



EDITORIAL

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Why should I?

Early in February 2007, I chaired a breakout session during a conference organized by the National Council for Science and the Environment. The titular focus of that conference was “Integrating Environment and Human Health,” an issue embedded deeply in wider sustainability goals. The more specific aim of the breakout session was how to design for complementarity among programs that are generating an unprecedented amount of health- and environment-related research information and data to facilitate easier use and greater effectiveness in assessment and stakeholder-decision processes. Significantly, the session’s focus was central as well to the challenge, and objectives, of establishing desirable outcomes from actions and programs initiated to address the intersecting issues that characterize sustainability science, practice, and performance.

The session attracted a rich spectrum of disciplinary specialists. It was structured with an understanding among participants that the expertise needed to explore the issue area was, indeed, “around-the-table.” The participants were self-selected and they recognized the high value of capitalizing on what other disciplines could offer to the planning, conduct, interpretation, and reporting of their own work. Nevertheless, the researchers reported that they continue to experience routinely significant problems in implementing interdisciplinary cooperation. The first order of business articulated actual obstacles participants had encountered in getting research programs to complement and strengthen each other. Challenges ranged from the absence of a *lingua franca*; to organizational, regulatory, and ethical barriers; to finding, and effectively targeting funding toward, engaged collaborators. The discussion then moved to identifying priorities for action and targeting such issues as the need to understand and value interdisciplinary complexity; the culture of science and technology practice; and the structural barriers to standardizing data acquisition and management and, importantly, the sharing of that data. With challenges and priorities laid bare, the group moved on to articulate recommendations that it would make to such likely and traditional gatekeepers as professional so-

cieties, funding agencies and foundations, the private sector’s research and development establishment, and domestic and international academe.

The group’s recommendations echoed many study reports on linking disciplines. If we consider only the past 30 years, there is a substantial extant resource of inquiry on the nature and promise of integrative research. These resources are chronicled in government, academic, foundation and private sector, and professional society studies, as well as in findings reported in scholarly journals and popular commentaries. One of the most recent, compelling, and thorough of these assessments, *Facilitating Interdisciplinary Research*, represents an addition to a group of keystone reports carried out by the Committee on Science, Engineering, and Public Policy (2004) of the National Academies. These studies prompted the establishment of, and continue to guide, the Keck Futures Initiative that aims to bolster more comprehensive realization of interdisciplinary research. Even commentators such as Tapscott & Williams (2007)—reporting in a popular, albeit highly business-oriented, venue—identify and expound upon what they call “a deep transformation in science and invention.” This article hones in on the need to move forward through open-source approaches, and through the collaborative advantages afforded by information technologies, to the integration of all sciences.

In light of this landscape of reports and recommendations, I suggest that rather than tilting at often nebulous organizational, institutional, and cultural barriers—or against such support mechanisms as the lapsed Research Applied to National Needs Program or the existing Integrative Graduate Education and Research Traineeship Program—a more direct, palpable, and personal response is needed. Very much in the mold of the studies, initiatives, and commentaries mentioned earlier, the recommendations of the breakout session overlooked what I believe to be the most fundamental constraining factor in the quest for interdisciplinarity. That is, participants in this discussion neither identified nor explored the *human dimension*. None of the efforts targeted squarely the

behavior of the individual (read individual scientist). Obviously, I feel that to make interdisciplinarity—and subsequently, complementarity—a reality among often-isolated disciplines, the mindset of individual scientists must shift. Scientists must believe that, through their own dedicated action, interdisciplinarity *can* be achieved; and those individuals *must* be willing participants in making it so. They must recognize that it is the end goal that matters, that end goal being more comprehensive research, understanding, and knowledge.

We recognize that at times scientists have been known, in the competitive world that is science, not to share the limelight. Also, at the outset, I must say that I do think that sustainability scientists by necessity have come a very long way in overcoming this learned, constraining attribute. This posture is due to their widening recognition of the bewildering array of disciplines now working separately on topics relating directly to the maintenance and improvement of the condition of our health, the health of ecological systems and their resident biota, and our economic and social systems. Nonetheless, more must be done to demonstrate to a larger universe of science practitioners the inherent value in taking bold decisions about—and making decisive steps toward—interaction. There is a critical need to *exercise* the mindsets of individuals doing science regarding what is most valuable to the trajectory of—and satisfaction with—their careers.

We know that many scientists find their sense of reward and recognition controlled, as yet, by outside institutional and cultural forces. How, then, do we get established, as well as new and budding, scientists to adopt cooperative and integrative ways? My suggestion is to reopen the discussion on what a scientist is. Back in 1989, the National Academy of Sciences produced a seminal volume entitled *On Being a Scientist*. Six years later, an updated version was issued in which the authors reiterated their vision of the “ethical foundations of scientific practices and some of the personal and professional issues that researchers encounter in their work” (Committee on Science, Engineering, and Public Policy, 1995). Rethinking the relevance of this important document is warranted in light of growing realization of the substantial benefits of integrating research and the still evolving issues surrounding the right to hold on to data and information (intellectual property)—data and information that in many cases may be, in fact, public property. Just as the second edition of this report was undertaken to explore scientific practices related to both individual and institutional conduct that were seen to violate the ethics of science, a further revisiting could focus on issues, questions, and opportunities posed by the increasing need for interaction across the

spectrum of scientific disciplines.

Furthermore, I believe that given their head start in being necessarily embedded in complementary studies that cross disciplines, sustainability scientists can, by example, enhance the relevance of their work to that of other disciplines. They can be in the vanguard to address the human dimension by pointing to ways for individual scientists to make their work more comprehensive, more defensible, and likely more credible. Coupled with a second updating of *On Being a Scientist*, we can help the individual scientist to shift into a mindset that turns the question “*Why Should I?*” into the clear-cut declaration “*Why I Must.*”

References

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About the Author

Sidney Draggan, an ecologist and science policy analyst, served most recently as Senior Science and Science Policy Advisor to the Assistant Administrator for Research and Development at the United States Environmental Protection Agency (EPA). He joined the staff of the Immediate Office of the Assistant Administrator after serving for two years as Special Assistant for Science to the Administrator and Deputy Administrator of the EPA. He is currently a member of the Environmental Information Coalition’s Stewardship Committee for the *Encyclopedia of Earth*. He holds a PhD in systems ecology and has long-standing interests in science policy research and analysis; environmental assessment, monitoring, and management; chemical testing and control; and international environment policy. (email: karhu@peoplepc.com)