Sense of Place and Forest Science: Toward a Program of Quantitative Research

Richard C. Stedman

ABSTRACT. Sense of place is rich in theory, but quantitative research approaches often fail to reflect this richness. This schism between theory and application not only impedes the development of theory, but also the ultimate utility of the concept for integration into resource management planning. Here, several fundamental points in sense of place theory that can readily be translated into testable hypotheses are identified, as are suggestions for how they may be reformulated into hypothesis language. Sense of place is composed of descriptive and evaluative components that are a function of landscape attributes, experience with the landscape. In turn, any of these elements may affect place-related behaviors. FOR. SCI. 49(6):822–829.

Key Words: Sense of place, place attachment, place satisfaction.

SENSE OF PLACE, or the meanings and attachments held by an individual or group for a spatial setting, is a potentially useful tool for forest management, especially when reconciling opposing viewpoints over management objectives (Cheng et al. 2000). Such conflicts are essentially conflicts over meanings of the forest: What does the forest represent? How should it be used, and for whom? Despite calls for integrating sense of place into forest management (e.g., Williams and Stewart 1998), the contribution of sense of place to forest management has been minimal. A major factor relates to the nature of previous work in sense of place: I contend that sense of place is relatively rich in theory and relatively poor in quantitative applications. Simply put, sense of place theorists have been better at raising important questions than they have been at testing them as propositions. This has hampered integration because the latter approach fit more smoothly within existing paradigms of forest management. This article attempts to bring more coherence to existing theoretical precepts embedded in sense of place writings with an eye toward converting them to empirical propositions. Suggestions for refining measures that would facilitate hypothesis testing are also made. Although I have collected and analyzed data in a manner consistent with that suggested (Stedman 2003), this is not a "findings" paper, but an assertion of research needs.

Sense of Place: The Traditional View

Sense of place is the meaning and importance of a setting held by an individual or group, based on an individual's and group's experience with the setting. A place is a center of meaning, or field of care (Tuan 1977) based on human experience, social relationships, emotions, and thoughts. Places are:

> fusions of human and natural order . . . significant centers of experience . . . the focusing of experiences and intentions onto particular settings. They are based on directly experienced phenomena of the lived world, full of meanings, with real objects, ongoing activities . . . and become important sources of individual and communal identity, often profound centers of human existence with deep emotional and psychological ties (Relph 1976, p. 141).

A three-component view of sense of place predominates in social science: places include the physical setting, human activities that occur there, and human social and psychological processes (meanings and attachments) rooted in the setting (Brandenburg and Carrol 1995).

What themes are apparent after closer inspection of the literature? Note that these themes do not appear in the sense of place literature: at the risk of mischaracterizing place theory, or creating the appearance of more coherence in the literature than actually exists, I have culled these themes from extensive writings on sense of place.

Richard C. Stedman, Dept. of Agricultural Economics and Rural Sociology, The Pennsylvania State University, University Park, PA16802—Phone: 814-863-8644; Fax; 814-865-3746; E-mail: rstedman@psu.edu.

Manuscript received July 26, 2001, accepted August 28, 2002.

Place is Defined in Opposition to Space

According to Tuan (1977), place is defined in opposition to space. Space is not culturally constructed; it is described accurately by using geometric principles of distance and direction (Sack 1997). Considered as space, says Ryden (1993), the world is a blank surface where spatial, physical, and social patterns are dispassionately outlined. If space is general, place is particular: it is where general values are made concrete (Tuan 1977).

Personal Experience Shapes Place Out of Space

We turn space into place through personal experience: if space is abstract and universal, place is particularistic and imbued with meaning by virtue of experiences we have had there.

It is difficult to think about space without soon thinking as well about the related concept of place. Sooner or later, we pull our eyes away from the horizon and turn them to the dirt under our feet . . . we look at the dot on the map and find ourselves wondering what the place looks like and what kind of people live there (Ryden 1993, p. 37).

The transition from space to place involves progression from the foreign to the familiar: space is transformed into place as it acquires definition and meaning. Through human experience, "abstract space, lacking significance other than strangeness, becomes concrete place, filled with meaning" (Tuan 1977, p. 199). Relph (1976) describes an experience-based continuum of sense of place based on a steady accumulation of experience leading to a progressively stronger sense of place. Under this conception, those who have the "most experience" (i.e., have spent the most time, have participated fully in the life of the home or community, or have accumulated a series of "humble events") will have the strongest place sentiments. "Extended residence in a place tends to make us feel toward it almost as a living thing . . . the place has become a shaping partner in our lives, we partially define ourselves in its terms, and it carries the emotional charge of a family member or any other influential human agent" (Ryden 1993, p. 66). A forest landscape first may appear as undifferentiated space until the accumulation of experiences with it begin to personalize it and give it meaning. These experiences may be based in work, recreation, or everyday life. Theory suggests that more experience (i.e., length of time, intensiveness, or extensiveness of interaction) will create stronger attachment to the forest landscape.

