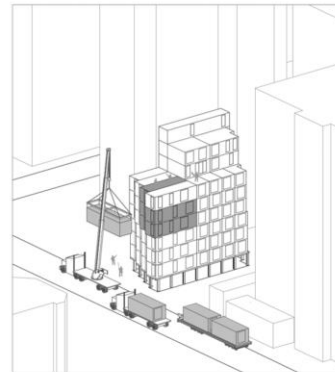
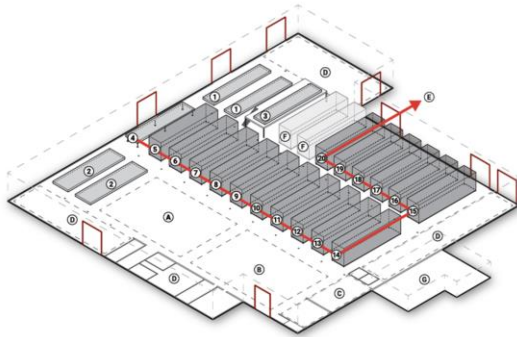


Type of Course: Advanced Studio
Class Meetings: Mon. / Thu.
Instructor: Ivan Rupnik
Location: Room TBD
Semester/Year: Spring 2018

Volumetric Modular: Projecting in Space-Time



Course Description

While architects continue to *dream of electronic builders* many of the ambitions of interwar and postwar architecture have been realized and exceeded by the volumetric modular industry, with little input from the discipline. In this studio, students will explore this new industrial ecology, using New York City as a laboratory. New modes of design practice will consider fabrication and occupation simultaneously, building upon a growing body of research on this topic. Students will work individually and in groups through a series of exercises that will culminate in the development of a housing delivery system utilizing the ecologies and logics of the volumetric modular industry

Learning Objectives

- Students will be exposed to a new mode of design, fabrication, assembly and project delivery
- Students will learn design research methods, building upon an existing body of knowledge
- Students will challenge the convectional definition of the architectural object through the consideration of material flows, patterns of human and automated labor, industrial ecologies and socio-economic forces

Topics of Research / Program / Course Schedule / Case Studies

The studio will be organized into three assignments. The first assignment will introduce students to the modular industry through a series of lectures and tours in and around New York City. In the second assignment, student groups will investigate a series of case studies focusing on fabrication and assembly. In the third assignment, each student will develop their own system, through the consideration of the spaces of fabrication, assembly and occupation. Each assignment will build upon the subsequent one. The program will be housing, with the specific brief developing through the research. Sites in New York City will be selected by the students in dialogue with the instructor in order to best test the systems assembly and occupational logics.

Assignment 1: Introduction to the Industry – 10% of Grade.

Date issued: 02.05 Date Due: 02.15

The studio will begin by dispelling the modernist myth of standardization and the postmodernist myth of mass customization. Students will be introduced to contemporary fabrication techniques and ecologies in America, Sweden, Japan and Poland and to trans-disciplinary design tools that will allow them to project in space-time. Students will also tour recent modular projects and fabrication facilities in New York City and the region. Specific systems discussed will include Capsys (NYC), Full Stack (NYC), Lindbacks (Sweden), Sekisui Heim and DMD (Poland).

TopicsL

- 1.1 Standardization
- 1.2 Mass-customization
- 1.3 Volumetric Modular
- 1.4 Projecting in Space time

Deliverable:

- written argument for which system or systems the student would like to explore (2 pages)

Assignment 2: Case Studies - 40% of Grade

Date issued: 02.20 Date Due: 03.12 (presentation) / 03.26 (final materials due)

Based upon the introduction to the volumetric modular industry, student groups will be formed around a series of current volumetric modular systems. Students will study Capsys (NYC), Full Stack (NYC), Lindbacks (Sweden), Sekisui Heim and DMD (Poland). Through the studies of these systems, in drawing and in physical models. Students will learn new design methods through a series of rapid analysis and projection exercises based on architectural responses to industrialized building. The instructor will provide a digital archive of the case studies.

