

ISIE News

Volume 5 Issue 3 (September 2005)

Inside....

Brad Allenby in the President's Corner

Tom Graedel continues to serve ISIE

Reid Lifset with JIE News

Ray Côté's Website Review

New Student Chapter Officers

The IE - Policy Connection

Biomass, Heat and Biofuels—Examples of Policy Issues in Developing IE

Roland Clift (r.clift@surrey.ac.uk)

This article has been prompted by the author's involvement in three policy studies which have attracted attention in the UK. All are concerned with aspects of energy policy:

- "Energy – the changing climate", a major report by the Royal Commission on Environmental Pollution (RCEP), published in June 2000;
- "Biomass as a renewable energy source", a follow-up report by RCEP published in May 2004;
- "Energy efficiency", a study by the House of Lords, published in July 2005.

To give a minimal explanation of the political significance of these bodies, RCEP is a standing Commission which has existed for more than 30 years. It is made up of about 15 independent, appointed experts. It stands outside political processes and formally addresses its reports to the Queen; HM Government is then required to respond. The ideas of Integrated Pollution Control and Best Practical Environmental Option originated with RCEP. The report published in 2000 initiated the process which led the UK Government to embrace a target of 50% reduction in carbon dioxide emissions by 2050.

By contrast, the House of Lords is central to the political system in the UK. Following a pruning of the number of hereditary members, the House of Lords now includes a large number of "Peers" appointed for their prominence, eminence and expertise. In the present state of politics in the UK, the House of Lords has taken on many of the

functions of the opposition – and this includes many Peers who are nominally members of the party in government.

So what has this to do with industrial ecology? All three reports pointed out that UK energy policy has systematically ignored low-grade heat—used mainly for space and water heating—although provision of heat accounts for nearly half of the UK's carbon dioxide emissions. Yet there is a lot of low-grade heat about, from electricity generation and industrial processes. The problem in the UK, as in much of the English-speaking world, is that low-grade heat is dissipated rather than used—so it exemplifies one of the key issues in industrial ecology: beneficial use of waste. Anyone who has examined the iconic case of the Kalundborg eco-park will have realised that integrated energy use is one of its key features. In fact, to a chemical engineer, there is nothing technologically remarkable at Kalundborg: it shows the kind of energy integration which is routine in process plant. Hence the interest lies in how the relationships between the parties at Kalundborg could develop. The policy issues around the development of beneficial uses for waste heat raise the same issues but at a larger scale.

Biomass as an Energy Source

The issues over use of waste heat and of waste or unconventional fuels—unconventional in the English speaking world that is—come into sharp focus over the use of biomass; i.e. forestry and agricultural waste, and energy crops such as willow (*Salix*) and elephant grass (*Miscanthus*). Biomass already makes a major contribution to energy supply elsewhere in Northern and Central

Continued on page 7

International Society for Industrial Ecology

205 Prospect Street, New Haven, CT 06511-2189 USA

What's New in ISIE?

Graedel Gets Scholarship Campaign Underway

At the Stockholm meeting, the ISIE Council agreed to begin a campaign to solicit donations for the Society's Scholarship Fund. **Tom Graedel**, past ISIE President, has jump started the campaign with a very generous gift.

This fund is used to support travel to ISIE meetings for students and members from developing countries. While ISIE has been successful in obtaining grants to support the fund, the Council believes that it is also very important to reach into our own pockets for such critical and growing needs. So, let's all follow Tom's excellent example and make a contribution today!

Please send contributions to:

ISIE
c/o School of Forestry and Environmental Studies
Yale University
205 Prospect Street
New Haven, CT 06511-2189

You can always add a contribution, as well, to your payment when you join or renew your membership.



Student Chapter News

New Student Leaders Elected

Amy Landis (alandi1@uic.edu)

The ISIE Student Chapter had yet another very successful gathering at the ISIE meeting in Stockholm. The Chapter held its elections and here are our new officers:

| | |
|------------------------------|--|
| President | Amy Landis, University of Illinois at Chicago |
| Web Chair | Vered Blass, University of California, Santa Barbara |
| Newsletter Chair | Elvis Oluoch, University of Kenyatta |
| Conference and Funding Chair | Ming Xu, Tsinghua University |
| Communication Chairs | Aron Walker, MIT Jonathon Coble, Middlebury College |
| President Emeritus | Jeremiah Johnson, Yale University |

President's Corner

What We Don't Teach

Brad Allenby (brad.allenby@asu.edu)

It matters not if you are a researcher, an activist, or a wonk; at some point, you come to the query: how do the results of industrial ecology get implemented – or do they? Indeed, at the last conference, as in previous ones, you could usually raise a ruckus by asking about “policy relevance” or perhaps “implementation.” Ah, yes. Implementation. The hobgoblin of our enlightened times.

