MIT School of Architecture + Planning
4.s15 Urban Research and Design Studio
Fall 2022, TR 1-6 (room 7-403)
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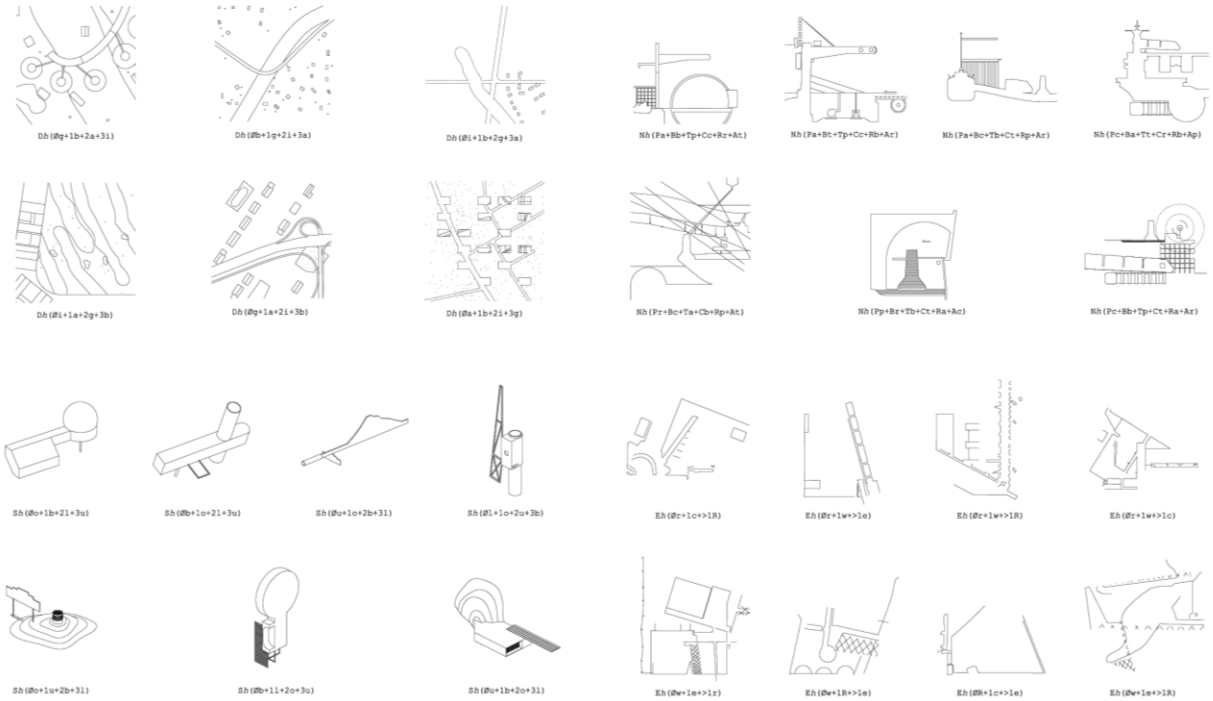
Urban Modding

Architecture of the Futuretrofit



From: Urban Hybrids of the Future City-State (2007),
by Rafi Segal, Els Verbakel, with Princeton University Center for Urbanism, Architecture and Infrastructure

Modding —a term frequently used in video gaming and automobile customization—is understood as an individual desire and expression that engages existing forms to release new potential. It can be a celebration of aesthetic qualities and/or of accumulative histories. Modification (modding) can be additive, subtractive, or even multiplicative! It can spread, infect, revitalize, be quiet or loud, divisive or unitary. It is certainly a transformation and perhaps, or rather hopefully, transformative. In this studio, we introduce ***Urban Modding*** as a new concept to expand upon notions of architectural alterations that impact the urban condition.