Topics:

- 2.1 Life Cycles
- 2.2 Units of fabrication, units of occupation
- 2.3 Component Rhythms
- 2.4 Fixing the flow

Deliverables:

- mappings of ecologies supporting the industry
- scale models of spaces of fabrication, assembly and occupation (and disassembly)
- isometric drawing sequence of fabrication, assembly, occupation (and disassembly)

Assignment 3: System. – 50% of Grade

Date issued: 03.12 (03.19) Date Due: Presentation (W15)

Building upon phase 1 and 2, individual students will develop a delivery system for the particular ecology of New York City. As a departure point, students will identify an existing modular system, fabrication and assembly faculty and typology through which they plan to conduct their design research. This assignment will utilize work from assignments 1 and 2.

Topics:

- 3.1 System selection
- 3.2 Ecology definition – sites of fabrication, sites of delivery

Deliverables:

- mappings of ecologies supporting the industry
- scale models of spaces of fabrication, assembly and occupation (and disassembly)
- isometric drawing sequence of fabrication, assembly, occupation (and disassembly)

WEEKLY SCHEDULE

Note: schedule below is subject to revision through the duration of the semester.

W1	INTRODUCTION
Mon. 01.29	First day of class (Lottery and general presentation)
Thu. 02.01	Studio (Portfolios DUE: M.Arch 1, M. Arch II and B. Arch 4 th year)
W2	ASSIGNMENT 1
Mon. 02.05	Assignment 1: Lecture
Thu. 02.08	Assignment 1: Workshop / Field Trip 6:30 pm. Lecture: Elisabeth Christoforetti
W3	ASSIGNMENT 1
Mon. 02.12	<i>College Closed / Lincoln' Birthday</i>
Thu. 02.15	Assignment 1: Final Presentation / Groups for Case Studies Selected 6:30 pm. Lecture: Ivan Rupnik
W4	ASSIGNMENT 2
Mon. 02.19	<i>College Closed / President's Day</i>
Tue. 02.20	(Mon Schedule) Assignment 2: Case study analysis assigned

Thu. 02.22	Assignment 2: Case study analysis intermediate deadline 6:30 pm. Lecture: Iñiqui Carnicero
W5	ASSIGNMENT 2
Mon. 02.26	Assignment 2: Case study analysis intermediate deadline
Thu. 03.01	Assignment 2: Case study analysis intermediary PIN UP 6:30 pm. Lecture: Vishaan Chakrabarti
W6	ASSIGNMENT 2
Mon. 03.05	Assignment 2: Case study analysis intermediate deadline
Mon. 03.08	Assignment 2: Case study analysis intermediate deadline
W7	ASSIGNMENT 2
Mon. 03.12	Assignment 2: Final Review (Deliverables due 03.26)
Thu. 03.15	No studio (individual meetings will be scheduled on student request)
W8	ASSIGNMENT 3
Mon. 03.19	Assignment 3 Launch, System strategy assigned
Thu. 03.22	No studio (individual meetings will be scheduled on student request)
W9	ASSIGNMENT 3
Mon. 03.26	Assignment 3 Intermediary deadline, desk crits (Asgn. 2 Deliverables Due)
Thu. 03.29	Assignment 3 System strategy due, PIN UP
SPRING RECESS	
W10	ASSIGNMENT 3
Tue, 04.09	Assignment 3 System development, desk crits
Thu. 04.12	Assignment 3 System development, desk crits 6:30 PM. Lecture. Mario Gooden
W11	ASSIGNMENT 3
Mon. 04.16	Assignment 3 System development, PIN UP
Thu. 04.19	Assignment 3 System development, desk crits
W12	ASSIGNMENT 3
Mon. 04.23	Assignment 3 System development, desk crits
Thu. 04.26	Assignment 3 System development, desk crits 6:30 PM Lecture Georgeen Theodore and Tobias Armbrorst (Interboro)
W13	ASSIGNMENT 3
Mon. 04.30	Assignment 3 System development, desk crits
Mon. 05.03	Assignment 3 System development, desk crits
W14	ASSIGNMENT 3
Mon. 05.07	Assignment 3 System development, desk crits
W15	
TBD	Final Review

BIBLIOGRAPHY

Barry Bergdoll, Peter Christensen. "Home Delivery: Fabricating the Modern Dwelling." edited by MoMA. New York: MoMA, 2008.