The subject of how institutions perceive, interpret, and act on information that might be of benefit to them is not only highly complex and multidisciplinary, and thus intellectually challenging; it is also crucial for enabling the fruits of industrial ecology research to be implemented in such a way as to provide greater quality of life at less environmental or social cost. This in turn presents both a research challenge, and a pragmatic challenge: how do we understand institutional change, and how do we as individuals with some (hopefully useful) knowledge make desirable change occur? The importance of this has come home to me in every major setting I've tried to “do” industrial ecology in: a manufacturing environment (the old AT&T), a service environment (the new AT&T), a defense and security environment (Lawrence Livermore National Laboratory), and academia (now at Arizona State University). And in every case, there are things that can be done . . . but it always surprises me how little real experience people have in this arena, and, perhaps more importantly, how absolutely most of us fail to teach our students about how change really happens in the real world (and, by implication, how to participate in that, and perhaps help shape it).

This is not a subject neatly captured in a brief comment. At some basic level, for example, questions about the exercise of free will in the context of the complex systems we are all a part of are not yet answerable – at least, not until we develop the wisdom and tools to predict the evolution of human systems *a la* Azimov's *Foundation* science

fiction novels. So (although I'm tempted) I shan't write a multipage gesture towards free will in the Anthropocene. But these kinds of difficult questions continue to lurk – what is free will at the individual level in an environment characterized by complex adaptive systems whose dynamics are unpredictable *a priori*? What does ethical responsibility mean under such circumstances, and how shall individuals, institutions, and society as a whole exercise such responsibility when complexity trumps knowledge at any particular point in time? And if there is no individual free will, or if it is significantly constrained, then why are we doing what we do at all? Habit? Kierkegaard holds that only habit saves most of us from suicide, but it seems a weak reed to justify a life of research in industrial ecology.

Recognizing that questions like this will not be answered for a long time, one can nonetheless postulate some heuristics which, at least in my experience, are relatively valid across many different kinds of institutions, private, public and academic. So . . . assuming I were a new industrial ecology graduate entering my first position, what kinds of things would I keep in mind?

The first thing I would do in each case is try to understand the culture and the agenda of the institution as objectively as I could. This is almost never a simple matter of reading the relevant press releases, for the “public posture” and the real culture of institutions are quite different, and the latter can be not only more subtle (and perhaps less politically correct), but often unconscious. Moreover, constraints to change can be dynamic as well as static: for example, an organization in a successful phase will be much harder to induce change in than one that is failing. When IBM was king of the mainframes, for example, it would have been impossible (for good reasons) to shift the firm to a primarily service orientation; but when IBM was in trouble a few years ago, that very fundamental shift was actually accomplished. It is often the case that innovative academic

Continued on page 10

10th Anniversary Brings Good Tidings

Reid Lifset (Reid.Lifset@yale.edu)

The Journal of Industrial Ecology (JIE) is fast approaching its 10th anniversary. In fact, as you read this update, volume 10, issue 1 is on its way to the publisher. The tenth year is bringing some good news.

Inclusion in the ISI Citation Index

Especially exciting is the news that JIE has been accepted for listing in the Thomson / Institute for Scientific Information's Science Citation Index Expanded (SCIEp). Of the approximately 2000 journals reviewed each year, only 10-12% are accepted into the Index. Inclusion is crucial for the health and viability of the journal. It also means that Current Contents, the prominent abstracting and indexing service, will carry JIE.

Governance Restructuring

Equally significant, JIE governance has been updated and revised. The current editorial board was established in 1996 when JIE was launched. The board's form and membership has since remained largely unchanged. During his tenure as ISIE President, Tom Graedel asked Helge Bratetebo to prepare a report reviewing the journal's governance. Based on that report, as well as discussions with journal board members and ISIE council members, the governance has been restructured.

