

Sense Shaping Place: Repositioning the Role of Sense of Place in Social-Ecological Systems from a Bioregional Planning Viewpoint

Muhammad Farid Azizul¹, Stephen Knight-Lenihan²,
Marjorie van Roon³

Abstract. Dynamic landscape change affects and is affected by human attitudes. The effect of pattern on process has been investigated mainly in landscape ecological sciences, focusing on whether and how the human influence on spatial organization of landscape creates stable, functioning ecosystems. In earlier ecological studies, despite embedding their values, perception and attitudes when delineating a place, humans have been treated as an independent, separate entity. Equally, the ecological imperative expressed through operational models of conservation planning changes the physical organization of landscape in such a way that it affects public connection to landscape and influences views and attitudes towards ecosystem governance. A more comprehensive understanding is needed of these two phenomena, addressing the linkages between ecosystem conservation and how people respond to dynamic change. Therefore we employ 'sense of place' as a broad concept to assess and evaluate the way in which people shape their responsiveness to place through a bio-regional planning approach. . This paper focuses on the attitudinal dimension of sense of place in planning-based activities. The results suggest that although place connection strongly empowers protective and ethical-based actions, it remains unclear how planning renders the negotiation of the different actors' values with respect to the concept of place. A conceptual framework is proposed, to assess the role of sense of place as an integrative concept in understanding the linkages of social-ecological systems and the need for future research to investigate how planning is receptive to the multitude of actor's values and attitudes that shape social-ecological changes across the landscape.

Keywords: sense of place, bioregional planning, environmental ethic, social-ecological systems, landscape planning

¹ PhD Candidate, School of Architecture and Planning, National Institute of Creative Arts and Industries, the University of Auckland, New Zealand. Corresponding Author, tel: +64 9 3737599 ext. 85076, fax: +64 373 7694, e-mail: mazi395@aucklanduni.ac.nz

² Senior Lecturer, School of Architecture and Planning, National Institute of Creative Arts and Industries, the University of Auckland, New Zealand

³ Department of Landscape Architecture, Faculty of Built Environment, University Technology Malaysia, Malaysia

1. Introduction

Landscape change has increasingly been recognized within interdisciplinary perspectives to be a process that is inherently influenced by an interacting social-ecological system (SES). This process is not deemed to be static, but rather it is a dynamic process of transaction between human values and functions that have evolved as a consequence of past resource use, policy and social response. The process of landscape creation as a human territorial region is described by Mumford (1938:367) as “a complex of geographic, economic and cultural elements. Not found as a finished product in nature, not solely the creations of human will... the region... is a collective work of art”. A human territorial region or a “place” is the sum of all interactions between human activity and preference and biophysical resources, whereby a bioregion indicates a similar pattern of land use and ecosystems (Brunckhorst 2001; Slocombe 1993). Place therefore is a geographical setting that is imbued with meanings (Altman and Low 1992; Tuan 1977). The meanings encompass the interaction between the components of utilitarian or intangible value of the natural resources within the physical setting. The conceptualization of meanings for that physical setting to be turned into “place” is unique, which correspond to how individuals develop their interaction with the components. This relationship is not easily categorized as Cheng et al (2003) suggest as they attempt in a body of literature to disassemble place creation into distinct constructs and dimensions based on each disciplinary epistemological and ontological perspective (for example, refer to Trentelmen 2009). The cognitive, affective and conative perspective of place rooted in human geography (Relph 1976; Tuan 1977) and environmental psychology (Canter 1977) seems to fit and be in tandem with bioregional thinking that emphasizes the “terrain of consciousness” (Thayer 2003), which also connects or associates with the development of one’s awareness of the natural world which is important in maintaining the ecology of the place.

The emergence of bioregional planning has reinvigorated the idea of “place” in land use planning and conservation. Hence a paradigm shift from the previous commodity-centric thinking and top-to bottom approach, to a more flexible-collaborative and integrative approach of human and ecological needs has occurred (McHarg, 1969). Recent research suggests that place-based values and meanings have been increasingly recognized in the field of landscape and urban planning (e.g., Smith et al 2011; Stewart et al 2004), natural resource management (e.g., Windsong 2013; Brehm et al 2012;), geography (such as, Brown and Raymond 2007; Tonge et al 2013;) and sociology (e.g., Ulrich-Schad et al 2013;). While the concept of “place” varies among these studies, they have used place-based meanings and values as a broad concept to characterize the behavioral perspective of the way in which individuals respond to and shape management outcomes. For example, the idea that through their understanding individuals ascribe meanings and values to their place, has been found to strongly influence support for resource consumption fee (Kyle et al 2003) and individual’s awareness towards local issues and environmental impacts (White et al 2008). The current processes of devolution and globalization makes the need to understand “place” is important, due to these processes knowledge is gained and actions are taken locally. This substantially depends on the process of humans becoming native to the place in which they are living within the natural parameters in a way that the local ecology is restored (Dodge 1981).

Navigating the range of literature along these threads, however, a deeper understanding is required to further expand upon the way in which the behavioral aspects of sense of place feed back into the ecological system. Recent studies on how humans conceive their place values and

subsequently actions that shape their ideas regarding the use of future resources have gained momentum. Studies in, for example Brown et al (2004); Alessa et al (2008) and Donovan et al (2009) have explored the convergence between social and ecological system and how this implicates planning and conservation which considers the community's values in relation to the place. These findings suggest that social and ecological assigned values may overlap which can assist planning processes in regard to ensuring sufficient support from the communities with respect to meeting their socio-economic goals. Even so, in terms of the reality of the realm of planning and conservation, the inclusion of values or sense of place per se has been sporadically considered, due to the ambiguity of multiple perspectives (Kalterborn, 1998) and the complexity of inherent values or sense of place that is not necessarily spatially explicit (Bott et al., 2003). Consequently, while specific place values for specific stakeholder group are accounted for in planning processes, it disrupts other group's values. Research has shown that the disruption and erosion of place's values and meanings represents a significant threat to one's associated socio-psychological functions (Brown and Perkins, 1992; Burke, 1991; Erikson, 1994) including social displacement or forced migration (Fried, 2000; Milligan, 2003). In terms of the result of place values disruptions, the attitudes process presents a contradictory view in relation to supposed place-protective action. Brown and Perkins (1992) and Inhaman and Finch (2004) characterized this attitudes process as including an initial shock and denial, followed by psychological stress and other mental issues, and finally by acceptance. This directly affects the resilience of the so-called social-ecological system, as the important motivator for place-protective behavior which stems from people attempting to prevent the loss of assigned place meanings (Twigger-Ross and Uzzell, 1996). Hence, from both a theoretical and practical perspective, the sense of place concept presents common ground for examination in planning and conservation efforts that influence the resilience of social-ecological systems.

In this paper, we focus firstly on bioregional planning as an umbrella concept of the planning paradigm which is recognized as interlinked with social-ecological systems. Second, we conduct a comprehensive review of the literature related to sense of place and its behavioral perspective, with a focus on the link between place connection and stewardship characteristics towards planning and conservation initiatives. Subsequently, we propose a theoretical framework that underlines sense of place as an integrative concept and identify the requirement to understand the multitude of place values among social actors that shape social-ecological system in the context of bioregional planning.

