

2004 Taplin Environmental Lecture

BP Chief Calls for Business Role in Facing Environmental Challenges

By Roberta Hotinski

In the eyes of John Browne, development doesn't have to be a dirty word. The group chief executive of BP p.l.c., delivered PEI's annual Taplin Environmental Lecture on October 4, 2004, and outlined his conviction that business should acknowledge the negative impact of resource development and proactively address environmental and social challenges. Browne's speech, "Powers and Responsibilities: The Role of Corporations in Human Progress," was a part of PEI's 10th anniversary celebration.



Lord John Browne, group chief executive of BP p.l.c.

Addressing a packed house of students, faculty, alumni, and donors, Browne focused on the historical relationship between economic development and environmental degradation. "Can we," Browne asked, "transcend what appears to be a harsh and unacceptable trade-off between the goal of improving living standards and, on the other hand, the equally imperative goal of protecting the natural environment which sustains human life?"

Browne argued that business can and should meet that challenge. He described several BP projects that include a focus on reducing the negative local impacts of resource development, including BP's investment in the Russian energy company TNK BP, construction of an oil pipeline from Azerbaijan to the Mediterranean, and plans to build a

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PEI Researchers Insert a Wedge into the Climate Debate

By Roberta Hotinski

Steve Pacala and Rob Socolow are trying to fire-up the debate over greenhouse gas emissions by driving wedges into the discussion. Far from being divisive, though, these wedges provide a common scale for comparing emissions-reducing strategies that people in industry, academia, government, and non-profit groups can use.

Pacala and Socolow, the co-directors of PEI's Carbon Mitigation Initiative (CMI), published their ideas in an article entitled "Stabilization Wedges: Solving the Climate Problem with Current Technologies for the Next 50 Years," in the August 13, 2004, issue of *Science*.

The concept of wedges, which represents the emissions cuts necessary to keep carbon dioxide under control, stemmed from a desire to communicate the concepts of the debate about greenhouse gas emissions as simply as possible. To help make their argument clear, Pacala and Socolow focused on the next 50 years and discussed only two possible futures. In one scenario, current trends are continued into the future—emissions double by the year 2054 and the world heads toward dramatic climate change. In the second scenario, emissions are held flat at current levels which, if followed by further cuts later in the century, would limit global warming and would avoid the worst predicted consequences of climate change.

Moving from the current path to the flat path will require avoiding nearly 200 billion tons of excess carbon emissions over the next 50 years. Pacala and Socolow divide these excess emissions into seven "wedges," each of which represents 25 billion tons of carbon to be avoided. The authors then identify 15 technologies currently avail-

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(Browne, continued from page 1)

pipeline across Canada to bring natural gas from Alaska to the continental U.S. These projects, Browne said, are using the best available technology to promote cleaner energy and minimize environmental degradation. At the same time, he added, they are providing local communities with jobs, revenue, and educational opportunities.

Browne also pointed out that climate change is a daunting environmental problem that requires immediate global action to cut greenhouse gas emissions. Citing work done by PEI's Carbon Mitigation Initiative—a \$20-million research program co-sponsored by BP and the Ford Motor Company—Browne said there are a number of steps that can be taken to substantially reduce emissions over the coming decades.

Focusing on the next 10 years, though, Browne predicted that energy production by greenhouse-gas-free nuclear energy and renewables will remain roughly flat and advocated three fossil-fuel based strategies as the most pragmatic ways to reduce near-term greenhouse gas emissions. First, substantially increasing efficiency, such as doubling the number of miles per gallon new cars must achieve. Second, replacing coal-burning technology with natural gas—a cleaner burning technology that generates about half the emissions of coal. And finally, investing in new technology that can capture and store—not release to the atmosphere—the greenhouse gas carbon dioxide that is produced during fossil fuel combustion.

“We can have economic growth, rising living standards, and a clean environment,” Browne said, “but only if we start now.” He warned that delaying precautionary action would only make matters worse, and that fixing a larger problem in the future could prove damaging to the economy.

At the close of his address, Browne urged the business community to acknowledge the global problem of climate change and work to find solutions to avert it. “The work

done [at Princeton] has helped to define that challenge and to identify a way forward,”

Browne said. “Now we in business have the responsibility to deliver, to turn ideas into reality, and to transform possibilities into real choices.”