The JIE will continue, as before, to have a managing board and editorial board. Because Yale University owns the JIE, formal and ultimate legal and financial responsibility rests with Yale and cannot be delegated to the managing board.

Continued on page 13

History and Relevance of Citation Indexing

Citation indexing was developed in the 1950s and 60s by Dr. Eugene Garfield, the founder of the Institute for Scientific Information (ISI). Citation indexing tracks referencing patterns in scholarly works to capture the conceptual association of scientific ideas as recognized by research authors. Originally, citation indices were designed primarily for information retrieval, and to facilitate tracking ideas both backward in time (by examining the work cited by a particular author) and forward (by looking at who has cited a particular author).

Garfield also pioneered in the development of bibliometry, "the study of the quantitative aspects of the production, dissemination and use of recorded information" or, more informally, the study of citation patterns. Research in bibliometry indicated that most scholarly articles received little attention while a small subset accounted for the vast majority of citations. A series of indicators—most notably the journal impact factor, which measures the number of times a journal is cited over a specific period of time as an indication of that journal's significance or influence—were developed to quantify and summarize the patterns found in citations. Research administrators, funding agencies, and scholars use bibliometric indicators to evaluate the quality of research output of scholars, organizations, and journals. There is debate about the accuracy of these indicators, but their influence is powerful and growing.

Journals included in the ISI citation indices are available through the ISI's web-based service, Web of Science: <http://scientific.thomson.com/products/wos/>

For more information on the index's relevance to ISIE members, see the article, "Publish and perish?" by Henrikke Baumann and an accompanying editorial in JIE 6(3): 13-26. There is additional information about journal selection at: <http://www.isinet.com>.

ISIE Committees

Membership Committee Poses Challenge

Greg Keolian (gregak@umich.edu)

The success and impact of any professional society is directly dependent on the active participation of its members. The ISIE is growing and its members are playing a critical role in addressing many of the complex sustainability challenges facing society in the 21st century. Academic programs have been established in leading academic institutions around the world (e.g., Leiden University, Norwegian University of Science and Technology, Royal Institute of Technology (Sweden), Swiss Federal Institute of Technology Zurich, Tsinghua University, University of Michigan, Yale University; see the ISIE website for a list of 76 programs!) Members are publishing articles about novel methods, new frameworks, and research findings in top scholarly journals including the *Journal of Industrial Ecology*, *Environmental Science and Technology*, *Scientific American*, *Science*, and *Energy Policy*. Graduates of IE programs are taking key positions in both the private and public sectors including major corporations, government

agencies, national labs, and consultancies. Given the solid foundation and record of accomplishments today, the Society is in a good position for expanding its membership. A membership committee including Peter J. Deschenes, Pierre Desrochers, Robert Holland, Gregory Keoleian, Ramesh Ramaswamy and Xin Tong has been formed to help with this goal.

A key mechanism for recruitment is through the efforts of individual members. Please encourage your colleagues and students to join. We also encourage your efforts to serve as ambassadors for the Society at conferences and workshops that you attend. Informational flyers and membership forms can be downloaded from the ISIE website or by emailing: is4ie@yale.edu.

Also please share your ideas for expanding our membership with the membership committee. Let's work on doubling our membership by each recruiting at least one new member!

New Members

Abhishek Agarwal, United Kingdom
Stefan Anderberg, Sweden
Tim Baynes, Australia
William Clark, United Kingdom
Jonathan Coble, USA
Miles Costanza, USA
Robin Curry, United Kingdom
Bernhard Dietz, USA
Andrea Estrada, Germany
Lorenzo Fedele, Italy
Garth Hickle, USA

Doyoon Kim, Korea
Deanna Lekas, USA
Frederico Medina, Ecuador
Maarten Neelis, Netherlands
Andrea Ramirez, Netherlands
Onishi Satoshi, Japan
Humberto Silva, Venezuela
Edward Smeets, Netherlands
Erin Walsh, USA
Martin Weiss, Netherlands
Wanpen Wirojanagud, Thailand

Welcome to ISIE

Southern European Masters Program

Gara Villalba (Gara.Villalba@uab.es)

In 2003 as part of an ECOSIND initiative to fund sustainable industrial development projects in southern Europe, the Universitat Autònoma de Barcelona proposed establishing a Masters Program in Industrial Ecology (MECOSIND). Universities in Spain, Italy and Greece have cooperated to create this program focused on sustainable management. The first students will begin their studies this fall.

