environment to incorporate individuals into groups, American society is a multi-group mosaic. Recent work is beginning to explore social differences in access to the economic and political power necessary to create meaning and define the use of resources—the basis of much intergroup conflict (see Cheng, Kruger & Daniels, 2003; Stokowski, 2002; Williams, 2002).

Individual / Expressive Paradigm

Like the sociocultural approach, the individual expressive paradigm emphasizes a socially constructed and more voluntaristic view of reality. The study of expressive meaning, however, is even more deeply rooted in a subjectively oriented phenomenology (Altman & Low, 1992), emphasizing individual level processes and recognizing that individuals have the potential to assign intangible and relatively unique meaning to places and things. Unlike adaptive and goal-directed meanings, expressive meanings do not apply so much to abstract classes of environments or their separable features as they do to specific places. The significance of individual/expressive meanings is captured in the concept of *place-identity*. According to

Cuba and Hummon (1993), "place identity arises because places, as bounded locales imbued with personal, social, and cultural meanings, provide a significant framework in which identity is constructed, maintained, and transformed" (p. 112). With involvement and attachment to places, individuals actively construct and affirm a sense of self. Our affiliations with places helps to communicate our sense of identity to ourselves and others.

Interest in individually-held meanings has often focused on concepts of place attachment and identity as affective bonds to place (Giuliani & Feldman, 1993). Place attachment can be thought of as an emotional dimension of meaning (i.e., an indication of the intensity, depth or extent of meaning) with symbolic and spiritual meanings developed through interaction with a place over time. These attachments can be distinguished from other emotional processes (e.g., scenic beauty, subjective utility) by the emphasis on bonds, ties and connections. Within environmental psychology, studies of place attachment are often associated with home, neighborhood and community, but a growing number of studies have applied place attachment to natural or outdoor landscapes (Jorgensen & Stedman, 1999; Moore & Graefe, 1994; Williams, Patterson, Roggenbuck & Watson, 1992; Williams & Vaske, 2003).

Survey-based studies of resource users and community residents have demonstrated that the strength of place attachments can be quantified for multiple places and at multiple geographic scales (Williams & Vaske, 2003). Some have been directed at resource- and tourism-dependent communities (McCool & Martin, 1994), while others have attempted to relate place attachment to national parks, wilderness and other outdoor recreation settings (Moore & Graefe, 1994). Although survey research may not be able to probe detailed spatial patterns or the subtleties of meaning, it may be useful for providing broad mapping of the emotional intensity individuals and groups associate with various places.

Using a qualitative approach, Mitchell, Force, Carroll and McLaughlin (1993) conducted personal interviews with visitors to a river drainage to identify attachment-oriented users who assigned specific social meaning to the drainage. In the process they pointed out how several planning technologies and frameworks were amenable to incorporating both utilitarian and place perspectives. Similarly, Schroeder (1996) asked people to write essays about the meaning and experience of being in the Black River area to develop knowledge about places of special significance within the forest. The implication from this work is that an inventory at a *special places* level might be obtained through such methods for public land managers and others.

Expressive meanings may not provide a common basis for managing natural landscapes, but they demonstrate the importance of site-specific relationships and bonds. Individualized meanings of places both *enable* people to create individuation by distinguishing themselves from their primary social group or community and, at the same time, *embed* the individual in a larger social context as place meanings are transmitted from a social group to the individual (Brandenburg & Carroll, 1995). The importance of acknowledging individualized meaning is that people are likely to resist management actions that threaten their individual sense of self.

Managerial and Social Significance of Environmental Psychology
Within the resource management community, procedures for classifying and

mapping adaptive and goal-directed uses and meanings have evolved into relatively well-defined research programs (e.g., assessments of scenic quality, valuation or choice modeling). Moreover, because these approaches address relatively tangible environmental meanings that can be linked directly to the physical properties of the environment, they have been readily integrated into the utilitarian philosophy that has long guided resource management and planning. This ability to link meaning to physical attributes has facilitated inventory strategies that allow resource managers, in principle, to integrate various and competing aesthetic and instrumental meanings in prioritizing land management goals.

In contrast, the cultural and expressive forms of meaning (often the most intangible and contentious forms of environmental meaning) have received little attention. While they have been the subject of environment and behavior research, there has been little systematic effort to characterize these meanings within natural resource management, a prospect made more difficult by the lack of correspondence to on-the-ground features. Still, this emerging work suggests that a variety of methods, from surveys to various forms of public involvement, may be used to identify varying and competing landscape meanings (Eisenhaur, Krannich & Blahna, 2000; Kruger, 1998). The work suggests that the public can identify and classify land units that hold intangible meanings and values, and demonstrates that it is important to distinguish spatially *generalized values* regarding public lands policy from *place-specific values* (Brown, Reed & Harris, 2002). It also suggests that a mix of both personal and public judgments about the meaning of places is important.

