

**CourseNo:** ARCHA4623\_001\_2013\_3

**Meeting Location:** [AVERY HALL 115](#)

**Meeting Time:** T 11:00A-01:00P

**Instructor Information:** [Katherine Orff Horodniceanu](#)

### **Sustainable Futures**

Columbia University in the City of New York

Graduate School of Architecture Planning and Preservation / GSAPP  
A4623

The Earth Institute / M.S. Sustainability Management

El/GSAPP Joint Seminar on the Built Environment

FALL 2013 Tuesdays 11am-1pm

Avery Hall, Rm 115

SEMINAR BOOK SHELF [345A+B](#) 200-level reading room, Avery Hall

**Instructor:**

Kate Orff RLA [ko2111@columbia.edu](mailto:ko2111@columbia.edu)

Assistant Professor of Architecture and Urban Design GSAPP

Office Hours: Tuesdays 10-11am by appt.

**Teaching & Grading Assistant:**

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**World-changing.** That's what we all want to be doing, and that's why we are studying sustainability, architecture, urban design, management, and policy. **Inaction.** We tend towards it, bogged down by contrasting perceptions, overwhelmed by biased opinions, and made apathetic by the scope of the challenge at the heart of imagining post-oil futures and scenarios. This forum aims to resist inaction by honing tools for analysis, decision making, and participation. We will unravel competing approaches, survey paradigms of thinking and study practices that navigate towards other options; our learning unit will function as a glossary of thoughts and actions towards a post-petrochemical era. **Curiosity.** Do strategies that bridge social, architectural, technological and political systems generate change? What is the role of design and policy thinking - not just for designers but for everyone working towards sustainable new energy futures. How can we begin to imagine a future without some fundamental restructuring of the built environment as it has evolved in the petrochemical era? **Design.** We are all designers. Every square millimeter of the planet and its terrestrial, aquatic, and climactic systems has been made and remade by human hands. Our forum brings together the realms of science, policy and design to address complex questions of environment and development with fresh thinking and a creative approach grounded in research, experimentation, and pilot projects. **Built environment.** We will discuss the concept of sustainability on global, regional, and local scales - with a focus on the role of cities and on targeted ideas that work, imagining scenarios of a post-petrochemical era future. We will discuss the idea of architecture as not just making something (buildings, chairs, renderings) - but as making change.

## Objectives

This seminar intends to marshal thinking in design and policy towards developing a toolkit of strategies and scenarios for change. Through faculty guidance and relevant readings, this seminar will facilitate informed discussion and exchange. Speckled with a series of video talks and guest speakers that is choreographed to run in parallel with joint seminar discussions, this seminar will consider the idea of connection and collaboration and ultimately explore the value of thinking horizontally to mesh together different perspectives and disciplines. Through a focus on both speculative projects and case studies, the seminar will highlight the reciprocity between thinking and making, researching and doing, desk work and fieldwork - the idea and the thing. At the same time, we aim to bring a critical perspective to the research and mission of the Earth Institute, and to evolve the role of the GSAPP as an experimental design school towards a broader, more sustainable mission. We will explore avenues of common purpose, shared techniques, and collaborative approaches. This seminar will also be interfacing with an initiative titled The Five Thousand Pound Life at the Architectural League of New York (disclaimer: I am a core advisor) We will overlap where possible and pragmatic with the League programming ([www.archleague.org](http://www.archleague.org))

## Format

The class includes videos, invited lecturers, library research, student-led discussions and presentations on case studies and readings, and discussions of timely, controversial issues. There will be assigned readings for each week which students are expected to be prepared to discuss. Students will choose a strategy where they will explore examples of world-changing work and describe real world examples, and speculate on future directions and opportunities.

