Mapping Place Meanings for Ecosystem Management

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by

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Introduction

Agencies managing the public estate are increasingly challenged to address a broader range of meanings and values in land management decision-making. Motivated in part by the past overemphasis on commodity production and economic efficiency, these challenges have lead to a greater consideration of biological diversity, ecologically sensitive silvicultural systems, and sustainable forestry (Salwasser, 1990). What some describe as a new paradigm of resource management (Behan, 1990; Bengston, 1994; Brown and Harris, 1992), has become formally instituted as the policy of "Ecosystem Management" within the Forest Service and other federal land management agencies (Robertson, 1992). Some in the social science community contend, however, that this paradigm debate is due in no small measure to the failure of the natural resource profession to understand and legitimize emotional and symbolic meanings of natural resources -- meanings that transcend the more tangible properties associated with commodity production and even ecological processes (Schroeder, 1992). Beyond a greater ecological consciousness, the new paradigm shifts the focus in two fundamental ways that have important implications for ecosystem management.

The first change involves extending beyond economic and even ecological concerns to include what some have described as the "spiritual" benefits (Salwasser, 1990; Schroeder, 1992) or deep values (Dustin et al., in press) associated with natural resources. For example, the National Research Council, in its assessment of research priorities in forestry, legitimized intangible meanings of forests when it stressed the importance of forestry research to "secure the environmental, economic, and spiritual benefits of forests" (National Research Council, 1990, p. 58). In the old, instrumental paradigm, meanings were largely limited to tangible, commodity uses grounded in an economic model. That is, the value of the land was defined by its use. Shannon (1992) describes this as thinking of our human relationship to resources as the tangible "things" that a resource produces rather than thinking of our relationship to the resource itself. Similarly, Rolston and Coufal (1991) describe the change as moving from commodities to communities. The idea is that forests carry a broad range of meanings that are embedded in and embed the human community. The human community, however, need not be limited to social bonds, but can

be understood as Leopold (1949) intended -- as constituting relationships with and attachments to places in the landscape. Thus, one of the important challenges of the new paradigm is to connect the biophysical system with the social system of which it is a part (Shannon, 1992).

The second change in focus brought by the new paradigm is to recognize the importance of a broader context or unit of analysis. From the perspective of natural systems, the new paradigm goes beyond a site or stand level analysis to embrace a landscape or ecosystem level. Larger units facilitate a more contextual and systemic understanding of the impacts of management decisions. The new paradigm also attempts to broaden the context by paying greater attention to dynamic aspects of ecosystems. This is viewed as paying more attention to natural history and change within ecosystems. For a social science assessment to address similar contextual issues (the human experience of the ecosystem), it needs to recognize the quality of "place" in the landscape as a means of understanding the human system. In the old paradigm, place was only considered in the more abstract sense of the spatial and temporal distribution of resource commodities. Accordingly, "attributes" of natural resources are disembedded from their spatial and temporal context. As illustrated in the principles of place management elaborated below, the concept of place embeds these resource "attributes" back into the system of which they are a part, reminding managers that resources exist in a meaning-filled spatial (and temporal) context. Recognizing and understanding this context is the principle contribution of social science to the new paradigm. The focus of this review is to show how social science can inform ecosystem management of this meaning-filled context.

An important aspect of the new paradigm, then, is to expand consideration of the human meanings of a place; in essence to pay as much attention to cultural history as biologists would to natural history. The new resource paradigm gives recognition to the idea that the landscape (place) carries a broad range of meanings; meanings that vary widely across individuals and social groups and that can be mapped like any other spatial-ecological datum.

Some Social Principles to Guide Ecosystem Management

Principle 1. Ecosystems are socially constructed places.

A forester sees a mature fiber production system needing harvest and regeneration. A logger sees stumpage value. A hiker senses a spiritual connection to creation. A bird-watcher

thinks of prime habitat for Spotted Owls. An ecologist sees a plant community in a late successional stage. Sociologists (Greider and Garkovich, 1994) look at each of these visions of an old-growth forest and see competing symbolic transformations of nature. "The meaning of the landscape is not inherent in the nature of things." Rather, "cultural groups transform the natural environment into landscapes through the use of different symbols that bestow different meanings on the same physical objects or conditions" (p. 2). An ecosystem is a kind of place; socially created by conferring a particular kind of meaning on some piece of the landscape.

Ecosystem management is tantamount to recognizing the social construction of nature. What *ecosystem* is to the biologist, *place* is to the social geographer. A place is a social (and sometimes scientific) construct. Space becomes place when people create and attach meaning to it. An ecosystem, like any concept, is imposed on the world by the meaning-making demands of the human mind -- in this case scientific minds. The only difference between ecosystems and other kinds of places is that the scientists who map ecosystems usually pay greater attention to the non-human world in drawing the boundaries. But, just as bio-ecologists map ecosystems, geographers and human ecologists map places. "Consider so-called natural places, such as tropical rain forests or national parks. Although they undoubtedly contain natural forces, they are partially the products of political jurisdictions and other forms of social control that protect them from the ravages of civilization, and they also are the products of the meanings we impart to them" (Sack, 1992, p. 16). The boundaries of ecosystems are no more natural than the political boundaries which divide social territories. To argue otherwise is to argue that humanity is not part of the community of living things; not part of the global ecosystem.

Ecosystems are places in the same sense that the Willamette Valley or Seattle are places. With a favored position given to the natural science over social science in making budgets and policies, it has been too easy to overlook this reality. Historically, natural resource professionals have perceived the ecosystem construct as more real (and valid) than the social construct of place. The new paradigm that produced ecosystem management must also recognize that an ecosystem, as a spatial construct, is as much a socially constructed place as it is a scientifically delineated space. Recognizing ecosystems as places in which scientists attempt to understand and map the natural and social history increases the potential for integration across social science disciplines

and between social science and natural science.

The concept of place in social theory, however, has been much neglected and marginalized (Agnew, 1989). The use of the term *place* is often confounded with location, region, community, space, setting, even environment. Place in social research takes on at least three interpretations: *location* or the spatial distribution of social and economic activities; *locale* or the settings for everyday routine social interaction provided in a place; and *sense of place* or identification with a place emotionally or symbolically (Agnew and Duncan, 1989). Until recently, the dominant approach to place in the social sciences was anchored in the first interpretation, location, which reduced the notion of place to an abstract and empty cartesian extreme. Agnew (1989) traces this marginalized role for place to the aims of modernism and rationality which emphasize national scale processes, placeless national society over place-based community, and the detachment of people from places through the commodification of (among other things) land. In architecture and urban planning, the result has often been to homogenize the built landscape (Ley, 1989). In natural resource management, the result has been to commodify the meaning of the landscape and concentrate on the spatial and temporal distribution of resource commodities.

