

Environmental Studies: The Sky Is Not Falling

BY MICHAEL F. MANIATES AND JOHN C. WHISSEL

For almost 30 years, detractors and defenders of undergraduate programs in environmental science and studies have debated the academic rigor, curricular structure, and lasting outcomes of these multidisciplinary, integrative educational initiatives. This sometimes heated conversation has been enriched over time by assessments of programs in place (e.g., NAEP 1987, 1992, Weis 1990, Nickerson 1992, Ruben 1993, Jenks-Jay 1995), explorations of the competencies and incompetencies these varied programs confer upon their students (e.g., Lemons 1991, Gough and Robottom 1993, Maniates 1993, O'Reily et al. 1996), and challenges to prevailing approaches to teaching and learning (e.g., Reichard 1993, Corcoran and Sievers 1994, Orr 1994, Cylke 1995, Mattingly 1997, Reeher and Cammarano 1997). Consensus on both the state and best design of environmental studies and science programs nevertheless remains elusive, even as the number and size of these programs grow (see Figure 1) and the disciplinary diversity of the faculty staffing them increases.

This conversation has become more hard-edged with the recent publication of Michael Soulé and Daniel Press's appraisal (1998) of US undergraduate environmental studies programs. For Soulé and Press, the increasing disciplinary diversity of environmental studies faculty is eroding the curricular coherence and academic integrity of environmental studies programs. They prescribe strong medicine to arrest this alleged decline. For us—a member of the faculty of a US undergraduate environmental science program and a recent graduate of that program—it is Soulé and Press's analysis, and the lack of any concerted challenge to it, that proves alarming. In this essay, we advance a more nuanced and affirming understanding of US undergraduate environmental studies programs by reporting on our own 5-year study (still in progress) of such programs.

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Soulé and Press begin their essay by claiming that today's professors of environmental studies hail from vastly different disciplinary traditions and teach about environmental ills from competing and sometimes contradictory vantage points. Gone are the days when environmental studies programs were staffed by a handful of faculty trained in similar disciplines, united by a shared understanding of environmental problems. This seemingly advantageous expansion of perspective, say Soulé and Press, has led to pedagogical anarchy, curricular incoherence, ideological conflict among faculty, and planning paralysis. As individual environmental studies faculty stake out their own intellectual turf—and become, perhaps, drawn into normative conflict with their colleagues over program focus, faculty recruitment policies, even the fundamental causes of environmental degradation—the environmental studies curriculum undergoes fission, splitting into a plethora of courses linked by few, if any, unifying themes or methodologies and creating what Soulé and Press call “the environmental studies problem.” Instead of receiving rigorous training in one of many distinct subfields of environmental studies (three of which Soulé and Press later identify as ecology and environmental policy analysis, literature and philosophy, and social criticism and critical theory), students are exposed to a superficial hodgepodge of competing disciplinary perspectives on environmental issues.

Consequently, say Soulé and Press, environmental studies programs now resemble “a university in the miniature” more than anything else. They are organized around a “hyper-diverse and shallow curriculum” that hobbles students with a “multidisciplinary illiteracy” poorly suited to the demands of a career or graduate study. Program administrators, unwilling or unable to implement reforms that might challenge a curricular philosophy of “anything goes,” become complicit in a “paralysis of program planning.” The result, assert the authors, is that environmental studies programs currently “lack curricular depth and coherence,” “fail by any standard of academic excellence,” and do a “disservice” to students and society. It is long past time, say Soulé and Press, to explore administrative reforms capable of controlling the expansive tendencies of environmental studies faculty and their programs (e.g., collapsing major programs into more focused academic minors or concentrations) and return to a less “universalist” model of the environmental studies curriculum that “would limit the intellectual diversity within, but not between, programs.”

