

The Value of Practice-Based Knowledge

EDWARD P. WEBER

School of Public Policy, Political Science Program,
Oregon State University, Corvallis, Oregon, USA

JILL M. BELSKY

Department of Society and Conservation, University of Montana,
Missoula, Montana, USA

DENISE LACH

School of Public Policy, Sociology Program, Oregon State University,
Corvallis, Oregon, USA

ANTONY S. CHENG

Department of Forest & Rangeland Stewardship, Colorado State
University, Fort Collins, Colorado, USA

Increasing recognition of the value of practice-based or experiential knowledge in natural resource management justifies the creation of a new category of articles in Society & Natural Resources that we are calling Practice-Based Knowledge (PBK). The rationale for focusing on PBK is due to its key role in the emergence of hybrid governance institutions across state, market, and civil society, understanding the complexity of dynamic socioecological systems, recognizing the challenges of multiple knowledge systems and context-specific practices, embracing the power of informal institutions and civic science, and engaging debates on the growing prevalence of market-oriented conservation. The goal is to provide a dedicated space within the published, peer-reviewed literature for scholars, government officials, nonprofit managers, and engaged citizens to share experiences informed by practical action. Relevant and timely practice-based insights may improve understanding and management of social and ecological processes and systems, while also offering the potential to contribute to theory.

Keywords civic science, collaboration, experiential knowledge, local knowledge, participatory research, socioecological systems

The growing importance of practice-based knowledge and partnerships in natural resource management justifies the creation of a new category of distinctive articles in *Society & Natural Resources* (SNR) called “Practice-Based Knowledge.” Here

Received 1 October 2013; accepted 23 April 2014.

Address correspondence to Edward P. Weber, School of Public Policy, Oregon State University, 306 Gilkey Hall, Corvallis, OR 97331-6206, USA. E-mail: edward.weber@oregonstate.edu

we provide background on the value of practice-based, experiential knowledge. The articles to be published in this category offer an opportunity for academic scholars, government decision makers, practitioners in civil society organizations, and engaged citizens to share experiences and insights from knowledge they gain through practical action. Innovations and experiences from the everyday world often outpace research. Providing relevant and timely practice-based insights can improve our understanding and management of dynamic social and ecological systems while offering the potential to contribute to theory. We also appreciate that the requirements for peer review in research journals such as *SNR* will need to be revised to evaluate and include highly practice-oriented works. We look forward to the challenge of doing so in order to create a space within our journal for more multiple forms of knowledge.

We do not view articles published in the Practice-Based Knowledge category as a substitute for other forms of scientific inquiry. Given the primary focus of *SNR* as an outlet for scholarly research, we envision this new type of articles to complement general research findings (and other types of articles) by providing perspectives from communities of practice as to how they examine and negotiate the interplay between society and natural resources, many of which may challenge the way academics think about the world, the way we produce and share knowledge, and what the world counts as “legitimate” knowledge (Wenger 1998). Given this, we expect to publish articles both from scholars and experienced practitioners, including involved citizens and community leaders, with rich insights into the patterns, factors, and relationships affecting the success or lack of success in their natural resource institutions, agencies, policies, norms, and management practices. These articles also will be a way to share case studies and guides for problem solving to, and from, practice-based professionals, leaders, and people involved in the day-to-day management of natural resources and the communities integrally connected to them. At the same time, we envision that they will offer a rich, new source of practice-based data and questions that may assist scholars refine existing theories and create new ones.

Finally, while we make distinctions between experiential experts and the professional, credentialed, and/or academic expertise (e.g., scientists, lawyers, engineers, etc.) more commonly privileged in natural resources and other public policy decision making over the past 150 years, we do so recognizing there is often considerable overlap between what is considered indigenous knowledge and what is considered scientific knowledge. Many practitioners possess advanced degrees or considerable technical training, and credentialed experts themselves have personal experiences that inform their academic training and research, the latter especially through involvement in participatory types of research. Our primary interest is to honor multiple forms of knowledge and learning emanating from on-the-ground action and problem solving, and to provide a space in this journal for sharing their lessons. Key examples of such practitioners include agency researchers and managers, land managers, and community members who have been participating (often together) in complex natural-resources-based management efforts. As Williams (2013), taking from Fischer (2000), Flyvbjerg (2001), and Scott (1998), notes:

We could do more to integrate and profit from the practical and informal knowledge that exists among both occupants/users of places and emplaced professional practitioners. (27)

Why Practice-Based Knowledge?

The idea for a new category of articles on Practice-Based Knowledge stems from the changing realities of natural resource governance institutions, key trends in social science scholarship, and our desire to share how these are playing out around the world. Chief among these developments are:

- The emergence of hybrid governance institutions across state, market, and civil society actors.
- The recognition of the complex dynamics of socioecological systems.
- The challenge of multiple knowledge systems and practices.
- The power of informal institutions.
- The legitimation of civic science.
- The prevalence of market-oriented conservation.

The Emergence of Hybrid Governance Institutions

Over the past several decades there has been great transformation in the form and manner of institutions employed to govern and resolve environmental and natural resources problems around the world (Agrawal and Gibson 2001; Gibson, McKean, and Ostrom 2000; Pretty 2003). Hybrid governance institutions, which often cut across state, market, and civil society actors, are becoming central to environmental policy and are likely to continue for decades to come. Some examples include collaboratives and networks, devolved property rights, community-based organizations, market-oriented approaches, voluntary environmentalism, shared information and other measures, or innovations in the science–policy interface (Dietz and Stern 2009; Fiorino 2006; Kraft, Stephan, and Abel 2011; Weber 1998).