Text of Lord John Browne's speech is available at the BP website:

<http://www.bp.com/genericarticle.do?categoryId=98>

[&contentId=7001429](http://www.bp.com/genericarticle.do?categoryId=98&contentId=7001429)

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(Wedges, continued from page 1)

able that could be scaled up to reduce emissions by at least one wedge, and which, if combined, could provide more than seven wedges worth of reductions necessary in the next half-century. Given the potential of current technologies, Pacala and Socolow assert that there is no need to wait for advanced technology to start solving the carbon problem. Indeed, the authors' message is that massive cuts in emissions need to occur immediately if the world is to get on track to avoid dramatic global warming.

Among the strategies that have the potential to take a big bite out of emissions in the next 50 years, the authors say, are the use of solar electricity, wind electricity, and nuclear electricity; substitution of natural gas for coal; increased efficiency in buildings, power plants, and vehicles; the use of biofuels; enhancement of natural sinks of carbon; and capture and underground storage of the carbon emitted as a result of fossil fuel combustion. Although they don't rule out other approaches, Pacala and Socolow are confident that developing and using these strategies can meet the world's increasing energy demands over the next half-century without increasing carbon emissions. Research and development will be needed, however, to keep ahead of the problems that will arise in the latter half of the century and beyond.

The wedges concept has proved popular with industry, academia, government, and non-profit groups and has been adopted by some to compare mitigation strategies. For example, the U.S. Department of Energy and BP p.l.c., one of CMI's corporate sponsors, are publicly couching the issue of controlling emissions in terms of wedges; for example, covering an area the size of New Jersey with solar panels; versus equipping 800 coal-based electric plants with carbon capture technology; versus doubling the efficiency of all the world's cars by 2050, among other wedge strategies. To spread the wedge concept further, CMI has developed a game based on the wedge concept that is currently being tested as an outreach tool for engaging climate stakeholders in industry, government, and the non-profit sector. The goal of the game is to introduce a wide variety of groups to the wedges framework and foster discussion of how emissions-cutting strategies might be implemented in the very near future.

The authors are quick to acknowledge that the scale of the carbon problem is monumental and note that their analysis doesn't address the cost of the massive emissions cuts—the subject of future research. The work is unique, however, in providing a common lexicon for climate stakeholders of all stripes and for supplying much-needed clarity about the steps necessary to move from debate to action. ❁



CMI's Wedge Game challenges players to build a portfolio of technologies and achieve seven wedges worth of emissions reductions over the next 50 years.

PEI Founding Director Simon Levin Recounts PEI's First Decade

Two-thousand four marked the 10th anniversary of the founding of the Princeton Environmental Institute. From 1993 to 1998 Simon Levin, the Moffett Professor of Biology, served as founding director of what was then known as the Princeton Environmental Initiative. Here, he discusses the origin of PEI, how the institute has grown and developed, and its future. Professor Levin is still very much involved in PEI as Director of the Center for BioComplexity, one of the institute's research centers, and as a member of the associated faculty and executive committee.

Please describe the history of the effort to establish PEI and the role you played.

The history of the effort to form PEI began 15 years ago, before I came to Princeton. At that time the University had considerable interest in fostering a coordinated effort in environmental teaching and research, and had established an environmental studies undergraduate program. The leaders of that program included Tom Spiro, professor of chemistry; Henry Horn, professor of ecology and evolutionary biology; George Philander, professor of geosciences; and Robert Socolow, professor of mechanical and aerospace engineering.

There was great interest among many faculty in creating a school for environmental studies. To address this interest, Princeton's then-President Harold Shapiro created a visiting committee that was chaired by Robert White, then-president of the National Academy of Engineering. [In 1967, White was Administrator of the Environmental Science Services Administration (ESSA), later known as the National Oceanic and Atmospheric Administration (NOAA). In this capacity he was instrumental in forming the partnership between the Geophysical Fluid Dynamics Laboratory (GFDL) and Princeton, which began in 1968.] I was asked to become a member of this committee in part because I had been director of a similar effort at Cornell.

As part of the committee, I visited Princeton in 1991. My first impression was that it would be one of the few places that could achieve an interdisciplinary program that would really break new ground. The last ten years have proven that I was right.

