

Architectural Design: Systems and Materials

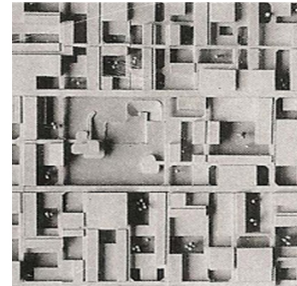
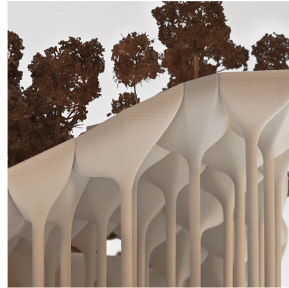
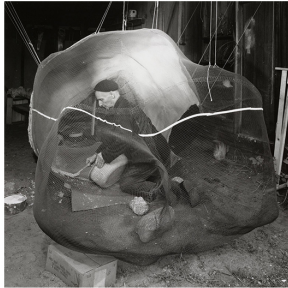
ARCH UN3101, Fall 2019

Time: Monday/Wednesday 9:00am-11:50am and Friday 9:00am-12:50pm

Room: 404 The Diana Center

Instructor: Diana Cristobal, dcristob@barnard.edu,

Office Hours available upon request



Top left to bottom, clockwise: Frederick Kiesler, Endless House (c.1950s); Toyo Iyo, Dwelling for Noman Woman (1989); Thomas Heatherwick, Pier 55 (2019); Narchitects, Windshape (2006); Josic Candilis, Free University Berlin (1963); Akihisa Arata, Tree-ness house (2017); Arakawa and Madeline Gins, Reversible Destiny Lofts (2005); Takko, Mountain, a democratic dress (2012)

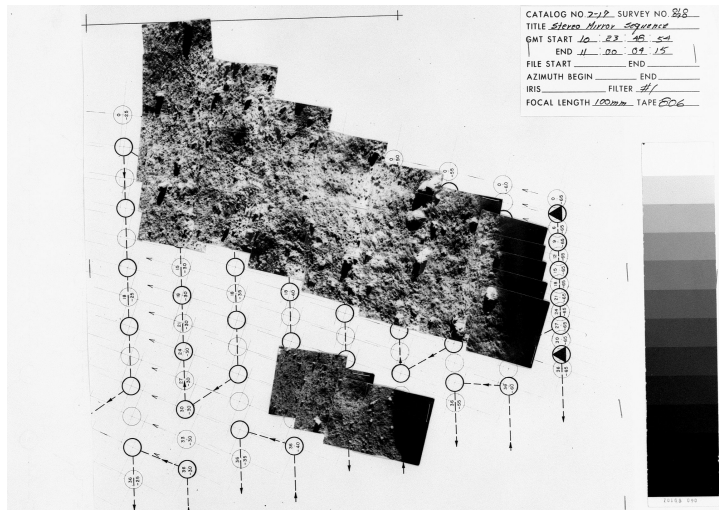
COURSE DESCRIPTION

This architectural design studio explores material assemblies, techniques of fabrication, and systems of organization. These explorations will be understood as catalysts for architectural analysis and design experimentation.

We will focus on architectural design techniques that aim to link performance to form—for instance imagining the procedural logics of a classroom, or speculating about the effects of a space on the emotions and behavior of individuals. Throughout three interrelated exercises, students will ask how architecture practices build translations between “techniques of making” and “socio-environmental factors.” The premise will be to challenge the functionalist ethos of maximizing efficiency, and to propose instead playful and unconventional associations between performance and form. Both analog and digital drawing and fabrication technologies will be used to analyze space.

EXERCISES

EX 01: OBJECT: Translations from... performance to room.