Many of these approaches strive for greater citizen participation, increased collaborative decision making, more decentralization, and a shared commitment to an interconnected, multipronged mission of healthy environments, economies, and communities (Weber 2003; Ansell and Gash 2007). Going by various labels, including, but not limited to, civic environmentalism, grass-roots ecosystem management (Weber 2003), community-based conservation (Western and Wright 1994), cooperative conservation (Ash Institute 2006; U.S. Forest Service [USFS] 2005), collaborative watershed management (Sabatier et al. 2005), collaborative environmental management (Koontz, Steelman, Carmin, Korfmacher, Moseley, and Thomas 2004), and sustainable communities (Mazmanian and Kraft 2009), these diverse governance arrangements have rapidly expanded in the United States, Canada, Australia, New Zealand, India, Kenya, and dozens of other countries in the developing world (Pretty 2003). Other efforts that fit under this broader hybrid governance umbrella include local food systems/foodshed movements (Starr 2010), sustainable rural economic development (Audirac 1997; Shepherd 1998), and civic science (Clark and Illman 2001; Kruger and Shannon 2000; McNie 2007).

The rationale for devolved models of governance includes appreciation that knowledge available for, and integral to, these institutions is necessarily context dependent or place based (Kruger and Shannon 2000; Williams 2013, 24–25), an approach addressed in the journal previously (e.g., Lejano, Ingram, Whiteley, Torres, and Agduma 2007). Furthermore, that concepts and institutions related to devolution and local knowledge, including community-based conservation programs, raise deeply political challenges and dilemmas; these concerns were first raised in one of

the journal's most highly cited and downloaded articles (Brosius, Tsing, and Zerner 1998). What constitutes local knowledge and for whom it serves remain highly contentious, as does the capacity of hybrid governance institutions to challenge dominant governance regimes and push forward possibilities under which different perspectives and practices can be communicated, vetted, implemented, and institutionalized (Agrawal 2005; Weber and Khademian 2008). It is particularly challenging to do this under conditions of rapid and uncertain social and environmental change and inequality.

The Complex Dynamics of Socioecological Systems

There is a growing recognition that natural resources users and managers find themselves facing complex conditions and “wicked” management predicaments requiring different perspectives, including those with firsthand experience over multigenerational time scales. The added complexity of uncertainty brought on by climate change and global social–economic integration also challenges disciplinary-based scientists working within paradigms developed under vastly different assumptions and time scales (e.g., see Funtowicz and Ravetz [1991] for their discussion of post-normal science). As such, there is hope that more systemic and transdisciplinary approaches to problem solving can offer more relevant insights into socioecological system change (Holling and Walters 1990), especially with recent social science contributions to resilience and other types of multiscaled dynamic thinking (Berkes and Ross 2013; Cote and Nightingale 2012).

Participatory and ecologically informed governance arrangements are also becoming more widespread, and importantly benefit from the involvement of non-scientists. For example, beginning in the mid-1990s, salmonid species of the Pacific Northwest were in serious decline with an Endangered Species Act (ESA) listing on the horizon. In the Pacific Northwest, protecting or restoring salmon habitat would affect all types of landowners from private to federal, activities from agriculture to power generation, and streams from the mighty Columbia to the backyard brook. Practices and land uses would need to be changed, potentially in drastic ways, including removing dams that blocked migration routes, resettling human activities away from riparian areas, and reducing the amount of water available for irrigation or other uses. This was a classic wicked problem requiring both coordination and collaboration between top-down direction and grass-roots local action (e.g., Lackey, Lach, and Duncan 2002). The creation of the Oregon Watershed Enhancement Board (OWEB) instituted a set of local and voluntary watershed councils, each empowered and budgeted to take on the place-specific restoration of their local streams. To date, more than 100 watershed councils have been created in Oregon, hundreds of millions of dollars invested in stream restoration, and a capacity for collaborative decision making created—all to address the wicked problem of salmon restoration. Assessing their ultimate achievement will require insights from both scientists and citizens.

Finally, the complexity and dynamic character of social and ecological systems today means that the only thing certain is change itself, making adaptive learning and management critical. Defining the latter is of course fraught with difficulties. Even if such processes can be sufficiently defined and result in action, unforeseen consequences and issues will inevitably emerge. Rebuilding broken urban neighborhoods, reforming public education, (re)creating and maintaining environmentally

sustainable communities, addressing non-point source pollution (e.g., urban stormwater runoff), and pursuing ecosystem and watershed management are just some examples of problems facing socioecological systems, problems that are difficult to define, cut across vertical and horizontal jurisdictions, involve multiple stakeholders, and require trade-offs (Weber and Khademian 2008). And, as with all processes related to the interaction of society and natural resources, what constitutes an adaptation or improvement demands specification as to whose views and interests in society are ultimately addressed (Neumann 2005).