These are strong words, bordering (for some) on heretical. But Soulé and Press's claims are not easily ignored. The

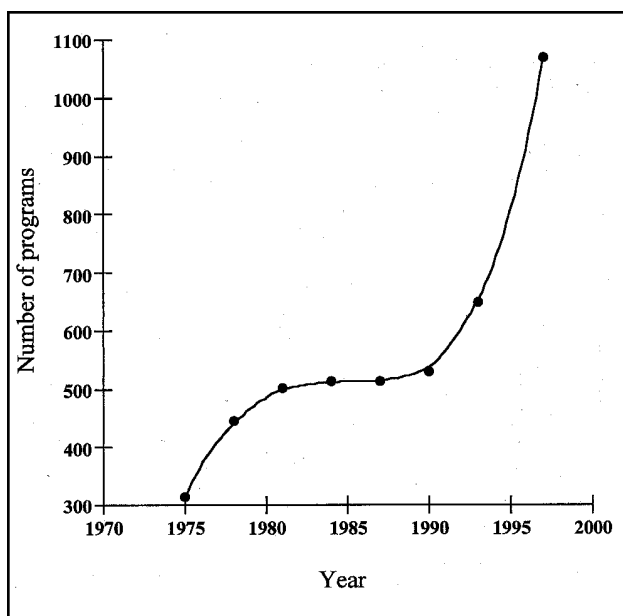


Figure 1. Number of environmental science and studies programs at 4-year institutions, United States (1975–1998; selected years). Source: Compiled by authors from selected editions (published 1975 to 1998) of Peterson's Guide to Four-Year Colleges. Anecdotal evidence from selected environmental studies programs suggests that rapid growth in enrollment within existing environmental studies programs coincides with periods of rapid growth in the number of such programs.

authors, after all, are members of the environmental studies community—more than anyone, they know the field, especially Soulé, who for years chaired the environmental studies program at the University of California at Santa Cruz. Their argument taps into a decades-long debate in the field about the appropriate balance between curricular breadth and depth and takes a position contrary to more recent reflections on the critical role that curious and community-rooted environmental generalists will play in a transition to a sustainable society (Hempel 1996; see also Clark 1989, Orr 1992). And their analysis, on its face, seems plausible. Who among us, after all, has not yet encountered an earnest environmental studies student confused about the basics of the carbon cycle, certain that the “ozone hole” is responsible for global warming, or ready with crudely drawn explanations for environmental degradation that fix central blame on (choose one) rapacious corporations, evil governments, or immutable human greed and apathy?

Nevertheless, we find Soulé and Press's essay to be flawed for at least two reasons. First, their assessment is primarily deductive. They begin with the unquestioned assumption that the increasing disciplinary diversity of environmental studies faculty drives internal discord and curricular incoherence, and then proceed to tease out implications and recommendations. Conspicuously absent in the assessment is any empirical recognition of the many ways in which significant numbers of environmental studies programs have

already embraced the very remedies for curricular incoherence that Soulé and Press recommend. In passing judgment on the forest, in other words, Soulé and Press neglect to take stock of intriguing adaptations exhibited by a majority of the trees. Second, although some environmental studies programs, in our view, exhibit elements of curricular incoherence that foster multidisciplinary illiteracy, we think these shortcomings derive more from institutional opportunism, which we describe below, than from any curricular fission caused by the increasing disciplinary diversity of environmental studies faculty. On this score, then, Soulé and Press are right—many environmental studies programs do a disservice to students—but for the wrong reasons.

Surveying the environmental studies landscape

We draw these conclusions from an empirical study of US undergraduate environmental studies programs that we initiated in late 1995, a time of rapid growth in the number and size of programs that, we suspected, was yielding curricular and administrative incoherence within environmental studies programs. We began by reviewing the literature for empirical assessments of broad curricular change across a large sample of environmental studies programs. Finding few such assessments, we searched for some synthesis of raw data (e.g., types and proliferation of courses, staffing levels) on individual or small sets of programs from which conclusions about the overall state of the field might be drawn. Guide books to undergraduate US environmental studies programs (e.g., Peterson's 1995a) were an initial source of information for us, although we quickly expanded the scope of our research to include Website clearinghouses of information on environmental studies programs, research reports (e.g., NAEP 1992, Strauss 1995, O'Reily et al. 1996), and journal articles (e.g., Braddock et al. 1994) that assess the topography of the undergraduate environmental studies landscape.

