Sense of place: A process for identifying and negotiating potentially contested visions of sustainability.

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Abstract

This article identifies opportunities and challenges to using sense of place as motivation for long-term stewardship at multiple spatial scales in a rapidly changing world. Sense of place reflects processes by which individuals or groups identify, attach to, depend on, and modify places, as well as the meanings, values, and feelings that individuals or groups associate with a place. These associations with place are fluid through time as they are felt, imagined, interpreted, and understood. Sense of place appears to most strongly motivate stewardship actions at local scales under circumstances where people value a place for the same reasons, and the conditions of the place are deteriorating. We suggest that well-recognized actions that build place attachment could create a reservoir of potential stewardship, if locally valued places were to deteriorate, as, for example, in response to climate change. Sense of place does not always promote stewardship, however, because attitudes may not lead to actions, some actions do not promote sustainability, and different place identities in the same place may lead to different stewardship goals (e.g., conservation vs. development). In situations where sense of place is deeply contested, we suggest that stewardship is best fostered by transparent and respectful dialogue to identify shared values and concerns and negotiate areas of disagreement. As a result of increased human mobility and globalization, individuals interact with many places to satisfy their desires and needs. We suggest that this opens new opportunities to motivate stewardship of *types of places* at regional, national, and global scales. Approaches such as discourse analysis, boundary concepts, incompletely theorized agreement, and common property theory that explicitly address contested concepts might contribute significantly to fostering sustainability in a rapidly changing and deeply divided world.

Keywords: globalization; local-to-global scales; sense of place; stewardship; sustainability

1 Introduction

The ecological impacts of a growing human population and rising aspirations and capacity for consumption have contributed to a global decline in the benefits (ecosystem services) that society receives from ecosystems (MEA, 2005; Rockström et al., 2009). Although the causes of environmental degradation are increasingly understood, processes that might foster a shift toward more sustainable trajectories are poorly defined. Laws and regulations that punish unsustainable actions (e.g., regulation of water pollution) and market approaches that align economic incentives with sustainability goals (e.g., payment for ecosystem services or green certification programs) can motivate more sustainable resource use (Kinzig et al., 2011) by focusing on policy and market instruments that incentivize desired outcomes. However, society's resource-use decisions are not motivated solely by economic self-interest or fear of punishment. Regulations and payment for ecosystem services may marginalize other, more fundamental motivations for valuing and relating to nature or may undermine alternative cultural approaches to stewardship (Berkes, 2008; Louv, 2005; Raymond et al., 2013).

A complementary approach is to capitalize on the attachment that people feel to particular places or attributes (e.g., biodiversity) as a motivation for environmental citizenship. Can this "sense of place" provide a foundation for stewardship strategies by providing insight into the processes that link people's place attachment to their actions?

Earth-System and Integrated Assessment Models that seek to incorporate an understanding of the linkages between people and places at large scales generally focus on biophysical, economic, and demographic dimensions (Michetti and Zampieri, 2014; Schneider, 1997) and ignore the intervening social processes. In this paper, we seek to bridge the gap between the fine-scale understanding of psychological and social processes that connect people to places and the urgent need to foster long-term stewardship at scales ranging from local places to the planet (Chapin et al., 2009; Folke et al., 2011; Turner et al., 2003)

2 Complexities of sense of place, stewardship, and sustainability

In simple terms, sense of place can be defined as “the collection of meanings, beliefs, symbols, values, and feelings that individuals and groups associate with a particular locality” (Williams and Stewart, 1998). It is the meaning or importance of a place based on human experience, social relationships, emotions, and thoughts (Stedman, 2003a; Tuan, 1977). However, this definition fails to capture the contextual and dynamic nature of sense of place. “Places are ... interpreted, narrated, perceived, felt, understood, and imagined” (Gieryn, 2000). Sense of place reflects not only experiences with places but also the cultural, religious, historical, and personal meanings of places and the power and economic relationships that shape historical and current interactions with places. Together, these feelings may build attachment to a place in ways that contribute to and are affected by a person’s or group’s identity and worldview (Ardoin, 2006; Fresque- Baxter and Armitage, 2012; Lewicka, 2011; Tuan, 1977; Williams and Stewart, 1998; Yung et al., 2003). For example, families of fishers, ranchers, farmers, and foresters who have lived in the same place for generations often feel strong attachment to their place.