Climate change has been called the “super wicked problem” with which global institutions and societies have to grapple (Levin et al. 2012). With recognition that mitigation efforts alone are unlikely to ameliorate the impact of climate change, at least in the relatively near term (i.e., the next 20–30 years), many governments and individuals have turned to adaptation planning (e.g., Pelling 2010). In an introduction to their book, Leary et al. (2008, 1) describe how a complex and wicked problem creates positive feedbacks that exacerbate hazards, suggesting that “the physical and social processes of change have a momentum that will continue for decades and well beyond.” The world continues to emit greenhouse gasses, unsustainably harvest natural and mineral resources, and become increasingly more unequal with regard to who benefits or not from these practices. There remains no effective venue or capacity for addressing these issues, especially on a global scale, a venue or capacity that offers mechanisms for changing behaviors as individuals, communities, corporations, and countries, and doing so in ways that are fair and just. We envision that Practice-Based Knowledge articles published in *SNR* will share insights from diverse groups of people working from their own experience in crafting context-specific rules, institutions, decision processes and tools, and cultural/professional norms that address these challenges.

The Multiple Knowledges Challenge

Technocratic approaches to development and resource management no longer garner the hope they did in the past. Uncertainty is to be expected, undercutting belief in the superiority of “rational” management practices oriented to prediction and control, and centered on commodity production above all other possible values and concerns. As such, the “formal schemes of order” favored by bureaucratic experts, grounded as they are in scientific management and imposed from above, need local experiential knowledge of the type not easily reduced to deductive principles and grounded in the context of specific places and people; they “are untenable without some elements of the practical knowledge that they tend to miss” and have led to tragic consequences, as described in Scott (1998, 7). The possibility that good decisions need both expert knowledge and practical knowledge defends the push for more collaborative research, and for respect for knowledge derived from experience, and argues for attention to a wider range of concerns beyond commodity production and profit.

Commanding a higher regard for knowledge produced through practical action and by noncredentialed specialists necessitates acknowledging how knowledge production, verification, and use are highly political processes. In these pages we hope to create a visible and regularly offered space where experiential knowledge is respected but can also be debated, including what constitutes such knowledge, whose knowledge matters, and how it may be used. Examples of highly reflective cases of co-produced knowledge are increasingly available (Fortmann 2008), offering

recommendations for positive change that center on professional resource managers rather than on local collectors and users (Ballard and Belsky 2010). As such, local, practical knowledge can provide alternative, competing explanations and interpretations reserved in the past only for assessment by “technical experts.” Two examples illustrate how practice-based knowledge can temper and even provide decision outcomes that take better account of biophysical processes and patterns. The first case involves the immediate aftermath of the 1989 *Exxon Valdez* disaster in Alaska. Regulators’ and Exxon’s computer models of ocean currents predicted limited damage despite the massive size of the spill because currents would flush the oil out of Prince William Sound’s rich fishing grounds relatively quickly. But fishers knew better. For the sake of their livelihoods,

they made it their business to know which way currents run in the Sound, and which way eddies pool around the islands . . . The currents, the fishermen maintained, would force the oil to move in a counter-clockwise swath around the western edge of the Sound . . . [and] threaten to oil the bays where most of the hatcheries were located. [This led Alaska’s] Department of Environmental Conservation to comment that . . . when the fishermen and a computer model disagreed on where the spill was going, the fishermen turned out to be right. (Day 2014, 78–79)

Debates over tropical forest management and especially sources of degradation have also tended to pit scientists and government leaders against local accounts, including the rationale for modern silviculture and parks and protected areas as remedies to indigenous practices (Neumann 2005; Western and Wright, 1994). Historic livelihoods and land uses, and the rich centuries-long practice-based knowledge on which they are based, are conveniently ignored and dismantled to enable their displacement and elite commercial capture (Dove 1983), as well as implementation of plans and programs by scientific “experts,” including conservationists in the employ of the state or international nongovernmental organizations (NGOs) (Peluso 1993). However, research that also takes account of tropical residents’ points of views has strongly challenged the accuracy of elite representations of their ecological history and conditions. For example, Fairhead and Leach (1996) convincingly upend entrenched assumptions of state officials and scientists in the case of Guinea to show how villagers over multiple generations converted savannah into healthy, growing forests despite ineffective, science-based policies imposed by European powers. Attention to everyday encounters and especially local understandings of landscape change and history were key to revealing the inaccuracies as well as politics associated with the persistence of dominant deforestation discourse. While such critical reassessments are increasingly shared among and for critical social scientists, our hope is that they can be shared in *SNR*’s new Practice-Based Knowledge category of articles, and be accessible to a broader range of readers and resource managers.

Influence of Informal Institutions

Whether it is Ostrom’s (1990) classic governance without government in weak state societies, or governance with government in societies with stronger government institutions, informal institutions play an important role in the intersection of society and natural resources. Communities and groups of interdependent actors can and often

do succeed in governing without governments in the conventional sense (Ellickson 1991; North 1990; Young 1996, 247). Put differently, politically significant, yet informal, social institutions can be (and are) effective at “resolv[ing] social conflicts, promot[ing] sustained cooperation in mixed-motive relationships, and, more generally, alleviat[ing] collective-action problems in a world of interdependent actors” (Young 1997, 4). Such arrangements are also capable of enhancing monitoring and enforcement capabilities (Ostrom and Schlager 1996). The broad message is that formal government institutions are not always necessary and are certainly not the only means for achieving policy effectiveness and accountability because, in some cases, group norms and other cultural mores have functioned extremely well. However, there also needs to be awareness of the potential vulnerability of informal arrangements such as for politically insecure groups in contexts of asymmetries of power; under these conditions there may a strong rationale for formalizing governance arrangements (Cerutti and Putzel 2013).

