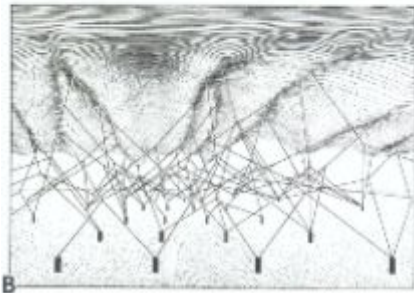
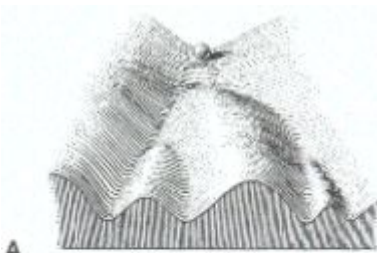




*Edith Sitwell's hand holding a helical shell. (From 1958 Christmas card of Eve and Lance Whyte.)*



Conrad Waddington, Epigenetic Landscape, 1957

### **Requirements:**

Students are required to attend every class, complete all assignments (reading, writing, and presentations), and participate with candor and commitment in class. Students are allowed one unexcused absence after which each absence will result in the lowering of the final grade by one full letter. Students with illnesses that require extended periods of absence are encouraged to officially withdraw from the class.

### **Texts:**

Reserve texts are available on-line at DOCUTEK using the following link:

Please use the following password:

**HUAS 6312-001**

**20537**

**BIOS: Art, Architecture, Design, and Biology**

**Dr. Charissa N. Terranova**

**University of Texas at Dallas**

**Spring 2014**

**Monday 4:00-6:45**

**JO 3.532**

**Office Hours: Monday 1:00-4:00**

**Office Location: JO 3.920**

**Contact: terranova@utdallas.edu**

**Topics and Themes:** autopoiesis; evolution; self-regulation from Gestalt to cybernetics; crystals, fabrics, and fields; epigenetic landscapes; morphogenesis

### **Description:**

Life and design bear at least a century-long history of entanglement and imbrication. In this time, artists and architects looked to the history, theory, and practice of biology not simply for inspiration but for substance and material. Reciprocally, biologists linked biomorphic patterns across species, claiming mammals and plants in certain instances shared 'good design': the symmetry and balance of the golden section and beauty classically understood. By contrast, this course looks to the relationships between art, architecture, and biology in order to rethink "consciousness," "mind," and the hierarchy of being. It focuses on texts, art, and architecture from over a roughly 150-year period, from Charles Darwin and Ernst Haeckel to Gianni Vattimo and Cleve Backster; from modern art and architecture to contemporary media art and architecture.

### **Goals and Outcomes:**

- Knowledge of the relationships between art, architecture, design, and biology
- Improve public speaking skills.
- Improve research skills.
- Improve expository writing skills.

The following texts should be purchased for the class. As students with an '.edu' at the end of your email address, you are eligible for discounted Prime Membership at Amazon.com and thus also free two-day delivery. Info: <http://www.amazon.com/gp/student/signup/info>.

- 1.) Raoul Francé, *Germes of Mind in Plants*
- 2.) Ludwig von Bertalanffy, *Modern Theories of Development: An Introduction to Theoretical Biology*, translated by J. H. Woodger
- 3.) Donna Jeanne Haraway, *Crystals, Fabrics, and Fields*
- 4.) Michael Marder, *Plant-Thinking: A Philosophy of Vegetal Life*

**Presentations:**

Each student will make two presentations in class. Both are exercises in teaching. The first presentation will take place during the first half of the semester and will require the student to guide discussion about the reading. In this presentation a student will teach the class about the readings while also using the Socratic method to generate discussion. The second presentation will take place during the last meetings of the semester and requires students to present their final research for the class as it is unfolding around the final written assignment. In this presentation a student will teach the class about their research project. Students should discuss his/her research by using images and PowerPoint.

