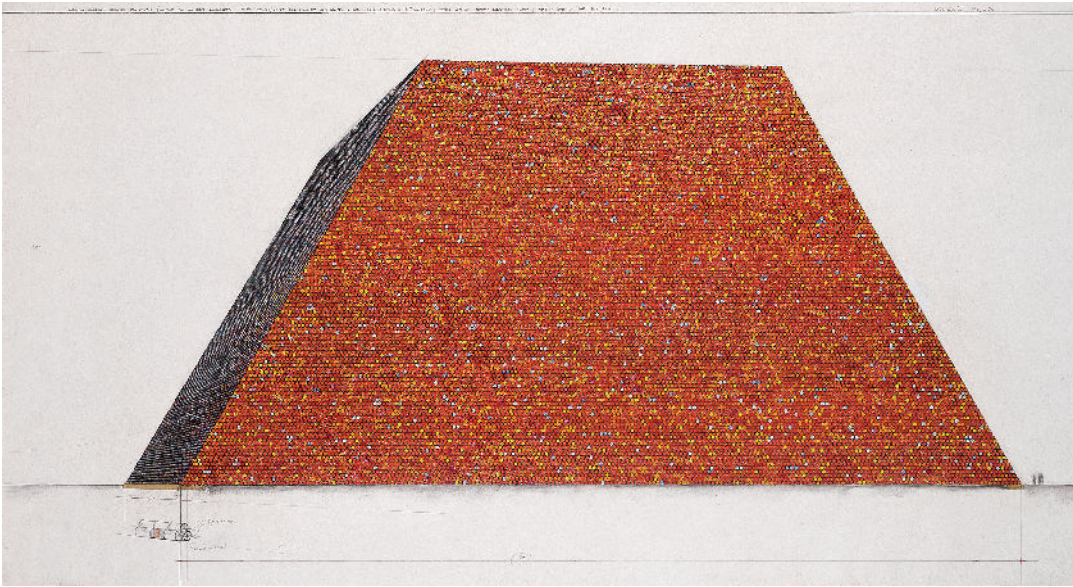


# PLASTIC MARSH:

## Cycles and Cyclones on the Texas Gulf Coast

Daniel Jacobs  
University of Houston  
2025



*Houston Mastaba – Stacked Oil Drums (Project for Houston Galveston Area Texas), Drawing 1969–1970, Pencil, wax crayon, pastel, charcoal, and cardboard 91.5 x 165 cm (36 x 65 in)*

*Description: About One Million Oil Drums - Each: 24" Diameter x 36" Length; Total Area 120,000 Square Feet, 400' x 300' x 200' High*

Property of the Christo and Jeanne-Claude Foundation, Photo: André Grossmann, © 1970 Christo and Jeanne-Claude Foundation

### FRAME 01: CYCLES

Houston's hydrocarbon processing landscape is one of the great generators of our contemporary waste streams: from synthetic rubbers, to petroleum-based fibers, to petrochemical polymers (plastics). Over half of each barrel of oil produced today goes to the production of these petro-materials, most of which end up in landfills and recycling centers, creating a superabundance of raw resources available for the foreseeable future. These waste streams also constitute one of the most potent indicators of the Anthropocene epoch: the plastiglomerates, oceanic particulates, and geological filaments that reveal the transformation of the Earth's strata by human industrial production. Architecture relies heavily on these materials: as historian and theorist Mark Jarzombek argues, plastic is one of the four fundamental elements of architecture's "Quadrivium Industrial Complex,"<sup>1</sup> along with concrete, steel, and glass. How do we position ourselves, as designers, relative to these streams of everlasting materials?

Transforming the material attitudes of architectural production will play a critical role in closing the metabolic rifts of our material landscape. At first glance, intervening in this cycle of production and waste seems to be one of the easiest and most efficient ways to reduce CO<sub>2</sub> emissions using existing technologies. Fundamentally, recycling lowers emissions by limiting raw material extraction and minimizing waste deposited in landfills. However, recycling can also be a double-edged sword: it offers a way out for corporations that produce materials like plastics and enables them to put the burden of recycling on the consumer. Most materials that architects specify come from extractive processes and often end up in landfills and scrap yards, such as concrete and composite assemblies that are difficult to dismantle. However, many building components can be recycled if we mobilize a different approach to design: thinking through long-term time scales, closed-loop material sourcing, and alternative assembly methods.