The experience of informal institutions demonstrates that many of the elements crucial to successful public problem solving and governance are not reducible to formulaic prescriptions, scientific or otherwise (Daniels and Walker 2001; Weber 2003; Belsky 2008; Donoghue and Sturtevant 2008). As Jack Shipley, longtime co-leader of the Applegate Partnership in southern Oregon, reports:

I am afraid that social scientists will come into our communities and, after studying us, and what we do, think they have it all figured out. Then they will publish a formula or roadmap that says here is how it’s done and this is how everyone should do it. But that won’t work because every one of these community collaboratives is different. They’re in different communities with different people and different relationships and different kinds of problems and different kinds of connections between the problems. (Personal interview 1998)

Gladwin Joseph, from the Ashoka Trust for Research in Ecology and the Environment (ATREE), in India, agrees that

what works for one community in achieving sustainability may be entirely different from the community over the hill. We have to learn how to listen to the people in the communities if we are ever going to figure community-based conservation out. (Personal interview 2012)

The two quotations capture the importance of self-organizing human systems and their concomitant informal social institutions (e.g., norms) and cultural customs in community-based problem solving settings (North 1990). They also suggest that practice-oriented participants are well placed to observe, analyze, report, and demystify the informal social, political, and community dynamics central to problem-solving success/not success since they are living it every day (Schusler, Decker, and Pfeffer 2003). But of course, they are also positioned within their own contexts, and their observations and concerns may reflect this as well. Hence the value of critical self-reflection, transparency, and rigorous review of articles submitted to Practice-Based Knowledge.

We acknowledge that lessons suggested from place-based practice reflect the experience of particular people in distinct places, and are not generalizable across

communities. Nonetheless, we suggest that their lessons may resonate with others in other places. Part of our rationale is that participants and especially leaders of place-based efforts serve as “translators” of knowledge applicable to their situations, which they help turn into on-the-ground practices (Gootee et al. 2010). Such practitioners are likely to offer perspectives on key literature as well as their own experiences different from those of “ivory-tower,” theory-driven scientists, academics, or government regulators/experts, who often have little or no on-the-ground experience of problem solving in business, agriculture, logging, ranching, or specific community settings and contexts. Furthermore, as practitioners they are likely to share in the search for problem-solving solutions and innovations, but also to exert caution in their undertakings since they must live directly with the consequence of their decisions and decision-making processes. Those embedded in informal and practical action enjoy a considerable information asymmetry advantage over academics and government officials, much like that enjoyed by bureaucracies vis-à-vis Congressional lawmakers, or businesses vis-à-vis consumers (see Niskanen 1971).

The Emergence of Civic Science

Articles published in the new Practice-Based Knowledge category are likely to reflect on experiences with citizen or civic science. Civic science refers to “efforts on the part of scientists to articulate and illuminate science content in the context of social issues” (Clark and Illman 2001, 18; Feldman et al. 2006; Lane 1999; Pielke 2007; Pielke and Sarewitz 2005). As such, civic science can involve citizen volunteers collecting data according to scientists’ questions and methods or, more generally, public participation in scientific research (Shirk et al. 2012). However, civic science can also include other form of participation such as involving multidirectional and iterative flows of information among scientists, policymakers, citizens, and others for the purpose of designing, reconciling, and better managing the supply, demand, and use of scientific information in the policy process (Dietz and Stern 2009; McNie 2007; Schmandt 1998).

A good example of where a civic science approach can add value is found in Allen’s *Uneasy Alchemy* (2003). She examines environmental justice issues in Louisiana’s chemical corridor and describes cases in which local knowledge was able to capture important patterns and incidences of illness that were not able to be captured by standard scientific techniques, for a combination of reasons including access and the lack of trust between scientists and citizens. The main point here is that formal science can often contribute to environmental injustices by claiming to be the authoritative voice on an issue while remaining blind to its own biases and limitations. And while civic science might not guarantee more equitable outcomes, it provides an avenue for bringing minority viewpoints, hidden or occluded stories, and patterns into view.

Civic science has also affected how communities and natural resource managers have come to understand and practice ecological restoration on national forest lands in the United States. On the Uncompahgre Plateau in western Colorado, attention focused on a need for ecological restoration: a decline of mule deer herds due to lack of available forage resulting from a high-intensity forest fire that scorched nearly 31,000 acres (Burn Canyon fire), much of it mule deer habitat. This motivated natural resource managers, resource users, conservation advocates, and community residents to collectively recognize that the plateau was on the verge of crossing an ecological threshold with potentially irreversible effects in the face of future disturbances, and

to develop a community-based collaborative of learning and dialogue around federal land management known as the Public Lands Partnership (PLP). The PLP provided the seedbed for meaningful citizen engagement in co-producing knowledge for natural resource management on the plateau (Colorado Forest Restoration Institute [CFRI] 2008; Cheng 2006; Taylor and Cheng 2012).

