

CourseNo: ARCHA4623_001_2012_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

EI/GSAPP Joint Seminar on the Built Environment

FALL 2011 Tuesdays 11am-1pm

Avery Hall, Rm 115

Instructor:

Kate Orff RLA 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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Office Hours: TBD

"We do not have the courage to envision a post-industrial world" (V. Shiva)

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.

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, and we will be posting to Courseworks when possible.

Schedule

9/04

Week 1 INTRODUCTION

/ KATE ORFF

The purpose and format of the course.

Sign up w/Google docs and coordinate with Tildy for the week 2 exercise before you leave class today on 9/4.

Readings:

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

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

Begin to research presentation topics

9/11

Week 2 THE FUTURE OF_

A Discussion on "BAU" business as usual scenarios and the State of the U.S.A. in 2 hours. (!) You are each asked to produce ONE slide and talk about it for 2 minutes relative to the below topics. Research your topic and bring in to class the most salient graph or diagram that speaks to the current condition. Be sure to cite your source by including citation & weblink.

Readings:

Diamond, Jared "Collapse: How Societies Succeed or Fail" (Introduction)

Revkin, Andrew "MANAGING PLANET EARTH; Forget Nature. Even Eden Is Engineered," The New York Times, August 20, 2002

Kolbert, Elizabeth "Man in the Anthropocene" 2006

OIL & ENERGY

OIL COMPANY PROFITABILITY

CONCEPT / DEBATE OF PEAK OIL <http://vimeo.com/15477088>

"EROI" FACTOR

NEW DRILLING & EXTRACTION TECHNOLOGY

TAR SANDS ALBERTA

OIL & GAS RESERVES U.S. AND FOREIGN

CAR OWNERSHIP

GREEN ENERGY “BRIDGE” NATURAL GAS

INFRASTRUCTURE

STATE OF EXISTING U.S. INFRASTRUCTURE

GREEN INFRASTRUCTURE CONCEPTS
WIND AND WAVES / TIDAL POWER

SOLAR ENERGY /

BIOMASS / SCALES OF USE

WASTE

CONSUMPTION / CONSUMER CULTURE U.S. / CHINA

PACKAGING, DISPOSABLE PLASTIC USE AND HALF-LIFE

CHINA POLLUTION CRISIS “CHOKING ON GROWTH”

WASTE PER CAPITA U.S.A. COMPARISON

EWASTE

TOXIC WASTE

WASTE-TO-ENERGY POTENTIALS AND PITFALLS

THE STATE OF RECYCLING

GLOBAL WASTE ZONES: THE PACIFIC GARBAGE PATCH

DISPLACEMENT

CLIMATE REFUGEES CURRENT AND ANTICIPATED

CONCEPT OF SOCIAL CAPITAL / HAPPINESS INDEX

CIVIC ENGAGEMENT SEE “BOWLING ALONE”

GLOBAL POPULATION SHIFTS/ URBAN / RURAL / PERIURBAN

EMERGING GOVERNMENTAL STRUCTURES / THREATS

ECOLOGY

GLOBAL STATE OF BIODIVERSITY

EXTINCTION TIMELINE - THE SIXTH WAVE

VERTEBRATES

INVERTEBRATES

FISH

CORAL REEFS

FRESH WATER / POTABLE WATER

ARCTIC ICE SCENARIOS / ICE ALBEDO FEEDBACK

STATE OF THE OCEANS / SALINIZATION

CONCEPT OF COLLAPSE / TIPPING POINT

FOOD

NUTRITION INDICES

MONOCULTURE: CORN / SOY BELT

FOOD INDUSTRY: CONAGRA, MONSANTO,

OBESITY IN THE U.S. (SEE XXXL, KOLBERT)

POVERTY & OBESITY CORRELATION

FACTORY FARMING

LOCAVORISM, PITFALLS

LANDSCAPE

SEA LEVEL RISE

TEMPERATURE SHIFTS / ANTICIPATED

DESERTIFICATION / AFRICA

DEFORESTATION / TROPICS

U.S.A. ANTICIPATED REGIONAL SHIFTS - DRIER, WETTER, HOTTER

SPECIES MIGRATION

HABITAT FRAGMENTATION

9/18

Week 3 THE FUTURE OF _ JUSTICE

PETROCHEMICAL AMERICA

EXHIBITION WALK THROUGH AND LECTURE/Q&A WITH MIKE SCHADE

Center for Health, Environment & Justice

NOTE: MEET AT Aperture Gallery at 11:30am. 547 West 27th Street, (between 10th and 11th Avenues) 4th Floor.

Reading:

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

Diamond, Jared. Collapse: How Societies Succeed or Fail (Part 4)

Schade, Michael <http://chej.org/2012/08/backtoschool2012/>

<https://www.google.com/news/story?cf=all&ned=us&hl=en&q=phthalates+school+supplies&ncl=dzUGqjV1bPKIGtMwjSdm-oWJe2Q1M&cf=all&scoring=d>

Video: Rob Hopkins on transition timelines

http://www.ted.com/talks/lang/eng/rob_hopkins_transition_to_a_world_without_oil.html

Video: Naomi Klein on failure

http://www.ted.com/talks/lang/eng/naomi_klein_addicted_to_risk.html

Final Presentation topics selected (refer to google docs sign up sheet)

9/25

Week 4 THE FUTURE OF_LIVING

LECTURE & DISCUSSION WITH GREG LINDSAY / AUTHOR / FUTURIST

Reading:

Lindsay, Greg: Interview with Charles Renfro (Fast Company)

<http://www.fastcodesign.com/1663701/in-levittown-the-ur-suburb-a-proposal-to-remake-sprawl-into-a-small-biz-oasis-slideshow#1>

