



Victoria Sambunaris, *Untitled (Pipes)*, Monahans, Texas, 2012.

Geology is a conception of the planet's surface as thick, resource-rich, and energy-latent, forming slowly in the “deep time” of the earth.<sup>1</sup> This terrestrial crust is composed of dense layers of rock, hot pyroclastic flows, igneous intrusions, and tectonic plates slipping and grinding along fault lines. Laced within these shifting rocks, the crust also contains the raw materials and carbon fuels of the technosphere: bands of iron ore, veins of mineral deposits, seams of coal, and vast fields of oil.

Our everyday worlds are sourced from these geologies—fracking, cracking, mining, drilling, processing, and burning—feeding a supply chain essential to the production and powering of the built environment. The materials themselves have specific qualities and attitudes, enforcing structures of power and metabolizing territories through their spatial patterns. Converted into the materiality of empire and the immateriality of energy, these resources produce a complex infrastructure of capital, energy, and heat. Yet while these geologies constitute the substructure of carbon modernity—determining its urban scales, circulatory flows, and organizational forms—they also devastate landscapes, bodies, and climates.

Deploying spatial and material tactics to intercede in these extractive processes, this studio seeks to trouble the persistence and durability of the hydrocarbon toward a deeper conception of geology: a planetary assemblage of landscapes, ecologies, organisms, technologies, and atmospheres. Learning from Anna L. Tsing's concept of the “liveliness” of materials, *Deep Geologies* looks to the entanglement of energy industries and trans-national economies, geographies of extraction and struggles for sovereignty, to imagine new architectures for terrestrial care.<sup>2</sup> Working in the context of Texas, students will intercede in sites of material extraction, processing, and movement through architectural and landscape interventions. Through their spatial forms, relationships to territories, and ecological agendas, projects will imagine how architecture can participate in a just transition to a post-carbon future. Exploring the potential for hybrid thinking within material extraction, *Deep Geologies* asks how the built world can more radically engage with agendas for environmental justice and geological repair.

## GEOLOGY + TERRITORY

**EX 01 [2 weeks]:** Choose a Texas-based site of extraction or processing of a material used in the built environment and document the site's geological, territorial, and ecological conditions. Organize field trips to local sites to document the landscape and meet with local geological and environmental experts. In parallel, use virtual field work techniques such as mapping and data gathering to construct digital models of the sites. Maps should explore the following questions:

*What are the relationships and movements between local geological conditions in Texas and global supply chains?*

*How does a territory's resources relate to its forms of property, infrastructure, development, and governance?*

*What ecosystemic, atmospheric, and political effects—on environments, climates, and bodies—do these processes of resource extraction and transportation cause?*

**Deliverables:** Represent a material landscape using three mapping scales:

Map 01: GEOLOGY  
Map 02: TERRITORY  
Map 03: ENVIRONMENT

*Material Resources, Topographic Forms  
Infrastructures, Networks, Architectures  
Climates, Ecologies, Geophysical Cycles*

## GEOLOGY + MATERIAL

**EX 02 [2 weeks]:** Based on Exercise 01, investigate the material extracted in Texas, examining its geological qualities, compositions, modes of extraction and processing, architectural assemblies, and product cycles. Through the construction of mixed-media models, create a series of physical artifacts and accompanying tableau that document the material's geophysical and architectural conditions, including drawings of building details, fragments of the material, product specifications, environmental data, and other media.

*What is the physical or sensual quality of the material, including critical components, alloys, and additives?*

*What types of technologies, energy systems, and processing methods are used in the transformation of these raw materials into building products and architectural assemblies?*

*What are the material and geological conditions of the product's carbon cycle, and how are its components recovered (or discarded) after use?*

**Deliverables:** Assemble 3 artifacts with supporting documentation:

Model 01: MATERIAL  
Model 02: PRODUCT  
Model 03: CYCLE

*Properties, Compositions, Qualities  
Processing, Manufacturing, Circulation  
Construction, Assemblies, Life Cycles*

### EX 01 TEXTS / FILM:

#### SITES OF EXTRACTION

Martin Arboleda, "Openings: The Mine as Transnational Infrastructure," *Planetary Mine: Territories of Extraction Under Late Capitalism* (New York: Verso, 2020), 1-34.

Jennifer Gabrys, "Becoming Planetary," *e-flux Architecture: Accumulation*, edited by Nick Axel, Daniel A. Barber, Nikolaus Hirsch, Anton Vidokle, October 2018.