2. Materials and methods

The review is based on primary and secondary literature sources reported in the root disciplines of cultural and humanistic geography, sociology, environmental psychology and applied disciplines, in landscape and regional planning, ecosystem management and resilience. The set of keyword combinations used to direct the literature search were sense of place, place attachment, bioregional planning, social-ecological systems, place-based governance and environmental ethic. A computerized searching technique was applied to online database navigation from Science Direct, Springer, Taylor and Francis and Scopus. Papers were extracted comprised of articles related to the theoretical aspect and empirical studies, which included the quantitative and the qualitative approach. Literature was chosen to illustrate an in-depth understanding of the theoretical side of people-place concept and its role in enhancing both ecological functioning and the social system. A greater emphasis was placed on literature that addresses the characterization of environmental stewardship in the form of attitudinal

responses towards development and conservation strategies. While the use of secondary sources offers a broad overview and immersion into the body of literature, the primary sources were located and synthesized accordingly. This two-step review process was conducted, thus avoiding the probability of erroneous interpretations of the results (Bui 2009).

3. Literature Review

3.1. Background: Bioregional Planning – Re-envisioning Humanity’s Role in Social-Ecological Systems

The fundamental rethinking of natural resource management, conservation and reconciling human needs in land use planning has led to a paradigm shift from a rational planning approach towards alternative integrated planning approaches (Scrase and Sheate 2002). In this age of complexity where the patterns of nature and society are interwoven into an interconnected web of domains and processes, many planning approaches struggle to frame the uncertainties of the future as a result of our actions today. Current advances in ecosystem sciences, sustainability sciences and other related disciplines acknowledge that socio-ecological systems are interlinked, creating an intertwined linkage of systems that are influenced by each other (e.g., Berkes 2004; Crane 2010; Miller et al 2010). Different approaches have been debated on how best to protect public interests. The failure of a traditional top-down planning approach has been noted by advocates in planning and environmental management fields (see for example; Blair 1996; Oddie 2004; Scott 1998). In particular, it has been critiqued as being overly relied on in regards to the aspect of growth projection (Halstead 2013; Loveridge 1972), the inability of local government to solve trans-boundary environmental problems associated with urban sprawl (Bruyneel 2009; Godschalk et al 1977) and disempowerment of local communities in decision-making (Harris 1994).

More importantly, Diffenderfer and Birch (1997) claimed that these responses are rather symptomatic of the core issue of a centralized command and control approach, highlighting an inability to counteract against a utilitarian view of specific actors in satisfying their needs. Furthermore, public dissatisfaction with government, has led to mistrust in science as a base for political decision-making (see for example; Gauchat 2012; Reynolds 1969) which often does not reflect the concerns, values and needs of the communities (Moote and McClaran 1997). Consequently this has necessitated a social restructuring of planning in order to manage effectively competing land use interests between various social actors (Frame et al 2004). In the context of regional planning and conservation, bioregionalism offers an alternative approach for governance that involves both social and political restructuring. Birkeland (2008) and Diffenderfer and Birch (1997) assert that the subsequent transformation of governance implies the need for a multi-faceted platform designed to achieve ecological conservation, which in turn facilitates social, ecological and economic sustainability.

A more overt approach for the inclusion of sense of place in planning and conservation through bioregional planning is needed as a means of addressing these concerns. While bioregions, as defined earlier, are patterns of land use and biophysical similarities, they also emphasize the “terrain of consciousness” – a place where the inhabitants are aware and have their own ideas regarding their existence or thoughts concerning how to live in that place (Relph 1976; Strobet 2003; Tuan 1977).

Relevantly, while earlier fragmented research and planning fields isolated society from resource use, bioregionalism under these conditions expresses the self-reliant characteristics of several multi-faceted components in the planning system. Sale (1993) noted that the core foundation of bioregionalism is the in-depth understanding of a region's resources and geography, in which dynamic social and economic development operates within the ecological carrying capacity. This philosophy underlines the importance of an ecological-planning approach so as to be responsive to people who inhabit the place (Thayer 2003) and to enable community empowerment in decision making (Harris 1994) in order to facilitate and achieve long-term ecosystem conservation.

3.2. *Sense of Place*

The subject of place as an experiential place or "sense of place" has been explored from various disciplinary perspectives bounded by their own epistemological foundation in conceptual understanding. Early development in geography indicated *place* as a *locale* of physical properties in a geographical context (Lew 2008). Since then, humanistic geography studies have enriched the concept by suggesting that place is not merely a physical entity but it is composed of complex experiential and psychological dimensions attached to a particular physical continuum. This particular discourse is endowed by humanistic geographers such as Relph (1996:907-908) asserting that place is not just a mere connection to physical properties of the natural environment but rather "tightly interconnected assemblages of buildings, landscapes, communities, activities, and meanings which are constituted in diverse experiences of their inhabitants and visitors". Drawing upon this phenomenological experience, he further suggests that development of place not only evolves from individual-meaning, but is presented as a collective form of inter-subjective, shared values communicated between inhabitants (Relph 1996). Such complexity in conceiving and establishing clear development of place has been highlighted by Butz and Eyles (1997:1) as "rooted in theories of social organization and society, and as being variably and contingently ecologically emplaced".

Considering these circumstances, "a sense of place" is therefore associated with the idea of experience that turns the ecosystem space into a place. Tuan (1977:6) in his seminal work pointed out that space turns into place "as we get to know it better and endow it with value". In a similar manner, Relph (1996:909) suggests 'a sense of place' is an awareness of the "inherent and unique qualities of somewhere". Implicitly, this understanding imposes a dimension of awareness or sense that qualities (environmental or social) can be achieved and maintained (Tuan 1980). In other words, "sense of place" is composed of "personal memory, community history, physical landscape appearance, and emotional attachment" (Galliano and Loeffler 1999:2); places therefore, in addition to a physical setting, are an amalgamation of meanings and values, (Sampson and Goodrich 2009) and socio-psychological processes (Gieryn 2000; Stedman 2002). Consequently, qualities that can be classified as subjective to the meaning of anything – culture, own identity, imagination or memory – influence the identification of physical or social properties when describing one's "sense of place" and therefore presents certain challenges.

Despite the complexity of theory and practice in place-related research, the theoretical construct of "sense of place" has been divided into two main lines of inquiry. The first approach conceptualizes three components of "sense of place", constructed as place dependence, place identity and place attachment that overlap each other in one instance and subsequently override

each other in another (Proshansky et al 1983; Vaske and Kobrin 2001; Williams and Roggenbuck 1989). Alternatively, others have viewed "sense of place" as a tripartite of three multidimensional constructs, with each construct representing the component of cognitive, emotive and conative of human consciousness (Stedman 2002; Jorgensen and Stedman 2006). Organizing these constructs in alignment with human consciousness, place identity can be conceptualized as the cognitive component while place dependence is associated with the conative component and place attachment as the emotive component of sense of place. Place identity according to Proshansky (1978) refers to an intersection of personal values, beliefs and goals within the physical setting, and hence an idea of how a physical setting becomes purposeful and meaningful to life. Place dependence is a functional relationship illustrated when a place is instrumental in fulfilling certain needs of the individual (Stedman 2002). Place attachment on the other hand reflects the emotive part of awareness, thus positive bonding develops between the individual and their natural world (Altman and Low 1992). Other studies, for example by Rollero and De Piccoli (2010), articulate constructs into distinct elements but also found that the constructs are correlated, comprising cognitive, affective and conative aspect of place.

Environmental psychologists have used place attachment as the denominator for a sense of place in their theory development and practice and their approach presents a stark contrast to epistemological and research approaches (Graham et al 2009:15). Their primary focus has been on investigating the psychological process of mental cognition/development of an individual's connection within the physical context. This range of researchers has emerged concurrently with the objective to inform the behavioural process in planning. Altman and Low (1992:165) define place attachment as "the symbolic relationship formed by people giving culturally shared emotional/affective meanings to a particular space or piece of land that provides the basis for the individual's and group's understanding of and relation to the environment". A symbolic relationship is experienced at the scale of individual, group or culture inculcation, through the "interplay of affect and emotions, knowledge and beliefs, and behaviours and actions in reference to a place" (Altman and Low 1992:4). However, the study of place attachment in environmental psychology has been criticized for its sole emphasis on the psychological process of development of place (Sime 1995). In contrast, humanistic geography emphasizes the phenomenological experiences of how people understand places and shape the role places play in their life, while research into environmental psychology has tended to separate the composite experiential of place into discrete elements that are measured in a positivist approach.