## Course Requirements

Students are expected to do all of the assigned reading, to actively participate in class discussion, and to prepare questions for invited speakers and engage actively in dialogue. Students will be asked to work in small teams to present an investigation and critical understanding, to include drawings, diagrams and text, of one case study that emphasizes synergistic thinking between science, design and engineering in an urban context. This assignment can be equal parts research and speculation about potential change scenarios. It will take the form of both a class presentation and a paper, which includes text, images, diagrams, plans, and sections as necessary to describe the social, political, physical, conceptual and operational aspects of the project or intervention. In addition, students are asked to provide an 'executive summary' of about 300 words that clearly and succinctly describes the spirit, intent, and effectiveness of the idea. For a reference, see the 'Glossary of Terms and Solutions' (located in the back cover of Petrochemical America.) Some class time will be dedicated to desk crits on this exercise. Students will also be asked to prepare 1-2 brief issues paragraph reactions to specific readings and lecture topics. In order to reduce paper consumption, PDF's of readings will be made available, and books will be placed on our reserve shelf in Avery Library.

## Schedule

9/03

Week 1                    **INTRODUCTION / KATE ORFF**

*The purpose and format of the course.*

Oil, Infrastructure, Waste, Displacement, Ecology, Food, Landscape

A lecture and discussion on methodologies and strategies for changing the conversation. *Begin to research presentation topics.*

### Readings:

Orff, Kate. 'Introduction' (p. 115-117) and 'Oil' (p.119-129) Petrochemical America

Diamond, Jared. Collapse: How Societies Succeed or Fail (Prologue)

Frampton, Kenneth. "Towards an Urban Landscape", Columbia Documents of Architecture and Theory 4 (1995): 83-94

Sachs, Jeffrey. Part Two: "Environmental Sustainability" and Part One, esp. 'The Urban Century' in Common Wealth

Thomas L. Friedman, "Connecting Nature's Dots" NYTimes, Aug 23, 2009 and "Tubas and Test Tubes" The World is Flat

Vandana Shiva, Soil Not Oil, "Triple Crisis Triple Opportunity"

VIDEO: Jeffrey Sachs on Sustainable Urbanization <http://vimeo.com/3395587>

9/10

Week 2            **THE FUTURE OF\_ SUSTAINABLE PLANNING**

**INVITED SPEAKER: JASON HELLENDRUNG / SASAKI**

**CASE STUDY: CEDAR RAPIDS RIVERFRONT**

**Flood Mitigation and Co-benefits + Community Resiliency**

Readings:

Cedar Rapids Fact Sheet (Courseworks)

<http://www.kcrg.com/news/local/Cedar-Rapids-Wants-State-Feds-to-Bend-Rules-For-Redevelopment-160165605.html?m=y&smobile=y>

Nancy Levinson: Editorial The Public Works

9/17

Week 3

## THE FUTURE OF \_INFRASTRUCTURE

INVITED SPEAKER: BRYAN BOYER

*"All the exasperatingly difficult environmental challenges we face today, large and small, are consequences of the explosive growth, during the past century or so, of the increasingly complex apparatus of modern civilization, and that growth has been engendered and nurtured and driven and amplified by oil, without which it could not have occurred. Most of the major environmental problems we currently face are the result of oil's prodigious abundance during the twentieth century; most of the problems we will face going forward will be the result of oil's increasing scarcity and cost during the twenty-first." (David Owen)*

Assignment: Develop 2 questions for Bryan based on the readings & links below.

Reference projects and links:

<http://news.stanford.edu/news/2009/october19/jacobs-on-energy-study-102009.html>

"Island in the Wind" and "Man in the Anthropocene" by Elizabeth Kolbert, 2006

"The Cheapest Generation: Why Millennials aren't buying cars or houses, and what that means for the economy" (Courseworks)

"The Shape of things to Come" David Owen (Courseworks)

<http://www.low2no.org/>

<http://www.low2no.org/pages/case-study> (PDF download)

[http://www.low2no.org/downloads/Low2No\\_overview.pdf](http://www.low2no.org/downloads/Low2No_overview.pdf)

