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Comment

Historians are from Venus, Ecologists are from Mars

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Previous calls for cooperation between historians and conservation scientists published in ecological and conservation journals have been made by nonhistorians. This Comment on Szabó and Hédl's (2011), paper "Advancing the Integration of History and Ecology for Conservation," provides the other half of the sought-for antiphonal duet from the perspective of an environmental historian.

Most calls for interdisciplinary research frame their discussions in terms of problems to be overcome. They elaborate reasons for the failure of this union to be consummated, and this shapes discussions of what is to be done. In their welcome article, Szabó and Hédl follow this route, noting contrasting tendencies toward generality versus particularity for ecologists and historians, respectively, and mismatches in scale and precision of data collection. They frame the lack of ecological research before 1800 as a "major obstacle to successful cooperation between history and ecology" but then show that this lack of ecological data is really an opportunity for ecologists to gain from history (Szabó & Hédl 2011, p. 685). Helpfully, they advise us to pay attention to "difficulties in communication rather than to fundamental differences between the 2 disciplines" (Szabó & Hédl 2011, p. 681). Yet, they also suggest there exists a fundamental divide between the social and natural sciences (not to mention humanities). In the practice of interdisciplinary research, this fundamental divide is more often a divide between those who do primarily quantitative research and those who do primarily qualitative research.

Szabó and Hédl's suggestion that there is a communication breakdown between the "two cultures" of the social and natural sciences, exacerbated by the poor editorial practices of interdisciplinary journals, is arguably now less true than the authors suggest (their references span 1959–1999). More recent analyses of the publication of interdisciplinary research in ecological journals find matters somewhat improved (e.g., Reyers et al. 2010). Of course, structural challenges for collaboration do remain, and power differentials in funding levels and eligibility between disciplines bedevil interdisciplinary research on conservation problems. To paraphrase Jane Austen: it is a truth universally acknowledged that a single discipline in possession of good funding must be in want of research partners.

Szabó and Hédl suggest that ecologists are characterized by a focus on generality and historians by a focus on particularity. This is a very broad statement, but interesting in light of the recent production of "big histories" (e.g., Christian 2004; Spier 2010). These histories either seek to impose major periodizations on all dimensions of Earth's history, including human histories, or to mine history for data to test predictive models. As Robin and Steffen (2007) observed, the former are plagued by the heterogeneity of human histories (e.g., the very differently timed development of agriculture and industrialization in Europe vs. Australia) and the unevenness of available historical evidence resulting from these heterogeneities. Devised without the input of historians, the Integrated History and Future of People on Earth (IHOPE 2009) project aims to recover useful data from the past for testing predictive social–ecological models. Projects include building a dynamic model of the social–ecological interactions and ultimate collapse of the Maya. In practice, marrying up archaeological and cultural sources will be challenging, as will adequately incorporating human agency.

These big histories, along with the kinds of large-scale historical panoramas offered by Jared Diamond and E.O. Wilson, are united in offering histories in which human agency, while present, operates within and in response to larger deterministic frameworks of evolution and environmental contingencies. They offer informed speculation on why human societies behaved and developed as they did, rather than detailed attempts to reconstruct

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these trajectories through the use of historical sources. To these "evolutionary meta-histories" (Sörlin & Warde 2007, p. 117), environmental historians bring a human scale, a sense of human agency (can you model a Hernán Cortés?) and open a dialogue with the extensive literature on, for example, the reasons for the ascendancy of Western Europe and its New World territories. They aim for more synthetic analyses of causation than those attempted by science-based and big-history historians on the one hand, and social scientists and historians allergic to any whiff of biological determinism on the other.

By no means do all environmental historians "[focus] on specific cases and [approach] the study of general patterns with caution" (Szabó & Hédl 2011, p. 682). This is a long-running tendency, but the breakthrough books in the discipline are works of synthesis that tackle big issues and themes, for instance Alfred Crosby's *Ecological Imperialism* (1986), Richard Grove's *Green Imperialism* (1995), and John McNeill's *Mosquito Empires: Ecology and War in the Greater Caribbean, 1620–1914* (2010). Sörlin and Warde (2007) urge environmental historians to move beyond regionalized, local studies and write more ambitious histories along such lines.