In its increasingly revitalized form, *place* is often evoked to describe socially constructed space -- that is a location that has been imbued with meaning. This is intended to capture the often neglected *sense of place* notion, but not to preclude the others. Thus, for humanistic geographers such as Tuan (1977, p. 6) "what begins as undifferentiated space becomes place as we get to know it better and endow it with value." Similarly, environmental psychologists emphasize the constructed nature of place by describing the human actor as a social agent who seeks and creates meaning in the environment (Saegert and Winkel, 1990). Sense of place is "created by the setting combined with what a person brings to it. In other words, to some degree we create our own places, they do not exist independent of us" (Steele, 1981, p. 9). Anthropologists and sociologists point to the role of culture and social structure in defining places. Rapoport (1982) for example describes places as providing culturally specific "indicators of social position [and] ways of establishing group or individual identity" (p. 181-82). Giddens (1984), in noting that sociology can learn much from geography, describes a sense of place as important for sustaining a concrete link between psychological identity and the socially structured

world through which we move and interact.

In advancing a social constructivist view of ecosystems, some might object to an inherent anthropocentric bias, a privileging of human meaning over biological meanings and values. The social construction of nature would regard the existence of biocentric meanings or interpretations as being contained within the human meaning system. Recognizing that nature is socially constructed, however, does not necessarily preclude the possibility of intrinsic or non-human meaning, only that these meanings cannot be known independent of human constructions. Rather it enhances the likelihood that such meanings will be given due consideration. A careful effort to map the human meaning system will turn-up biocentric interpretations of places to the extent that humans construct such meanings. Beyond the empirical question of whether people in fact assign such meaning to places, the role that any biocentric ethical theory should play in decision-making is an issue of moral philosophy. It is a question of how human meaning *ought* to be constructed. Knowing how meaning *is* being constructed can inform the moral decisions we make individually and collectively.

Recognizing the social construction of ecosystems, raises important concerns about the development of theoretical, generalizable, and operational conceptions of ecosystem management; that is, a conception that can apply similarly in a wide range of contexts. Unlike the instrumental paradigm, a more contextual approach means that highly generalizable procedures for doing ecosystem management will be of limited meaning outside of any particular context. The heart of ecosystem management is to guide decisions affecting a place using a rich understanding of its natural and cultural history -- i. e., its context. The old paradigm was devoid of real context. Managers looked for general rules, procedures, values, inventories, Best Management Practices, etc. These approaches failed because they were constituted from abstract and decontextualized understandings. Ecosystem management, whether it is understood by biologists or social scientists, is really about contextually sensitive (spatial and temporal) management of a bio-social system. Ecosystem management is really a world view (a way of construing the world) and not a specific set of methods or procedures. It is a statement of purpose or intent. The difficult management questions will be what sort of specific translation of these guiding principles is necessary when it comes to applying them to one or more actual places?

From the human experience, an ecosystem is foremost a place -- a place to extract a living, to play, to affiliate, to appreciate, to define self, and to become acquainted with one's origins be they biological or spiritual. Unfortunately, there has been little coordinated effort to understand how individuals and groups come to assign differing and often conflicting meanings to such places, and how these meanings serve individual and group needs. Places are socially constructed repositories of meaning -- scientific, social, historic, and personal. Ecosystem management can be achieved by making sense of multiple disciplinary "senses" of place. In particular social science can integrate disciplinary "senses" of place by inventorying a broad range of landscape meanings. The process, however, must not privilege any one sense or meaning. In the past, meanings have been overly restricted to the tangible and instrumental to the neglected of historic, cultural, and spiritual meanings and certain natural forces (i. e., ecological processes). All the while, place has been only considered in the more abstract sense of the spatial and temporal distribution of resource commodities.

Principle 2. Ecosystems can be described as the intersection of natural forces, social and economic relations *and* sociocultural meanings.

The theoretical domain of modern social science involves understanding three sets or realms of social forces: nature, social relations, and meaning (Sack, 1992).[1] Nature refers to the physical, chemical, and biological aspects of phenomena and how they affect human life. Ecosystem management pays new attention to the systemic aspects of nature, the spatial-temporal distribution of natural phenomena, and hopefully the impact of these forces on human experience. Sack notes, however, that humans are products of both nature and culture; the latter of which consists of the realm of social relations (social, economic, and political forces) and the realm of meaning (ideas, values, and beliefs that give meaning to the world).

Social relations refers to structure, position, and interchange among people and includes social phenomena such as race, class, politics, markets, and bureaucracy. It concerns how goods and power are distributed within society. In resource management, social relations has emphasized economic relations over political and community relations. In the instrumental paradigm, planning involved the use of the economic and decision sciences to attempt an optimal allocation of resources for commodity production (Larson et al., 1990). Of course, some

resource sociology has focused on how policies are socially and politically constructed and the impacts of resulting policies on communities, but this has been secondary to economic efficiency analysis. The emphasis in resource sociology has often focused on social facts and trends (demographics, migration patterns) and such issues as order, cohesiveness, stability -- structural properties of social systems.

As already noted, meaning "refers to the operations of the mind" (Sack, 1992, p. 129) and is generally understood as constituting ideas, values and beliefs. The human mind is a meaning making system (Bruner, 1990) that basically works by trying to impose meaning on the world through the use of cognitive structures such as taxonomies, categories, and schemata (Neisser, 1976). Meanings are manifest through symbolic systems, most notably language, but also expressed physically through material culture (the things we make and ways we transform the environment). Thus, words and physical elements of the environment have meanings which can be perceived if and when they match the perceiver's culturally acquired cognitive structures or frames of reference.

Forces from the realm of meaning are arguably the dominant feature of modern natural resource conflict, yet modes for conceptualizing and considering issues of meaning have been limited in at least two important ways. First, what little attention has been given to meaning has been narrowly focused on the objective, tangible, or instrumental features of the physical environment, neglecting more intangible (symbolic and spiritual) meanings (Williams, 1994). This instrumentalism fails to recognize that resource conflicts are frequently symbolic in nature and most divisive when intangible, but deeply felt meanings are threatened by resource development (Appleyard, 1979). Second, meaning has been largely limited to a question of how individuals assign and derive instrumental values and benefits from the use of natural resources, ignoring shared meanings and how meanings are socially constructed. Psychological approaches which dominate the instrumental paradigm are anchored in need-driven models of behavior which presume a sovereign or autonomous consumer. These models focus on individual meanings expressed through motivations, experiences, benefits, satisfactions, goals (Williams et al., 1992) and psychological assessments of values designed to mimic economic measures (Peterson et al., 1988). This narrow focus on individual instrumental or tangible meanings and the sometimes

explicit marginalization by resource professionals of symbolic meanings as irrelevant have contributed much to the distrust of agencies and professionals involved in public land management (Larson et al., 1990).

A significant human dimension of ecosystem management, then, is that ecosystems constitute a geographic space where forces from the realms of nature, social relations, and meaning overlap and where integration can begin. However, most disciplines and theories do not address forces from more than one realm, making integration difficult. Further, in those instances where theories from more than one realm are considered, the discussion is often aimed at pointing out the dominance of one realm by another. Given the limited treatment of intangible symbolic and emotional meanings of landscapes, these meanings remain under-represented in environmental decision-making. With this in mind, the focus of the remainder of this analysis will be to document the importance of and potential strategies for addressing the realm of meaning in ecosystem management.