Nonetheless, the contribution of place attachment and identity in environmental psychology has been widely accepted in planning practice due to its ability to conceptualize the emotive bonds between people and place- a subject that many planning realms strive hard to manage. Regardless of various disciplinary orientations in understanding place, they are underpinned by the core principle of human beings embedded in a particular environmental context that involves interaction of experience and physical components. Therefore we employ “sense of place” as a broad concept (Figure 1) to capture the tripartite construct of place attachment, place identity and place dependence rather than articulating the constructs into distinct individual elements. The geographical space turns into a place when individuals assign a value corresponding to the geographical characteristics and their interaction. The human conception of space involves a process of categorization and discrimination of geographical discrete elements (Burnett 1976) and this subsequently influences attitudes towards how it should be managed (Cheng et al 2003; Kruger 2001). This suggests that the combination of psychological domains as illustrated in Figure 1 can better understand how humans ascribe values to the natural world including the processes taking place and predicting the attitudinal responses that can influence the future landscape. Our study revisited the concepts and ideas as outlined by the previous works and places them in a new light by framing the context from a social-ecological perspective.

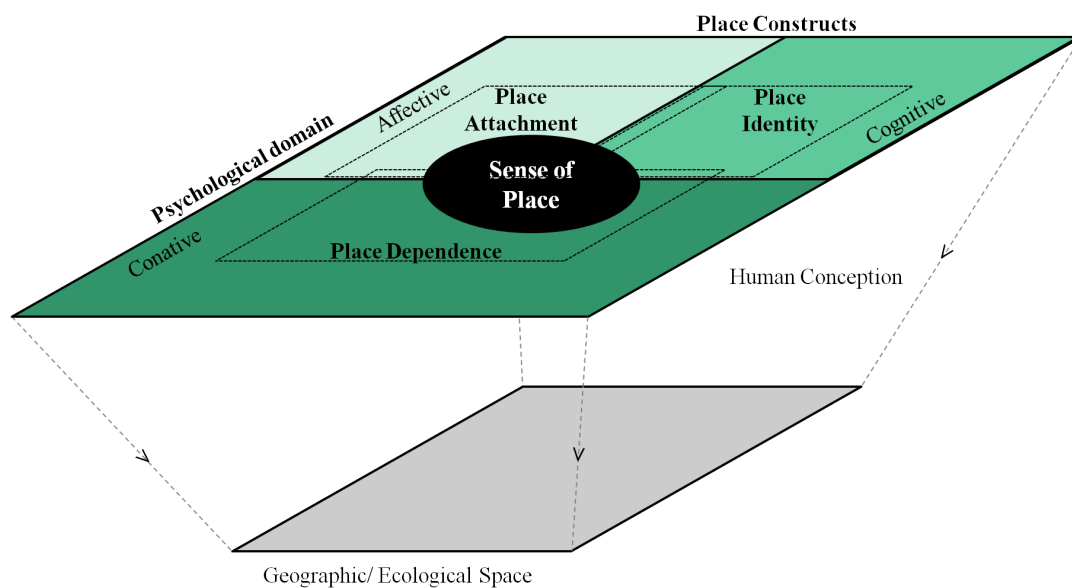


Figure 1. Sense of place as a broad concept that combined multiple constructs and psychological domains emplaced in geographic and ecological space.

3.3. Grounding a Sense of Place in Bioregional Planning

A bioregional planning approach explicitly addresses the need for conservation planning in maintaining ecological processes and functions. Scientific knowledge of landscape ecology underlines the set of principles used in modifying the spatial organization of the landscape when achieving balanced performance-based ecosystem outcomes. This may differ from the socio-cultural context, within which opinions, perceptions and values that are attached to particular landscapes are contingent on changes of the biophysical components. This dual perspective of conceptualizing the environment is crucial, as the scientific view of organizing the landscape is coupled with real community involvement in the planning process. In reality

social opinion is not always aligned with the intended outcomes of conservation planning. Therefore, this poses a challenge for planners when considering the dualistic realm of an environmental model such as that described by Rappaport (1968) cited in Ndubisi (2002:111-112):

“Two models of the environment are significant in ecological studies; the operational and cognitive. The operational model is that which the anthropologist (scientist, planner, designer) constructs through observation and measurement of ecological entities, events and material relationship. He takes this model to present analytical purposes, the physical world of the group he is studying.... The cognized model is the model of environment conceived by people who act in it...The important question concerning the cognized model, since it serves as guide to action, is not the extent to which it conforms to reality (is identical to operational model) but the extent to which it elicits behaviour that is appropriate to the material situation of the actors, and it is against this function and adaptive criterion that we may assess it”

Humans enter into the ecological system by being incorporated as another set of values or determinants (Cosens 2013; Uy and Shaw 2013). The cognitive model reflects on how people conceptualize and participate in the landscape by creating a specific meaning or value associated with the idea of ‘ecosystem’. Within the context of this study, this phenomenon is underpinned by the “transactional concept” (Zube 1987) and the “interactionism perspective” (Greider and Garkovich 1994). Zube (1987:38) coined the idea “transactional concept” in order to explain human-landscape relationships by suggesting the notion that “both the human and the landscape change as a function of the transactions”. He suggested that active social participation and exploration in nature, creates an experience that contributes to the attribution of value towards nature. From the discipline of sociology, Greider and Garkovich (1994:1) argue that landscape is the process of social construction in nature and:

“[landscapes are] the symbolic environments created by human acts of conferring meaning to nature and the environment, of giving the environment definition and form from a particular angle of vision and through a special filter of values and beliefs”

These theories conceptualize human-nature interaction where the human is an active participant in seeking, processing and making judgments about the landscape that generates affinity or attachment to a particular place manifested by a unique set of belief or norms.

Translating this interaction of human and nature within bioregionalism, these theories imply that societal outcomes when managing ecosystems are not dictated by the biophysical process, but rather are guided by the spatial organization of the landscape built upon ecosystem sciences in such a way that it fulfills both social and biophysical objectives. As a result of this developmental process, this implies that “sense of place” includes or integrates ecological science and landscape values. Planning considered as a process “founded on the need to deliver human experience” underlines the complexity of negotiating public values and meanings (Knopf 1983:229). The implications of ignoring this experience may include influencing the way people react or behave, either positively or negatively in that place setting. As bioregionalism stresses the notion of people knowing the “place” in which they live, it is crucial

to understand the process of how a place is developed from the human interaction with biophysical components.

The bioregional planning approach that is conveyed in this article aims to provide an integrated framework that will relate ecological imperatives alongside the social systems. While discussion on bioregional planning as a framework for land use planning, conservation and social reorganization (see discussion in Brunckhorst 2002; Miller 1996) is beyond the scope of this paper, we acknowledge that the framework shares a common ground among the various definitions, that is, bioregional planning recognizes both the natural environment and human societies as dynamic components of the landscape. Consequently, the implication for bioregional planning is that it is an integrated ecosystem management system, where plans for conservation and maintenance of ecological integrity depend on sustaining human processes and vice-versa through co-operative decision-making (Berkes and Folke 1998; Bunch et al 2011; Cumming 2011).

