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Learning from the Landscape

A Proposal for a Green Web Course

How can we encourage students to think deeply about the environment we live in? To understand basic ecosystem services and energy flows through the world? To creatively face the problems that human civilization has placed on the biosphere?

The Indiana University campus, both literally and figuratively, is an underutilized foundation for teaching the basics of environmental literacy and the ethics and practices of sustainability. As a physical place and as an institutional nexus of human resources, the Bloomington campus can function as a laboratory and field site to illustrate environmental history, illuminate general ecological systems, and explicate diverse responses to the current state of the environment.

Conceptual Rationale

This essay proposes a conceptual design for a web-based course that uses the local landscape of IUB to understand the status of the global environment, how ecosystem services support life, and why humans need to live in a sustainable manner. These learning goals emerged over the course of a yearlong, multidiscipline faculty seminar on environmental literacy at IUB in 2003-04, and led to the creation of an ongoing pedagogical effort, the Environmental Literacy and Sustainability Initiative (ELSI). With a multifaceted approach, ELSI is pursuing the challenge of educating all students for this fundamental civic necessity. ELSI joins a host of other universities pursuing campus environmental stewardship and learning.

The modern environmental movement in America dates from the aftermath of World War II, with the U.S. locked in a geopolitical struggle with the U.S.S.R., vying for supremacy in science and technology. Domestically, the nation was enjoying a period of unprecedented economic prosperity. But critics started pointing out the hidden costs of this affluence and the increasing pollution of the land, water, and air. By the 1950s, smog in urbanized California was a problem. In 1962, Rachel Carson's *Silent Spring* indicted the chemical industry for its profligate and indiscriminant use of poisonous substances for pesticides and herbicides, leading to deleterious effects on all living organisms. By the end of the 1960s, environmental concerns joined civil rights, feminism, and the Viet Nam war as objects of protest and activism. In 1970, both Earth Day, an annual festival, and the federal Environmental Protection Agency, were established.

At Indiana University, professors and students organized an educational "teachin" held in Dunn Meadow on the first Earth Day. The City of Bloomington created a volunteer Environmental Commission in 1971 to advise city departments and local developers on land use, greenspace, and waste management. The following year the new IU School of Public and Environmental Affairs was established, strengthening a longstanding faculty interest. On the national level, membership in organizations such as the Sierra Club was up sharply, and Congress passed the National Environmental Policy Act in 1970. IU political science professor Lynton K. Caldwell was among the principal drafters of the bill, which called for consideration of environmental impact of development projects – the now ubiquitous "Environmental Impact Statement."

Since those heady years, popular enthusiasm for the environmental movement has waxed and waned, but concerns about the environment have garnered a permanent place on the public agenda. In the 1980s, thinkers such as the Norwegian philosopher Arne Naess articulated a radical view of humanity's role in the biosphere that came to be known as "Deep Ecology," and Earth First! and other direct-action organizations were spawned. In the 1990s a global agreement to coordinate efforts to improve the environment were enshrined in the Kyoto Protocol, yet the U.S. relinquished its leadership when the government declined to be a signatory. But local and regional efforts continued, both in statutory bodies and area agencies (e.g., Bloomington Environmental Commission; Hilltop Garden & Nature Center) as well as issue-oriented organizations (e.g., Citizens for Appropriate Rural Roads).

The environmental movement has always had a strong pedagogical thrust, and generations of energetic young people have been drawn to its ideals and ethical standpoint. In academe, Washington University biologist Barry Commoner (1971) observed the contradictory advice surrounding the first Earth Day, which prompted him to formulate the following set of informal "laws of ecology."

- > Everything is connected to everything else.
- > Everything must go somewhere.
- > Nature knows best.
- > There is no such thing as a free lunch.

These principles, expressed in the vernacular, remain pedagogically useful even if environmental education has yet to reach consensus on learning goals, methodological approaches, and substantive focus during the ensuing decades.

2

Oberlin College political scientist David Orr coined the term "ecological literacy" and his 1992 book of the same name attempted to put the idea into wide circulation. For Orr, ecological literacy comprised not only a new mindset regarding humans and nature but also a different way of living in the world, both individually and collectively. In colleges and universities around the nation, efforts to promote environmental literacy proliferated in the 1990s, both within and adjacent to the academic curriculum. Conferences, notably the biennial "Greening of the Campus" (held at Ball State University in Indiana), and organizations, such as Campus Ecology (sponsored by the National Wildlife Federation), have built networks and provided a focus for disparate activities. More recently, the Association of University Leaders for a Sustainable Future, including signatories of the 1990 Talloires Declaration, have been constructing a global partnership to foreground environmental issues in higher education. In 2000, the organization established the *International Journal for Sustainability in Higher Education.*

The recent publication Penn State biologist Christopher Uhl's *Developing Ecological Consciousness* textbook presents an integrated approach built upon the foundation of wide reading and long experience in the college classroom. The book is divided into three sections. The first part (*`Earth, Our Home"*) is designed to reawaken students to the wonder of the natural world and its processes; the second (*`Assessing* the Health of the Earth"), to evaluate the myriad ways human beings are damaging the environment; and the third (*`Healing Ourselves, Healing the Earth"*), to present the paradigms and tools for individual and collective renewal and restoration. The supple writing blends scientific facts to, in the author's words, *``awaken the head," aligned* with humanistic interpretations to *``awaken the heart."*

These three themes – wonder, despair, hope – emerge as common currency in discussions about the environment, including conversations surrounding the IU Environmental Literacy and Sustainability Initiative. Guided by these themes, a conceptual design of a web course under the working title of *The Green Campus of Indiana University* is sketched below.