Principle 3. Ecosystem management must map the full range of meanings that humans assign to places.

Attempts to understand meaning are common to many branches of social science. At the psychological level of an individual organism, meaning is the interpretation the perceiving organism gives to stimulus information. From Gibson's (1979) ecological theory of perception, the interpretation or meaning derives from perceiving what the environment affords. These affordances are generally very functional (e. g., a place to hide or find food or a smooth surface for locomotion) and determined by the ecological context of the perceiving organism. A sociological approach would give more emphasis to symbolic meaning (e. g., a place to call home or to find companionship and identity) as socially structured or learned interpretations of objects, events, or places (Giddens, 1991). The essential task of anthropology is to understand the meaning system of a given culture (Geertz, 1973), hence symbols (objects, words, the environment) objectify meaning. Even politics can be defined as any deliberate effort to control systems of shared meanings (Sederberg, 1984). This view of politics directly ties the concept of meaning to the problem of negotiating differences for how such things as public natural resources are to be used.

Place meanings can be characterized in a number of important ways. For example, specific meanings associated with a place can be described in terms of their content, structure (complexity, diversity, etc.), clarity, and consistency (Stokols and Shumaker, 1981). A particularly useful framework to guide ecosystem management is Fournier's (1991) description of three characteristics of the meanings attached to objects: tangibility, commonality, and emotionality.

Tangibility refers to the degree to which "meaning is primarily objective, tangible, and verifiable through the senses or whether it is primarily subjective, interpreted through experience and dependent on associations" -- that is whether "meaning is resident in the object itself or in the mind of the user" (Fournier, 1991, p. 738). Tangibility is similar to Gibson's (1950) description of a continuum of meaning from concrete to abstract. Concrete meanings are often functional in nature (what Gibson later referred to as affordance), reflecting the way an object or place is used. By contrast abstract meanings tend to be symbolic. The symbolic meanings carried by some object or place may be assigned to it by a culture, social group or an individual. Thus, for Americans of European ancestry, wilderness is supposed to symbolize a frontier heritage. At an individual level, wilderness may represent cherished relationships and experiences of the past. At a biological level wilderness may symbolize our ecological connection to the biosphere (Williams et al., 1989).

Commonality refers to the degree to which meanings are shared versus highly individualized (Fournier, 1991). Some meanings may be said to be biological or functional affordances shared because of the way we evolved to process information from the environment (i. e., legibility; Kaplan, 1987). Other meanings may reflect the social definition of an environment (Lee, 1972) to the extent that they are held in common with other occupants and/or shared through interaction and communication among members of a group (Stokols and Shumaker, 1981). Though shared meanings allow for effective communication and facilitate social integration within society, in some important contexts (e. g., favorite places or objects) highly personalized meanings may serve an equally valuable function of differentiating the individual from society (Belk, 1987).

Where tangibility and commonality refer to the source of meaning, the emotionality

dimension of meaning is largely associated with arousal and intensity or depth of attachment (Fournier, 1991). For environment meanings, emotionality may vary in intensity from immediate sensory delight to long-lasting and deeply rooted attachment (Tuan, 1974). The emotional dimension can refer to ephemeral feelings and moods associated with a particular experience of a place (Hull, 1991); for example., when standing on the south rim of the Grand Canyon for the first time or finding the name of a loved one on the wall of the Vietnam War Memorial. In a more enduring sense, emotionality often focuses on place attachment as an emotional or affective bond between an individual or group and a particular place (Stokols and Shumaker, 1981). Thus, emotionality can be thought of as an indication of the depth or extent of meaning with symbolic and spiritual meanings often associated with high levels of attachment to an object or place.

The issue for resource managers is not so much knowing how meaning in general is created, negotiated, or lost (the work of social scientists), but knowing what meanings various individuals, groups, or cultures assign to what pieces of the landscape, and understanding the extent to which people agree or disagree on these meanings (Williams and Carr, 1993). Complicating the task is that the meaning of something is not universal, need not be the same in all contexts, nor constant across time. What is the meaning of Mount Rushmore to America? To native Americans? What is the meaning of old-growth forests to loggers in Oregon or environmentalists in Washington? What was the meaning of wilderness to the first European settlers in America? What does wilderness mean to their urban-dwelling decedents? What is the meaning of wilderness, if any, to recent immigrants from Asia or Latin America? All the social sciences in some way struggle to understand and articulate the meaning of places, things, events, and relationships, and describe how these meanings are socially or personally constructed.

Principle 4. Ecosystem management requires new epistemological considerations.

The shift from a commodity to ecosystem paradigm has ontological and epistemological implications. Ontology refers to the nature of reality and has been discussed within Principles 2 and 3 as organized around the realms of nature, social relations, and meaning. Epistemology has to do with how we come to know reality and involves employing differing perspectives or points of view. This is reflected in Sack's (1992) fourth realm, human agency, which emphasizes that the other ontological forces are not determinate, because humans have some freedom to construct

meaning in highly individualized ways. The significance of human agency is that it reflects the fact that we can experience the world from multiple perspectives along a subjective-objective continuum.

Places can be viewed (experienced, understood, explained) from many epistemological perspectives. The epistemological significance of a spatial-ecological approach to resource management is that it highlights a dialectic tension between different modes of science. These differing perspectives have been described as occurring along a continuum from somewhere to virtually nowhere (Sack, 1992; Nagel, 1986). What is traditionally thought of as science involves the abstraction of a point of view from somewhere (the place of everyday experience) to a more remote, public, and distant point of view that is virtually nowhere. It does so purposefully. Abstraction is thought to increase the meaningfullness of findings "by making it possible to perceive them not as isolated bits of empirical information, but as a special case of the working out of a set of more abstract presuppositions" (Sellitz et al., 1967, p. 471).

The process of abstraction, though profoundly useful in many cases, has two undesirable consequences that are highly relevant to ecosystem management. The first is that abstraction is a decontextualizing process that results in a loss of meaning. The everyday experience or meaning of place is easily lost in scientific and rational discourse (Sack, 1992). In this late-modern age, many social critics see a kind of crisis associated with the decline (or "thinning" to use Sack's term) of place-based meanings -- a crisis aggravated, according to Sack, by the tendency of modern society to privilege the view from nowhere. This was evident to the Forest Service policy team that reviewed the process of national forest planning (Larson et al., 1990). Such highly abstract models as FORPLAN carried little meaning for the public with output that was difficult to comprehend even among the planners. Methods of knowing that minimize or obscure important emotional or symbolic meanings of objects, events, or places, no matter how scientific they are, will not be favorably received by those who sense the loss.