These sources, we found, ably describe the organizing goals and general approaches typical of environmental studies programs and explore many of the overarching challenges (e.g., curricular breadth versus depth, design of introductory and capstone courses, the dangers of multidisciplinary illiteracy) facing the field. They do not, however, explore changes in the broad tapestry of US environmental studies programs over time. Nor do they report the specific curricular and administrative details of how (if at all) environmental studies administrators have framed and staffed their programs during the recent period of impressive programmatic growth.

Confronted by the lack of broadly comparative and empirical work, we drew upon the 24th edition of *Peterson's Guide to Four-Year Colleges* (1994) to compile a list of all 4-year colleges that offer majors or distinct programs of study in environmental science and environmental studies. We also included programs in environmental education, environmental health sciences, and environmental biology

when more detailed information on these programs (typically, descriptive information drawn from the college catalogue of the program in question) indicated that these programs offered a multidisciplinary curriculum that explored the cause of and cure for contemporary environmental ills. We arrived at a list of 655 programs.

We randomly selected 82 programs from this list, approximately 13% of the overall number. Undergraduate (upper-level) research assistants from Allegheny College's department of environmental science collected and reviewed college-catalogue descriptions of each program and cross-checked this information against all available information sources, such as a program's Web site or program brochures. Alumni from some programs were also interviewed. Each program was scored on several variables, including its degree of curricular breadth, principal disciplinary focus or foundation, number and type of required courses, curricular structure (e.g., academic major versus academic minor versus a concentration or certificate program), dominant teaching philosophy and approaches, faculty characteristics (number, rank, disciplinary training, relationship to the program), number of students in the program, preponderance of integrative courses (e.g., senior capstone courses, junior seminars), and programmatic assumptions about social change (i.e., does a program aspire to train professional analysts or to produce effective activists?). Our list of programs was later supplemented by a more limited random sampling from the 25th edition of *Peterson's Guide to Four-Year Colleges* (1995b), bringing the total number of scrutinized programs to 128.

A comparison sheet capturing the summary scoring and additional narrative comments on program distinctiveness was developed for each of the 128 programs. Two groups of research assistants, working independently, used these data to consider two questions: What functionally discrete environmental studies program categories emerge from this group of 128, and how, if at all, are architects and administrators of these programs responding to the threats of a hyperdiverse curriculum and multidisciplinary illiteracy?

Members of each group worked individually to generate initial responses to these questions. They then met repeatedly in their group to compare, defend, and modify their assessments of the empirical information at hand. An iterative process of individual analysis, group discussion and critique, additional individual reflection and recategorization, more group discussion, and further research into some programs unfolded, a process that spanned more than 3 months. Meanwhile, the project director (M. F. M.) separately reviewed the information on all 128 programs—this to provide yet another analytic perspective on the study sample.

Although we relied on limited materials that were sometimes promotional in nature—catalogue copy, Web sites, course descriptions, and the occasional interview with program alumni—these sources were, as a rule, quite revealing.

Architects and administrators of environmental studies swim against the current: They promote multidisciplinary learning and analysis in an institutional setting organized around disciplines and grounded in long-accepted major fields of study. It is perhaps unsurprising, therefore, that print descriptions of and justifications for environmental studies programs are typically expansive; they often speak to the nature of environmental ills (as understood by the program architects), outline the skills necessary for the resolution of these ills, and detail those ways in which particular curricular combinations foster these skills, all in service of establishing the relevance and rigor of a program that exists contrary to some of the accepted norms of academe (Brad-dock et al. 1994).

Progress on our first question (into what meaningful programmatic categories do environmental studies programs fall?) was facilitated by the typical transparency of environmental studies programs. We were not obliged to take program claims about curricular coherence or educational outcomes at face value. We investigated program requirements, examined the descriptions of courses meeting those requirements, drew meaning from the sequencing of courses, learned what we could about the staffing of the courses, and paid particular attention to the number and content of required core courses, which say more than perhaps anything else about the assumptions and goals underlying a program. With this information in hand, we labored to strike an analytically sound balance between developing a comprehensive, lengthy list of program categories that would reflect small differences among programs and a very short list of categories that would fail to reflect important variations among programs.