Place is Based on Meanings

Common to the place literature are assertions about the importance of meaning. Sense of place is based on thoughts as well as feelings; it involves the interplay between cognition and emotion. We attribute meaning to landscapes, and in turn become attached to the meanings themselves. A setting may take on a particular meaning or range of meanings: a symbol suggests a whole, and an "object is taken as a symbol when it casts a penumbra of meanings . . . ." (Tuan 1975, p. 23). All settings are imbued, to varying degrees, with multiple place meanings. Lynch (1960) notes that the identity of a place provides its individuality or distinction from other places, but that this identity will vary between people. Some further suggest that place meanings are radically individualistic: a given setting will contain as many different meanings as there are people using the setting (Relph 1976, Meinig 1979). Others (e.g., Grieder and Garkovich 1994) suggest that a given setting embodies multiple meanings that are based on social categories and potentially shared by others within these categories. A given forest setting, therefore, will take on multiple meanings: it may represent a pristine wilderness, a place where ecological processes should not be tampered with, a place to make a living through the harvest of forest products, or a place to recreate on weekends with friends and family. Conflict over these meanings often is a source of conflict over forest management.

Meanings are Constructed Through Experience

Although some may suggest that settings have meanings at their very essence that are independent of human experience (e.g., the "proper" meaning of a setting is "learned" rather than "created"), most place theorists suggest that meanings are forged through experience with the setting. Attachment, as already discussed, is formed through the accumulation of experience. The nature of the experiences, the manner in which one interacts with the landscape, also plays an important role in shaping the meanings ascribed to the landscape, shaping answers to the question "what kind of place is this." Common meanings are based on shared (or similar) experience: people who interact with a landscape in similar ways will share a degree of commonality in meanings (Ryden 1993, Greider and Garkovich 1994). A given forest may be a playground, a workplace, or a haven for an endangered species, depending on the types of experience one has with it, and the prior experiences one brings to it. For example, to an urban resident with little exposure to the outdoors, even a straight-row pine plantation may convey "wilderness" meanings.

The Role of the Physical Environment and Social Relationships in Creating Place

Place literature often emphasizes that social relationships embedded in the setting are crucial to developing attachment. Memories and meanings are with people in place rather than just the physical setting. The significance of attributes of the physical landscape is thus downplayed: ". . . a place is essentially its people, and appearance or landscape are little more than a backdrop of relatively trivial importance" (Relph 1976, p. 33). Greider and Garkovich (1994) and Eisenhauer et al. (2000) also hold the position that sense of place is strongly socially constructed. In contrast, others suggest that the physical setting contributes important "raw material" to place meanings and attachment. Although in theory people may turn "blank space" into "meaningful place," in reality, physical features of the environment play an important role in producing sense of place. Space is never truly "blank" because the physical setting contributes important raw material to place meanings. "A knowledge of place is grounded in those aspects of the environment which we appreciate through the senses . . . color, texture, slope, quality of light, the feel of wind, the sounds and scents carried by that wind" (Ryden 1993, p. 38). Especially germane to forest management is the idea that the biophysical environment—aspects of the forest itself—shapes sense of place meanings and attachment. Al-

though the hypothetical first-time visitor with little previous outdoor experience may ascribe wilderness meanings to a pine plantation, more people are likely to ascribe such meanings to forests with few roads, old trees, and diverse species compositions. "Working forest" meanings may be less prevalent in this instance. In short, the physical environment matters to sense of place, providing managers with the opportunity to manipulate the landscape accordingly.

Place Is Multidimensional and Multidisciplinary

This review of place theory suggests the multidimensionality of place. The human component is composed of descriptive symbolic meanings about the essence of the setting and evaluative notions of attachment, identity, and dependence. In turn, these are formed through experience with the biophysical landscape and the people within it. Therefore, understanding place in its true complexity is a multidisciplinary exercise. Conventional disciplinary approaches to understanding place concepts will fail in understanding the concept because ". . . the overwhelmingly complex and dynamic character of modern places obscures connections even for academics. The intellectual fields that are supposed to make us aware see only fragments (Sack 1997, p. 254). The reality of contemporary forest management, especially approaches such as ecosystem management and collaborative management, is an exercise in balancing ecosystem function with a wide variety of human benefits.

