4.154	Architecture Design Option Studio	Spring 2020

Power Structures

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| 0-10-11 G	(T*)RF 1-6PM (7-434)	Prerequisites: 4.153

Subject Description

Power structures

>*Charity is injurious unless it helps the recipient to become independent of it.*
>*John D Rockefeller*

Our civic institutions, such as foundations, libraries, and museums, were brought into place to 'educate the people' by giving them access to the knowledge embedded in their collections. Most of these organizations grew out of the transformation in the late 19th-century of private collections amassed by powerful royals, merchants and industrialists, into public institutions. At times this shift happened through revolution, as was the case with the Louvre. Still, mostly these transformations happened over time through a realization of responsibility and maybe a sense of guilt felt by ruling classes. With the provision of access to their collections came elevated status: being a member of the philanthropic and civic-minded elite. Many of the cultured elites found their wealth through controlling the world's energy infrastructures, such as the Rockefellers, with Standard Oil or the Koch family and its Koch industries. Control of most industries' essential input, power, directly translates into power to its owners.

Today the mission of these institutions for 'education' is in jeopardy, as the internet is the defacto portal to knowledge, including knowledge about the industries that brought the 'civic-minded elite' into power and wealth in the first place. Often, these sources are environmentally damaging or ethically questionable (as the Sackler Family, which made money of the opioid crisis through their company Purdue Pharma) and, as such, are diametrically opposed to the public mission they support. This phenomenon has put our public institutions in crisis. Both their purpose and the money that supports them are suspect.
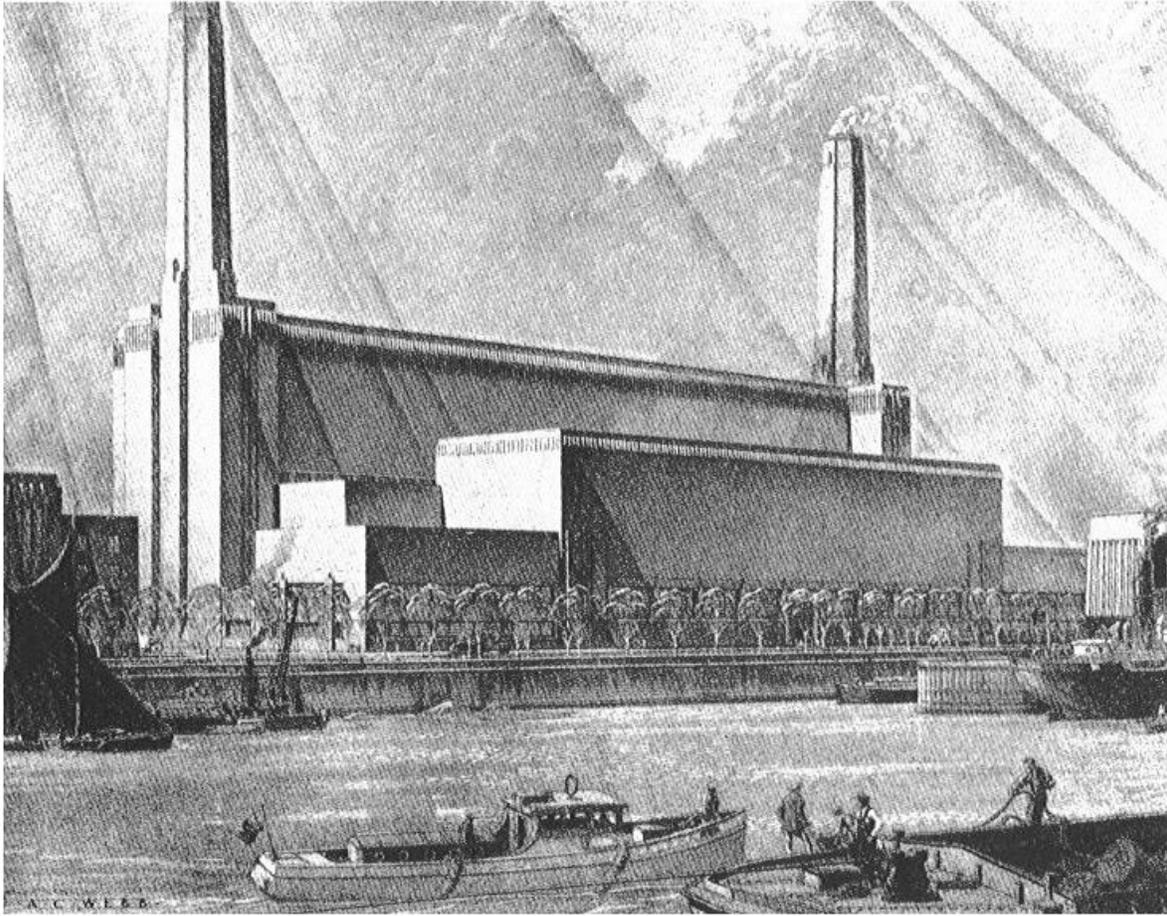
Bankside power station (1891)

