

## Editorial

# Generating and Fostering Novelty

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Managing social-ecological systems can be daunting because of numeric and dynamic complexity. These complexities present great uncertainties for scientists, policy makers, stakeholders, and other groups. When approaching complicated problems, there are often mismatches between problems and solutions. At least three caricatures are useful in demonstrating the mismatch between problem and solution sets [See ADDENDUM]. For simple problems such as making a meal, a cookbook or recipe approach suffices. Other classes of complex problems are amenable to engineering approaches. For example, building bridges, sending men to the moon, or constructing trustworthy aircraft not only rely on a combination of optimization and efficiency to deal with limited resources but also call for functional redundancy to maintain system stability and reliability. The class of environmental issues and problems discussed in this journal and other outlets is much more complex and subject to true uncertainty and surprise, indeed, much more like raising a child. We argue that this class of problems requires novel approaches, creative combinations of strategies, and the ability to adapt in a changing environment.

Resilience and transformation are two terms that refer to qualitatively different types of change in complex systems. Resilience is the capacity of a system to absorb disturbance and reorganize and yet persist in a similar state. The system state is defined as one that has essentially the same function, structure, identity, and feedbacks. Transformational change involves creating an essentially new system, with different components, relationships, interactions, and feedbacks.

Both transformation and resilience require novelty. When systems are disturbed, one way in which they respond and reorganize depends upon an interaction among various components of novelty. Given a

window of opportunity for change, a system can reorganize with essentially the same components and relationships among components. This is a resilient system, with a similar identity, feedbacks, and functions that persist with continued perturbations. Systems can reorganize into a novel configuration of extant components, described as bricolage, or an entirely new creation made from old components. This type of system is often described as adaptive, whether it involves genetics (evolution), artificial intelligence, society, or culture.

As editors, we encourage and challenge our readers for novel contributions. Indeed, this is one criterion used to evaluate whether a submission is published. Our hope is that this journal is indeed contributing new ideas, new approaches, and new methods to deal with difficult and thorny issues of people and nature. We try to foster that novelty in at least three different ways: (1) in an annual competition for novel contributions named in honor of Ralf Yorque, (2) in the articles in the regular issues, and (3) in the special features. Each of these is described in the following sections.

## THE RALF YORQUE MEMORIAL COMPETITION

The Ralf Yorque Memorial Competition 2005 has been closed. Eight manuscripts were submitted, and four of those passed the peer review process. The accepted papers appear in this issue of *Ecology and Society*. This competition is intended to help foster discovery, innovation, and originality by seeking manuscripts that effectively and imaginatively practice research across disciplines. A committee of three judges, C. S. Holling, M. A. Janssen, and S. R. Carpenter, deliberated and voted on these four articles to determine the winner of the prize.

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“Understanding the Stability of Forest Reserve Boundaries in the West Mingo Region of Uganda,” submitted by Nathan Vogt, Abwoli Banana, William Gombya-Ssembajjwe, and Joseph Bahati (2006) [ERRATUM], was chosen as the winner of the Ralf Yorke Memorial Competition 2005. Vogt and his colleagues studied the persistence of forest reserve boundaries in a specific region of Uganda. Remote sensing techniques were used to demonstrate that these boundaries had remained remarkably stable over the last 50 yr despite significant challenges from disturbances and social transformations. Vogt et al. provide explanations of the mechanisms that created and maintained these boundaries. The paper is a very interesting and innovative example of using methods such as remote sensing and archival and ethnographic research to investigate long-term developments in social-ecological systems. The committee decided to grant Vogt and his colleagues the prize of 5000 Euro provided by the Foundation for Scientific Symbiosis.

The aim of the Ralf Yorke Memorial Competition is to stimulate the publication of creative transdisciplinary research in the field of ecology and society. Unfortunately, we have found that the competition in its present form does not lead to the number and type of entries we had hoped for, so we decided to change the procedures for upcoming [Ralf Yorke Memorial Competitions](#). All the papers published in a given calendar year will be eligible for that year’s competition. At the end of the year, all members of the editorial board can vote on the most creative and stimulating transdisciplinary paper in the journal. The paper that receives the most votes will be the winner of the competition. We hope that this redirection of the annual competition will continue to stimulate and recognize ideas on creative transdisciplinary research for resilience and sustainability.