Work around our second question (how, if at all, are environmental studies architects and administrators responding to the threats of a hyperdiverse curriculum and multidisciplinary illiteracy?) first unfolded as a natural part of the process of program categorization. As we became more immersed in our data set, however, we began to systematically catalog a host of mechanisms already embedded in many of the programs in our sample that might stem the slide toward curricular incoherence. These mechanisms include distinct tracks within programs that focus student inquiry, required seminars that guide students to a more defined and defensible articulation of their focus within environmental studies, and sequenced practicum courses (usually in the junior and senior years) that require students to refine and apply a coherent set of analytic and problem-solving skills. We lacked the resources to definitively evaluate the effectiveness of these mechanisms within individual programs and for specific student populations; doing so would have necessitated skill assessments of students and occupational surveys of alumni. We were struck, however, by the seeming utility of these mechanisms and their widespread deployment. We are now focusing our efforts on better understanding their relative effectiveness.

Finally, as we proceeded with our analysis, we began to

Hard choices confronting architects of environmental studies programs^a

- Broad programmatic composition: Multidisciplinary breadth versus disciplinary depth
- Disciplinary bias: Natural science versus social science versus humanities^b
- Problem definition: Poor managers or insufficient expertise versus erosion of civic virtue
- Skill sets: Firm grasp of received wisdom versus capacity to cope with ambiguity
- Dominant pedagogical philosophy: Classroom-centric versus highly experiential
- Curricular flexibility: Highly structured curriculum versus “anything goes”
- Administrative formality: Discrete environmental studies department versus informal cross-departmental collaborations
- Staffing: Core, tenured environmental studies faculty versus affiliates housed in other academic departments

^aWe imagine each of these paired terms as marking the ends of a spectrum of choice; each program, whether consciously or unconsciously, situates itself somewhere on that spectrum.

^bHere, we imagine these choices as marking the corners of a triangle. Programs (again, consciously or unconsciously) locate themselves somewhere within the triangle by virtue of their curricular decisions.

wonder about the existence of reliable indicators of emerging curricular incoherence within specific environmental studies programs. Could one point with confidence to one or more programmatic or administrative features and claim (as do Soulé and Press, who cast the increasing disciplinary diversity of faculty members as an indicator of emerging curricular incoherence) that they reveal underlying tendencies toward an “anything goes” approach to multidisciplinary education? Identifying one or more of these indicators could be a boon, we felt, to new college students making decisions about which environmental studies program to join.

After extended deliberation by the entire study team (the two groups of undergraduates and the project director)—which took us again to the raw data on some environmental studies programs—we concluded that the most robust indicator of apparent program coherence was visible, repeated acknowledgment in program materials of a set of difficult tradeoffs (what we call “hard choices”) that confront any environmental studies program. The more credible programs, plainly put, appeared to be those that know they stand at the brink of multidisciplinary illiteracy and curricular incoherence and that wear this awareness on their metaphorical sleeve. We found that these kinds of programs—approximately 70% of the programs in our sample—attempt to negotiate these tradeoffs in one of six distinct ways, which we call “programmatic responses.” Less effective programs, by contrast, appear far less cognizant of these tradeoffs or the importance of managing them in systematic fashion; as we explore later in this article, they are also frequently in the midst of opportunistic or parasitic growth that lacks resilience.

Hard choices

Soulé and Press highlight one tension endemic to multidisciplinary undergraduate programs, that of breadth versus depth, and argue that this tension is inflamed by the changing disciplinary dimensions of environmental studies faculty. Our review of the varied curricular and administrative structures of environmental studies programs, and the

rationales presented by these programs for these structures, suggest seven additional tensions or tradeoffs. We call these tradeoffs “hard choices” (see box this page), because compelling arguments exist for situating environmental studies programs along the entire range of program possibilities suggested by these tradeoffs. For example, despite much debate, no consensus exists on the degree to which environmental studies programs should favor depth over breadth. Nor, despite the natural science legacy of environmental studies, do overriding arguments emerge in support of the claim that rigorous environmental studies programs must be grounded in the natural sciences, as opposed to the social sciences or humanities.¹ Argument rages on, furthermore, around the most preferred outcomes of an environmental studies education. Should programs lean toward training “insiders,” who can bring expertise and management skills to bear on environmental problems from within rationally organized bureaucracies charged with environmental protection? Or should they focus their resources on training “outsiders,” who might work to stem the erosion of mass democratic capacities and civic virtue?² No environmental studies program can do both equally well. Decisions must be made.

