

[ CHARRETTE ]

# SCALES OF COMMUNITY AND ECOLITERACY AT BARTRAM'S GARDEN CONNECTION

APRIL 14-16 2023

led by the award-winning design firm  
**Höweler + Yoon.**

STUDENT  
DESIGN  
CHALLENGE



**2023 Drexel Student Design Challenge**

Scales of Connection  
Community and Ecoliteracy at Bartram's Garden

Höweler + Yoon  
Bartram's Garden  
Drexel Department of Architecture, Design & Urbanism



*As Homo faber, the human maker, our material actions and mental constructs shape our world. "Every act of knowing brings forth a world. ... All doing is knowing, and all knowing is doing. ... We have only the world we bring forth with others..." (Maturana & Varela, 1992, p.25 & p.249).*

*Besides the sky, the river is the only aspect of our urban environment that has not been parceled out into real estate. It still suggests far away places and gives urban citizens a most needed sense of freedom. (Gyorgy Kepes)*

*A place cannot be understood from the vantage point of a single discipline or specialization. It can be understood only on its terms as a complex mosaic of phenomena and problems. The classroom and indoor laboratory are ideas environments in which to narrow reality in order to focus on bits and pieces. The study of place, by contrast, enables us to widen the focus to examine the interrelationships between disciplines and to lengthen our perception of time. (David Orr, Ecological Literacy)*

# The Drexel Student Design Challenge

Since 2008, the Department of Architecture, Design & Urbanism has organized student design challenges (aka 'charrettes') that involve 60-80 students from across the University working in interdisciplinary teams for a weekend of intense, creative brainstorming and collaborative design. [Previous challenges](#) have engaged social justice issues including health facilities, transportation networks, place identity, and public space.

## Event Partners

For 2023 Drexel has partnered with Höweler + Yoon, an award-winning international design practice known for interdisciplinary and socially engaged work, and Bartram's Garden, a public park located in Southwest Philadelphia that provides a home for horticulture, riverfront activities, and an African Diaspora farm.

## Scales of Connection: Community and Ecoliteracy at Bartram's Garden

The 2023 Design Challenge is conceived around Float Lab, a project by Höweler + Yoon for Bartram's waterfront. Students will design an apparatus that expands its users' ecological literacy while articulating connections between Bartram's and its local constituencies. Projects will respond to the environmental history of the Schuylkill River and its banks, ongoing community engagement work at Bartram's Garden, and the range of urban conditions along the 56th Street transect from Lindbergh Blvd to the river.

Embracing a sustainable material ethic, students will be challenged to work within a prescribed kit of supplies—focusing on wood—responding both to the imperative to design with renewable materials and to an ecological ethos of doing more with less.

## Stakeholders

In addition to the Charrette partners, projects at Bartram's engage a variety of stakeholders and participants, including Mural Arts, YMCA, neighborhood public schools, high school students doing internships at Bartram's, Philadelphia school teachers, and neighborhood residents. A cardinal issue is the integration of historically marginalized communities from Southwest Philadelphia into the place and programming of Bartram's Garden, already an area of focus for Bartram's leadership.

# Introduction:

## Architectures of Ecoliteracy

The world is hurtling toward ecological catastrophe—unless we quickly gather the political will to undertake “rapid and far-reaching transitions across all sectors and systems,”<sup>1</sup> in the words of the most recent IPCC. With the built environment contributing 40% of annual global carbon emissions, architecture and design clearly have a crucial role to play in any transition to a sustainable future.<sup>2</sup> Yet architecture’s scope could be wider than implementing green building standards and using renewal materials. Design relates not only to infrastructure and economies but also to cultural expectations and behaviors. As Eric Höweler and Meejin Yoon put it several years ago, “The goals of sustainable design are to convince as much as they are to reduce.”<sup>3</sup> Architecture, in other words, can foster ecoliteracy.

Ecological literacy, or *ecoliteracy* for short, is, simply put, the ability to read one’s natural environment. It is the ability to understand the relationship between everyday experiences of the natural world and larger ecological, climatic, and environmental systems. It is closely related to Anne Whinston Spirn’s concept of “landscape literacy”—the ability to read the complex interaction between ecological and socio-economic forces that shape the physical environment of cities and regions. As Spirn has argued, such literacy “is a means for recognizing and redressing ... injustices through urban planning and design and community development.”<sup>4</sup> Learning to read our environment is a first and necessary step if we hope to advocate for environmental justice, sustainable design, and a just transition to a carbon-free future.