## REGULAR ARTICLES

The total number of articles published in this first issue of Volume 11 is 46. Our managing editor’s reaction was one word: “Whew!” About half of those articles are part of the regular issue, and those remaining appear as part of special features. The articles in the regular issue cover topics ranging from methods for species-based assessment and management of baleen whales in the Antarctic (Williams et al. 2006) to the reintroduction of wild

boar in Europe (Fernández et al. 2006), the temporal stability of artisanal coastal fishing areas in Brazil (Begossi 2006), an economic evaluation of the pollination service in relation to coffee growing in Ecuador and Indonesia (Olschewski et al. 2006), and the use of utility theory for conservation (Davis et al. 2006).

Resource management in social-ecological systems features heavily in this issue, including the significance of involving individuals with ecological knowledge in participatory processes and adaptive management of wetlands in Australia (Fazey et al. 2006), in support of the processes by which local ecological knowledge is generated among fishers in Kenya (Crona 2006), in the development of coping and adaptive livelihood strategies for dealing with drivers and change in Cambodia (Marschke and Berkes 2006), and in the use of adaptive management as a conflict resolution process (Walkerden 2006).

In this context, Roux et al. (2006) plead for co-production of knowledge in relation to ecosystem management through collaborative learning between “experts” and “users,” and Sirén et al. (2006) suggest that participatory economic experiments may help improve the sustainable use of tropical forest resources. Huntington et al. (2006) stress the significance of taking into account the social and cultural contexts of collaborative processes such as community workshops through an example of community-based research in Alaska, and Manuel-Navarrete et al. (2006) show that epistemological flexibility in place-based and integrated-knowledge approaches is key for the successful management of tropical forests in Central America. Sense of place and proximity were found to be essential for perceptions of quality of life in relation to coastal waterways in Australia (Cox et al. 2006).

Rozzi et al. (2006) present 10 essential collaborative principles that have guided the actions of biocultural conservation in southern Chile, and Cinner et al. (2006) provide social features that allow for the dynamic adaptive management of coral reefs in the Indo-Pacific region, in which communities manage their resources among multiple social and ecological baselines. The challenges of cross-scale dynamics and multilevel management in complex ocean fisheries and the implications for conventional fisheries models and management are clarified by Wilson (2006) and further addressed in

relation to globalization and the resilience of coastal regions in Asia by Armitage and Johnson (2006).

Other articles focus on the social dimension of ecosystem management. These include tools to engage citizens in collecting wildlife data along highways (Lee et al. 2006), the relationship between corruption and sustainability (Morse 2006), and a review of institutional theories and environmental change that stresses the importance of uncovering the underlying dynamics of institutional change (Hotimsky et al. 2006).

## SPECIAL FEATURES

About half of the articles in this issue of *Ecology and Society* are spread among nine special features. The final contributions to the special feature on urban sprawl (Craig Allen, editor) appear in this issue, as do all of the articles associated with "Exploring and Refining Resilience Theory" (edited by Walker, Anderies, Kinzig, and Ryan). We are pleased to continue articles from the Millennium Ecosystem Assessment as part of "Scenarios for Global Ecosystem Services" (edited by Carpenter, Bennett, and Peterson). Other articles contribute to special issues titled "Restoration of Riverine Landscapes," "Assessing Risks to Wildlife from Multiple Stressors," "New Management Paradigms to Achieve Sustainability in Tropical Forests," and "Scale and Cross-Scale Dynamics in Social-Ecological Systems." There are also two contributions to be included in a special feature, "Empirical-based Agent-based Modeling," that will open in the fall.

Thanks to the people who submit their papers and to the reviewers and subject editors, we are really pleased to be able to offer you a journey into explorative work on interdependent social-ecological systems. We hope that the articles and contributions in this issue of *Ecology and Society* will give you moments of insight and excitement, and that novelty for resilience and transformation may be fostered and generated in the process.

Responses to this article can be read online at:  
<http://www.ecologyandsociety.org/vol11/iss1/art50/responses/>

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## ADDENDUM.

Last fall, we participated in an exciting workshop led by Frances Westley and Steve Carpenter and also attended by Buz Brock and Marten Scheffer. Many of the ideas and text on novelty and transformation in this editorial were generated and stimulated by our discussions and collaboration, hence, their contribution on those issues is greatly acknowledged. See also: Westley, F., B. Zimmerman and M. Patton. 2006. *Getting to Maybe*. Random House, Toronto, Canada.