I saw that Princeton presented a unique opportunity for five reasons. First, Princeton's faculty was extremely strong. Second, the GFDL, the premier lab in the world for modeling climate change, was located here. Third, the Woodrow Wilson School, which is unmatched in the discipline of policy studies was also here. Fourth, Princeton's facilities were outstanding. One can work

across disciplines here because of the University's small size and the quality of its resources. Fifth, the University was very committed to environmental studies.



Professor Simon Levin

We recommended that the University not create a school, but rather a structure that united the departments rather than separated them. We recommended that the University create a focus of strength beginning with the effects of climate change and bringing in geosciences, ecology, and water resources (as part of engineering) to mix with GFDL. Jerry Mahlman, former director of GFDL, and Jorge Sarmiento and George Philander, members of the faculty in both the geosciences department and the program in atmospheric and oceanic sciences, were very committed to this project. Once this was in place, all Princeton would need to develop to complete the picture would be a policy component within the Woodrow Wilson School. President Shapiro liked this idea and became committed to it.

How did you become PEI's first director?

Once President Shapiro was convinced about the initial structure, he established a committee chaired by Jim Wei, then-dean of engineering. By this time, Princeton had recruited me and Steve Pacala to be professors of ecology and evolutionary biology. Hence, I was asked to serve on the Wei Committee to help shape what was then called the Princeton Environmental Initiative, a name that was key because we could use the same anagram when it became an institute. The provost then was Hugo Sonnenschein [an economist and later president of the University of Chicago from 1993 – 2000]. He offered me the position of director of PEI, an offer I learned I could not refuse. The recommendation that came out of the Wei Committee was that PEI's main goal should be to make the whole larger than the sum of its parts. PEI would not compete with University departments. Instead it would create joint appointments with existing departments, and use this mechanism to attract really outstanding new faculty. That way, not only would it avoid competing, but PEI's ideals and philosophy could infiltrate the departments as well.

The University approved this plan and committed four half-positions, with more to follow, plus funds to buy faculty time to teach. This commitment included the understanding that PEI would eventually raise money to fund the half-positions itself, which it has done. I, and later François Morel, have worked with the development office to raise these endowments.

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(Levin, continued from page 3)

What forces inspired the founding of PEI?

Those of us who contributed to the creation of PEI were initially inspired by our awareness of a sweep of global environmental problems including climate change, loss of biodiversity, the emergence and reemergence of diseases, sustainability, and the future of the planet. Our environment has been changing and degrading at scales and rates not seen before in human history. There was also a growing interest nationwide among scientists and students to do something about these problems. Princeton faculty wanted to work together to try to address these environmental problems. There was also a great demand from students who wanted to learn more about environmental issues.

How have PEI's goals evolved?

Though its goals have evolved over the last 10 years, PEI has stayed true to its vision: to build a strong science base [including engineering and technology]. This is working just as we had planned. We anticipated building on this base to develop stronger ties with the humanities, social sciences, and policy programs, and that has been happening. I credit François Morel, professor of geosciences and current director of PEI, for developing these relationships. I hope a major part of PEI's goals for the next decade will be to continue to expand in the social sciences and humanities, and to be creative in exploring other dimensions—psychology and anthropology, for instance.

Another of our goals was to incorporate the undergraduate program as part of PEI, offering a certificate in Environmental Studies. Led by Tom Spiro, we then started PEI-STEP (originally PEI-RISE), which has turned out to be one of the most successful ways we have of expanding our training of graduate students. [PEI-STEP (Science, Technology and Environmental Policy) provides environmental policy fellowships for doctoral students.] We resisted the temptation to start a new graduate program that would compete with existing departments. Instead, we began to provide funding and enhance opportunities graduate departments already offer.

How did PEI's faculty develop?

The first position we filled at PEI was with François Morel. Then, we had a hand in bringing in Michael Bender and Bess Ward, both professors of geosciences. The next hire was Ignacio Rodríguez-Iturbe, professor of civil and environmental engineering. The final science position was filled by Lars Hedin, professor of ecology and evolutionary biology. These were all terrific hires.