In summary, place is a multidimensional concept that depends on meanings, which in turn are based on experiences with both the physical landscape and social actors therein. Variability in meanings among individuals or groups arises from variability in experience with the landscape.

Studying Place

Despite these relatively clear themes extracted from an often muddy and contradictory literature, sense of place research is fraught with nagging questions about concept clarity and causality. Low and Altman (1992), in an attempt to advance the study of place, suggest place researchers need to move beyond presumed consensus about the meaning of core concepts to a second-stage analysis that more systematically examines relationships between concepts, and develops general theory. This second stage largely has not been forthcoming. The theoretical relationship between concepts remains poorly articulated; concepts often cannot be differentiated by their definitions. For example, Low and Altman (1992, p. 3, emphasis added) assert that "place attachment *subsumes or is subsumed by* a variety of analogous ideas, including topohilia (Tuan 1974), place identity (Proshansky et al. 1983), insideness (Rowles 1980), genres of place (Hufford 1992), sense of place or rootedness (Chawla 1992), environmental embeddedness, community sentiment and identity (Hummon 1992)." This is a remarkably vague articulation of place attachment relative to other terms, suggesting that a given construct either "subsumes or is subsumed by" at least nine other concepts states little except that the person making such statements cannot or will not differentiate between the concepts. Low and Altman's statement was made in the context of calling for more systematic analysis of the place attachment concept. However, 6 yr later, similar observations are made, ". . . sense of place is more of an idea than a well defined construct" (Kaltenborn 1998, p. 172).

This lack of construct clarity, and the dearth of attempts to better systematize relationships between constructs, is based on a schism between theory and research. *S*ense of place theory has traditionally been characterized by phenomenological approaches, which emphasize treating place as a totality rather than as component parts that may "cause" each other (Kruger 1996). Phenomenological approaches are often suspicious about prediction and causality, seeking instead to understand how the everyday life world is constituted as a totality. Overwhelmingly, phenomenological approaches use qualitative methods and reject the language of conventional positivistic science that emphasizes hypothesis-testing and prediction via general laws of human behavior (Seamon 1982). Most of the place "pioneers" (e.g., Relph 1976, Tuan 1977, Sack 1980) articulate place in phenomenological terms (Altman and Low 1992, Rubenstein and Parmelee 1992, Brandenburg and Carrol 1995), and the necessity of using qualitative approaches to understanding the totality of sense of place (Seamon 1992, Stefanovic 1998), rather than breaking it into components or multiple variables. Kruger (1996:2) asserts "the empirical-analytic model . . . abstracts humans from nature and place and devalues the knowledge that people have," thus minimizing important symbolic meanings and the complex, multifaceted nature of lived experience. In sum, proponents of this view argue that much is lost through attempts to simplify complex, multifaceted, phenomena such as sense of place, or reduce these phenomena to "cause-and-effect" relationships. These approaches take a particularistic view of sense of place and eschew deriving generalizations from hypothesis testing. This approach has much to recommend; it provides details and intimate knowledge about how place works in a given setting for a given group of actors. Such an approach may impede the development of general principles that can be examined across settings. Also, this approach may be a barrier to integrating place variables with traditional forest management, which has relied more heavily on conventional positivistic science and its hypothesis-testing approach.

Quantitative Measures

The approach described above is by no means a consensus: some researchers acknowledge the utility of quantitative measures and hypothesis testing (Krupat 1983, Shumaker and Taylor 1983, Shields 1991, Rudzitis 1993). Recent research on place has continued to move toward quantitative measures. Measurement paradigms can be categorized in several ways. First, some researchers have created a series of unidimensional scales that look examine "stronger or weaker" forms of sense of place (Shamai 1991), place attachment (Kaltenborn 1998), place identity (Cuba and Hummon 1993), "at homeness," or "rootedness" (McAndrew 1998).

Others attempt to incorporate multidimensionality into their measures: Lalli (1992) developed a multidimensional urban identity scale comprised of five subscales. Williams et al. (1992) also adopt a multidimensional approach, but explicitly attempt to interrelate identity, attachment, and dependence; they regard place attachment

as the global concept, defining it as an emotional bond between an individual and a particular spatial setting. Place identity and place dependence are identified as two subdimensions of attachment. Place identity is seen as a form of attachment resulting from the symbolic importance of the physical environment to self-definition. Forest dependence is often defined by using economic measures such as proportion of jobs in the forest industry in "forest dependent communities"; in contradistinction, place dependence, in this instance, is also a social psychological construct. It is conceived in terms of how the setting compares with other alternatives supporting behavioral goals (How well does this place meet my needs?). Thus, a place may be both a resource for satisfying explicitly felt behavioral or experiential goals and an essential part of one's self. Moore and Graefe (1994) test a model based directly on the work of Williams et al. (1992). Jorgensen and Stedman (2001) review these studies and explore the possibility of a three-factor-model of sense of place composed of the subdomains of attachment, identity, and dependence which all contribute equally to sense of place. Counter to the authors' hypotheses, results suggested that a single evaluative dimension consistent with the definition of attachment better explained the observed responses than did the subcomponents. Note that most of the other studies that posit multiple domain solutions find high cross-loadings or weak factor loadings with high interscale correlations, suggesting that the measured concepts tap a common domain of meaning.

