

Dream Course
Managing Dilemmas: Net-Zero Energy / Eco Footprint in the Built Environment
University of Oklahoma, Norman, Oklahoma
August 23, 2010

Schedule

August 24 through December 7, 2010
Tuesday 10:30AM to Noon. Devon Energy Hall 130

Coordinators

Alicia D. Burris<woodstock77@ou.edu> Information Technology Scholar	Work: 405-417-2701
Lee Fithian<leefithian@ou.edu> Architecture	Work: 405-325-2444
Matthew H. Kane<mhkane@ou.edu> Electrical and Computer Engineering	Work: 405-325-0404
Farrokh Mistree<farrokh.mistree@ou.edu> Aerospace and Mechanical	Cell: 405-306-7309
Zahed Siddique<zsiddique@ou.edu> Aerospace and Mechanical	Work: 405-325-2692
Musharraf Zaman<zaman@ou.edu> Civil and Environmental Sciences	Work: 405-325-2626

Administrative support

Lawana Cavins<lcavins@ou.edu> Work: 405-325-2322

Objective

The principal objective for this seminar is to learn how to identify and manage dilemmas associated with sustainable complex socio-techno-eco systems.

What is a dilemma?

A dilemma (Greek: δι-λήμμα "double proposition") is a problem offering at least two solutions or possibilities, of which none is practically acceptable. One in this position has been traditionally described as "being on the horns of a dilemma", neither horn being comfortable, "between Scylla and Charybdis"; or "being between a rock and a hard place", since both objects or metaphorical choices are rough. This is sometimes more colorfully described as "Finding oneself impaled upon the horns of a dilemma", referring to sharp points of a bull's horns, each of which are equally uncomfortable.

<http://en.wikipedia.org/wiki/Dilemma>

Dilemma for the semester

In the context of social, economic, educational, public policy what is the role of technology in achieving a sustainable net-zero energy / eco footprint in the built environment?

Organization

We plan to address this dilemma in the context of sustainability and the dilemmas resulting from tensions between socio-cultural, economic and environmental drivers in the following brackets:

1. Sustainability and the Net-Zero Energy Footprint
2. Socio-cultural-philosophical dilemmas in achieving a Net-Zero Energy Footprint
3. Architectural and environmental dilemmas in achieving a Net-Zero Energy Footprint
4. Economic and Public Policy dilemmas in achieving a Net-Zero Energy Footprint
5. Managing dilemmas in attaining a sustainable net-zero footprint in the built environment

The seminar schedule and a list of speakers follows.

Seminar Schedule and Speakers

Seminars in Devon Energy Hall 130
Discussions in ExxonMobile Engineering Practice Facility Room 200
Public Lectures as indicated

Bracket 1 – Sustainability and the Net-Zero Energy Footprint

Coordinators – Alicia Burris and Farrokh Mistree

- 8/24 *What this seminar is about ...*
Professor Farrokh Mistree
- 8/31 *Net-Zero Energy Initiative ...*
Course coordinators
- 9/7 *Winds of Change for Technology Communities*
Alicia Burris and colleagues
ExxonMobile Engineering Practice Facility Room 200.

Bracket 2 – Socio-Cultural-Philosophical dilemmas in achieving a Net-Zero Energy Footprint

Coordinator – Farrokh Mistree

- 9/14 *Education for Tackling the Dilemma of Challenging the Status Quo*
Patricia Hardré
Professor, Department of Education Psychology
University of Oklahoma, Norman, Oklahoma
- 9/21 *Socio-Cultural and Philosophical Dilemmas in Challenging the Status Quo*
Zev Trachtenberg
Associate Professor, School of Philosophy
University of Oklahoma, Norman, Oklahoma
- 9/28 *Discussion – Coordinated by Patricia Hardré and Zev Trachtenberg*
ExxonMobile Engineering Practice Facility Room 200.