### READINGS

#### FRAME 01: CYCLES

- The City of Houston Solid Waste Management Plan (2021)
- Emily Eliza Scott and Ursula Biemann, "Mobilizing Materialities: A Dialogue on the Planetary Condition, and New Aesthetic Environmental Imaginaries" in *Productive Universals - Specific Situations* (Sternberg Press, 2019) 406-435.
- Aaron Forrest, Yasmin Vobis, Brett Schneider, *Heterogeneous Constructions: Studies in Mixed Material Architecture*, (de Gruyter, 2024)
- Material Cultures, *Material Reform*, (Mack Books, 2022).
- Raj Patel and Jason W. Moore, *A History of the World in Seven Cheap Things: A Guide to Capitalism, Nature, and the Future of the Planet*, (University of California Press, 2017).

### NOTES

1. See Mark Jarzombek, "The Quadrivium Industrial Complex," *e-flux*, (November, 2019).

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Discussing his *Plastic Horizon* series, the artist Dan Peterman articulates that recycling in his work should not be seen as a “solution” but rather as “a containment strategy—a response—to a system of material exploitation that is fundamentally flawed and destructive.”<sup>2</sup> Exploring such containment and cyclic material strategies as a design process, projects in the studio will seek new methods of assembling, disassembling, storing, and reassembling architecture in the context of the Texas Gulf Coast. Viewed as a mode of architectural environmental politics, how can this idea of temporary containment, of capturing and holding on to these materials, allow us to project alternative approaches for our material horizon? What other design approaches, construction assemblies, and material sensibilities can we find to address the immensity of the metabolic rifts in our material worlds? Weaving together the impact of these material streams on our ecological relationships and the broader economic and territorial conditions of waste in the region, how can we restructure our habits and modes of life relative to these material movements?

### FRAME 02: CYCLONES

The site of the studio is located at a nexus of cyclic and cyclonic conditions. We are no longer shocked by the correlation between the enormous amount of carbon emitted by this petrochemical landscape and the increasing intensity of weather events in the Gulf Coast region. As ocean temperatures rise due to Anthropogenic climate change, scientists predict that hurricanes and flood events will continue to strengthen and impact coastal communities. People living on the Gulf Coast are viscerally aware of the implications of these climatic events: uprooting communities, taking lives, destroying property, disrupting economies, and challenging the notion that we exist on solid ground. Critically, the impacts of these storms and floods are distributed unequally, with low-income frontline communities bearing the brunt of the devastation.

At the same time, these events affect everyone at some level: forging bonds of solidarity and mutual support required to manage daily habits amidst power outages, rotting food, and a waterlogged life. More terrifying, climate philosopher Roy Scranton writes about Hurricane Isaiah, a speculative storm that directly strikes the industrial stronghold of Houston: “More than 200 petrochemical storage tanks have been wrecked, more than 100 million gallons of petroleum and chemicals spilled. Damages for the region are estimated at more than \$100 billion. More than 3,500 are dead...The good news is that Isaiah hasn’t happened. It’s an imaginary calamity based on research and models. The bad news is that it’s only a matter of time before it does.”<sup>3</sup> Despite this possible future, the Port of Houston is one of the busiest in the country, the petrochemical industries steadfastly grow, and people continue to dwell in this landscape. Critically, this vulnerable petrochemical stronghold is surrounded by thousands of acres of precarious coastal wetlands, which help protect the facilities by mitigating storm surges and flood impacts. This is now an engineered landscape, fortified by levees and dykes, and under constant risk: crisscrossed by oil pipelines and subject to toxic spills and uncontained waste. Despite these risks, since the wetlands are crucial to the safety of the petrochemical landscape, there is substantial investment in their conservation. Massive efforts are underway to repurpose and recycle the dredged material extracted from the ship channel to restore wetland habitats critical for migratory and local species.