A general critique of all of these quantitative studies, and key to this effort, is the unsatisfactory relation between the literature they cite and the questions they examine empirically. Typically, the literature review sections of these studies adequately represent the complexity of place concepts, but the quantitative applications are often quite narrow, failing to incorporate the theoretical complexity into actual measures and hypothesized relationships. Measurement, even that which explores the potential multidimensionality of place concepts such as attachment, has been narrowly focused on the sense of place concept itself (e.g., describing higher or lower levels of place attachment) rather than examining factors that may produce attachment, or the effects of attachment on other variables. Thus, I assert that important thematic areas of sense of place theory, as described earlier, have not been adequately tested in quantitative research approaches. We appear to be left with two extremes. Pure qualitative "case study" descriptions define one end of the spectrum. These approaches, although rich in detail, do not seek to build general predictive models useful to forest management. The other end of the research spectrum is characterized by quantitative approaches that do not address many of the questions raised by theory. Practical solutions appear to lie in middle ground approaches such as testing hypotheses informed by theory that examine the influence of particular variables and the conditions that affect the relationship. Systematic knowledge about sense of place is likely to emerge through this process. In turn, these findings are more likely to appear as useful knowledge to forest managers.

Toward a Quantitative Study of Place

Fundamentally, place measurement should reflect the complexity of the questions place theorists long have been asking: What factors and processes foster attachment? How do we think about the symbolic meanings that people hold for places? How do we compare the effects of the physical environment versus social relationships that occur there? This article is not a polemic for quantitative measures for the sake of quantitative measures, but rather a plea for introducing greater complexity and theoretical richness into quantitative measurement efforts. This section outlines the themes that ought to be reflected in research and the form that quantitative analyses in this area might take. Some work (Stedman 2000, 2002) already has been done in this vein; where possible I illustrate the thematic areas with measures drawn from this research.

Place is Multidimensional and Multidisciplinary

Fundamentally, and by way of introducing the more specific assertions below, sense of place is a multidimensional concept. Furthermore, these dimensions cross disciplinary boundaries. Theorists have asserted that a place entails a physical environment, social relationships and other human behaviors, and human cognitions and emotions. However, consistent with recognized barriers in interdisciplinary research (e.g., Heberlein 1988), measures have not followed suit. How can we examine the multidimensionality of place in a manner consistent with theory?

Evaluative Components of Place Entail More Than Attachment

As described above, research has examined potential subdomains of attachment such as dependence and identity (e.g., Williams et al.1992, Moore and Graefe 1994), or sense of place as an overall evaluative construct (Jorgensen and Stedman 2001). These approaches, though helpful, do not explore the possibility of other potential evaluative domains. The domains of attachment, identity, and dependence are distinct conceptually, but (at least as reflected in research) closely related empirically. One alternative construct to consider is place satisfaction as an evaluation of the quality of a spatial setting. In addition to knowing if a setting I considered to be personally significant (as loosely represented by attachment and its purported subdomains), it is important to know the degree to which it is liked or disliked. These are clearly distinct domains: the former conception is consistent with the social psychological construct of "identity," the latter with the concept of "attitude." Community sociology has made a clear conceptual and empirical distinction between community satisfaction and community attachment (e.g., Guest and Lee 1983, Brown 1993). For purposes of maximizing clarity, sense of place research could and should do the same. Stedman (2000, 2002) has conducted research in this vein, asking people in a forested lake district questions such as, "Compared to other things in your life, how important is your lake to you?" and, "Overall, how satisfied are you with the condition of your lake?" Responses to these questions, the former measuring attachment, and the latter measuring satisfaction, indicate that the concepts differ substantially: corre-

lation between items is low, each is predicted by different variables, and each has independent effects on behavior.