For more information go to:

http://antalya.uab.es/_c_ceambientals/mecosinda.htm

New Energy-Focused Programs at Utrecht

Martijn Reitbergen (m.g.reitbergen@chem.uu.nl)

Utrecht University in the Netherlands offers a new master program, Energy Science. The aim of the program is to educate natural scientists so they can contribute to developing sustainable energy and material systems. Energy Science is a two-year program, focusing on sustainable energy supply, energy and material systems analysis, energy and material demand efficiency and energy policy.

For more information see: www.chem.uu.nl/nws/energyscience

Students who are more interested in energy and sustainable development can follow the Energy and Resources track of the Sustainable Development masters program.

For more information on this, see: www.copernicus.uu.nl/master

New IE Dissertations Completed

ISIE member **Anne Hewes** completed her dissertation at Antioch New England Graduate School in April. Her work is titled, *The Role of Champions in Establishing Eco-Industrial Parks*.

A founder of the student chapter, **Eric Masanet**, has completed his Ph.D. work at the University of California, Berkeley. His dissertation is titled, *Environmental and Economic Take-back Planning for Plastics from End-of-Life Computers*.

*You've worked hard for your degree—be sure that other ISIE members know what you've done!
Post information about your dissertation on the ISIE website.*

More on IE and Policy

Europe, notably in Denmark, Finland and Sweden (but not Norway, which is a story in its own right) and, perhaps most significantly, Austria. Biomass accounts for around 15% of primary energy in Austria. The figure is more than that in some Austrian provinces, to the point that they have succeeded in attaining one of the golden dreams of sustainable development: increasing GDP while not merely reducing carbon intensity but actually reducing carbon dioxide emissions.*

But not in the UK. The issue is not availability: as the RCEP's report on Biomass (2004) documented, there are already substantial quantities of agricultural and forestry waste which simply goes to waste. The policy failure is that there is essentially no market for these materials. Furthermore, given that their most beneficial use is as local fuels for heat or CHP (Combined Heat and Power) plants, the lack of a market for biomass is exacerbated by the lack of a market for heat. Even the possible use of biomass for co-firing in fossil-fired electricity generation—which is contentious, but could provide a short-term demand to stimulate development of a market—has been inhibited by specious legalistic restrictions over metering and a failure to understand the planning and planting cycle. The government's first response included planting grants for farmers to promote energy crops but, unsurprisingly, take-up has been slow: why plant a long-term crop like *Salix* when there is no demand? The Royal Commission concluded that for biomass to develop as an energy source it is necessary to develop a market for heat. The House of Lords endorsed this conclusion. If any evidence were needed, both studies concluded that the rapid rise of biomass elsewhere in Europe had been pulled by demand for heat. In industrial ecology terms, the need is to develop a market for a new or waste product—"new" only in the sense that the market does not already exist.

Both RCEP and the House of Lords had things to say about the policy failures which have impeded the development of a market for heat. It is some-

**If any reader knows of other economies where this has happened, do tell!*

times claimed—notably by the trade association which represents domestic house builders—that householders are reluctant to participate in neighbourhood heating systems. While this may have been true in the past, when such systems were inefficient and unreliable, the evidence is now otherwise—people who have access to modern heat distribution value the convenience, including the space and effort saved by not needing to install and maintain a heating plant, and appreciate it even more when they discover how cheap it can be—not to mention carbon efficient. The same trade association claims that heat distribution is inefficient, notwithstanding the fact that energy losses are actually much the same as the losses from an electrical distribution grid. The House of Lords concluded that one of the biggest barriers to developing a heat market lies in the conservatism of the construction sector in the UK.