Most writings about sense of place treat it as a psychologically and socially constructed process. The foundational writings of Tuan (1977), for example, differentiate between “space,” which is the physical environment and “place”, which is imbued with experiential, narrated, and imagined meanings. Others note the additional importance of biophysical and aesthetic attributes of place that draw people to particular locations and provide the opportunity for people to derive meaning from them (Jackson, 1994; Ryden, 1993; Shields, 1991; Stedman, 2003a). There are therefore multiple, sometimes competing, discourses about sense of place (Arts and Buizer 2009). By this we mean both alternative framings of sense of place (Schön and Rein 1994) and alternative social practices, including objects of knowledge, social relationships, institutional arrangements, and power processes (Foucault 1994; Fischer 2003, Arts and Buizer 2009). In this sense, sense of place is a boundary object or concept that can facilitate learning and communication across disciplines and between theoreticians and managers (Star 2010), while at the same time acting as a barrier to consensus among disciplines or social groups as to its definition or utility in fostering stewardship. We return to this tension in the Conclusion.

The dynamic interactions among the many influences on sense of place and the fluid changes in these interactions through time (Gieryn, 2000) lead to substantial variation within and among stakeholder groups in reasons for valuing particular places and therefore the potential for conflicts, as often seen in debates over conservation vs. development among people who value the same place (Ardoin, 2006; Cheng et al., 2003; Davenport and Anderson, 2005; Stedman, 2003b; Yung et al., 2003). Sense of place is therefore often contested and not a simple panacea for stewardship, as sometimes assumed by environmental advocates (Heise, 2008). In addition,

sense of place can motivate parochialism and exclusionary practices, as seen in NIMBY (not in my backyard) attitudes and gated communities (Gieryn, 2000; Relph, 2008) that can amplify economic and political disparities. Given the enormous complexity of sense of place and its potential to motivate both good and ugly social behaviour, how can it possibly be a constructive framework for stewardship?

Like sense of place, sustainability and stewardship are boundary concepts that have no single definition or agreed-upon utility. Sustainability emerged as a goal to link conservation and development outcomes for long-term societal benefit of developing nations (WCED 1987). However, the term has also been applied more narrowly to economic growth, social wellbeing, ecological stability, *or* a combination of all three. Similarly, stewardship has been defined both as a framework for actively shaping trajectories of ecological and social change (Chapin et al. 2011) and as a religious and moral basis for social action (Kearns and Keller 2007). Like other boundary objects, sense of place, sustainability, and stewardship may be useful as incompletely theorized frameworks if they allow communication and cooperation to emerge among groups that have apparently conflicting worldviews (Star 2010; Sunstein 1995; see Conclusion).

3 An integrated framework

3.1 Scope, approach, and definitions

In this paper we focus on the relationships between people (individuals, groups, communities) and ecosystems (both wild and inhabited landscapes). We do not address the interactions of people and physically constructed places (e.g., homes, neighbourhoods), which involve somewhat distinct issues and relationships (Lewicka, 2011; Scannell and Gifford, 2010). We briefly sketch psychological and social perspectives on sense of place (Sections 2 and 3.1), then hypothesize a simple integrative framework to describe people's attachment to and impacts on wild and inhabited ecosystems, drawing on additional literature from natural resource management. We begin with experiential and psychological dimensions of the relationships of individuals with places (Section 3.2), then add social, political, cultural and economic dimensions of groups and communities (Section 3.3) and finally address the dynamic nature of sense of place over time (Section 3.4). In Section 4 we draw on sense-of-place theories to identify elements and contexts in the relationship between people and places that might foster or inhibit social-ecological stewardship at local and larger scales. We then relate this discussion of sense-of-place theories to place-based conservation planning, which focuses on valuing communities, ecosystems, and places rather than commodities (Chapin et al., 2009; Mason, 2007; Williams et al., 2013), and to the commons literature, which addresses the ways in which local groups self-organize and cooperate to sustain community goals (Dietz et al., 2003; Ostrom, 1990).