An architecture of ecoliteracy is one that engages its subjects—users, inhabitants, or passersby—pedagogically, to transform how and what they see. It strives to heighten environmental consciousness by expanding our capacity to see nature, decode its signals, and interpret its phenomena. It aims to change *perceptions* of energy and environment so that the ethereal qualities of our interrelated systems and lives can be understood physically, materially, and empirically.

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<sup>1</sup> [https://report.ipcc.ch/ar6syr/pdf/IPCC\\_AR6\\_SYR\\_SPM.pdf](https://report.ipcc.ch/ar6syr/pdf/IPCC_AR6_SYR_SPM.pdf)

<sup>2</sup> <https://architecture2030.org/why-the-building-sector/>

<sup>3</sup> Eric Höweler and J. Meejin Yoon, “Architectures of Ecoliteracy”

<sup>4</sup> Anne Whinston Spirn, “Restoring Mill Creek”



## Site Background

Often referred to as a city between two rivers, Philadelphia has relied on the Schuylkill River from the time of its founding through the Industrial Revolution. The discovery of anthracite coal in the river's headwaters would transform the waterway, once celebrated for its uncommon purity, into the most polluted river in the country. The stretch of the Schuylkill River between downtown Philadelphia and the Delaware River has long been a particularly contested geography of human-environment interaction. For much of the later nineteenth and twentieth century, its shores served as the city's industrial near-hinterland—home to coal processing facilities, oil refineries, gas works, and manufacturing installations that used the river as their dumping ground. By the 1940s, the river required extensive remediation. One of the earliest environmental cleanup efforts in the U.S., the restoration of the Schuylkill River in 1945 was a template for the EPA's later Superfund designation as well as subsequent river dredging projects across the country.

If the river is a landmark for the modern environmental movement, it is also of importance to a much longer history of ecological thinking. It is home to Bartram's Garden—the oldest botanical garden in the US and home to the early American botanist John Bartram (1699–1777). Bartram was known for his plant-collecting trips across colonial North America and export of American seeds and specimens to European gardens. Bartram's son, William Bartram, and granddaughter, Ann Bartram Carr continued cultivating the family's botanical garden and plant nursery on the site until 1850.

Before the Bartrams' arrival, the site was home to the Lenape people who, in turn, had a different kind of intimate understanding of the region's landscape and ecology. There is evidence of the site's seasonal occupation by indigenous people as early as 3000 BCE.<sup>5</sup>

The modern river is also well known for its recreational use, memorably recorded by Thomas Eakins in his turn-of-the-century paintings of rowers.

Our focus will be 56th street—the southern edge of Bartram's Garden and the one east-west connector in the area that extends all the way from the Lindbergh Blvd/Elmwood Ave trolley line to the river's edge. It terminates in a riverside plaza that will be the future home of the Höweler+Yoon-designed Float Lab.

