GSD DES 03356 | Fall 2018 | Field Methods & Living Collections

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Time: Wed. 10.00-1.00
Arboretum: Weld Hill Lecture Hall

Brief Course Outline

"If Science thrived by behaving as if it were totally disconnected from the collective, Research is best seen as a collective experimentation about what humans and non-humans together are able to swallow or to withstand."

-Latour (1999)

"To wander about among a vegetation which is new to one is pleasant and instructive. It is the same with familiar objects: in the end we cease to think about them at all. But what is seeing without thinking?"

-Goethe (1790)

Confronting the reality of environmental degradation requires more than remote sensing, statistical analysis or institutional restructuring. As images of the changing planet become emblematic of our time, designers are responding with a scrutiny towards amplified scales and extreme events. This has given rise to a growing interest in the materials or elements of this transformation, and in the particular category of evidence that can only be collected through first hand engagement. All research, from the molecular to the continental requires a scale of study and these scales are most often refined in the field. With respect to analysis, the course examines plant morphology, plant evolution, landscape trends, visualization and aims to bridge the discrepancy between geographic data and local fieldwork.

This course offers an opportunity for students to learn the basic theoretical and practical parameters of site description in order to account for how the living formation acts and reacts in response to complex factors. Moving between investigation and recording, coursework will promote a better understanding of the tension between the materialization of the landscape and its political or social development. Using Harvard's Arnold Arboretum as an analogue or proxy to these spatial conflicts, students will study a transect between the surrounding urban fabric and the living collection, addressing the

specific issues that emerge from observational analysis including historical, biological and societal layers. As a record of heterogeneity, the outcomes will help students decipher the kinds of information that are most important to collect while iterating skills for taking measure, reading ground conditions and fostering imaginative inquiry. The course expands upon techniques of fieldwork and the value of models, by exploring the remarkable activities and processes of plant life.

Format

Lectures and discussions will be split between classroom presentations, laboratory demonstrations and outdoor investigations, with the support of key Arnold Arboretum staff, including Michael Dosmann, Keeper of the Living Collections, Tiffany Enzenbacher, Manager of Propagation, and Andrew Gapinski, Manager of Horticulture. Students are encouraged to develop a close reading of the Arnold Arboretum and will have access to key personnel and research that is associated with their projects.

Context

Habitat is a physical area that is characterized through its constant formation. In ecological terms, habitat references the fundamental features of a site, and is represented by the interactions between the plant and its setting. More recently, the elaboration of habitat has moved beyond descriptive botany in order to embody the interface between inseparable actors, including the human and non-human. In this case, *context*—a term used in design fields— is broadened by the inclusion of habitat and plant formation.

The Arnold Arboretum is a living museum collection. As a research institute and public ground, the Arboretum at Harvard simultaneously serves scientific and civic interests. Shortly after its establishment in 1872, the Arboretum became part of the Boston Park system through a creative lease agreement between Harvard and the municipality. This 1,000-year lease secured a public/private relationship that endures today. It equally supported the involvement and advocacy of landscape architect Frederick Law Olmsted, as he developed miles of public space embedded in Boston's Emerald Necklace. In an era of intense cultural production, the Arboretum flourished as a premier institution, operating as a biological, economic and academic authority on the science of botany and global plant trade while offering an indispensable public space to residents. The Arboretum has evolved, biologically, spatially and socially alongside the urbanization of Boston. The living formation has become part of the city.

The collections themselves represent a record of human progress, as plants were traded, propagated, released and manipulated through nearly a century and a half of species exchange and horticultural domestication. As a result, the living collection is also a physical mapping of global plant exploration and biodiversity documentation, embedded in a temporal and technical milieu. The Arboretum is a living database in a constant state of assembly and disassembly; each year roughly 250 accessioned organisms are deaccessioned (become mulch) and are replaced with a similar number of new

specimens on the grounds. Precise catalogues of each specimen are recorded and updated over time, including photographs and pressed samples of each plant. Importantly, almost every accession at the Arnold Arboretum has provenance, and is thus not only a representation of a species; it is an individual with known history, no more nor less interchangeable with other conspecifics than any two humans would be as representatives of the species *Homo sapiens*. Archives, laboratories and herbarium continue to lead the fields in plant knowledge ranging from genomic information, to climate adaptation and speciation. Serving a global community, the collection functions as a model of global biodiversity, as advances in plant science foster ecological, economic and social development.