[http://www.low2no.org/downloads/Low2No\\_brief.pdf](http://www.low2no.org/downloads/Low2No_brief.pdf)

<http://www.helsinkidesignlab.org/pages/publications>

Video: Rob Hopkins on transition timelines

[http://www.ted.com/talks/lang/eng/rob\\_hopkins\\_transition\\_to\\_a\\_world\\_without\\_oil.html](http://www.ted.com/talks/lang/eng/rob_hopkins_transition_to_a_world_without_oil.html)

9/24

#### Week 4            **THE FUTURE OF\_INDIGENOUS LANDSCAPE**

**INVITED SPEAKER: JULIA WATSON / LANDSCAPE'S  
AGENCY**

What are productive pairings of emergent ecological paradigms and local knowledge? How can the fields of ecology and conservation biology inform contemporary planning & design practice? The language of ecology still in its infancy, but now pervasive across many disciplines from the creative to commercial, has yet to mature and propagate. For designers, terms such as diversity, reciprocity, feedback and resilience have unknown spatial and ecological consequences. They can be informed by the breadth and depth of knowledge observed in the vernacular landscapes of the world's traditional and indigenous peoples. And while indigenous innovation has historically inspired the field of architecture, so far there has been minimal impact on the fields of landscape architecture and urbanism. Taking observation from the anthropological landscapes of the other that evolved over thousands of years, new understandings of our potential for ecological

coexistence are explored.

Assignment: Develop 2 questions for Julia based on the readings below. Also, you must finalize your group in preparation for turning in a presentation. Presentation topic 10/1. Refer to google docs sign up sheet.

Reading:

Revkin, A. "Forget Nature: Even Eden is Engineered." (Courseworks)

Wilson, E.O. The Diversity of Life excerpt (Courseworks)

Watson, J. (2014). Water Urbanism as a Way of Life: Conservation of the Subak Cultural Landscapes of Bali. In B. De Meulder & K. Shannon (Eds.), *Water Urbanisms East*. Zurich: Park Books.

Rudofsky, B. (1964) *Architecture without Architects*. Connecticut: Doubleday & Company.

Lister, N. (2008) *Bridging Science and Values: The Challenges of Biodiversity Conservation*. In D. Waltner-Toews, J. Kay & N. Lister (Eds.), *The Ecosystem Approach*. New York: Columbia University Press.

Berkes, F. & Davidson-Hunt, I. (2008) *The Cultural Basis for an Ecosystem Approach*. In D. Waltner-Toews, J. Kay & N. Lister (Eds.), *The Ecosystem Approach*. New York: Columbia University Press.

Margolis, L. and A. Robinson (2007). *Living Systems: Innovative Materials and Technologies for Landscape*



Architects. Basel, Birkhauser.

10/1

## THE FUTURE OF\_ ECOLOGY

Week 5

### INVITED SPEAKER: DAVID MADDUX

David is the founder of the “Nature of Cities” Project. He is committed to the health of the natural environment, urban resilience, the application of ecosystem services for human welfare and livelihoods, and the effective and efficient monitoring and evaluation of these issues. As Founder and Editor of TheNatureOfCities.com, Co-Founder of Sound Science LLC (<http://www.sound-science.org>), his current work is in the development of useful knowledge for design and management of social-ecological systems in urban landscapes.

Reading:

"The Death of Environmentalism" Intro, and see esp pp. 32-34

[http://www.thebreakthrough.org/images/Death\\_of\\_Environmentalism.pdf](http://www.thebreakthrough.org/images/Death_of_Environmentalism.pdf)

Read at least three pieces three different authors from three different continents.