Corbusier, Le. "Des Yeux Qui Ne Violent Pas... lii: Les Autos." *L'Esprit Nouveau* 10 (1921): 1140-41.

———. "Maisons En Série." *L'Esprit Nouveau* 13 (1922): 1525-42.

Rupnik, Ivan. "Building Systems/Building Territory: The Architects Role in Industrialized Housing Delivery." In *Building Systems: Design Technology and Society* edited by Ryan E. Smith Kiel Moe, 86-104. London: Routledge Press, 2012.

———. "Home Delivery Graduate Research Studio." Boston: Northeastern University, 2011.

———. "Mapping the Modular Industry ". In *Offsite Architecture*, edited by Ryan Smith and John Quale, 70-91. London: Routledge, 2017.

———. "Mass. Modular Graduate Research Studio." Boston: Northeastern University 2017.

———. "Mass. Production Graduate Research Studio." Boston: Northeastern University, 2014.

Smith, Ryan and Ivan Rupnik. "Case Study USA: Simplex Homes." In *Prefab Housing and the Future of Building: Product to Process*, edited by Mathew Aitchison. London: Lund Humphries, 2018.

———. "Country: USA." In *Prefab Housing and the Future of Building: Product to Process*, edited by Mathew Aitchison. London: Lund Humphries, 2018.

Tanney, Joseph. "Res: 4 Arch." Paper presented at the Homework: Cotemporary Housing Delivery Systems, Northeastern University, 2010.

Volner, Ian. "Construction Stops on the B2 Bklyn High-Rise at Atlantic Yards." *Architect: The Journal of the American Institute of Architects* (2014). Published electronically September 23, 2014.

// Grading & Attendance Policies and Studio Culture

Course Expectations:

- That students will develop a high level of independent thought and rigor and a willingness to go beyond both basic project requirements and their own perceived limits and abilities.
- That students will successfully complete all project requirements. No make-up or postponed project submissions will be accepted except in the case of medical emergencies or other extraordinary circumstances. Excused absences and project delays must be officially cleared by professor in advance in order to be considered valid.

Portfolio Requirements:

- All M Arch I second and third year students and all M Arch II students are required to submit a portfolio on February 1st, 2018. Second year students must submit a hard copy portfolio to Hannah Borgeson's office by [5pm on the 1st](#). Third year students and M Arch II students may submit either a hard copy portfolio or email a link to a digital portfolio to hborgeson@ccny.cuny.edu. Digital submissions must be a link, not a file attachment.

Methods of Assessment:

- Attendance and participation in class discussions: 20%
- Project development in response to semester schedule: 50%
- Project presentation, completion and resolution: 30%

Key Areas of Grading Assessment:

- **Studio Performance & Work Habits** Ability to respond to studio criticism & discourse in a consistent & clear manner throughout the course of the semester as demonstrated in the evolution and development of design work.
- **Clarity of Representation & Mastery of Media** Ability to utilize both digital and manual drawing and model-making techniques to precisely and creatively represent architectural ideas.
- **Pre-Design:** Ability to prepare a comprehensive program for an architectural project that includes an assessment of client and user needs; an inventory of spaces and their requirements; an analysis of site conditions (including existing buildings); a review of the relevant building codes and standards, including relevant sustainability requirements, and an assessment of their implications for the project; and a definition of site selection and design assessment criteria.
- **Research:** Understanding of the theoretical and applied research methodologies and practices used during the design process.
- **Integrated Evaluations and Decision-Making Design Process:** Ability to demonstrate the skills associated with making integrated decisions across multiple systems and variables in the completion of a design project. This demonstration includes problem identification, setting evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation.
- Studio & Lecture Series Attendance
- Completion of Portfolio and Attendance at all scheduled portfolio related events

Grading Criteria:

Note: C is the lowest passing grade for M Arch I and M Arch II students.

