

DEPARTMENT OF ARCHITECTURE, FACULTY OF ARCHITECTURE, UNIVERSITY OF MANITOBA

Resonance: Vertical Design Studio

EVAR 4004, ARCH 7050/7070 Fall Term: 2011/12

Professor Patrick H Harrop: MOAQ

class times: Mondays and Thursdays: 9:00 am to 5:30

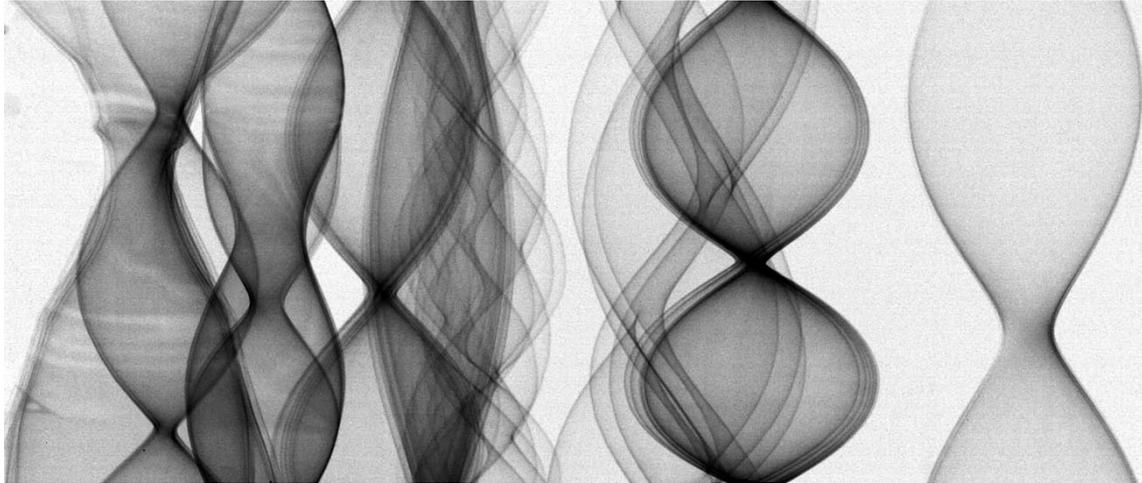
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vorticose: Harrop / Leckey 2011

Calendar Description

EVAR 4004: Architecture Design Studio 3

This studio focuses on the broader cultural implications of social interaction and the collective inhabitation of the built and natural environments. Architecture design explorations are influenced by a thorough examination of programmatic, theoretical, historical, technological, material and environmental criteria. May not be held for credit with the former EVAR 3680 or ARCH 6400

ARCH 7050 Arch Studio 5 and Comprehensive Program Report

Develop design explorations and seek to clarify relations between architectural criteria and the urban/natural environments in national or international contexts. Conceptual, programmatic, material, technological, economic, and political principles and systems employed are to be evident in the Comp. Prog Report.

ARCH 7070 Design Research Studio

This final design studio involves concerted research and design explorations of an individually defined subject of inquiry, within a selected studio thematic focus. These investigations are intended to prepare students for their final Design Thesis.

Course Description

Resonance and Modulation

There is no outside: outside is another inside with another climate control, another thermostat, another air conditioning system. Are you in public? Public spaces are spaces too, for goodness sake. They are not different in that respect from private spaces. They are simply organized differently, with different architectures, different entry points, different surveillance systems, different soundscapes. Naked humans are as rare

as naked cosmonauts. To define humans is to define the envelopes, the life support systems, the Umwelt that make it possible for them to breathe.

