

Is Curiosity Good for Anybody?

Henry F. Howe

THE ACADEMIC RELEVANCE OF ECOLOGY TO ENVIRONMENTAL JUSTICE starts with the creation of ecological theory, and follows with the application of theory to practice. This is not the usual view. Environmental justice is usually seen as the scientific, legal, and community response to negative impacts of science and technology and their industrial consequences that fall disproportionately on people without the education, financial resources, or political clout to avoid serious health and economic consequences (e.g., Bullard 2005). One traditional role of progressive science, then, is to hear the calls of those affected, provide technical information, and help guide the affected communities towards political, technical, and medical resolution. The bottom-up influence of environmental justice activists channels this grassroots recognition of issues, while scientists, including ecologists, offer insights from academic scholarship that contribute to remedies by engineers, medical professionals, policy-makers, or other technical or educational elites. An enlightened version of this traditional approach is integration of community members and scientists as partners in devising questions to be asked and evidence to be gathered (Coburn 2002). However, the scientific paradigms used, if not their application, are still created by scientific elites, largely in research universities. A danger is that solutions to environmental *in*justice become inherently class-structured, like the imposition of disproportionate risk on poor communities, with problems afflicting the poor and dispossessed remedied by what solutions have been conceived and made available by middle- and upper-class professional elites that are overwhelmingly white.

This essay is an opinion in progress. My view is that ecological paradigms that codify the questions asked and answered in major research institutions, and applications of ecological science implemented by private or public agencies and exported to the rest of the world, do not reflect most issues relevant to either local or global issues of environmental justice. An important step is to foster the curiosity that allows admission to the “paradigm elite” who create, practice, teach, and regulate ecology as a science, and who train new generations of ecologists. Here I state the problem; a more general discussion will be published else-

where. My main thesis is that the kinds of curiosity that develop in under-represented ethnic groups in the United States, and in much of the developing world, are barred at the graduate admissions committee gate in our major research universities, or are discouraged if admission occurs. The field, and our planet, are the worse for that exclusion.

Power of the paradigm

Science is a social enterprise. Kuhn (1970) noted that scientists live within social contexts that define the questions worth asking, the answers worth getting,

and the acceptable means of communicating results and implementing applications. Theories that define the paradigm, and testable hypotheses that allow its refinement, falsification, or extension, are constrained by social and economic realities. To Kuhn, progress in science occurs with social guidance from enforcers who review grants and decide what will be funded and what will not, pass judgment on manuscripts and decide what will be published and what will not, and define and implement “what is known for sure” in government, industry, or other private contexts. Research elites are also training elites; one does not become a member without passing through the filters consciously or unconsciously imposed by those who guard, refine, and extend paradigms.

Sciences differ. While progress in physical sciences occurs within a few consensus paradigms, like Newtonian mechanics or relativity, ecological paradigms resemble a welter of tree-like branches of historical themes more than conceptual monoliths, as broad as “global change ecology” to as narrow as twigs on some branch of “foraging ecology” (see Graham and Dayton 2002). Numerous small cliques of colleagues define and direct agendas in funding, publication, training, and hiring of ecologists for trunks and branches of this “paradigm tree,” and therefore influence what ecology exists to apply to environmental challenges facing the world. Social control can mean social exclusion. If perspectives from the affected communities are not present among those creating and enforcing ecological paradigms, issues of most relevance in environmental *in*justice remain low priorities. The body of accepted theory and practice that is perceived as legitimate ecological science is about something else.

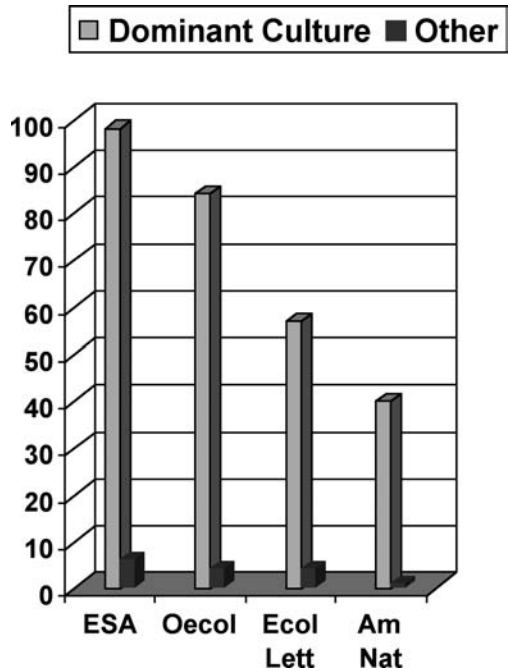
Cultural enforcers

Who are “the enforcers” of paradigms in ecology?