Other choices similarly unfold. Should students’ environmental sciences education emphasize “received wisdom”—structured ways of thinking about, analyzing, and acting on environmental problems—or self-development of problem-solving skills through involvement in open-ended class projects? Both approaches have merit, and each has its strong defenders. Likewise, should the experiential mode (i.e., hands-on and project-oriented approaches) dominate, or does the best learning about environmental problem-solving occur in a teacher-centric classroom? Or is there

¹It is commonly thought that “environmental science” programs are organized around a natural science core, whereas “environmental studies” programs emphasize policy studies and work in the humanities. Surprisingly, no systematic difference between the two asserted itself in our study sample. Many “science” programs emphasize policy studies or political economy and many “studies” programs revolve around a natural science core.

²Our thanks to Kai Lee, professor of environmental studies at Williams College, for this distinction between “insiders” and “outsiders.”

some workable middle ground? Nowhere is it clear. Are environmental studies students well-served by a highly prescriptive curriculum, one that locks students into the vision and biases of the program's administrators? Or are students better served by assuming responsibility for making informed choices among a broad set of acceptable courses, even when poor choices take a toll on curricular coherence? Again, it is impossible to know for certain.

Similar ambiguities pervade choices regarding over-arching program architecture. Persuasive arguments are often advanced for framing environmental studies programs as discrete departments with full-time faculty attached thereto. Within academe, formal departments often prove to be more capable than ad hoc interdepartmental bodies—which often fail to become institutionalized—of securing resources and hiring and retaining faculty. But arguments and examples abound for other architectures, including nondepartmental structures wherein affiliated faculty from a number of departments effectively deliver truly multidisciplinary programs of instruction. Although more vulnerable to the changing tides of institutional priorities—seldom do nondepartmental programs command tenured faculty positions—environmental studies programs that coordinate the course offerings of other departments can impressively advance a campus-wide culture of integrative learning and teaching around environmental issues, to the benefit of students and faculty alike.

Aware of it or not, architects and administrators of environmental studies programs have always faced difficult choices regarding ongoing curricular design, administrative and staffing structures, problem definitions, and dominant pedagogical approaches. No choice is necessarily better than another; each generates a set of ongoing challenges that must be monitored and managed. Confronted by many choices and lacking a guiding disciplinary canon, program planners might well throw up their hands and give in to an “anything goes” philosophy—the task of systematically negotiating these many choices becomes overwhelming, even without the added complications supposedly brought on by the increasing disciplinary diversity of environmental studies faculty. This certainly is the image of life in the average environmental studies department that Soulé and Press advance. It is, however, one that bears only limited resemblance to reality.

Programmatic responses and implications

Recall that at the outset of our study we expected to encounter broad patterns of curricular incoherence driven by the rapid growth in the number and size of environmental studies programs in the United States—a growing attitude of “anything goes,” in other words. We found instead that approximately 70% of the programs in our study have already marshaled six distinct programmatic

Six programmatic responses

How do environmental studies programs negotiate difficult tradeoffs and guard against multidisciplinary illiteracy and other perils?