The second consequence of abstraction is that the process of moving from the highly subjective, but integrated experience of place to the more public, external, and objective experience tends to fragment knowledge along disciplinary and theoretical lines. This consequence of abstraction can be understood by examining Sack's (1992) "Relational

Geographic Framework" (Figure 1). The realms of nature, social relations and meaning form the horizontal base or the spatial plane. These forces converge to constitute place as a concrete focal point in our everyday experience. Sack uses the image of an inverted cone rising and expanding above the horizontal (spatial) plane to illustrate how the process of abstraction isolates and segments our understandings of places. With abstraction from the horizontal plane of reality (somewhere), along the vertical plane toward "nowhere" comes greater segmentation between, and reduction within disciplines or perspectives as they expand and diverge from one another.[2]

Sack's framework reveals both the promise and problem of integrating social and natural science contributions to resource management. The dilemma for natural and social scientists is to identify ways of transcending the fragmentary nature of scientific inquiry to truly inform ecosystem management. According to Sack, focusing on place integrates theory by creating more overlap among the realms of nature, social relations, and meaning by making sense of multiple disciplinary senses of place. In the past, with place only considered in the more abstract sense of the spatial and temporal distribution of resource commodities, meanings were overly restricted to the tangible and instrumental while neglecting historic, cultural, and spiritual meanings. But, in addition to broadening ontological considerations, integration requires developing multiple points of view between somewhere and nowhere. This has been described by Entrikin (1991) as an epistemological position of "betweenness" -- informed by scientific discourse, but also historically and spatially specific. Ecosystem management has the potential for just this kind of epistemological integration.

Principle 5. Socially constructed places are organized in a hierarchy of scales.

Perhaps the most perplexing issue facing the assessment of place meanings, or any social or biological aspect of ecosystems for that matter, is the appropriate spatial scale for organizing and assessing places. Like ecosystems, social structures, processes, and meanings need to be considered at multiple spatial scales. For a given context, the most appropriate scale will depend to a large degree on the specific policy questions being addressed and the types of social and biological data required. Broad regional scales (state level) will be of little value for directing management decisions on a forest level. Similarly, site level data may be too fine and of little value even at a forest district level. However, the scale for social and ecological processes should

not necessarily be coupled a priori for mapping or management decision-making. Social phenomena are not necessarily organized spatially along, nor determined by, bio-ecological boundaries.

Research efforts in human ecology and geography suggest that the most appropriate strategy is to discover the effective scale empirically by starting at a relatively fine scale and working up as one gains experience and knowledge. From human ecology a method known as *progressive contextualization* advocates working upward in scale to preserve the "holistic premise that adequate understanding of problems can be gained only if they are seen as part of a complex of interacting causes and effects" and avoid "*a priori* definitions of boundaries [such as] an ecosystem or human community" (Vayda, 1983, p. 266). This method involves focusing on significant activities or people-environment interactions in specific locations and times, and then explaining these interactions by placing them within progressively wider or denser contexts. Vayda cites lessons from the Man and the Biosphere program in which a priori units (ecosystems and units of human exchange -- i. e., social and economic) were ineffective in resolving the "research unit" (scale) problem. Progressive contextualization makes this problem avoidable by allowing investigators to proceed "empirically to put the interactions in question into context" (p. 268). Other advantages of progressive contextualization cited by Vayda (1983, p. 266) are:

(a) Avoidance of unwarranted assumptions about the stability of units or systems. Thus, progressive contextualization is consistent with views arising in both bio-ecology and human ecology that see systems as less inherently stable than once thought.

(b) Increased practical significance of results and their ready communicability to policy-makers by allowing investigators to put the attention directly on the questions of concern to policy makers.

The preference behind progressive contextualization for starting at a finer level within a specific context is bolstered by geographic theorizing about place and region as social constructs. Murphy (1991), points out that geographers are often guilty of assuming an a priori and/or unstated spatial unit. Much like Agnew (1989) cited earlier, Murphy argues that geographers often present the place or region as backdrop for a discussion of regional change with little consideration of why the place or region came to be a socially significant spatial unit in the first

place, and how it is understood and experienced by its inhabitants. Particularly lacking in geography is an understanding of the ideological significance or meaning of a place and region. Most geographers have emphasized economic processes or social interaction, but not group affiliation and place-based identity. Murphy concludes that "to treat places and regions as a priori spatial categories is [in his view] theoretically unjustified" (p. 29). Vayda and Murphy taken together demonstrate that spatial scale and territorial boundaries need to be informed by the occupants' perceptions of place and region and not artificially imposed from the outside. Places must be discovered empirically.

Starting an investigation at a smaller scale also avoids the tendency of rational inquiry, as described under Principle 4, to disembed phenomena from their place or context. For instance, a mill town may compete with a tourist town, yet may be assigned to the same biological or social unit. As an economic example, input-output models often attempt to model multi-county regions. However, in making policy for Shenandoah National Park which touches 10 counties, aggregate data on economic impacts was of little value because the individual counties saw themselves competing with the park and each other for tourist dollars. Each county could easily dismiss the positive economic impact of park policies as primarily benefiting one of the other counties. The only solution was to be able to disaggregate the impact data to a county level (Sullivan, et al. 1993).

Applying hierarchy theory from ecology (O'Neill et al., 1986) to social systems may also suggest the need to give greater consideration to scale issues in general and smaller scale phenomena in particular. Hierarchy theory implies that interactions between adjacent levels of scale are stronger and more immediate than between more distant levels. To the extent that social systems are highly dynamic, what happens in a given context may reverberate up and down the various levels of scale relatively quickly and strongly. This may tend to blur the hierarchical nature of social systems and make scale appear less relevant. With the potentially "broad reach" of social phenomena across scale, the response in the social sciences may be to give less attention to scale and thus, reinforce the tendency to disembed social phenomena from their context and perpetuate a decontextualized view from nowhere.

In sum, a case can be made that a meaningful understanding of the human demands and

conflicts regarding natural resources will generally benefit more from knowledge at a local scale relative to a regional or national scale. The sociologist Giddens (1984) implies this, arguing that identification with local context is more important in determining large-scale social phenomena than meanings identified at regional or national scales. Moreover, from a simple strategic standpoint it is easier to aggregate upwards than to disaggregate downwards after the fact. Thus, given the complexity of social structures and processes, meaningful data will generally necessitate information at a finer, more local scale. To map social processes too broadly glosses meaningful social patterns. It perpetuates the abstract, reductionistic view from nowhere. Ecosystem managers will likely need comparatively more social input at a local scale, not less for a given decision.

Place Assessment and Management

A Framework for Mapping the Ideological Landscape

Geographers appear to be no less guilty than resource managers of ignoring group affiliation and place-based identity in regional analyses and description (Murphy, 1991). According to Murphy, geographic studies often lack an understanding of the "ideological significance" or social meaning of the place or region in question; that is, how a place is understood, experienced, and identified by its inhabitants. The purpose of this section is to describe ways that ecosystem management can begin to map the broad range of social meanings of the landscape. Specifically, the ideological elements of the landscape can be classified, inventoried and spatially delineated using a combination of four approaches. These are identified in Figure 2 as the scenic/aesthetic, activity/goal-directed, cultural/symbolic, and individual/expressive approaches. Each approach to mapping landscape meanings can be characterized in terms of its tangibility, emotionality, and commonality as described earlier. Significant progress has been made in mapping the two most tangible levels of meaning, aesthetic and activity/goal-directed. These approaches alone, however, are insufficient. Broader cultural/symbolic and individual/expressive meanings have received comparatively less attention in resource management despite their important role in environmental conflicts.