Those of us who follow (and at times try to influence) energy policy in the UK can see a Big Opportunity coming up. Current projections are that several million new homes and apartments need to be built in the UK, mostly in the South East of England. At the same time, we are supposed to be swept along by a tide of pride and euphoria at the prospect of having the 2012 Olympic Games in London (although I personally cannot get excited at the prospect of two weeks of people running, jumping and throwing things—but no doubt I'm missing something). There is much discussion over exactly where the new homes and sports facilities will be, but much less over where the energy will come from. It is much cheaper and more efficient to include heat distribution as part of the infrastructure of new developments—so we have a real opportunity to change the thinking through this wave of new construction. Much of the heat could be provided by biomass, for example from multi-functional forests on the outskirts of London, providing both recreation and energy. But seizing this opportunity will require low-carbon housing and a low-carbon Olympic Games to become a high priority of policy to be followed up with serious action. Given that heat distribution

Continued on page 8

More on IE and Policy

systems generally have high capital costs but relatively low operating costs, some form of capital grant or tax incentive seems appropriate—or at least some form of Renewable Heat Credit to parallel the existing credits for renewable electricity. The UK Government has commissioned two studies on the feasibility of renewable heat credits and the matter now sits with a Biomass Task Force; which is due to report in the autumn, but its interim report shows a degree of lukewarmth about stimulating a heat market.

To make matters worse, responsibilities are split between three different government departments. There are, in principle, capital grants available to help the development of carbon-efficient heating schemes but they require applicants to get support from at least two different bodies, one national and one regional. One of the most ambitious plans for biomass-fired heating, in the City of Leicester, has already been put on hold because only one of the two bodies was prepared to commit support. It is difficult not to see the Big Opportunity as just another chance to get the policy wrong. As in other areas of industrial ecology, the need is to develop relationships between industries and agents who do not usually interact. Splitting the policy responsibility between different government departments is not an obviously effective way to promote new interactions.

Biomass and Biofuels

By contrast with the UK government's lukewarm attitude to biomass as a fuel for heat, there is great enthusiasm in the European Union for transport fuels from renewable sources—biodiesel from oilseed crops and bioethanol primarily from other cereals. The RCEP (2004) report asked "Why?" The life-cycle carbon balance of biofuels for transport is not particularly attractive; in particular biodiesel and bioethanol yield much less energy per hectare than do perennial biomass crops including *Salix* and *Miscanthus* (a conclusion confirmed by several papers at the ISIE conference). Yet transport biofuels are already being produced. One explanation is that this underlines

Seizing this opportunity will require low-carbon housing and a low-carbon Olympic Games to become a high priority of policy.

the need for a market to be in place: for biodiesel in particular, it already existed in the well-established companies trading in vegetable oils. More cynically, support for biofuels has provided some European national governments with a means to circumvent the Common Agricultural Policy (which is one of the most contentious areas of EU policy) and provide subsidies to farmers for non-food production.

But, looking forward a decade or two, land availability will again become a problem in many parts of the world, including Europe. The higher energy yields obtainable with woody biomass should then make these crops preferred over biofuels for transport. The RCEP argued that:

- Hydrocarbons will continue to be available in the long term: high crude oil prices make "unconventional" sources like oil sands not just economic but very profitable, and this represents a supply which has been underestimated in recent arguments over "a world after hydrocarbons."
- Transport will continue to be the priority user of hydrocarbons, whether liquids as at present or converted to hydrogen as the energy vector.
- Because of competition for land use, biomass crops should take precedence over biofuels unless the local demand for heat and CHP is met.
- At least in Northern Europe, this point will not be reached.

This leaves the author completely out of sympathy with the European Union's policy of promoting transport biofuels, much less supporting targets for their introduction, rather than promoting biomass as a renewable energy source. And it leaves me completely baffled as to why anyone would want to start on the technologically difficult, economically expensive and thermodynamically inefficient route of using biomass as a feedstock for processes like Fischer-Tropsch synthesis of transport fuels.

Website Reviews

Industrial Designers Society of America **www.idsa.org/ecodesign.htm**

Ray Cote (rcote@mgmt.dal.ca)

As described by the Industrial Designers Society of America, the new section of the general society website "supports the design of products, services, spaces and delivery methods that minimize damage or restore the health to the natural environment."

It was developed as a partnership with the USEPA. The audience for the site is clearly identified as designers although the parent site also targets educators and students. The ecodesign section enhances this by incorporating the Okala curriculum, eighteen modules supported by readings and presentations. Compared to the parent site, the section is easy to follow. The coverage of ecological design is limited at this time and it isn't clear to the reader that it will be expanded. It currently contains principles, a design tool, a course curriculum and selected links. The latter component is extensive and will be a valuable resource for everyone in industrial ecology.