While the activities of research and scholarly experimentation are limited to the boundaries of the Arboretum, the plant formation extends well beyond its perimeter. Plants move, reproduce, seed, sprout, and display behaviors of mobility outside of human agency. While the formation undergoes continuous change, the urban context is also shifting and conforming to the imposition of lines, borders and zoning. Maps serve as diagrams that arrest plant behavior and deny movement. The Arboretum site—seemingly static in plan— is also adjusting to ongoing erratic behavioral influences, both human and non-human. Some of those influences include political and institutional structuring that limit social engagement. Each entrance, wall and fenceline is bordered by a different neighborhood creating an ever-changing dynamic between public and private interests. While the Arboretum functions as a public park, it is unique in its temporality, organization and heritage. The original design prioritized enclosure and interiority, a form of escape that was popularized by Olmsted and partners. Each naturalistic curve and slope prioritizes vistas and viewlines over circulation and access. Currently, the perimeter is eroded by small infrastructural amenities at each entrance, necessitating a more comprehensive study of the relationship between the Arboretum and its context. This course will pick up on the evolution of the Arboretum as both a local resource and global institution. Some questions that will be raised include: What is the role of the threshold between the site and its adjacencies? How can a living collection become relevant within contemporary needs of an urban population? More broadly, where can policy and alliances be formed to reengage the public and private sectors? Can the plant formation be read as an indicator of conflict?

CLASS SCHEDULE

September 05 Living Environments

10.00-1.00 Lecture: What is a living collection?

As an introductory lecture, topics will cover the role of site in fieldwork, the use of 'proxy' as an operative tool and the aspirations of deploying plants in achieving scalar design intentions. Ned Friedman will give a lecture on the history of Harvard Arnold Arboretum, including an overview of the evolution of plant life. This first session is intended to give an overview of the course, and will include a review of the syllabus: schedule, readings, sites, deliverables and conclude with a discussion of student's objectives and interests in the course.

Required Reading
Rosetta S. Elkin. "Plant Life: The Practice of Working Together" (New Geographies #9, 2017)

Rosetta S. Elkin "Live Matter: Towards a theory of Plant life in Landscape Architecture" in Journal for Landscape Architecture, JoLa. (Spring 2017).

For Reference
Agnes Arber "The Biologist and his Problem" in *The Mind and The Eye* (Cambridge: University Press, 1954), 6-21.

Olafur Eliasson, "Models are real" in *Models, Volume 11.* (2007), 18-25.

September 12 The Science of Fieldwork

10.00-1.00 Fieldwork: Session 1 - TRANSECT

Required Reading
Andrew S. Matthews "*Ghostly Forms and Forest Histories*" in Anna Tsing, & Bubandt, N., Gan, E. & Swanson, H. A. *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene* (2017: 145-156).

Bruno Latour "Circulating Reference: Sampling Soil in the Amazon Rain Forest" in *Pandora's Hope" Essays on the Reality of Science Studies* (1999: 24-79.)

Goethe. "The Experiment as mediator between subject and object" (1792) in M. Bell ed., *The Essential Goethe* (Princeton: University Press, 2016).

September 19 Plants as Organisms

10.00-11.30 Lecture: The science of morphology, from zygote to towering oak tree (with brief history of field of morphology, focusing on Goethe's foundational book *On the Metamorphosis of Plants*, 1790)

As we have seen, plants are not sessile individuals, but rather move, reproduce, develop and transform outside of political boundaries, and personal determination. Plant movement is examined in order to reconsider the consequences of dividing human and non-human agency. Lecture by Ned Friedman will focus on how plants grow and maintain perpetually embryonic cells in which organogenesis (the creation of new organs) is a lifelong undertaking. The implications of a non-static view of plant ontogeny as myriad ephemera will be examined against the backdrop of common assumptions about perennial plants as slow-growing, sessile objects.

Required Reading
Goethe, Miller, and Miller, Gordon L. *The Metamorphosis of Plants*. Cambridge, Mass.: MIT Press, 2009.
Hughes, J. Donald. "Theophrastus as Ecologist." *Environmental Review : ER* 9, no. 4 (1985): 297-306.

Hand-out: Assignment 1

September 26 The Practice of Working Together

10.00-11.30 Lecture: A Theory of Plant Life

Plant life is offered as a theory and a form of knowledge in order to probe deeper into the legitimacy of the sciences that study life and understanding the consequences of their authority. The purpose of this lecture is to connect an articulation of *plant life* to the multiscale analysis of landscape transformation that underscores political ecology. Readings are offered to reveal the articulation of environmentalism that have emerged from the assertions of modern science and technology. The question raised is how to pay attention to living matter and to find equitable outcomes.

11.45-1.00 Fieldwork [Peters Hill: Crabapples, Locusts and Hawthorns]

Required Reading

Anne Pringle "Establishing New Worlds: The Lichens of Petersham" (in Anna Tsing, & Bubandt, N., Gan, E. & Swanson, H. A. *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene* (2017: 157-167).

Christopher Stone "Should Trees Have Standing? Towards Legal Rights for Natural Objects", Oxford, University of Oxford Press, 1974.)