**Written Assignment:**

The final written assignment is a research paper that may be based on art, architecture, the built environment, a scientist, philosopher, critic, film, or work of literary fiction. Your paper should have a thesis statement – an argument – based on your research. **I encourage you to meet with me during office hours (or otherwise) to discuss your interests and passions in relation to class material. The topic of your paper should emerge from class readings.** The requirements for the research paper are as follows:

- title page, 10-12 pt. font, standard margins
- thesis statement in the body of text on the first or second page
- 20 pages
- pagination
- foot- or endnotes
- bibliography with 8 sources, of which 2 can be websites
- Due Wednesday May 9, 2014

**Grades:**

Presentation 1	25%
Presentation 2	35%
Written Assignment	40%
TOTAL	100%

**Standard UTD policies regarding classroom behavior, religious holidays, withdrawals, etc.:**

- <http://www.utdallas.edu/deanofstudents/conductguidelines.html>
- <http://provost.utdallas.edu/>
- <http://www.charissaterranova.com/syllabi/utd-policies.htm>

**Schedule:**

**Monday January 13**  
**Introduction and Presentation Sign-Up**  
Presentation by Dr. Terranova

**Monday January 20**  
**Martin Luther King Day**  
**No Class**

**Monday January 27**

**Darwin, Evolution, and Form**

- 1.) Charles Darwin, Introduction and Chapter 4, *The Origin of the Species by Natural Selection or The Preservation of Favoured Races in the Struggle for Life*, <http://www.talkorigins.org/faqs/origin.html>
- 2.) Linda Nochlin, "Introduction: The Darwin Effect," <http://www.19thc-artworldwide.org/spring03/76-spring03/spring03article/218-the-darwin-effect-introduction>
- 3.) Philip Steadman, *The Evolutions of Design: Biological Analogy in Architecture and the Applied Arts*, 1-20, 71-98, 145-52 DOCUTEK

**Monday February 3**

**Epigenesis and Mimetics**

- 1.) Richard W. Burkhardt, Jr. *The Spirit of System: Lamarck and Evolutionary Biology*, 13-45, 143-185 DOCUTEK
- 2.) Frederick Wollaston Hutton, *Darwinism and Lamarckism, Old and New: Four Lectures*, 1-28, 177-189 DOCUTEK
- 3.) Helmut Müller-Sievers, *Self-Generation: Biology, Philosophy, and Literature around 1800*, 26-47 DOCUTEK
- 4.) Richard Dawkins, *The Selfish Gene: 30th Anniversary Edition--with a new Introduction by the Author*, 189-201 DOCUTEK

**Monday February 10**

**Biofunctionalism**

- 1.) Raoul Francé, *Germes of Mind in Plants*
- 2.) Detlef Mertins, "Where Architecture Meets Biology: An Interview with Detlef Mertins," [http://repository.upenn.edu/cgi/viewcontent.cgi?article=1006&context=arch\\_papers](http://repository.upenn.edu/cgi/viewcontent.cgi?article=1006&context=arch_papers)
- 3.) Detlef Mertins, "Bioconstructivisms," [http://repository.upenn.edu/cgi/viewcontent.cgi?article=1036&context=cplan\\_papers](http://repository.upenn.edu/cgi/viewcontent.cgi?article=1036&context=cplan_papers)

**Monday February 17**

**Theoretical Biology 1: Biosystems**

- 1.) Ludwig von Bertalanffy, *Modern Theories of Development: An Introduction to Theoretical Biology*, translated by J. H. Woodger, pages TBA DOCUTEK
- 2.) Ludwig von Bertalanffy, "The Tree of Knowledge," *Sign, Image, Symbol*, ed. Gyorgy Kepes, 274-278 DOCUTEK
- 3.) Lawrence K. Frank, "The World as Communication Network," *Sign, Image, Symbol*, ed. Gyorgy Kepes, 1-14 DOCUTEK

**Monday February 27**

**Theoretical Biology 2: Theoretical Biology Club**

- 1.) Donna Jeanne Haraway, *Crystals, Fabrics, and Fields*
- 2.) Gyorgy Kepes, Introduction, *Structure in Art and In Science*, ed. Gyorgy Kepes i-vii, DOCUTEK
- 3.) Lancelot L. Whyte, "Atomism, Structure, and Form: A Report on the National Philosophy of Form," *Structure in Art and In Science*, ed. Gyorgy Kepes, 20-28 DOCUTEK

