New Geometric Systems: Jakebs Zvilna and integrative form-languages
ARCH 510 - 001 Visual and Digital Media Courses

University of Waterloo | Spring 2019 | SEM – Seminar
Wednesdays
10:00 am-12:50 pm
With Val Rynnimeri

"I *see now two and three-dimensional forms organization, development, genesis in time-space […]a spiral I understand not as a construction but as an emergent through a formative process, when matter in continuous rotation is exposed to a linear force[…] In opposition to nature's order, the structured patterns display 'natural order'*[i]…"

This course will explore conceptions of geometry as form-language by developing digital models, drawings and texts that explore a body of inventive work by a historical visionary architect, framed by a broad background of contemporary 'organicism' and complex-systems studies. The research and directed design elective course will study combinations of primary geometric systems including lattices, arrays and membranes, guided by Waterloo Architecture professor Jakebs Zvlina's pioneering research during the1960's and 70's. A published folio and small exhibition will be produced, offering previously unpublished material to contemporary architectural discourse. Students will have the opportunity to develop advanced conceptions of three-dimensional geometry and digital modeling skills by handling and illustrating original historical works.

Zvilna's conceptions anticipate surging development in contemporary complexity studies. His extraordinary models, photograms and drawings can be positioned within contemporary and historical architectural theories of Organicism. Sources that would be included include Synergetics by the American engineer Buckminster Fuller, the interdisciplinary Vision and Value publication series edited by theorist Gyorgy Kepes, D'Arcy Wentworth Thompson's canonical 'On Growth and Form' and contemporary literature and architectural manifestos including Patrik Schumacher's 'Parametricism' and Jenny Sabin and Cecil Balmond's 'Meander'.

The group would create a small exhibition associated with the Living Architecture Systems Group documented within a folio to be published by the LASG with Riverside Architectural Press. The course would include collaboration with professor Val Rynnimeri. Digital modeling will be supported by parametric modeling tutorials provided by expert LASG researcher Timothy Boll.

Each student would develop written texts, illustrations and digital models that contribute to a collective publication and exhibition. The course will be organized as a sequence of seminars presenting individual student assignments, and would include work-in-progress workshops interwoven with group discussions, tutorials and discussions with visitors. Students will be asked to use Rhino, Illustrator and InDesign software. While advanced skill is not necessary, rudimentary knowledge of those tools is required order to enter the course. Students should have interest in researching, modeling and illustrating primary architectural geometric systems. The option of including support for parametric modeling can be considered, dependent on individual interest.

[i] Jakebs Zvlina, ‘Interdisciplinary Language’ in Karelia News, c. 1972

Course outline

1. Assignment One: Geometry Garden
   Using and extending a kit provided to you, explore the forms and language of traditional geometry. Build arrays and combinations of polyhedral forms. Photograph your explorations. Precisely name the constructions that you create.
   10% of final grade
   Evaluation: Depth, Conceptual Quality and Craft Quality of document and model

2. Assignment Two: Svilna Models
   With a partner, document a selected historic model authored by Jakebs Svilna. Build on the Sketchup model and related notes that have been prepared for you. The product for this exercise is a digital and physical set of studies. Include a formative part, executed in wood, together with an extended foam model. Produce high-resolution digital model. Using traditional terminology, attempt to precisely name the forms and organizations that appear.
   30% of final grade
   Evaluation: Depth, Conceptual Quality and Craft Quality of document and model

3. Assignment Three: Growth and Variation
   Building on the model that you documented in Phase One, and working individually, explore variations. Extend your models by exploring growth, including potential large-scale arrays. Consider forms appearing in nature that are similar to your explorations. Attempt to describe the stages of transformation that create the forms you have explored.
   30% of final grade
   Evaluation: Depth, Conceptual Quality and Craft

4. Assignment Four: STEAM Kit
   Note: This assignment is launched during the term, but its completion shall be administered as a take-home examination with final submission during the examination period.
   With a partner, design a kit that could be used for young people exploring complex forms relating to the contemporary environment, built and natural. Conceive components and simple attachment methods that can be multiplied using inexpensive mass-production methods, locally available to you. Produce a document that illustrates the kit. Include digital models supporting fabrication. Produce a ‘lexicon’ of typical assemblies that might be found by using this kit.
   30% of final grade
   Evaluation: Depth, Conceptual Quality and Craft Quality of document and model

Course schedule

Week 1
Wednesday May 8, 2019
Course begins
Val Rynnimeri Presentation
Launch Assignment One: Geometry Garden

Week 2
Wednesday May 15, 2019
Review Assignment One
Launch Assignment Two: Phase One Svilna Models

Week 3
Wednesday May 22, 2019
Review work in progress

Week 4
Wednesday May 29, 2019
Review work in progress

Week 5
Wednesday June 5, 2019
Review work in progress

Week 6
Wednesday June 12, 2019
Review Assignment Two
Launch Assignment Three: Phase Two Growth and Variation

Week 7
Wednesday June 19, 2019
Review work in progress

Week 8
Wednesday June 26, 2019
Review work in progress

Week 9
Wednesday July 3, 2019
Review work in progress

Week 10
Wednesday July 10, 2019
Review Assignment Three
Launch Assignment Four: STEAM Kit
(note, STEAM Kit is positioned as take-home examination, with final submission during examination period)

Week 11
Wednesday July 17, 2019
Review work in progress

Week 12
Wednesday July 24, 2019

Last day of class
Review work in progress

Week 13
Examinations begin

Week 14
Tuesday, August 13
Examination submission: Final submission of Assignment Four Kits