LARCH 750
FALL QUARTER 2008
AUSTIN E. KNOWLTON SCHOOL OF ARCHITECTURE
THE OHIO STATE UNIVERSITY

RESEARCH, DESIGN AND PROTOTYPING OF NEW LANDSCAPE TECHNOLOGIES

THE LIBRARY FOR THE BIRDS OF NEW YORK, MARK DION. 1996

INSTRUCTOR — SARAH COWLES, VISITING PROFESSOR
OFFICE — KN 295
OFFICE HOURS — TUESDAY AND THURSDAY, 10:30-12:00 P.M.
EMAIL — COWLES.26@OSU.EDU
CLASS MEETINGS — LECTURES KN0176 MWF 8:30-9:30
STUDIO KN0310 MWF 9:30-12:18

COURSE DESCRIPTION

"DESIGNERS MUST IDENTIFY OPPORTUNITIES WITHIN THE PRODUCTION MODES OF THEIR TIME TO ENABLE NEW WAYS OF THINKING ABOUT THE CITY AND ITS LANDSCAPE" [1]
ALAN BERGER, DROSSCAPE

Recent innovations in materials, manufacturing and construction techniques offer many opportunities for new landscape technologies. Smart skins, adaptive systems, cradle-to-cradle manufacturing, mass customization, CNC workflows and GPS/precision controlled construction methods provide a wealth of possibilities and applications to solve environmental challenges, manage waste, increase habitat, and enrich our public spaces. Concurrently, the emerging field of ecological engineering provides a framework for the design of new systems that integrate energy, life, and the self – organizing capabilities of ecosystems. In this studio, we will investigate these new technologies and production methods to create a novel, landscape-based technology that expresses a critical engagement in the interface of ecology, production, and the built environment.

The studio is comprised of four problems. Working primarily from an industrial design project development methodology, teams of two will begin by researching current materials, systems and products in four areas: geotextiles and bioengineering, ecological engineering, GPS/precision construction, and CNC manufacturing. Next, each designer will write a product brief for a new technology (for the purpose of this studio, a "technology" is defined as a product, system, material or method). In the third stage, each designer will develop and prototype their new landscape technology. Finally, the spatial and performance implications of the new technology will be tested at an infrastructural or site scale.The assigned readings will provide an introduction to the designer to contemporary theories of green and sustainable design, ecological engineering, performance infrastructure, and applications of new technologies in landscape. As this is a research studio, it will be necessary for each designer to pursue further resources and readings to evolve the design proposal; that is to say, designers will be expected to search beyond close-at-hand resources such as Google and the KSA Library.

As a technology-based studio, we will work intensely with digital media and modeling. It is the responsibility for each designer to experiment with the software, tools and resources provided by the school and to pursue the possibilities of digital workflows (KSA is one of only a handful of graduate schools with a state-of-the-art fab lab that is open to landscape students). However, a tactile and kinesthetic workflow must not be neglected in this process; hand sketching, mess-making, multi-material mash-ups, accidental confectionery, and the pursuit of a "singular and unexpected outcome"[2] are all strongly encouraged.

Embedded in this studio is a challenge to envision a new mode of practice. We will search out critical, landscape-based solutions to problems that in the past have been solved by other disciplines and industries. For example, in the project brief stage, we will review current RFPs from issued by agencies such as the Department of Energy, the Environmental Protection Agency, the US Department of Agriculture, the United Nations, and Architecture for Humanity to discover new opportunities for innovation in landscape technologies.

A successful project in this studio will engage three criteria: in-depth research and analysis, fearless iteration in the development and refinement of the prototype, and the manifestation of the designer's critical position on the following topics:

- aesthetics
- identity & branding
- economy
- efficiency
- materials
- manufacturing process
- spatial implications
- experience

STUDIO PROJECT OVERVIEW

PROBLEM 1: RESEARCH & DISCOVERY

Working in teams of two, designers will choose an area of landscape and manufacturing technology to research in-depth.

- GPS and satellite controlled equipment: (mining, construction, agriculture, mapping and surveying)
- Site Remidiation Technologies (water and soil treatment)
- Ecological Engineering
- Soft and permeable systems: Bioengineering, Fabrics and Membranes
- CNC production workflow and mass customization

The result of this analysis will be presented to the class and uploaded to the course web site. This research will for the foundation and shared knowledge base for Problem 2.

PROBLEM 2: PROBLEM-POSING

Working individually, designers will develop a design brief for a new landscape technology. Designers may opt to develop a project from the research topics in the previous exercise, or may choose to review current RFPs for potential project ideas.

PROBLEM 3: PROTOTYPING

Each designer will iterate design solutions for their problem using hand sketching, diagrams, physical models, and computer modeling and animation. This portion will provide an introduction to computer modeling and output. Material, scale, manufacturing, and system processes are to be considered and resolved during this stage. Designers will illustrate the process that their system engages in, and the manufacturing or construction processes involved in the creation of the system.