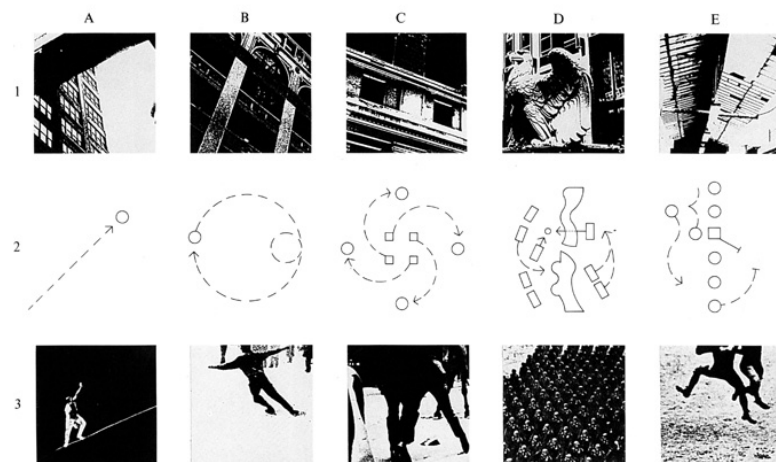
NASA surveyor 7



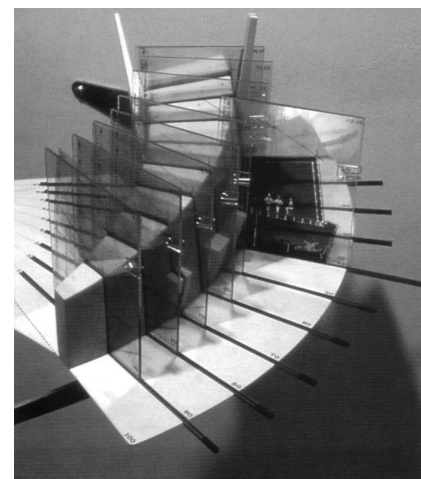
Frederick Kiesler, *Endless House* c.1950s

The first exercise examines translations between socio-environmental phenomena and spatial forms, through the design of a body sized room **controller**. Students borrow diagramming techniques from a wide set of heterogeneous disciplines—including chronophotography, choreutics, motion studies, and graphic musical scores, among many others—and use these diagramming techniques to represent relationships between their bodies, and their selected socio-environmental phenomena. Such diagrams will then be translated into three dimensional design models that will use linear elements and flat surfaces. A second iteration of such models will test different material assemblies. Despite learning from fields concerned with rigorous pseudo-scientific methods, this exercise interrogates the notion of measurement and challenges approaches based on usefulness and efficiency—shifting its focus into playful drawing investigations.

EX 02: SEQUENCE: Translations from... room to sequence.



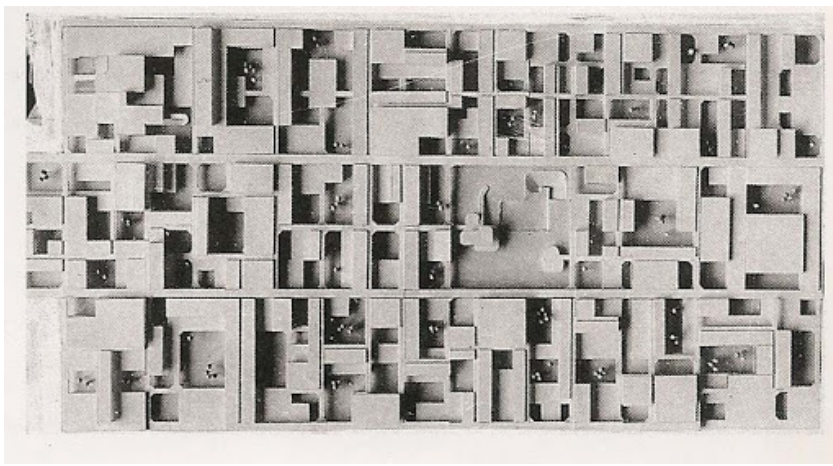
Bernard Tschumi, *Screenplays* 1976



Diller Scofidio, *Slow House*, 1989.

The second exercise tests the potential for growth of the room controller through the design of an urban *multiplier*. Students will begin by modeling their three-dimensional rooms in Rhino, and then will translate such object (room), into a sequence (series of sections) that is potentially expandable. Their sequential drawing will be a solid-void reinterpretation of their room. It should explore the movement of two inhabitants along a path, and record how this chosen path modulates their chosen socio-environmental factor (i.e. changes in light, privacy, vision, etc.). By moving from object to sequence, students will have an opportunity to address spatial and organizational principles that are dynamic. Their sequential drawing should be able to read the changes—but also the continuities—from one frame to the next, and thus move beyond architecture as a fixed and stable form.

EX 03: FIELD: Translations from... sequence to field.