<http://www.theatlantic.com/magazine/archive/2012/09/the-cheapest-generation/309060/>

Reference Projects:

The Garden in the Machine (Studio Gang, SCAPE, et al) Museum of Modern Art Foreclosed :Rehousing the American Dream Exhibition, 2012

<http://www.smart-urban-stage.com/>

Aerotropolis, by Greg Lindsay, John Kasarda (Intro)

Other: "The Right to the City", by David Harvey

Joel Garreau, *Edge City*, 362-388

Owen, David "The Shape of things to Come" (esp: Dubai Mall of the Emirates / Beijing Hutongs)

Prepare 3 questions for the speaker, post to Courseworks and bring to class

9/25 PANEL DISCUSSION at APERTURE GALLERY

WILMA SUBRA, Subra Company, MacArthur Fellow, Kate Orff / Columbia University, and Mike Schade, Center for Health, Environment and Justice

NOTE: MEET AT Aperture Gallery at 6pm. 547 West 27th Street, (between 10th and 11th Avenues) 4th Floor.

Allen, Barbara Uneasy Alchemy: Chapter 1: The Making and Unmaking of a Polluted Region MIT Press, 2003 and "Cradle of a Revolution"

"Exquisite Communion: The Body, Landscape and Toxic Exposures" by Sandra Steingraber in Ecology and Design: Frameworks for Learning, Island Press 2001 (on the lawn and the smokestack)

10/2

****Week 5 THE FUTURE OF _ HEALTH**

LECTURE & DISCUSSION WITH PROFESSOR DAVID ROSNER PHD

Ronald H. Lauterstein Professor of Sociomedical Sciences & Professor of History, Graduate School of Arts and Sciences Columbia University

****Note:** Class will not be meeting at the regularly scheduled time of 11am. Class will be meeting at 6pm at the Aperture gallery

Rosner and Markowitz, Deceit and Denial: The Deadly Politics of industrial Pollution, University of California Press, 2002. Introduction

10/9

Week 6 THE FUTURE OF _ SUSTAINABILITY & PEDAGOGY

MARK FELDMAN / FOUNDER / STANFORD SUSTAINABILITY SCHOLARS

Readings:

"Visualizing the End of Oil"Places / Design Observer April 2012

"The Fissured Ethos of Climate Science"

Other readings TBD

10/16

Week 7 THE FUTURE OF_ ECOLOGY

GUEST LECTURE ELLEN NEISIS

"HIPPO" Video: <http://www.youtube.com/watch?v=Gllvstjsp8I>

Wilson, E.O. Introduction, The Diversity of Life (selected pages) Kolbert, Elizabeth "The Sixth Wave" The New Yorker, 20xx Foreman, Richard "The Missing Catalyst: Design and Planning with Ecology Roots"

10/23

Week 8 THE FUTURE OF_ PARTNERSHIP

INVITED SPEAKER

Terra Global Capital. <http://www.terraglobalcapital.com/>

New paradigms integrating environment and finance

10/30

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

11/6

Week 10 ELECTION DAY

/ NO CLASS

11/13

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. How can waste be re-integrated into a positive cycle in the landscape and in communities.

Video: The Warriors of Qiugang: A Chinese Village Fights Back

http://e360.yale.edu/feature/the_warriors_of_qiugang_a_chinese_village_fights_back/2358/

Reading:

From Landfill to Landscape

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

Bonus! See video: Alan Berger

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

http://www.youtube.com/watch?v=D_BOODgPkKU

11/20

Week 12 THE FUTURE OF _ WATER SYSTEMS

/ 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? What are new paradigms for filtering, cleaning, sharing water ?

Reading:

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

Herbert Dreiseitl, 'Water is Universal' in New Waterscapes

11/27

Week 13 THE FUTURE OF _ SETTLEMENT PATTERNS

/ STUDENT PRESENTATIONS / CASE STUDIES

"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." (D. Owen)

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

"Island in the Wind" by Elizabeth Kolbert, 2006

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

Green Metropolis: Why Living Smaller, Living Closer, and Driving Less are the Keys to Sustainability, New York, Penguin, 2009 .Green Metropolis, Chapter 2 "Liquid Civilization"

Of interest:

http://www.treehugger.com/files/2010/10/david-owen-traffic-public-transit-cities-wisdom.php?campaign=th_rss

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"

11/29 THE FUTURE OF_ CITIES

STUDENT PRESENTATIONS/ CASE STUDIES

How can we design for and integrate ecology, biodiversity, and human wellbeing

Architects and designers are skilled at making but in the next century, but the success of future designers may hinge upon our ability to unmake, undo, and retrofit.

Shrinking Cities - Cleveland, Detroit (see: Razing the City to Save the City, NY Times, June 20, 2010, This Old Recyclable House)

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

Chapter 1 *More Like Manhattan* and Chapter 6. *The Shape of Things to Come*

11/29 SUSTAINABLE DEVELOPMENT LECTURE

/JEFFREY D. SACHS

Quetelet Professor of Sustainable Development and Professor of Health Policy and Management; Director, The Earth Institute, Columbia University; Special Advisor to United Nations Secretary-General Ban Ki-moon

Time: 4:00 to 6:00 p.m.

Location: Columbia University, Morningside Campus, Alfred Lerner Hall, Boone Arledge Auditorium

I suggest that you REGISTER now.

12/4 Last day of Architecture classes

12/3-7 Arch Final Review Week

12/10-12/19 Exam + Paper Week

12/13 PAPERS DUE at 11am in Room 115

Final student conferences w/Kate and/or Tildy (sign up)

12/19 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 21st 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/>

Andrew. C. Revkin

<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 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. The basic oral & slide presentation format is as follows:

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 your paper.