Bracket 3 – Architectural and Environmental dilemmas in achieving a Net-Zero Energy Footprint

Coordinators – Lee Fithian and Farrokh Mistree

- 10/05 *NZEF – How Would Nature Do It?*
Jeannette Yen POC (Farrokh Mistree)
Director, Center for Bio-inspired Design,
Professor, School of Biology
Georgia Tech, Atlanta, Georgia
Public Lecture on October 4, 2010. Nielson Hall 270 @ 6PM.
- 10/12 *NZEF – Design of Building Aggregations*
Brad Bell POC (Lee Fithian)
Assistant Professor of Architecture
UT Arlington, Texas
Public Lecture on October 12, 2010 @ 6PM.
Ethics and Excellence in Journalism Foundation Auditorium, Gaylord Hall 1140.
- 10/19 *NZEF – Lessons Learned from Architectural Design and Urban Planning in the Negev Desert*
Evyatar Erell POC (Petra Klein)
Associate Professor, Desert Architecture and Urban Planning
Ben-Gurion University of the Negev, Israel
Public Lecture on October 19, 2010 @ 6PM.
Ethics and Excellence in Journalism Foundation Auditorium, Gaylord Hall 1140.
- 10/26 *Discussion – Coordinated by Lee Fithian*
ExxonMobile Engineering Practice Facility Room 200.

Bracket 4 – Economic and Public Policy dilemmas in achieving a Net-Zero Energy Footprint

Coordinators –Matthew Kane and Farrokh Mistree

- 11/2 *NZEF – Holistic Innovation Management*
Ulrich K. Frenzel POC (Farrokh Mistree)
Director, Innovation Center, Freudenberg Dichtungs, Weinheim, Germany

- Matthias Messer
 Manager, Innovation Strategy, Freudenberg Dichtungs, Weinheim, Germany
 Public Lecture on November 2, 2010 @ 6PM.
 Ethics and Excellence in Journalism Foundation Auditorium, Gaylord Hall 1140.
- 11/9 *NZEF – Dilemmas and Dilemma Management*
 Sammy Haroon POC (Farrokh Mistree)
 CEO, RBR Group
 Public Lecture on November 9, 2010 @ 6PM.
 Ethics and Excellence in Journalism Foundation Auditorium, Gaylord Hall 1140.
- 11/16 *Dilemmas and Way Ahead in Energy Security for the Navy*
 Rear Admiral Philip Cullom POC (Matthew Kane)
 Director of Fleet Readiness
 Office of Naval Research
 Public Lecture on November 16, 2010@ 6PM.
 Ethics and Excellence in Journalism Foundation Auditorium, Gaylord Hall 1140.
To be confirmed
- 11/23 *Key –note: Dilemmas in America’s Energy Future*
To be decided. POC (Farrokh Mistree and Musharraf Zaman)
 Public Lecture on November 23, 2010@ 6PM.
 Ethics and Excellence in Journalism Foundation Auditorium, Gaylord Hall 1140.

Bracket 5 – Managing dilemmas in attaining a sustainable net-zero footprint in the built environment

Coordinator – Zahed Siddique

- 11/30 Panel / wrap-up
 Course coordinators
 ExxonMobile Engineering Practice Facility Room 200.
- 12/7 Presentations
 Course coordinators
 ExxonMobile Engineering Practice Facility Room 200.

About Our Invited Speakers

Brad Bell

Brad Bell is an Assistant Professor at the University of Texas Arlington where he researches and teaches on the integration of digital fabrication technologies into the architectural design process. He has lectured, taught, and written on the uses of such technologies for the past 11 years and has been an invited critic at schools of architecture throughout the United States. In addition to his research and teaching responsibilities at UTA, he is the Assistant Director of the Finland Summer Architecture Institute, conducted each summer at the Helsinki University of Technology.

Brad is the co-founder and co-director of TEX-FAB which is a collaborative network of affiliated Texas Designers focused on providing a platform for the exchange and exploration of issues related to parametric design and digital fabrication. (www.TEX-FAB.net)

As principal of *brad bell studio*, he has completed residential projects in Colorado, Texas, Louisiana and Oklahoma. His research and practice focus on adapting contextual and regional construction methodologies with new digital fabrication technologies.