Adapting, retrofitting, and changing existing urban forms: buildings, infrastructure, and open spaces are essential in city-making. When building functions or programs become obsolete or new needs emerge,

we are often left with structures no longer used for the purpose they were designed for. 19th-century warehouses or craft shops, for instance, became desirable living lofts, dilapidated infrastructure transformed into green urban space. The examples are plenty. Dramatic events such as natural catastrophes, pandemics, wars, as well as new technological inventions and cultural trends, ignite urban change as they uncover changes in social structures and use patterns. When these changes emerge, they are often met with physical structures and spaces that are unfit and require some degree of alteration to best accommodate new uses. Changes in technology—communication, mobility, and energy systems—bring with them new forms, yet at the same and, especially on the urban scale, existing forms remain in need of change. In fact, we can suggest that the history of the city be read through phases of retrofitting. The spatial-formal component of retrofitting emerges as a problem since changes in how we use space are more frequent than the 'lifespans' of the forms and spaces we create. In our era and further projecting ahead, some urban typologies (that have come to populate our cities) are becoming or will most likely become obsolete —they will no longer be needed in the capacity, quantity, arrangement and purpose for which they were designed: Single-use office towers (changes in remote working), inner city parking garages (the future of automated vehicles could significantly reduce parking needs in the city core), factory buildings (changes in manufacturing and clean energy), retail spaces in strip malls (changes in consumer habits) and more. While not originating in the current/recent global pandemic, the changes to life habits and patterns of use have certainly accelerated in the past couple of years.

Instead of demolishing unfit urban forms (and also because "the greenest building is…one that is already built"' —Carl Elefante), we will explore in this studio the architectural design and urban potential in transforming obsolete structures/forms. More than a mere 'update' to an existing building, we ask to experiment with the aesthetic, cultural, and programmatic potential of transforming the existing, often ordinary/generic form to one of architectural expression that acts as a catalyst for urban change in its immediate context. Modding which can happen at different scales and with different urban elements, calls to question the relationship between form and function/purpose, new and existing, the individual and the collective, while aspiring to develop a spatial -aesthetic urban method of change.

The Studio will include a trip to New York City, where retrofitting has been an important strategy to update buildings and urban infrastructure.

Studio Assignments

#1: **The Re-Found Object**
This first assignment, the Re-Found Object, will serve as an introduction to the studio theme. Select an object from your house and modify it significantly. The modification should not allow the object to be used in its prior function. The original object should be partially recognizable yet at the same time integrated into its new form. The outcome—the new object created—should be spray-painted in one color (NOT red: "If you can't make it good, make it BIG. If you can't make it big, make it RED!"- Paul Rand).

Bring the physical objects to class for discussion.

Due date: Tuesday 9/13

#2: **Variations on Form: Iterative Transformations of Urban Elements**
A study and explorations into the formal and spatial possibilities of existing objects/ buildings/ urban elements. This assignment responds to Alison and Peter Smithson's practice of As Found as a new seeing of the ordinary, an openness as to how prosaic 'things' could re-energize inventive activity.
This studio assignment is an invitation to explore how design studies can reveal the latent potential of an existing form while questioning the relationship between form, function/program, past and future, void and mass, open and closed.

Students will select an urban element (building/space/ urban infrastructure) from the list provided in class. The first step is to 3D model the existing form. The second step will be to create a minimum of 12 iterations of the form based on the criteria in the list below. Each iteration will be done in 3D, either physically or digitally (print at least 2 axons views for each iteration on 11" x 17" and provide at least two physical models).

Volume (4)
- Change the form while keeping the area/volume the same (x2)
- Double the volume,
- Triple the volume

Open Space (4)
- Create open/semi-open space equivalent to a third of the existing (x2)
- Degrees of porosity (x2)

Environment (2)
- Change the acoustic properties
- Change the temperature

Structure (2)
- Change the relationship between structure and envelope (x2)

Due date: Thursday 9/27

#3: **Urban Research**
We will analyze the sites and the neighborhoods in which the forms selected in the previous exercise are located. Through research, mapping, drawing, and modeling, this urban analysis seeks to reveal and expose urban systems, current and future urban trends and patterns of use, and other data and observations that can inform the design project. Mappings done as part of the analysis will not just be passive readings but active constructions of narratives and relationships of urban space. The purpose of this urban research is to identify and understand what the city needs and how to best take advantage of existing urban forms in their transformative potential.

Part I: Mapping
Part II: Site Observations

Due date: Tuesday 10/13

#4 **Design Project**: **Urban Modding**
In this final project, we will use the spatial-formal explorations of the buildings/urban elements from the second assignment and combine them with our research and findings from the third assignment to guide a design project. As the urban analysis will reveal more about the immediate and extended context of our sites and objects, this urban modding design project can expand beyond the single building/urban element to become a larger 'modified' assembly, system, network, etc.