A (+/-) work meets all requirements and exceeds them. Presentations are virtually flawless, complete, and finely detailed. Work exhibits professional, "museum quality" level of craft. Student has developed an individual design process that shows a high level of independent thought and rigor. Work shows evidence of intense struggle to go beyond expectations, and beyond the student's own perceived limits of their abilities.

B (+/-) work meets all requirements. Presentations are complete and finely detailed. Work exhibits professional level of craft. Student has developed an individual design process that shows a high level of independent thought and rigor.

C (+/-) work meets minimum requirements. While presentations may be complete, student has struggled to develop an individual design process and/or is lacking in craft or design resolution

D (+/-) work is below minimum requirements. Presentations are incomplete, student has struggled to develop an individual design process and/or is lacking in craft or design resolution.

F work is well below minimum requirements. Student does not develop adequate design process, and / or does not finish work on time.

INC grades of "incomplete" are not given under any circumstances unless there is evidence of a medical or personal emergency. In such cases, instructor and student develop a contract to complete work by a specified date, as per CCNY policy. Classes / work missed due to illness must be explained with a physician's note.

NOTE: *Working in teams does not guarantee the same grade for each team member; grades are based on a range of criteria for each student.*

For more information on grading guidelines and other CCNY policies and procedures, consult the current CCNY Academic Bulletins: <http://www.ccnycunyc.edu/registrar/bulletins.cfm>

Office Hours:

Office hours are set by appointment. If a student needs to speak in private with a studio critic they must email in advance to request a meeting time. Students may seek office hour appointments to discuss any matters of concern including personal, private matters and general inquiries about course related work, grading, assessment and content.

Probation & Dismissal: For program specific information related to grades, academic standing, probation and dismissal, please see your program academic advisors:

B. Arch.: Arnaldo Melendez & Sara Morales

M. Arch.: Hannah Borgeson

Studio Culture:

Working in the studio is mandatory. Studio culture is an important part of an architectural education. Please see the Spitzer School of Architecture Studio Culture Policy, which can be accessed on the SSA website here <https://ssa.ccnycunyc.edu/about/policies/> for more information.

Absence & Lateness

Arriving more than ten minutes late to class will constitute an absence. Two unexcused absences will result in a whole letter grade deduction from a final grade; three will result in a failing grade. It is expected that all students will participate in all scheduled working, midterm and final reviews and contribute constructively to the discussion.

Absences due to Religious Observances

Students who will miss any class sessions, exams, presentations, trips, or the like due to a religious observance should notify the instructor at the beginning of the semester so that appropriate adjustments for observance needs can be implemented. This could include an opportunity to make up any examination, study, or work requirement that is missed because of an absence due to a religious observance on any particular day or days.

Noise Policy:

The studio environment should be a quiet and respectful place where all students can work and think in peace. At no time may students play music out loud in studio, even at a low volume. If you desire to listen to

music, either during class hours or after hours, headphones are a requirement. Conversations must also be kept to a reasonable volume to respect classmates and those students in adjacent studios.

Readings & Journals:

Students are expected to keep a journal or sketchbook throughout the duration of studio to document their thought process & take notes of any texts, books, terms or references that are mentioned by either the studio critic or fellow classmates and to selectively follow up on these and any other assigned readings before the next class.