<u>Scenic/Aesthetic Meanings</u>

American legislative requirements for environmental assessment and forest management

planning of the early 1970s resulted in a strong research program to develop techniques for the inventory and management of visual quality. Within the resource management community, these efforts have been dominated by two assessment approaches: formal-aesthetic models from landscape architecture and psychophysical models originating in environmental psychology (Daniel and Vining, 1983). Formal-aesthetic models developed by landscape architects are widely used for mid-scale landscape inventories by land management agencies in the U.S., particularly the Forest Service and the Bureau of Land Management. These formal-aesthetic approaches rely on evaluations of professional landscape architects who attempt to map landscape themes and scenic character and to establish visual quality objectives for each land unit. Psychophysical models use easily measured and mapped physical characteristics such as topographic relief, slope, water, and vegetation to predict the "scenic beauty" ratings of the landscape by non-expert informants. These techniques tend to work best for stand-level analyses of landscape conditions and modifications, especially those dealing with vegetation changes resulting from timber harvesting and road building. This research effort has resulted in general guidelines regarding the visual effects of various silvicultural practices (Hull, 1989).

As a basis for understanding meaning and value of forest resources, aesthetic approaches have a number of advantages. First, aesthetic meanings are more than cosmetic concerns. Natural environments appear to have an intrinsic capacity to promote healing and mental restoration (Kaplan and Kaplan, 1989; Ulrich, 1993). Second, when aesthetic properties are isolated as one type of meaning (i.e., as a purely aesthetic judgment as opposed to a generally quality judgment), then cross-cultural (common) explanations of beauty are possible (Daniel and Vining, 1983). In addition, aesthetic meanings can be translated into planning and design criteria, and researchers have identified specific relationships between aesthetic quality and readily inventoried landscape features (Hull, 1989). Finally, affective responses to landscapes have been indexed to economic measures of value (Daniel et al., 1989).

As powerful as scenic or aesthetic inventories might be, there is some danger of concluding that they constitute the primary human dimension of ecosystem management. While any comprehensive inventory of landscape meanings should include some effort to map the aesthetic component, this approach by no means captures the full array of meanings people are

likely to assign to given place or ecosystem. Aesthetic evaluations alone ignore the larger political, social and economic factors that define and structure the environment and distribute the power to control the meaning and use of resources within society.

Activity/Goal Properties

As reflected in the instrumental or commodity paradigm that has historically guided resource management, the predominate way of assigning meaning to natural landscapes has been to assess an area's capacity to promote behavioral and economic goals. Procedures for inventorying forest and rangeland products have dominated the attention of resource professionals. Much of the recreational and amenity research has sought to do the same by presuming that specific recreational experiences have some functional or dependent relationship to the environment (e. g., a lake or stream affords fishing; remoteness affords solitude). A large number of empirical studies have attempted to identify the perceived utility of various environmental features in satisfying recreation goals (e. g., Manfredo et al., 1983). For example, through the Recreation Opportunity Spectrum, managers have been able to map specific biophysical, cultural (social), and managerial characteristics of the landscape and articulate ways in which these features facilitate specific recreation goals (Driver et al., 1987).

Unlike aesthetic meaning, however, the sheer diversity of recreational activities and goals (the diversity of the clientele groups and the experiences they seek in outdoor settings) has greatly complicated the development of widely applicable inventory procedures (Schreyer et al., 1985). While some goals are obtainable in a wide range of environmental conditions (i. e., picnicking), others depend on very specific conditions (i. e., fly fishing on spring-fed trout streams). Thus, some meanings may represent shared biological or functional (cross-cultural) relationships (i.e., bodies of water afford fishing), but most represent cultural meanings or associations learned through socialization (i. e., nature as an opportunity to escape social pressures). And though a culture may operate on a particular shared theory of meaning (nature affords solitude), not everyone within the culture will necessarily value a particular goal to a similar extent. Thus, recreation goals, like other instrumental uses of nature, often conflict with one another. Competing meanings may be understood and even "shared" in the abstract, but they may not be equally valued as a characteristic of a specific place.

Viewing recreation in instrumental or commodity terms, as the manipulation and control of tangible properties of natural resources to meet recreation needs, is a natural product of the utilitarian philosophy behind natural resource management. While this works well for many commodities (and services), places for outdoor recreation and aesthetic experiences that have been imbued with symbolic, expressive or spiritual meaning cannot be reproduced across the landscape at will. There is only one Yellowstone. Inherent in the instrumental view of natural resources is the notion that places are theoretically interchangeable, even reproducible, given that the replacement provides a similar combination of goal-fulfilling attributes. What is less often recognized in resource planning at least, is that places carry additional meanings beyond their capacity to meet recreation (or any production) goals. Some important benefits associated with a place do not derive so much from how it can be used but simply what the place represents symbolically to a culture or an individual.

Sociocultural Meanings

Aesthetic and goal-directed inventories represent important and widely used procedures for characterizing natural resources which can be directly applied to ecosystem management at a landscape (neighborhood) level. However, with more attention given to context, the shift to ecosystem management makes the limits of these approaches more apparent. Consequently, a third potential approach is to attempt to map sociocultural or symbolic meanings of places. The primary dimension of meaning distinguishing sociocultural approaches from the others discussed to this point is tangibility. Stokols (1990) contrasts sociocultural/symbolic approaches (which he labels "spiritual") with the dominant instrumental (tangible) view within environmental design and management. As discussed in the previous section, the instrumental perspective defines the quality of an environment by its capacity to promote behavioral and economic goals with research providing the means to achieve technological solutions to environmental problems. Studies emphasizing the symbolic approach to environmental planning on the other hand, view the environment as an end in itself rather than as a tool -- "as a context in which fundamental human values can be cultivated and the human spirit can be enriched" (Stokols, 1990, p. 642). From the sociocultural view, natural resources are valued not only for instrumental purposes, but also exist as *places* that people become attracted to and even attached to because such places possess

emotional, symbolic, and spiritual meaning.

Just as geographers have neglected the ideological landscape, natural resource sociologists involved in environmental assessments have not been particularly engaged in assessing the sociocultural meanings of natural resources. Rather, concern for these meanings have often been deferred to or imposed by political and regulatory processes for assessing and assigning environmental meanings. Essentially, the various formal, legal designations for public land uses constitute political forms of meaning negotiation and have resulted in a plethora of specialized land use designations over the last three decades. These systems are often viewed as usurping agency/expert prerogative to make sound resource decisions. Clearly, the intent of many of these policies is to "lock-up" the meaning of specific tracts of land. However, from a sociocultural view, these policies constitute legitimate meaning negotiation efforts aimed at circumventing unresponsive or unsympathetic agency decision-making processes and values. Ecosystem approaches to management require tools and conceptual frameworks that will allow managers to more actively inventory and monitor the meanings that various constituencies attach to the lands under their jurisdiction. Managers need resource analysis systems that incorporate or map the socially relevant meanings at the administrative level to hopefully avoid management by legislation.