The foundation of bioregional theory amalgamates human and ecological needs as applied in the ecological land use planning paradigm (McHarg 1995). However, bioregions are also perceived as a place, acknowledging the influence of collective public vision in the development of place and accordingly desire to maintain the ecosystem (Brunckhorst 2001). The following section elaborates further on the association between a sense of place as a social process and how this process influences social actions of conservation and development policies. The two main thematic notions of bioregions as a transformation of place, and environmental stewardship which empowers communities, are deconstructed and a conceptual model is proposed that illustrates the role of people-place collaboration in achieving social and ecological sustainability within the context of bioregionalism.

3.4 Sense of Place Nurturing and Empowering Positive Landscape Change

Environmental stewardship is one of the core principles of community planning articulated in bioregionalism as people who live in a specific place, consciously develop their own idea and way of living in relation to that particular place. As outlined earlier, disintegration of people and place in the rational planning approaches disempowers community members from their civic role and responsibility towards the protection of their living environment. In contrast it is apparent that developing the competency of community-based-decision-making is founded on residential understanding of local resources availability. Bioregionalism under these circumstances becomes a decentralized planning exercise, underscoring the importance of economic and political decision-making to be delegated at a local level, which inherently gives rise to personal and community empowerment (Harris 1994). Moreover, community empowerment is translated into active participation in decision-making that fosters a shared learning process – a quality legitimated by the interaction between experiential and technical knowledge (Aberley 1993; Diffenderfer and Birch 1997).

Such mobilization of empowerment is determined importantly by understanding the connection of humans with their natural world and stewardship of the land. The emphasis on consideration of human connection and values in planning potentially can be the turning point for more directive actions towards a resilient social-ecological system. Concurring with bioregional thinking, it advocates the re-envisioning of people-place relationship translated into “repairing...the damage done to natural systems, and recreating human cultures capable of

flourishing in an ecologically sustainable manner through time” (Plant and Plant 1990 cited in DePrez 1997:43). Human culture in this sense is parallel to the land ethics that Aldo Leopold espoused, which works toward intensifying the sense of care, commitment and concern of how the place should be. He eloquently suggests that in developing a land ethic, the role of humanity is transformed from conqueror of ecological system to an egalitarian view that a human is “just plain member and citizen of it” (Leopold 1949:240). He further asserts that culture which then drives societal action can be assessed in relation to one’s connection or association to the natural world:

“A thing is right when it tends to maintain the integrity, stability, and beauty of biotic community, it is wrong when it tends otherwise” (Leopold 1949:266).

One of his supporters, Worrell and Appleby (2000:269), suggest that environmental stewardship is a form of land ethic, defining it as a deeply held moral obligation interpreted into actions of “responsible use (including conservation) of natural resources in a way that takes full and balanced account of the interests of society (and) future generations ... as well as private needs, and accepts significant answerability to society”. Considering that society must confront multifaceted issues related to land management, a compelling question arises. In what way are social actions directed towards achieving social, economic and ecological sustainability? It has been suggested that the land ethic should provide a conceptual foundation for environmental stewardship that can guide the action and response of society towards addressing the threat of ecosystem degradation and resources depletion (Knight 1996). This segment will articulate and characterize certain qualities promoted by ethical social action that would qualify as environmental stewardship, which is initiated from planning and conservation decisions.

The majority of research into planning, resource management, environment and behaviour have made connections between place-based values and stewardship, although in each case it has been explored within its own paradigm. Studies in landscape and urban planning for example, have explored the role of local resident attachment to rural and urban landscapes in determining their motivation for stewardship and land protection (Lokocz et al 2011; Walker and Ryan 2008). These studies have found strong connections between place attachment and stewardship engagement. This quality is manifested through several forms of supportive attitude towards conservation strategies that promote ecological stability. Inasmuch, this presents evidence that residents are more concerned about their connection to place by sustaining the local economic and landscape character. Studies have shown that social actions through several mechanisms in development planning directly contribute to social embeddedness in a physical context. Cantrill (1998) indicates that “sense of place” constitutes a major role in influencing individual capacity and involvement in environmental advocacy for sustainable resource policies. A study by Lerner (2005) examined how attachment to a place empowered a community for a positive change against a local contamination issue. The study concluded how sense of place defines us and the environment through the process of the creation of ‘change maker’, a person that is empowered to make positive changes in regards to local land use issues through active participation. Kruger and Shannon (2000:475) assert that citizens who developed awareness of their local context seem to “grasp the opportunity to create knowledge, benefits, and new opportunities for social action”. These studies exhibit that an ability to practice attitudes which heighten the protection of ecosystems are underlined by an awareness of place-based

knowledge.

Drawing on literature in environmental psychology and behaviour, volunteer motivation for engaging in stewardship programs have been demonstrated to depend on whether they can view it as a process of social learning, care-taking of the environment, as well as developing sense of belonging to that place, or not (Bramston et al 2010). Over and above people-place relationship theory, other studies have explored this concept through the lens of community attachment – how socially based attachment determines attitudes about local environmental issues (Brehm et al 2006; Stewart et al 2004). This line of research distinguishes between socially based bonding relating to physical attachment, and the emphasis placed on community-level attachment on environmental concerns.

As the people-place connection is inextricably embedded in the ecosystem context, previous studies suggest emotional bonding with the place can mediate the way people respond and react to ecosystem change through several mechanisms. For example, people who exhibit a strong sense of place demonstrate more commitment to problem solving and are more likely to react to environmental issues. This is a predictor of a resilient characteristic of dynamic landscape change (Burley et al 2007; Kaltenborn and Bjerke, 2002; Lai and Kreuter 2012). These studies have suggested that the role of communities within themselves can make clear how the policy should be oriented towards their needs. Pertinent to that, resident acceptance of proposed landscape changes are inclined to legitimize and enhance their meaning of place in the planning process (Stewart et al 2004). This finding for example, was underlined by Steadman (2002) where place-based values are incorporated into the decision-making process, thereby creating a protective behaviour that seeks to maintain and enhance values attributed to place. Similarly, Vaske and Kobkrin (2001) found that local attachment to natural resources could be a valuable mechanism to predict whether an individual acts in an environmentally responsible manner (or not). These studies, when applied within various fields related to environmental policy-making, have demonstrated that the people-place connection and community attachment have played a significant role in guiding specific social actor behavioural responses, either positively or negatively, to environmental decision-making.

4. Synthesis and Prospective Future Research

Based on a review of the literature mentioned above, land use planning, resource and biodiversity conservation can be observed as activities that manage biophysical components, and also manage the creation or destruction of human territorial regions, which are composed of complex values, interactions and meanings. Congruent with the development of system and complexity theory, more models are being developed to assess the human impact on landscape change (see for example in Hersperger et al 2010). These include environmental aspects (e.g., Wu et al 2008), economic (e.g., Irwin and Geoghegan 2001), political and institutional influences (e.g., Clement et al 2006), in addition to attitudinal considerations (e.g., Karali et al 2011). While most of these factors largely involve definitive and measurable indicators, the less perceptible gauge of human well-being or satisfaction, the attachment to place, has received little attention. This type of value system is seen as less defensible as it is regarded as far more difficult to measure, with an “unseen” physical impact in managing sustainable land use practices. In other words, “it is easier to oppose land uses when there is hard evidence that these practices will have tangible, measurable, objective and widespread impacts” (Stedman 2005:121).