From the start, we created the concept of PEI-affiliated faculty. Today there are over 70 affiliated faculty members

who have a strong interest in PEI and contribute to its activities, even though they aren't drawing a salary from it. This is evidence, I think, of the added value PEI provides.

Princeton is a world leader at the interface between atmospheric sciences and oceanic/circulation models and biology. All the people we have hired—including François Morel, Ignacio Rodríguez-Iturbe, Michael Bender, Bess Ward, Lars Hedin, David Wilcove, and Michael Oppenheimer—are comfortable working with biologists, physicians, and mathematicians and are people who have been able to build this interface. They have been the key people to bridge with existing faculty and the departmental hires to create this outstanding program. The latest hires, David Wilcove and Michael Oppenheimer, further enhanced PEI's ties to the Woodrow Wilson School. Oppenheimer is professor of geosciences and international affairs, and Wilcove is professor of ecology and evolutionary biology and public affairs, both based in the Wilson School in the Science, Technology, and Environmental Policy Program.

When did PEI begin to develop research centers?

One of the first steps toward the creation of the PEI research centers was to absorb the former CEES (Center for Energy and Environmental Studies), integrating it within PEI. We also began to develop a series of separate, focused research centers. New centers will continue to be developed, for example, at the interface between the environment and economics, as the nature of PEI's structure evolves to meet new challenges.

The first focused research effort was led by Steve Pacala and Jorge Sarmiento in 1995 with the formation of the Carbon Modeling Consortium, funded through a grant from NOAA. It has grown into the Princeton Climate Center, part of the new CICS (Cooperative Institute for Climate Science). In 1998, François Morel established the Center for Environmental Bioinorganic Chemistry (CEBIC). In September 2000, Lars Hedin and I acquired a biocomplexity grant from the NSF (National Science Foundation) which grew into what is today the Center for BioComplexity. Following, in October 2000, was the Carbon Mitigation Initiative (CMI), funded by BP and the Ford Motor Company, and led by Robert Socolow and Steve Pacala.

These activities expanded the functions of PEI beyond undergraduate and graduate teaching to include research and outreach, with research providing the organizational skeleton that unified the total program.

To what do you attribute PEI's rapid success?

PEI has received a tremendous amount of support from the University administration and various department chairs. Department Chairs Dan Rubenstein, John Suppe, and Jean Prevost were instrumental in the beginning, and others have been invaluable in the later years. We have also been

tremendously assisted by alumni and friends who have been very eager to help in terms of time and contributions. Both have been—and continue to be—equally important. The late Frank Taplin '37 was the first outside chair of the advisory council. We received great support from Henry Bienen, current president of Northwestern University; John Wilson '56; Richard Scudder '35; Michael Huber '49; Tom Barron '74; Barney McHenry '52; and Hank Habicht '75, current chair of the PEI advisory council; among others.

We have also been successful in terms of outreach, including the Taplin lecture, faculty seminar series, PEI's research opportunities for local community college students, and programs for K-12 schools. I single out Henry Horn, Tom Spiro, Robert Socolow, George Philander, Bess Ward, and Danny Sigman for supporting these outreach initiatives, but many others have contributed. I also mention Will Howarth, who has continuously labored to increase the involvement of the humanities in PEI.

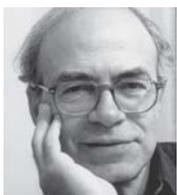
Finally, one of my greatest triumphs was to collaborate with François Morel in hiring PEI's Executive Director Janet Gruschow. Janet has been a fantastic and tireless force for PEI, and has been both a leader and a welcoming interface with the outside community. ❁

PEI Celebrates its 10th with Faculty Seminars

The PEI 10th Anniversary Faculty Seminars were held on October 4th to honor the institute's first decade. The seminars were given by four of PEI's distinguished associated faculty members: Peter Singer, the Ira W. DeCamp Professor of Bioethics, University Center for Human Values; William L. Howarth, professor of English; Michael Oppenheimer, the Albert G. Milbank Professor of Geosciences and International Affairs; and Stephen W. Pacala, Frederick D. Petrie Professor of Ecology and Evolutionary Biology.

Following is a synopsis of each lecture.