Georges Candilis, Frei University Berlin 1963,



Thomas Heatherwick, Pier 55, 2019

The third exercise aims to translate the students' sequential drawing into a field organization, through the design of a socio-environmental *condenser*. The notion of the “social condenser” emerged in the Soviet Union in response to the events of 1917, proposing architecture as a way to forge radical new kinds of human collectivities: collectivities of inhabitation, co-production, intellectual work, etc. The point of this exercise is to borrow this idea of “condensation” as a prompt to reconsider architecture as socially and environmentally active. We will use this term beyond the geographical, political and historical context within which it originated, without divorcing it from its collectivist origin. That means that students will need to think about how people come together at this particular place, and how environmental conditions (sun, noise, temperature, etc) influence such collectivity. This condenser will reimagine part of Barnard College as a “public living room” that will seek to extend the limits of a private institution. Students will go back and forth between digital models and physical scale models constructed with the aid of digital fabrication technologies.

TENTATIVE CALENDAR

EXERCISE 1: OBJECT_ Translations from... Performance to room

Week 1.	W. Sept 09	Introduction.
	F. Sept 11	Exercise 1A.
Week 2.	M. Sept 14	Exercise 1A. Pin-up
	W. Sept 16	Exercise 1B.
	F. Sept 18	Rhino tutorial
Week 3.	M. Sept 21	Exercise 1B.
	W. Sept 23	Exercise 1B. Pin-up
	F. Sept 25	Rhino and illustrator tutorial

EXERCISE 2: SEQUENCE_ Translations from... Room to sequence

Week 4.	M. Sept 28	Exercise 2. Pin-up
	W. Sept 30	Exercise 2. Deskcrits
	F. Oct 02	Exercise 2. Pin-up

EXERCISE 3: FIELD_ Translations from... Sequence to field

Week 5.	M. Oct 05	MID TERM
	W. Oct 07	Exercise 3. In class workshop
	F. Oct 09	Exercise 3. Digital fabrication tutorial
Week 6.	M. Oct 12	Exercise 3. Deskcrits
	W. Oct 14	Exercise 3. Deskcrits
	F. Oct 16	Exercise 3. Pin up
Week 7.	M. Oct 19	Exercise 3. Deskcrits
	W. Oct 21	Exercise 3. Deskcrits
	F. Oct 23	FINAL REVIEW

*** The schedule is subject to adjustment during the course of the semester based on the progress of the entire studio group from one project to the next. However, Mid-term and Final Reviews will not be moved. Any schedule conflicts should be brought to the attention of the studio instructor.

LEARNING OBJECTIVES

1. Visually communicate architectural concepts and design intent using discipline-specific techniques including:
 - orthographic projections (plans, elevations, sections),
 - paraline projections (axonometrics, isometrics),
 - physical models using various techniques and materials,
 - multiple media and/or combined representational strategies
2. Verbally communicate architectural research methods and spatial concepts
3. Demonstrate an understanding of precedent and site analysis
4. Demonstrate an understanding of design method as a step-by-step, iterative and incremental process of research, synthesis and feedback
5. Demonstrate an understanding of design thinking as responsive to and shaper of social and cultural context
6. Demonstrate the ability to work independently and collaboratively
7. Demonstrate an understanding of the historical and theoretical contexts for architectural representational conventions
8. Utilize a range of hand and digital techniques in the design process
9. Utilize digital fabrication technology in the design process
10. Demonstrate the ability to present their design work in a digital portfolio

STUDIO PROCEDURES AND POLICIES

01. PREREQUISITES

This is an introductory course for students interested in thinking about architecture and is required for those majoring in Architecture. There are no prerequisites, with the exception of a passion and a will to speculate. It is generally recommended for the sophomore year, and can be taken before or after Architectural Representation: Perception. Abstraction and Perception complement each other, with the former concentrating on conventions of architectural representation, and the latter on methods and techniques of spatial representation.

02. STUDIO PROCEDURES

This course is taught by the studio method. The core method of instruction is that of ‘desk crits’, a one-to-one dialogue at the desk between the student and the faculty (also described as “Studio Critics”) or teaching assistants. At the desk crit, previous design work is reviewed and discussed and the student and faculty formulate the next steps in the process. Desk crits are supplemented by Interim Reviews, or ‘Pin-ups’, where all students in the studio present their design ideas for group critique and discussions. The culmination of each project is the Final Review in which students present their work for public evaluation by Studio Critics and Visiting Critics.