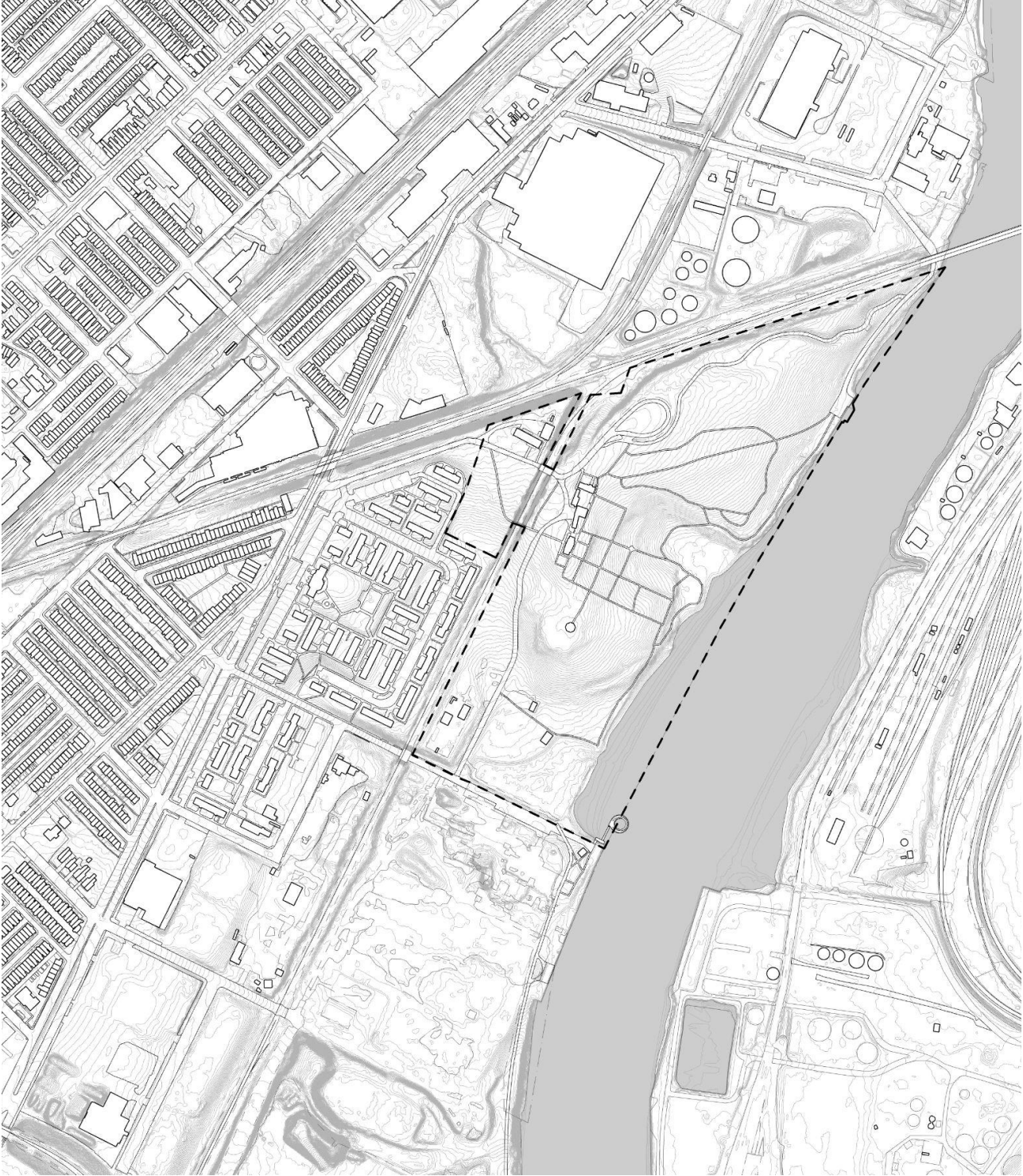
Continuing along the shore to the north is a tidal wetland and adjacent historic Lenape sites. Beyond is the primary waterfront of Bartram's Garden. To the South, 56th Street Plaza connects to the new Bartram's Mile Trail, which runs along the Schuylkill embankment to an overlook at 61st Street.

Along the transect from the river to Gray's Avenue, 56th street passes through three distinct zones. Between the waterfront and the rail bridge, 56th Street runs between Bartram's and the ex-industrial sites to the South—some of which are planned sites of Bartram's future expansion. In the next stretch, 56th Street runs through Bartram's Village, a public housing development of about 500

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<sup>5</sup> For more on the history of Bartram's Garden and previous indigenous inhabitants of the site, see <https://www.bartramsgarden.org/history/>.

apartments owned and operated by the Philadelphia Housing Authority, and originally built as public housing for industrial workers in war-related industries during the Second World War. 56th Street then meets the fork of Lindbergh Blvd and Elmwood Ave at the Elmwood & 56th stop along the 36 trolley. A low-rise residential neighborhood continues between Elmwood and the industrial zone along the rail tracks at Gray's Avenue.