Environmental Values and the Moral Status of Animals



Peter Singer

Prior to joining the faculty at Princeton in 1999, Peter Singer was the founding president of the International Association of Bioethics. He was also a founding co-editor of the journal *Bioethics* with Helga Kuhse. He is best known for his work on the ethics of our treatment of animals and became known internationally after publishing *Animal Liberation* in 1975.

In his lecture, Professor Singer discussed western environmental values and the status of non-human animals. He asserted, "Animals have interests, we can't treat them as less because they are different species. These issues come to light if we are trying to make a case for change in attitude on the environmental question... We say we should [preserve the rainforest] because we value biodiversity or because it is home for countless numbers of animals who feel and suffer and will die if forest is destroyed." But the issue starts to come apart when there's a clash between preserving biodiversity and preserving animals, he said.

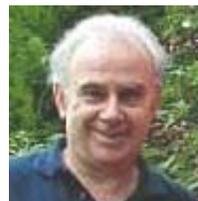
Professor Singer used Australia as a case in point. It is home to many introduced, non-native animals, he said, such as rabbits. These non-native animals compete with native species for food. Rabbits were hunted and diseases were introduced as means of controlling their population, but neither had much of an impact. With the introduction of disease, the population was temporarily reduced, but the animals built up resistance and their numbers subsequently increased. The introduction of disease also caused terrible suffering among the rabbit population. "It made them blind and lame, and they starved to death," he said.

Singer pointed out that in a situation such as Australia's, if an individual is concerned about animals, he or she might not like the methods used to control the rabbit population. However, if an individual is concerned about biodiversity—he or she might believe those methods to be necessary. "This is the kind of conflict that raises these issues," he said. "If we say there are things of intrinsic value beyond humans, then are animals more important or is preservation of biodiversity more important?"

Why do we value biodiversity and devalue the pain and suffering of rabbits? he asked. Is it because rabbits are not self-aware? There are non-self-aware humans we don't want to see suffer either—such as babies, he countered.

Singer suggested the problem is a dilemma of different perspectives. If biodiversity is an intrinsic good, then steps need to be taken to preserve it that have an economic cost. "We have to trade goods for biodiversity. We also need to consider how these trade-offs take place in terms of non-human animals."

Does the Whale Diminish? The Art and Science of *Moby Dick*



William Howarth

William Howarth, one of the first faculty members to join PEI in 1994, specializes in the study of ecocriticism, environmental literature and history, and American literature. His books include *Nature in American Life*, *The John McPhee Reader*, *The Book of Concord*, *Traveling the Trans-Canada*, *Mountaineering in the Sierra Nevada*, and *Walking with Thoreau*.

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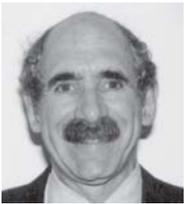
Professor Howarth began his lecture by noting, “At the heart of *Moby Dick* is natural history. [Herman] Melville addresses these questions in *Moby Dick*: Does the whale diminish? Will he perish? Whaling took place in America between 1750 and 1850, and *Moby Dick* describes the destruction of this once common species.”

According to Howarth, whaling was the first oil industry in the world. Melville describes the destruction of a great species for commercial purposes and use in every day life – such as lubrication of machines and home lighting. In *Moby Dick*, Melville describes the end of a way of life.

“White whales do exist, and in the book the white whale acquires a spiritual and tragic meaning. The whale spouts water and takes in fresh air, which gives it life but at the same time seals its doom. Whalers watch for the spray and then go after it...If the whale is to survive it must not be a subject of human desire.”

According to Howarth, Melville describes the animals as kin, not property. “Their deaths enfold us,” he said. “Whales do not diminish because of the size of their ‘pasture’— the sea. Melville sides with dreams and the hope that in spite of human behavior, life will go on.”

Global Warming: Minimizing Long-Term Risk



Michael
Oppenheimer

Michael Oppenheimer has joint appointments in the Woodrow Wilson School, the Department of Geosciences, and PEI. His fields of specialization include the physics and chemistry of the atmosphere, environmental consequences of atmospheric change, and public policy for protecting the atmosphere. In his lecture he

spoke of the dangers of the rising sea level.

The earth is warming due to human activity, Professor Oppenheimer began. “How much warming is too much? Where do we take the experiment?” he asked.