PROBLEM 4: SITE APPLICATION

In this stage, we will apply our prototypes to a particular site. The individual choice of site (or infrastructural application) will be developed over the course of the semester.

We will study how our prototypes work in multiples and how they interface with other site systems to create a new landscape. Does the technology interface with living systems? Is it a performance surface? Is it a living system? Does it change over time? Does it wear out? Biodegrade? Become stronger? Remain pristine? Oxidize? Evolve? Enable succession?

COURSE OBJECTIVES

At the completion of LARCH 750 students who earn a passing grade should have the ability to:

- Research existing technologies (systems, products or materials) to define opportunities for the development of new and improved technologies
- Prototype and refine designs for new landscape technologies
- Understand how modern, sustainable manufacturing and construction systems inform and impact the design of new technologies
- Propose applications of novel technologies at the landscape scale
- Define a critical position with regards to the aesthetics and spatial characteristics and implications of their proposed technologies
- Communicate research results and important design concepts using cataloging, modeling, graphic and verbal formats;
- Contribute usefully to individual and group efforts in the studio environment.

COURSE ATTENDANCE, ASSIGNMENTS AND GRADING

Students are expected to attend all class meetings, for the entire scheduled time, and to be actively working on LARCH 750 assignments while in class. Excuses will be granted only for serious illness, family emergencies or other circumstances by approval of the instructor or section head. Permission must be received from the instructor prior to missing a class or submitting late work. All assignments must be completed to receive a passing grade. No exceptions.

Course instructors reserve the right to make changes to the course syllabus, schedule and assignments as needed and with appropriate notification of students enrolled in the course.

Grades for this studio are based on student performance relative to the instructors' expectations and to the performance of other students enrolled in the class. Students are evaluated at the completion of each assignment (including presentations, design exercises and participation in group discussions). Evaluations are based on the following ratings with plus and minus qualifications:

Excellent	A
Above Average	B
Below Average	C
Poor	D
Failure	E

An incomplete can be given only if a student is determined by the instructors to have successfully completed half of the studio assignments by the end of the final day of class. To make up the incomplete, all work must be successfully completed and submitted as agreed between the instructors and the student and according OSU academic guidelines.

STUDENT CONDUCT

Students are required to adhere to all codes and academic policies of The Ohio State University and the Knowlton School of Architecture. In particular, plagiarism (the use of the ideas, words or works of intellectual content of another person as if they are one's own or without crediting the source) is strictly forbidden.

The Student Code of Conduct (http://studentaffairs.osu.edu/resource_csc.asp) defines academic misconduct as: any activity that tends to compromise the academic integrity of the university, or subvert the educational process. All students are required to review the code and understand the implications of a code violation. If there is any suspicion of academic misconduct, the faculty member/instructor will report the alleged violation to the section head and the Committee on Academic Misconduct (http://oaa.osu.edu/coam/home.htmlf) for investigation and any further action.

Other misconduct includes damage to, alteration of or other improper use of university equipment and property. The facilities of Knowlton Hall are for your use, but they are also for the use of students who come after you. Please take appropriate care in your use of the facilities. Since Knowlton Hall is a 24/7 facility for our students and faculty, it is imperative that all safety procedures be followed. With regard to maintaining secured access after normal business hours, do not prop doors open. Maintain and secure your personal items in lockable storage or by other approved means. Work and study in a responsible manner so as not to create or provide potential fire/safety hazards in the building or its environs. If you observe such conditions, please report them to the building coordinator or the Director's Office.

Attention is called to the University's Sexual Harassment Policy 1.15 (https://hr.osu.edu/policy/ policy115.pdf). Prompt action will be taken to report and correct any problems should they occur. If a student feels they have been the subject of harassment, or if others observe such harassment, it should be reported immediately to the faculty member in charge, section head or director of the school.
Student Resources

If you need an accommodation related to a disability, you should contact the Office for Disability Services or the ADA Coordinator's Office for assistance in verifying the need for accommodations and developing accommodation strategies. Your needs and potential accommodations will be considered relative to the course format. If you have not previously contacted the Office for Disability Services, you are encouraged to do so.

ADA Coordinator's Office:	http://ada.osu.edu
Office for Disability Services:	http://www.ods.ohio-state.edu/
	(614) 292-3307 | Fax: (614) 292-4190 | TDD: (614) 292-0901

Other resources for students can be found at: http://studentaffairs.osu.edu.

SCHEDULE

Note: Schedule subject to change as field trips, workshops and lectures are added. A schedule for each problem will be provided with the problem description.

Wed	9_24	Introduction to course. Assignment of Problem #1
Wed	10_8	Review Problem#1:Research & Discovery
Mon	10_20	Review Problem #2: Problem-Posing
Fri	11_7	Review Problem #3: Prototyping
Fri	12_5	Final Review, Problem #4: Site Applications

RESOURCES

All assigned readings will be posted to CARMEN or will be on reserve in the KSA library. Problem descriptions and schedules will also be posted to CARMEN.