We define sense of place broadly as the process by which individuals and groups derive meanings, beliefs, symbols, values, and feelings from a particular locality based on human experience, thoughts, emotions, and social relationships. These meanings are interpreted, narrated, perceived, felt, imagined, and understood. They change through time because of historical contingencies and the interaction of social, political, cultural, economic, environmental, and other processes (Antonsich, 2010; Gieryn, 2000; Stedman, 2002; Tuan, 1977;

Williams and Stewart, 1998). We define worldview as the way someone thinks about the world—a mental model of reality (<http://www.merriam-webster.com/dictionary/worldview>). We define sustainability as the use of the environment and resources to meet the needs of the present community without compromising the ability of future generations to meet their needs (WCED, 1987). We define stewardship as the active shaping of pathways of social and ecological change for the benefit of ecosystems and society (Chapin et al., 2009; Chapin et al., 2011). Based on these definitions, sense of place is part of a person's or group's worldview, and stewardship entails actions that foster the sustainability of particular places in the context of their worldview. The contested nature of sense of place, stewardship, and sustainability provide both opportunities for finding some common ground and likelihood of disagreement among groups with different worldviews, as discussed later.

3.2 Experiential and psychological dimensions in individuals

Experiential and psychological dimensions of an individual's sense of place can influence their motivations and behaviours for stewardship of places through place attachment, i.e., the bond between people and their environment (Antonsich, 2010; Gifford, 2014; Williams, 2014). This attachment reflects both the *meaning* of places to people (place identity, this section) and the *dependence* of people on places (place dependence, Section 3.3) (Antonsich, 2010; Ardoin, 2006; Brown, 1987; Low and Altman, 1992; Stedman, 2003b; Vaske and Kobrin, 2001; Williams and Vaske, 2003; Yung et al., 2003). From the perspective of social psychology, place identity has two components: (a) the influences of symbolic meanings of a place on a person's cognition, attitudes, identity, and satisfaction with a place and (b) the effects of cognition, attitudes, identity, and satisfaction on place-related behaviour (Fresque-Baxter and Armitage, 2012; Stedman, 2002). Together, these components constitute the complex coupled interactions of individuals with places.

Some literature suggests that attachment to place is likely to be strongest in local places with which people regularly interact (e.g., their ranch or community garden) (Stedman, 2003b). The symbolic meanings of these places are shaped by a person's experiences, as modified or reinforced by history, culture, politics, and religion. The multi-generational experience of indigenous and other people with their lands, for example, strongly shapes their identity as salmon or river people or as ranchers or herders (Nelson, 1983; Sayre, 2005; Thornton, 2008). An ethic of respect for these places and associated resources tends to foster stewardship (Berkes, 2008), which is often reinforced through social ties with other people having similar cultural roots (Lewicka, 2011). Nonetheless, there are people in every community who do not follow an ethic of respect for nature, regardless of professed norms.

A meta-analysis of the literature indicates that residence time is the strongest socio-demographic predictor of place attachment (Lewicka, 2011), suggesting that the meanings of places for people generally strengthen with time within and across generations. However, the role of residence time is variable, with some recent arrivals quickly attaching to places and others retaining greater attachment to their place of origin (Lewicka, 2011). Conversely, as people spend less time in places that were valued by previous generations, the symbolic meaning of these places may weaken, for example as younger generations of subsistence hunters shift to office jobs and store-bought food, weakening their sense of identity and selfworth (Reedy-Maschner, 2010).