On [www.TheNatureOfCities.Com](http://www.TheNatureOfCities.Com)

Win Win Ecology: Introduction

Assignment: Bring to class a printed < 1 page description of your Case Study presentation topic, please include names & units.</p>

10/2

**\*\*Week 5+  
YPCCC**

**THE 5000 POUND LIFE: ANTHONY LEISEROWITZ, YALE**

**NOTE: ARCH LEAGUE EVENING EVENT OCT 02**

How is climate change communicated to the American public, and how does the public respond to this communication based on different cultural values? How can we evolve our practices and the conversation in a more productive and more proactive direction? Anthony Leiserowitz has a doctorate in environmental science, studies and policy, and has been a research scientist in the Yale School of Forestry and Environmental Studies since 2007. He also directs the Yale Project on Climate Change Communication. He is an expert on American and international opinion on global warming, including public perception of climate change risks, support and opposition for climate policies, and willingness to make individual behavioral change. His research investigates the psychological, cultural, political, and geographic factors that drive public environmental perception and behavior.

Required Reading: “Global Warming’s Six Americas”

<http://environment.yale.edu/climate-communication/article/Six-Americas-March-2012/>

Full video of Anthony Leiserowitz in conversation with Bill Moyers, from January 4, 2013:

<http://vimeo.com/56743098>

Suggested reading: A Perfect Moral Storm: The Ethical Tragedy of Climate Change

10/8

Week 6            **THE FUTURE OF \_ ENERGY**

**INVITED SPEAKER: NINA BERMAN**

Politics, visualization and energy are inextricably intertwined and a key in moving the needle relative to carbon emissions and new climate paradigms. In this session we will discuss with Nina her “Fractured” project and integrate the larger fracking debate - is it a “bridge” to a cleaner energy future or business as usual?

Readings:

Naomi Klein, “To Conservatives, Climate Change is Trojan Horse to Abolish Capitalism” in the Nation and “Climate Change is a Historic Opportunity”

<http://www.alternet.org/bill-moyers-naomi-klein-how-climate-change-historic-opportunity-progressives>

Reference projects: Fractured

The NOOR Climate Change Project

<http://photovillennyc.org/about/>

Video: Naomi Klein on failure

[http://www.ted.com/talks/lang/eng/naomi\\_klein\\_addicted\\_to\\_risk.html](http://www.ted.com/talks/lang/eng/naomi_klein_addicted_to_risk.html)

10/15

Week 7            **IN CLASS DISCUSSION - CLIMATE CHANGE CROSSROADS**

**Assignment:** 2 Page Response paper due - please pick one of the lecturers and a cluster of readings and develop a brief position / response paper. Please bring a printed copy into class and also post to Course works. Be sure to include your name and UNI on all submitted materials.

**UNI / ODDS**

**“INNOVATION”**

Shiva, Vandana Soil Not Oil

*The Inventor's Dilemma; An Eco-minded Engineer Discovers the Limits of Innovation*, by David Owen. In the New Yorker Magazine May 17, 2010

The Shape of Things to Come. Green Metropolis, [http://www.treehugger.com/files/2010/10/david-owen-traffic-public-transit-cities-wisdom.php?campaign=th\\_rss](http://www.treehugger.com/files/2010/10/david-owen-traffic-public-transit-cities-wisdom.php?campaign=th_rss)

**UNI / EVENS “SETTLEMENT PATTERN”**

Green Metropolis: Why Living Smaller, Living Closer, and Driving Less are the Keys to Sustainability, New York, Penguin, 2009 Chapter 1 *More Like Manhattan* and *Liquid Civilization* Ch. 2

Shiva, Vandana. “Sacred Cow or Sacred Car” in Soil not Oil

Kenneth T. Jackson. Crabgrass Frontier: The Suburbanization of the United States. =

Chapter 2. The Transportation Revolution and the Erosion of the Walking City, And “Chapter 10. Suburban Development Between the Wars” and Ch. 16 “Retrospect and Prospect”