Szabó and Hédl's discussion of research methods provides a useful characterization of the different approaches of historians and ecologists. However, it offers a narrow version of how conservation scientists actually work and misses the interdisciplinary nature of good environmental history. What, then, is good environmental history? Worster (1988) exhorted environmental historians to study how the biophysical world shapes human history and how humans understand and shape the natural world through time by: addressing the ecological study of nature, including humans, cultivated and domesticated species, and flows of materials; the socioeconomic dimensions and interactions of social–ecological systems; and the ways in which human cultures and ideologies have been shaped by nature and have shaped our conceptions of and effects on nature. At the very least, this schema implies scientific literacy and the comprehension and use of scientific data alongside the more traditional materials and techniques of social, economic, and cultural histories.

If Reyers et al. (2010) are correct that cultural and social values and their political expressions drive policy and management priorities, which in turn drive how resources are managed and ultimately how knowledge acquisition is structured and funded to enable this, then it is necessary to try to understand the relations between all these dimensions of conservation (including the biophysical). By taking a historical approach, these kinds of relations can be unraveled, and although they may be convoluted, they are not irreducibly complex.

Deconstruction, Divorce, and Disequilibrium

If one acknowledges common cause and agrees that alleged methodological incompatibilities are exaggerated, then why has there been so little collaboration between conservation scientists and environmental historians? Certainly, structural issues remain within academic institutions and funding bodies. Also recall that conservation scientists and environmental historians courted divorce early on. The debate over the limits of objective knowledge of the 1980s and 1990s deeply polarized some social scientists and humanities scholars from biological scientists and environmentalists (Proctor 1998). Conservationists, including Michael Soulé, responded angrily to assertions by the U.S. environmental historian William Cronon and others that wilderness is a cultural construct. They argue that ideas of nature may not exist outside cultural understanding, but nature certainly does, and wild things have rights and value independently of human understanding (Cronon 1995; Soulé & Lease 1995).

There was another reason for this vehement response to constructivist attacks on scientific authority—ecology was going through a major theoretical shift. Field observations of populations of wildlife had shown abrupt fluctuations that equilibrium-based principles could not explain (Botkin 1990). Chaos theory and developments in mathematical modeling challenged fundamental aspects of equilibrium-oriented ecosystems ecology. These new perspectives challenged the assumption that nature tends toward stability, emphasizing rather instability, disequilibria, and chaotic fluctuations in biophysical environments. How, then, does one predict or measure environmental degradation? How indeed does one determine what is natural at all? (Worster 1994).

This was also a challenge for environmental historians, who looked to ecology for baselines against which to measure the effects of human interventions on nature. On the one hand, some feared the consequences of a scientifically justified relativism about environmental change. On the other hand, the cyclical time of systems ecology was displaced by a historical conception of time, where irregular natural disturbances and periodicities of natural variation play an important role. Human disturbances can cause long-term or permanent ecosystem shifts. By implication, to understand and manage an ecosystem, it is necessary to investigate its environmental history. This is not to discover some past prehuman (or pre-European) baseline or natural state (although problematizing taken-for-granted baselines is important), but rather to reconstruct histories of major events and shifts and to help establish what Szabó (2010, p. 383) rightly emphasizes: the "historical range of variability."

Back to the Future

In their conclusion, Szabó and Hédl call not for collaboration, but for the integration of historical concepts into ecological research by conservation professionals. Although a historical awareness is useful for conservationists, scientists should not be expected to become historians and should not expect to become historians through adopting some notional historical toolset. As Lowe et al. (2009) suggest, this instrumental approach to other bodies of expertise has not proven fruitful for interdisciplinary relationships.

A working partnership is preferable to integration, which may well result in a dilution rather than a concentration of skills. Collaboration suggests a dual role for historians in conservation research. First, environmental historians can contribute conceptually to research planning, offering historical perspectives for question formulation and development. Second, where a historical perspective is judged relevant, the contextual particularities of a project will determine what kinds of historians, and with what particular experiences, should be wooed to provide the necessary historical perspective.

For example, historical analyses can reveal how conservation problems and solutions have been framed over time by competing scientific, political, cultural, and other groups (e.g., Davis 2007). It can show why particular approaches were favored and how success has been evaluated. This allows the questioning of dominant narratives and the reconsideration of sidelined perspectives (e.g., Pyne 2010). Historical analyses reveal the conjunctions of environmental and societal factors that cause unintended consequences to flow from interventions based on sound scientific generalizations.

Environmental history contributes the capacity to integrate ecological, socioeconomic, and cultural information into coherent narratives of change over time. Not least of these should be the histories of conservation itself. These narratives should be clear, critical, and comprehensible to policy makers and practitioners. As an environmental historian, I am just as interested and invested in the future of conservation as I am intrigued and challenged by its past.

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