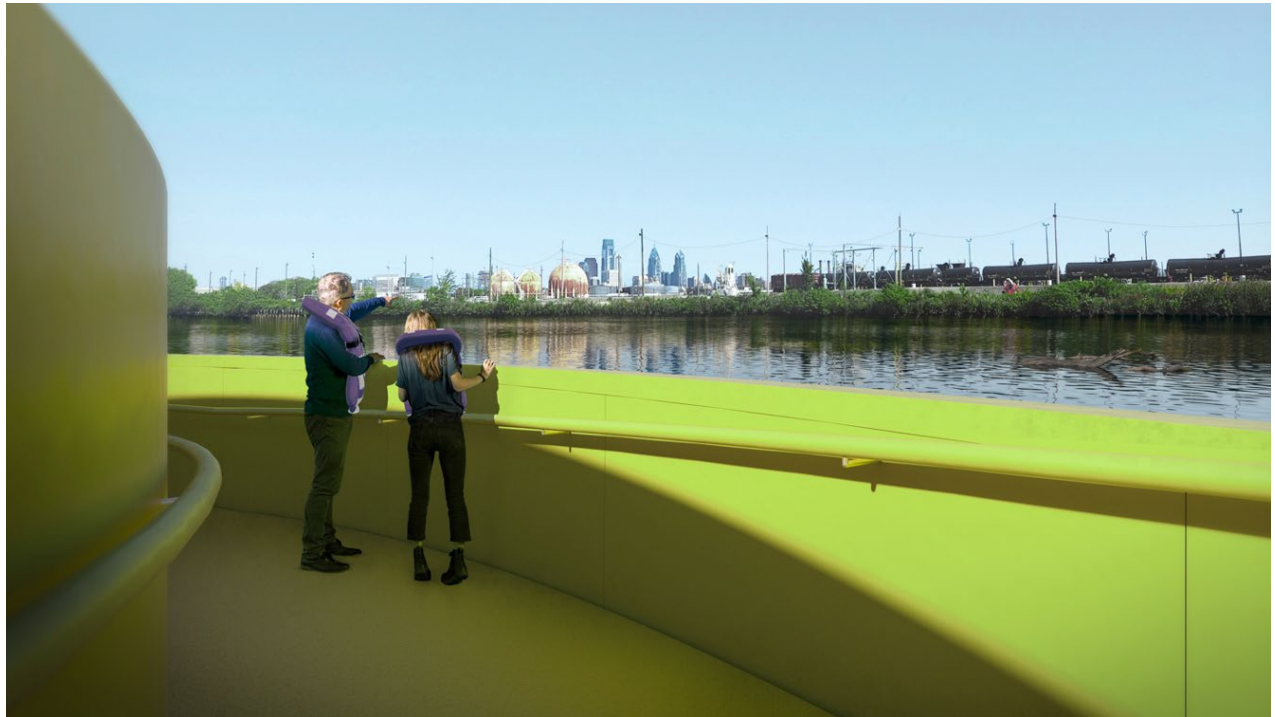


Bartram's Garden in context

## Project Brief

Design an intervention—an apparatus, a space, an object, an installation, or a structure—that expands its users' ecological literacy and articulates connections between Bartram's Garden and its local constituencies.

The intervention should implicitly instruct its users to see differently, e.g., by resituating the body or the senses in a way that makes visible an environmental process or ecological relationship. It should be a hybrid device that operates at multiple scales to facilitate sitting, viewing, and signaling.



### **The Observing Body: Sectional Displacement**

Höweler+Yoon's FloatLab will be a platform for experiencing one's surroundings in a new way. By changing the relationship of one's body to the Schuylkill River—and allowing one to experience the river's water at eye level—FloatLab instigates new ways of seeing and understanding.

We will also begin with observation, and by experimenting with moving our bodies vertically in relation to the landscape. While visiting Bartram's Garden students will have the opportunity to explore on a pair of stilts. How does changing our eye level and vantage point change how and what we see? How will your proposal instigate a new way of seeing, experiencing, and understanding the natural environment?

### **Program: Scales of Connection**

Think carefully about the relationship of ecoliteracy to environmental justice, and the role your intervention could play in connecting Bartram's Garden to its local constituencies. Your proposal could be conceptualized as operating simultaneously at three different scales: *sitting*, *viewing*, and *signaling*.

*Sitting:* How does your proposal situate the user's body relative to the environment? How will it gather multiple bodies in relation to one another? Does its form or articulation suggest certain postures or modes of engagement?

*Viewing:* How does your proposal direct or train the users' vision or other senses? Does it implicitly instruct the user to see (or sense) in a specific way? What does it make the user see (or sense) that might otherwise go unnoticed?