Design Approach

This studio takes this crisis as its point of departure. It will ask the students to design a new type of public institute according to a newly defined mission. We seek a fundamental paradigm shift both in what these institutes strive to do and how they operate.

Power stations

A further definition of the studio comes through a typological frame. It is remarkable to realize that many of today's leading museums are located in adapted infrastructures of power, such as the Tate Modern or Shanghai's Power Station of Art. Furthermore, it is beyond evident that our sources of power need to be radically altered to mitigate climate change, and current relations of the public to these infrastructural elements help to conceal the problems associated with them. With the capability to distribute energy over vast geographical scales, these power structures are frequently far removed from those they service, allowing for them to remain out of sight and mind. While these spatial relations emerged out of the inherent hazards and spatial scale of these structures, in the current climatic condition, we see there is no "away" to which we

can relegate the disruptive elements we wish to distance ourselves from. Through developing an understanding of energy infrastructures, their systems and nodes, and the ownership structures that govern them, the ambition is that the studio might also be able to imagine a new hybrid, in which we short cycle the generation of power, and the associated public good it might offer.

Drax Power Station (1973)

The Museum(?)
Throughout the semester, and especially in our engagement with MAAT and EDP students will be tasked with visioning not only a museum in Lisbon, but one that tackles problems faced by museums globally today and in the future. These visioning calisthenics are not on behalf of MAAT or a faithfulness to their program's ambition, instead students will use this research and mode of articulation to stake a claim for their project. How are we to anticipate how to house the changing energy landscape that enables museums and the programs that they house? What is the museum's audience today, and how is it addressed? How can architecture be open to both the museums changing circumstances and to the public? What role do artifacts play in contemporary communication of knowledge? How do museums structure access to knowledge and artifacts? What role do these institutions play in relating the public to the broader networks of power that support them?

We specifically question the nomenclature of "museum." For the sake of this studio, the "museum" we encounter today shall serve primarily as a point of departure. Without a pre-ordained destination, we seek to explore what potential institutions could be posited based on the convergence of the matters we've brought together for investigation. While the possibility remains that we may circle back and find ourselves projecting something clearly in the lineage of the museum, we are choosing to start without attachment to the current instantiations of museums that we are familiar with.

Open Structure

In accelerated times, design justified through program is born dead. Programs are not stable, and typically, despite most well-meaning intentions, misalign with people's behaviors. Monofunctional organizations foreclose possibility. How, then, might we order architectural space in times of flux?

To this end Umberto Eco's Opera Aperta (1962) describes a beautifully useful approach captured in his conjecture of openness, which characterizes an author's cultural production as a "decision to leave arrangements of some constituents of a work to the public or to chance." In architecture, we can imagine this idea as the construction of a spatially open framework, or loose order, and situate it in opposition to programmatic and typological plan-making approaches. Such is an attitude that considers semi-autonomous spatial organizations that accommodate, or even merely tolerate, evolving configurations of activities and things. These open orders can have an underlying structural or material logic but are just as well allusive, compositional, figurative, or arbitrary. Here the architect exceeds the role of translator, a converter of needs and wants into plans, or re-arranger, fitting pre-existing spatial archetypes within a site, and instead becomes an author. It is where all alibis vanish and we are left to our own devices.

An open structure is anticipatory. It opens up a space of future possibilities. It is intentionally to be determined. It triggers spontaneous participation and focuses on the choreography of situations. There is no start or end, no entry or exit. It does not dictate how to move. Loose fit architecture is a concept explored by architect Cedric Price in the 1960s as a way to 'enable rather than determine human activity' in a building, and in many ways sets the groundwork for today's explorations in architectural adaptability and provisional responsive technologies. Similarly to open structure, it embraces open programming, a degree of functional ambiguity, and even planned obsolescence. Loose-fit offers a *decoupling* between spaces and access, volumes and functions, scale and perception, or exterior envelope and interiority. If the traditional role of the building profession is to deliver an unrelenting knowable outcome for each project (which is indeed a necessary parameter for any building to be constructed), loose-fit architecture argues – demands even – that an embrace of open-ended *uncertainty* is the real task for the architect in an effort to address the active life of a building.

