

Architecture Climate Change & Society

Buell Center
2021 Course Development Prize

GULF: ARCHITECTURE, ECOLOGY, AND PRECARITY ON THE GULF COAST

Matthew Johnson & Michael Kubo

University of Houston

Much of contemporary carbon culture and its environmental consequences can be traced back, forensically or circumstantially, to the U.S. Gulf Coast. The extraction of fossil fuels has made the Texas-Louisiana coastline a global center of oil production, sprawling along the bayous and wetlands of Beaumont, Galveston, Baton Rouge, Lake Charles, and Houston.

While the products of carbon have fueled the megaregion's expansion, the sprawling oil industry has produced structural inequities in its built environment. Racially segregated "fenceline" communities sit in uneasy proximity to petrochemical plants, subject to the environmental impacts of polluted soil, air, groundwater, and aquifers. Toxic clouds, spills, and other disasters are common in these areas, particularly during extreme weather events exacerbated by climate change. In this context, an examination of the relationship between architecture, urbanism, climate, and environmental justice is urgently needed.



The proposed "superstudio" (a combined research studio and seminar) deals with the history and speculative futures of petroculture's long century and its aftermath. We will engage the "wicked" problems facing individual communities along the Texas-Louisiana coast, from flooding to pollution to toxic development patterns, and propose methods for repairing the discriminatory effects of petroculture on the broader environment of the Gulf.

As our energy systems evolve toward more sustainable models, we have the potential to rethink the Gulf Coast's problems—to reimagine a post-carbon urbanism that is resilient and flexible. How might legacy urbanism originally constructed around oil dependence transition to an ecological, zero-carbon urbanism? The embedded landscapes of a century-plus of oil dependence will have to be reused, removed, or remade. Gray infrastructure will shift toward blue-green and social infrastructures. What might the resulting “city after oil” look like? In this research studio, we will 1) first understand the specific ways in which carbon culture has generated urban space and infrastructure, 2) model scenarios for how energy transitions might occur, and 3) examine how these scenarios might affect the way we make cities and architecture. All of this work will attempt to imagine a Post-petropolis: architecture after carbon.

PETROCULTURES

CLIMATE,
ENVIRONMENT,
ARCHITECTURE

A Research Seminar

INSTRUCTORS

Michael Kubo
Matthew Johnson

3 Units

Undergrad & Grad

The seminar proposes to chart a cultural, geographical, and climatic history of the age of global petroculture, with the Gulf Coast megaregion as the specific locus for our inquiry. While this period of energetic and historico-material development since the Industrial Revolution has acquired various names—including carbon culture, fossil capitalism, carbon democracy, and the Comfortocene—we will focus on the multivalent concept of *petroculture*, a term that centers on the Gulf’s deep ties to extraction of petroleum and its subsidiary chemical products, and to the ineluctable cultural status of “oil” among the modern materials that have had the most transformative impact on the built environment and the developing climate crisis over the past century-plus.

While the modern oil age began in the mid-nineteenth century with the drilling of the first commercial oil wells in Azerbaijan (1846), Poland (1953), Romania (1857), Trinidad (1857), and Pennsylvania and West Virginia in the U.S. (1859), we might inaugurate the “long century” of U.S. petroculture and its global connections around 1901, with the parallel discovery of major petroleum reserves at Spindletop, near Houston, and the D’Arcy Concession in Persia (today Iran), the first oil concession granted in the Middle East. Coupled with the increasing use of kerosene for lighting and heating, the invention of the automobile, and the development of industrial and building materials whose production relies on petroleum, the last century-plus has witnessed the rise and consolidation of petroculture as a constitutive feature of contemporary life.

In a condition in which the petro-fueled construction and maintenance of the built environment is responsible for almost 40% of direct and indirect carbon emissions and some 36% of global energy consumption—and in which the petro-region around Houston and the Gulf Coast contains roughly 40% of the total petrochemical capacity of U.S. industry—a critical archaeology of petroculture, centered in Houston, is fundamental to any speculation on the current climate crisis and environmental justice for the communities of the Gulf megaregion.

This seminar will explore conceptual frameworks through which we can approach the cultural, historical, and climatic stakes of petroculture, with readings drawn from the fields of environmental and material history, climate futures, ecology, cultural and critical theory, literature, science fiction, the philosophy of science and technology, and the history of architecture and urbanism. Weekly topics will include climate history and the chronology of the petro-century; toxicity and environmental justice; the petro-urbanism of Houston and the Gulf Coast megaregion; extraction landscapes and the global petro-economy; the networked material flows of the petro-industrial complex, including related industrial materials such as steel, glass, concrete, sand, and plastic; petro-aesthetics and the processes of financialization, real estate, and architecture that underlay the petroleum-fueled economies of Houston and other U.S. cities; decarbonization, the possible ends of petroculture, and the significance of these movements for our environmental future.

Children’s mural from a fenceline community in Manchester, showing proximity to petro infrastructure and its place in a child’s imaginary.