Although sense of place demonstrates ethical-based attitudes in protecting the place, the different conception of place in relation to those actors who are the planners that influence the representation of place remains unclear. Stedman (2005) asserts that place attachment can be a catalyst determining the choice and activities in land use outcomes. In his study, these differences were observed whereby the impact of shoreline development on sense of place between two groups of property owners was assessed. The end result revealed that the degree of lakeshore development significantly influenced the residents' considerations about their lake. While the property owners on lightly developed lake shores associated their sense of place with that of a pristine, natural-based setting that is peaceful, this view for the residents on highly developed lake shores was held to a far lesser extent. The residents of highly developed lake shores were more likely to consider their place as residential-suburbia, packed with related urban services and recreational opportunities with consequential pollution problems. In a similar manner, a study of whitewater recreationists in California found that individuals who believed their personal identity was shaped by their natural resources held different views and attitudes of how the place should be managed compared to individuals that valued the resource more so as a functional setting (Bricker 1998). The discrepancies between the different individuals' values of place demonstrate that human cognition has a pivotal and measurable impact on future land use pattern and consequent impact on associated resources. Negotiating the meaning of place by various social actors inevitably implies a different direction for future actions. Although some studies indicate that while an attachment to a place substantially expresses a strong support to maintain the setting, an understanding of the way in which the place can be perceived by various actors may imply a different course of action that further determines the future of the spatial pattern. Hence, the repositioning of our sense of place through bio-regional thinking is imperative, underlining its importance to nurture and empower human culture towards a positive landscape change.

Figure 2 proposes a conceptual model linking sense of place with social and ecological sustainability. Drawing upon this conceptual framework, the compelling question arises for further study; How are land use decisions rendered by the negotiation of the actors' values, which then in turn shape the land use patterns and ecosystem services that will further be enjoyed by the communities at large? This framework illustrates sense of place as a concept of a social-ecological process that helps make conservation and development policies viable by acknowledging the values and meanings of humans. It captures the idea that ecosystem functioning evolves as a result of human understanding of the place across social structure and institutions; specifically, it is manifested in an amalgamation of social attitudes and behaviors in influencing land use outcomes. This article argues that individual and community empowerment is developed from the connection to the place within which they are embedded, and this serves as a basis for developing an ethical and moral responsibility for actions mobilized by stewardship to the land. It is contended that this framework could assist planning actors in understanding local values through improvised planning processes that encourage collaborative, community-led decision-making.

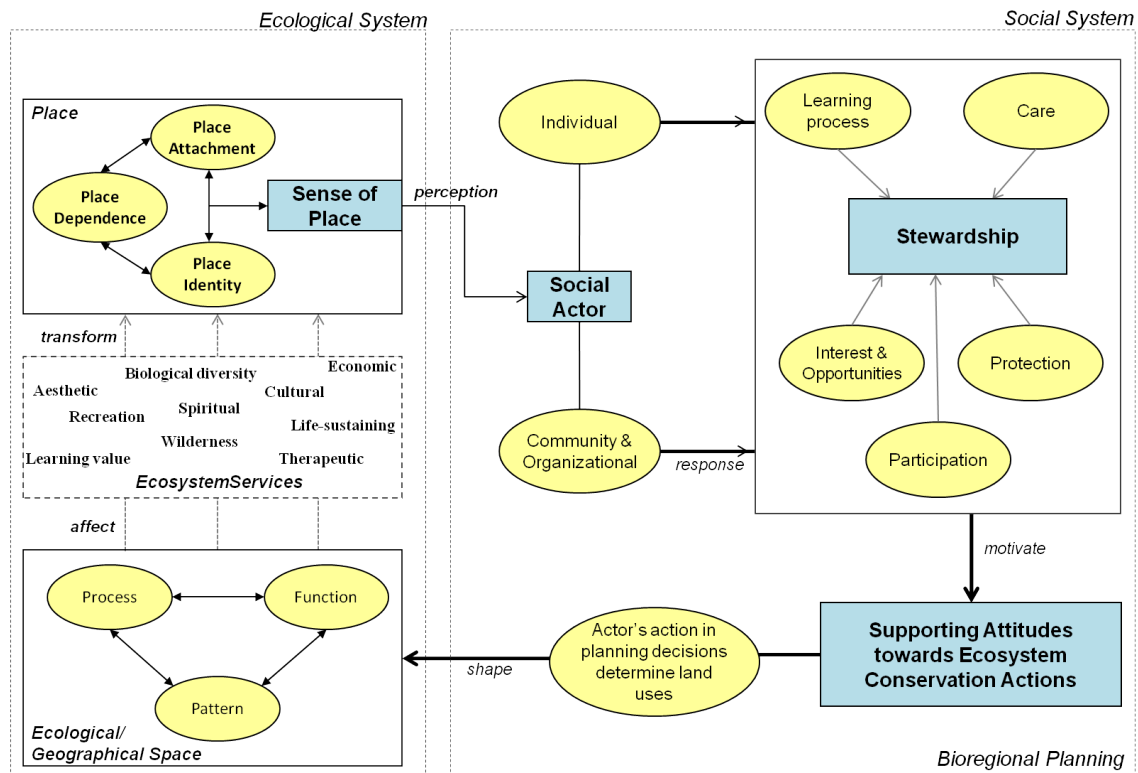


Figure 2. Conceptual model linking the core premise that the people-place relationship fulfills an important role in achieving social and ecological sustainability.

5. Conclusion

As stressed in this article, bioregional planning envisions the role of people-place relationship being in its core foundation to characterize specific emergence of social behavior in planning decisions. This re-positions the human dimension in integrated ecosystem management, suggesting an alternative path to the sustainability of socio-ecological systems especially in dealing with the uncertain future of our plans today. The evolution of an ecosystem is partly but crucially determined by what we identify as important for the next generation to enjoy including the ecosystem services that we are experiencing now. In conclusion, a sense of place is a concept that people use to imagine themselves into the ecological system and so plays a powerful role in influencing and distinguishing actions across social actors in land management. The conceptual model proposed provides a framework to assess the influence of sense of place ecological system evolution.

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References

- Aberley, D. 1993. *Boundaries of Home: Mapping for Local Empowerment*, Gabriola Island, B.C.: New Society Publishers.
- Alessa, L. (Naia), Kliskey, A. (Anaru) & Brown, G. 2008. Social–ecological hotspots mapping: A spatial approach for identifying coupled social–ecological space. *Landscape and Urban Planning*, 85(1), pp.27–39.
- Altman, I., & Low, S. 1992. *Place Attachment*. New York: Plenum Press.
- Berkes, F., 2004. Rethinking Community-Based Conservation. *Conservation Biology*, 18(3), pp.621–630. Retrieved September 30, 2013, from <http://www.blackwell-synergy.com/doi/abs/10.1111/j.1523-1739.2004.00077.x>.
- Berkes, F. & Folke, C. 1998. Linking social and ecological system for resilience and sustainability. In Fikret Berkes, C. Folke, & J. Colding, eds. *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*. Cambridge, U.K. ; New York, USA: Cambridge University Press.
- Birkeland, J. 2008. *Positive Development: From Vicious Circles to Virtuous Cycles through Built Environment Design*, London: Taylor & Francis.
- Blair, H.W. 1996. Democracy, equity and common property resource management in the Indian subcontinent. *Development and Change*, 27, pp.475–499.
- Bott, S., Cantrill, J.G. & Myers, O.E. 2003. Place and the Promise of Conservation Psychology. *Human Ecology*, 10(2), pp.100–112.
- Bramston, P., Pretty, G. & Zammit, C. 2010. Assessing Environmental Stewardship Motivation. *Environment And Behavior*, 43(6), pp.776–788. Retrieved May 22, 2013, from <http://eab.sagepub.com/cgi/doi/10.1177/0013916510382875>.
- Brehm, J.M., Eisenhauer, B.W. & Stedman, R.C. 2012. Environmental Concern: Examining the Role of Place Meaning and Place Attachment. *Society & Natural Resources*, 26(5), pp.522–538. Available at: <http://dx.doi.org/10.1080/08941920.2012.715726>.
- Brehm, J.M., Eisenhauer, B.W. & Krannich, R.S. 2006. Community Attachments as Predictors of Local Environmental Concern: The Case for Multiple Dimensions of Attachment. *American Behavioral Scientist*, 50(2), pp.142–165. Retrieved May 22, 2013, from <http://abs.sagepub.com/cgi/doi/10.1177/0002764206290630>.
- Bricker, K.S., 1998. Place and preference: A study of whitewater recreationists on the South Fork of the American River. Ann Arbor: The Pennsylvania State University. Retrieved September 10, 2014 from <http://ezproxy.auckland.ac.nz/login?url=http://search.proquest.com/docview/304445010?accountid=8424>.
- Brown, G. et al. 2004. A comparison of perceptions of biological value with scientific assessment of biological importance. *Applied Geography*, 24(2), pp.161–180. Available at: <http://linkinghub.elsevier.com/retrieve/pii/S0143622804000050>.
- Brown, B. & Perkins, D. 1992. Disruptions in place attachment. In I. Altman & S. M. Low, eds. *Place Attachment*. Boston, MA: Springer US, p. 336.
- Brunckhorst, D.J. 2002. *Bioregional Planning: Resource Management Beyond the New Millennium*, London; New York: Routledge.
- Brunckhorst, D.J. 2001. Building capital through bioregional planning and biosphere reserves. *Ethics in Science and Environmental Politics*, 2001(1), pp.19–32. Retrieved May 20, 2013, from <http://www.int-res.com/articles/esep/2001/article2.pdf>.