The Prevalence of Market-Oriented Conservation

Another arena for practice-based knowledge relates to what is increasingly referred to in the policy and academic literatures as market-oriented or “neoliberal” conservation (Igoe and Brockington 2007; Dressler and Buscher 2008; Brockington and Duffy 2010; Arsel and Buscher 2012). In market-oriented conservation approaches, environmental problems are viewed as market failures and market dynamics and economic rationales are employed to promote conservation. In today’s context, market-oriented conservation reflects the logic of neoliberalism, the economic political philosophy and practice that emphasize the role of markets to determine appropriate resource use and that rejects regulation and government intervention (Heynen et al. 2007). Market-oriented conservation has become popular especially since the 1980s, with the move from recognizing and addressing negative externalities (i.e., making polluters pay) to offering positive externalities (i.e., paying for desired ecosystem services).

For advocates of market-oriented conservation, nature protection based on philosophical and scientific arguments has been insufficient to motivate behavioral and structural change, particularly because of the financial costs or loss of potential revenue generation (e.g., for corporate profit or local jobs). In creating markets where environmental “goods and bads” have clear financial values, and can be bought and sold like any other commodities, the logic is that nature protection occurs while also expanding human well-being and profit; that is, capitalist economic growth and nature protection can be mutually reinforcing (Buscher et al. 2012). Another rationale is that large geographic scales involving many interstate transboundaries create difficulties for implementing conventional state-led (“command and control”) conservation, especially in the absence of an international authority with capacity to enforce them (Muradian and Gomez-Baggethun 2013). Market-oriented instruments are further argued to be more cost-effective compared to other approaches such as integrated conservation and development projects (Pattanayak et al. 2010).

Some of the most prevalent market-oriented conservation approaches include payments for ecosystem (and cultural) services, carbon permits and trading projects, certification schemes, ecotourism, biodiversity and habitat offsets, taxes and subsidies, and wetland/grassland banking. Payments for ecosystem services are perhaps the most well known and are receiving considerable analytical attention. Conniff (2012) highlights the following two examples as early successes with such schemes. Recognizing that its aquifer in northern France was being polluted by nitrate fertilizers and pesticides from nearby farms, Vittel-Nestlé Waters implemented a scheme to pay farmers to change their methods and deliver the ecosystem service of clean water. Beijing, China, undertook a similar scheme in the catchment around one its reservoirs before the 2008 Olympics; this approach apparently worked better than previous attempts using antigrowth regulations and resettlements.

Another form of payment for ecological services that is receiving growing and more critical attention is the U.N. Reducing Emissions from Deforestation

and Forest Degradation or REDD. These programs were institutionalized under the Kyoto Protocol and consolidated in the Millennium Ecosystem Assessment and have been pushed and negotiated in substantive ways by NGOs around the world. They are aimed at forest preservation and are financed by wealthy countries to compensate for failing to meet their own greenhouse gas emission targets. However, studies are revealing considerable problems associated with REDD-type programs, for example, that the assignation of market value to previously “unvalued” resources pushed in REDD-type programs strip away and transfer rights of access to resources from local users to states, NGOs, corporations, and other entities, deepening modern capitalism and agrarian differentiation, which does not benefit rural resource producers (Dressler et al. 2013; Igoe and Brockington 2007). The threat that REDD schemes pose to forest users with informal tenure has been a major sticking point among indigenous and peasant rights activists and forest communities. In addition, REDD programs also continue to suffer from “additionality” (activities and reductions might have occurred anyway) and “leakage” (reduced emissions in a project area might actually increase emissions outside the project area), as well as from issues of “permanence” (carbon conserved today could be released in the future) (Angelsen 2008).

In line with the objective of the new Practice-Based Knowledge category, recent studies of market-oriented conservation are beginning to be informed from the actual experience of how they play out in particular places and at particular times (Roth and Dressler 2012). For example, promoting commoditization has been an ongoing project with the spread of capitalism, and, as noted earlier, REDD-type programs deepen this value in the Global South. However, how particular market-oriented strategies operate and for whom they serve is place and context specific. New conservation-oriented markets served the interests of local landowners in Australia (Higgins et al. 2012). Similarly, in Montana, rural landowners concerned about protecting working forest landscapes to be divested by a corporate timber company were able to develop a partnership with government and nongovernmental leaders and acquire former corporate timber lands, maintain them as forests, and avoid loss of public access and landscape fragmentation that would have resulted if they were subdivided and converted to private recreational property (Belsky 2014). However, both in the Montana example and in Bhutan’s community forestry program, also included in the latter study, “market” strategies involved numerous combinations of public–private actors, resources, hybrid institutions, and safeguards against unregulated market activity (Belsky 2014). That so many “market-based instruments” involve hybrid forms of governance suggests the complexity of the classification and need for more context-specific studies (Driessen 1998; Muradian and Gomez-Baggethun 2013), including insights from people directly involved in their practice on the ground.

Submission Requirements

SNR’s new Practice-Based Knowledge category of articles is about practitioners and academics working alone or together to share lessons learned from actual on-the-ground experiences. The hallmark of manuscripts submitted to this category is that they arise from experiential or place-based knowledge, rather than from conventional scientific research. We cannot overemphasize this difference.