Individual/Expressive Meanings

The main difference between sociocultural meanings and individual or expressive meanings of place is one of commonality. Like the sociocultural approach, individual, expressive meanings also concern intangible qualities of places, but give more emphasis to the potential for individuals to assign relatively unique meaning to places. The significance of individual/expressive meanings is captured in the concept of *place identity*. According to Cuba and Hummon (1993, p. 112) "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." Involvement with and attachment to places represent important mechanisms by which an individual actively constructs and affirms a sense of self. The places we frequent help to communicate to ourselves and to others "who we are."

Some might argue, as Rapoport (1982) has, that individual meanings are for the most part

irrelevant to planning because, by their very nature, they do not provide a common basis for understanding the meaning and value of a place. The problem with this interpretation is that people can agree on the importance of being able to assign individualized meaning to a place even if they don't agree on specific meanings. That is, people share a need to individualize self-definition (Belk, 1988; Sampson, 1988). The process of "individuation" (differentiation of individual identity from society) is important within a modern, western society. Particularly in American society, nature, wilderness, and the frontier have always been important contexts within which individual identity is situated and affirmed (Nash, 1982; Haggard and Williams, 1991). Along the same lines, Brandenburg and Carroll (1994) describe places as both *enabling* people to create individual meanings that deviate from those held by the primary social group or community and *embedding* because they have meaning associated with them that can be passed along to the individual from the social group. Such meaning and use of nature is important to recognize in land use decision-making even if the specific meanings are highly individualized. People are likely to resist management actions that threaten their individual sense of self through the modification of valued landscapes.

Mapping Cultural and Expressive Meanings:
Practicing Progressive Contextualization

Procedures for classification and mapping aesthetic and instrumental meanings are well-developed and need not be elaborated further here. However, efforts to develop broad inventories of cultural and expressive meanings of ecosystems on the scale of aesthetic, recreational, and other resource commodities are virtually non-existent. The intangible nature of symbolic and expressive meanings precludes the development of inventory procedures that can be directly tied to environmental features such soil, vegetation, hydrology or their "remotely *sens*ible" spectral signatures. Rather, in a manner much like progressive contextualization (Vayda, 1983), these kinds of meanings must be elicited by focusing on the relevant people-place interactions. Symbolic and expressive meanings can only be known through more or less direct contact with the individuals and groups who occupy and/or use the places of interest to resource managers. Comprehensive mapping of the cultural, symbolic, spiritual and expressive meanings of the landscape will require a long-term and continuous commitment by resource managers to

acquire a local knowledge of place and integrate that knowledge with larger regional and national meanings and values. Such an effort does not require any greater magnitude of effort than has been devoted to other forms of ecological analysis or resource inventory, but it cannot be accomplished with the sporadic and superficial efforts that have thus far been devoted to it.

Though little comprehensive work has been attempted, a number of investigators have conducted small-scale efforts and a number of demonstration projects are currently under development that attempt map at least some meanings at a neighborhood level. Of particular note is Hester's (1985) work mapping the "sacred structure" of a small North Carolina coastal community that was considering tourism development. Hester used a variety of techniques to "uncover" sacred or special places in the community. His methods included a community goals survey, behavioral mapping (observing people's use of places in the community), and key informant interviews. From these sources, Hester and a colleague drew up a preliminary list of "important places" and asked townspeople to rank them in order of significance and to indicate which they thought could be modified to accommodate tourism development. After the newspaper published the results one resident, noting how many places ranked above the local churches and cemetery, dubbed it the "sacred structures" list. Moreover, this list was developed into a map which became the basis for town zoning ordinances and other forms of land-use planning.

Similar efforts have been developed to identify special places on national forest lands. Mitchell et al. (1993) conducted personal interviews with visitors to the Chiwawa River drainage in Central Washington State to identify attachment oriented users who assigned specific social meaning to the drainage. They also point out how several planning technologies and frameworks are amenable to incorporating both utilitarian and place perspectives. As an example, they cite the Tongass National Forest EIS as an example in which GIS was used to record the location of over 1400 "favorite places" and to evaluate the impact to these sites on forest planning alternatives (see also Dean, 1994 for an example of the application of GIS to public involvement). Brandenburg and Carroll (1994) used public participation mailing lists from a national forest in Washington as a source for "stakeholder" interviews to identify symbolic and expressive meanings of a popular river drainage. 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 their dominant social group (utilitarian or preservationist). Moreover, some 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 neighbors. As another example, Harris (1994) is in the early stages of attempting to identify spiritual meanings of landscapes using procedures similar to the Recreation Opportunity Spectrum. Finally, personnel from the Interior Columbia Basin Ecosystem Assessment project have been able to elicit through interviews with local residents and agency officials, shared "designations" and "expectations" for places within some demonstration sites in the Yakima Valley and Silvies Basin.

Surveys of resource users and communities have also demonstrated that the strength of place attachments can be quantified for multiple places and at multiple geographic scales (Williams et al., in press; Shamai, 1991). The survey approach has usually been associated with studies of attachment to home, neighborhood and community (Altman and Low, 1992), with some efforts directed at resource and tourism dependent communities (Johnson and Burdge, 1974; McCool and Martin, 1994; Williams et al., in press). Others have attempted to relate place attachment to national parks, wilderness and other outdoor recreation settings (Moore and Graefe, 1994; Williams et al., 1992). These studies generally represent place attachment as an emotional dimension of meaning -- as an indication of the intensity, depth, or extent of meaning -- with symbolic and spiritual meanings associated with the high levels of attachment. While survey research may not be able to probe detailed spatial patterns and subtle nuances of meaning, it may be useful for providing broad map of the emotional intensity individuals and groups associate with various places. Thus, an inventory of "special places" at a district or forest level might be obtained through such methods.

All of these studies shows that a variety of public involvement efforts can be structured to identify areas that can accommodate development while preserving areas that are symbolic of community and individual identity. More importantly they demonstrate that it is important to distinguish spatially generalized values regarding public lands policy from place specific meanings and values. These efforts demonstrate that the public can identify and classify land units that hold

varied and often intangible meanings. They also suggest that a mix of both personal and public judgments about the meaning of places is important. Personal views of many can be at variance with the views of the social group or community and the sacredness of places may be often taken for granted until threatened. Moreover, open public discussion is important because input in the form of "letter counting" or "poll-taking" is not the same as working through or "coming to public judgment" (Yankelovich, 1991). The latter involves replacing what Kemmis (1990) describes as the "procedural republic" -- where agency administrators become arbitrators who must choose between winners and losers in the policy sweepstakes -- with something more akin to transactive forms of planning which recognize the need for dialogue between and among planners and citizens (Friedmann, 1973).

The process of mapping landscape meanings is intertwined with public involvement efforts, but also extends well beyond traditional forms of public input and planning. The process of mapping meanings is more than surveys and interviews and more than providing a forum for public input and comment. Transactive planning processes and opportunities for "working through," which allow people to share meanings and come to an understanding of meanings different from their own, are valuable social learning process that do not occur in one-on-one interviews or with questionnaires.[3] Moreover, the process of identifying the ideological landscape and local sentiment regarding specific land units is not likely to be achieved through some single well-coordinated methodology. Rather the examples presented here demonstrate that intangible symbolic and emotional meanings can only be captured through continuous dialog among stakeholders and ongoing public exercises in mapping the symbolic landscape.