10/22

Week 8            **THE FUTURE OF\_ CO-HABITAT**

**/ DISCUSSION & STUDENT PRESENTATIONS / CASE STUDIES**

Interview with Kristina Hill

<http://www.asla.org/ContentDetail.aspx?id=28548>

Davis, Mike Cannibal City: Los Angeles and the  
Destruction of Nature

Leatherbarrow, David Frameworks of Performance &  
Delight

Kolbert, Elizabeth “The Sixth Wave” The New  
Yorker

Forman, Richard “Land Mosaics” (Courseworks)

Ariane Lourie Harrison: Architectural Theories of the  
Environment: Post-Human Territory, Routledge 2012

Land Mosaics, by RTT Forman, Habitat corridors /  
landscape over/underpass concept

10/29

Week 9            **THE FUTURE OF\_ FOOD**

**/ DISCUSSION & STUDENT PRESENTATIONS**

*How can we enhance public and environmental health by  
diversifying our relationship to food and new/old forms*

*of agriculture? “We’re eating the leftovers of WWI” (V. Shiva)*

Readings:

Manning, Richard “To See the Wizard” in Against the Grain: How Agriculture has Hijacked Civilization, by and “The Oil We Eat”

Pollan, Michael. The Omnivore’s Dilemma, by pp 41- 84

Owen, David, on locavorism and vertical farming (p 301-305)

Shiva, Vandana “Women in the Food Chain” in Staying Alive (pp. 139-169)

Elizabeth Kolbert, “XXXL”, New Yorker

11/5

Week 10      **ELECTION DAY**

**/ NO CLASS**

11/12

Week 11      **THE FUTURE OF\_WASTE**

**/ DISCUSSION & STUDENT PRESENTATIONS**

*How has the one-way system of extraction of oil and waste impacted the environment and displaced communities. What are other paradigms of living alongside and integrating waste.*

Reading:

Berger, Alan. Drosscape: Wasting Land in Urban America (New York: Princeton Architectural Press, 2006).

Allen, Barbara Uneasy Alchemy and “The Cradle of A Revolution”

Case Studies:

Semakau Landfill, Singapore

Duisberg Nord, Germany

Bonus! See video: Alan Berger

<http://www.youtube.com/watch?v=cd78QyUPWEA>

[http://www.youtube.com/watch?v=D\\_BOODgPkKU](http://www.youtube.com/watch?v=D_BOODgPkKU)

The Warriors of Qiugang: A Chinese Village Fights Back

[http://e360.yale.edu/feature/the\\_warriors\\_of\\_qiugang\\_a\\_chinese\\_village\\_fights\\_back/2358/](http://e360.yale.edu/feature/the_warriors_of_qiugang_a_chinese_village_fights_back/2358/)

11/19

Week 12      **THE FUTURE OF\_ WATER**

**/ DISCUSSION & STUDENT PRESENTATIONS**

*How can we remake our built environment to filter water and work with hydrology and marine habitat*

*rather than exclude natural systems?*

Reference Projects; Potsdammer Platz, Mumbai SOAK project

Reading:

Rising Currents; Projects for New York's Waterfront, MoMA

Herbert Dreiseitl, 'Water is Universal' in New

Waterscapes

11/26

Week 13      **THE FUTURE OF\_ POLITICS    RECLAIMING THE REGION**  
**/ DISCUSSION & STUDENT PRESENTATIONS**

*How are cities coping with the idea of long term planning and resiliency? Can regional identity and ecological systems help to shape policy and planning? How is the region defined? The question of boundaries. The concept of watershed planning, shrinking cities.*

Reading:

Hough, Michael. "Urban Ecology: A Basis for Shaping Cities" in *Cities and Natural Process* (London: Routledge 1995):

Retrofitting Suburbia / The Sprawl Repair Manual, by Ellen Dunham-Jones and June Williamson

11/29

Last day of Architecture classes



12/2-12/6 Arch Final Review Week Monday, December 2 - Friday, December 6

12/09-12/13 Exam + Paper Week

12/13 **PAPERS DUE 5pm**

Final student conferences w/Kate (sign up for 12/10)