One of my international students suggested that I tabulate composition of editorial boards of elite journals. This preliminary effort identifies likely minority status and national affiliation of subject editors in major journals in ecology that figure large in hiring and tenure committees (Figure 1). Distinguished are names with Hispanic roots, the people I knew to be African American, and names likely to represent Asian or African roots, from those of the “dominant culture,” which in the Ecological Society of America journals, plus *Oecologia*, *Ecology Letters*, and *American Naturalist*, are white American or white European. I also noted the national identity of editors, designating those from other than the United States and Canada, Europe, and Japan as “not dominant culture” in the science of ecology. Ambiguities are obvious. Hispanic or Japanese names from Spain or Japan are scored as the dominant culture in each, but in the United States the same names would represent minority perspectives. Some minority editors might have been missed. With even such a basic analysis, however, I am forced to agree with my student that just about all editors in several premier journals that determine stature in the discipline are white Americans or white Europeans. People of color, in the United States and around the world, suffer more severe consequences of industrial development from misuses of technology than affluent whites, but their views are not well-represented within “paradigm elites” who set the agendas for publication in major journals in the developed world.

Might this homogeneity of culture influence “environmental justice?” My

Figure 1. Cultural background of subject editors for leading journals of ecology (percent). "Dominant culture" includes editors of apparently Caucasian background from Canada, the United States, or European countries, and Japanese editors from Japan. "Other" includes editors with Hispanic, African American, African, or Asian surnames in the United States and Europe. Editors with Hispanic names in Spain are "dominant culture." Journals covered are the Ecological Society of America journals *Ecology*, *Ecological Applications*, and *Ecological Monographs* ("ESA"), plus *Oecologia* ("Oecol"), *Ecology Letters* ("Ecol Lett"), and *American Naturalist* ("Am Nat").



hypothesis is that it does—a lot. One can count the number of African Americans in tenure-track positions in ecology at major research universities on one's fingers, probably on one hand. There are more Hispanics, but not many. Despite overwhelming ecological degradation in developing countries around the world, self-inflicted and imposed by technologies and practices imported from the developed world (Tinker 1997; or, for, the extreme case of Bhopal, Dhara et al. 2002; Varma and Varma 2004), few *ecologists* of the professoriate in leading colleges and research universities in the countries that export technological mayhem are from the developing world.

Ecology has peculiar roots

My suspicion is that paradigms in ecology are strongly influenced by cultural values infiltrated by an environmental movement of the white upper-middle class (also

see Bullard 1990). I could identify all local birds by sight or sound by the age of nine because they fascinated me, and I had educated parents who encouraged the interest, supplied books, binoculars, and telescopes; because I lived in a safe rural area where I could wander freely; and because I had a mother who did not work outside the home and could drive me to good birding sites. Childhood experiences with programs of the Massachusetts and National Audubon Societies—then all-white—encouraged a particular brand of curiosity. That this developed into a professional perspective centered on wildness, processes affecting biological diversity, and their implications, is not surprising (e.g., Howe and Miriti 2004). Many colleagues, far more influential than me, have roughly similar backgrounds. By contrast, Robinson (2005) found it difficult to find white birders who had seen African Americans bird-watching. African

Americans are less likely than other Americans to visit national parks (Solop et al. 2003), the kinds of visits that catalyzed epiphanies in my youth. The evidence suggests that working-class families, under-represented racial groups or otherwise, simply cannot afford to buy all that stuff, drive children longer distances, or spare the time to help children develop their curiosity in the same way that affluent whites do, even if the parents are tolerant of a nascent interest. If such children get into ecology, it is by some other route. Obviously, few do.

What about curiosity?