- **Environmental studies across the curriculum.** Most courses in the entire college curriculum explore environmental problems, although from specific disciplinary vantage points. This model effectively skirts the “breadth versus depth” question, but at high administrative cost.
- **Concentration programs.** These are minor or certificate programs that seek to develop focused competencies in environmental science and studies, in ways that join with another, separate, major program of study.
- **In-depth programs that foster a self-reinforcing understanding of natural science analysis.** Some of the oldest environmental studies programs fall in this category, with their emphasis on natural science competency (in biology, geology, and chemistry, in particular) and a smattering of social science coursework. Introductory courses in environmental problem-solving privilege the natural sciences—students pursue an upper-level combination of natural science courses (e.g., biology, chemistry, earth sciences, and physics)—and track students along a multidisciplinary natural science exploration of environmental ills.
- **Foundation study plus an applied, multidisciplinary focus.** This newer model varies widely in the details of its execution. Typical programs require foundation study of the natural sciences, then ask upper-level students to develop competency in a particular integrating topic or area of expertise. This is another programmatic approach that skirts the breadth-versus-depth tradeoff by incorporating both elements.
- **Explicitly multidisciplinary, extensive-breadth programs.** These programs intentionally emphasize breadth over depth and make no apologies for doing so. Students are exposed to diverse perspectives on environmental problem definition and problem solving. This exposure is thought to foster self-reinforcing skills of problem identification, problem solving, and intellectual humility in the face of complex problems.
- **Umbrella programs.** These programs are multitrack and multidisciplinary and typically take root in large land-grant institutions in which competing departmental or disciplinary claims to “environmental studies” spawns multiple variations of the five preceding categories, often coexisting under one coordinating programmatic umbrella.

responses (see box page 513) against the dangers of curricular incoherence and multidisciplinary illiteracy. We now are working to supplement our general understanding of these sets of responses with case studies of some of the most innovative and successful programs in each set. We expect these cases to more fully illuminate important pedagogical and administrative dynamics at work within these six responses. They may also reveal ways in which one or more of the six prove especially capable of holding at bay the threat of a “hyper-diverse, shallow curriculum” (Soulé and Press 1998) and delivering to students a multidisciplinary education of value.

What we can now assert is that prevailing curricular and administrative behaviors within environmental studies programs are more complicated and diverse than Soulé and Press claim, and that a far lower percentage of programs (30% in our study sample) than that suggested by Soulé and Press appears marred by pronounced curricular incoherence. Indeed, the emerging norm within environmental studies programs appears to be less an ignorance of multidisciplinary illiteracy than a hypersensitivity to it. Cognizant of past curricular blunders and pressured by parents, students, and administrators to demonstrate the vocational value of an undergraduate environmental studies major, those directing environmental studies programs are taking pains to be perceived as rigorous. Despite the influx of faculty from a variety of disciplinary perspectives into environmental studies, a prevailing pedagogical strategy of “anything goes” is far from common. Soulé and Press’s prediction of widespread “paralysis of program planning” that leaves a dearth of “curricular coherence and depth” unchallenged is unrealized in our sample.

Weak scaffolding. This is not to suggest, however, that Soulé and Press’s concerns should be ignored. After all, three out of ten environmental studies programs in our study did disappoint. These programs are typically understaffed, underfunded, and rely on myriad faculty borrowed from disparate departments to deliver a curriculum. Lines of authority and responsibility for program administration and planning are blurred, ambiguously shared, or both; some programs are administered by an unwieldy sum of affiliated faculty who appear to be rewarded more for contributions to their own departments than to a loosely organized environmental studies program. Most of these programs, to put it bluntly, are run on the cheap: as Braddock et al. (1994) note, they are parasitical on more established disciplinary programs and tend to “fail at the first sign of funding pressure or faculty staff movement.” Their administration and delivery relies on the “kindness of strangers”—namely, faculty in other departments who may already be overextended by persistent departmental obligations.

This collection of weaker programs does tend to “reproduce the university in miniature,” but not because

of the increasing disciplinary diversity of environmental studies faculty, as Soulé and Press claim. At work instead is institutional opportunism that is as blatant as it is understandable. As undergraduate interest in environmental issues grew during the late 1980s and into the 1990s, pressure mounted throughout the world of higher education to respond with environmental studies programs to meet rising student demand. Many existing environmental studies programs added new faculty (which often increased the disciplinary diversity of these programs without, as far as we can discern, eroding coherence) and accommodated additional students. Many more educational institutions brought new programs on board or formalized existing ad hoc programs (frequently by expanding them into full-fledged majors, minors, or concentrations) in ways that complemented existing institutional strengths.