Anna Tsiang, "Unruly Edges: Mushrooms as companion species" (2012)

October 03 Individual Species

Review: Assignment 1: Student presentations

Hand-out: Assignment 2: Review findings and precedent

October 10 Identification in the Field

10.00-1.00 Fieldwork Session with Michael Dosmann

October 17 The Evolutionary History of Plant Life

10.00-12.00 Lecture: Four billion years and counting: A brief introduction to the evolutionary history of plants.

Today's biodiversity represents nothing more than a vanishingly ephemeral reality that has been shaped by nearly 4 billion years of evolution. The first plants to emerge from water and colonize land, some 475 million years ago, were leafless, rootless, and minute. How can we connect today's trees and other plant life forms through a chain of key evolutionary transitions and transformations back to single-celled ancestors? This lecture by Ned Friedman will also examine the deeper meanings of chance and contingency in evolutionary history, and whether the patterns revealed in biological history speak to the question of what is or is not inevitable.

12.00-1.00 Individual Discussions regarding Assignment 2

Required Reading

Friedman, William and Pamela K. Diggle "Charles Darwin and the Origins of Plant Evolutionary Developmental Biology" in *The Plant Cell* (Vol. 23, April 2011) pp. 1194-1207.

Gould, Stephen Jay. *Dinosaur in a Haystack: Reflections in Natural History*. 1st ed. New York: Harmony Books, 1995. [Part 7]

For Reference

Bell, Adrian. *Plant Form: An Illustrated Guide to Flowering Plant Morphology*. (Portland: Timber Press, 2008).

Arber, Agnes. "The Biologist and his Problem" in *The Mind and The Eye* (Cambridge: University Press, 1954).

October 24 Horticulture

10.00-1.00 Fieldwork Session with Tiffany Enznbacher
Meet at Dana Greenhouses.

October 31 Defining Fieldwork
Group meetings review of assignment progress / fieldwork sessions

November 07 The Politics of Plants

10.00-11.30 Lecture: Why is plant life a political subject?
The consequences of marginalizing plant life and deliberate expansion of plant ranges is exemplified in supracontinental planting projects. Ecological decline is exaggerated in service of 'greening' and 'resilience' strategies. Lecture will focus on a broad explanation of how plant life is an active agent in complex territorial transformation.

11.45-1.00 Fieldwork: Session: Soils, excavation and concealed metrics with Andrew Gapinski, Head of Horticulture

Required Reading
Stuart Elden "Land, Terrain, Territory" in *Progress in Human Geography* (no. 34:6, 2010) pp. 799-817.

Rosetta Elkin "Desertification and the Rise of Defense Ecology" in *Portal 9* (Issue 4, Solidere, Beirut 2014) *trans*. Arabic

Tsing, Anna Lowenhaupt. "On Nonscalability: The Living World Is Not Amenable to Precision-Nested Scales." *Common Knowledge* 18, no. 3 (2012): 505-24.

November 14 Defining Fieldwork
Group meetings review of assignment progress / fieldwork sessions

November 21
[No Class. thanksgiving recess]

November 28 Defining Fieldwork
10.00-1.00 Group meetings review of assignment progress / fieldwork sessions

OUTCOMES

This course is open to all students. The final projects will become part of a more systemic planning document that may include design outcomes, findings, opportunities and recommendations. All students will be expected to produce a final statement and design document. Students will be responsible for the following deliverables:

- PROJECT: The identification of a fieldwork method. Experiments and testes will be tried and tested (historical, social, biological) in order to articulate, trace, identify and describe novel methodology. The accumulation of this self-generated data will be necessarily developed with a clear ambition to refine the ways in which we engage with the environment.

- STATEMENT: Students will prepare a 2,500-word statement that explicates the main methods and ideas. This will include references to the literature under review during the lectures. The final statement will clarify the goals of the project, while framing their position historically, theoretically etc. This could also take the form of an annotated bibliography or textual analysis.

- INDEX/SKETCHBOOK: A description of the procedures used to assess and qualify spatial analysis. Procedures observed, designed or appropriated. This includes learned skills, drawing types, experiments and projections and acts as a record.

EVALUATION

Grading will be assessed by overall contribution during the semester and outcome of the final project. These criteria should be reflected accordingly through the quality of the research, the evolution of the strategies, and the consistency of communication:

Project: 50% Method | 50% Participation

Grades for GSD students will be assigned according to the standard school breakdown of Low Pass, Pass, High Pass and Distinction. Plagiarism is not tolerated at Harvard. Students are expected to cite and reference other ideas appropriately, for further information please review:
http://usingsources.fas.harvard.edu/icb/icb.do

Only files with the following convention will be accepted:
LAST_First_tile of drawing_type of drawing.file extension

For Example:
Elkin_Rosetta_ Proposed Centre st gate_section.pdf
Elkin_Rosetta_ Proposed Centre st gate_view.jpeg
Elkin_Rosetta_A Treatise on Gates_statement.doc