

ISIE News

Volume 5 Issue 2 (June 2005)

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JIE Issue Prompts Information Technology and Environment Workshop

H. Scott Matthews (hsm@cmu.edu)

Reid Lifset (Reid.Lifset@yale.edu)

The final report from a March 2004 workshop on *Environment and the Information Economy: Next Steps for Research* is available. The impetus for the U.S. National Science Foundation sponsored workshop was the successful special issue of *The Journal of Industrial Ecology* (Vol. 6 Issue 2) on

IE in the Information Economy

the same topic. Reid Lifset of Yale University, Dave Rejeski of the Woodrow Wilson International Center for Scholars, and Scott Matthews of Carnegie Mellon University were the lead organizers for the workshop.

The workshop brought together more than 50 key researchers and decision makers from around the world who have been working in this general focus area. Unlike several other international events that have held meetings to discuss research on this topic, this workshop's primary goal was to

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Global Efforts Proceed

Sustainable Consumption Declaration

In February, 50 international researchers developed the Oslo Declaration on Sustainable Consumption to prompt implementation action for activities identified at the 2002 Johannesburg World Summit.

Specific initiatives encourage countries and regions to:

- Establish research programs on sustainable consumption
- Implement projects to foster social experiments
- Identify opportunities to translate research into concrete policy initiatives.

For more information see:

<http://www.oslodeclaration.org>

Thanks Edgar Hertwich and Arnold Tukker for this link!

Environmental Sustainability Index

Yale and Columbia Universities have joined forces to create the 2005 Environmental Sustainability Index. This index ranks countries according to a composite of socioeconomic, environmental, and institutional indicators that characterize and influence environmental sustainability. The last index was published in 2002.

According to this index, Finland, Norway, Uruguay, Sweden and Iceland are the world's most sustainable countries.

To see where your country ranks, go to:
<http://www.yale.edu/esi>

International Society for Industrial Ecology

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

What's New in ISIE?

Finance Committee Thinks Long-Term

Mak Dehejia (mdehejia@aol.com)

Current members of the Finance Committee, appointed in January 2005 by outgoing President Tom Graedel, are:

Robert Pfahl

Thomas Swarr

Donald Rogich

Mak Dehejia (Treasurer – ex officio)

The committee's principal responsibility is to develop a long term financial plan for ISIE.

The Treasurer's report for the period ending June 30, 2004, pointed out that the Society's principal expenses are payments to MIT Press for the JIE, remuneration for the New Haven based Program Coordinator and a modest honorarium for the Executive Director. The principal revenue sources are membership dues and profits from the bi-annual ISIE conferences. In the initial years, grant funding from benefactors including AT&T, the Lounsberry Foundation, EREF, Dupont, the Luce

Foundation and others was of immense help in getting the Society established.

In broad terms, the membership dues pay for the Journal and the revenue from conferences pays for all other expenses. It is hoped that the expected rise in the costs of the Journal will be offset by the increased membership dues rate that went into effect in January 2005, and that the profit participation from the upcoming Stockholm conference will help fund the rest of the expenses for FY2005 and FY2006.

The Society's total membership hovers around 400. While in a short term financial sense, the volume of membership could be considered as a fixed cost—as long as dues keep pace with Journal costs—in the longer run, a growing membership roster is desirable and necessary.

Furthermore, in order to enable the Society to undertake new and bold initiatives, it would be desirable to generate new sources of grant support.

The Finance Committee intends to focus on these issues in the coming months.

IE Lecture Series

Stefan Gößling-Reisemann

(sgr@uni-bremen.de)

A number of organizations, including the University of Bremen, the German Association of Engineers, and ISIE are sponsoring a lecture series called, *Industrial Ecology—Perspectives and Approaches Towards a Sustainable Design of Industrial Systems*.

There are talks at the University of Bremen each week from April through July, featuring speakers from around the world. Among others, ISIE members Marina Fischer-Kowalski, Ester van der Voet, Matthias Ruth, John Ehrenfeld, Ralf Isenmann, are participating.

Some lectures are available as video feed at:
<http://mlecture.uni-bremen.de>

For more information go to:
<http://www.industrialecology.de>

**The Great Game:
What is Industrial Ecology?**

Brad Allenby (Braden.Allenby@asu.edu)

It is a rare industrial ecology confab that does not at some point raise the question of what industrial ecology "really is." Some argue metaphor; some are adamant in defense of analogy; some argue discipline; and a few urge competency, to be applied as appropriate to existing disciplines. Despite the intense interest in this question, especially on the part of those who continue to try to institutionalize industrial ecology and the students who are learning how to practice it, a resolution does not appear imminent. And I think there may be some fairly fundamental reasons for that.