Strength of social ties to people associated with a place is another strong predictor of place attachment (Kasarda and Janowitz, 1974; Lewicka, 2011; Mesch and Manor, 1998). These social ties sometimes motivate civic action on behalf of valued places (the second component of place identity) (Ardoin, 2006; Carrus et al., 2005; Mueller Worster and Abrams, 2005; Perkins et al., 1996; Scannell and Gifford, 2010; Stedman, 2002; Vaske and Kobrin, 2001), especially when trust among stakeholders is well developed within the community (Gosling and Williams, 2010; Lewicka, 2011; Payton et al., 2007). Although the biophysical attributes of place often influence where people choose to live or spend time, experiences and social ties appear to increasingly shape place attachment through time (Lewicka, 2011).

The link between place attachment and civic action also depends on people's satisfaction with valued places. The resource management literature suggests that people who are dissatisfied with the condition (biophysical properties) of the places they value are more likely to take actions to improve these conditions, for example in response to pollution or climate change (Fresque- Baxter and Armitage, 2012; Gifford, 2014; Stedman, 2002). However, stewardship intentions often fail to trigger action (Jorgensen and Stedman, 2001). Behavioural theory suggests that perceived self-efficacy, or the belief that one has the capacity to act and influence a given situation, can influence whether intentions translate to behaviour (Ajzen, 1991; Bandura, 1997). In a sense, place attachment may provide latent motivation for stewardship actions, if conditions deteriorate and people feel empowered to reverse or prevent further deterioration.

Place-protective intentions can trigger a variety of behaviours. People may protect valued places from developments that would permanently alter their character, especially if these places are close by and tied to people's place identity (Bonaiuto et al., 2002; Devine- Wright, 2009; Vorkinn and Riese, 2001). Other people might seek to privilege their own use of specific places by excluding others (e.g., NIMBYism, gated communities, exclusion of local people from African game parks) (Gieryn, 2000; Relph, 2008). The circumstances in which these contrasting social reactions emerge in response to threats to valued places are poorly understood and warrant further research.

When different people derive *different* symbolic meanings from the same place, this can lead to different attitudes, intentions, and actions (i.e., the second component of place identity) despite shared appreciation for the same biophysical features. Loggers and conservationists, for example, may both value forests for their trees but have different symbolic values of trees and therefore different visions of how to sustain inhabited forested landscapes. Similarly, groves of urban trees can be viewed as a haven for violent crime or as a place to socialize and escape the heat of the city. This variation among individuals and their social networks creates challenges for any community or stakeholder group trying to mobilize for action (Carrus et al., 2005; Stedman, 2002; Uzzell et al., 2002) and may lead to polarization, political manoeuvring, and use of power to enforce a dominant perspective (Blaikie, 1995; Devine- Wright, 2009; Robbins, 2004).

Together this literature suggests the hypothesis that places whose symbolic meanings are important to a person's identity (e.g., rangelands to a rancher) frequently motivate stewardship intentions and sometimes actions that the person believes will sustain valued attributes of the place. We further hypothesize that stewardship actions are most likely to occur if the desired

conditions have deteriorated. However, stewardship actions motivated by sense of place are far from certain because (1) attitudes (cognitions, emotions, and intentions) may not lead to actions, (2) some actions may not promote sustainability, and (3) different place identities that develop in the same place may lead to different, and sometimes conflicting, stewardship goals. In addition, the actions of individuals are strongly influenced by social, political, and economic considerations that we address in the next section.

3.3 Cultural, social, political, and economic dimensions in communities

Cultural, social, ideological, political, and economic lenses often condition the responses of individuals to particular places (Ardoin, 2006; Basso, 1996). People who share the same lens often develop informal or tacit rules of use (Ostrom, 1990) that can be reinforced and shared through stakeholder organizations (Acheson, 2003). Ranchers' associations, for example, often share best practices to maintain rangeland productivity in the context of changes in climate, property values, and regulations governing use of public lands. In these ways economics, politics, and environmental management become thoroughly entwined with place identity as ranchers develop strategies to manage the places they value.