Curiosity comes in many forms. A standard dictionary definition is a “desire to learn or know.” A more reflective definition from the Wikipedia website is the “emotional aspect of living beings that engenders exploration, investigation and learning.” In the context of this discussion, I define curiosity as “the source of the internal drive to learn about nature that creates a scientist.” Individual curiosity is the motive that channels values into the creation or testing of theory, and application to practical problems; highly individualized motives lead people to try to understand some phenomena more than others, to ask some questions rather than others, and to address some practical challenges needing ecological insight or application more than others. Values and the social environment encourage some interests and not others.

Will kindergarten-through-college educational programs that foster curiosity in nature dramatically enhance the number of under-represented do-

mestic groups and international students in academic ecology? Probably not. An unfortunate reality is that the gates are usually closed at the graduate admissions committee door.

Admission is controlled by those of us on the inside looking out. Students who apply to research university graduate programs from blue-collar colleges are less likely to be seen as “qualified” than those from elite colleges or similar universities. If international students are apply, and take Graduate Record Examination (GRE) exams in a second, third, or fourth language, they often look weak regardless of drive, intelligence, or experience—or sometimes extensive publication records! Moreover, if domestic or international students have very different life experiences than “dominant culture” students from elite colleges and universities, their curiosities will likely be in different directions, and not focused on questions or processes of interest to faculty members doing the screening. Admissions processes often classify such people as a “bad fit” because interests are not closely aligned with available faculty.



Pedagogy of the different

What is to be done?

Entry to doctoral programs must change. The first step is to recognize that people with very different backgrounds and curiosities are unlikely to react to our academic environments created by those from upper-middle-class professional families. Encouraging programs for children and mentoring college students can help on the domestic front, since as yet I see very few applications for graduate study from under-represented groups. For both those rare applicants and much more numerous international applicants, those of us on the inside need to look for strengths and celebrate them. If students are applying from institutions without graduate programs, they may not know that their thesis interests need to converge with those of an advisor. Faculty who want diverse graduate groups must be prepared to deal with skeptical colleagues, or departmental or graduate college obsession with GREs, which in my experience are not especially good predictors for minorities, or people without primary and college education in American English, or people strapped at an early age with family obligations, financial necessity, or other complications of life. Potential advisors need to be prepared to argue for exceptions on the basis of evident drive, experience, and sometimes publications record. Once in graduate school, even gifted students from very different life experiences may take time to figure out how to succeed as they piece together necessary preparation that was absent from undergraduate days, meet family obligations, or pursue interests not quite on the advisor's screen. Often it takes time for students from diverse backgrounds to identify the ropes on the paradigm tree and start to climb.

One such student who is now a professor, taking pause when I suggested that the steepest climb was probably out of the schoolyard, commented that by the time she finished college, every male peer in the inner-city neighborhood where she grew up was dead or in jail. I have yet to meet a white ecologist with a similar history.

Would more diversity in the intellectual leadership in ecology change the environmental justice debates? The experiment has not been run. Seeing the world, and the science of ecology, through the eyes of my students, whose experiences are radically different from mine, suggests to me that the debates would change in fundamental ways. Some themes would change, and new ones would appear. In a diverse science of ecology there would be less interest in protecting biodiversity for its own sake and more interest in processes that promote ecosystem stability, like control of erosion, landslides or flooding; less interest in wilderness without people and more in human residence as part of nature; less interest in wild places and more in urban ecology; less interest in capital-intensive resource use and more in sustainable resource use, non-timber forest products, and the like. Some issues might change entirely. The multibillion-dollar drug trade might, for instance, be viewed as less a law-enforcement and moral issue and more a vast environmental disaster, both from direct pollution from illegal drug production and corruption and destabilization of governments that would otherwise have a chance to manage forest and water resources wisely. It is impossible, without the experiment being run, to guess exactly what would change, but change it would. Branches in the ecological paradigm tree would grow in different directions. I have no doubt that new branches would form.

Ed. note: This essay is a longer version of an article that will appear on-line in the Ecological Society of America Bulletin.

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Henry F. Howe, University of Illinois at Chicago, Department of Biology, 845 West Taylor Street, Chicago, Illinois 60607; hfhowe@uic.edu