*Signaling:* How does your proposal communicate to its immediate users and to a wider audience? What ecological conditions, processes, or events does it announce? What should the proposal's constituencies understand after engaging with it?

To these ends you could consider hybridizing other programs: a prosthesis, a microscope, a divining rod, a step ladder, a seesaw, a tandem bicycle, a bus shelter, a canoe, a stoop, public bathrooms, community centers, bike paths, billboards, etc.

### **A Sustainable Material Ethic: Wood**

An architecture of ecoliteracy goes hand-in-hand with a sustainable material ethic. Wood is one of the most sustainable building materials, and new construction should reuse materials whenever possible.

In this spirit, teams will contend with a strict material constraint: all proposals should be conceived as a way to reuse the stilts that have been purpose-built for this charrette—that is, designed to be built from 7-ft-long 2x2 wood sticks—in combination with a second material that will be assigned to each team.

Teams may also elect to add a third material of their choice; however, this third material must be some kind of wood (e.g., plywood, bendyboard, OSB, another size of dimensional lumber, etc.), and 2x2 sticks must remain the primary material.

### **Bartram's Garden Goals**

Teams should consider the relationship of their proposals to the goals of Bartram's Garden:

- Integrate with the existing master plan for Bartram's Garden
- Promote foot/bike traffic to garden and riverfront, including wayfinding, signage and graphics
- Build excitement in neighborhood and educational/arts community for Float Lab
- Generate ideas for performance, engagement
- Develop educational and arts programming
- Consider additional amenities (outdoor classroom, marine hatchery, community farm)
- Enhance awareness of waterfront and other urban-nature opportunities
- Integrate principles of sustainability, biophilia, and regenerative design
- Further equity and access to Bartram's Garden for Southwest Philadelphia BIPOC and immigrant communities



# Process

## Part 1. Observational Model

Each team will be assigned an approximately 400' x 400' site within Bartram's garden, along the 56th Street transect, or along the Bartram's Mile Trail south of 56th Street. While visiting the site, students should seek to understand:

- The relationship between their site and the larger landscape of Bartram's and its surroundings
- Key ecological processes acting on their assigned site
- Key ecological, infrastructural, and architectural features of their site, including those that might be hidden from view.
- Relationships between human and nonhuman actors on the site

Each team will represent its assigned site in a 2' x 2' model at 1/16" = 1'-0", highlighting the team's distinct observational approach. Teams will receive a scale plan of the site and a pre-made 2' x 2' plywood base and stand. The observational model should be constructed using the plywood base, and be presented elevated at 32" above the floor, either on top of the provided stand or supported by materials of the team's choice. The plywood surface should correspond to the mean low tide elevation of the Schuylkill River (the lowest contour line marked on the provided basemap).

Teams should consider how to represent key aspects of the site above as well as below this datum, taking note of topography, water level, underground infrastructure, buildings, streetscape, vegetation, human uses, and ecological processes. How will you translate your observations into representations?