Each student will have a desk in 404 Diana. You must work in the studio after hours, employing your peers as critics. You will be expected to equip your desk with the necessary tools and

materials for your projects (see below). No excuses for incomplete work should be made for lack of equipment. Each project will use different equipment.

03. STUDIO WORK PRACTICES

In addition to periodic presentations by the faculty, Teaching Assistants will conduct other informal evening workshops focusing on techniques and methods relevant to ongoing projects. These sessions are optional but you are strongly encouraged to attend.

The studio work will consist of analog drawings, model-making and computer work. You will be required maintain a sketch-book throughout the semester that will be used for sketching and writing notes for all projects, and to document your work periodically (i.e. scan your analog drawings, photograph your pin up, screenshot your rhino screen). By the end of the semester you will be required to present your design process in a small digital booklet format, so it is important that you keep records of all your steps.

Please refrain from the use of spray paints, spray adhesives, or similar products in the studio and all adjacent spaces. This may be done only in the model room annex to the studio. The hallway, stairwells, and sidewalks outside the building are not to be used as working spaces for model building, etc. The overspray from spray paints and adhesives are destructive to the building. In order to maintain a productive workspace for all, music must be listened to through your headphones. Please keep the studio and DAL clean. **DO NOT LEAVE FOOD ITEMS IN STUDIO.** (We are trying hard not to enforce a “NO FOOD” policy in studios).

04. SECURITY

Please attend to the security of the Studio space. Because there is occasional theft, it is highly recommended that you not leave any valuables unattended when away from your desk, and that you not leave costly tools or devices (iPods, laptops, cameras, etc.) in your desk even if locked. One very workable solution is to carry your more valued items with you! You may leave your parallel rule attached to your desk. Barnard Security does make periodic checks of the studio but security is a responsibility that we all share; please help us maintain a safe and productive environment. If something of yours is taken, please make sure you contact Barnard Public Safety, as well as the studio faculty. Finally, University policy prohibits smoking in classrooms. Please be considerate of your classmates.

05. ATTENDANCE

You are encouraged to work in the studio and to take advantage of the shared learning environment to discuss your work with your peers. Attendance is mandatory at all scheduled classes. Studio is held Monday and Wednesday beginning promptly at 9 AM. Any student arriving after 9:20 AM will be considered ‘late’ and arrivals after 10:00 AM will be considered as absent. Absences due to acute illness, a personal crisis (e.g. a death in the family), religious observance, or for other reasons of comparable gravity may be excused. In all such cases, students must promptly email their instructor to communicate the reason for their absence and to arrange an opportunity to review any important information they may have missed. Students who know they will miss scheduled classes due to religious holidays should meet with their instructor during the first week of classes to discuss their anticipated absences. Unexcused absences, late

arrivals, or early departures from class will reduce your course grade. Three consecutive absences or four nonconsecutive absences will mean that you have dropped the course, whether or not you have filed the appropriate “drop” form. Three non-consecutive absences will result in a grade reduction by one-third ($1/3$) of one letter grade (e.g., A- to B+). Three consecutive absences or four non-consecutive absences will adversely affect your final grade. You may NOT leave class early or after a desk crit. Plan to use your time in the studio productively and related to project assignments so that you are not simply waiting for your Critic.

06. GRADING

Each Studio Project will be graded with a letter grade. Your work will be evaluated by the following criteria: (1) analysis & concepts; (2) process & development; (3) final project materials: drawings, collages, models, etc. Final grade will be constituted as:

Project #1: 40%, Project #2: 10%, Project #3: 40%,

Overall Studio Progress, Participation: 10%.

The instructors recognize learning and improvement as important factors in determining your final grade. Students are required to present their work in all Interim and Final Reviews. Failure to do so will reduce the grade of the exercise by a minimum of one letter grade (e.g. B to C).

Work not presented at the designated time will not be reviewed at a later date. Project grades will be based on the work you present at your Final Review. Required work that was not completed at the Final Review must be completed in time for grading. Additional work completed after the Final Review and before grading will not be considered at the grading session unless otherwise stated by the Studio Critics. NO INCOMPLETES will be given at the end of the course.