He received the J. Herndon Thomson Traveling Fellowship and the Malcom Heard Award for Teaching Excellence in 2004 and the UTA Faculty Excellence Award and Innovative Research Grant in 2009. He is a member of Tau Sigma Delta Honor Society Architecture and the Allied Arts and the Phi Beta Delta Honor Society for International Scholars. Brad received his Master of Architecture Degree from Columbia University in 1998 and his Bachelor of Environmental Design Degree from Texas A&M in 1993.

http://www.uta.edu/architecture/people/fulltime.htm?last_name=Bell

Philip Cullom

Rear Admiral Philip H. Cullom graduated with distinction from the U.S. Naval Academy with a bachelor's degree in Physics. He also holds a master's degree in business administration with distinction from Harvard Business School.

At sea, he has served in various operational and engineering billets aboard USS Truxtun (CGN 35), USS Jesse L. Brown (FF 1089), USS Dwight D. Eisenhower (CVN 69) and USS Mobile Bay (CG 53), participating in numerous exercises and counter-narcotics patrols as well as Operations Desert Storm and Southern Watch. From 1998 to 1999 he commanded USS Mitscher (DDG 57), deploying to the Mediterranean, Adriatic and North Sea during the Kosovo crisis. As commander, Amphibious Squadron 3, he served as sea combat commander for the 1st Expeditionary Strike Group (ESG-1) in support of Operations Iraqi Freedom and Enduring Freedom (2003-2004). Most recently, from June 2007 to August 2008, he commanded the Eisenhower and George Washington Strike Groups, as commander, Carrier Strike Group 8.

Ashore, he has served in various staff, policy, strategy, and technical positions to include: Shift engineer & staff training officer of the A1W nuclear prototype at the Idaho National Engineering Laboratory, special assistant to the CNO's Executive Panel (OP-00K) and branch head for Strategy & Policy (N513). Joint assignments have included defense resource manager within the J-8 Directorate of the Joint Staff, white house fellow to the Director of the Office of Management and Budget and director for Defense Policy and Arms Control at the National Security Council. He also held a personnel assignment, serving as the head of Officer Programs and Placement (PERS 424/41N) for all surface nuclear trained officers from late 2001 until 2003. After completing major command, he served as the chief of staff for Commander, 2nd Fleet/Commander, Striking Fleet Atlantic until September 2005. Flag assignments ashore included Navy Staff positions as director, Deep Blue and the director for Strategy & Policy (N5SP). In September 2008, he assumed his present duties as director, Fleet Readiness Division on the Navy Staff.

Cullom's personal awards include the Defense Superior Service Medal (two awards), Legion of Merit (five awards), Defense Meritorious Service Medal, Navy Meritorious Service Medal (two awards), Navy and Marine Corps Commendation Medal (three awards), Joint Service Achievement Medal, and Navy and Marine Corps Achievement Medal.

<http://www.navy.mil/navydata/bios/navybio.asp?bioid=322>

Evyatar Erell

Evyatar Erell is an architect and researcher in the field of climate and energy in the built environment, and is a professor at Ben Gurion University's Jacob Blaustein Institutes for Desert Research. He received a professional degree in architecture and town planning from the Technion, Israel; a master's degree in geography & environmental development at Ben-Gurion University of the Negev; and a PhD in architecture at the University of Adelaide.

Evyatar has studied glazing systems, daylight control and passive cooling techniques for buildings, and participated in several joint projects supported by the European Union, the last of which culminated in a book on 'Roof Cooling Techniques'. Evyatar's research has also included studies of the urban microclimate, such as an investigation of the effect of buildings on the deposition of dust in a desert city, the development of a computer tool for modeling air temperature in urban street canyons, and a field study of the intra-urban temperature differences in the mid-latitude city of Adelaide. He is co-author of a book (in press) titled 'Urban Microclimate: The Design of Spaces between Buildings'.

Prof. Erell is a member of several expert committees at the Israel Institute of Standards, and has contributed to drafting national standards for thermal insulation and energy certification of buildings.

http://cmsprod.bgu.ac.il/Eng/Units/bidr/Faculty_Members/Errel.htm

Ulrich K. Frenzel

Ulrich K. Frenzel is the Director of Freudenberg's Technical Development Center in Weinheim, Germany. Under his leadership Freudenberg built an Innovation Center and pioneered a new business development approach called Holistic Innovation Management. Ulrich obtained Diplom-Ingenieur and Dr.-Ing. degrees in mechanical engineering from the University of Munich in Germany.