- Bruyneel, S., 2009. Thinking Down or Acting Up? Governmental and grassroots environmental thought and action in the transboundary Northern Plains. *Environments*, 36(3), pp.55–72. Available at: <http://search.proquest.com/docview/304674431?accountid=14771>.
- Bui, Y.N., 2009. Using literature to research your problem. In Y. N. Bui, ed. *How To Write A Master's Thesis*. Los Angeles: Los Angeles : Sage c2009., pp. 45–76.
- Bunch, M.J., Morrison, K.E., Parkes, M.W. & Venema, H.D. 2011. Promoting Health and Well-Being by Managing for Social – Ecological Resilience : the Potential of Integrating Ecohealth and Water Resources. *Ecology And Society*, 16(1). Retrieved July 6, 2013, from <http://www.ecologyandsociety.org/vol16/iss1/art6/ES-2010-3803.pdf>.
- Burgess, J. & Gold, J. 1982. On the Significance of Valued Environments. In J. A. Gold, J. R., Burgess, ed. *Valued Environments*. London: George Allen & Unwin, pp. 1–9.
- Burke, P.J. 1991. Identity Processes and Social Stress. *American Sociological Review*, 56(6), p.836.
- Burley, D., Jenkins, P. Laska, S. & Davis, T. 2007. Place Attachment and Environmental Change in Coastal Louisiana. *Organization Environment*, 20(3), pp.347–366. Retrieved July 6, 2013, from <http://oae.sagepub.com/cgi/doi/10.1177/1086026607305739>.
- Burnett, P. 1976. Behavioral geography and the philosophy of the mind. In G. Rushton & R. G. Golledge 1937-, eds. *Spatial Choice And Spatial Behavior : Geographic Essays On The Analysis Of Preferences And Perceptions*. Columbus: Ohio State University Press c1976., pp. 23–48.
- Butz, D. & Eyles, J. 1997. Reconceptualizing Senses of Place: Social Relations, Ideology and Ecology. *Geografiska Annaler: Series B, Human Geography*, 79(1), pp.1–25.
- Canter, D. V. 1977. *The psychology of place / David Canter.*, New York: New York : St. Martin's Press 1977.
- Cantrill, J.G. 1998. The environmental self and a sense of place: Communication foundations for regional ecosystem management. *Journal of Applied Communication Research*, 26(3), pp.301–318. Retrieved May 16, 2013, from <http://www.informaworld.com/10.1080/00909889809365509>.
- Cheng, A.S., Kruger, L.E. & Daniels, S.E. 2003. “Place” as an Integrating Concept in Natural Resource Politics: Propositions for a Social Science Research Agenda. *Society Natural Resources*, 16(March 2002), 87–104. doi:10.1080/08941920309199&magic=crossref.
- Clement, F., Amezaga, J.M., Orange, D., Toan, T.D., Large, A.R.G. & Calder, I.R. 2006. Reforestation Policies and Upland Allocation in Northern Vietnam: An institutional approach for understanding farmer strategies and land use change. *International Symposium Towards Sustainable Livelihoods And Ecosystems In Mountainous Regions*. Retrieved July 5, 2013, from <http://www.iascp.org/bali/papers.html>.
- Cosens, B.A. 2013. Legitimacy, Adaptation, and Resilience in Ecosystem Management. *Ecology and Society*, 18(1). doi:10.5751/ES-05093-180103.
- Crane, T.A. 2010. Of Models and Meanings: Cultural Resilience in Social–Ecological Systems. *Ecology and Society*, 15(4), p.19. Retrieved September 30, 2013, from <http://www.ecologyandsociety.org/vol15/iss4/art19/>.
- Cumming, G.S. 2011. Spatial resilience: integrating landscape ecology, resilience, and sustainability. *Landscape Ecology*, 26(7), pp.899–909. doi:10.1007/s10980-011-9623-1.
- DePrez, V. 1997. Bioregionalism : a state of mind, place, and heart. In C. Warwick, ed. *Proceedings Fifteenth North American Prairie Conference*. Natural Areas Association, pp. 42–43. Retrieved February 2, 2013, from <http://digital.library.wisc.edu/1711.dl/EcoNatRes.NAPC15>.

