

# focus

on university teaching and learning

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## The Dalhousie Environmental Education Program

Dalhousie University is actively engaged in a number of initiatives which link environmental issues to education. In an endeavour which has earned national and international attention, students and faculty from the School for Resource and Environmental Studies are developing an industrial ecosystem at the local Burnside Industrial Park. Dalhousie's School of Business Administration is working in partnership with universities in the U.S. to devise ways to integrate environmental learning into business education.

Among other initiatives to link the environment and the classroom is the Dalhousie Environmental Education Program (DEEP). From January to April, 1994, this series of six lunch-hour workshops attracted faculty and teaching assistants from a variety of disciplines. Speakers from areas as diverse as Music and Pathology engaged participants in discussions about issues which are affecting our world and which should be part of, rather than apart from, our classroom teaching. This issue of *Focus* highlights the Dalhousie Environmental Education Program and demonstrates that professors can and should teach their students to analyze and seek solutions to environmental problems using a variety of disciplinary approaches.

### Environment: A Subject for All Disciplines

Ray Côté and Fay Cohen  
School for Resource and Environmental Studies

For some, the issue of the environment is a fad; for others, it is a religion; for still others, it is the core of their professional work. Perhaps, an appropriate way to think about the environment is the dictionary definition: "that which surrounds." We are all surrounded by and part of the environment.

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*"To have a better world, we need environmentally literate graduates."*

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For too long, humans have thought of themselves as apart from the rest of the environment. Particularly since the industrial revolution, many humans have believed that we are not constrained by the laws of nature, the principles of thermodynamics, and the ecological functions which sustain the diversity of life on the planet Earth. Increasingly, people have become aware that they too are integral in the system of life on Earth.

The local problems of solid waste and sewage disposal, the regional problems of acid rain, and the global problems of ozone depletion, deforestation, and the loss of biodiversity should cause all of us to consider some of the old adages:

- What goes up must come down.
- Everything has to go some place.
- Out of sight, out of mind.
- Everything is connected to everything else.
- There is no such thing as a free lunch.

Sulphur dioxide and nitrogen oxides emitted into the atmosphere at one location have been deposited as acidic precipitation hundreds of miles away. Radioactive materials spewed into the atmosphere at Chernobyl found their way to Scandinavia and elsewhere. Solid waste collected at home and here at Dalhousie does not simply disappear into a garbage truck: it must be taken to a landfill, an incinerator, or, preferably, to a multi-material recycling centre. Burying chemical wastes in the ground in a number of cases, out of sight as it were, has proven to be an unsatisfactory solution as chemicals leak through permeable formations into drinking water. The worry about the risks associated with consuming contaminated water has had a severe toll. Local politicians and international diplomats are finding these problems increasingly difficult to resolve because they involve questions of equity as well as technology. The calculation of the costs has become a complex challenge for economists, while philosophers question whether society should be putting a price on nature and ecological functions. We can ponder these weighty issues listening to musicians celebrate nature and endangered species.

One of the most important things we can learn at Dalhousie is that there is an interconnectedness between ourselves and that which surrounds us. We are surrounded by others here at Dalhousie, in Halifax, and elsewhere on the planet. A purchase of a product here can, in fact, affect someone's livelihood, positively or negatively, half a world away. But we are also surrounded by air, water, soil, and other species, all of which contribute in large and small ways to our own well being. That message can be taught in all disciplines, from music and literature to physics, mathematics and medicine. If we are going to have a better world, we need environmentally literate graduates. ✪

*In the following piece, Tania Li argues from a social sciences perspective that the protection of the environment is contingent upon the well being and security of those who live on and farm the land.*

## Livelihood Security

Tania Murray Li  
Sociology and Social Anthropology

The concept of environmental security begins from a concern with physical things, such as the state of forests, oceans, and soil. It leads to a focus upon protection and conservation of these things. By contrast, the concept of livelihood security begins from a concern with people, especially that large portion of the world's population who are rural and poor. It focuses attention upon the need to find ways to make their livelihoods more adequate and secure.<sup>1</sup>

Livelihood security has three main components:

**Ecological:** the biophysical sustainability of the resource base from which livelihoods are obtained. Insecurity stems from overuse or degradation.

**Economic:** the viability of livelihoods in terms of their adequacy to meet basic needs either through direct consumption or sale. Insecurity stems from insufficient production; exploitative labour arrangements; overspecialization and lack of diversity; and vulnerability to market prices, especially for those who grow a monocrop (a single crop, e.g., only corn or only potatoes).

**Political/Legal:** the security of access to, and control or tenure over, the resources upon which livelihood depends. Insecurity stems from threats of eviction or displacement by more powerful interests, including private entrepreneurs or the state.

Seen from a livelihood security perspective, ecological sustainability is only part of the problem. At least as fundamental are the economic and political arrangements through which resources are used. It is these arrangements which dictate "who benefits and who loses" from a particular resource regime, and from any changes or interventions proposed either to conserve it or to increase its productivity. Whose livelihood—whose livelihood exactly—will be affected? Will it be women or men who gain? Rich or poor? Insiders or outsiders? This ethnic group or that one? Communities or the state?

Not only is the livelihood approach ethically justifiable in itself, it is also recognized to be the most effective route to meeting the goal of environmental protection in the long term.

The argument runs as follows:

**Environmental Knowledge:** Poor people tend to live in vulnerable and/or degraded environments. They have the most detailed knowledge of these environments, their potential uses, and the measures needed to ensure their long-term ecological stability. They also know that, if their present resources are destroyed, they have few alternatives: a powerful incentive to conserve.