Final Review: Thursday 12/08

Workshops & Trips

#1: **Shop / 3D Printing Experimentation**
#2: **Introduction to GIS & Mapping (using ArcGIS Pro or QGIS)**
Learn how to read and interpret maps and data and use basic cartography principles to create maps that can be used in reports and presentations. After learning basics concepts, attendees will work through an exercise using ArcGIS Pro or QGIS
#3: **New York Urban Retrofits Trip**

Readings

Batch 1
'As found' in objects, architecture and the city:
#1: artincontext. "Found Object Art - A Look at the Found Object Art Movement." *Artincontext.Org* (blog), June 1, 2021. https://artincontext.org/found-object-art/.
#2: Lichtenstein, Claude., and Thomas Schregenberger. As Found: the Discovery of the Ordinary, English ed. Baden, Switzerland: Lars Müller, 2001, p.8-19.
#3: Elderfield, John. Essays on Assemblage, New York: Museum of Modern Art, 1992, p.118-159.
#4 Segal, Rafi. "The Irrational Life of Architecture." *Defining the Architectural Space: Rationalistic or Intuitive Way to Architecture*, Cracow University of Technology, 2018, p. 105-109

Batch 2
Transformation:
#1: Rowe, Colin, and Robert Slutzky. "Transparency: Literal and Phenomenal." *Perspecta* 8 (1963): 45–54.
#2: Mako, Vladimir. "The Aesthetics of Transformation." *ATHENS JOURNAL OF ARCHITECTURE* 3, no. 3 (June 30, 2017): 263–76. https://doi.org/10.30958/aja.3-3-3.
#3 Wainwright, Oliver. "'Demolition Is an Act of Violence': The Architects Reworking Buildings Instead of Tearing Them Down." *The Guardian*, August 16, 2022, sec. Art and design. https://www.theguardian.com/artanddesign/2022/aug/16/demolition-is-an-act-of-violence-the-architects-reworking-buildings-instead-of-tearing-them-down.
#4: Sorkin, Michael. ."Twenty Minutes in Manhattan", Reaktion Books, 2009, p. 139-154

Notes

Modification is thought to have been borrowed from 14th century French to mean "determination by a mode or quality", from the Latin nominative *modificātiō* ("a measuring") and the stem of *modificāre* ("to limit, control, modify"). The etymology seems to suggest that modification involves a controlled or partial alteration while understanding the original limits and qualities of the initial condition of the subject. This does not mean that to modify is a conservative act.

Adaptive reuse is often utilized along with words such as conservation which is why it may lend itself to a stronger correlation with minimal formal intervention to improve or change the existing structure's function. In modding, we want to be free of these associations although they can be part of the design.

Course Calendar

WEEK	DATE	DAY	FORMAT
0	09/08	R	Introduce **A1: Objet (Re)Found** + Assign Readings (Batch 1)
1	09/13	T	Review **A1** + Discussion on Readings (Batch 1) + Introduce **A2: Variations on Form** + Assign Readings (Batch 2)
	09/15	R	Discussion on Readings (Batch 2), Discussion on Iteration Themes and Operations + Review sketches for **A2**
2	09/20	T	3D Printing / Software Tutorial, Desk Crits - [Rafi Out of Town]
	09/22	R	GIS Workshop - [Rafi Out of Town]
3	09/27	T	Review **A2 (**room to be announced) **+** Introduce **A3: Urban Research - Part I**
	09/29	R	+ Desk crits in groups: A3
4	10/04	T	Review **A3: Urban Research - Part I** **+** Introduce **A3: Urban Research - Part II**
	10/06	R	Independent Site Visits (for **Urban Research - Part II**)
5	10/11	T	Student holiday – no classes
	10/13	R	Review **all Urban Research** (room to be announced) + Introduce **A4: Design Project - Urban Modding**
6	10/18	T	Desk Crits
	10/20	**R**	**New York Urban Retrofits Trip**
7	10/25	T	**Pin-Up**
	10/27	R	Peer Desk Crits
8	11/01	T	Desk Crits
	11/03	R	Desk Crits
9	11/08	T	Desk Crits
	11/10	R	**MID REVIEW**
10	11/15	T	Desk Crits
	11/17	R	Desk Crits
11	11/22	T	Desk Crits
	11/24	R	[Thanksgiving: no class]
12	11/29	T	Desk Crits
	12/01	R	**Pin-Up**
13	12/06	T	Desk Crits
	12/08	R	**FINAL REVIEW**

Course Expectations and Policies

Work in the studio will build sequentially. Therefore, your commitment to incremental development on a weekly basis is of great importance. The demanding nature and pace of this class necessitates regular attendance and requires that deadlines are consistently met. Attendance and active participation for the duration of all sessions is mandatory and will highly contribute to your development as a designer and critical thinker.