The criteria for evaluating these articles then are different from those used for other article categories, especially for general research articles. Rather than attempting to “prove” a hypothesis or develop a new theory, articles submitted for publication in

the Practice-Based Knowledge category should offer insights grounded in their particular places and actions. They should clearly explain the context and arrangements under which the work was conducted, including how the authors were personally involved and/or positioned within the work. Authors need to be very explicit regarding what constitutes the “data” or evidence for lessons and conclusions drawn. They should also include how the information was vetted or shared among participants, or not, including measures taken to ensure that the material accurately represents what the author claims people think and say. Careful attention should be given to respecting prior agreements with those involved in the effort, especially regarding conditions of anonymity and/or confidentiality. We strongly advise that these topics be discussed among those included in or potentially affected by material included in the article and that their concerns be carefully respected. We especially encourage submissions that reflect on why decisions, approaches to problem solving, practices, ideas, trade-offs, and so on worked or did not work and according to whom, and on lessons that may be useful to people in other communities facing similar situations and/or problems.

- Topics to be addressed can include, but are not limited to, *commentary/review* from participants in practice-based projects; *theoretical essays* extending thinking about practice-based research and participation; and *methodological discussions* focusing on innovations in collecting and analyzing data from ongoing initiatives. Commentary/review submissions are welcome for both successful and challenging efforts from both scholars and experienced practitioners, including involved citizens and community leaders, with rich insights into the patterns, factors, and relationships affecting the success/not success in their communities of natural resource institutions, agencies, policies, norms, and management practices.
- Articles should be no longer than 5000 words, include a short abstract (500 words or less), and should provide information that allows readers to follow up on references. This might include not just scientific journal articles, but also newspaper articles and websites that include meeting agendas and notes, project reports, and so on. Citations of information sources should be consistent and follow the existing style format for *SNR*.
- Articles will be subject to peer review (i.e., others involved in and familiar with practice-based knowledge) and, as with all submissions to *SNR*, will be subject to editing suggestions from reviewers and the journal’s editors.

We look forward to your submissions to our new Practice-Based Knowledge category of articles.

References

- Agrawal, A. 2005. *Environmentality: Technologies of government and the making of subjects*. Durham, NC: Duke University Press.
- Agrawal, A., and C. Gibson. 2001. Introduction: The role of community in natural resource conservation. In *Communities and the environment*, ed. A. Agrawal and C. Gibson, 1–31. New Brunswick, NJ: Rutgers University Press.
- Allen, B. L. 2003. *Uneasy alchemy: Citizens and experts in Louisiana’s chemical corridor disputes*. Cambridge, MA: MIT Press.
- Angelsen, A., ed. 2008. *Moving ahead with REDD: Issues, options and implications*. Bogor, Indonesia: Center for International Forestry.

- Ansell, C., and A. Gash. 2007. Collaborative governance in theory and practice. *J. Publ. Adm. Res. Theor.* 18(4):543–571.
- Arsel, M., and B. Buscher. 2012. NatureTM Inc: Changes and continuities in neoliberal conservation and environmental markets. *Dev. Change* 43(1):53–78.
- Ash Institute. 2006. *Innovations in American government: Site report, Montana Partners for Fish and Wildlife*. July. Cambridge, MA: Harvard University.
- Audirac, Y. (Ed.). 1997. *Rural sustainable development in America*. New York: John Wiley and Sons.
- Ballard, H., and J. M. Belsky. 2010. Participatory action research and social–environmental learning: Implications for building resilience in communities and forests. *Environ. Educ. Res.* 16:611–627.
- Belsky, J. M. 2008. Creating community forests. In *Forest community connections: Implications for research, management and governance*, ed. E. M. Donoghue and V. M. Sturtevant, 219–242. Washington, DC: RFF Press.
- Belsky, J. M. 2014. *Community forestry in Bhutan and Montana: Comparative engagements with market-oriented conservation*. (Manuscript under review.)
- Berkes, F., and H. Ross. 2013. Community resilience: Toward an integrated approach. *Society Nat. Resources* 26:5–20.
- Brockington, D., and R. Duffy. 2010. Capitalism and conservation: The production and reproduction of biodiversity conservation. *Antipode* 42(3):469–482.
- Brosius, J. P., A. L. Tsing, and C. Zerner. 1998. Representing communities: Histories and politics of community-based natural resource management. *Society Nat. Resources* 11:157–168.
- Buscher, B., S. Sullivan, K. Neves, J. Igoe, and D. Brockington. 2012. Towards a consolidated critique of neoliberal biodiversity conservation. *Capitalism Nat. Socialism* 23(2):4–30.
- Cerutti, P. O., and L. Putzel. 2013. Panel on formalisation of access and trade in land and natural resources: Inter-sectoral lesson sharing from and for forestry, mining, fisheries, and land tenure. Annual Meeting of the International Association for the Study of the Commons (IASC) conference, Mt. Fuji, Japan, June.
- Cheng, A. S. 2006. Build it and they will come? Mandating collaboration in public lands policy and management. *Nat. Resources J.* 46:841–858.
- Clark, F., and D. H. Illman. 2001. Dimensions of civic science: Introductory essay. *Sci. Commun.* 23(1):5–27.
- Colorado Forest Restoration Institute. 2008. *Historical forest structure on the Uncompahgre Plateau: Informing restoration prescriptions for mountainside stewardship*. Fort Collins, CO: Colorado Forest Restoration Institute, Colorado State University. http://coloradoforestrestoration.org/CFRIpdfs/2008_UncMesas_HistoricForestStructure.pdf
- Conniff, R. 2012. What's wrong with putting a price on nature? *Guardian Environment Network*. www.guardian.co.uk/environment/2012/oct/18/what-wrong-price-on-nature (accessed 14 January 2013).
- Cote, M., and A. J. Nightingale. 2012. Resilience thinking meets social theory: Situating social change in socio-ecological systems (SES) research. *Prog. Hum. Geogr.* 36(4):475–489.
- Daniels, S. A., and G. Walker. 2012. Lessons from the trenches: Twenty years of using systems thinking in natural resource conflict situations. *Systems Res. Behav. Sci.* 29:104–115.
- Day, A. 2014. *Red light to starboard: Recalling the Exxon Valdez disaster*. Pullman, WA: Washington State University Press.
- Dietz, T., and P. C. Stern. 2009. *Public participation in environmental assessment and decision making*. Washington DC: National Academies Press.
- Donoghue, E. M., and V. M. Sturtevant 2008. *Forest community connections: Implications for research, management and governance*. Washington, DC: RFF Press.
- Dove, M. 1983. Theories of swidden agriculture and the political economy of ignorance. *Agrofor. Systems* 1:85–99.

