Summary
A history of abstraction from the birth of geometry to algorithmic governance.

Content
Abstraction passes for ‘absence’ – as distinct from the concrete ‘presence’ of objects, of things. Nothing could be more false. For Abstraction’s modus operandi is devastation, destruction (even if such destruction may sometimes herald creation). Signs have something lethal about them – not by virtue of ‘latent’ or so-called unconscious forces, but on the contrary, by virtue of the forced introduction of abstraction into nature.

Henri Lefebvre, *The Production of Space*, 1974

In his essay “Abstraction and Culture” the American painter Peter Halley lamented the persistent belief that abstraction is a stylistic device or invention, born out of the artist’s formal concerns. For Halley, abstraction unfortunately continues to be seen as a free play of form that is completely self-referential vis-à-vis social and political issues. “In thinking about this most rarefied of visual languages,” Halley writes, “it seems we intellectually retreat into the cloister of high culture; we deny that abstraction is a reflection of larger historical and cultural forces. We deny that the phenomenon of abstraction only gains meaning to the extent to which it does reflect larger forces and is embedded with their history”. This understanding of abstraction as a retreat from the world is dominant within the discipline of architecture, where it is associated with modernist formal simplicity and the reduction of architecture to platonic object. The term “abstraction” evokes an aesthetic of formal restraint, reduction to essentials. The course aims to overcome the stylistic interpretation of abstraction and introduce students to a more complex and nuanced reading of this fundamental condition in the history of human civilization.

“To abstract” comes from the Latin verb *trahere*, which means to pull something essential out from the totality of which it is a part. Abstraction is a process through which man seeks to reach generic frameworks rather than specific solutions. With the rise of early states and complex societies, abstraction became the condition sine qua non of government. Large quantities of people, goods, and agricultural produce could effectively be governed only by reducing them to abstract signs to be computed. Yet this process of abstracting reality into signs impacted reality itself, as physical space itself was ordered and formalized according to the abstractions of calculus and economic rationality. An important example of how abstraction became concrete within urban form is the rise of geometry as a method to measure the land. Herodotus narrates the origin of geometry in ancient Egypt, with the professional practice of the “stretcher of the rope.” This practice, in which rope was used to make the measurements necessary for building temples and granaries, found a significant application in parceling out the soil when it reemerged after the yearly Nile floods. It is within this context that the fundamental problems of geometry were defined, such as the tripartition of angles and the magnification and diminution of volumes, including the doubling of cubes. The use of meticulous calendars or even astronomy are stripped of their religious aura when we understand how they were instrumental in empowering the measuring prerogatives of the ruling class, made of state functionaries and priests. With the rise of private property and the possibility of exchanging products for money, the abstractness of geometry and mathematics became a ubiquitous social force. However, while in antiquity this social force was limited to the exchange of commodities as objects, with the rise of modernity the abstraction of exchange and the equivalence of value begin to include human labor, since the latter is no longer slave labor devoid of wage, but becomes sold and purchased as a commodity among “free” citizens. Here, labor is no longer based on direct material interchange; it depends on capital. It is at this point that labor becomes what Marx defined as *abstract labor*. It is precisely the rise of abstract labor as a fundamental datum of modern political economy that gave rise of the abstract space of the factory as a generic built framework and the industrialization of building techniques that
proliferated into any aspect of the built environment, from housing to infrastructure, to landscape design. Within an urban space increasingly governed by financial capital and its algorithms, abstraction is everywhere materialized into the material and immaterial spaces of our daily existence. Piet Mondrian’s utopian vision of a world ruled by the aesthetics of abstraction is now finally realized. The course will trace the history of abstraction in architecture from the advent of sedentary societies to today by focusing on pivotal moments: the rise of calculus, geometry and architectural drawing, the building of large-scale structures such as Egyptian Pyramids and European Cathedrals, the planning of monasteries and the engineering of infrastructure, the building of houses, glasshouses, factories and data centers.

Course Sessions
1st Session: From ‘Points’ to ‘Surfaces’
Domestication and Abstraction

2nd Session: Calculating, Measuring, Governing space
Early States in the Near East and the Rise of Mathematics and Geometry

3rd Session: The Pyramid and the Temple
Geometry, Design and Labor Organization in Ancient Building Sites

4th Session: Patriarchy and Abstraction
Geometry, Survey and Land Property in Ancient Rome

5th Session: Abstraction and Sameness in Medieval Times

6th Session: Abstraction and Disegno
From the Architecture of the Orders to Descriptive Geometry

7th Session: Architecture Without Quality
From Sebastiano Serlio’s Temperate Classicism to the English Terraced House

8th Session: ‘Free’ Plan
Commodity Exchange, Abstract Labor and the Rise of Industrial Architecture

9th Session: Territory and Abstraction
Tracing the Urban Grid from Colonialism to Urbanization

10th Session: Architectural form and Economy
The legacy of Jean-Louis-Nicolas Durand’s Precis

11th Session: Metropolis and Abstraction
From Ludwig Hilberseimer’s Metropolis Architecture to Archizoom’s No Stop City, to Rem Koolhaas’s Generic City

12th Session: The Return of the Factory
From Cedric Price to Data Centers

General Readings

Learning Outcomes

A history of abstraction in architecture
By the end of the course, the student must be able to:

- Interpret in a critical manner the concepts developed during the course
- Argue the relations between socio-political issues, urban form and architecture
- Develop a reflection on the relationship between historical conditions and architecture
- Close reading of projects in the context of their historical period

Expected student activities

Personal work during the semester, reading of texts, personal study of a theme.

Resources

Bibliography

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Pier Vittorio Aureli “Labor and Architecture: Revisiting Cedric Price’s Potteries Thinkbelt”. In Log 23 (Fall 2011): 97-118.


