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LCC 6318 Experimental Media: Responsive and Topological Media
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Tuesdays 1:30-4:30

Abstract

We develop design intuitions about physical and digital materials out of which we can construct contemporary hybrid digital artifacts, such as glass, networks, clay, lattices, video.

Course Description

Design firms like IDEO maintain stocks of samples of materials such as fabric, wire mesh and sandpaper to sharpen their designers' intuitions. Inspired by such professional design practice, this course explores the materials out of which hybrid spaces are constructed: physical media such as crystal, cobwebs and water, as well as computational media such as lattices, deformable solids and digital video. The purpose of this survey is to offer students a chance to acquire and exercise intuitions about matter that span both physical and computational domains. Students will be able to

1. Conceptualize and articulate design decisions based on principles of everyday physics of materials, computational media ,and associated cultural aesthetics and axiologies.
2. Gain proficiency in the components of the current digital tools for generating, sculpting or presenting such computational matter.
3. Make design decisions using computational matter informed by socio-cultural approaches to materiality and experience.

This is a companion course to LCC 6321 Architecture of Responsive Spaces, in which students design applications for such media.

Prerequisites

Programming experience with physics simulations, *or* facility with some professional media synthesis tools digital video, digital sound, etc. One advanced course in philosophy or mathematics, *or* an energetic approach to such fields.

Readings and Themes

Readings will be supplied in the areas of design -- material, fabric, paper, etc., simulations, computational physics, responsive media, sensors and effectors.

Currently, some of the material themes include:

Air / storm / Gas models
Clay / Topology / Deformable solid
Copper / Ornament /
Crystal / Linguistics / Lattices
Foam, Soapfilm / / Area Minimization
Gel / Touch, desire, flesh / Haptic, plastics
Glass / vision / Amorphous solid, Fiber optics
Paper / Print, trash, clothing / Folding, print
Sound / speech / Waves
Spacetime / Striated and smooth spaces / Elastica
Thread / Weaving / Graphs, knots
Tissue / Touch, desire, flesh / immunology, elastica
Water / geography, thirst / Phase change, Fluid dynamics

Schedule

Each unit is named after a material whose symbolic and physical values constitute the themes to explore. We explore poetically and technically a material, objects made from such material, digital correlates and associated computational or physical tools. Unless otherwise noted, each unit occupies approximately one week.

Students will collect materials -- both physical and computational -- in personal Scrapbooks, and develop their own materials notes. Each material can be associated with: (1) objects that are typically made from that substance; (2) a set of symbolic values; (3) computational correlates and tools. Students will develop and sharpen their design intuitions by working with these physical and computational media, and document their insights in their personal Scrapbooks of digital pieces and written or sketched notes.

Assignments/Evaluation

Students will be evaluated based on responses in the form of digital artifacts: software, animations, video, as well as short written notes, and on their Scrapbooks.

SYLLABUS THEMES

MATERIAL	OBJECT / RELATED PHYSICAL PHENOMENA	COMPUTATIONAL OR TECHNOLOGICAL CORRELATES AND TOOLS	SYMBOLIC and CULTURAL CORRELATE
Crystal	Refraction & reflection	Typography (after Emigre, Adobe, but prior to ItsAlive)	Linguistics Matrices and lattices
Aluminum / Copper / Gold	ductility, conduction. Electrical and magnetic matter.		ornament pots, weapons, money
Steel Mesh	Memory metal	CAD Systems	Rigidity / pliancy. Sculpture.
Glass	Amorphous solid	Fiber optics Optical computing calligraphy	Glass blowing Visuality
Water	Wetting, capillary action. Thermodynamics: Phase change, Steam and Ice	Fluid flow and turbulence: Navier-Stokes simulations	Irrigation. Ink and calligraphy
Air	Wind, Storm Compressible fluid	Tangible media computing (H. Ishii, Snibbe breath machines) http://www.offf.org/english/splash.html Azucena Muñiz <azu@offf.org>	Weather modeling, policy and ideology of complex systems (P. Edwards, S. Schneider etc.) inflation
Radium	Radioactivity	Randomness, poisson process	Seeing the invisible
Tissue,nervous system	Oxidation, Rust, Decay	Infection, Epidemic models	Immunology
Foam, Soapfilm	Area	Minimization	Foam, Minimal surfaces
Clay	Adhesion Deformation	Deformable solid modeling	Topology

SYLLABUS THEMES (cont.)

MATERIAL	OBJECT / RELATED PHYSICAL PHENOMENA	COMPUTATIONAL OR TECHNOLOGICAL CORRELATES AND TOOLS	SYMBOLIC and CULTURAL CORRELATE
Sound (2 weeks)	Waves	Wave model	Resonance vs. Conductor models of Communication. Vibratory rhetoric (Linda Hendersen, U. Texas Art History). Speech. Sound art (Kahn, Dyson, ...)
Gel	Flesh	Haptic Technology, Poly-gel	Transplants and Immunology. Touch, Desire, Ethics. (ex. body artists, genetic artists).
Spacetime	Elastic spacetime	Computational relativity and differential geometry	Movies, video editing, storyboarding. Striated and smooth spaces, Deleuze & Guattari.
Light			
Paper			clothing,
Thread, fibres	roots, knots	nets, graphs, knots	ornament,
STUDENT PRESENTATIONS (2 weeks)			

References

Paracelsus

Information Arts by Stephen Wilson
http://userwww.sfsu.edu/~swilson/
Also the Ars Electronica and Interaction (IAMAS) catalogs.

"Life in Moving Fluids" by <http://www.amazon.com/exec/obidos/search-handle-url/index=books&field-author=Vogel%2C%20Steven/002-5422963-0936025>Steven Vogel.

Popper's Kinetic Art. <http://www.amazon.com/exec/obidos/search-handle-url/index=books&field-author=Weschler, Lawrence/002-5422963-0936025>Lawrence Weschler : Seeing Is Forgetting the Name of the Thing One Sees : A Life of Contemporary Artist Robert Irwin

<http://www.amazon.com/exec/obidos/ASIN/0679764895/qid=1004681677/sr=2-1/ref=sr_2_11_1/002-5422963-0936025>Mr. Wilson's Cabinet of Wonder

"Experimental Animation" by Cecile Starr

Harvard Graduate School of Design project on experimental materials

Poly-Gel L.L.C., 30 Leslie Court, Whippany, NJ 07981, http://www.polygel.com/index.html

The Centre for Biomimetics, Department of Engineering, University of Reading, Whiteknights, Reading, RG6 6AY.
http://www.rdg.ac.uk/Biomim/projects.htm

Bernard Cache,
M. Delanda, Users guide to Capitalism and schizophrenia (massumi),

Forsythe et al: Eidos:telos Reader

Harvard University's Graduate School of Design (GSD). Immaterial/Ultramaterial Exhibit , Nader Tehran, Toshiko Mori, Marco Steinberg, Ron Witte