Other institutions, however, responded with environmental studies programs in name but not in practice—programs that could be marketed to prospective students but that suffered from too little administrative support, faculty resources, and careful deliberation over the hard choices explored in the box on page 512. In the short term, this institutional strategy can pay rich dividends: At minimal expense a college or university can lay claim to an environmental studies program and attract new students or accommodate the interest of existing ones, perhaps with the full intention of bringing additional resources to bear in later years. As the number of students in these skeleton programs grows, however, the flimsy administrative and curricular scaffolding begins to buckle, leading to an anything-goes strategy that drives the curricular incoherence decried by Soulé and Press.

One response, which we favor, would center on alerting would-be students of environmental studies to the programmatic opportunities and dangers that lie before them. It is the lead author’s experience, drawn from more than a decade’s work in environmental studies programs, that prospective students rarely raise questions about the ability of an environmental studies program to deliver what it promises (the more usual question is whether a student will be employable after graduation).

Prospective students thus would be well served by the knowledge that all environmental studies programs are not created equal; at least seven varieties exist—the six outlined in the box on page 513 and a seventh one, namely, skeleton programs ready to buckle under the weight of increasing enrollments. Questions aimed at identifying and avoiding these skeletal programs (e.g., queries about the number of full-time faculty dedicated to the program, the impact of any recent enrollment growth on the ability to deliver a coherent program, and existing plans for accommodating additional enrollment growth without putting curricular coherence at risk) should be at the tip of every student’s tongue. More sophisticated questions about how and why a particular program balances the

tradeoffs listed in the box on page 512 and settles into one of the programmatic strategies explored in the box on page 513 could follow. If students and their parents raised these tough questions and reflected about which program types listed in the box on page 513 best match a student's own talents and interests, significant pressure could be brought to bear on those programs most guilty of fostering multidisciplinary illiteracy. Admittedly, it is difficult for students to frame, much less ask, such questions without guidance and encouragement. As yet, there is no subject-specific guidebook for prospective students of environmental studies and their parents, but we are now working to produce such a guidebook, based on the research described in this essay.

Lessons for program architects. We believe that our findings may be useful not only to prospective college students but also to faculty and administrators who are designing or launching new environmental studies programs. Environmental studies program architects should understand, however, that not all program models listed in the box on page 513 may be equally appropriate for all educational settings. Our study sample suggests that a handful of elements appear to steer educational institutions toward some of the models listed and away from others.

One such element, clearly, is the size of the educational institution. Three of the programmatic responses—environmental studies across the curriculum; foundation study plus an applied, multidisciplinary focus; and extensive breadth—are found disproportionately in smaller institutions that emphasize undergraduate teaching and advising over research. This pattern most likely reflects the requirement for intensive academic advising imposed by each of these three models—for any of them to be effective, students and faculty must work together closely to bridge the gaps among disciplines and together pursue integrative projects. Smaller institutions are best positioned to support such close and ongoing student–teacher contact.

By contrast, larger institutions tend toward three different programmatic responses—concentration programs, in-depth natural science programs, and umbrella programs. The concentration model offers larger institutions a mechanism for easily grafting an interdisciplinary environmental studies program onto existing disciplinary structures and programs. Indeed, some of our interviewees suggested that the concentration model allows larger discipline-centric educational institutions to create an interdisciplinary educational space for environmental studies without undermining the disciplinary organization of departments or majors or the disciplinary delivery of knowledge. In-depth natural science and umbrella approaches are also congruent with the disciplinary, department-bound mechanisms of inquiry and education that most strongly prevail in larger institutions of higher education.

This is not to say that one set of environmental studies

programmatic models always evolves in smaller colleges, whereas another model emerges only in larger universities. But size undoubtedly matters when puzzling out how and why environmental studies architects make the choices they do. We conclude that as educational institutions scramble to create environmental studies programs—as many have done throughout the 1990s—they favor those models that complement existing institutional strengths and administrative structures.