Refinery viewed from a neighborhood, Port Allen, TX



Refinery on the Ship Channel. Coastal Prairie Scraped Away and Replaced with a Chemical Tank Farm



READING LIST

BIBLIOGRAPHY

Capital | Houston, the Gulf, and Petro-Urbanism

Martin V. Melosi and Joseph A. Pratt, ed., *Energy Metropolis: An Environmental History of Houston and the Gulf Coast*
Lars Lerup, *After the City + One Million Acres and No Zoning*
Dominic Boyer and Mark Vardy, "Hydraulic Houston," *Anthropocene Curriculum*
Center for Energy and Environmental Research in the Human Sciences, *Flooding, Recovery & Hydraulic Citizenship in Post-Harvey Houston*
Daryl Meador, "Becoming Oil Incarnate in Houston's Weiss Energy Hall," *Avery Review*
Reinhold Martin, "Materiality: Mirrors," *Utopia's Ghost: Architecture and Postmodernism, Again*

Justice | Toxic Communities in the Gulf

Dorceta Taylor, *Toxic Communities: Environmental Racism, Industrial Pollution, and Residential Mobility*
Kate Orff and Richard Misrach, *Petrochemical America*
Anthropocene Curriculum, various projects on the Mississippi River Delta: esp. *Anthropocene River Campus, The Human Delta*, <https://www.anthropocene-curriculum.org>

Sites | Houston/Ship Channel

CLUI/University of Houston, *On the Banks of Bayou City: the Center for Land Use Interpretation in Houston*

Sites | Lake Charles/Cancer Alley

Robin McDowell, "Black Resistance in Louisiana's Cancer Alley," *Boston Review*, June 4, 2019
Lylla Younes and Sara Sneath, "New Research Shows Disproportionate Rate of Coronavirus Deaths in Polluted Areas," *ProPublica*, 09/11/20

Sites | Lake Jackson

Carol Chapman, "Dow Town," *Texas Monthly*, December 1998

Organizations/Web Resources

Texas Environmental Justice Advocacy Services (T.E.J.A.S.)
<https://www.tejasbarrios.org>
T.E.J.A.S., Toxic Tour factsheet, https://web.archive.org/web/20200807185240if_/https://docs.google.com/document/d/16bGCgPfdvqavOxOLferCScolBeEA9h7nZ9ki4xNWD54/edit
Environmental Defense Fund, "Mapping Pollution in Houston"
<https://www.edf.org/maps/airqualitymaps/houston/pollution-map/>
Texas Commission on Environmental Quality, Data and Records, <https://www.tceq.texas.gov/agency/data>
Air Alliance Houston, <https://airalliancehouston.org>
CENHS, Extraction Syllabus, <http://culturesofenergy.com/extraction-syllabus-a-cenhs-fellows-interdisciplinary-project/>

Fossils | Climate History and the Petro-Century

Timothy Mitchell, *Carbon Democracy: Political Power in the Age of Oil*
Timothy Morton, *Hyperobjects: Philosophy and Ecology after the End of the World*
Timothy Morton, *Being Ecological*
Andreas Malm, *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming*
Antti Salminen and Tere Vadén, *Energy and Experience: An Essay in Nafthology*
Rania Ghosn, "Energy as a Spatial Project," *New Geographies 02: Landscapes of Energy*

Resources | Environmental Justice and Global Extraction Landscapes

Laleh Khalili, "A World Built on Sand and Oil," *Lapham's Quarterly*
Ingrid R. G. Waldron, *There's Something In The Water: Environmental Racism in Indigenous & Black Communities*
There's Something in the Water (2020), 1 hr 11 mins, dir. Ellen Page, Ian Daniel
Mark Jarzombek, "The Quadrivium Industrial Complex," *e-flux*
Lucy Lippard, *Undermining: A Wild Ride Through Land Use, Politics, and Art in the Changing West*
Jeff Diamanti, "Energyscapes, Architecture, and the Expanded Field of Postindustrial Philosophy," *Postmodern Culture*
Pierre Belanger, *Extraction Empire: Undermining the Systems, States, and Scales of Canada's Global Resource Empire, 2017-2017*
Felipe Correa, *Beyond the City: Resource Extraction Urbanism in South America*
Werner Herzog, *Lessons of Darkness* (1992)
Amanda Boetzkes and Andrew Pendakis, "Visions of Eternity: Plastic and the Ontology of Oil," *e-flux*

Futures | The End(s) of Carbon

e-flux, Accumulation series, <https://www.e-flux.com/architecture/accumulation/>
Log 47: Overcoming Carbon Form, 2019
Design Earth, "After Oil" (Kuwait Pavilion, 2016 Venice Biennale)
Michael T. Klare, *The Race for What's Left: The Global Scramble for the World's Last Resources*
Vaclav Smil, "Energy Transitions, Dominant Fuels," *Global Catastrophes and Trends*
Imre Szeman, "'System Failure: Oil, Futurity and the Anticipation of Disaster,'" *South Atlantic Quarterly*