- Dressler, W. H., and B. Buscher. 2008. Market triumphalism and the so-called CBNRM “crisis” at the South African Section of the Great Limpopo Transfrontier Park. *Geoforum* 39(1):452–465.
- Dressler, W. H., P. Xuan To, and S. Mahanty. 2013. How biodiversity conservation policy accelerates agrarian differentiation: The account of an upland village in Vietnam. *Conserv. Society* 11(2):130–143.
- Driessen, D. 1998. Is emissions trading an economic incentive program? Replacing the command and control/economic incentive dichotomy. *Washington Lee Law Rev.* 55: 290–349.
- Ellickson, R. 1991. *Order without law*. Cambridge, MA: Harvard University Press.
- Fairhead, J., and M. Leach. 1996. *Misreading the African landscape: Society and ecology in the forest–savanna mosaic*. Cambridge, UK: Cambridge University Press.
- Feldman, M. S., A. M. Khademian, H. Ingram, and A. S. Schneider. 2006. Ways of knowing and inclusive management practices. *Public Admin. Rev.* 66(1):89–99.
- Fiorino, D. J. 2006. *The new environmental regulation*. Cambridge, MA: MIT Press.
- Fischer, F. 2000. *Citizens, experts and the environment: The politics of local knowledge*. Durham, NC: Duke University Press.
- Flyvbjerg, B. 2001. *Making social science matter: Why social inquiry fails and how it can succeed again*. New York, NY: Cambridge University Press.
- Fortmann, L., ed. 2008. *Participatory research in conservation and rural livelihoods: Doing science together*. Oxford, UK: Blackwell.
- Funtowicz, S. O., and J. R. Ravetz. 1991. A new scientific methodology for global environmental issues. In *Ecological economics: The science and management of sustainability*, ed. R. Costanza, 137–152. New York: Columbia University Press.
- Gibson, C. C., M. A. McKean, and E. Ostrom, eds. 2000. *People and forests: Communities, institutions, and governance*. Cambridge, MA: MIT Press.
- Gootee, R., K. Blatner, M. Carroll, D. Baumgartner, and E. P. Weber. 2010. Choosing what to believe about forests. *Small-Scale Forestry* 10(2):137–152.
- Heynen, N., J. McCarthy, S. Prudham, and P. Robbins, eds. 2007. *Neoliberal environments: false promises and unnatural consequences*. New York: Routledge.
- Higgins, V., J. Dibden, and C. Cocklin. 2012. Market instruments and the neoliberalisation of land management in rural Australia. *Geoforum* 43:377–386.
- Holling, C. S., and C. J. Walters. 1990. Large-scale management experiments and learning by doing. *Ecology* 71(6):2060–2068.
- Igoe, J., and D. Brockington. 2007. Neoliberal conservation: A brief introduction. *Conserv. Society* 5(4):432–449.
- Koontz, T. M., T. A. Steelman, J. Carmin, K. S. Korfmacher, C. Moseley, and C. W. Thomas. 2004. *Collaborative environmental management: What roles for government?* Washington, DC: Resources for the Future Press.
- Kraft, M. E., M. Stephan, and T. D. Abel. 2011. *Coming clean: Information disclosure and environmental performance*. Cambridge, MA: MIT Press.
- Kruger, L. E., and M. A. Shannon. 2000. Getting to know ourselves and our places through participatory civic social assessment. *Society Nat. Resources* 13:461–478.
- Lackey, R., D. Lach, and S. Duncan. 2002. *Salmon 2100: The future of wild Pacific salmon*. Bethesda, MD: American Fisheries Society.
- Lane, N. 1999. The civic scientist and science policy. In *AAAS science and technology policy yearbook*. <http://www.aaas.org/spp/yearbook/chap22.htm>
- Leary, N., J. Adejuiown, V. Barros, I. Burton, J. Kulkarni, and R. Lasco. 2008. *Climate change and adaptation*. London: EarthScan.
- Lejano, R. P., H. M. Ingram, J. M. Whiteley, D. Torres, and S. J. Agduma. 2007. The importance of context: Integrating resource conservation with local institutions. *Society Nat. Resources* 20:177–185.