Place dependence is the potential of a place to meet the goals and needs of an individual or group, relative to other options (Jorgensen and Stedman, 2001). This potential depends on personal or group goals and identities (section 3.2); biophysical attributes; cultural, economic, and political contexts; and the real or imagined practicalities of interacting with a particular location. Place dependence can cause friction if there is disagreement about the appropriateness of various activities that are connected to specific livelihoods.

In heterogeneous communities, debates over incompatible resource uses (e.g., logging vs. species protection) can be contentious (Yung et al., 2003), especially when they reflect different norms, values, and worldviews (Blaikie, 1995; Cheng et al., 2003; Gieryn, 2000; Williams and Stewart, 1998; Yung et al., 2003). Worldviews, i.e., the dominant frames by which we understand the world, can be problematic when they impose standardized explanations of place that are a poor fit with local reality. Some groups might advocate restoration, for example, even when historically rooted conservation goals are no longer compatible with current climate and environment, or development may be advocated despite unacceptably high environmental or social costs. Allegiance to cosmopolitan worldviews can be a way in which a stakeholder group justifies and mobilizes support for its perspective on local issues (Kymlicka and Walker, 2012), or it can be a way in which external groups seek to manipulate local outcomes (Blaikie, 1995; Gieryn, 2000; Robbins, 2004; Yung et al., 2003). For example, economic dependence on extractive industries can strongly influence local support for government decisions on resource use, as can worldviews about the relative roles of government and private enterprise. Landscapes or regions can also “stand for” something politically, as in the case of Northern Ireland, the Basque region of Spain, and the contrasting meanings of Crimea to Ukraine and Russia. These broad-scale narratives sometimes become more powerful and influential than local meanings and values (Williams and Stewart, 1998). When agreement on worldviews or overriding principles is unlikely, it may still be possible to “achieve incompletely theorized agreement on particular outcomes” that are not explicitly tied to incompatible worldviews (Sunstein, 1995). Different

groups, for example, might support sustainability of a place despite different fundamental motivations such as aesthetics vs. conservation vs. livelihoods.

3.4 Interactions and temporal fluidity

Sense of place and identity are psychologically and socially constructed and therefore constantly shift through time in response to a wide range of social, political, economic, and environmental influences. The increased mobility of modern society can create stewardship challenges by increasing community heterogeneity in values, ways of shaping identities, levels of dependence, and length of residence in specific places (Gustafson, 2014). In some cases long-term residents may value a place for its capacity to provide them with a livelihood (place dependence) and identity (place identity), whereas newcomers may more often be attracted for its aesthetic or symbolic appeal (Davenport and Anderson, 2005; Gustafson, 2014; Lewicka, 2011). This aesthetic value may be imported based on prior experiences in other places or the connotation of a landscape to the viewer. In these situations, place can become a symbol rather than a set of active relationships. Despite these changes in interactions between people and places, there is little evidence that place attachment is less important today than it was historically, and people who travel extensively often show as great or greater social capital and commitment to local action than do non-travellers (Gustafson, 2009; Lewicka, 2011).

In addition to cultural and historical roots to places, identities are increasingly shaped in other ways, for example through mass media, online networks, political ideologies, nationality of origin, or stakeholder groups (Christensen and Jensen, 2011; Gustafson, 2001). This cosmopolitanism might support policies or actions that reflect worldviews that are not strongly rooted in specific places (Davenport and Anderson, 2005). Fostering stewardship in today's world is thus a multi-scale challenge, requiring a suite of scale-dependent approaches.