Place is Meaning-Based

The lack of quantitative research on the nature of place meanings is particularly perplexing. Sense of place has been defined as "meanings and attachment" for a spatial setting (Brandenburg and Carrol 1995). Meanings and attachment are not the same thing! Researchers ought to examine not just *how much* the place means, (and as per the discussion above, how much it is liked) but *what* does it mean? The latter question is a question of description, not evaluation. These components are analytically separable, and there is great clarity to be obtained by separating them in quantitative application. Humans attribute meaning to landscapes and in turn, become attached to the meanings themselves. Greider and Garkovich (1994) lay this charge quite clearly: the meanings are socially constructed and may serve as the basis of attachment. However, empirical treatments have not looked at the meanings, or *descriptive* sense of place. Understanding the content of meanings is critically important for understanding resource conflict. It is not enough to know the strength of one's attachment to the setting, but precisely to *what* one is attached. If two people each are strongly attached to a forest but hold very different meanings for it (i.e., this forest is a wilderness vs. this forest is a place to make a living), it is likely they will conflict over preferred uses and policies. Meanings can be readily measured via level of agreement or disagreement with belief statements about the nature of settings: e.g., "this forest represents a pristine wilderness," "this forest is mostly a place for recreation," or "this forest represents a source of steady, high paying jobs." Research (Stedman 2002) using this approach found that meanings were empirically separable from attachment and satisfaction and played a large role in predicting respondent level of satisfaction.

A Process-Based Notion of Place: Developing a Sense of Place

How are meanings and attachments created? Much theoretical writing suggests a process model of place formation. For example, Relph (1976) states that place attachment grows through time, is based primarily on relationships with people in the setting rather than aspects of the physical environment itself, is fostered by multiple experiences, and varies between groups with different experiences. These statements sound like research hypotheses but are not treated as such by Relph, nor by those who do positivistic research on place. Yet, these questions may readily be tested as hypotheses: Are higher levels of attachment to a forest setting more closely linked to social relationships embedded there or to qualities of the physical landscape? All of these concepts can be measured quantitatively. A sense of place may develop quickly in the case of dramatic settings or landscapes of escape, or gradually, in relation to everyday home places (Tuan 1977). Even these two simple questions are largely absent from quantitative treatments of place. These questions are certainly examined in case studies that focus on the particulars of a group's experience with a particular physical setting. However, this question has not been examined in a more systematic fashion in an attempt to develop any general principles. In summary, the statement, "sense of place is based on experience" should be considered empirically testable rather than a given. As an example, Stedman (2000) finds that the length of interaction with the landscape (as defined by years of property ownership) is relatively independent of level of attachment and satisfaction, but that the intensity of social network involvement (number of others in the local setting considered close friends) has a strong effect on attachment, but not satisfaction.

Examine the Influence of the Physical Setting on Sense of Place

Theorists (with some debate, as noted above) have long acknowledged the potential role of attributes of the physical environment in underpinning sense of place. However, setting attributes have not been examined as producing sense of place in research. Certainly there is precedent for doing so in other fields. For example, research in landscape perception has a long history of examining human response to landscape attributes. Sense of place research can and should follow suit: with the advent of Geographic Information Systems and associated databases, it is becoming easier to model the influence of the biophysical landscape on sense of place. Little is known about the exact process by which landscape variables may affect sense of place. For example, given the discussion above, at least three routes are possible. Attributes of the physical setting may create attachment directly (we become attached to the "raw material" of certain types of settings, such as snow-capped peaks or old-growth forests) or indirectly. This indirect causality may take at least one of two routes. Landscape features may enable certain behaviors that produce attachment (e.g., we become attached to places by virtue of the accumulation of important memories set in place), or these behaviors may result in important descriptive meanings to which we are attached. These different causal routes are readily examined through multivariate statistical modeling. For example, Stedman (2000) finds that the strongest effects of environmental attributes on place attachment are indirect: environmental attributes give rise to certain meanings (e.g., "wilderness"), which in turn predict attachment. More research in this vein is crucial if forest managers wish to maintain the landscape to foster a sense of place.

The Relationship Between Sense of Place and Behavior

Unlike the previous statements, which are treated as "untested assumptions" latent in literature about sense of place, there are few assertions in the literature about the potential effects of sense of place on subsequent behavior. Sense of place is often implicitly viewed as an end in itself, and attention is paid to its potential effects on behavior. However, this relationship is an obvious response to the "so what" questions that may arise in response to sense of place studies. Community sociology has examined the effects of attachment and satisfaction on behavioral loyalty (long-term residence) in a community. Sense of place research can and should do the same. However, another type of behavior might

prove more interesting to consider: there is a latent assumption in the literature that places threatened with unwanted change and to which one is attached are most likely to be fought for. In this context, the effect of the various domains of sense of place (meanings, attachment, and satisfaction) on willingness to engage in place-protective behaviors is also of interest. For example, are people with higher levels of attachment more likely to provide input to forest management proposals? Engage in protests? Or do these behaviors depend on whether the management plan threatens a preferred meaning (i.e., a proposal to close an area to motorized access may threaten recreation meanings). Measurement in this area could take several forms. Respondents could be asked about their intentions to engage in certain behaviors, or attachment levels and meanings between participants and nonparticipants in the behavior of interest could be compared (e.g., those who do or do not provide input to forest management plans). Stedman (2002), taking the former approach, finds that willingness to engage in place-protective behavior is maximized when attachment is high (the place is important) and satisfaction is low (the place is flawed in some way).