The ontogeny of any environmental studies program also tends to reflect the prevailing organizational mission and pedagogical structure already in place in the larger college or university. Programs of extensive breadth, for instance, are rooted disproportionately in colleges that broadly construe their mission as training citizen activists and problem solvers. Across-the-curriculum programs are found in institutions with robust faculty consensus regarding the role and extent of general education requirements. In-depth natural science programs are more common in those institutions at which the natural science community holds great sway or in those whose admissions strategies target prospective students with special interests in the natural sciences. And, interestingly, those programs with a natural science foundation plus a multidisciplinary focus tend to emerge at institutions with demanding natural science programs that attract relatively large numbers of first-year students, many of whom by their second year of study conclude that they are a poor fit for ongoing study in biology, chemistry, or physics. These sophomores retain an interest in the natural sciences, but they desire an alternate major, one that will count their first-year work in the natural sciences toward a degree in that newly selected discipline.

Although different in important ways, none of our six programmatic responses can be run on the cheap. Each demands significant resources, a fact not always appreciated by program administrators. Our case-study work suggests that successful architects of environmental studies programs recognize the central role played by reliable funding of a range of needs (e.g., special seminars, internship experiences, lab equipment, student travel to conferences, applied projects, faculty release time for curriculum development) in the effective delivery of an environmental studies curriculum. These actors make their hard choices and frame their programs in ways that command support from diverse campus constituencies and advance broader, long-term institutional imperatives. What is good for the environmental studies program thus becomes good for the institution, which in turn helps to ensure adequate resources for the program.

Continuing the conversation

In addressing the question “what is environmental studies,” Soulé and Press usefully remind us that environmental studies programs—like most multidisciplinary educational ventures—remain vulnerable to curricular

incoherence, program-planning paralysis, and an anything-goes approach to undergraduate education, noting that these vulnerabilities may be amplified by the increasing disciplinary diversity of environmental studies faculty. It would be foolish to pretend otherwise; Soulé and Press protect us from such foolishness.

Still, although our empirical exploration of environmental studies programs is not yet complete, we find little evidence to support the claim that disciplinary divisions and normative conflicts among a new breed of environmental studies faculty are spawning a wave of universalist programs that, in Soulé and Press's (1998) words, "fail to address the curricular and pedagogical problems of coherence and depth." We remain open to the possibility that increased disciplinary diversity among faculty may exacerbate the likelihood of normative conflict and planning paralysis within environmental studies programs, but there is ample reason to assume that this increased diversity might prove manageable—even advantageous—when tenure, promotion, and merit pay are directly linked to faculty contributions to crafting and advancing an effective, rigorous program (Braddock et al. 1994). Indeed, Braddock et al. (1994), whom Soulé and Press cite in partial support of the claim that increased disciplinary diversity among environmental studies faculty fosters discord and curricular incoherence, argue that combining faculty from disparate disciplines into one autonomous multidisciplinary program is a preferred strategy for blunting faculty miscommunication and discord that sometimes comes with so-called disciplinary gaps. Ultimately, it would be helpful to have a deeper understanding of the empirical roots of Soulé and Press's belief that a more disciplinary diverse environmental studies faculty will prove more contentious and centrifugal and less able to come to agreement on a coherent core curriculum for their program.

The sky, we believe, is not falling on the linked fields of environmental science and environmental studies. Although challenges remain, the field is not at a crisis point, nor is it sliding toward curricular anarchy. Rather, in decentralized but not uncoordinated ways, and with little fanfare, departments and programs are embracing multiple innovations and strategies to cope with the dangers Soulé and Press (1998) elucidate.

Now may be the time, therefore, to broaden the conversation about the state and direction of undergraduate environmental studies programs to include a new, more empirically oriented set of questions: How have architects and administrators of environmental studies programs, for example, sought to bring coherence and rigor to their programs? Why have they elected to pursue some strategies over others? Why have some programs been slow to respond to well-documented and often-repeated warnings about curricular incoherence? And, in both theory and practice, what effect does the increasing disciplinary diversity of environmental studies faculty have on the

curricular coherence of environmental studies programs? As a second wave of growth in the size and number of environmental studies programs continues (see Figure 1), and environmental education in its many forms becomes yoked to initiatives for a sustainable future, these are the questions that scholars of undergraduate environmental studies education should begin to consider.

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