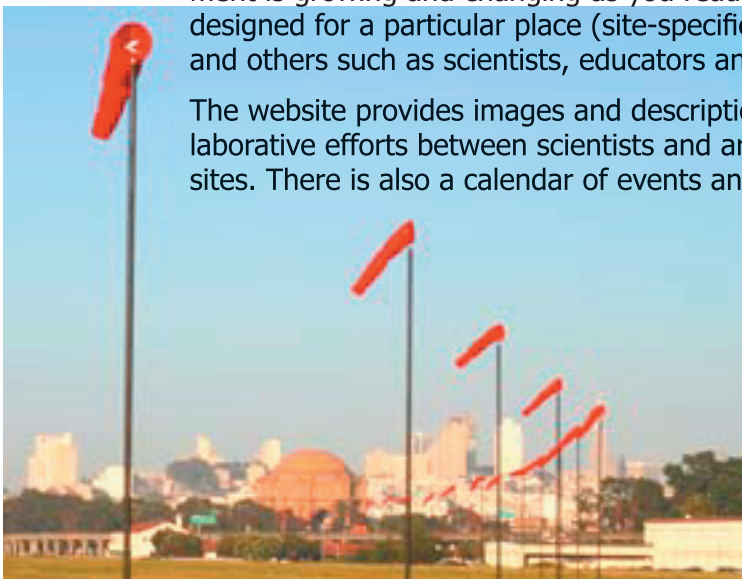
The Green Museum **www.greenmuseum.org**

Kristan Cockerill (kristanc10@earthlink.net)

The connections between art and the environment run deep, as do ties among the sciences and art. The Green Museum provides a forum for exploring these relationships. This nonprofit, online museum highlights artists, exhibits, and activities featuring environmental art.

According to the website, environmental art is "art that helps improve our relationship with the natural world. There is no definition set in stone. This living worldwide movement is growing and changing as you read this. Much environmental art is ephemeral, designed for a particular place (site-specific) and involves collaborations between artists and others such as scientists, educators and community groups."

The website provides images and descriptions of various artwork as well as links to collaborative efforts between scientists and artists, as well as green architecture and design sites. There is also a calendar of events and a forum for submitting information.



R.T. Livingston, "Windssock Currents", windssocks, Crissy Field, San Francisco, CA, 2005. (Photo: R.T. Livingston)

More from The President

experiments occur in institutions that might not be regarded as top rank, precisely because those at the top have a brand to protect, and are correspondingly conservative.

The next step, at least in my simplistic approach, has been to identify those areas where my indus-

The language of a private firm is not that of a weapons lab, and neither institution reacts well to academic language.

trial ecology agenda intersected the core interests of the institution. For manufacturing, for example, the design constraints created by product regulation and material bans (beginning with the Montreal Protocol) formed the means by which Design for Environment and similar practices could be introduced to the firm. For a service firm, material bans may be irrelevant, but business opportunities created by technology, which had ancillary environmental and social positive externalities, could be implemented. The classic case here is telework and the network centric firm: in no case that I am aware of did a large service provider, or their enterprise customer, adopt such technologies for "environmental" or "sustainability" reasons. Rather, efficiency, cost, and employee productivity drove much of the service development and deployment forward. Nonetheless, the environmental and social benefits were there, and no less important for the fact that they were not highlighted. In fact, it is preferable that they weren't: a firm that adopts something because it's "good to do" will drop it as financial or competitive stresses grow, whereas a firm that adopts a practice because it helps its core goals, such as competitiveness, will in fact increase its reliance on the new service as stresses accumulate. Similarly, at Lawrence Livermore National Laboratory, a weapons lab, the relevance of the "traditional" industrial ecology subjects and approaches was not necessarily clear – but some exploration resulted in "environmental

security" being identified as a subject that both lent itself to industrial ecology techniques and concepts, and intersected with the institution's view of its core priorities.

Finally, of course, there is the necessarily messy process of implementation. This requires a number of talents, but perhaps the most important is the ability to define and pursue initiatives within the language and culture of the particular institution involved. The language of a private firm is not that of a weapons lab, and neither institution reacts well to academic language. The ability to function in different cultures, with different ontologies, is an important one in the real world, but we do not teach it very well.