RECOMMENDED REFERENCES

Allen, Stan. **Points + Lines**. New York: Princeton Architectural Press, 1999.

Aranda, Benjamin et.al. **Tooling.** New York: Princeton Architectural Press, 2006.

Berger, Alan. **Reclaiming the American West.** New York: Princeton Architectural Press, 2002.

Berger, Alan. **Designing the Reclaimed Landscape.** Washington: Taylor & Francis, 2008

Crites, Ronald and George Tchobanoglous. **Small and Decentralized Wastewater Management Systems.** Boston: WCB/McGraw-Hill, 1998.

C3 Landscape. **stossLU**. Seoul: C3, 2007

Dreiseitl, Herbert et.al. **Waterscapes.** City: Birkhauser (Architectural), 2001.

Dreiseitl, Herbert. **New Waterscapes.** City: Birkhauser (Princeton Architectural Press), 2006.

Dunnett, Nigel and James Hitchmough. **The Dynamic Landscape.** London: Spon Press, 2004.

Gali-Izard, Teresa. **Los Mismos Paisajes/the Same Landscapes: Ideas E Interpretaciones/Ideas and Interpretations.** Barcelona: Editorial Gustavo Gili, 2006.

Hawken, Paul et.al. **Natural Capitalism: Creating the Next Industrial Revolution.** Boston: Back Bay Books, 2000.

Izembart, Helene and Bertrand Le Boudec. **Waterscapes El Tratamiento De Aguas Residuales Mediante Sistemas Vegetales.** Barcelona: Editorial Gustavo Gili, 2003.

Kirkwood, Niall, ed. **Manufactured Sites: Rethinking the Post-Industrial Landscape.** London: Spon Press / Taylor & Francis Group. 2001.

Kangas, Patrick. **Ecological Engineering.** Boca Raton: Lewis Pub, 2003.

Kreith, Frank and George Tchobanoglous. **Handbook of Solid Waste Management.** New York: McGraw-hill, 2002

Margolis, Liat and Alexander Robinson. **Living Systems.** City: Birkhäuser Basel, 2007.

Mitsch, William and Sven Jørgensen. **Ecological Engineering and Ecosystem Restoration.** New York: Wiley, 2004.

Mcdonough, William and Michael Braungart. **Cradle to Cradle**. San Francisco: North Point Press, 2002.

Norman, Donald. **Emotional Design.** New York: Basic Books, 2005.

Norman, Donald. **The Design of Everyday Things.** New York: Basic Books, 2002.

Olgyay , Aladar. **Design with climate: bioclimatic approach to architectural regionalism.** Princeton, N. J: Princeton University Press, 1963

Reiser, Jesse. **Atlas of Novel Tectonics**.Princeton, N. J: Princeton University Press, 2006.

Schneider, Eric and Dorion Sagan. **Into the Cool.** Chicago: University of Chicago Press, 2005.

Sinclair, Cameron and Kate Stohr. **Design like You Give a Damn.** City: Metropolis Books, 2006.

Steffen, Alex et.al. **Worldchanging.** New York: Abrams, 2008.

Todd, Nancy. **A Safe and Sustainable World.** Washington: Island Press, 2007.

Vipulanandan, Cumaraswamy and David Elton. **Recycled Materials in Geotechnical Applications.** New York: American Society of Civil Engineers, 1998.

Wolff, Jane. **Delta Primer.** San Francisco: William Stout Publishers, 2003.

Wigginton, Michael and Jude Harris. **Intelligent Skins**. Oxford: Butterworth-Heinemann, 2002.

WEB RESOURCES

How Stuff is Made
https://wikis.nyu.edu/howstuffismade/
a user-generated site that details modern manufacturing techniques

Worldchanging
http://www.worldchanging.com/
Overview of current sustainable technolgies, projects.

PLAN NYC (posted to CARMEN in under "Resources")

High Performance Infrastructure Guidelines (posted to CARMEN in under "Resources")

Innovative Technologies website, US Environmental Protection Agency:
http://www.epa.gov/tio/remed.htm
See "Brownfields / Roadmap to Redevelopment" and "Technology Descriptions"

Pruned
http://pruned.blogspot.com/
Current landscape esoterica.

SF Better Streets PDFs
http://www.sfgov.org/site/uploadedfiles/planning/Citywide/Better_Streets/proposals.htm
Street design guidelines for new development in San Francisco

NOTES:

1. Alan Berger, "Drosscape". (Princeton, 2007)
2. Kiene Brillenburg Wurth, "Radical Indeterminacy: The Sublime Sculptures of Heringa/VanKalsbeek." In Controlled Accidents: Heringa VanKalsbeek.(Amsterdam,Idea Books,. 2007)