The relationship between space and structure is self-evident. Structure, the bones of a building, is the most permanent of all elements that make up a building. Often, however, how to support

the building form is an afterthought, after program and form are determined. This studio will look at structure as a principal ordering device. By analyzing the work of a number of visionary structural engineers we will develop an understanding of structure as a driver for design. This understanding will then be tested to make various spatial orders that can be evaluated on their ability to contain program and allow flow.

Furthermore, we will be exploring the application of these principles of open structure and open-ended uncertainty towards the development of an institutional mission. Projecting the future role of the museum(?) that we are designing, the outcomes of our efforts will have to contend with the unpredictable vicissitudes of changing times. It is our task to project a potential system that can contend with this uncertainty.

Site
The studio will use as a site the former Tejo Power Station, along the Tagus river in Lisbon, Portugal. Currently owned by EDP (Energias de Portugal) it houses the MAAT museum. The studio will spend a week in Portugal, working with MAAT museum director Beatrice Leanza, and the team for sustainable innovation at EDP. The final projects of the studio will be part of an exhibition the MAAT museum will put up in conjunction with the Architectural Biennale in Venice.

Subject Objectives

The objective of the course is to develop an ability to research, conceptualize, develop, and represent an architectural project. This will be carried out with the goals of understanding and implementing ordering systems that are configured through structure, proposing how this establishes specific yet flexible forms of organization for the institution being projected. Further research will be conducted around power structures, the aesthetics of energy, paradigmatic museums, and the institutional crises that link these concerns. Students will apply their research in these realms to the proposal and development of a museum(?) in an urban site. Students will learn about structure through an emphasis on model making, and will develop their design work with an emphasis on iteration.

Evaluation Criteria
- **5% Deliverables**
- **5% Attendance/Participation**
    - Attendance for the full duration of each class is mandatory. You are allowed three excused absences for the semester. An excused absence is defined as one that was discussed with and approved by the professor at least 24 hours prior to the date of absence, or a family or medical emergency that is confirmed by your physician or a dean in Student Support Services.
- **15% Concept** how clearly are you articulating your design intentions?

- **25% Process**: how well are you using your concept to develop a spatial and architectural response to the given program or site?
- **25% Final Review:**
  - Did you synthesize your concept into a resolved architecture appropriate for the site and larger spatio-temporal context?
  - Is your architectural response a logical conclusion of your process?
  - Does your design address the needs called out in the given program?
- **25% Representation:**
  - Quality of representation?
  - Evidence of skill/craft?
  - Ability of representation to convey information?
  - Clarity of representation?

Absences beyond the three allotted will result in a decrease in your final grade. If you miss six or more classes, you will be asked to drop the subject or receive a failing grade. Evaluation is contingent on students active participation, contribution to the discourse of the studio, demonstrable design development, as well as conceptual and representational clarity.

Grading

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 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.

Schedule

Week 1	Tuesday	2/4	**Studio Preview**	
	Thursday	2/6	Studio Introduction and Assignment 1; visit MIT CUP	*Chris*
Week 2	Tuesday	2/11	Reading Presentations, Analysis Check-in	*Florian / Chris*
	Thursday	2/13	**Pin-Up 1 / Intro Assignment 2**	*Florian / Chris*
Week 3	Tuesday	2/18	*NO CLASS (Monday Schedule)*	
	Thursday	2/20	desk crit (skype)	*Chris*
Week 4	Tuesday	2/25	**Pin-Up 2 / Intro Assignment 3**	*Florian / Chris*
	Thursday	2/27	desk crit	*Chris*
Week 5	Tuesday	3/3	**Pin-Up 3**	*Florian / Chris*
	Thursday	3/5	desk crit	*Chris*
Week 6	Tuesday	3/10	desk crit	*Florian/Chris*
	Thursday	3/12	**Midterm (juried)**	*Florian/Chris*
Week 7	Tuesday	3/17	desk crit / trip prep	Chris
	Thursday	3/19	desk crit / trip prep	Chris
	Friday	3/20	Travel to Portugal	
Week 8	Monday	3/23	Florian Arrive Lisbon	*Florian/Chris*
	Wednesday	3/25	**MAAT presentation / Midterm**	*Florian/Chris*
	Sunday	3/29	Return Boston	
Week 9	Tuesday	3/31	**desk crit / intro Assignment 4**	*Florian/Chris*
	Thursday	4/2	desk crit	*Chris*
Week 10	Tuesday	4/7	**Pin-Up**	*Florian/Chris*
	Thursday	4/9	desk crit	*Chris*
Week 11	Tuesday	4/14	desk crit	*Florian/Chris*
	Thursday	4/16	desk crit	*Chris*
Week 12	Tuesday	4/21	**Pin-Up**	*Florian/Chris*
	Thursday	4/23	desk crit	*Chris*
Week 13	Tuesday	4/28	desk crit	*Florian/Chris*
	Thursday	4/30	desk crit	*Chris*
Week 14	Tuesday	5/5	**Pre Final Pinup**	*Florian/Chris*
	Thursday	5/7	desk crit	*Chris*
		TBA	**Final Review**	*Florian/Chris*