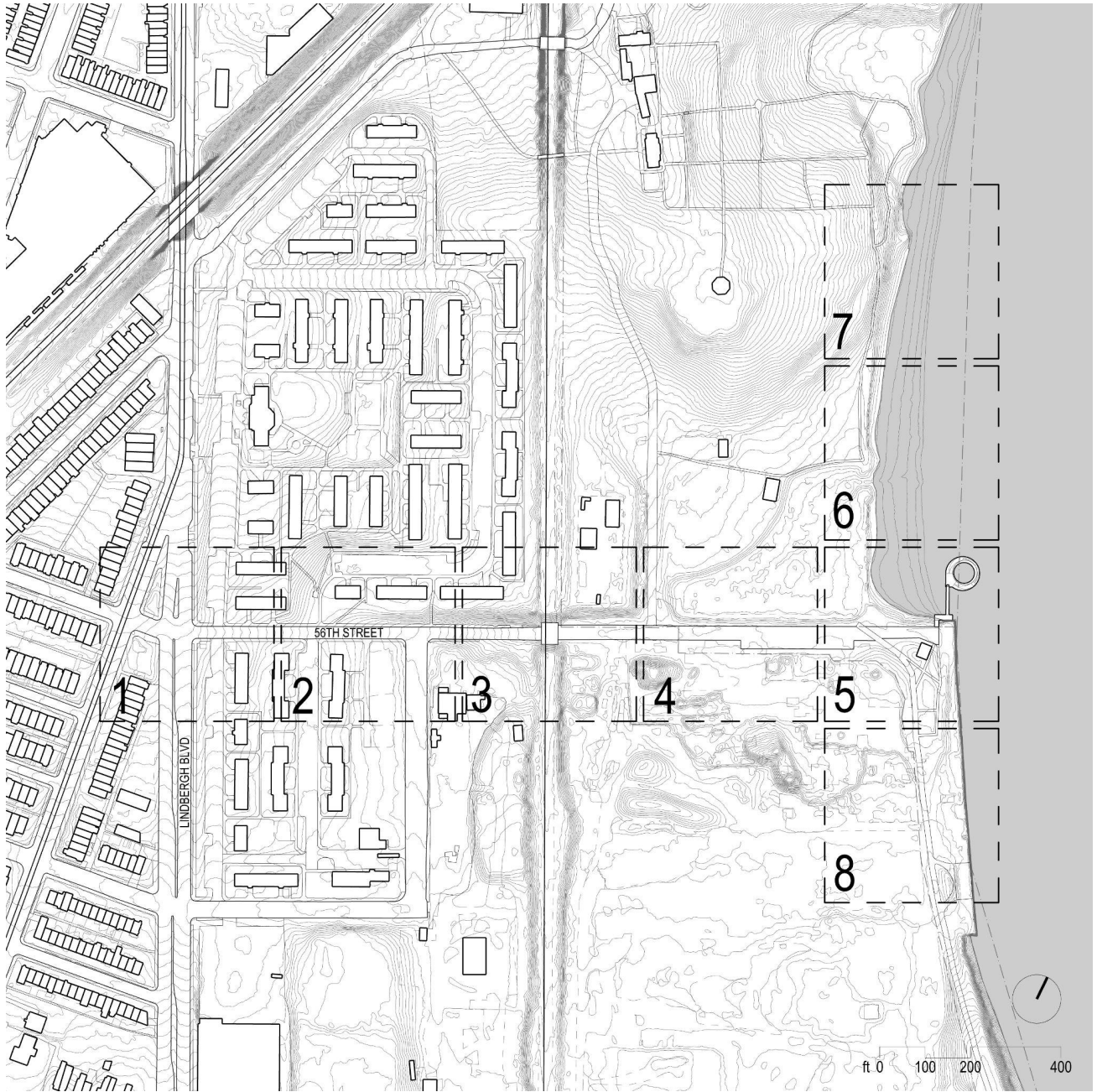
## Part 2. Design Proposal

Working primarily in large-scale model (1" = 1'-0"), develop an intervention—an apparatus, a space, an object, an installation, or a structure—that expands its users' ecological literacy and articulates connections between Bartram's Garden and its local constituencies, while facilitating sitting, viewing, and signaling.

Your proposed intervention should be designed to be constructed using 7-ft-long 2x2 lumber (actual dimension: 1-1/2" x 1-1/2" x 7'-0") and one other material of your choice. Teams are provided with 1/8" x 1/8" basswood sticks to construct these models.

You should be able to explain how your intervention responds to the distinct observational approach developed in your site model.

Take care to represent your proposal in a way that communicates not only its appearance but also its intended impact. How will Bartram's Garden's various constituencies interact with your proposal, and how will it change how and what they observe in the natural environment?



Boundaries of Assigned Sites for Observational Model

# Deliverables:

## Saturday morning pin-up

1/16" = 1'-0" observational model of your assigned site.

## Saturday afternoon pin-up

Initial design proposal models and drawings, at a scale of your choice, indicating at least three possible directions. For each iteration, at least one drawing should clearly describe how users will gain ecological literacy through their interaction with your proposal.