To begin, the situation regarding industrial ecology, although it may be the focus of our attention as a community, is not unique. Similar conceptual structures have sprouted elsewhere: think of "green chemistry" or "sustainability science." These cultural constructs share many important characteristics with "industrial ecology." For one, they are clearly and deliberately multidisciplinary. More fundamentally, they are also "multiontological." Deconstruct, for example, "green chemistry." Chemistry has in one sense always been "green," in that the history of the chemical industry has always included controls of noxious emissions, often as a result of regulation (e.g., the British Alkali Act of 1863), and, taken over time, has displayed a clear pattern of turning waste streams into material feeds for new products. Moreover, production efficiency in a systems sense has always been an important part of the industry. In some ways, then, the history of chemistry and the chemical industry is also a history of providing what society demands efficiently and, albeit under regulatory guidance, in an environmentally sound way: good chemistry is socially and environmentally responsible chemistry. So what does the adjective "green" add? It makes at least two statements. The first is that it intentionally attempts to raise the importance of environmental issues above their tradi-

tional role, and above that of other components of chemical design and engineering. In this it reifies the reigning zeitgeist. But it also represents a much more normative conceptualization of chemistry and chemical engineering. Just as some have argued that industrial ecology is only worthwhile to the extent it support environmental activism, so the term "green" represents an argument that chemistry is "good" only to the extent it privileges environmental ideology above other discourses (otherwise, "green" is simply superfluous).

Whether this is a "good" thing or not—for chemistry or industrial ecology, for society, for science as a discourse—is to a large extent a reflection of personal belief systems, and not the concern of this column. But it has interesting implications for the more mundane question (albeit a very important one for our community) of how industrial ecology is best defined and centered in the academy. One can posit several possibilities. The polar models are to either build industrial ecology into a separate course of study, with courses and perhaps degree programs explicitly dedicated to industrial ecology; or to ignore it completely, and just teach the traditional underlying disciplines. There are a few examples of the former, such as the MSc Industrial Ecology programme jointly offered by Leiden University, Delft University of Technology, and Erasmus University Rotterdam; the Bachelor of Applied Industrial Ecology degree offered by Mt Royal College in Calgary, Canada; and the MS in Industrial Ecology offered by GIST, a joint program of Technische Universität München and Nanyang Technological University of Singapore. Many in our community participate in such programs, and the fact that they are more popular outside of the United States is, overall, a hopeful sign. On the other hand, there are also obviously an overwhelming number of schools, and programs, where no industrial ecology is taught in any form. And then there is the middle ground, where schools may offer a few courses in industrial ecology or, following the model of such places

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Website Reviews

Strategis

<http://strategis.ic.gc.ca>

Jay L. Batongbacal (jbatongb@dal.ca)

Strategis is Industry Canada's official business and consumer information site. Eco-efficiency features prominently in the Business and the Environment section of the site. Information is provided on the benefits of eco-efficiency for Canadian businesses; case studies from Canada and elsewhere; and insights by practitioners. A Tools for Business section provides small and medium enterprises with downloadable tools to assist them in making their business more environmentally responsible. The tools available are not limited to those designed in Canada. Materials on industrial ecology and

industrial sustainability can be found in a subsection on eco-efficiency and other related concepts. The latter include pollution prevention, cleaner production and lean manufacturing. The links pages point to additional resources including other sites, case studies, books, conferences, centres, institutes, and societies such as the ISIE. The site is well organized and is updated with additional information almost daily. It is one of the most comprehensive sites in Canada and serves as an excellent reference for designing environmentally responsible businesses, processes and practices.

Industrial Ecology Program at NTNU

<http://www.indecol.ntnu.no/indecol.php>

Ray Côté (rcote@mgmt.dal.ca)

This website has been developed and is being maintained by the Industrial Ecology Program (IndEcol) at the Norwegian University of Science and Technology (NTNU). The program is one of the few academic programs dedicated to industrial ecology. The purpose of the website is to promote the Industrial Ecology Program and particularly its academic and research activities. The site compiles comprehensive information on the nature and scope of the IndEcol program, its history, graduate programs and research activities. Detailed information is provided on presentations, reports, working papers, doctoral dissertations, master's theses, and a newsletter. The site includes a large collection of articles, organized alphabetically. Many publications can be downloaded from the site. The site is updated regularly although one section, Industrial Ecology at IndEcol, is still under construction. The site is a valuable resource for researchers in the field, especially those interested in studies in Scandinavia.