Content Considerations

The content of this course will be based on selected items of daily life that a typical college student might consume or use throughout the normal day -- such as food and drink, clothing, transportation, housing, equipment -- and trace their life cycle, progressing both upstream to the item's origin and downstream to its ultimate fate. In so doing, students will be confronted with the larger context of their daily

choices and exposed to some of the environmental consequences, both individually and collectively.

Suggested items include: Food and drink: water; beer; coffee; potato; corn; chicken; salmon Clothing and fabric: cotton T-shirt; Nylon backpack Transportation: automobile; bicycle; bus; pedestrian Housing: dormitory room; downtown apartment; room in shared house Equipment: pencil; paper; personal computer; cell phone

To connect with students' lives, each chapter would begin on the level of the *mesocosm* (the human scale), with an item of daily use. In telling a likely story about where the item came from, its transformation by human use, and its fate afterwards, the item will be analyzed on various levels, from "the big picture" context (*macrocosm*) of ecosystems services to the unseen world of microorganisms and biogeochemical processes (*microcosm*) that support the biosphere.

Each chapter will be devoted to one item, and should emphasize both the local IU context and the global connections that tie it to this place. Take "chicken" for example: How did it get here, both as a physical object and a social negotiation? Where is it going after you eat it, materially and culturally? Let's say, a McDonald's chicken sandwich, prepared locally in Bloomington from frozen chicken raised on a factory farm in North Carolina, with attendant sanitary inspections, pollution issues, and refrigerated truck transportation. The chapter would include discussion of the history of animal domestication and agriculture, and the rise of industrialized meat production (capital flows, government regulations, faster transportation, etc.) replacing family farms. Downstream analysis would include possible human physiological effects of hormones and antibiotics given to the chicken, the community sewage system, and the infrastructure that supports fast food. Alternatives might encompass free-range chickens, the ethics of meat-eating, and vegetarian diets, with accompanying health and social benefits and costs.

Another example would be the bicycle as a form of transportation. Oftentimes students rediscover the joys of bike riding when they come to the Bloomington campus after living in suburban places where families are tied to automobiles for most of their transportation needs. The physical environment is challenging – narrow roads, steep hills, changeable weather – but the bicyclist is rewarded with great scenery, physical fitness, and participation in a vibrant culture of bicycling. The invention of the bicycle in the 19th century was a revolutionary advance in human-powered transport. No

longer were humans confined to walking or running, or dependent on auxiliary sources of motive power that relied on animals, or later, internal combustion engines. For local transportation, around campus and town, the bicycle is fast, easy to park, and is nonpolluting, but rain and extreme temperatures lessen it attractiveness. Each spring, the campus hosts the Little 500, a 50-mile bicycle for undergraduates, which has become a unique part of local culture. As a transportation system, bicycling has a soft ecological footprint in terms of manufacturing resources consumed and no special fuel requirements. But it has limitations in weight capacity, either for passengers or cargo. Students studying overseas are often surprised at the extensive presence of bicycling in the Netherlands or in China, where many people commute to their jobs. That might lead into a discussion of the relationship between transportation, economics, and social organization.

Notebook paper can serve as the last example of the possibilities of this approach. Paper, as a semi-permanent medium for written communication, has a long and rich global history. The transformation of plant fibers into stable sheets first occurred as a craft technique. Over time it became an industrial process, with wood as the raw material. Upstream, the technology of paper production leads to forests, natural as well as human-managed, and a discussion of what ecosystem services forests provide, including a central role in the global oxygen/carbon dioxide cycle. Case studies might include the Amazon rain forest, sometimes referred to as the "lungs of the Earth," and conflicts over its management, or, more locally, the Hoosier National Forest in southern Indiana with its recurring controversies the interpretation of a policy of "multiple use." Students will read and discuss the parable The Man Who Planted Trees, an inspiring story about individual determination and ecological restoration, and relate it to the changing role of Dunn's Woods as an example of campus stewardship. At the level of the student mesocosm, paper is a ubiquitous presence and taken-for-granted resource, although the individual printer paper allotment might provide a "teachable moment" to discuss campus economic policy. In a larger sense, the university runs on paper, with student assignments, memoranda and policy documents, archives and libraries all utilizing this renewable resource. Once notebook or printer paper is discarded, it enters either the waste stream, destined for the landfill, or the recycling service. How paper gets recycled, the challenges of the market for recycled paper, and emerging alternative fibers for paper production are all topics for investigation.

Conclusion

At completion of this course, students should understand: the major ecosystems and their associated services; the historical progression of ecological regimes, both geographically and temporally; the fundamentals of ecological footprint analysis; the concepts, ethics and practices of environmental sustainability.

A web course is not a panacea. It cannot replace the traditional classroom, experiential learning, or time in field settings. But it can be an effective way to teach undergraduate students. Even modest rates of enrollment could have large cumulative effect. For instance, if 1,000 students a year took such a course, then after eleven years, there would be an alumni group of 10,000 course graduates, or approximately 2% of the total alumni body. IU's home campus is Bloomington, where the largest population of students resides. But the institution spreads its educational mission throughout the state with other IU campuses and into the world with 450,000 alumni. A successful web course will be a small but significant step in developing environmentally literate graduates. Reaching the massive IU student body with computer-assisted instruction is but one reasonable and effective way among many landscapes of learning.

Acknowledgments

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