Reading Sources

Required texts to be introduced as needed over the course of the semester.

Recommended Texts

Energy and Ecology

- Dean, Jodi. "The Anamorphic Politics of Climate Change" *e-flux* 69. (2016): 1-10.
- Kara, Hanif, Leire Asensio Villoria, and Andreas Georgoulias. *Architecture and Waste: A (Re)Planned Obsolescence*. Actar, 2017.
- Latour, Bruno. "Why Has Critique Run Out of Steam? From Matters of Fact to Matters of Concern." *Critical Inquiry* 30, no. 2 (2004): 225-248.
- Latour, Bruno. *Down to Earth: Politics in the New Climatic Regime*. John Wiley & Sons, 2017.
- Morton, Timothy. *Hyperobjects: Philosophy and Ecology After the End of the World*. U of Minnesota Press, 2013.
- Temple Hoyne Buell Center for the Study of American Architecture. "Power."
  https://power.buellcenter.columbia.edu/
- Wilkinson, Tom. "Typology: Dam." *Architectural Review*. June 22, 2017.
  https://www.architectural-review.com/essays/typology/typology-dams/10020771.article
- Wilkinson, Tom. "Typology: Power Station." *Architectural Review*. February 27, 2019.
  https://www.architectural-review.com/essays/typology-power-station/10040432.article

Power and Museums

- Azoulay, Ariella Aïsha. "Imagine Going on Strike: Museum Workers and Historians."
  e-flux 104. (2019).
- Bennett, Tony. *Museums, Power, Knowledge: Selected Essays*. Routledge, 2017.
- Cotter, Holland. "Making Museums Moral Again." *New York Times.* March 17, 2016.
  https://www.nytimes.com/2016/03/17/arts/design/making-museums-moral-again.html
- Deleuze, Gilles. "Postscript on the Societies of Control." *October* 59 (1992): 3-7.
- Giridharadas, Anand. *Winners Take All: The Elite Charade of Changing the World*.
  Vintage, 2019.
- Fabrikant, Geraldine. "European Museums Adapt to the American Way of Giving." *New York Times.* March 15, 2016.
  https://www.nytimes.com/2016/03/17/arts/design/european-museums-are-shifting-to-american-way-of-giving.html
- Massing, Michael. "How the Superrich Took Over the Museum World." *New York Times.* December 14, 2019.
  https://www.nytimes.com/2019/12/14/opinion/sunday/modern-art-museum.html?action=click&module=Well&pgtype=Homepage&section=Contributors
- Sholette, Gregory "Let's do it again comrades, let's occupy the museum!"*NeMe.* November 11, 2013. http://www.neme.org/texts/lets-occupy-the-museum

Structuralism and Loose Fit

- Eco, Umberto. *The role of the reader : explorations in the semiotics of texts*. n.p.: Bloomington : Indiana University Press, c1979., 1979.
- Habraken, John, J.Th Boekholt, A.P Thijssen, P.J.M Dinjens, Sue Gibbons, and Wim Wiewel. *Variations the Systematic Design of Supports*. Cambridge: MIT, 1981.
- Idenburg, Florian; Liu, Jing; Papageorgiou, Ilias, and compiler, editor. SO-IL (Firm). *Solid objectives : order, edge, aura*. n.p.: Zürich, Switzerland : Lars Müller Publishers, [2017], 2017.
- Lifschutz, Alex. "Long Life, Loose Fit, Low Energy." *Architectural Design*87, no. 5 (2017): 6-17. doi:10.1002/ad.2210.
- Mallac, Guy De. "The Poetics of the Open Form: (Umberto Eco's Notion of "Opera Aperta")." *Books Abroad* 45, no. 1 (Winter 1971): 31.
- Valena, Tomáš. *Structuralism Reloaded: Rule-based Design in Architecture and Urbanism*. Stuttgart: Menges, 2011.
- Van Den Heuvel, Dirk. "Total Space." Volume. February 15, 2017. Accessed September 04, 2018. http://volumeproject.org/total-space/.