And that is my point. These suggestions are experiential, heuristic and oversimplistic, and I would not pretend that I either understand change in complex adaptive systems, or how to teach it. But experience clearly shows the importance of this difficult area in its own right, both for productive research, and for the subsequent implementation of industrial ecology initiatives, and it cannot be avoided simply because it is complicated. It becomes yet another component of the industrial ecology research agenda.

Join the
President's Forum
Brad wants to hear
from **you!**

Reactions to his report?
Thoughts on Roland Clift's piece?

Send retorts, critiques, applause to
Kristan Cockerill
kristanc10@earthlink.net

Conference Reports

2005 AEESP Research and Education Conference

Troy Hawkins (trh@andrew.cmu.edu)

Cortney Higgins (chiggins@andrew.cmu.edu)

Those who made the trek to Potsdam were rewarded by the natural beauty of Clarkson University's campus and the relaxed atmosphere of the Association of Environmental Engineering and Science Professors Conference. Roughly 200 faculty and graduate students attended the July meeting.

The theme of this biennial conference was "Pushing the Boundaries: Making research and education in environmental engineering and science count". The meeting included workshops, keynote addresses and concurrent topical sessions. The workshops covered topics ranging from advice for graduate students to tools for environmental engineering. Richard Luthy of Stanford and Charles O'Melia of Johns Hopkins received honorary degrees and presented keynote addresses. Other keynote speakers were Mary Smith from the EPA and Keri Hornbuckle from the University of Iowa.

Dr. O'Melia talked about global water use, and the importance of "virtual flows" of water in U.S. agricultural exports. Ms. Smith gave an overview of EPA programs that promote environmental technology. Dr. Hornbuckle presented three case studies demonstrating the difficulties environmental scientists face in tracking toxic chemicals in the environment and preventing their entry. Dr. Luthy summarized discussions at Stanford about adopting sustainability as a unifying theme to help guide their program as it moves forward.

The technical program included sessions on "Sustainability and Industrial Ecology." Presenters included John Crittenden at Arizona State who talked about assessing the impacts of urban growth and development; Anu Ramuswami at the University of Denver who discussed an outreach program for sustainable energy system design for a tribal village in India; Jerald Schnorr who talked about the sustainability education and research at the University of Iowa; and Michigan Technological University students who described a project that identified and set campus indicators of sustainability.

The session on "Sustainability in Education" included graduate students and professors from a diverse array of universities. Additionally, Julie Zimmerman from EPA discussed using sustainability education and research to draw minorities and women into science and engineering disciplines.

The meeting also provided ample opportunity to meet people in a more casual atmosphere with activities ranging from a hike to canoeing to exploring Clarkson science facilities. Throughout the conference, the atmosphere was hopeful and enthusiastic. It became evident how young the field is, that it is still defining itself, and that there are plenty of opportunities for young researchers and professors to contribute. It was also evident how passionate the attendees were in regard to their own research and the education of future scientists on issues related to the environment and sustainability.

**We shape our buildings and afterwards
our buildings shape our world.**

—attributed to Winston Churchill

Conference/Exhibition Listings

Go to the ISIE website to submit your conference information.

International Conference and Trade Fair for Hydrogen and Fuel Cell Technologies

31 August - 1 September 2005, Hamburg, Germany

Business Strategy and the Environment Conference 2005

5-6 September 2005, Leeds, UK

Bioenergy 2005 in Wood Industry

13-15 September 2005, Jyväskylä, Finland

2nd International Congress and Innovation Fair: Sustainable Management in Action

19-20 September 2005, Geneva, Switzerland

International Conference on Information Technologies In Environment Engineering

25-27 September 2005, Magdeberg, Germany

SWANA's Wastecon

27-29 September 2005, Austin, USA

Global Environmental Change, Globalization and International Security: New Challenges for the 21st Century

