Connecting Place to Fire Planning through Participatory Mapping:
A Case Study on the Kootenai National Forest in Montana

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Introduction

There is increasing interest in integrating sense of place research into decision-making. Place research has tremendous potential to contribute to more democratic, participatory decision-making and enhance communication between stakeholders and management agencies. Sense of place is a broad term encompassing a multitude of superficially similar topics, including place meanings, relationship to place, place attachment, and place identity. In its most basic sense, "place" refers to space endowed with meaning. In the realm of natural resource management, two fundamental precepts have guided place research. One, sense of place is attached to specific geographic locations often referred to as special places. Two, these special places are not substitutable to the users that attribute meaning to them.

It flows from these concepts that mapping special places and documenting the reasons for attachment are both possible and useful. By capturing the spatial dimension of place in a reproducible map, researchers may be able to communicate place concepts to managers and, therefore, better inform planning and decision-making. Indeed, there has been a surge of interest in social, or participatory, mapping recently. In this chapter, we explore the role of social mapping in linking place to decision-making. We examine the potential for such mapping to provide decision-makers with information about the place meanings embedded in particular geographic locations, and the ways that these meanings connect to proposed management actions for these locations. Using a recent study that employed an innovative, participatory mapping tool, we discuss the strengths and weaknesses of social mapping as a technique to both capture sociocultural phenomena, such as place meanings, and to assist decision-makers.

Linking Place with Proposed Management Actions

While managers and other decision-makers may recognize that people's relationships to place are important, actual research on sense of place rarely contributes to decision-making, except in the arena of recreation management. Where place research is available it may be used to understand the broad outlines of stakeholders' relationships with the surrounding landscape. However, because place research is rarely explicitly connected to proposed natural resource management actions, it is difficult to translate research results into public preferences for specific management options. Far too often, researchers and decision-makers make "logical," but unfounded assumptions about the relationship between place meanings and proposed management actions.

For place research to truly integrate place meanings into natural resource planning and decision-making, it must investigate the connections between sense of place and specific management actions. We need to better understand if, how, and under what conditions place meanings are related to views on management actions, from forest thinning to ski resort development. Decision-making bodies will then have information regarding why an understanding of place is relevant to specific decisions and how to use place research in decision-making. This knowledge could potentially aid managers in anticipating, if not avoiding,

stakeholder conflict over values or interests that may be threatened by the management action. Place researchers also need to develop ways to make research more accessible to decision-makers who may have trouble incorporating social science data into their planning frameworks. Such efforts might include exploration of participatory data collection techniques as well as ways to represent and disseminate data that are both highly accessible and relevant to decision-making bodies.

Geospatial data, typically in the form of GIS maps, has become vital to informed decision-making, but it is difficult to capture complex and nuanced social data in such formats. Furthermore, because of the technical expertise it demands, GIS is oftentimes an inaccessible technology and difficult to utilize in collaborative decision-making. If social data, such as place meanings, can be adequately represented in a spatial format, such data might be more accessible to a range of interested parties. Specifically, participatory GIS exercises could be incorporated into NEPA mandated public involvement. Alternatively, collaborative groups could employ participatory mapping as they actively negotiate how they envision proposed projects happening on the ground. Oftentimes a visual aid such as a map will elicit different reactions and clarify important ambiguities present in abstract group discussion of inherently concrete phenomena. Some place researchers have suggested that such interactions can contribute to mutual learning, trust building, and much more.

Connecting Place and Fire Management on the Kootenai National Forest

In 2007, we investigated the ways in which knowledge of place meanings could inform decisions about hazardous fuels reduction and fire planning. As part of this study, we explored the utility of gathering and representing such meanings spatially. This research was conducted in the rural, forested community of Libby in the Kootenai National Forest in northwestern Montana where an extensive wildland-urban interface (WUI) lies just east of the Cabinet Mountains Wilderness. This community is experiencing economic and demographic transitions similar to many rural communities in the western U.S. In that regard the insights gained from this study may speak to resource management elsewhere in the changing American West.

The management of wildland fire is of utmost concern to Western land managers. Prolonged drought, catastrophic wildfire, and expansion of rural residential development are pushing this issue to the fore. The National Fire Plan of 2001 requires that local communities be considered in planning for fire and hazardous fuels since these management decisions have resounding material and social effects on local people. While prior research has focused on the economic and ecological impacts of fire, few studies have examined the socio-cultural impacts of fire. In particular, we know very little about how community members and forest landowners regard the spectrum of potential fuel treatments available to the land manager. We also lack information about how local people's place meanings might interact with views of fuel treatments. Such knowledge is clearly required to better integrate the needs and views of local communities into fire planning.

Prior place research suggests that understanding sense of place may enable managers to identify and respond to the bonds between people and the landscape. In this study, we wanted to know if and how people's relationships with the land are related to their views on fire and fuels management. This knowledge has the potential to help us understand which fuel treatments and

fire management alternatives are deemed appropriate for use and why. Conflict could then at least be anticipated, if not reduced, when new management actions are being considered. Local stakeholder groups would be able to utilize such information to better understand how different management actions might impact people's sense of place and how place meanings affect views on management. This could lead to greater awareness and articulation of common ground for the groups, as well as stronger agency-community relationships that could be drawn on in times of actual fire emergency or other coordinated efforts.