Conclusions

In the transition to an ecological paradigm for natural resource management, social science offers a rich and growing body of research which promotes a view of the person as a social agent who seeks out and creates meaning in the environment (Saegert and Winkel, 1990). From this sociocultural perspective, a place (resource) may symbolize local or national heritage, ancestral ways of life, recreation opportunity, scenic views, valued commodities, rare habitat, or sacred rite. Each is a legitimate meaning for a place. Each can be threatened by another. Each is located in space and therefore capable of being mapped or referenced in a GIS system. Each

ultimately can be integrated with others. Perhaps not through an elegant algorithm, but through an inelegant political system, a political system that has the potential at least to organize vertically and horizontally all of the system's parts and processes. Natural resources are not just raw materials to be inventoried and managed as a commodity, but also and more importantly, "places with a history, places that people care about, places that embody a sense of belonging and purpose that give meaning to life" (Williams et al., 1992, p. 44). Quality of life, of community, of the environment; each is bound-up in our human ability to assign geographically specific meaning to our actions.

Greater understanding of and integration across the realms of nature, social relations, and meaning is no guarantee of solutions to natural resource problems. Greater understanding of the complexities of ecosystems will not eliminate conflict in meaning, unjust distributions of power, or ecological limits. In practice, however, integration occurs all the time -- policies are promulgated and decisions get made. The inherently uneven spatial (and temporal) distribution of forces not only make for biodiversity and unique places, but also the uneven distribution of resources and the power to control and distribute them. There is no technical solution to "natural" spatial variation, hence solutions are ultimately political. To build on Sederberg's (1984) definition of politics, resource allocation and management decisions involve the deliberate effort by individuals and groups to control the meaning of places or territories and the resources within them. In the end ecosystem management is still, to use Allen and Gould's (1986) term, a *wicked* problem; one lacking a technical solution.

Perhaps the deeper, societal motivation for reforms embodied in ecosystem management is a collective "sense of placelessness" wrought by excessive commodification of natural landscapes -- the dissociation of meaning from place. Ecosystem management will be successful if it is guided by contextually rich understandings of social and natural history. It is likely to fail if it only serves to further segment scientific discourse by adopting a different but equally abstract and reductionistic perspective. Natural resource management needs an understanding that bridges the tension between somewhere and nowhere. Sack (1992) believes this is possible:

> ". . .geographical ground for agreement can develop by examining the relation among forces and perspectives as they are constituted in and by particular places. Recognizing

that places are an essential means by which we make sense of the world and through which we act expands the overlap among the realms, geographically integrates theory, and joins it to practice" (p. 205).

Summary

Ecosystems are repositories of meaning -- scientific, biological, social, historic, and personal. This paper has highlighted meaning and place as significant concepts for managing ecosystems. The meanings associated with a given place in the landscape can be characterized in a number of important ways, including tangibility, emotionality, and commonality. The nature of place meanings range from the aesthetic and instrumental meanings captured in current resource inventories to the social, symbolic, and spiritual meanings which have been often overlooked or viewed with suspicion in traditional resource analysis. The emerging ecosystem paradigm provides greater legitimacy to these intangible and often competing meanings. Recognizing that ecosystems, landscapes, and places are rich repositories of human meanings can help managers better understand the connections between people and specific resources for which they have administrative responsibility.

Meanings are not just located or distributed in space, they define and create place. Resource planning has often failed to satisfy the public, in part, because the plans do not provide sufficient indications of where actions are to take place. Focusing on the symbolic meaning of places reminds resource managers that the public is involved with specific places under the manager's jurisdiction, not just summary tables of acres to be allocated to various uses during a planning cycle. With expanded use of geographic information systems in resource planning, intangible emotional and symbolic meanings can be mapped, displayed, and contrasted with each other and more tangible meanings (Dean, 1994).

Ecosystem management must recognize that an ecosystem is as much a social and individual construction as it is a scientific one. Viewing ecosystems as socially constructed places is important because it helps resource managers recognize that the meaning and value of objects and places are not inherent, but continually negotiated through social interaction. Policy making involves attempts to influence and control the meaning of things. This is an on-going process that is inseparable from the efforts to map the natural and cultural significance of ecosystems. Public

participation is not just the discovery of meaning and value, it is part and parcel of the negotiation of meaning. Individuals, organized interests, and communities at large should be encouraged to seek out opportunities to work through conflicting meaning. This is best achieved not through the rational and comprehensive planning process as we have known it, but through a *transactive* process (Friedmann, 1973) that is on-going and collaborative.

Much remains to be done, of course. Hopefully the principles identified here will help to give some structure to the various efforts of both biological and social scientists -- as a shared basis from which to discuss the problem of the ecosystem management. The tasks from here are to pursue the development of the multiplicity of methods needed to put these principles into practice. Managers need to develop meaning "discovery" methods in applied contexts that are sensitive to spatial, temporal, and group variation. But more importantly mangers must recognize that they are both facilitators of and participants in a process of negotiating the meaning and use of specific places in the landscape.

Notes

1. Sack (1992) recognizes a fourth realm, human agency, which emphasizes that these other forces are not determinate, because humans have some freedom to construct meaning in highly individualized ways. Because it is difficult to isolate, agency is not normally considered an independent part of nature, social relations, and meaning. The implications of this realm will be address under Principle 4.

2. The ontological and epistemological dimensions taken together make Sack's (1992) Relational Geographic Framework. Specific vectors in the cone have been labeled here as examples of specific scientific and ethical perspectives in natural resource management.