12/18 Grades due

### **Bibliography**

Students should consider purchasing these books for background reading and reference materials:

Carson, Rachel Silent Spring

Diamond, Jared Collapse: How Societies Succeed or Fail

Sachs, Jeffrey Common Wealth: Economics for a Crowded Planet

Shiva, Vandana. Soil Not Oil

Wilson, E.O. The Diversity of Life

Friedman, Thomas L. "The Ten Forces that Flattened the World" in The World Is Flat: a Brief History of the Twenty-first Century (New York: Farrar, Straus Giroux, 2005) and /or Hot Flat and Crowded

Owen, David Green Metropolis: Why Living Smaller, Living Closer, and Driving Less Are the Keys to Sustainability, 2009

Jackson, Kenneth T. Crabgrass Frontier: The Suburbanization of the United States, 1985

Pollan, Michael The Omnivore's Dilemma, 2006

Steffen, Alex ed. Worldchanging: A User's Guide for the 21<sup>st</sup> Century Abrams, 2009

Kolbert, Elizabeth Field Notes from a Catastrophe, Bloomsbury, 2006

Misrach, Richard and Orff, Kate Petrochemical America, Aperture 2012

### **Electronic Resources:**

<http://dotearth.blogs.nytimes.com/>

<http://blogs.nature.com/climatefeedback/>

<http://sustsci.aaas.org/category.html?categoryid=52>

<http://climateprogress.org/>

<http://ecogeek.org/>

### **Grades will be based on the following:**

You are asked to regularly and thoughtfully participate in discussions, and to prepare questions for speakers, and responses to readings. You cannot miss more than 3 classes. Please inform the instructors in advance should you have to miss class for any reason.

### **Case Study (60%)**

Research one ‘world changing’ concept or project. Each student is responsible for working in a team of two to produce an oral presentation

and critical analysis and potential speculative discussion of constraints and opportunities of the project case study chosen. Time to research the topic is crucial - you will be asked by the instructor to work together to discover a fruitful line of inquiry. Therefore it is advised that students meet with the instructor prior to their presentation for guidance on overall approach and to shortlist research source material. A separate handout will be distributed week two with more information and a sign up sheet.

1. Context. Begin with a tour of the project case study or urban condition and its site to acquaint the class with its historical and geographical conditions. Include scale and relation of project to town or rural area. Include background on disciplinary collaboration or unexpected consequences.
2. Critical Analysis. Describe how the project or action or idea connects or separates objects and spaces, and the processes and events that it carries. How does the project structure new relationships and organize new cultural or ecological functions? How does it create the conditions for future events or behaviors? What are its effects?
3. Conclusion. Situate the work: describe strengths and weaknesses, missed opportunities and latent potential. How can an understanding of the project inform current practice of science and design? What are new avenues of understanding and speculations that could help move the discussion forward?

Oral presentations will take place on the dates listed above. A final project to include images, drawings of approx 15-20 pages total length

will be due at the end of the term. This final case study report will be included in a PDF book of class work at a graphic standard that will be posted online at the end of the semester. This booklet may be distributed back to the class via email, to guest speakers, and to the Avery library as a record of the course and for future reference material. Your aim should be to produce a work that is approximately 15-20 pages in overall weight, although well researched charts, finely crafted diagrams, and the sequencing or juxtaposition of images and precedents will count for a lot. The ratio of text to image/diagram will depend on the project itself and individual student's interest and experience. We expect a range of responses from text-heavy papers to those consisting of primarily diagrams and analytical drawings that explain the structure and flow of the project in its context. Include citations from the course readings where appropriate - these will be very helpful for your audience to understand the relevance of the case study and how it intersects with cultural and conceptual issues raised in the course. The best papers have a clear structure, and an introduction, body and conclusion. Structure your writing in outline form and organize your ideas visually as a storyboard sketch if it is useful.

Please include your full name and email/UNI on all submitted materials.