Structure and Order

- "Arches without Hierarchy." Interwoven: The Fabric of Things. Accessed September 04, 2018. http://kvadratinterwoven.com/fan-club-toyo-ito.
- Balmond, Cecil, Christian Brensing, and Jannuzzi Smith. *Informal*. Munich: Prestel, 2001.
- Conzett, Jürg, and Mohsen Mostafavi. *Structure as Space: Engineering and Architecture in the Works of Jürg Conzett*. London: Architectural Association, 2002.
- Hengel, Heinrich. *Structure Systems*. New York: Van Nostrand Reinhold Company, 1981.
- "Jun Sato Laboratory, University of Tokyo." Jun Sato Laboratory Jun Sato Structural Engineers. Accessed September 04, 2018. http://junsato.k.u-tokyo.ac.jp/index.htm.
- Vrachliotis, Georg, Joachim Kleinmanns, Martin Kunz, Philip Kurz, Simon Cowper, Ariane Kossack, and Frei Otto. *Frei Otto: Thinking by Modeling*. Leipzig: Spector Books, 2017.

Studio Culture

- Students should coordinate and set up a space to keep books relevant to the studio themes that the class may benefit from.
- For pin up dates, please be ready and pinned up before 1:00 PM.
- The shared Google spreadsheet is there to be used by everyone in the class. Use this to contribute information to the studio that you think is interesting, and use this to sign yourself up for your selected precedents.
- Please coordinate a desk crit sign up before each class on a piece of paper for our reference.
- The studio is to set up an area and normalized method of documenting the sketch models throughout the semester. These are to be included in the studio report.

Final Studio Deliverables

Final deliverables will be discussed on a student by student basis; the following is a general guideline.
Site plan (1/32"=1'0")
Diagrams/Rationale/Structure
Plans (1/8"=1'0")
Sections (1/8"=1'0")
Aerial Perspective
Street Level Perspective
2 Interior Perspectives
Model (1/16"=1'0")
Structural model iterations

Grades will not be posted for students to view on their grade report until their work has been archived. The projects need to be properly prepared and formatted and delivered to the Archiving TA. Studio TA's will collect project archives from each student immediately following the review. Detailed requirements and instructions for formatting will be posted to CRON, the Department website, and sent to students at the beginning of the semester.

Academic Integrity + Honesty

MIT's expectations and policies regarding academic integrity should be read carefully and adhered to diligently: http://integrity.mit.edu

Student Performance Criteria: NAAB

Realm A: Critical Thinking and Representation
A1. Communication Skills: Ability to read, write, speak and listen effectively

A2. Design Thinking Skills: Ability to raise clear and precise questions, use abstract ideas to interpret information, consider diverse points of view, reach well-reasoned conclusions, and test alternative outcomes against relevant criteria and standards

A3. Visual Communication Skills: Ability to use appropriate representational media, such as traditional graphic and digital technology skills, to convey essential formal elements at each stage of the programming and design process.

A6. Fundamental Design Skills: Ability to effectively use basic architectural and environmental principles in design.

A7. Use of Precedents: Ability to examine and comprehend the fundamental principles present in relevant precedents and to make choices regarding the incorporation of such principles into architecture and urban design projects.

A8. Ordering Systems Skills: Understanding of the fundamentals of both natural and formal ordering systems and the capacity of each to inform two- and three-dimensional design.

Realm B: Integrated Building Practices, Technical Skills, and Knowledge:
B9. Structural Systems: Understanding of the basic principles of structural behavior in withstanding gravity and lateral forces and the evolution, range, and appropriate application of contemporary structural systems.

Realm C: Leadership and Practice
C3. Client Role in Architecture: Understanding of the responsibility of the architect to elicit, understand, and reconcile the needs of the client, owner, user groups, and the public and community domains.