**Monday March 3**

**Epigenetic Landscape**

- 1.) C. H. Waddington, "The Basic Ideas of Biology," *The Origin of Life: Toward a Theoretical Biology*, 1-31 DOCUTEK

- 2.) C. H. Waddington, *The Strategy of the Genes* (New York: Macmillan, 1957) pages TBA DOCUTEK
- 3.) Sanford Kwinter, "Landscapes of Change: Boccioni's 'Stati d'animo' as General Theory of Models," *Assemblage*, No. 19 (December 1992) 50-65 DOCUTEK
- 4.) Sara Franceschelli, "Morphogenesis, Structural Stability, and Epigenetic Landscape," *Morphogenesis*, eds. P. Bourguine and A. Lesne, 283-293 DOCUTEK

**Monday March 10**

**Spring Break**

**No Class**

**Monday March 17**

**Growth and Form 1**

- 1.) D'Arcy Wentworth Thompson, Introduction, *On Growth and Form*, 1-21 DOCUTEK
- 2.) Sarah Bonnemaïson and Philip Beesley, "Why Revisit D'Arcy Wentworth Thompson's *On Growth and Form*?" *On Growth and Form: Organic Architecture & Beyond*, eds. Philip Beesley and Sarah Bonnemaïson, 7-15 DOCUTEK
- 3.) Kevin Nute, "Functional versus Purposive in the Organic Forms of Louis Sullivan and Frank Lloyd Wright," *On Growth and Form: Organic Architecture & Beyond*, eds. Philip Beesley and Sarah Bonnemaïson, 44-53 DOCUTEK
- 4.) Antonio Juarez, "Topology and Organicism in the Work of Louis I. Kahn," *Perspecta*, Vol. 31 (2000) 70-80 DOCUTEK

**Monday March 24**

**Growth and Form 2**

- 1.) Philip C. Ritterbush, *The Art of Organic Forms* (Washington, DC: Smithsonian, 1968) COPIES ON RESERVE
- 2.) Philip C. Ritterbush, "The Public Side of Science," *Change*, Vol. 9, No. 9 (September 1977) 26-33, 64 DOCUTEK
- 3.) Anne Massey, "Growth and Form," The Founding of the Independent Group," *The Independent Group: Modernism and Mass Culture in Britain, 1945-1959*, 33-53 DOCUTEK

**Monday March 31**

**Nervous Systems**

- 1.) Norbert Wiener, *Cybernetics or Control and Communication in the Animal and the Machine* (Cambridge: MIT Press, 1961) 1-29, 133-154 DOCUTEK
- 2.) Heinz Von Foerster, "From Stimulus to Symbol: The Economy of Biological Computation," *Sign, Image, Symbol*, ed. Gyorgy Kepes, 42-61 DOCUTEK
- 3.) Norbert Wiener, "Pure Patterns in a Natural World," *The New Landscape in Art and Science*, Gyorgy Kepes, ed, 247-275 DOCUTEK

**Monday April 7**

**Systems Aesthetics**

- 1.) Ludwig von Bertalanffy, *General Systems Theory: Foundations, Development, Applications*, 3-53 DOCUTEK
- 2.) Jack Burnham, "Systems Esthetics," *Artforum*, Vol. 7, No. 1 (September 1968) 30-35 DOCUTEK

**Monday April 14**

**Plant Life and Beyond Consciousness**

- 1.) Michael Marder, *Plant-Thinking: A Philosophy of Vegetal Life*
- 2.) Cleve Backster, *Primary Perception: Biocommunication with Plants, Living Foods, and Human Cells*, pages TBA DOCUTEK
- 3.) Roy Ascott, "Edge-Life: Technoetic Structures and Moist Media," *Art, Technology, Consciousness mind@large*, Roy Ascott, ed. (Bristol, UK: Intellect, 2000) 2-6 DOCUTEK

4.) Ted Kreuger, "There Is No Intelligence," *Art, Technology, Consciousness mind@large*, Roy Ascott, ed. (Bristol, UK: Intellect, 2000) 155-159 DOCUTEK

**Monday April 21  
PRESENTATIONS**

**Monday April 28  
PRESENTATIONS**

**FINAL PAPER DUE: WEDNESDAY MAY 9**