To better understand the meanings and views of local stakeholders, landowners in the WUI were interviewed during the summer of 2007. In-depth, semi-structured interviews focused on landowner relationships with the landscape as a whole and with specific places. Landowners were also asked about wildland fire and hazardous fuels management. Interviews included a computer-based mapping exercise to provide participants with an opportunity to spatially describe both their relationship with place and their views on three specific fuel treatments. We wanted to know if people's place meanings could be represented spatially in a way that captured the complexity of such meanings and provided accessible GIS data to decision-making bodies, and to better understand the connections between place and views on fire and fuels.

We found that place-based meanings were connected to landowner views on fire and fuels, but that the computer-based mapping exercise alone provided incomplete information on these connections. Forest landowners readily mapped the specific places of importance to them and described why they were attached to those places, such as lakes, meadows, or drainages. They also conveyed meanings that they explicitly associated with the entire landscape, rather than specific places. But landowner preferences for fuel treatments were rarely, if ever, situated in specific places. Instead landowners thought about fire and fuel management at a landscape level. For example, one longtime landowner discussed his favorite berry picking, gold panning, and hunting locations, mapping these special places with ease and great specificity. Additionally, he finished the exercise by creating a map that depicted the entire landscape as very important to him as representative of home, family, and culture. Later, when asked to map which fuel treatments would be acceptable, he answered in very broad strokes, saying, for example, that prescribed burning was acceptable everywhere. This reluctance to map management preferences in specific locations was widespread amongst participants.

However, while fire management preferences were not situated at the same scale as special places, landowner views on fire and fuels were very much related to landscape-level place meanings. These landscape-level meanings existed as components of place-based narratives situated at a much larger scale than special places. These complex landscape narratives were oftentimes about stewardship and proper management of the forest. Landscape narratives were related to how landowners "saw" the national forest as a place of work, amenities, or naturalness. These multiple and sometimes competing landscape narratives were connected to support for wildland fire use, prescribed burning, and forest thinning. When landowners discussed their preferences for fuel treatment they oftentimes explicitly related such preferences to their ideas about proper forest management and the landscape narrative(s) to which they subscribed. For example, landowners who described the area as natural were more likely to support wildland fire use. On the other hand, landowners who saw the area as a working landscape were more interested in forest thinning. The qualitative interview as a whole allowed

for a detailed understanding of these landscape narratives, which were oftentimes only briefly referenced during the mapping exercise.

Knowledge of the connection between place meanings and views on fire and fuels can assist decision-makers who are interested in understanding conflict and common ground in local communities. While prior research has shown that forest landowners usually support some type of fuel reduction, we found that an understanding of place, especially at the landscape scale, provided a deeper understanding of why landowners support specific types of fuel reduction. Decision-makers can use this information to determine the extent of support for or common ground around proposed fuel treatments. They might also be able to better predict possible shifts in support for fuel treatments as a result of landownership change. In contrast to prior research, we found that individual maps of special places alone did not provide information that could be helpful to fire managers, because the meanings associated with special places were not connected to preferences for fire management and because views on fire and fuels were situated at a much different scale as compared with special places. In the context of fire management then, special places *were* substitutable for landowners in this study. Landowner fire management preferences did not hinge on the protection of their individual special places. For example, one landowner explicitly stated he did not expect his special places to be given extra protection from fire or the sometimes aesthetically adverse effects of fuel reductions. Despite the limitations of the mapping exercise, this portion of the interview was critical because it revealed the fact that fire management preferences were not situated at the scale of special places, but rather at the landscape level. In the end, we concluded that participatory mapping, at least in this case, was a useful tool, but that it failed to capture the full depth and complexity of place meanings.

Moving forward with Place Mapping and Place-based Management

This study suggests that sense of place may be situated at multiple, nested scales from particular geographical locations expanding out to a much larger socio-cultural, landscape context. Additionally, depending on the specific management action, special places may be substitutable. Decision-makers must find ways to account for place meanings that occur at multiple scales. Decisions that are generically based on sense of place may draw on data that are situated at a difference spatial scale than the management actions themselves. Issues of scale will continue to emerge as place is increasingly linked to decision-making in new contexts. When basing a decision on place research, managers should be aware that their particular management actions could be connected to place meanings residing at one spatial scale and not another, e.g. at the regional versus local scale. In this case study there was a mismatch in scale between special places and management preferences. A hazardous fuel management decision based on special places would have missed what was actually driving landowner preferences for fuel treatments. This scalar mismatch between elements of sense of place and the "location" of management preference could easily be overlooked, particularly if social mapping focuses exclusively on special places.

Furthermore, for social mapping to realize its potential to spatially represent place meanings, we need to develop methods that allow for mapping that is attentive to emergent meanings. The main strength of our mapping approach was the ability to capture qualitative data and remain open to unanticipated themes because the mapping exercise was part of a larger

interview. The mapping exercise functioned very well in the context of the interview. However, the mapping exercise alone might have been insufficient to capture the diversity of views and depth of complexity regarding place and fire. Other mapping tools and techniques may suffer similar weaknesses. Initially, the holistic nature of sense of place made it an attractive tool for integration with adaptive, ecosystem research. To realize this potential, researchers must strive to retain the richness of place meanings as they convey findings to managers in accessible, useful forms.