Greater than two absences from sessions without medical excuse supported by a doctor's note or verifiable personal emergency could result in a failing grade or a NE for the course; those missing more than 3 classes during the semester will receive a fail or NE. Persistent lateness will also contribute to a lowered final grade. If you may miss a session or deadline, please reach out to us and we will find ways to accommodate it.

Collaboration is an essential part of the design profession. This studio thus encourages a highly collaborative environment of sharing thoughts, tools and references.

Inclusivity Statement

MIT values an inclusive environment. I hope to foster a sense of community in this classroom and consider this classroom to be a place where you will be treated with respect. I welcome individuals of all backgrounds, beliefs, ethnicities, national origins, gender identities, sexual orientations, religious and political affiliations – and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class. If this standard is not being upheld, please feel free to speak with me.

Academic Integrity Statement

In this course, I will hold you to the high standard of academic integrity expected of all students at the Institute. I do this for two reasons. First, it is essential to the learning process that you are the one doing the work. I have structured the assignments in this course to enable you to gain a mastery of the course material. Failing to do the work yourself will result in a lesser understanding of the content, and therefore a less meaningful education for you. Second, it is important that there be a level playing field for all students in this course and at the Institute so that the rigor and integrity of the Institute's educational program is maintained.

Violating the Academic Integrity policy in any way (e.g., plagiarism, unauthorized collaboration, cheating, etc.) will result in official Institute sanction. Possible sanctions include receiving a failing grade on the assignment or exam, being assigned a failing grade in the course, having a formal notation of disciplinary action placed on your MIT record, suspension from the Institute, and expulsion from the Institute for very serious cases.

Please review the Academic Integrity policy and related resources (e.g., working under pressure; how to paraphrase, summarize, and quote; etc.) and contact me if you have any questions about appropriate citation methods, the degree of collaboration that is permitted, or anything else related to the Academic Integrity of this course.

Grading Definition

A. Exceptionally good performance demonstrating a superior understanding of the subject matter, a foundation of extensive knowledge, and a skillful use of concepts and/or materials.
B. Good performance demonstrating capacity to use the appropriate concepts, a good understanding of the subject matter, and an ability to handle the problems and materials encountered in the subject.
C. Adequate performance demonstrating an adequate understanding of the subject 5 matter, an ability to handle relatively simple problems, and adequate preparation for moving on to more advanced work in the field.
D. Minimally acceptable performance demonstrating at least partial familiarity with the subject matter and some capacity to deal with relatively simple problems, but also demonstrating deficiencies serious enough to make it inadvisable to proceed further in the field without additional work.
F. Failed. This grade also signifies that the student must repeat the subject to receive credit.
NE. No record will appear on the external transcript. ACADEMIC INTEGRITY Work should be correctly and completely referenced. MIT's expectations and policies regarding academic integrity should be read carefully and adhered to diligently. Plagiarism is a major academic offense. Read: http://integrity.mit.edu

Mental Health

As a student, you may experience a range of challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may impact your ability to attend class, concentrate, complete work, take an exam, or participate in daily activities. Graduate Students: Please reach out to the deans for personal support in the Office of Graduate Education. For urgent or after-hours concerns, please contact MIT Police. You can learn more about confidential services available on campus at resources.mit.edu.

Land Acknowledgement Statement

We acknowledge Indigenous Peoples as the traditional stewards of the land, and the enduring relationship that exists between them and their traditional territories. The lands which MIT occupies are the traditional unceded territories of the Wampanoag Nation and the Massachusett Peoples. We acknowledge the painful history of genocide and forced occupation of these territories, as well as the ongoing processes of colonialism and dispossession in which we and our institution are implicated. Beyond the stolen territory which we physically occupy, MIT has long profited from the sale of federal lands granted by the Morrill Act, territories stolen from 82 Tribes including the Greater and Little Osage, Chippewa, and Omaha Peoples. As we honor and respect the many diverse Indigenous people connected to this land from time immemorial, we seek to Indigenize our institution and the field of planning, offer Space, and leave Indigenous peoples in more empowered positions.