- Diffenderfer, M. & Birch, D. 1997. Bioregionalism: A comparative study of the Adirondacks and the Sierra Nevada. *Society Natural Resources*, 10(1), pp.3–16. doi:10.1080/08941929709381006.
- Dodge, Jim. 1981. Living By Life: Some Bioregional Theory and Practice. *CoEvolution Quarterly*, 32. pp. 6-12.
- Donovan, S.M. et al. 2009. Reconciling Social and Biological Needs in an Endangered Ecosystem: the Palouse as a Model for Bioregional Planning. *Ecology and Society*, 14(1), p.9 [online]. Retrieved April 2, 2014, from <http://www.ecologyandsociety.org/vol14/iss1/art9/>.
- Erikson, E.H. 1994. *Identity and the life cycle*, New York: W. W. Norton.
- Frame, T.M., Gunton, T. & Day, J.C. 2004. The role of collaboration in environmental management: an evaluation of land and resource planning in British Columbia. *Journal of Environmental Planning and Management*, 47(1), pp.59–82. doi: 10.1080/0964056042000189808.
- Fried, M. 2000. Continuities and discontinuities of place. *Journal of Environmental Psychology*, 20(3), pp.193–205.
- Galliano, S.J. & Loeffler, G.M. 1999. *Place assessment: how people define ecosystems*, Portland, OR: U.S. Dept. of Agriculture, Forest Service, Pacific Northwest Research Station.
- Gauchat, G. 2012. Politicization of Science in the Public Sphere: A Study of Public Trust in the United States, 1974 to 2010. *American Sociological Review*, 77(2), pp.167–187. doi:10.1177/0003122412438225.
- Gieryn, T.F. 2000. A Space for Place in Sociology Anonymous, ed. *Annual Review of Sociology*, 26(1), pp.463–496. doi:10.1146/annurev.soc.26.1.463.
- Godschalk, D.R., Brower, D.J., McBennett, L.D. & Vestal, B. 1977. *Constitutional issues of growth management.*, Chicago, NC: ASPO Press.
- Graham, H., Mason, R. & Newman, A. 2009. *Literature Review: Historic Environment, Sense of Place, and Social Capital*. Newcastle Upon Tyne: Newcastle University Commissioned for English Heritage. Retrieved February 20, 2013, from http://www.englishheritage.org.uk/hc/upload/pdf/sense_of_place_lit_review_web.pdf?1257932683.
- Greider, T. & Garkovich, L. 1994. Landscapes: The Social Construction of Nature and the Environment. *Rural Sociology*, 59(1), pp.1–24. doi:10.1177/S0038038599000280.
- Halstead, R. 2013. Opponents of regional development plan vent frustration at San Rafael hearing. *Marin Independent Journal*. Retrieved September 30, 2013, from http://www.marinij.com/ci_23039559/opponents-regional-development-plan-vent-frustration-at-san.
- Harris, G. 1994. The Adirondack Mountains: Wilderness preservation or bioregional vision? *Trumpeter*, 11(3), pp.117–120.
- Hersperger, A.M. et al., 2010. Linking land change with driving forces and actors: four conceptual models. *Ecology and Society*, 15(4), p.1 [online]. Retrieved September 9, 2014, from <http://www.ecologyandsociety.org/vol15/iss4/art1/>.
- Inalhan, G. & Finch, E. 2004. Place attachment and sense of belonging. *Facilities*, 22(5/6), pp.120–128.
- Irwin, E.G. & Geoghegan, J. 2001. Theory, data, methods: developing spatially explicit economic models of land use change. *Agriculture, Ecosystems & Environment*, 85(1-3), pp.7–24. doi:10.1016/S0167-8809(01)00200-6.

- Jorgensen, B.S. & Stedman, R.C. 2006. A comparative analysis of predictors of sense of place dimensions: attachment to, dependence on, and identification with lakeshore properties. *Journal of Environmental Management*, 79(3), pp.316–327. Retrieved May 3, 2013, from <http://www.ncbi.nlm.nih.gov/pubmed/16288828>.
- Kaltenborn, B.P. & Bjerke, T. 2002. Associations between environmental value orientations and landscape preferences. *Landscape and Urban Planning*, 59(1), pp.1–11. doi: 10.1016/s0169-2046(01)00243-2.
- Kaltenborn, B.P. 1998. Effects of sense of place on responses to environmental impacts. *Applied Geography*, 18(2), pp.169–189. doi: 10.1016/S0143-6228(98)00002-2.
- Karali, E., Rounsevell, M.D.A. & Doherty, R. 2011. Integrating the diversity of farmers' decisions into studies of rural land-use change. *Procedia Environmental Sciences*, 6, pp.136–145. doi:10.1016/j.proenv.2011.05.014.
- Knight, R.L. 1996. Aldo Leopold, the land ethic, and ecosystem management. *Journal of Wildlife Management*, 60(3), pp.471–474. Retrieved February 15, 2013, from <http://www.jstor.org/stable/3802064>.
- Knopf, R.C. 1983. Recreational needs and behavior in natural settings. In I. Altman & J. F. Wohlwill, eds. *Behavior and the Natural Environment*. New York: Plenum Press, pp. 205–240.
- Kruger, L.E. 2001. What is essential may be invisible to the eye: Understanding the role of place and social learning in achieving sustainable landscapes. In S. R. J. Sheppard & H. W. Harshaw, eds. *Forests and Landscapes: Linking Ecology, Sustainability and Aesthetics*. New York: CABI, pp. 173–188. Available at: <http://books.google.co.nz/books?id=gG63WGi0fzUC>.
- Kruger, L.E. & Shannon, M.A. 2000. Getting to Know Ourselves and Our Places Through Participation in Civic Social Assessment. *Society & Natural Resources*, 13(5), pp.461–478.
- Kyle, G., Absher, J. & Graefe, A. 2003. The Moderating Role of Place Attachment on the Relationship Between Attitudes Toward Fees and Spending Preferences. *Leisure Sciences*, 25(1), pp.33–50. Available at: citeulike-article-id:3766478.
- Lai, P.-H. & Kreuter, U.P. 2012. Examining the direct and indirect effects of environmental change and place attachment on land management decisions in the Hill Country of Texas, USA. *Landscape and Urban Planning*, 104(3–4), pp.320–328. doi: 10.1016/j.landurbplan.2011.11.007.
- Leopold, A. 1949. *A Sand County Almanac*. London; New York: Oxford Press.
- Lerner, J.M. 2005. *Stand in the Place Where You Live: Sense of Place, Values and Perceptions about Land Use in Tiverton, Rhode Island*. Brown University.
- Lew, A.A. 2008. What is geography? *Geography: USA*, Chapter 1. Retrieved July 6, 2013, from <http://www.geog.nau.edu/courses/alew/gsp220/text/chapters/ch1.html>.
- Lokocz, E., Ryan, R.L. & Sadler, A.J. 2011. Motivations for land protection and stewardship: Exploring place attachment and rural landscape character in Massachusetts. *Landscape and Urban Planning*, 99(2), pp.65–76. doi: 10.1016/j.landurbplan.2010.08.015.
- Loveridge, R.O. 1972. The environment: New priorities and old politics. In H. Hahn, ed. *People and politics in urban society*. Beverly Hills, CA: Sage Publications, pp. 499–529.
- Miller, F., Osbahr, H., Boyd, E., Thomalla, F., Bharwani, S., Ziervogel, G., Walker, B., Birkmann, J., Leeuw, S. Van der., Rockström, J., Hinkel, J., Downing, T., Folke, C. & Nelson, D. 2010. Resilience and vulnerability: complementary or conflicting concepts? *Ecology and Society*, 15(3), p.11. Retrieved September 30, 2013, from <http://www.ecologyandsociety.org/vol15/iss3/art11/>.