Academic Dishonesty:

As a student you are expected to conduct yourself in a manner that reflects the ethical ideas of the profession of architecture. Any act of academic dishonesty not only raises questions about an individual's fitness to practice architecture, but also demeans the academic environment in which it occurred. Giving or receiving aid in examinations, and plagiarism are a violation of an assumed trust between the school and the student.

Plagiarism, i.e. the presentation as one's own work of words, drawings, ideas and opinions of someone else, is a serious instance of academic dishonesty in the context as cheating on examinations. The submission of any piece of work (written, drawn, built, or photocopied) is assumed by the school to guarantee that the thoughts and expressions in it are literally the student's own, executed by the student.

All assignments must be the student's original work. Any copying, even short excerpts, from another book, article, or Internet source, published or unpublished, without proper attribution will result in automatic failure of the entire course.

CCNY Academic Integrity Policies: <http://www.ccny.cuny.edu/academicaffairs/integritypolicies.Cfm>

In particular, consult the Academic Integrity Brochure for students:

<http://www.ccny.cuny.edu/academicaffairs/upload/BrochurePDFVersion.pdf>

For more guidance about understanding standards for plagiarism in the digital age, see:

http://www.nytimes.com/2010/08/02/education/02cheat.html?_r=1&emc=eta1&pagewanted=print

For citations, use the Chicago Manual of Style "Notes and Bibliography" method:

http://www.chicagomanualofstyle.org/tools_citationguide.html

AccessAbility Center (Student Disability Services):

The AccessAbility Center (AAC) facilitates equal access and coordinates reasonable accommodations, academic adjustments, and support services for City College Students with disabilities while preserving the integrity of academic standards. Students who have self-identified with AAC to receive accommodations should inform the instructor at the beginning of the semester. (North Academic Center 1/218; 212-650-5913 or 212-650-6910 for TTY/TTD).

Library:

The school's library is a shared resource that is necessary supplement to all research and design work. Please direct questions to the library staff or the architecture librarian Nilda Sanchez.

NAAB (National Architectural Accrediting Board)

The National Architectural Accrediting Board (NAAB) is the sole agency authorized to accredit US professional degree programs in architecture. Since most state registration boards in the United States require any applicant for licensure to have graduated from a NAAB-accredited program, obtaining such a degree is an essential aspect of preparing for the professional practice of architecture. While graduation from a NAAB-accredited program does not assure registration, the accrediting process is intended to verify that each accredited program substantially meets those standards that, as a whole, comprise an appropriate education for an architect.

More specifically, the NAAB requires an accredited program to produce graduates who: are competent in a range of intellectual, spatial, technical, and interpersonal skills; understand the historical, socio-cultural, and environmental context of architecture; are able to solve architectural design problems, including the integration of technical systems and health and safety requirements; and comprehend architects' roles and responsibilities in society.

The following Student Performance Criteria are addressed in this course:

Realm B: Building Practices, Technical Skills, and Knowledge. Graduates from NAAB-accredited programs must be able to comprehend the technical aspects of design, systems, and materials and be able to apply that comprehension to architectural solutions. In addition, the impact of such decisions on the environment must be well considered.

B.1 Pre-Design: *Ability* to prepare a comprehensive program for an architectural project that includes an assessment of client and user needs; an inventory of spaces and their requirements; an analysis of site conditions (including existing buildings); a review of the relevant building codes and standards, including relevant sustainability requirements, and an assessment of their implications for the project; and a definition of site selection and design assessment criteria.

Realm C: Integrated Architectural Solutions. Graduates from NAAB-accredited programs must be able to demonstrate that they have the ability to synthesize a wide range of variables into an integrated design solution.

C.1 Research: Understanding of the theoretical and applied research methodologies and practices used during the design process.

C.2 Integrated Evaluations and Decision-Making Design Process: Ability to demonstrate the skills associated with making integrated decisions across multiple systems and variables in the completion of a design project. This demonstration includes problem identification, setting evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation.

Students should consult the NAAB website www.naab.org for additional information regarding student performance criteria and all other conditions for accreditation.