From: Bruno Latour: *A Cautious Prometheus? A Few Steps Toward a Philosophy of Design (with Special Attention to Peter Sloterdijk)*
Keynote lecture for the Networks of Design meeting of the Design History Society, Falmouth, Cornwall, 3rd September 2008

On a seemingly normal spring morning in 1888 there were reports of an earthquake somewhere in the lower east side of Manhattan. A subtle, but certain, vibration of increasing intensity sent a local high-rise building site into pandemonium. By all accounts, machinery and equipment were tossed, while iron-workers were sent scurrying into the street. Police were eventually able to locate the epicenter of this earthquake to an innocuous laboratory at 48^E Houston st. in the lower East Side. This was, of course, the laboratory of the famed scientist Nicolas Tesla. The cause of this disruption was a due to a small mechanical oscillating or vibration device (later to be known as Tesla's earthquake machine) of his invention. Although later debunked by the "Mythbusters", it is a convenient demonstration of the possibilities of resonance.

This studio will be using the question of resonance as a template for experimentation, exploration, elaboration and execution in the context of a year-long comprehensive architectural project. While the term resonance seems to privilege the sonic (or in Tesla's case, the sub audible) it has relevance to any phenomenon that includes the dimension of temporality and oscillation. Resonant phenomenon can be found in clock mechanisms, tidal rhythms, astronomical geometry, molecular chemistry, radio frequencies and coherent light. Yet, in a broader, even more poetic dimension, we find resonance in literary thought, emotional affect (memory and history), and transindividual cultural movements.

While Tesla's experiment sought to find the resonant frequency of a large structure by modulating a mechanical device, we will be looking at exploring a diversity of resonances by modulating architecture through drawing, making, exploring materials, creating space, envelopes, structure, program, site and building systems. The focus of this studio is on making, drawing and comprehensive architecture. While it has a strong capacity and cultural reputation for electronic, interactive and sonic experimentation, it privileges the analogue over the digital, the passive over the electronic and the exploration of phenomenon using the mediums that the student feels comfortable with.

In its most common model, an architectural membrane is conceived and designed as a boundary condition between mediums. It is a built ecological condition: understood as a delicate stasis of competing and unstable milieus. The membrane is a negotiation between continuous conditions. In its broadest reaches, it is a system that is, in fact, difficult to trace: a careful reconciliation of a disparation of interruptions to the continuity of a variety of dynamic milieus: the interruption of gravity, the interruption of heat, the interruption of air, water etc. Rather than a spatial boundary, architecture is a momentary reification of a modulated interplay of the perturbed weaves of milieus. Although we tend to privilege the non-human, milieus as modulated by a building skin interface the multiplicities of social, cultural and material systems: a complex, somewhat quasi-biological edification of an ever-concretizing co structured event, performance and matter.

As a dynamic system, the building envelope mitigates a variety of environmental and energetic systems. These systems may include, temperature differentials, light and solar energy, wind pressure, humidity and water infiltration and even the sonic conditions between these environments. Each of these conditions has the potential to develop into an interplay between a sensing condition (both electronically and passively) as well as an opportunity for actuation. A simple house draft will attest to the actuation potential energy of a temperature differential. These conditions of environmental interplay are also polyscalar and polytemporal.. Each of the above mentioned systems mitigated by the building membrane are played out in a temporal script that is regular (seasonal temperature, natural light) as well as somewhat arbitrary (sound, local temperature variables). The opportunity to develop an interactive script based on a temporal complexity resides in the relationship that is immediately available within a typical environmental interplay of a building membrane.

To suggest then that responsiveness is a particularly new opportunity in the building arts is perhaps premature. After all, our buildings have been embedded with interactive systems such as temperature control, plumbing controls, automated lighting, circulation, wayfinding etc. for at least the major part of this century. But even more importantly, architecture has employed responsive behaviors for thousands of years without the benefit of electronic circuitry or sensor technology. Any building that orients itself or alters the phenomenological of its environment through time is, in fact, creating a responsive condition for action. We have many examples the rich history of architectural work that modulates the immaterial qualities of light and sound. The gothic cathedral and its intended modulation of light throughout the course of the day to the year and even more recently le Corbusier's latter work of La Tourette and Notre Dame de Ronchamp that modulated light and sound through his sensibility of *acoustique plastique*.