Oppenheimer believes that the most important effect of global warming is a rise in the sea level. “Beaches have been drowned out already. Sea-level rise threatens infrastructure [and] population and, once it starts, it’s almost impossible to stop. What we have already done will cause problems for the next millennium. If we don’t stop we will doom ourselves beyond that.”

According to Oppenheimer, the best models available today predict less of a rise in sea level than is actually occurring. “Perhaps, the ice sheets are melting faster than we have predicted.... [What] we need to know is [whether] global warming is causing this.” In terms of policy, he said, we need to ask what might be done to avert ice sheet change. “We ought to act as if the

melting could occur in the next couple of centuries, not in 1,000 years.”

PEI and the Social Contract: Solving the Problem of Global Warming



Steve Pacala

Steve Pacala, co-director of PEI’s Carbon Mitigation Initiative, opened his lecture with a photo of Woodrow Wilson and reminded listeners that Princeton has a history of “delivering on the social contract.” As PEI enters its second decade, it must follow in the Princeton tradition and continue to

address the social implications of one of earth’s most serious problems: global warming.

PEI’s research centers focus on the *science* of global change, Professor Pacala said. Now PEI must also focus on the humanities and the social sciences. Science alone will not solve the problem, he warned.

At CMI, “We think that if we were to freeze carbon emissions at current levels for the next fifty years, we could cope with the situation. There are plenty of technologies we can use. All the technology employed on industrial scales has been catalogued. It’s already in the marketplace. But implementing these technologies will bring more than scientific challenges,” he said.

He pointed to wind electricity as an example of an existing cost-competitive technology that can be used for electricity generation. “But rapid expansion of wind power is likely to bring about NIMBY [not-in-my-backyard reactions] from local communities,” he observed.

Pacala cited the example of automobile emissions. “Only one-third of emissions comes from cars, so even if we were to cut all car emissions, we could not solve the whole problem.” In addition, cutting automobile emissions in half, he said, would require dramatic changes in buying habits or driving behavior.

Pacala also pointed to storing waste carbon underground instead of releasing it into the atmosphere at large point sources as a way to reduce emissions. But, he cautioned, this technology also is not without problems—global and local carbon leakage are possible pitfalls.

For each strategy used to address the climate problem, he said, “We must look not only at the science, but at economics, engineering, ethics, trade-offs, policy, and various problems” that will arise in each area. Because the climate problem is closely linked to the critical issues of international development and energy security and because there is a policy dimension to carbon mitigation, “We will need to bring in engineering, humanities, and the social sciences to find solutions,” he said. ❁

Alumni Chat: Constance de Brun '00

Constance de Brun graduated in 2000 with a degree from the Woodrow Wilson School of Public and International Affairs. Soon after graduation she began her career at the Trust for the Public Land (TPL), a national non-profit organization. PEI News interviewed Constance about her career and how the ENV Program influenced it, and asked her advice for future graduates.

Please explain what you are doing professionally.

I work at the Trust for Public Land (TPL), a national land conservation nonprofit with the mission of conserving land for people. My current title is Manager of Finance and Administration, so my main responsibilities are financial management, including tracking restricted grants, and creating and managing the budget for my division. I'm also the assistant treasurer of the Conservation Campaign, TPL's lobbying affiliate. I prepare the Conservation Campaign's financial statements and present them to the board of directors. I've learned a lot about what it takes behind the scenes to run a nonprofit organization.

I also work on a range of program development and special research projects, which allow me to stay at the cutting edge of what's happening in land conservation. One of the projects I'm most excited about is the TPL LandVote Database, which I built with the help of a volunteer Princeton alum, Tom Pears '68. Across the country, legislators in dozens of state and local governments vote to raise public funds in support of land conservation each year. The TPL LandVote Database is the premier source of information about these measures. The free, online database brings together a five-year, comprehensive history for all conservation-related ballot measures that have been voted on since 1999. The information is used by members of the press, other nonprofits, elected officials, and community activists pursuing similar measures.

The public's support for saving the places that are special to them is staggering. From 1995 to 2003, voters in 39 states approved 643 measures — 78% of the conservation measures that were on the ballots — and created nearly \$15 billion in new public funds for land conservation. Our polling indicates that land conservation remained a top concern for voters in 2004. We tracked nearly 150 communities that voted on land conservation measures in November's election. On Election Day 2004, voters in 23 states approved 117 ballot measures, creating \$2.5 billion in new funds for land conservation. More than 75% of the measures on the ballot passed, the highest level of voter support for land conservation since 2000. The results are posted at www.landvote.org.