## Sunday afternoon final presentation

- Revised 1/16" = 1'-0" observational site model
- 1/16" = 1'-0" model of design proposal, sited within observational model
- 1" = 1'-0" model of design proposal incorporating at least one scale figure (use 1/8" x 1/8" basswood sticks provided)
- Diagram situating your project within a broader territorial, temporal, material, and/or ecological context.
- One key image describing how users will gain ecological literacy through their interaction with your proposal.
- Additional drawings and diagrams as needed to explain the proposal (e.g., 1" = 1'-0" plan and 1" = 1'-0" section)

# Format and Presentation

## Final Presentation

Final work will be presented in the 1<sup>st</sup> floor gallery of the URBN Center on Sunday afternoon. Each team will be assigned wall/floor space where they will display their work and discuss their design proposal. Teams will be given 5 minutes to present their work and all team members are encouraged to speak. Please rehearse your presentation in advance.

## Presentation Format

Teams will present their 1/16" observational site model elevated 32" above the floor as described above. Tables/pedestals will be provided for teams to present 1" = 1'-0" scale models. Teams will format and print two-dimensional work on 11x17 sheets. Teams are encouraged to show process development sketches and models. Monitors are available for video presentations.

### **Digital Submission & Printing**

Cards will be provided for each team to print free of charge. All teams are required to submit digital files of their presentation and process work by 12pm on Sunday April 16. Files should be uploaded to the SharePoint site "Charrette 2023" and saved in the appropriate folder under "Team Submissions."

Charrette resources can be accessed via the website:

<https://drexel.edu/westphal/academics/undergraduate/ARCH/Charrette/Charrette%202023/>

or the Sharepoint site:

<https://drexel0.sharepoint.com/sites/Charrette2023>

### **Social Media**

Teams are encouraged to document the process and post images using the hashtag **#drexelwestphal**

Drexel University shall retain ownership of all charrette work. The Department of Architecture, Design, and Urbanism plans to hold a gallery exhibition and publication (online and/or printed) of work submitted in the charrette. In entering the charrette, participants grant the Department unrestricted license to exercise the participants' rights regarding their submission, including but not limited to, reproduction, preparation of derivative works, distribution of copies of the design submission and the right to authorize such use by others.





## About Höweler + Yoon

Höweler + Yoon is a design-driven architecture practice and creative studio that believes design is an instrument for imagining and implementing change – social, cultural, technological, and environmental. Over the last 18 years, they have built a reputation for work that is formally and technologically innovative, socially engaged, and conceptually rigorous.

The Höweler + Yoon team is a dedicated group of 20+ architects, designers, and researchers. They seek to expand the scope of design beyond disciplinary boundaries, have benefited from collaborations with experts in numerous fields, and have taken a hands-on approach to design and implementation. Their projects ask how design fits within contemporary culture, how it can affect behavioral and social norms, and how it can produce a sense of place or create environmental awareness. Each project involves a research agenda into larger cultural trends, material properties, fabrication processes, or environmental conditions.

## Bibliography

Benyus, Janine M. "Parable of the Prairie" Excerpt from *Biomimicry: Innovation Inspired by Nature*. 1997.

Bjornerud, Marica, *Timefulness: How Thinking Like a Geologist Can Help Save the World*. Princeton University Press, 2020.

Buell, Lawrence. *Writing for an Endangered World*. Belknap Press. 2001.

Curran and Hamilton, *Just Green Enough: Urban Development and Environmental Gentrification*. Routledge, 2017.

Goleman, Daniel, Lisa Bennett, and Zenobia Barlow. *Eco Literate: How Educators Are Cultivating Emotional, Social, and Ecological Intelligence*. Jossey-Bass, 2012.

Gooley, Tristan. [The Lost Art of Reading Nature's Signs](#). Experiment Books. 2015

Höweler, Eric, and J Meejin Yoon. "Architectures of Eco-Literacy." In *Ground Rules for Humanitarian Design*, ed. Alice Min Soo and Irene E. Brisson. John Wiley & Sons, 2015. 136–141.

Ibañez, Daniel, Jane Hutton, and Kiel Moe. *Wood Urbanism: From the Molecular to the Territorial*. Actar, 2019.

Jones, Owain and Paul Cloke, "Orchard" from *Tree Cultures: The Place of Trees and Trees in their Place* (2002), In *The Cultural Geography Reader*. pp. 123–142.

Latour, Bruno. "Objects too Have Agency" in *Reassembling the Social*. Oxford. 2005.

Meyer, Beth. "Sustaining Beauty: The Performance of Appearance." *Landscape Architecture Magazine* 98, no.10 (October 2008): 92-131.