07. STUDIO EQUIPMENT

Basic Tools and Materials:

- Borco (board cover)
- Drafting board with parallel rule – Mayline
- 10” 45/90 inking edge triangle
- 10” 30/60 inking edge triangle
- vellum 18x24”
- white drawing paper 18x24”
- 12” role tracing paper
- drafting dots or drafting tape
- lead pointer, lead holder, leads
- white pencil eraser
- cutting surface (30” x 40” piece of $1/8$ ” chipboard)
- X-acto with #11 blades
- 24” metal ruler with cork backing
- elmers or sobo glue
- model making materials (as needed)
- Sketchbook (minimum size 8”x10”)

Sample of places to purchase material:

Janoff's Office and Art Supplies: Located on Broadway between 111th and 112th Streets, Janoff's is the closet art supply store to campus.

Blick Art Materials: Blick Art Materials has several locations in Manhattan, offering a large range of art supplies, tools, and materials.

Canal Plastics Center: Canal Plastics Center offers plastics and fabrication services and sells acrylics in hard to find colors and sizes. They also offer a student discount.

Pearl Paint: 308 Canal St

New York Central: SW corner of 11th and 3rd Ave.

08. HONOR CODE

The Barnard Honor Code applies to all students in this class regardless of academic affiliation. Approved by the student body in 1912 and updated in 2016, the Code states:

We, the students of Barnard College, resolve to uphold the honor of the College by engaging with integrity in all of our academic pursuits. We affirm that academic integrity is the honorable creation and presentation of our own work. We acknowledge that it is our responsibility to seek clarification of proper forms of collaboration and use of academic resources in all assignments or exams. We consider academic integrity to include the proper use and care for all print, electronic, or other academic resources. We will respect the rights of others to engage in pursuit of learning in order to uphold our commitment to honor. We pledge to do all that is in our power to create a spirit of honesty and honor for its own sake.

09. STATEMENT FROM THE OFFICE OF DISABILITIES

If you are a student with a documented disability and require academic accommodations in this course, you must register with the Office of Disability Services (ODS) for assistance. Students requesting accommodations will need to first meet with an ODS staff member. Once registered, students are required to request accommodation letters each semester to notify faculty.

Accommodations are not retroactive, so it is best to contact ODS early each semester to access your accommodations. If you are registered with ODS, please see me to schedule a meeting outside of class in which you can bring me your faculty notification letter and we can discuss your accommodations for this course. Students are not eligible to use their accommodations in this course until they have met with me. ODS is located in Milbank Hall, Room 009/008. Columbia ODS is located in Wien Hall, Suite 108A.

10. AFFORDABLE ACCESS TO COURSE TEXT STATEMENT:

All students deserve to be able to access course texts. The high costs of textbooks and other course materials prohibit access and perpetuate inequity, and Barnard librarians are partnering with students, faculty, and staff to increase access. By the first day of advance registration for each term, you should be able to view on Canvas information provided by your faculty about required texts (including ISBN or author, title, publisher and copyright date) and their prices. Once you have selected your classes, here are some cost-free methods for accessing course texts, recommended by the Barnard Library: find out if your faculty has placed the texts on reserve at Barnard Library or another Columbia library, and look for course texts using [CLIO](#) (library catalog), [Borrow Direct](#) (request books from partner libraries), [Interlibrary Loan](#) (request book

chapters from any library), and NYPL. Students with financial need or insecurity can check items out from the FLIP lending libraries in the Barnard Library and Butler Library and can consult with the Dean of Studies and the Financial Aid Office about additional affordable alternatives for getting access to course texts. Talk with your librarian and visit the Barnard Library Textbook Affordability guide(library.barnard.edu/textbook-affordability) for more details."

11. WELLNESS STATEMENT

It is important for undergraduates to recognize and identify the different pressures, burdens, and stressors you may be facing, whether personal, emotional, physical, financial, mental, or academic. We as a community urge you to make yourself—your own health, sanity, and wellness—your priority throughout this term and your career here. Sleep, exercise, and eating well can all be a part of a healthy regimen to cope with stress. Resources exist to support you in several sectors of your life, and we encourage you to make use of them. Should you have any questions about navigating these resources, please visit these sites:

Barnard Students: <https://barnard.edu/wellwoman/about>

Columbia Students: <http://www.college.columbia.edu/resources> Click on Health-Wellness

Columbia GS Students: <https://gs.columbia.edu/health-and-wellness>

Columbia SEAS Students: <http://gradengineering.columbia.edu/campus-resources>"