**Repelling Core Invasions:** Those who would exploit natural resources for profit have no limits to their desire for expansion. Increasing the control of the poor over resources empowers them to repel core invasions by outsiders whose incentives to

**Population:** The poor are accused of overpopulating the world, but family labour is often their only resource. Increasing their control over land and other resources decreases the need to have more children to secure the family's future.

**Distress Migrations:** Where the needs of the poorest are disregarded, and they are displaced, exploited or left without protection and services, their options are very limited. Often they must engage in destructive practices in order to survive. These include overusing the resources where they are, or migrating to areas of even higher ecological vulnerability (steep mountains, deserts, reserve forests) or to cities, where conditions are already bad enough. Meeting the needs of the poor is *essential* to environmental protection—there is no way around the fact, and no short cut

These are powerful arguments for making livelihood security, especially for the rural poor, both the central goal *and* the central strategy of development endeavours.

<sup>1</sup> Reference: Chambers, R. (1988). *Sustainable livelihoods, environment and development: Putting poor rural people first* (Discussion Paper 240). Sussex: Institute of Development Studies. \*

## The Opinion of a Graduate Student Participant in DEEP

M. Angelica Silva Serra  
Department of Biology

In January, 1994, I read a pamphlet describing the Dalhousie Environmental Education Program for graduate students and faculty involved in teaching. The information appeared too good to be true! The program included speakers from a variety of backgrounds rather than those centered in one area. I am particularly interested in the integration of natural (biological, chemical, physical) and sociological approaches to the examination of the environment. I therefore called to register.

The informal lunch-hour meetings were well planned and organized; they gave me opportunities to listen to excellent presentations from mem-

bers of the Dalhousie community and ample opportunity to participate in discussion. From my point of view, this series of six workshops helped me to

integrate further into my background the social implications of environmental degradation and conservation; health; harmony (music); food production; and areas other than the natural sciences with which I am most familiar. We must consider sociological and political aspects to provide a more holistic perspective of environmental education. In general, we do not understand our role in the conservation of our living conditions, and we must be part of the solution.

Dalhousie must take a leadership role in environmental education for its community of students, faculty, staff, and the population at large. The program should be considered for undergraduates also, as many Dalhousie graduates go on to work in other cities and around the world. Their approach to nature will play a fundamental role in their lives and in their communities. Further, environmental education must be mandatory in all disciplines. We humans are only a small part of all living organisms; we are the ones that need to rethink our attitude toward the environment that we share and want to conserve.

DEEP has helped me to think about how to improve my own actions; I hope I will be able to apply these thoughts while I teach at any level \*

## Mus-ecology

David Schroeder  
Department of Music

One fully expects environmental studies to be of an interdisciplinary nature, but the possibility of making a link with music does not come readily to mind. To be sure, a number of composers have exhibited a profound love for nature in their works, including Haydn, Beethoven, Schubert, Debussy, Bartók and Messiaen, but the step from that to addressing environmental issues remains large. More recently, these issues have become the focus of musical works, and no one has pursued this more actively than the Canadian composer R. Murray Schafer. The pun on "musicology" given above is his.

Music 1010R, a class for students not majoring in music, introduces music through linkages with a variety of fields, including literature, cinema, religion, social history, painting, mathematics, and gender studies. This is not a music appreciation class in the normal sense nor an historical survey; instead, it proceeds in a topical manner related to the various other fields in question, and one of those is environmental studies.

In Music 1010 (now a first-year writing class), the environmental component focuses on Murray Schafer's musical works and essays. Schafer's primary role is advocacy for environmental responsibility, and he achieves this through musical works that draw our attention to the issues. Some of his most unusual works in this respect are ones intended to be performed in wilderness

settings, combining the sounds and voices or instruments with those of the natural surroundings. Such a performance took place in Nova Scotia in 1993, at Long Lake (Camp Kidston) near Middle Musquodoboit, when Schafer was composer-in-residence at the Scotia Festival of Music at Dalhousie. I show a video of excerpts from that performance to the class. One of the marvelous moments of that performance was when two Canada geese flew over the lake during a vocal number, honking at full volume.

In his essays, Schafer discusses various aspects of "sound pollution" and also alerts us to the dangers of damage to our hearing. Again, the discussion becomes interdisciplinary, as issues concerning medicine, engineering, law, and social behaviour are invoked. One of his pet projects is a guide to Muzak-free restaurants in Canada. ■

*Dr. Schroeder has shown us that the combination of music and environmental education is not as unlikely as it might appear at first. Musical works which highlight environmental responsibility and discussion of "sound pollution" have enriched his classes. Have you incorporated environmental education into your discipline in an innovative way? For example, when you are looking for a topic in, say, German conversation class, do you choose to engage your students in a discussion about recycling?*

*Please send a description of your teaching strategy to the Office of Instructional Development and Technology, Killam Library, Dalhousie University, Halifax, NS, B3J 3H5 (e-mail: Herteis@ac.dal.ca).*

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The OIDT wishes to thank all the presenters of DEEP workshops

Environmental History and Law - Fay Cohen (SRES), David VanderZwaag (Law)

The Environment and Health - David Janigan (Pathology), Judith Guernsey (Comm. Health & Epidemiology)

A View of Earth - Edith Angelopoulos (Biology)

Music and the Environment - David Schroeder (Music)

Climate Change and Its Implications - Owen Hertzman (Oceanography)

Environmental Security - Martin Willison (Biology), Barry Lesser (Economics), Tania Li, (Sociology & Social Anthropology)



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