Elia Zenghelis, Masterplan for the Sacred Valley of St Gerasimos, Greece, 1984.
Teaching unit on mapping environmental relations in architecture.

Sessions
1. Cartography and Modern Abstraction
2. Drawing: Visual Layers
3. Planning: Spatial Figures
4. Mapping: Social Formations
5. The Dialectical Method
6. GIS Workshop
7. Midterm Reviews
8. Environmental Thresholds
9. Territorial Conduits
10. Domestic Enclosures
11. Wilderness Frontiers
12. Final Reviews

Content
Maps are visual tools for thinking about the world at many scales. They shape scientific hypotheses, organize political and military power, delineate private property, and reflect mental conceptions about landscapes and nonhuman nature. In the Western tradition, medieval maps were less territorial descriptions than conceptual cosmologies, occasionally depicting biblical stories, mythology, history, flora, fauna, and exotic peoples and species. With the advent of modernity, an important shift took place. Cartesian perspectives began to trace the world in relation to a fixed human subject, while mathematical God’s eye views surveyed the land from an abstract elevated “nowhere.” Accurate maps—stripped of all elements of fantasy, religious belief, and authorship—became essential tools for modern scholars and states who sought rational progress through scientific prediction, social engineering, and planning. Cartography became concerned with analyzing and measuring the res extensa, and the land survey emerged as a crucial instrument of capitalist development.

As Neil Smith explained, capitalism required the invention of “space as emptiness, as a universal receptacle in which objects exist and events occur, as a frame of reference, a coordinate system […] within which all reality exists.” But the flip side of treating the environment as an abstract container is treating architecture as an abstract object, disembedded, consumed, and aestheticized for its own sake. From this radical separation, maps become quantitative systems for managing phenomena, while buildings become circulating commodities for the valorization of land rent. In today’s context of ecological crisis, this separation is visibly contradictory. The environment is not a backdrop or a container of natural resources, just as architecture is not a collection of objects floating in a vacuum. Buildings and landscapes constitute each other dialectically, regardless of whether their relationship is collaborative.
or antagonistic, and cartography can render this dynamic concrete.

This teaching unit proposes a cartographic method for embedding architecture in its environment. By mapping buildings in their space and time, we reveal the invisible backgrounds that make up their material conditions of possibility. The aesthetic choices conveyed in the so-called “object” thus appear no longer disinterested, but complex, as a rich totality of environmental relations. Throughout the course students should keep in mind the following questions: how should architecture reflect society’s relation to the environment; how should it constitute a critique of said relation; and how should it predict a collective ideal?

1. The term “cartography” was coined at the beginning of the nineteenth century, based on the Latin charta, meaning “paper” or “map,” and -graphia, meaning “description,” which derives from graphein, meaning “to write” or “to draw.” It is an umbrella concept derived from older terms such as geography, chorography, and topography, respectively meaning the description of geo or “earth,” khōra or “region,” and topos or “place.”


4. “Perhaps nothing is more irrelevant to architecture than the notion that it is the realization of a design qua idea. Far more dominant factors are the dialogue with and persuasion of the client and the collaboration with other staff members. The design as initially conceived is destined to be transformed during the course of its execution. […] No architect can predict the results of construction. No architecture exists out of context. Architecture is an event par excellence.” Kojin Karatani, Architecture as Metaphor: Language, Number, Money (Cambridge, MA: MIT Press, 1995), 126.

Method
The course takes a skeptical stance toward traditional claims of “cartographic truth” by addressing the map’s internal tension between sensuous perspective and rational plan. The method blends tools from art (hand drawing), planning (remote sensing), and history (dialectical criticism). Hand drawing guides the initial process of abstraction and layering; planning offers a set of spatial figures as metaphors for the urban palimpsest; and a dialectical approach to historical development reveals hidden relationships between form and context. In this way, cartography reconciles the immanent (object) and the contingent (environment), allowing us to measure how certain buildings function as devices of environmental mediation.

Theoretical content is provided through weekly lectures, and practical assignments are supported by weekly desk critiques and group reviews. Classes include close reading of historical maps, and the analysis of texts and films on cartography, landscape, and environmental politics. Special emphasis is placed on hand drawing, AI, CAD, and GIS, but no previous experience is required.

Assessment
Continuous assessment:
• Intermediate exercises and class participation: 25%.
• Midterm review: 25%
• Final review: 50%.
All classes will be held in English, reviews and table meetings may be held in French.

Learning Outcomes
Preparation for design and research studios that reflect on cross-scale relationships and the environmental backgrounds of architectural form. Provides a methodological basis for the Enoncé théorique de master and the Project Urbain orientation. Content is closely related to the theory course Modernity, Architecture and the Environment, which teaches a more historical and literature-based version of the same question and method.

General Bibliography
1. Cartography and Modern Abstraction

Lecture: The rise of modern territorial abstraction and the transition from cartographic “description” (graphie) to the more quantitative nature of the land survey. Premodern maps and the sensuous experience of local space-time vs. modern synoptic vision: the survey’s goal to annihilate space and time. Land enclosure, “improvement,” and ecological imperialism. Capital trying to free itself of its material barriers. Naturalization vs. historicization.

Activities: Introduction to class goals, presentation of list of projects to map, screening of David Hockney: A Bigger Picture (2009).

2. Drawing: Visual Layers

Lecture: Introduction to drawing's basic challenges: hierarchy of weights, relational composition between elements, the presence and shape of voids, the problem of stereotypes, the unconscious tendency for symmetry, fear of complexity, etc. Introduction to hand drawing materials, wet and dry. Patterns of graphic codes: lines, dots, textures, colours.

