Research article

How do potential knowledge users evaluate new claims about a contested resource? Problems of power and politics in knowledge exchange and mobilization

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A B S T R A C T

This article examines how potential users of scientific and local/traditional/experiential knowledge evaluate new claims to knowing, using 67 interviews with government employees and non-governmental stakeholders involved in co-managing salmon fisheries in Canada's Fraser River. Research has consistently shown that there are major obstacles to moving new knowledge into policy, management, and public domains. New concepts such as Knowledge Exchange (KE) and Knowledge Mobilization (KMb) are being used to investigate these obstacles, but the processes by which potential users evaluate (sometimes competing) knowledge claims remain poorly understood. We use concepts from the sociology of science and find that potential users evaluate new knowledge claims based on three broad criteria: (1) the perceived merits of the claim, (2) perceptions of the character and motivation of the claimant, and (3) considerations of the social and political context of the claim. However, government employees and stakeholders have different interpretations of these criteria, leading to different knowledge preferences and normative expectations of scientists and other claimants. We draw both theoretical and practical lessons from these findings. With respect to theory, we argue that the sociology of science provides valuable insights into the political dimensions of knowledge and should be explicitly incorporated into KE/KMb research. With respect to practice, our findings underline the need for scientists and other claimants to make conscious decisions about whose expectations they hope to meet in their communications and engagement activities.

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1. Introduction

The question of how to move or "mobilize" new knowledge about social-ecological systems into policy, management, and public domains has become a major area of applied research in recent years (Fazey et al., 2012; Singh et al., 2014; Cvitanovic et al., 2015a; Hulme, 2015). New knowledge claims have always faced barriers of acceptance from people and institutions that have invested in established ways of knowing and doing (Kuhn, 1962). However, ongoing environmental changes at local and global scales suggest that new knowledge of all kinds — scientific, local/ traditional, and experience-based — is urgently needed if management systems are to keep up (Adams and Sandbrook, 2013). Concepts such as evidence-based management, adaptive management, and adaptive co-management reflect the importance of rapidly diffusing new knowledge to policy-makers, managers, and stakeholders alike to improve decision-making at multiple levels (Sutherland et al., 2004; Armitage et al., 2007; Cook et al., 2010). However, a wide range of studies have shown that these groups are far more likely to draw on intuition, personal and collective experience, and other forms of informal and tacit knowledge than on empirical evidence or data in their decision-making (e.g., Sutherland et al., 2004; Pullin et al., 2004; Roux et al., 2006; Fazey et al., 2006; Cook et al., 2010; Cvitanovic et al., 2014; Ntshotsho et al., 2015). Part of the problem is that knowledge is difficult to move across social and epistemic boundaries, even when there is a

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strong desire among both knowledge-generators and potential users to see it communicated and implemented (Roux et al., 2006; Bainbridge et al., 2014).

Researchers have recently developed several concepts to investigate the conditions under which knowledge does and does not transcend these barriers, and propose strategies and techniques for improvement. These concepts, which include "knowledge exchange" (KE) and "knowledge mobilization" (KMb), attempt to capture the social dimensions of knowledge creation, diffusion, and application. In our view, the differences between the two terms are trivial. KE has been more popular in the environmental studies literature, while KMb originates in efforts to measure the impact of education and social policy research (Provencal, 2011; Fazey et al., 2012). KE and KMb research both stress the iterative and non-linear nature of knowledge movement, the impact of social practices and relationships on how people access and interpret knowledge, and the fact that knowledge can be mobilized in multiple ways (for instance, as an instrumental or symbolic resource) depending on context. KE/KMb research also emphasizes several major obstacles to knowledge movement, including poor communication among knowledge generators and potential users, a lack of incentive for researchers to package their knowledge in a consumable way, and a lack of capacity among potential users to access new knowledge and apply it to real-world problems (Young et al., 2013; Singh et al., 2014; Cvitanovic et al., 2015a). Based on these observations, researchers have argued for several structural changes in knowledge production and communication, from educating scientists about policy-making processes (and vice versa), to establishing "boundary organizations" that can serve as knowledge brokers between the scientific and policy communities, to job exchanges and "connection rituals" such as regular workshops and brainstorming sessions to bring these groups together in the co-production of knowledge (Roux et al., 2006; Cook et al., 2013; Reed et al., 2014; Chapman et al., 2015; Cvitanovic et al., 2015b).