Issues for the Future

Place, Context and Scale

In proposing the need for a synthesis of paradigms in environmental psychology, Saegert and Winkel (1990) note that previous research findings are largely products of specific historic or geographic contexts. They argue that the goal of finding general relationships continues to elude researchers, and further, that some investigators have suggested it might be more appropriate to view person-environment relationships as necessarily specific to particular historical and geographic contexts.

One implication is that the emphasis in environmental psychology should shift from seeking generalizable relationships to seeking geographically and historically specific ones (not unlike the shift in natural resources from the commodity to ecosystem paradigm). In other words, a more contextual and integrated understanding of resource management, in addition to benefitting from a broader view of environmental meaning, may profit from geographic theorizing on the concept of place in which human culture and history imbued a landscape with meaning (Sack, 1997).

Consideration of meaning in defining *place* complements the increasing focus in natural resource management on the spatial and temporal context of management decisions. Attending to larger scale processes (moving from typically *site* level to *landscape* or *ecosystem* level) presumably facilitates a more integrated view and understanding of the impacts of resource policies and management. Thus, social science suited to the needs of collaborative and adaptive management of complex social and biological systems involves not just a more inclusive

understanding of the realm of meaning, but must also address the expanded spatial and temporal scales emphasized in ecosystem management. In particular, the concept of place draws attention to the processes by which resources and ecosystems are socially and politically constructed and contested.

Mapping and Constructing Socio-cultural Meanings and Relationships

Beyond more attention to scale and context, there is a need to address the lack of knowledge in cultural, symbolic, spiritual and expressive meanings of the landscape. This will require a long-term and continuous commitment by resource managers to nurture local knowledge of place and integrate that knowledge within larger regional and national values. This represents a continuous engagement in public discussion about the meaning of places.

Cultural and expressive meanings are not as stable in place, time and group as aesthetic and instrumental meanings. Consequently, management is not so much a matter of applying technology and technique, but of building trust, applying the principles of adaptive learning, and learning the art of participating in public dialogue and collaboration. This dialogue is a critical part of the process of creating and negotiating landscape meanings. Such ongoing discussion does not require any greater magnitude of effort than has been devoted to various forms of ecological analysis or resource inventory, but it does require an openness to diverse ways of knowing places and their meanings.

Post-positivist Approaches to Science

In addition to characterizing the nature of human responses and relationships, this openness to diverse ways of knowing requires critical pluralism in the practice of science (Patterson & Williams, 1998). For example, there are important ontological and epistemological assumptions behind each of the four paradigms of human-environment relationships. Ontologically, forms of human-nature responses and relationships can be differentiated in terms of whether human behavior is adapted to and/or determined by a reality composed of separable parts, or if it involves the actions of voluntary agents actively constructing a more holistic reality.

Epistemologically, the different research models describe how humans come to know reality, with contrasting points of view ranging from generalizable and objective knowledge, to contextual and subjective knowledge. Thus, to advance research on these various relationships we must broaden what counts as knowledge, how we conceptualize and value places and landscapes, and how we integrate this knowledge into theory and practice.

Conclusions

In addressing meanings and relationships as *responses* to the environment, environmental psychology is well-suited to bridging the paradigmatic shift in natural resources from utilitarian models, which emphasize tangible things that a resource can produce (Shanon, 1992), towards more holistic landscape or place perspectives. Whereas a response to a stimulus may be understood as something direct and largely unmediated, a meaning or relationship implies something more constructed, connected to the past, and embedded in a web of social affiliations and

practices. In this latter view, the environment (e.g., ecosystems, places) to which people respond and relate is conceptualized as more than a resource of separately valued properties. The totality of any particular relationship to an environment that a researcher might want to describe is likely to involve an amalgamation of adaptive, goal-directed, socio-cultural and expressive meanings. Taken together, the different research paradigms within environmental psychology provide a framework for natural resource management to transcend its traditionally commodified view of nature, and adopt a view that emphasizes more holistic geographic units.

If we think of environmental psychology as a way to identify and map landscape meanings, then we need to move toward a wider conception of meaning. Metaphorically, if not literally, we need to expand our knowledge on how to map landscape meanings, and the natural and social processes that structure or distribute these meanings across spatial and temporal dimensions. Similarly, if modern society hopes to forge a more sustainable basis for human habitation of the planet, it will need to recognize the inherent assumptions underlying human-environment relations that guide environmental research and management, and endeavor to broaden and recreate new modes of thinking about its place and impact on the rest of the planet. An underlying theme of this chapter has been that the gaps in knowledge about human-environment relations are, in large part, a result of the dominance of certain guiding metaphors (e.g., commodity, production) used in natural resource management. The emergence of ecosystem management as a resource management philosophy is in many ways an effort to rethink these metaphors, and to chart new ways of viewing the world.

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