9-13 October 2005, Bonn, Germany

6th Asia Pacific Roundtable for Sustainable Consumption and Production

10-12 October 2005, Melbourne, Australia

5th Closed-Loop Supply Chain Workshop

9-11 October 2005, Nashville, USA

S-DEV Geneva 05: Innovating cities across the world

11-13 October 2005, Geneva Palexpo, Switzerland

VII Congress SETAC Latin America

16-20 October 2005, Casona de Las Condes

Sustainable Innovation 05

24 -25 October 2005, Farnham, UK

Bioenergy 2005: Nordic Bioenergy Conference

25-27 October 2005, Trondheim, Norway

Brownfields 2005: Reaching New Heights in Redevelopment

2-4 November 2005, Denver, USA

IIP Workshop 2005: Challenges for Industrial Production

7-8 November 2005, Karlsruhe, Germany

ZERIA: Zero Emissions Conference 2005

10-11 November 2005, Radkersburg, Austria

SETAC North America 26th Annual Meeting

13-17 November 2005, Baltimore, USA

LCA in Industry

17 November 2005, ETH Zürich

International Symposium on Corporate Sustainability Management

24-25 November 2005, Bangkok, Thailand

2005 MRS Fall Meeting

28 November - 2 December 2005, Boston, USA

ESTIEM and VWI Student Seminar: Vision of Cycles

29 November - 4 December 2005, Bremen, Germany

6th Asia Pacific Industrial Engineering and Management Conference

4-7 December 2005, Manila, Philippines

EcoDesign 2005

12-14 December 2005, Tokyo, Japan

Hazardous Waste Management for a Sustainable Future

10-12 January 2006, Thailand

Industrial Ecology in Germany

16-17 February 2006, Kaiserslautern, Germany

2006 International Symposium on Electronics and the Environment

8-11 May 2006, San Francisco, CA, USA

2006 Greening Rooftops for Sustainable Communities Conference, Awards, and Trade Show

10-12 May 2006, Boston, USA

Towards the City Surface of Tomorrow

8-9 June 2006, Vienna, Austria

2nd International Conference on Quantified Eco-Efficiency Analysis for Sustainability

8-30 June 2006, Egmond aan Zee, Netherlands

Material, Minerals, & Metal Ecology '06

14-15 November 2006, Cape Town, South Africa

2007 International Symposium on Electronics and the Environment

7-10 May 2007, Orlando, FL, USA

More on JIE News

Thus, the managing board will play an advisory role, providing recommendations on fiduciary matters, fostering accountability, providing a buffer between the university and JIE editorial policy, and promoting the financial health and viability of the Journal. The managing board has 7 members serving staggered 3-year terms including 2 members nominated by the ISIE.

The restructured editorial board emphasizes the role of board members as communication conduits to and from JIE. Editorial board members help JIE keep abreast of developments in industrial ecology and elsewhere (e.g., new ideas, emerging research and topics, policy changes, funding sources), and they serve as ambassadors on behalf of the JIE to relevant constituencies. A secondary role of editorial board members is to serve as reviewers for papers submitted to JIE. The editorial board is not intended to be the primary source of reviewers because, as an interdisciplinary journal, the scope of expertise needed is too vast to be captured on one board. (In its short history, JIE has used well over 900 different people as reviewers!). Editorial board members include the various subject-area and other editors of JIE.

Availability Through AGORA

The third piece of good news is that free access to the Journal is now available for public institutions in selected developing countries through Access to Global Online Research in Agriculture (AGORA), a global initiative to improve availability of major scientific journals in agriculture and the related biological, environmental and social sciences. Additional information on AGORA can be found at: www.aginternetwork.org

<http://www.is4ie.org>

JIE Managing Board

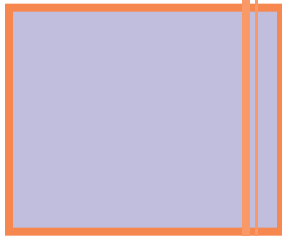
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Research Scholar or Postdoctoral Research Associate
University of Maryland

Faculty position in Green Engineering and Product Design for the Environment
Yale University

Waste Minimisation Officer
North East Lincolnshire Council Environmental Services

For more information see the ISIE website

International Society for Industrial Ecology

The International Society of Industrial Ecology (ISIE) promotes industrial ecology as a way of finding innovative solutions to complicated environmental problems and facilitates communication among scientists, engineers, policy makers, managers and others who are interested in how environmental concerns and economic activities can be better integrated.

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ISIE News Schedule

| <u>Publication Date</u> | <u>Submission Deadline</u> |
|-------------------------|----------------------------|
| December 2005 v5 n4 | 11 November 2005 |
| March 2006 v6 n1 | 17 February 2006 |

Send submissions to the appropriate editor.

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