4 Fostering stewardship based on sense of place

4.1 Local scales

Many types of actions have been advocated for building and strengthening attachment of *individuals* to places. These include spending meaningful time in the place with family or friends, learning about the place through personal experiences, stories, legends, and writings, or pursuing a livelihood rooted in that place (Louv, 2005). Attachments to place can be scaled to stakeholder groups that share common values and strengthened through informal education and social learning, for example in culture camps, community gardens, restoration projects, place-based community celebrations, and shared activities in valued places (Williams and Stewart, 1998). Economic barriers to place-based rural livelihoods can sometimes be reduced by subsidies and tax incentives (e.g., conservation easements) or mixed economies that make these livelihoods viable. People who are deeply rooted to place often choose place-based livelihoods because they value their place identity more than profitability (Gentner and Tanaka, 2002). This explains why many ranchers choose to continue ranching despite declining profitability and why Alaska indigenous people continue their rural subsistence lifestyle despite its associated economic hardship.

At the community scale it has been argued, largely on normative grounds, that *place-based community planning* should provide an opportunity to incorporate local norms and values through community dialogue that engages all key stakeholders. In this context, locally based planning is expected to lead to greater community buy-in and effective implementation than are generic solutions provided through non-local laws and regulations (Parkins and Mitchell 2005; Williams et al., 2013). Active participation and facilitated dialogue during the planning process can identify points of agreement that provide a foundation for community solidarity and collective action as well as contested issues that require deeper discussion (Fresque- Baxter and Armitage, 2012). When contested issues arise, the development of a few alternative scenarios (i.e., storylines) of plausible futures can facilitate open discussion of underlying values and meanings of place as well as difference of opinion about the potential causes and consequences of different scenarios for the future (Carpenter et al., 2006; Peterson et al., 2003). These discussions may serve as a basis for research that clarifies disputed facts or to more informed assessment of trade-offs between short-term and long-term benefits, which, in turn, may spark innovation, negotiation, and consensus-building to inform decision-making (Chapin et al., 2012; Fresque- Baxter and Armitage, 2012; Yung et al., 2003). For instance, collaboration around public lands has helped to bring diverse stakeholders together around a common vision of the future (Daniels and Walker, 2001). Although there are many studies that illustrate these advantages of place-based community planning, there is currently insufficient understanding to know the circumstances in which good outcomes are most likely to emerge. Alternatively, for example, clarification of differences in sense of place can lead to polarization and political maneuvering that seeks to achieve solutions through power rather than consensus. The likely success of any strategy depends on local context—there is no formula to ensure stewardship, when sense of place is deeply contested. This remains an exciting area of research.

The proposed development of a large open-pit mine upstream of the world's largest remaining salmon fishery (Bristol Bay Alaska) illustrates the role of sense of place in a highly contested development controversy. A downstream community of indigenous salmon fishers was concerned about potential leakage of pollutants from mining operations (EPA, 2014). The salmon-based culture, identity, and multigenerational experiences of the community motivated them to strongly oppose the mine, despite the economic advantages it would bring. Further opposition to the mine came from conservationists knowledgeable about pollution discharge from other mining operations, from biologists knowledgeable about pollutant impacts on salmon, from offshore commercial fishermen concerned about the economic consequences of potential salmon declines, and from regulators seeking to assess the balance of economic opportunities and associated risks. Support for the mine came primarily from politicians without a local sense of place who supported economic development in Alaska. The decision not to permit the mine was an incompletely theorized solution based on sense of place but reflecting several different worldviews (Sunstein 1995).

In other cases zoning of incompatible uses (e.g., solitude for skiers vs. recreation for snow machiners) to utilize different places may meet the place-based needs of conflicting groups. Multiple attributes of a place sometimes allow compatible uses. For example, city parks, ponds, and gardens in floodplains provide a recreational and aesthetic resource to city dwellers but also serve as water storage areas to prevent downstream flooding at times of high water. However, if people view their place primarily as a source of products to be consumed rather than as a place

worth sustaining for future generations, a stewardship ethic is unlikely to emerge (Carrus et al., 2005).

