



Burning through organizational boundaries? Examining inter-organizational communication networks in policy-mandated collaborative bushfire planning groups

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ABSTRACT

Collaboration can enhance cooperation across geographic and organizational scales, effectively “burning through” those boundaries. Using structured social network analysis (SNA) and qualitative in-depth interviews, this study examined three collaborative bushfire planning groups in New South Wales, Australia and asked: How does participation in policy-mandated collaboration affect bushfire communication networks amongst organizational representatives? Inter-organizational communication networks became more active, less centralized, and more closely connected during planning than they had been prior. However, efforts to institutionalize collaboration were intrinsically biased towards placing administrative power and influence in public agencies. Further, collaborative planning groups did not maintain “during planning” levels of network activity and structure after planning was completed. In one case, the mandated planning process had a negative impact on inter-agency communication networks. Contextual aspects such as group size, history of inter-organizational conflict and fire occurrence, and process management were important in the development of inter-organizational networks. Though communication diminished after planning was completed, participation in the collaborative planning effort may serve as an important basis for the continuation of inter-organizational relationships beyond the scope of the planning process.

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1. Introduction

1.1. Wildland fire and collaborative environmental planning

A central challenge for environmental governance is creating institutions that effectively attend to dynamic ecological and socio-organizational phenomena in the context of accelerating environmental change (Ostrom, 1990; Barham, 2001; Folke et al., 2007). One concern is that natural resource agencies are generally delineated by level of government (municipal, state, federal) and driven by specific policy directives that narrow management foci. Single-agency management may be administratively expedient, but may also emphasize organizational efficiency over managing for broader environmental goals such as watershed management, ecosystem restoration, and landscape-level biodiversity conservation (Dombeck et al., 2004). Collaborative governance models hold that networks of organizations offer the flexibility, coordination, and

innovation necessary to adequately address complex management issues that single agencies cannot (Ansell and Gash, 2008). Further, building social networks may enhance resilience, adaptability, and innovation in the face of environmental change (Tompkins and Adger, 2004). In Australia, where this study took place, collaborative or “integrated” models of environmental management and planning are widely applied (Bellamy and Johnson, 2000; Margerum, 2002; Lane and Robinson, 2009). Still, organizations are challenged to balance cooperation across boundaries with the traditional notion of an organization as a ‘boundary reinforcing’ entity with largely independent interests. Collaborative environmental planning is a model of collaborative governance that seeks to address cross-scale complexity through multi-stakeholder approaches, and is often used when the environmental system at hand extends beyond the boundary of any given organizational jurisdiction or substantive charter. Environmental planning scholars cite the creation of new relationships, capacity to accommodate socio-ecological change, and coordination of management as the most impactful benefits of collaboration (Innes and Booher, 1999; Wondolock and Yaffee, 2000; Booher and Innes, 2002), but changes in these elements are also the most difficult to measure (Beierle, 2002).

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Wildland fire is one of those environmental phenomena that ‘burn through’ organizational, ecological, and geopolitical boundaries. A given wildfire may move through diversely owned land from private, to industrial, to public forests. However, coordination in wildland fire planning is complex due to the assignment of management activities – such as suppression, fuels mitigation, and biodiversity conservation – along organizational lines. These challenges are compounded by the expected impact of climate change and environmental change on global fire regimes (Pitman et al., 2007; Bowman et al., 2009; Driscoll et al., 2010); fire management institutions will need to adapt to address increases in wildland fire intensity and occurrence. Scholars propose that wildland fire planning should integrate interdependent management goals, enhancing coordination and as well as the capacity to attend to future changes in the environment through the creation of inter-organizational networks (Handmer, 2003; Dombeck et al., 2004; Stephens and Ruth, 2005; Steelman and Burke, 2007; Jakes and Nelson, 2007). Thus, collaborative wildland fire planning has grown in both the US and Australia with goals of expanding inter-organizational planning networks. In New South Wales (NSW), Australia, Bush Fire Management Committees are directed to apply the concepts of collaborative planning in Bush Fire Risk Management Planning processes. The NSW process is a part of a growing trend in natural resource management and wildland fire planning of using policy to *mandate* collaborative environmental planning. Previous research on mandated collaboration in wildland fire planning has shown that both the design of the mandating policy and the local context influence collaborative outcomes (Grayzeck-Souter et al., 2009; Brummel et al., 2010), such as the formation of inter-organizational communication networks.

