Chapter XXXIX
Collaboration in the Service of Knowledge Co-Creation for Environmental Outcomes, Science and Public Policy

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ABSTRACT

Environmental sustainability and global climate change issues intensify the need for collaborations between scientists and policymakers. Working in virtual spaces exacerbates many of the challenges inherent in these collaborative efforts. Ideal collaborations promote social learning that delivers integrated knowledge through synergies that develop across institutional, occupational and other boundaries. However, impediments arise when individuals with different specializations and degrees of expertise inhabiting different physical and psychological spaces bring different problem-solving methods and presuppositions. Values affect the potential for synergy and the ultimate products of such collaborations. Addressing social learning challenges among different disciplinary traditions requires identifying and then addressing core differences. Through examining a study of occupational values and resulting behaviors of ocean environmental policy actors, this chapter considers collaborations through theories of discourse, actor involvement, social learning, and policy analytics and offers suggestions to improve knowledge co-creation as a potential aid to these critical issues and processes.

INTRODUCTION

Issues related to environmental sustainability and global climate change often include widely geographically distributed actors in scientific and governmental institutions. Institutional goals and definitions of successful outcomes may vary considerably. In addition, organizations are represented by individuals holding different occupational and personal values, and possess-

ing different degrees and types of technical expertise. Collaboration, particularly through information and knowledge consensus, is suggested as a positive approach to such differences (Dryzek, 1997; Keil & Desfor, 2003; Wondolleck & Yaffee, 2000).

The relationship of science to politics and to policymaking has led to widespread directives for building a democratic knowledge-based society (European Commission Directorate-General for Research, 2006; National Research Council, 2005) by addressing what has been described as a "mutual incomprehension between scientists and decision makers" (Clark, 2007). Such calls for meaningful inclusion of actors at all stages of the scientific and decision making process on multiple scales and across disciplinary boundaries is echoed by the former President of the American Association for the Advancement of Science (AAAS) in a call for sustainability science that is "interdisciplinary, intersectoral and integrative" on a worldwide scale (Holdren, 2007).

However, problems resulting from different standards and values continue to plague these collaborative efforts. Issues mirror the interaction of physical landscape (natural boundaries) and social landscape (economic or political boundaries), impeding implementation of either scientific or social directives in the absence of the other. Boundary issues hinder synergetic collaboration building processes which lead to knowledge co-creation, and are exacerbated by processes that must operate over geographic distances. Success depends upon factors including agreements on definitions of success, power, cultural influences, and professional norms as well as managing the unintended consequences of electronic collaboration. Even time zone differences exacerbate the difficulties, highlighting power differentials; virtual meetings are often scheduled for the convenience of the more influential partners. Internationally distributed teams are becoming more common with the recognition that environmental policy is global as well as national and local.

While knowledge co-creation literature spans education, business, electronic and distributive learning, information technology, and even psychology, it is a relative newcomer to natural resources/sustainability/climate change discussions. There, occupational cultures prefer scientific methods that encourage experts' directions and translating science to lay audiences and policy makers. With increased pressure for "inclusion," learning and decision processes have shifted towards knowledge co-creation among experts and even to community inclusion of impacted stakeholders. One such attempt is the European Commission's 5th Framework Programme's Social Learning for Integrated Management (SLIM) project (European Commission - DG Research, 2004). SLIM explores socio-economic aspects of the sustainable water use, focusing on understanding the application of social learning as a conceptual framework, an operational principle, a policy instrument and a process of systemic change. One SLIM participant explicitly states that a distinguishing characteristics of the process is the "co-creation of knowledge needed to understand issues and practices" (Blackmore, 2007, p. 516). The project's targeted outcomes of changed behaviors, norms, and procedures originate in shared actions and interpretations from knowledge co-creation's processes and outputs.

Despite such efforts, many environmental decisions emerge from scientific experts rather than as an emergent property of collaboration. The mandate for decisions based on "sound science" is frequently codified into law and rules. However, knowledge co-creation is appropriate when no single party has the answer to a complex problem (Dawson, 2000, p.171), or when multiple perspectives and multiple investigative methods are required. Applying social learning knowledge to policy and scientific expert processes requires looking at the intersection of theories and methods in new ways. Many human dimensions studies borrow from cybernetics a preference for coupled dualities over polarized ones (Maturana & Va-