The success of a community in managing their place depends on properties that are very similar to those that facilitate successful management of the commons, including well-defined community boundaries, opportunities for active participation to discuss and decide rules by which the place is managed in congruence with its ecological conditions, accountability mechanisms to ensure fair and proper use by all stakeholders, and effective conflict-resolution mechanisms when disputes arise (Dietz et al., 2003; Ostrom, 1990). However, these design principals for managing the commons focus on institutional structure. Sense of place adds the goals and shared relationships among people that motivate them to sustain these places.

4.2 Non-local scales

The role of scale in place attachment has rarely been studied (Lewicka, 2011), so our comments on non-local sense of place and stewardship are less empirically grounded than at the local scale. Rapid global change and mobile populations of stakeholders suggest a different potential role for sense of place at regional-to-national than at local scales—a role that identifies with *types* of places (e.g., forests) and cultures or attributes (e.g., biodiversity or iconic species) and is relatively independent of the particularities of local context. Protected areas interact both directly and virtually with a broad range of stakeholders with diverse expectations and needs (Massey, 1991). Denali National Park and Preserve (DNPP) in Alaska, for example, manages in the context of climate change (e.g., treeline shift) and is responsive to multiple senses of place, including those of park biologists, subsistence harvesters, and short-term visitors from throughout the world (Knapp et al., 2014). Staff at DNPP use the park as a platform to instill or strengthen a national and international sense of place by fostering increased awareness of climate change, its consequences at DNPP, and the actions that individuals can take to mitigate these effects. This fostering of rooted cosmopolitanism builds on local attachment (DNPP) to instill a more universal commitment to stewardship (Kymlicka and Walker, 2012). Sense of place could also motivate the stewardship of *social-ecological* interactions, rather than protecting only ecological values (Sayre, 2005), as in the cultural landscapes of the Biosphere Reserve Network (Olsson et al., 2007).

The financial and political boundaries that historically tied people to a single place are now less constraining. People move frequently for jobs, education, and vacations, but there is mixed evidence as to whether this limits or enhances their long-term relationships with local places (Calhoun, 1991; Cuba and Hummon, 1993; Giddens, 1991). The ability to access information about other places through education, the Internet, and social media increases our awareness of and connection to other places (Gustafson, 2014). People who travel may develop identities with *types* of places (e.g., mountain people, urban people) as well as to their own local special places (Feldman, 1990).

Figure 1. Sense of place (SOP) and worldview at the local scale are influenced by sense of place and interactions with places at regional-to-global scales through media, donations, politics, and markets, as well as by biophysical interactions among places that occur across scales.

Mobility may increase our awareness of the value of distant places and make us more supportive of conservation efforts that do not directly benefit us, thus building support for sustainability at regional, national, and global scales (Carrus et al., 2005; Cuba and Hummon, 1993), the scales at which stewardship is most difficult to implement. Non-local stewardship motivated by appreciation for distant places is evident in public support for legislation and institutions (e.g., National Parks and conservation NGOs) that target the conservation of valued places (Fig. 1) (Bonaiuto et al., 2002; Carrus et al., 2005). Global interconnections also increase awareness of stewardship strategies that work in other places in order to apply them to our own place. These opportunities for social learning are often facilitated by NGOs seeking general strategies to implement their visions.

It has been argued that factors influencing individual identities have shifted from roots to routes, i.e., from attachment to a single place to a more open dynamic that reflects diverse social, political, and economic influences on identity (Hall, 1995). Roots and routes are not necessarily opposing forces, but often intertwine and interact to influence identity (Clifford, 1997; Gustafson, 2001). To the extent that roots build on attachments to local places and routes build cosmopolitanism, we suggest that their merging could be a powerful force for global stewardship.

5 Conclusions

Regulations and economic incentives have proven insufficient to move society toward a sustainable relationship with ecosystems and the environment, so new approaches are urgently needed. Sense of place can inspire and mobilize stewardship under some circumstances, but identifying the nature of facilitating circumstances will require new types of experiments in research and practice.