### READINGS

#### FRAME 02: CYCLONES

- Marina Tabassum, “Architecture for a Shifting Ground,” *Log 60* (2024).
- Frédérique Aït-Touati, Alexandra Arènes and Axelle Grégoire, *Terra Forma: A Book of Speculative Maps* (MIT Press, 2022).
- Roy Scranton, “Anthropocene City: Houston as Hyperobject,” in *More City than Water: A Houston Flood Atlas*, Edited by Lacy M. Johnson and Cheryl Becket (University of Texas Press, 2022) 32-48.
- Micah Fields, *We Hold Our Breath: A Journey to Texas Between Storms* (W. W. Norton & Company, 2023).
- Paolo Tavares, “Nonhuman Rights” in *Forensis: the Architecture of Public Truth*, edited by Forensic Architecture (Sternberg Press, 2014) 553-571.

### NOTES

2. Dan Peterman, text accompanying the installation *Archive for 57 People*, 1998. URL: <<http://www.danpeterman.com/>>
3. Roy Scranton, “When the Next Hurricane Hits Texas,” *The New York Times* (October 7, 2016).

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Thinking through these cyclonic systems—of waste, weather, and wetlands—*PLASTIC MARSH* asks: How can projects challenge this landscape to imagine alternative climate futures? Speculating about how to build (and un-build) in this drowning world, projects will explore transformations to architecture's material and environmental ecosystems to help create new relationships with the soil, flora, and fauna and imagine possible forms of mutuality and reciprocity with the land. Set against the backdrop of the extractivist tendencies of the petrochemical landscape of Houston's Gulf Coast, students will situate their research towards new practices of environmental and material cycles.

### STUDIO PROCESS

**INVESTIGATION:** Each studio section will select a site along the Gulf Coast, located at the juncture of coastal wetlands, industrial production, and environmental infrastructure (including levees, dykes, coastal breakwaters, and constructed wetlands). Students will begin with a collective process of material, ecological, and territorial research: creating visual narratives through large-scale drawings, site transects, and material cycle analyses, to understand the deep time and material flows through the site. These narratives—a combination of mapping, drawing, and film media—will include vertical layers from ocean floor to atmosphere, horizontal layers from commodity movements to human/non-human migrations, and the multi-temporal and trans-scalar relations across the region. Students will engage in methods of in-person fieldwork to research their regions throughout the term.

The studio will also host organizations and institutions involved in climate risk and mitigation, resiliency planning, and environmental justice action in the Texas Gulf Coast to help situate their research. These organizations include the Texas Environmental Justice Advocacy Services (t.e.j.a.s.), the Houston Climate Justice Museum (HCJM), the Galveston Bay Foundation, the Bayou City Water Keepers, and the Army Corps of Engineers Galveston District, among others.

**PROJECTION:** Responding to these complex conditions, students will develop a wetland restoration facility charged with managing the flow of materials involved in caring for this contingent and precarious ecosystem. The program will also support research laboratories, educational spaces, material storage, a storm relief shelter, and community space. Situated in this flood-prone landscape, projects will consider how they make contact with the ground and respond to the cyclonic conditions of the coast. Critically, projects will intervene in the material cycles of construction and the architecture will be designed for future dismantling, storage, and reuse. Speculating about the future of industrial waste processes and coastal ecologies, students will use their studio projects to propose new forms of life for a shifting landscape in a changing climate. Projects will speculate about how design can create new alliances between peoples, landscapes, organizations, materials, animals, plants, and atmospheres.

**EXHIBITION:** The research portion of the studio will be compiled into a book, and the final production of the studio will be exhibited at the Houston Climate Justice Museum. The publication and exhibition will enable a broader conversation between students, local organizations, and community groups about these critical topics.

### FIELDWORK:

The studio will engage in local site visits, carefully documenting the culture, material use, and environmental relationships present in and around the Texas coastal wetlands. In addition to the studio sites, students will visit the following organizations and infrastructures:

- Coastal wetland
- Aluminum recycling center
- Wetlands restoration center
- Petrochemical production facility
- Coastal flood protection infrastructure
- Houston Ship Channel
- High risk coastal community