

# DIFFUSIVE ARCHITECTURE

September 2014

Philip Beesley

Mondays, 6:30-9:30 p.m.

This seminar course will offer a series of readings and explorations of specialized aspects of interactive architecture. The theories of Ilya Prigogine, the great 20<sup>th</sup> century physicist, proposed a set of paradigms that seem to dramatically contrast with core assumptions that have guided western architecture. Seemingly opposing the stable world of Vitruvian architecture, Prigogine proposed **diffusion** and **dissipation** as key terms for understanding how materials could interact in a dynamic, constantly evolving and self-organizing world. Framed within a general exploration of interactive architecture, we will follow a set of readings and design explorations related to the dynamic form-languages implied by Prigogine's theories. The 'quasiperiodic' geometries organizing these complex systems can form hybrid topologies composed of multiple interconnected and interdependent systems. These studies imply emerging paradigms for design.

Readings move from tangible explorations of spatial organizations to study of paradigms and underlying principles. The survey offered by these readings can provide terms of reference that support precise descriptions of complex interdependent systems.

The seminar will be conducted as a series of readings led by students throughout the term, alternating with professor-led readings and presentations. Material from the Hylozoic Architecture Group (HAG) of Waterloo Architecture, Electrical and Computer Engineering, and Knowledge Integration will be included. Critique and extension of the themes embodied in HAG installations will be invited. A workshop offered by Jenny Sabin (Cornell/Penn) will focus on the theme of Extracellular Matrix, expanding terms relating to the seminar. The varying topics within the seminar course can be refined in order to directly relate to individual thesis investigations, providing material for integration. Practical technology and expressive formal design can be included within the investigations of the participants.

The explorations of the NEST undergraduate studio will provide an opportunity to apply the material of the seminar to design. Seminar students will be asked to contribute critiques organized over the three interim reviews of the undergraduate studio.

A final assignment will ask each seminar student to frame an individual manifesto articulating paradigms for interactive architecture.

## Production

During the seminar, each student will be asked to produce the following:

Assignment One: Seminar presentation, accompanied by summary notes composed as a reference hand-out

Assignment Two: Critiques for Arch 383 design presentations, written notes provided to students

Assignment Three: Individual manifesto for design, including text and illustrations, integrating references and discussion issues developed during the course.

## Evaluation

Evaluation is as follows:

Assignment One: 40% of final grade, evaluated for conceptual depth, ambition, and quality of presentation. Students will be asked to work in pairs.

Assignment Two: 10% of final grade, evaluated for quality of critique

Assignment Three: 40% of final grade, evaluated for conceptual depth, ambition, and quality

10% of the final grade will be assigned for class participation, evaluated for consistency of attendance and contributions to the group within discussions.

## Schedule

1. Monday, Sept. 8  
Lecture/discussion: Hylozoic Architecture research group  
Organize Assignment One groups
2. Monday, Sept. 15  
Lecture/discussion: introduction to diffusive systems  
Work in progress, Assignment One
3. Monday, Sept. 22  
Seminar presentation: collective survey  
D'Arcy Wentworth Thompson  
Steven Vogel  
Graham Cairns-Smith  
Michelle Addington  
Humberto **Maturana** and Francisco **Varela**  
Ilya Prigogine
4. Monday, Oct. 6 *[PB away Monday, Sept. 29]*  
Seminar presentation 1: D'Arcy Wentworth Thompson
5. Monday, Oct. 13  
Seminar presentation 2: Steven Vogel
6. Monday, Oct. 20  
Seminar presentation : Graham Cairns-Smith  
*[PB away Monday, Oct. 27]*
7. Thursday-Friday, Nov. 2 and 3  
Workshop with Jenny Sabin: Extracellular Matrix
8. Monday, Nov. 3  
Seminar presentation 4: Michelle Addington
9. Monday, Nov. 10  
Seminar presentation 5: Maturana and Varela
10. Monday, Nov. 17  
Seminar presentation 6: Ilya Prigogine
11. Monday, Nov. 24  
Lecture/discussion
12. Monday, Dec. 1  
Lecture/discussion

Specific readings and details will be identified to follow. The course content and specific details of assignments may be adjusted to reflect progress during the term.

## GOVERNING DETAILS

### Class Communication and Organization

Organize the class with a class representative. This structure can be used for providing critical feedback to the faculty and for coordinating evolving details through the term.

The course will use the ARCH 685 Beesley section of LEARN for course handouts, reference material and class coordination. Enter the site by using your 'UWDir' ID and password. You will be asked to make digital submissions of assignments on that site. The email utility within that site can be used for class and group broadcast correspondence. Each group and individual will have individual file space there.

**Class Meetings**

Lectures and class meetings will be held throughout the term from 6:30 pm to 9:30 pm on Mondays, excepting occasions as shown on the schedule. Specific dates will be established as the term evolves, responding to class progress. Check your email late evening on the day before for updates on class arrangements.

**Attend Lectures**

Attend all lectures. Be in full attendance during class meetings. Class focus is required: **no** texting, emailing, surfing during meetings and lectures.

**Complete all parts of the work; submit your work on time**

All assigned parts of the work must be completed. Punctual completion is required. Grade penalties will be applied to late submissions and chronic lateness may result in disciplinary review including refusal of acceptance. Late submissions must be accompanied by formal transmittal indicating reason for lateness. Penalties would be assessed at 5% per day. 'Days' begin at midnight each day, and include weekends and holidays.

**Accommodation for illness; not for travel**

If you need to apply for accommodation of lateness or absence due for illness, make a formal application by using 'Verification of Illness'(VIF) forms or counselling letters, filed with the Architecture Office.

Student travel plans are not considered acceptable grounds for granting alternative reviews and submission times.

**Academic Integrity:**

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Director. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline. For typical penalties check Guidelines for the Assessment of Penalties. Note: "Plagiarism, which is the act of presenting the ideas, words or other intellectual property of another as one's own. The use of other people's work must be properly acknowledged and referenced [...] The properly acknowledged use of sources is an accepted and important part of scholarship. Use of such material without complete and unambiguous acknowledgement, however, is an offence under this policy. "

References:

[www.uwaterloo.ca/academicintegrity/](http://www.uwaterloo.ca/academicintegrity/)

[www.adm.uwaterloo.ca/infosec/Policies/policy71.htm](http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm).

[www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm](http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm).

**Grievance:**

A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, [www.adm.uwaterloo.ca/infosec/Policies/policy70.htm](http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm). When in doubt please contact the department's administrative assistant who may provide further assistance.

**Appeals:**

A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) [www.adm.uwaterloo.ca/infosec/Policies/policy72.htm](http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm).

**Students with Disabilities:**

The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.