Like stewardship and sustainability, sense of place is a boundary concept that draws on diverse disciplinary roots and is interpreted and acted upon differently by distinct stakeholder groups who value the same place for different reasons. As such, there is an inevitable tension between the commonalities and the differences among groups with different disciplinary, worldview, or experiential perspectives. Commonalities of perspective provide opportunities for social learning and cooperation in support of shared values and goals. This may facilitate stewardship in communities with a relatively homogeneous sense of place. However, differences increase the likelihood of conflict both among disciplines and among stakeholder groups who seek to work together to understand and manage the same place. The challenge is to define a boundary object in which the commonalities that foster cooperation outweigh the contradictions that breed conflict.

Most persistent social-ecological problems are complex, interdisciplinary, and contested and are therefore unlikely to be solved by a single disciplinary or management approach. We suggest that those theories and tools from the social sciences that are designed to address multi-faceted concepts have a high potential to contribute to the understanding of the contested concepts of sense of place, stewardship, and sustainability, as society seeks to move toward a more sustainable future. These specific concepts and tools include discourse analysis, boundary objects, incompletely theorized agreements, and common property theory, which together address different dimensions of contested concepts: (1) Discourse analysis provides tools to identify the consistent elements of a discourse, permitting more transparent communication and mutual understanding of the framing (Schön and Rein, 1994) and alternative social practices (e.g., information, institutions, and power relationships) associated with different worldviews (Foucault, 1994; Fischer, 2003; Arts and Buizer, 2009). (2) Boundary concept theory (Star, 2010) acknowledges both the commonalities and differences among discourses. Articulation of the commonalities among alternative discourses provides a basis for stakeholder cooperation, even if for different reasons. (3) When stakeholders hold incompatible worldviews, incompletely theorized agreements (Sunstein, 1995) can incorporate the more compatible and instrumental components of these worldviews and avoid deeper philosophical divides. (4) Common property theory identifies elements of institutional structure and relationships that promote long-term cooperation and provide mechanisms to resolve conflicts (Dietz et al., 2003).

Several lines of research drawing on these interdisciplinary tools and approaches might foster greater understanding of the circumstances when sense of place is most likely to contribute to stewardship and sustainability. First, several disciplines have contributed significantly to understanding the causes and consequences of sense of place at levels ranging from individuals (e.g., psychology) to communities and nations (e.g., sociology, political science, and resource management). Development of a new discourse that draws on these multiple perspectives would facilitate interdisciplinary communication and might create a common framework that incorporates these perspectives. Secondly, a respectful merger of theories that explore the rich dimensionality of sense of place with empirical studies that assess the relative impact of each dimension in different circumstances would address the urgent need to foster stewardship in today's rapidly changing world. Thirdly, discourse analysis, boundary objects, incompletely theorized agreements, and management of the commons each provide insights on the development of cooperation in a contested world. Research that draws on all of these

perspectives might provide new insights on opportunities for cooperation despite contested senses of place. Fourthly, sense of place at large scales has received relatively little research attention, despite its relevance to global problems and the opportunities and challenges emerging with rapidly increasing information accessibility and human mobility.

Some of the greatest sustainability challenges are at regional, national, and global scales—the scales at which sense of place is least understood. We suggest that identification of people with *types* of places and attributes and exposure to them through travel and electronic media provide opportunities for place attachment that are motivated by local experience with places and cosmopolitan recognition of the scale of the sustainability challenge. This rooted cosmopolitanism (Kymlicka and Walker, 2012) could motivate support for their stewardship through donations to NGOs and through political and market processes. Such a type-based place attachment may be less historically rooted and relatively independent of spatial scale and political, economic, and cultural context and therefore potentially appropriate to global conservation and stewardship challenges. It also provides a framework for incorporating insights about psychological and social processes into integrated assessment and other models that seek to account for the role of human-mediated linkages in regional and global systems.

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