- Levin, K., B. Cashore, S. Bernstein, and G. Auld. 2012. Overcoming the tragedy of super wicked problems: Constraining our future selves to ameliorate global climate change. *Policy Sci.* 45:123–152.
- Mazmanian, D., and M. Kraft. 2009. *Toward sustainable communities*. Cambridge, MA: MIT Press.
- McNie, E. 2007. Reconciling the supply of scientific information with user demands: An analysis of the problem and review of the literature. *Environ. Sci. Policy* 10:17–38.
- Muradian, R., and E. Gomez-Baggethun. 2013. Introduction: The institutional dimension of market-based instruments for governing ecosystem services. *Society Nat. Resources* 26:1113–1121.
- Neumann, R. P. 2005. *Making political ecology*. London: Hodder Arnold Press.
- Niskanen, W. A. 1971. *Bureaucracy and representative government*. Chicago: Aldine-Atherton.
- North, D. C. 1990. *Institutions, institutional change, and economic performance*. Cambridge, UK: Cambridge University Press.
- Ostrom, E. 1990. *Governing the commons*. Cambridge, UK: Cambridge University Press.
- Ostrom, E., and E. Schlager. 1996. The formation of property rights. In *Rights to nature: Ecological, economic, cultural, and political principles of institutions for the environment*, ed. S. Hanna, C. Folke, and K. G. Maler, 127–156. Washington, DC: Island Press.
- Pattanayak, S., S. Wunder, and P. Ferraro. 2010. Show me the money: Do payments supply environmental services in developing countries? *Rev. Environ. Econ. Policy* 4:254–274.
- Pelling, M. 2010. *Adaptation to climate change: From resilience to transformation*. New York: Taylor & Francis.
- Peluso, N. 1993. Coercing conservation?: The politics of state resource control. *Global Environ. Change* 3:199–218.
- Pielke, R. A. 2007. *The honest broker making sense of science in policy and politics*. Cambridge: Cambridge University Press.
- Pielke, R. A. Jr., and D. Sarewitz. 2005. Bringing society back into the climate debate. *Popul. Environ.* 26(3):255–268.
- Pretty, J. 2003. Social capital and the collective management of resources. *Science* 302:1912–1914.
- Roth, R., and W. Dressler. 2012. Market-oriented conservation governance. The particularities of place. *Geoforum* 43(3):363–366.
- Sabatier, P., W. Focht, M. Lubell, Z. Trachtenberg, A. Vedlitz, and M. Matlock, eds. 2005. *Swimming upstream: Collaborative approaches to watershed management*. Cambridge, MA: MIT Press.
- Schmandt, J. 1998. Civic science. *Sci. Commun.* 20(1):62–69.
- Schusler, T. M., D. J. Decker, and M. J. Pfeffer. 2003. Social learning for collaborative natural resource management. *Society Nat. Resources* 16:309–326.
- Scott, J. 1998. *Seeing like a state*. New Haven, CT: Yale University Press.
- Shepherd, A. 1998. *Sustainable rural development*. London: Macmillan Press Ltd.
- Shirk, J. L., H. L. Ballard, C. C. Wilderman, T. Phillips, A. Wiggins, R. Jordan, E. McCallie, M. Minarchek, B. V. Lewenstein, M. E. Krasny, and R. Bonney. 2012. Public participation in scientific research: A framework for deliberate design. *Ecol. Society* 17(2):29–35.
- Starr, A. 2010. Local food: A social movement? *Cultural Stud. Crit. Methodol.* 10:479–490.
- Taylor, P. L., and A. S. Cheng. 2012. Environmental governance as embedded process: Managing change in two North American and Central American community-based forestry organizations. *Hum. Organization* 71(1):110–122.
- U.S. Forest Service. 2005. *Cooperative conservation*. <http://www.fs.fed.us/spf/coop/coopconserv/index.shtml> (accessed 6 December 2012).
- Weber, E. P. 1998. *Pluralism by the rules*. Washington, DC: Georgetown University Press.
- Weber, E. P. 2003. *Bringing society back in*. Cambridge, MA: MIT Press.

- Weber, E. P., and A. M. Khademian. 2008. Wicked problems, knowledge challenges, and collaborative capacity builders in network settings. *Public Admin. Rev.* 68(2):334–349.
- Wenger, E. 1998. *Communities of practice: Learning, meaning and identity*. Cambridge, UK: Cambridge University Press.
- Western, D., and R. M. Wright, eds. 1994. *Perspectives on community-based conservation*. Washington, DC: Island Press.
- Williams, D. R. 2013. Science, practice and place. In *Place-based conservation: Perspectives from the social sciences*, ed. W. P. Stewart et al., 21–34. Dordrecht, the Netherlands: Springer.
- Young, O. R. 1996. Rights, rules, and resources in international society. In *Rights to nature: Ecological, economic, cultural, and political principles of institutions for the environment*, ed. S. Hanna, C. Folke, and K. G. Maler, 245–264. Washington, DC: Island Press.
- Young, O. R. 1997. Rights, rules, and resources in world affairs. In *Global governance: Drawing insights from the environmental experience*, ed. O. R. Young, 1–23. Cambridge, MA: MIT Press.