This paper presents findings from an investigation of inter-organizational communication networks existing before, developed during, and maintained after the policy-mandated collaborative planning process in three NSW bushfire groups. Despite the growth of ‘network-centered’ literature, there are few studies that report on structured and in-depth analyses of network changes occurring as a result of collaborative planning and none that investigate the formation of inter-organizational communication networks in mandated collaboration. The research reported here poses three questions:

- (1) How does participation in policy-mandated collaboration affect structural aspects of bushfire communication networks amongst organizational representatives?
- (2) How do contextual issues influence the development of inter-organizational communication networks?
- (3) What are the effects of changing network structures on participants, inter-organizational relationships, and bushfire management more broadly?

1.2. *Research approach: social networks and the environment*

Connection is a growing trend in natural resource management. Policy-makers and environmental management professionals seek to facilitate connection through the creation of social networks amongst stakeholders. In its most basic iteration, a social network “consists of a finite set of actors and the relation or relations defined on them” (Wasserman and Faust, 1994). An “actor” can be an individual, an organization, or even a nation-state. Actors form a social network when relational ties develop amongst them, and linkages serve as conduits for the exchange or “flow” of material or immaterial resources. This research investigates “communication networks” between organizational representatives around a collaborative bushfire planning process. Social networks have been found to foster learning and joint understanding (Daniels and Walker, 2001; Schusler et al., 2003; Tompkins and Adger, 2004)

and to facilitate coordination, innovation, and the integration of management activities (Pretty and Smith, 2004; Folke et al., 2005). Social network theory focuses on the primacy of social relationships in influencing behavior through providing constraints and opportunities to individuals (Wasserman and Faust, 1994; Emirbayer, 1997). As Granovetter (1985: 504) argues “Most behavior is closely embedded in networks of interpersonal relations”.

Much of the recent literature suggests that the expansion of networks is necessary to improve environmental and social outcomes in environmental management (e.g. Innes and Booher, 1999; Pretty and Smith, 2004; Tompkins and Adger, 2004; Janssen et al., 2006). For example, cross-organizational knowledge exchange may improve organizational performance (Reagans and McEvily, 2003), enhance access to resources, and lead to innovated practices (Ruef, 2002). Bodin and Crona (2009) propose four network characteristics – network density, cohesiveness (measured here as average geodesic distance), subgroup interconnectivity (measured as betweenness), and network centralization – as important in influencing actors’ ability to manage their relationships, as well as the natural environment. Each of these measures is operationally defined in Table 1. Greater density of relationships in networks may improve capacity for collective action (Diani, 2003), knowledge sharing, and idea creation (Sandstrom and Carlsson, 2008). Actors in networks with low average geodesic distances may be efficient at communicating information across the network quickly (Hanneman and Riddle, 2005). Groups with high network betweenness may tend to ‘other’ distinct groups within the networks, which may lead to unproductive deliberations (Borgatti and Foster, 2003). While high network centrality may improve coordination within a group (Sandstrom and Carlsson, 2008; Bodin and Crona, 2009), it can lead to disparities in power and influence (Diani, 2003; Ernstson et al., 2008). Further, centralized networks are focused around a few prominent individuals and may not be compatible with the complex project of environmental governance (Bodin and Crona, 2009).

This research focuses on inter-organizational communication networks – a particular form of social network – existing before, developed during, and maintained after a mandated collaborative bushfire planning process. Communication is the most common currency amongst diverse participants and is an important indication of one’s degree of engagement in a collaborative planning network. Further, communication that occurs between organizational representatives during planning can have implications for wildland fire management at the organizational level. As Dal Fiore (2007: 861) writes, such “. . . networks are the places for boundary-spanning learning” in that they tend towards evolution of ideas, creative communication, and a sense of comparing. We investigate communication between representatives that are mandated to participate in a planning process according to organizational affiliation (see Appendix A for list of organizations); these are organizations that policy-makers have identified as being important in the context of bushfire management in NSW. The planning network examined in this research functions as an inter-organizational network because participants are directed by policy to represent their organizations during planning and are only participants in the planning process *due to* their organizational affiliation. Organizations only “communicate” in as much as individual representatives for organizations communicate; the individual representative behaves as the network actor since they communicate, share information, and actively participate in the planning process. Mandarano (2009) investigated the creation of inter-organizational networks within a voluntary estuary restoration collaborative planning process and found increased number and strength of knowledge, resources, and funding exchange

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