Activities: Exercise I – Drawing: quick hand drawing exercises from projected photographs of landscapes, with the goal of extracting and overlaying graphic layers. Possible live drawing at the Geneva Botanical Gardens.

• WOLLHEIM, Bruno, director. David Hockney: A Bigger Picture. Coluga Pictures, 2009. 1 hr., 1 min.
3. Planning: Spatial Figures

Lecture: Decoding the land as palimpsest. Rendering graphic layers more concrete by organizing them into typologies of landscape systems. These systems are nevertheless abstract rationalizations, diagrams to be used as figures of speech in our developing understanding of the environment.

Activities: Exercise II – Tracing: mixed hand and computer drawing exercise from satellite photograph, with the goal of extracting and overlaying graphic layers that now have a more concrete spatial meaning.

5. Mapping: Social Formations

Lecture: A totality of environmental relations:
2) Technology: infrastructure, land management and construction techniques.
3) Production: economic practices, labour and property relations.
4) Reproduction: divisions of labour, social hierarchies, institutions, rituals.
5) Aesthetics: ideology, beliefs, culture, politics.

Activities: Exercise III – Mapping: pick team and project, begin historical research (collecting historical maps and essays on the urban development of the chosen place).

4. The Dialectical Method

Lecture: A four-fold process:

1) Identify and frame site,
2) Extract layers separately with individual graphic identities,
3) Combine graphic layers to form spatial systems,
4) Contextualize building as an environmental totality, i.e., a relational loop of nature + technology + production + reproduction + aesthetics.

Activities: table reviews.

6. GIS Workshop with Aurèle Pulfer (ALICE)

**Lecture:** In coordination with EPFL ALICE. The GIS data processing cycle: abstraction, acquisition, archiving, analysis, display, anticipation. Parallels with the ‘analogue’ work mode. How to think with GIS: possibilities, misconceptions, biases, and correct use. Beginner user guide and direction towards open data sources.

**Activities:** GIS exercise and table reviews.
7. Midterm Reviews

Deliverables

• Drawing exercises: to show during pin up.
• Tracing exercise: print and pin up for review, include original photo at same scale.
• Mapping exercise: aerial photo and map, print and pin up side-by-side on the same scale and same frame.
• Architectural object: extra drawings, historical maps, and photos.

Presentation (5–7 minutes)

1. Object: what is it, where is it, when was it built, who is the architect (use photos).
2. Frame: what you take to be part of your object’s environment (use aerial photo).
3. Layers: what cartographic layers you extract from aerial view, how you represent them, how you combine them (use map and extra layers if needed, use historical maps).
4. System: how your layers combine to make territorial systems.
5. Totality: what that building does environmentally, how it interacts with the territorial systems and how it becomes an agent of spatial contradictions. Explain relational loop of: nature + technology + production + reproduction + aesthetics. At this moment this last point is only a sketch.
8. Environmental Thresholds


Activities: table reviews.

9. Territorial Conduits

Lecture: Territorial conduits are transportation infrastructures. A conduit is a “pipe” that extracts a resource from a place of abundance and transports it to a place of relative scarcity. It establishes a spatial link between source and destination, production and consumption. These resources are usually raw materials and/or labour. The construction and maintenance of such conduits requires a set of technologies and bureaucracies, typically coordinated by a centralized power or state. This implies a division of labour between those who plan and build, and a spatial separation between production, circulation, and consumption. The result is patterns of uneven development, spatialized in the fundamental contradiction between the metropolitan centre and the peripheral hinterland.

Activities: table reviews.

10. Domestic Enclosures

Lecture: An enclosure is a piece of nature transformed into landed property, a fenced-in open space that is domesticated and can be privately or collectively owned. From this appropriation, goods can be extracted, produced, and stored. This requires a set of specialized knowledge and technologies, such as irrigation and plant reproduction. These technologies require constant and systematic maintenance, adapted to the cycles of natural metabolism. Their rhythms dictate that labour be physically tied down, thus creating an identification with the reproduction of daily life. The enclosure spatializes a fundamental contradiction between the private domestic economy and the public politics of the city.

Activities: table reviews.

11. Wasteland Frontiers

Lecture: A wasteland is an empty piece of land that lacks investment. It is wasted because it has not yet been ‘improved’ and therefore does not yield a profit. This withdrawal from the market does not make it ‘natural’, since wasteland always awaits cultivation, and its borders are policed and politicized. Wastelands contain no official property rights and no formalized relations of production. When production does occur, it is operated under a regime of exception, which may be a distorted version of previous forms of land use (e.g., communal), or it may involve usurpation. It tends to serve subsistence needs of typically lumpenized classes that are often racialized. The wasteland spatializes a fundamental contradiction between the polite territory of the social contract and its external enclaves of dehumanization.

Activities: table reviews, general course debriefing and long Q+A.

12. Final Reviews

**Deliverables**

- Drawing exercises: to show during pin up.
- Tracing exercise: print and pin up for review, include original photo at same scale.
- Mapping exercise: aerial photo and map, print and pin up side-by-side on the same scale and same frame.
- Architectural object: extra drawings, historical maps, and photos.
- Text in bullet-points following presentation structure.

**Presentation (5–7minutes)**

1. **Object**: what is it, where is it, when was it built, who is the architect (use photos).
2. **Frame**: what you take to be part of your object’s environment (use aerial photo).
3. **Layers**: what cartographic layers you extract from aerial view, how you represent them, how you combine them (use map and extra layers if needed, use historical maps).
4. **System**: how your layers combine to make territorial systems.
5. **Totality**: what that building does environmentally, how it interacts with the territorial systems and how it becomes an agent of spatial contradictions. Explain relational loop of: nature + technology + production + reproduction + aesthetics. Consider having a second map on the building.