Summary and Suggestion

Most quantitative research on sense of place has not lived up to the themes culled from sense of place theory. Therefore, this is not solely a call for quantitative measures, but a call for measurement efforts that, as much as possible, embrace some of the precepts embedded in theory. Sense of place is more than place attachment. The sense of place concept should be expanded to include (at minimum) other independent evaluative domains such as satisfaction, and perhaps more importantly, the meanings ascribed to the setting by the social actor. Also, sense of place (and the domains described above) should be treated as a dependent variable in process models, and as a potential cause of human behavior as well.

Discussion

This article has clarified themes in the sense of place literature that ought to be better reflected in quantitative research. Moving research in the direction suggested here is likely to increase the utility of sense of place concepts to forest management. I have proposed an approach for relating components of sense of place, measuring the process by which sense of place is formed (including the influence of the physical environment itself), and examining potential effects on place-protective behavior. The components can be measured by using relatively conventional social psychological research (e.g., quantitative survey instruments that explore attitudes, beliefs, and behaviors). In turn, the relation between these concepts can be arranged into models that can be tested and compared across settings and different stakeholders within a given setting. Differences between settings and variation in the way that people interact with these settings contribute to *predictable* variation in meanings, evaluations, and place-protective behavior. This is a "middle ground" approach in that sense of place is not considered to be radically particularistic as suggested by some approaches. Rather, interesting and potentially predictable variation occurs within and between settings; the sources of this variation are understandable using relatively conventional multidimensional analysis techniques.

This treatment of sense of place will simultaneously contribute to theory and practice. The value of empirical work that is consistent with, and builds on, theoretical prescriptions has been discussed throughout and need not be reemphasized here. Quantitative research that is consistent with theory will also serve the needs of resource managers, who are increasingly interested in place issues but may be uncertain about methods for integrating these concepts with everyday management concerns. Translating complex place concepts into more familiar beliefs, attitudes, and behaviors may compromise the complexity of place, but should help to bring place concerns more fully into the discussion. For example, Williams and Stewart (1998) assert that sense of place is beginning to "find a home" in ecosystem management. I suggest, however, that common conceptions about sense of place rooted in phenomenology—that it does not seek to predict, is holistic, and observer-dependent (Seamon 1982)—are barriers to reconciling sense of place with practical, concrete resource management objectives. Measurement efforts such as those advanced here not only are more true to theory, but also nudge sense of place toward becoming a more "manager-friendly" concept.

Imagine that a forest manager wants to integrate sense of place concerns into management objectives, for example, by attempting to foster place attachment and satisfaction. One cannot "manage for sense of place" or integrate it into resource planning unless its particulars are known, as well as the process by which it is created. As described, recent research (Stedman 2002) has demonstrated that place attachment is fostered primarily as a function of increased experience with the spatial setting (including a diversity of types of experience), but is relatively independent of physical attributes of the setting as "natural capital." The physical setting is important, however, in providing for a range of experiences that lead to attachment. In contrast, place satisfaction is strongly related to attributes of the setting itself: perceptions that the landscape is being damaged (by overcutting, for example), may impact satisfaction but are less likely to harm place attachment, unless they impede preferred behaviors that underpin attachment. For example, access restrictions such as forest road closures will undoubtedly harm attachment for those who interact with the forest primarily through motorized vehicles.

Or, consider the role of symbolic meanings: what meanings are derived from the landscape, what landscape attributes and activities contribute to them, and how might these meanings be affected by forest management activities? For example, closure of access roads will likely promote certain meanings (e.g., wilderness), whereas intensive harvest may harm these meanings and foster others. In turn, do different sets of meanings for a given landscape foster higher levels of attachment and satisfaction? For example, are people who attribute wilderness meanings to the landscape consistently more attached to it than people who consider it a "playground"? Stedman (2000, 2002) found that holding

certain symbolic meanings for a landscape was associated both with increased attachment and satisfaction.