Send your favorite IE-related website to **ISIE News!**

Sustainable Futures Institute Celebrates One-Year Anniversary

Emily Owens (elowens@mtu.edu)

In one year, the Sustainable Futures Institute at Michigan Technological University has a research portfolio that exceeds \$7 million dollars. Some of SFI's initiatives have included:

- Creating a Graduate Certificate in Sustainability
- Developing a partnership with the U.S. Peace Corps that allows graduate students to combine their education with service in the Corps

- Creating middle school curriculum for water, energy, and pollution prevention/sustainability.
- Collaborating with Southern University and A&M College to form an interdisciplinary student team to compete in a U.S. Environmental Protection Agency sustainable design competition.

For more information go to:
<http://www.sfi.mtu.edu>

IE in the Summertime

Heinz Schandl (Heinz.Schandl@uni-klu.ac.at)

A five-day summer program, *Procedures and Toolkits for Integrated and Participatory Analyses of Sustainability*, will be offered in July at CEMACAM Torre Guil, in Spain.

Liphe4 and IFF are sponsoring the program, which will focus on providing graduate students and young professionals with information on Integrated Assessment, Social Multicriteria Evaluation, Participatory Approaches and Biophysical Analysis.

For more information go to:
<http://www.liphe4.org>

Congratulations Rolf!

ISIE member Rolf Andre Bohne holds the distinction of being the first graduate to earn a Ph.D. in Industrial Ecology from the Norwegian University of Science and Technology (NTNU). He defended in February 2005. His dissertation, *Ecoefficiency and Performance Strategies in Construction and Demolition Waste Recycling Systems*, contributes to the continuously growing body of knowledge within industrial ecology.

What is your university doing in industrial ecology?
Send information to Kristan Cockerill,
kristanc10@earthlink.net

More on The Great Game

as MIT or UC Berkeley, inject industrial ecology methods and concepts into selected courses in many different disciplines. This approach implies quite a different conceptualization of

industrial ecology, where it is taken as a means to improve the underlying discipline, rather than of value in itself. Thus, for example, a chemistry program that includes elements of industrial ecology is seen as producing "better" chemists and chemical engineers, rather than "industrial ecologists."

Does this matter? From a purely pragmatic viewpoint, the answer is obviously yes: if you are a student, what is written on your diploma, and how it is understood by potential employers, is serious business. But there are also ontological implications, and these have perhaps not been fully recognized. If you teach industrial ecology as a separate field or area of study, you imply a coherent worldview that validates the need for, and boundaries of, such a field – or, in other words, you assume a rational, or at least explicable, underlying ontology. Yet an observer might have trouble defining such an ontology for industrial ecology. Does industrial ecology share ontological assumptions with environmental activism, or with scientific or engineering disciplines? The two are quite different. And that's not even considering some of the more exotic potential ontologies, such as that characterizing "California industrial ecology" which seems to be more of an aesthetic ontology, rather than a scientific or activist one.

Beyond that, however, where industrial ecology is taught or understood as a complement to existing disciplines, it tends to be treated as a toolkit or set of methods. Taken that way, industrial ecology is almost purely instrumental, and takes on the underlying ontology of the discipline with which it is being integrated. If some of the LCA or pollution

It may be that industrial ecology is inherently multiontological, and cannot be easily reduced to any single ontology.

prevention methodologies that are considered part of industrial ecology make you a better chemical engineer, then you are still – perhaps even more – a chemical engineer, not a chimerical mixture of engineer and activist.

Where does this lead? It suggests, among other things, that the definitional issues surrounding industrial ecology are not just products of imprecision, or perhaps a failure of the community to be aggressive enough in reaching for a unified understanding of industrial ecology. Rather, it may be that industrial ecology is inherently multiontological, and cannot be easily reduced to any single ontology: that the nature of the subject matter (especially its complexity), and of those drawn to the field of study, and of the way in which it is integrated with the existing academic structures and institutions, preclude such easy, or at least traditional, outcomes.

This is a highly speculative conclusion at this point. But it can be tested by continuing to observe how industrial ecology is taught: if the field converges towards dedicated degrees and courses, it may develop a unified ontology; if not, it may remain multiontological as a matter of necessity. If that is the case, then it is not just the study of the content of industrial ecology, but the study of industrial ecology as a subject, that will continue to surprise and delight us as we go onward.

Continuing Student Profiles

Hilary Grimes (grimeshg@clarkson.edu)

Stephanie Gerson (sgerson@stanfordalumni.org)

Continuing with the previous **ISIE News** student column theme on industrial ecology research and the student experience, here are three more perspectives—broadly distributed both geographically and academically.