While the literature on KE and KMb is advancing, there remain some significant gaps. One of these gaps is our understanding of how potential users perceive and evaluate new knowledge claims — how they judge them to be of greater or lesser quality or utility — which is a key step in their mobilization and use. Most KE/KMb-inspired research assumes that the key challenge is to enhance exposure and exchange between knowledge generators and potential users, but the field has yet to directly investigate how new knowledge is received by heterogeneous audiences who may have different priorities and viewpoints than scientists and other claimants (Amara et al., 2004; Lacey et al., 2015). In this article, we use concepts and insights from the sociology of science to address this problem. One of the strengths of the sociology of science is the explicit link it makes between knowledge and social power (Jasanoff, 2012; Wynne, 2014). In fields such as natural resource management, for instance, claims to knowing can have profound political consequences, particularly if knowledge claims imply that certain policy actions are logical or necessary to address a given problem or challenge (Sarewitz, 2004). Attention to power therefore provides critical context for understanding how different actors evaluate the reliability of (sometimes competing) knowledge claims and the motives and actions of claimants. Our position is that explicit incorporation of concepts from the sociology of science strengthens the KE/KMb research agenda and provides more in-depth explanations of how potential users evaluate new claims.

The sociology of science is a broad field that encompasses several distinct traditions. We focus here on what Sismondo (2008) calls "the engaged program of science and technology studies", which examines relationships between science and society. Research in this area has shown that authorities, citizens, and stakeholders use complex criteria for evaluating knowledge claims and claimants. For instance, sociologists of science have found that evidence is often interpreted through the lens of values, so that experts and research whose conclusions align with one's values and priorities are seen as more credible than those that do not (e.g., Yamamoto, 2012). Sociology of science research also suggests that disagreement about the validity and meaning of evidence is sometimes used as a proxy for conflicts over political interests, in a process Irwin et al. (2012) call "higher order games". Higher order games are common in collaborative and consultative processes, particularly among less powerful groups who may withhold agreement or consensus in order to gain leverage or advance their interests. In turn, authorities often see knowledge claims — particularly scientific and expert claims — as tools for "de-politicizing" social controversies (Boswell, 2009). By appealing to scientific data, knowledge, and expertise, authorities can assert that their practices and decisions are rational and inevitable, rather than politically determined. In most fields of public policy, this approach is widely accepted by the general public as appropriate and beneficial (Leiss, 2001). In the context of controversies and conflicts, however, the rhetorical mobilization of scientific evidence by authorities is less satisfactory, particularly to stakeholders who see it as an infringement on democratic rights and processes (Wynne, 2014). Citizen and stakeholder skepticism of scientific claims is therefore often about how it is *used* by authorities, rather than a rejection or distrust in science or evidence itself (Engdahl and Lidskog, 2014). This is often misunderstood by those same authorities, who fail to see that stakeholders are taking a different view of the appropriate role for scientific evidence in decision-making (Wynne, 2002; Jasanoff, 2012).

In summary, the sociology of science literature suggests that perceptions of knowledge are intertwined with issues of social power, and that this matters for KE/KMb processes and outcomes. In this article, we analyze how potential knowledge users perceive and evaluate new claims to knowing from multiple scientific and non-scientific sources, using the case of contested salmon fisheries in Canada's Fraser River.

2. The case

The Fraser River, which winds 1375 km through the province of British Columbia before meeting the Pacific Ocean near Vancouver, is one of the most productive salmon rivers in the world (Cohen, 2012). Five species of Pacific salmon pass through the river on their way to spawning grounds (sockeye, coho, chum, pink, and Chinook as well as the anadromous rainbow trout known as steelhead). However, annual salmon returns to the river have declined significantly from historic highs (Northcote and Atagi, 1997; Cohen, 2012). Reckless practices during the twentieth century in forestry, mining, damming, and urban development have had a lasting impact on salmon habitat and spawning grounds (Evenden, 2004). Today, old problems are being exacerbated by new threats from climate change, as warming river waters place increased physiological stress on migrating salmon that likely enhances vulnerability to infection and disease (Hinch et al., 2012; Martins et al., 2012).

Three fishing sectors targeting adult migrating Pacific salmon occur in or near the Fraser River: commercial, recreational, and First Nation (indigenous), all with different catch allocations and restrictions. Regulation of these fisheries is complex (see Cohen, 2012), involving both the Canadian Department of Fisheries and Oceans (DFO) and the Canada-US bi-national Pacific Salmon Commission (PSC), which regulates fish populations that migrate across the international border. DFO's first priority is conservation of the fisheries it manages, an obligation that is enshrined in legislation