The questions described above are all researchable topics that are true to the theoretical base of sense of place and yet should provide useful information to forest managers. Even within a given setting, created meanings, and evaluations of users will vary—not in a radically individualistic way, but according to respondent characteristics, such as mode and/or length of interaction with the landscape. Much of this variance is predictable, and this prediction is in line with resource management decision-making: what stakeholder groups are likely to be affected by what ways by different types of management activities? Differences in place meanings among stakeholders, when coupled with uniformly strong levels of attachment, may drive conflict over resource policy.

Many might argue that too much is lost when phenomenological place concepts are translated (some might say "reduced") to positivistic hypothesis-testing approaches. I will grant that some elements of complexity are lost in these translations. But this is not the point: I am not advocating an elimination of the phenomenological perspective in place research. The approach used should reflect the nature of the question one wishes to answer. Also, the thematic areas I have illustrated for quantitative analysis are derived from place thinkers who primarily identify with the phenomenological approach and assert the need for qualitative methods. Such approaches are where most of the interesting place thinking has been located. There is much to be gained by subjecting these questions to positivistic hypothesis testing: concept precision, a better understanding of process, and sources of variation within or between settings. Some might respond that landscape management can and ought to become more flexible in its response to intangible values and qualitative data, such as those advanced in more conventional sense of place treatments. According to this view, it is ultimately problematic that sense of place must enter the resource management dialogue on positivistic terrain. Although I agree that resource managers ought to be adaptable in their integration of human concerns into ecosystem management or integrated resource planning, there is nothing wrong with beginning with the approach suggested here. The research needs identified are potentially easier to incorporate into management (i.e., beliefs and attitudes as a function of specific landscape management activities), and as asserted throughout this article, consistent with advancing sense of place theory.

Conclusions

This article identifies instances where the empirical application of sense of place theory does not reflect the richness of research imperatives. It suggests ways that measurement of concepts and questions about the relationships between concepts might be better targeted in bridging this gap. Although some research has followed this approach (Stedman 2000, 2002), the intent here is to clearly outline the potential relationships and methods of measure, rather than focus on data. I want to reemphasize that the intent is *not* to assert that sense of place must be subjected to quantitative measures at all costs, nor that the phenomenological, qualitative studies have little to contribute. Nothing could be farther from the truth: those who are proponents of quantitative measures of sense of place must follow the example of those more qualitatively oriented by asking questions and testing hypotheses that reflect the richness set forth in the qualitative research.

Literature Cited

BRANDENBURG, A.M., AND M.S. CARROLL. 1995. Your place or mine? The effect of place creation on environmental values and landscape meanings. Soc. Natur. Resour. 8:381–398.

BROWN, R.B. 1993. Rural community satisfaction and attachment in mass consumer society. Rur. Soc. 58(3):387–403.

CHAWLA, L. 1992. Childhood place attachments. P. 63–86 *in* Place attachment, Altman, I., and S.M. Low (eds.). New York, Plenum Press. 314 p.

CHENG, T., KRUGER, L., AND S. DANIELS. 2000. 'Place' as a mediating social variable in natural resource politics: a propositional analysis. Unpubl. manuscript. 108 p.

CUBA, L., AND D.M. HUMMON. 1993. A place to call home: Identification with dwelling, community, and region. Soc. Quart. 34(1):111–131.

EISENHAUER, B.W., KRANNICH R.S., AND D.J. BLAHNA. 2000. Attachments to special places on public lands: An analysis of activities, reasons for attachments, and community connections. Soc. Natur. Resour. 13:421–441.

GREIDER, T., AND L. GARKOVICH. 1994. Landscapes: The social construction of nature and the environment. Rur. Soc. 59(1):1–24.

GUEST, A.M., AND B.A. LEE. 1983. Sentiment and evaluation as ecological variables. Soc. Perspect. 26:159–184.

HEBERLEIN, T.A. 1998. Improving interdisciplinary research: integrating the social and natural sciences. Soc. Nat. Resour. 1(1):5–16.

HUFFORD, M. 1992. Thresholds to an alternate realm: Mapping the Chaseworld in New Jersey's Pine Barrens. P. 231–252 *in* Place attachment, Altman, I., and S.M. Low (eds.). New York, Plenum Press. 314 p.

HUMMON, D.M. 1992. Community attachment: Local sentiment and sense of place. P. 253–278 *in* Place attachment, Altman, I., and S.M. Low (eds.). New York, Plenum Press. 314 p.

JORGENSEN, B.S., AND R.C. STEDMAN. 2001. Sense of place as an attitude: Lakeshore owners' attitudes towards their properties. J. Env. Psych. 21:233–248.

KALTENBORN, B.P. 1998. Effects of sense of place on responses to environmental impacts. Appl. Geogr. 18(2):169–189.