3. I am indebted to Linda Kruger for her insights on the role and limits of public involvement.

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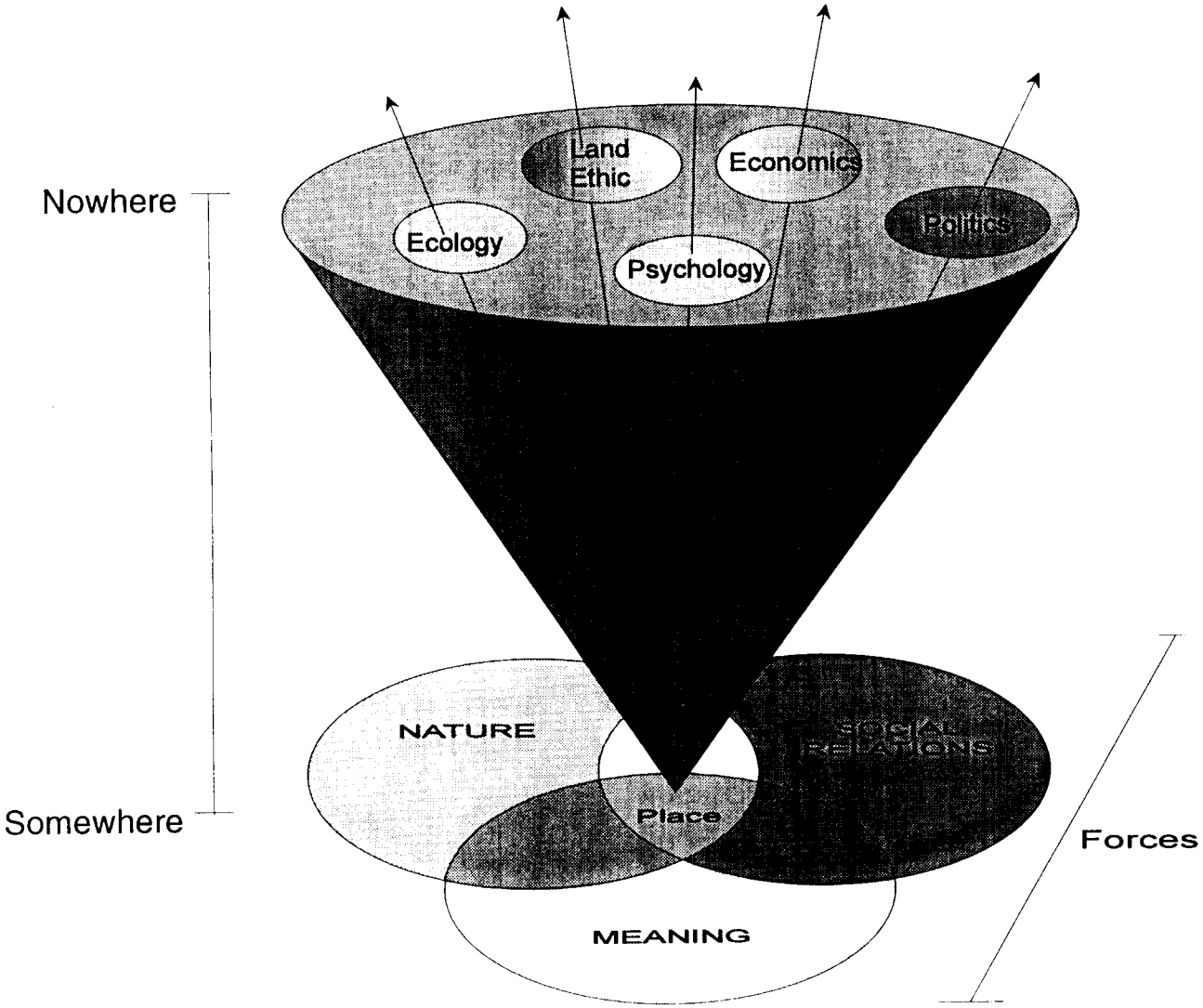
Figure Captions

Figure 1. Natural resource perspectives within a relational geographic framework. From *Place, Modernity, and the Consumer's world*, by R. D. Sack, 1992, Baltimore: Johns Hopkins University Press.

Figure 2. A framework for mapping the meaning of the landscape.



Source: Adapted from Sack, 1992

Figure 1. Relational Geographic Framework

Character of Human-Environment Relationships

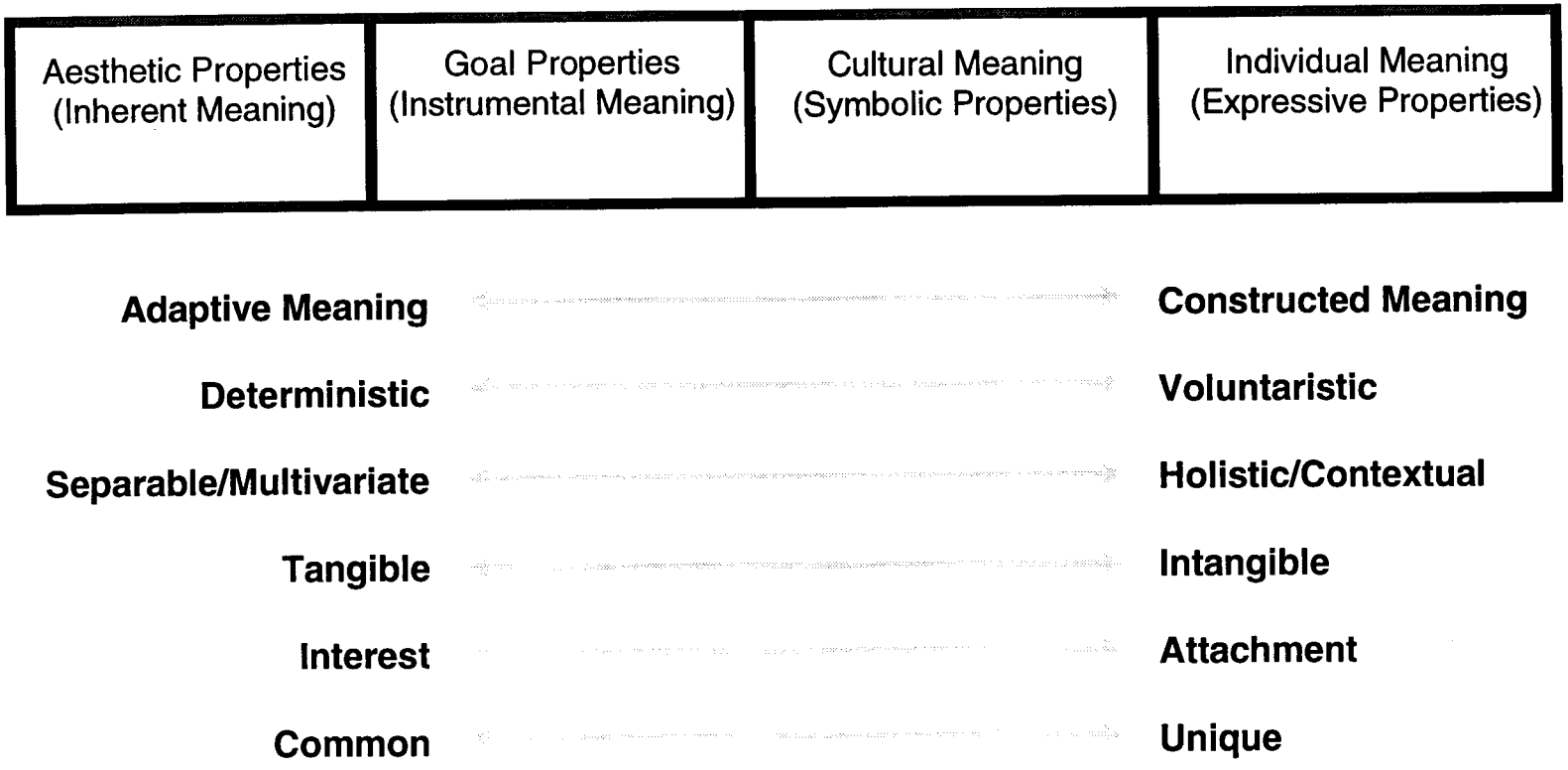


Figure 2. Framework for Mapping The Meaning of The Landscape