- Miller, K. 1996. *Balancing the scales: guidelines for increasing biodiversity's chances through bioregional management*, Washington, DC: World Resources Institute.
- Milligan, M.J. 2003. Displacement and Identity Discontinuity: The Role of Nostalgia in Establishing New Identity Categories. *Symbolic Interaction*, 26(3), pp.381–403. <http://dx.doi.org/10.1525/si.2003.26.3.381>.
- Moote, M.A. & McClaran, M.P. 1997. Viewpoint: Implications of participatory democracy for public land planning. *Journal Of Range Management*, 50(5), pp.473–481. Retrieved February 15, 2013, from <http://www.scopus.com/inward/record.url?eid=2-s2.0-0030854294&partnerID=40&md5=a02a0f2e088fc434c93443ee923d33b6>.
- Mumford, L. 1958. *The Culture of Cities*, London: Seeker & Warburg.
- Ndubisi, F. 2002. *Ecological planning: a historical and comparative synthesis*, Johns Hopkins University Press. Retrieved January 12, 2013, from <http://books.google.com/books?id=VzzSulgl4qQC&pgis=1>.
- Oddie, R. 2004. Top-Down Planning From the Bottom-Up? Vision 2020 and the Challenges of Participatory Environmental Governance. In P. Bose, N. Garside and R. Oddie., eds. *A Dialogue on Development, Displacement and Democracy*, Ethics of Development-Induced Displacement Working Papers No. 3. Toronto: York University.
- Proshansky, H.M., Fabian, A.K. & Kaminoff, R. 1983. Place-identity: physical world socialization of the self. *Journal of Environmental Psychology*, 3(1), pp.57–83. Retrieved February 20, 2013, from <http://psycnet.apa.org/psycinfo/1983-30076-001>.
- Proshansky, H.M. 1978. The City and Self-Identity. *Environment And Behavior*, 10(2), pp.147–169. doi:10.1177/0013916578102002.
- Relph, E.C. 1996. Place. In I. Douglass, R. Huggett, & M. Robinson, eds. *Companion Encyclopedia of Geography: the environment and humankind*. London: Routledge, pp. 906–922.
- Relph, E.C. 1976. *Place and placelessness*, London: Pion Press.
- Reynolds, J.P. 1969. Public participation in planning. *Town Plann. Rev.*, 40, pp.131–148.
- Rollero, C. & De Piccoli, N. 2010. Place attachment, identification and environment perception: An empirical study. *Journal of Environmental Psychology*, 30(2), pp.198–205. doi:10.1016/j.jenvp.2009.12.003.
- Sale, K. 1993. *The Green Revolution. The Environmental Movement 1962-1992*, New York: Hill & Wang.
- Sampson, K. & Goodrich, C. 2009. Making Place: Identity Construction and Community Formation through “Sense of Place” in Westland, New Zealand. *Society Natural Resources*, 22(10), pp.901–915. doi:10.1080/08941920802178172.
- Scott, J.C. 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* J. C. Scott, ed., Yale University Press. doi:10.1177/146499340100100213.
- Scruse, J.I. & Sheate, W.R. 2002. Integration and integrated approaches to assessment: what do they mean for the environment? *Journal of Environmental Policy and Planning*, 4(4), pp.275–294. Retrieved July 6, 2013, from <http://dx.doi.org/10.1002/jepp.117>.
- Shannon, M.A. 1998. Understanding social organizations and institutions. In R. J. Naiman & R. E. Bilby, eds. *River ecology and management: lessons from the Pacific coastal ecoregion*. New York: Springer, pp. 529–551. Retrieved June 20, 2013, from <http://books.google.com/books?id=yQeM-OUrLDUC&pgis=1>.
- Sime, J.D. 1995. Creating places or designing spaces? In L. Groat, ed. *Giving Places Meaning. Readings in Environmental Psychology*. London: Academic Press, pp. 27–41.
- Slocombe, D.S. 1993. Implementing Ecosystem-Based Management. *BioScience*, 43(9), pp.612–622.

- Smith, J.W. et al. 2011. Place meanings and desired management outcomes. *Landscape and Urban Planning*, 101(4), pp.359–370. Available at: <http://www.sciencedirect.com/science/article/pii/S0169204611001332>.
- Stedman, R.C. 2005. Sense of place as an integrated framework for understanding human impacts of land use change. In S. J. Goetz, J. S. Shortle, & J. C. Bergstrom, eds. *Land use problems and conflicts: causes, consequences and solutions*. London; New York: Routledge, pp. 121–131. Retrieved June 25, 2013, from <http://www.loc.gov/catdir/enhancements/fy0651/2004050983-d.html>.
- Stedman, R. 2002. Toward a Social Psychology of Place: Predicting Behavior from Place-Based Cognitions, Attitude, and Identity -- Stedman 34 (5): 561. *Environment And Behavior*, 34(5), pp.561–581. doi: 10.1177/0013916502034005001.
- Stewart, W.P., Liebert, D. & Larkin, K.W. 2004. Community identities as visions for landscape change. *Landscape and Urban Planning*, 69(2-3), pp.315–334. doi:10.1016/j.landurbplan.2003.07.005.
- Strobet, C., 2003. Bioregionalism. *ConSpiritu: A Center for Cultural Creativity*. Retrieved September 30, 2013, from <http://www.conspiritu.com/ConSpiritu/Bioregionalism.html>.
- Thayer, R.L. 2003. *LifePlace: Bioregional Thought and Practice*, Ewing, NJ: University of California Press.
- Tonge, J. et al. 2013. A Photo-elicitation Approach to Exploring the Place Meanings Ascribed by Campers to the Ningaloo Coastline, North-western Australia. *Australian Geographer*, 44(2), pp.143–160. Available at: <http://dx.doi.org/10.1080/00049182.2013.789591>.
- Trentelman, C.K. 2009. Place Attachment and Community Attachment: A Primer Grounded in the Lived Experience of a Community Sociologist. *Society & Natural Resources*, 22(3), pp.191–210. Available at: <http://dx.doi.org/10.1080/08941920802191712>.
- Tuan, Y.-f. 1980. Rootedness versus Sense of Place. *Landscape: A Magazine of Human Geography*, 24(1).
- Tuan, Y.-F. 1977. *Space and place: The perspective of experience*, London: Arnold.
- Twigger-Ross, C.L. & Uzzell, D.L. 1996. Place and Identity Process. *Journal of Environmental Psychology*, 16(3), pp.205–220. Available at: <http://www.sciencedirect.com/science/article/pii/S0272494496900171>.
- Ulrich-Schad, J.D., Henly, M. & Safford, T.G. 2013. The Role of Community Assessments, Place, and the Great Recession in the Migration Intentions of Rural Americans. *Rural Sociology*, 78(3), pp.371–398. Available at: <http://dx.doi.org/10.1111/ruso.12016>.
- Uy, N. & Shaw, R. 2013. Ecosystem resilience and community values: Implications to ecosystem-based adaptation. *Journal of Disaster Research*, 8(1), pp.201–202. Retrieved July 6, 2013, from <http://www.scopus.com/inward/record.url?eid=2-s2.0-84873436509&partnerID=40&md5=8df950b0d8fdd623ba390d61b44adeb2>.
- Walker, A.J. & Ryan, R.L., 2008. Place attachment and landscape preservation in rural New England: A Maine case study. *Landscape and Urban Planning*, 86(2), pp.141–152. doi: 10.1016/j.landurbplan.2008.02.001
- White, D., Virden, R. & van Riper, C. 2008. Effects of Place Identity, Place Dependence, and Experience-Use History on Perceptions of Recreation Impacts in a Natural Setting. *Environmental Management*, 42(4), pp.647–657. Available at: <http://dx.doi.org/10.1007/s00267-008-9143-1>.
- Williams, D.R. & Vaske, J.J. 2003. The Measurement of Place Attachment: Validity and Generalizability of a Psychometric Approach. *Forest Science*, 49(6), pp.830–840. doi: 10.1080/00958960109598658.

- Williams, D.R. & Roggenbuck, J.W. 1989. Measuring Place Attachment: Some Preliminary Results. In *Session on Outdoor Planning and Management*. p. 7. Retrieved March 3, 2013, from <http://www.fs.fed.us/rm/value/docs/nrpa89.pdf>.
- Windsong, E.A. 2013. Insights from a Qualitative Study of Rural Communes: Physical and Social Dimensions of Place. *Society & Natural Resources*, 27(1), pp.107–116. Available at: <http://dx.doi.org/10.1080/08941920.2013.840816>.
- Worrell, R. & Appleby, M.C. 2000. Stewardship of natural resources: Definition, ethical and practical aspects. *Journal of Agricultural and Environmental Ethics*, 12(3), pp.263–277. doi:10.1023/a:1009534214698.
- Wu, X., Wu, Shen, Z., Liu, R. & Ding, X. 2008. Land Use/Cover Dynamics in Response to Changes in Environmental and Socio-Political Forces in the Upper Reaches of Yangtze River, China. *Sensors (Peterborough)*, 8(12), pp.8104–8122. doi:10.3390/s8128104.
- Zube, E.H. 1987. Perceived land use patterns and landscape values. *Landscape Ecology*, 1(1), pp.37–45. doi:10.1007/BF02275264.

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