KRUGER, L.E. 1996. Understanding place as a cultural system: Implications of theory and method. See especially p. 42–47, "Understanding place as a cultural system." Ph.D. Diss., Univ. of Washington (Forest Resources). 180 p.

KRUPAT, E. 1983. A place for place identity. J. Env. Psych. 3:343–344.

LALLI, M. 1992. Urban-related identity: theory, measurement, and empirical findings. J. Env. Psych. 12:285–303.

LOW, S.M., AND I. ALTMAN. 1992. Place attachment: A conceptual inquiry. P. 1–12 *in* Place attachment, I. Altman & S.M. Low (eds.). Plenum Press, New York. 314 p.

LYNCH, K. 1960. The image of the city. MIT Press, Cambridge, MA. 194 p.

MCANDREW, F.T. 1998. The measurement of "rootedness" and the prediction of attachment to home-towns in college students. J. Env. Psych 18:409–417.

MEINIG, D.W. 1979. The interpretation of ordinary landscapes. See especially Chapter 2, "The beholding eye," p. 33–50. Oxford University Press, New York. 255 p.

MOORE, R.L., AND A.R. GRAEFE. 1994. Attachments to recreation settings: The case of rail-trail users. Leis. Sci. 16:17–31.

PROSHANSKY, H.M., A.K. FABIAN, AND R. KAMINOFF. 1983. Place-identity: Physical world socialization of the self. J. Env. Psych. 3:57–83.

RELPH, E. 1976. Place and placelessness. Pion Limited, London. P. 29–38, 47–56.

ROWLES, G.D. 1980. Growing old "inside": Aging and attachment to place in an Appalachian community. P. 153 *in* Transitions in aging, Datan, N., and A. Lahmann (eds.) Academic Press, New York. 221 p.

RUBENSTEIN, R.L., AND P.A. PARMELEE. 1992. Attachment to place and the representation of the life course by the elderly. P. 139–163 *in* Place attachment, Altman, I., and S.M. Low (eds.). Plenum Press, New York. 314 p.

RUDZITIS, G. 1993. Nonmetropolitan geography: Migration, sense of place, and the American West. Urban Geogr. 14(6):574–585.

RYDEN, K.C. 1993. Mapping the invisible landscape: Folklore, writing, and the sense of place. University of Iowa Press, IA. 326 p.

SACK, R.D. 1997. Homo geographicus: A framework for action, awareness, and moral concern. Johns Hopkins University Press, Baltimore, MD. 292 p.

SACK, R.D. 1980. Conceptions of space in social thought. See especially Chapter 4, p. 86–117, Social science and subjective meanings of space. MacMillan, London. 231 p.

SEAMON, D. 1992. Dwelling, seeing, and designing: Towards a phenomenological ecology. SUNY Press, New York. 363 p.

SEAMON, D. 1982. The phenomenological contribution to environmental psychology. J. Env. Psych. 2:119–140.

SHAMAI, S. 1991. Sense of place: An empirical measurement. Geoforum 22:347–358.

SHIELDS, R. 1991. Places on the margin: Alternative geographies of modernity. See especially Chapter 4, p. 162–199, "The true North strong and free." Routledge, London and New York. 334 p.

SHUMAKER, S.A., AND R.B. TAYLOR. 1983. Toward a clarification of people-place relationships: A model of attachment to place. P. 219–251 *in* Environmental psychology: Directions and perspectives, Feimer, N.R., and E.S. Geller (eds.). Praeger, New York. 356 p.

STEDMAN, R.C. 2002. Toward a social psychology of place: Predicting behavior from place based cognitions, attitude, and identity. Environ. Behavior 34(5):561–581.

STEDMAN, R.C. 2000. Up North: A social psychology of place. Ph.D. Diss., Department of Sociology, Univ. of Wisconsin-Madison. 285 p.

STEFANOVIC, I.L. 1998. Phenomenological encounters with place: Savtat to square one. J. Env. Psychol. 18:31–44.

TUAN, Y.F. 1974. Topophilia. Columbia Univ. Press, New York. P. 92–100.

TUAN, Y.F. 1975. Place: An experiential perspective. Geogr. Rev. 65:151–165.

TUAN, Y.F. 1977. Space and place: The perspective of experience. Univ. of Minnesota Press, Minneapolis. P. 8–18, 118–148.

WILLIAMS, D.R., AND S.I. STEWART. 1998. Sense of place: An elusive concept that is finding a home in ecosystem management. J. For. 96(5):18–25.

WILLIAMS, D.R., M.E. PATTERSON, J.W. ROGGENBUCK, AND A.E. WATSON. 1992. Beyond the commodity metaphor: examining emotional and symbolic attachment to place. Leis. Sci. 14:29–46.