Did the ENV Program have an impact on your career choice and goals?

Yes. The interdisciplinary program exposed me to a range of approaches to environmental management and conservation, and allowed me to combine my interests in ecology, natural history, and animal behavior with my interests in social movements, public policy, and environmental literature. My studies led me to conclude that how we use the land is the root of all environmental issues — from endangered species to air and water pollution. As a result I chose a career in land conservation at an organization that works to reconnect people to land.

The ENV Program also introduced me to environmental law. That exposure has proven invaluable when working with TPL attorneys on legal research and drafting and interpreting legislation.

How did the ENV Program inspire you?

For one of the core courses, I worked on a group project analyzing the New Jersey Department of Transportation's proposed Millstone Bypass [which would impact the local Princeton area]. I met with a coalition of concerned residents and nonprofits called Sensible Transportation Options Partnership (S.T.O.P.), who opposed the project based on the increased traffic and environmental degradation it would bring to the Millstone River and Raritan Canal corridors, including the loss of the elm trees that line [the road that leads to] Princeton's campus. S.T.O.P. urged alternative alignments and a thorough review under the federal National Environmental Policy Act.

This class project inspired me to community activism in my current neighborhood of Bay Village, in downtown Boston. The Massachusetts Bay Transportation Authority has proposed taking my neighborhood's only park and using it as an entrance for a bus tunnel for the Silver Line project. The project also threatens several historic homes. In researching the issue, speaking at hearings, and strategizing with the Bay Village Neighborhood Association, I've drawn on themes from the ENV class. We are proposing alternative alignments and urging a thorough review as required by federal statutes—and so far we have prevailed.

What did you study at Princeton?

I majored in the Woodrow Wilson School of Public and International Affairs, with a concentration on international environmental policy. I took a lot of classes in



Constance de Brun '00

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the Ecology and Evolutionary Biology Department, for I strongly believe that sound environmental policy is based on science. I spent the spring of my junior year abroad at Melbourne University, taking courses in sustainable development, human rights, and Australian wildlife biology. Thanks to a grant from the Woodrow Wilson School, I spent four weeks in New Zealand in the summer of 1999 conducting field research for my senior thesis.

Do you have any advice for current students pertaining to the ENV Program or to a career in the environmental field?

I encourage current students to take advantage of all the program has to offer and to get involved on campus and in the community. I also encourage them to raise awareness of and interest in environmental issues with classmates so that the program can continue to grow. I hope students will choose a career based on their passions—you spend too much time at work not to be passionate about what you do! I have found working in the nonprofit sector to be very rewarding, and I encourage students to explore nonprofit jobs in the environmental arena through summer internships sponsored by PEI, the '69 Community Service Fund, Project 55, and the like. For those seeking networking or permanent positions, I recommend the tigtenet discussion lists and www.idealists.org job listings. All of TPL's openings are posted at www.tpl.org. ❁

PEI Faculty Awards



G. Charles Dismukes, professor of chemistry, was awarded the 2004 Lemberg Traveling Fellowship by the Australian Academy of Sciences. During the summer of 2004, he delivered lectures at five Australian universities.



Dan Rubenstein, professor and chair of the Ecology and Evolutionary Biology Department, was elected Fellow of the American Association for the Advancement of Science (AAAS) in 2003.



Jorge L. Sarmiento, professor of atmospheric and oceanic sciences (biogeochemistry), was elected a Fellow of the American Geophysical Union (AGU) in 2003, and in 2004 was elected a Fellow of the American Association for the Advancement of Science (AAAS).



Thomas Spiro, the Eugene Higgins Professor of Chemistry, will receive the 2005 American Chemical Society Award for Distinguished Service in the Advancement of Inorganic Chemistry. The award will be presented March 15 in San Diego. He will also receive the 2005 Founders Award for outstanding achievement in biophysics from the Biophysical Society.

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Additional information about the Institute and the Undergraduate Program in Environmental Studies is available on the Internet:
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