Moe, Kiel. *Unless, The Seagram Building Construction Ecology*. Actar, 2020.

Morton, Timothy. *Hyperobjects, Philosophy and Ecology after the End of the World*. University of Minnesota Press (2013).

Nisbet, James. *Second Site*. Princeton University Press, 2021.

Orr, David. "Ecological Literacy." In *The Earthscan Reader in Sustainable Agriculture*, ed. Jules Pretty. London: Earthscan, 2005. 21–29. Reprinted from David Orr, *Ecological Literacy: Education and the Transition to a Postmodern World*. SUNY, 1991.

Pollan, Michael. [Harvard Design Magazine "Beyond Wilderness and Lawn"](#) 1998.

Powers, Richard. *The Overstory: A Novel*. W. W. Norton & Company, 2019.

Spirn, Anne Whiston. "Restoring Mill Creek: Landscape Literacy, Environmental Justice and City Planning and Design." *Landscape Research* 30 (2005).  
<https://doi.org/10.1080/01426390500171193>.

Tsing, Anna Lowenhaupt, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton University Press, 2021.

Watson, Julia. *Lo–TEK. Design by Radical Indigenism*. Taschen, 2019.

Wulf, Andrea. *The Invention of Nature: Alexander von Humboldt's New World*. Knopf, 2015.

## References / Precedents

Höweler + Yoon, *Float Lab*

Höweler + Yoon, *Windscreen*

Smout Allen, *British Exploratory Land Archive*

Smout Allen, *Envirographic and Techno Natures* [\[link\]](#)

Interboro Partners, *Holding Pattern*

Beatriz Colomina et al., *Radical Pedagogies*

Hans Hemmert, *Same Height Party*

Allan Kaprow, *Happenings*

Andy Goldsworthy

Robert Smithson

Mary Miss

Alan Wexler

## Event Sponsors

Westphal College Rankin Scholar Fund

*The Rankin Scholar-in-Residence Series, named in honor of former Dean Marjorie Rankin and established through the continuing donations of her friends and colleagues, seeks to bring noted individuals to campus who excel in the multidisciplinary education championed by the Antoinette Westphal College of Media Arts & Design. The goal of the Series is to inspire students, stimulate research, invigorate professional networks, and aid in the continuing development of the Drexel community.*

The Good Idea Fund

Wexford Science & Technology

INTECH Construction

Tim Haahs & Associates

OLIN Studio

WRT Planning + Design

Plaza Art Supply

Ground Reconsidered

Susan Weiler

Alan Greenberger

# Schedule

<b>Thursday, April 13, 2023</b>	<b>Arfaa Lecture</b>	<b>Time</b>	<b>Location / Notes</b>
Eric Höweler Arfaa Lecture		6:00pm	Mandell Theater
<b>Friday, April 14, 2023</b>	<b>Charrette Kickoff</b>		
Charrette Introduction		1:00pm	URBN Center 4th Floor
Team/project assignments			
Bus to Bartram's Garden		2:30	In front of URBN Center
Site exploration		3:00-6:00	Bartram's Garden
Bus to URBN		6:00	
Dinner at URBN		6:30	URBN Center 4th Floor
Work time		7:00-9:00	
<b>Saturday, April 15, 2023</b>	<b>Charrette Workday</b>		
Breakfast at URBN		9:00	Coffee/breakfast snacks provided
Pin-up and discussion		9:00-10:00	Team alcoves
Work / Site visits in teams		10:00-12:00	
Lunch at URBN		12:00-1:00	URBN Center 4th floor
Work / Site visits in teams		1:00-4:00	Team alcoves
Prelim Pin-up / Work time		4:00-6:30	Informal comments from faculty
Dinner at URBN		6:30	
Work time		7:00-9:00	
<b>Sunday, April 16, 2023</b>	<b>Prep / Presentation</b>		
Breakfast at URBN		9:00	Coffee/breakfast snacks provided
Work time		9:00-12:00	
*Submit print and digital files		12:00	
Presentation Prep / Printing / Pin-up		12:00-2:00	
Reception in Lobby		2:00	Light lunch provided
Charrette team presentations		2:30-5:00	URBN Center Lobby

*\*all work must be submitted to print queue by 12pm on Sunday 4/16*