Aron Walker (aronwalk@mit.edu)

For me, the journey is just beginning. It is my second year as an undergrad studying “the Science of Earth’s Environment” in the Department of Earth, Atmospheric, and Planetary Science at the Massachusetts Institute of Technology. It is a new program at the institute and one whose path traverses a broad swath of the natural sciences with emphasis on “Earth System” problems and outlooks. This road is half of my journey. At the same time, I have started taking classes in Chemical Engineering to try to understand the “anthrosphere” and the human cognates to natural material and energy systems. My hope is for these paths to eventually merge, and Industrial Ecology is an exciting and very promising possibility.

One of the most interesting things I am learning is the extent to which the planetary system is integrated. Biosphere affects geosphere, which affects hydrosphere, which affects atmosphere...and all affect and are affected by how our civilizations

act. The extent to which we do not understand these interactions is both impressive and exciting for someone new to the field. Another thing to learn, and I am just starting to do so, is the broad toolbox and rigorous methodology that chemical engineers have in order to approach systemic problems. For me, the most exciting thing would be to cross these disciplines and modes of analysis and see what insights emerge. IE likely lives at the heart of this juncture.

My other academic passion is for urban design and regional planning as a third medium through which to study the interaction between human and natural environments. What has struck me most in this study is how mutually linked our physical environment is with our society. The capacity to promote change in both is inspiring, and the possibility of extending the concepts of IE to the behavior of regional human systems is exciting indeed.

Yuan Zhao (chengdepetroleumcollege@yahoo.com)

I am a Ph.D. student in the Environmental Science Department of Nankai University in China. I am an experienced chemical engineer, but consider myself a novice in the field of IE. This submission, and the ISIE community in general, is a really great opportunity for me to communicate with others engaged in the same field of study. I haven’t started my research yet, but I would like to focus on eco-industrial parks. I am having difficulty with the difference between my intended Ph.D. dissertation theme and the backwardness of local industry—I’d like to do research in my hometown, but local companies are either too small or technically backwards. I fear that any research based on local industry will not satisfy the demands of my dissertation.

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More Student Testimonials

Thomas Counsell (tamc2@cam.ac.uk)

I am in the Engineering Department at Cambridge University (UK). I've completed one of three years towards a Ph.D. My thesis area is, "Can we build a desktop paper recycling machine?". The thing that has surprised me, from reading within Industrial Ecology, is the relatively low level of attention focused on the technology that could enable sustainability generally, and Industrial Ecologies in particular. Before reading into the field, I expected that there would at least be some debate about what specifications a 'black box' piece of technology would need (i.e. what inputs it would need to transform into what outputs using what power, etc.), and hoping that there would be some examples of people's attempts to fulfill such specifications.

ISIE student chapter members and interested students at any stage in their education can now visit and participate in the growing community of IE students at **www.isiestudents.com**.

New ISIE Members

Paul Beavis, Australia
Havard Bergsdal, Norway
Daniel Berlin, Sweden
Andres Clarens, USA
Charles Corbett, USA
Vered Doctori, USA
Goran Finnveden, Sweden
Sergio Galeano, USA
Susanne Hartard, Germany
Barbara Hermann, Netherlands
Elisabeth Hochschorner, Sweden
Volker Hoffman, Switzerland
Robert Hollaender, Germany
James Ireland, Canada
P.K. Jayanthan, India
Mook Han Kim, USA

Welcome

Fabrice Mathieux, France
Oladele Ogunseitan, USA
Ari Paloviita, Finland
Linda Ramstedt, Sweden
Suzana Russell, UK
Erwin Meissner Schau, Norway
Han Shi, USA
Philip Sinclair, UK
Atsushi Terazono, Japan
Pernilla Tidaker, Sweden
Pedro Vieira, USA
Gara Villalba, Spain
Thomas Wiedmann, UK
Teresa Zhang, USA

Conference Reports

More Workshop

get key people together—including individuals from U.S. federal agencies—to envision how this emerging area can continue to be studied beyond currently constrained funding mechanisms. Attendees participated in two breakout sessions to help identify prospective future activities, and to set a research agenda that would capture existing knowledge, create data repositories, and forge new paths in segments not currently studied. Some of the key priorities of this agenda include understanding the infrastructure effects of ICT, promoting interdisciplinary and systems-oriented research, and tracking substitution and rebound effects. These key priorities should fit well within the context of the community being built by the proposed expansion of the IEEE *Electronics and the Environment* conference (summarized below).