Hence the emphasis that will be followed during the term will be about the materiality of building as a modulator of the immaterial condition of architecture. Both the immaterial phenomena of sound and light are entirely dependant on a material condition, both in actuation and sensing. The work that will be conducted during the first term will attest to this: the interface of material conditions with vibration, friction, electromagnetic mechanical energy are what produce sonic conditions within an environment. Hence, architecture plays a fundamental role in the material conductivity and transduction of sonic form.

This studio will introduce the student to the development and study of techniques of observation and expression in immaterial phenomenon as a generator of architectural form. It will take the position that architecture is the ideal modulator of such phenomenon, even to suggest that the true origins of form are with the historical desire to modify, manipulate and engage in light and sound phenomenon. Its approach will be comprehensive with the objective of completing a viable and relevant building proposal at the end of the academic year.

Course Objectives

To investigate the architectural consequences of building as a modulator of immaterial phenomenon.

To investigate the consequences of architecture as a generator of immaterial phenomenon.

To develop intuitive analytical skills through reverse engineering techniques and synthetic strategies in making and integration.

To investigate the translation of the immaterial to material consequence through representation modes of sound and light recording into realm of traditional architectural representation.

To practice and gain firsthand experience in synthesizing and developing an architectural investigation in a real site, in an urban context through the auspices of immateriality.

To bring expressive interpretation to architectural ideas through a finished work in proof of concept.

To develop a general understanding of building systems and services at a preliminary comprehensive level.

Schedule

Project 1:

Students will begin the term by selecting and investigating an immaterial phenomenon that they are particularly interested in. They will develop a strategy and approach to tracking, sensing and recording this phenomenon through recording devices, analogue sensors and drawing.

Project 2:

Using the strategy / devices developed in the first project, students will map these immaterial conditions on a real site in an urban context (Berlin). Students will develop a mapping approach to the development of the architectural representations through the auspices of video, sound recording and notational drawings. This data will then become the basis for the site, program and architectural schematic at the end of term.

Project 3:

Students will return to a detailed investigation of the material conditions that are modulating the phenomenon. They will develop an architectural device, dependant on the material conditions of the site, that will emit rather than sense.

This course will engage demonstrations, discussions, both group and individual critiques and student presentation of work. We will generally meet twice a week: on Mondays and Thursdays, from 9:00 a.m. to 5:30 p.m. In many cases the studio days will be switched due to holidays and faculty travel obligations. This schedule is subject to change.

	Mondays	Tuesdays	Wednesday	Thursdays	Friday
Week 1 Sept 5 – 11	Labour day	Presentations	Interviews	Interviews	interviews

Week 2 Sept 12 – 18	Studio lists posted				
Studio introduction: Immaterial phenomenon and architectural mediation					
Week 3 Sept 29 – 25					
Representation and interpretation of immaterial phenomenon. Device and hardware design					
Week 4 Sept 26 – Oct 02		Design Thesis meeting			
Device and Instrument fabrication. Interim reviews					
Week 5 Oct 3 – 9			Interim Reviews Project 1 due		
Studio week: refinement and development of devices. Research: Berlin					
Week 6 Oct 10 – 16	Thanksgiving			Field trip	Field trip
Berlin Field Trip: Site analysis, As built, Site and practice visits					
Week 7 Oct 17 – 23	Field trip	Field trip	Field trip	Field trip	Field trip
Berlin Field Trip: Site analysis, As built, Site and practice visits					
Week 8 Oct 24 – 30	Field trip	Field trip			
Berlin Field Trip: Site analysis, As built, Site and practice visits – As built drawings, site analysis and model (50%)					
Week 9 Oct 31 – Nov 6		Project 3 due	Tech week	Tech week	Tech week
Studio week: / Tech week					
Week 10 Nov 7– 13	Tech week	Tech week			Remembrance day
Site analysis, Program development, conceptual development architectural siting					
Week 11 Nov 14 – 20			VW date		
Preliminary design of building systems: Structure, Envelope, Spatial interpretation and services					
Week 12 Nov 21 – 27					
Studio Week					
Week 13 Nov 28 – Dec 4	Design Thesis Draft Proposals		Last Day of Classes		
Studio Week					
Week 14 Dec 5 –11			Final reviews Term work due		
Week 15 Dec 12 - 18		Portfolio Hand in 3:00pm			