<http://www.freudenberg.com/>

Field Code Changed

Patricia Hardré

Patricia Hardré is Professor of Instructional Design at the Jeannine Rainbolt College of Education at the University of Oklahoma. She received his Ph.D. in Instructional Design and Technology from the University of Iowa in 2002. She has a MA in English with an emphasis in critical theory. Her scholarly activities are directed towards enhancing learner-driven design that is anchored in experiential learning. Patricia is a Native American on both sides of her family. Her mother's people are Blackfoot, and her father's people are Cherokee. She loves the Native culture, art, literature, music and ritual.

<http://faculty-staff.ou.edu/H/Patricia.L.Hardre-1/>

Sammy Haroon

Sammy Haroon is an innovator and an entrepreneur. In the past 20 years he has made significant contributions in developing and delivering breakthrough business transformations, such as, the world's first scaled electronic billing and payment system (+\$100MM sales of Bank of America and Wells Fargo), and the world's first artificial intelligence based airline fleet management system in extreme conditions (year 1 savings \$100MM, Delta Airlines 1996). Most recently Sammy led global innovations for Procter & Gamble establishing the company's first innovation center in the Middle East (2007), a result for a billion dollar category was the decrease of SKUs from 21 to 15 and annual growth of 4%.

Today, Sammy serves as the Managing Director of The RBR Group, a management consultancy specializing in innovation driven strategies for success in the energy, CPG and technology sectors. His methods of "Invention To Innovation" (I2I) and "Accelerated Business Commercialization" (XBC) are being utilized at RBR for business design and commercialization. Sammy speaks frequently throughout the world on innovation, and lectures at various global universities including Georgia Institute of Technology in Designing "Open Engineering Systems".

Sammy received his Nuclear Engineering degree from Georgia Institute of Technology. He currently lives in North Carolina with his wife and two sons.

<http://www.linkedin.com/in/haroon>

Matthias Messer

Matthias Messer is the Manager of Innovation Strategy at Freudenberg's Technical Development Center in Weinheim, Germany. His current focus is on new business development. Matthias obtained his first degree in mechanical engineering from the Technical University of Darmstadt and his doctorate from Georgia Tech.

<http://de.linkedin.com/in/matthiasmesser>

<http://www.freudenberg.com/>

Field Code Changed

Zev Trachtenberg

Zev Trachtenberg is an Associate Professor of Philosophy at the University of Oklahoma. He received his Ph.D. from Columbia University in 1988. He specializes in political philosophy; his research focuses on the works of Jean-Jacques Rousseau, and in environmental political theory. He has written on Rousseau's theory of the role of culture in political life, on stakeholder involvement in environmental policy-making, specifically in watershed management, and on the role of judgment in environmental citizenship. His current projects include work on civic environmentalism, on environmental implications of the work of John Locke, and on Rousseau's understanding of the human relationship with the natural world. He has been involved in civic affairs in Norman through service on the Greenbelt Taskforce, the Greenbelt Commission, and since 2007, on the Planning Commission.

<http://www.ou.edu/ouphil/faculty/trachtenberg/trachtenberg.html>

Jeannette Yen

Jeannette is the Director of Georgia Tech's Center for Biologically Inspired Design. Along with co-directors Marc Weissburg, Craig Tovey, Bert Bras and Ashok Goel, the Center brings together a group of interdisciplinary biologists, engineers and physical scientists who seek to facilitate research and education for innovative products and techniques based on biologically-inspired design solutions. The participants of Georgia Tech's Center for Biologically-Inspired Design believe that science and technology are increasingly hitting the limits of approaches based on traditional disciplines, and Biology may serve as an untapped resource for design methodology, with concept-testing having occurred over millions of years of evolution. Experiencing the benefits of Nature as a source of innovative and inspiring principles encourages us to preserve and protect the natural world rather than simply to harvest its products.

Jeannette Yen's Ph.D. is in biological oceanography where she studies how fluid mechanical and chemical cues transported at low Re flow serve as communication channels for aquatic organisms, primarily plankton: the base of aquatic food webs. She is a Professor in the School of Biology and has been at the Georgia Institute of Technology since 2000.

<http://www.biology.gatech.edu/people/index.php?id=jeannette-yen>