Presentations from the workshop as well as the final report and proposed research agenda are available at:
<http://www.environmentalfutures.org/inoeconagenda.htm>

2005 IEEE International Symposium on Electronics and the Environment (ISEE)

H. Scott Matthews (hsm@cmu.edu)

The 13th Annual ISEE/Electronics Recycling SUMMIT was held 16-19 May in New Orleans, USA. Approximately 350 people from around the world attended this premier event on environmental issues associated with electronic products and systems. This year saw a noticeable increase in the level of interest from federal, state, and local government decision makers who are grappling with important issues associated with electronic waste. Representatives from several states gave talks and sat on panels discussing the challenges ahead, and what various agencies are considering.

Approximately 50 papers were presented. Students presented posters and competed in the

<http://www.is4ie.org>

student paper competition funded by Dell. Winners were Mou Peng, Texas Tech University and Maria Anityasari, Old Dominion University who tied for 3rd; Puneet Shrivastava, Texas Tech University in second; while Wa Layiding, Tsinghua University earning the top honors.

Thirty corporate exhibitors showcased their technology solutions for e-waste and related issues. Additionally, US EPA sponsored several workshops to broaden the understanding of health impacts and management of e-waste.

ISIE President, Braden Allenby, gave the keynote speech on the emerging technological fields of nano and biotechnology, information systems, and cognitive science (referred to as NBIC). He outlined a vision for how the emerging technology community might come together to learn from each other to bring about a more sustainable world.

Dr. Allenby's talk was a preview of significant changes coming to the ISEE conference. In the next year, the traditional electronics- focused event will morph to capitalize on past contributions, as well as to broaden the appeal by adding a session track on the emerging NBIC domains. The IEEE Society on Social Implications of Technology (led by ISIE Council Member, Clint Andrews) may co-sponsor next year's gathering.

To receive more information register at the conference website:
<http://www.iseesummit.org/>



ISIE 2005 is imminent!

Watch for a special ISIE News following the meeting.

Conference/Exhibition Listings

Go to the ISIE website to submit your conference information.

ISIE 2005 **12-15 June 2005, Stockholm, Sweden**

BIO 2005

19-22 June 2005, Philadelphia, USA

Shaping our Future Energy Systems: ECOS 2005

20-23 June 2005, Trondheim, Norway

7th International Conference of the Russian Society for Ecological Economics: Globalisation, New Economy and the Environment

23-25 June 2005, Saint Petersburg, Russia

15th International Conference on Input-Output Techniques

27 June- 1 July 2005, Beijing, China P.R.

IPSI BgD Multidisciplinary, Interdisciplinary, and Transdisciplinary Conference—USA

7 - 10 July 2005, Cambridge, USA

International Conference on Energy, Environment and Disasters (INCEED 2005)

24 - 30 July 2005, Charlotte, USA

IPSI BgD Multidisciplinary, Interdisciplinary, and Transdisciplinary Conference - Italy

27 July - 1 August 2005, Loreto Aprutino, Italy

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

10th European Roundtable on Sustainable Consumption and Production

5-7 October 2005, Antwerp, Belgium

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

S-DEV Geneva 05: Innovating Cities Across the World

11-13 October 2005, Geneva, Switzerland

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: Challenges and Approaches to Make it More Practical

17 November 2005, Zürich, Switzerland

6th Asia Pacific Industrial Engineering and Management Science Conference

4-7 December 2005, Manila, Philippines

EcoDesign 2005: 4th International Symposium on Environmentally Conscious Design and Inverse Manufacturing

12-14 December 2005, Tokyo, Japan



Job Listings

Associate or Full Professor of Sustainable Engineering , Penn State Capital College, Harrisburg Campus

Executive Director of the International Human Dimensions Programme, International Human Dimensions Programme of Global Environmental Change

Faculty positions, Ecole Polytechnique Fédérale de Lausanne School of Architecture, Civil and Environmental Engineering:

- Environmental Engineering
- Environmental Remote Sensing
- Structural Mechanics
- Transportation Engineering

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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<http://www.is4ie.org>

ISIE News Editors

Kristan Cockerill, Editor: kristanc10@earthlink.net
H. Scott Matthews, Conference Reports: hsm@cmu.edu
Ray Côté, Tools & Websites, rcote@mgmt.Dal.ca
Edgar Hertwich, Tools & Websites,
edgar.hertwich@ntnu.no
Stephanie Gerson, Student Information,
sgerson@stanfordalumni.org

ISIE News Schedule

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Send submissions to the appropriate editor.

International Society for Industrial Ecology

c/o Yale School of Forestry and Environmental Studies
205 Prospect Street
New Haven, CT 06511-2189 USA
Tel +1-203-436-4835 Fax +1-203-432-5556
is4ie@yale.edu
<http://www.is4ie.org>