Week 16 Dec 19 - 25				Christmas Holidays	Christmas Holidays
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Evaluation Procedure

Students projects in each phase will be evaluated based on work submitted for every public review phase of the term. As part of this review, the evaluation will be both for the final product of each phase as well as a general assessment of the process and developmental work leading to the presentation of each project. This development work and all of the material developed through the term must be uploaded on individual student blogs. Students will receive weekly feedback and assessment for their work throughout the term, formalized feedback in three reviews to be held during the term. Students who are advised to consider voluntary withdrawal will receive written feedback of their performance.

Evaluation Criteria

Student projects and performance will be evaluated during the term based on the following criterial.

Quality and comprehension in the process and development of work in the studio.

Quality and consistency in Iterative approach to investigation and design work.

Quality and depth of research in developmental phase of work at the technical, cultural and historical levels.

Craft, care and precision in the design and execution of all media including drawing and model making.

Quality of consistent engagement in the activities and objectives of the studio.

These criteria will be judged on the basis of the student's engagement within the studio, the standards of architectural representation and work within the context of their peers by a comparison to the work of their peers and their awareness of standards outside of the institution.

Evaluation Breakdown

Resonance Device	25%	Due October 6 th 2011
Site analysis and notational exercise	25%	Due October 31 st 2011
Preliminary Building proposal	50%	Due December 7 th 2011
Term Portfolio	100% of final grade*	Due December 13 th 2011

* The evaluation of the term will be conducted at the end of term based on the collective grade for the term portfolio submitted by the student.

Final portfolio: Students will also be expected to maintain a portfolio of the entire studio process and final work for review by a faculty jury. This review will determine the final grade of the studio work for the year.

Student Blog: Students will also be OBLIGED (no exceptions) to maintain and update a blog on a daily basis to discuss and show the progress of their work. This will be reviewed by the studio instructor and it will meter the pace of student progress.

The website for the studio is: resonance.ocular-witness.com

Students are also responsible for familiarizing themselves with the following addendums to this outline:

DEPARTMENT OF ARCHITECTURE GENERAL STUDIO & COURSE INFORMATION

ATTENTION: Department of Architecture General Studio and Course Information:

Please refer to the downloadable PDF located on the Department of Architecture's Website under "current students" + "downloads 2011/12" for IMPORTANT further clarification as to the rules and regulations governing this course: <http://www.umanitoba.ca/faculties/architecture/programs/architecture/downloads.html>

Bibliography

A larger bibliography will be accumulated during the course of the term with readings that are specific to the theme of each project as well as suggested readings for each student's particular direction during the evolution of their design work. Most of the web resources and articles can be found at the class web site: resonance.ocular-witness.org

Suggested bibliography:

Egan, M. David, and Victor Olgyay. Architectural Lighting. 2nd ed. Boston: McGraw-Hill, 2002.

Egan, M. David. Architectural Acoustics. New York: McGraw-Hill, 1988.

Hall, Dennis J., Nina M. Giglio, and American Institute of Architects. Architectural Graphic Standards for Residential Construction. 2nd ed. Hoboken, N.J.: Wiley, 2010.

LaBelle, Brandon. Acoustic Territories: Sound Culture and Everyday Life. New York ; London: Continuum, 2010.

---. Background Noise: Perspectives on Sound Art. New York ; London: Continuum, 2006.

Rasmussen, Steen Eiler. Experiencing Architecture. New rev -- ed. London: Chapman & Hall, 1964.

Sterne, Jonathan. The Audible Past: Cultural Origins of Sound Reproduction. Durham: Duke University Press, 2003.