A. Laura Palmer, "Openings," "Carbon," & "Aluminum," *In the Aura of a Hole: Exploring Sites of Material Extraction* (London: Black Dog Publishing, 2015), 6-10, 16-22, & 30-36.

Kathryn Yusoff, "Golden Spikes and Dubious Origins," *A Billion Black Anthropocenes or None* (Minneapolis: University of Minnesota Press, 2018), 23-64.

*Petropolis: Aerial Perspectives on the Alberta Tar Sands*, Dir. Peter Mettler, 2009.

### EX 02 TEXTS / FILM:

#### MATERIAL ENCOUNTERS

Amitav Ghosh, "A Lamp Falls," *The Nutmeg's Curse: Parables for a Planet in Crisis* (Chicago: University of Chicago Press, 2021).

Jane Hutton, "Range of Motions: Granite from Vinalhaven, Maine, to Broadway, 1892," *Reciprocal Landscapes* (New York: Routledge, 2020), 66-103.

Graeme Macdonald, "Containing Oil," in *Petrocultures: Oil, Politics, Culture*, edited by Sheena Wilson, Adam Carlson, and Imre Szeman (Quebec: McGill-Queen's University Press, 2017), 36-77.

Manuel Shvartzberg Carrió, "Automated Architectures of Leisure," in *Work, Body, Leisure*, edited by Marina Otero Verzier and Nick Axel (Rotterdam: Het Nieuwe Instituut, 2018), 127-144.

*Topophilia*, Dir. Peter Bo Rappmund, 2015.

## GEOLOGY + REPAIR

**EX 03, PT 01 - INSTITUTIONAL CHARTER [2 weeks]:** Develop a charter for an Institute of Terrestrial Care in Texas. Thinking through programs centered around climate care, this institutional charter will serve as the brief for the following design exercise, outlining the project's specific programs and scope. Charters should propose research, civic, and pedagogical facilities for the community, engaging in municipal, environmental, and activist agendas.

*How can the energy and material infrastructures of the built environment engage with projects of environmental justice and land rematriation?*

*What material assemblies, sensibilities, and cultures offer an alternative to systems of extraction for designers?*

*How can architectural types, forms, landscapes, and systems produce programs for geological restoration, remediation, and repair—from the scale of the building to the territory?*

**Deliverables:** Institutional Charter and site documentation.

## INSTITUTE FOR TERRESTRIAL CARE

**EX 03, PT 02 - DESIGN PROMPT [10 weeks]:** Based on charter exercise, propose architectural and landscape design strategies for an Institute of Terrestrial Care in Texas. The Institute should include public-facing programs such as classrooms, galleries, and libraries, as well as research-focused programs such as laboratories, offices, workshops, test landscapes, and field stations. Programs should also include residences for care-workers, including social and living spaces. Projects should re-imagine the built environment's entanglement with its geological and ecological conditions through three frames:

*Propose new ways that architecture can inhabit the world through the design of typological hybrids and alternative material assemblies.*

*Experiment with strategies for a post-extractive world, such as industrial decommissioning, energy transitioning, ecological remediation, and carbon-capturing.*

*Propose alternative afterlives for the planet's shattered geologies: imagine how to preserve, repair, and rematriate the land and its resources.*

**Deliverables:** The studio will emphasize the role of architectural visualization to communicate the speculative and hybrid quality projects. Supplementing typical modes of representation (plans, sections, axons), students must develop drawing, modeling, and mapping techniques that convey the aesthetics, tone, politics, materiality, and sensorial components of projects. A list of final deliverables including technical drawings, images, artifacts, data models, films, and maps will be developed with each student during the final phase of the semester.

### EX 03, PT 01 TEXTS:

#### REPAIR AND RESISTANCE

María Puig de la Bellacasa, "Soil Times: The Pace of Ecological Care," *Matters of Care* (Minneapolis: University of Minnesota Press, 2017), 169-221.

Holly Jean Buck, "Capturing" & "Weathering," *After Geoengineering: Climate Tragedy, Repair, and Restoration* (New York: Verso, 2019), 119-136 & 141-152.

Nick Estes, "Prophets," *Our History is the Future: Standing Rock Versus the Dakota Access Pipeline and the Long Tradition of Indigenous Resistance* (Verso, 2019), 1-23.

Paulo Tavares, "Nonhuman Rights," in *Forensis: The Architecture of Public Truth*, edited by Forensic Architecture (Berlin: Sternberg Press, 2014), 553-571.

### EX 03, PT 02 TEXTS:

#### FUTURE GEOLOGIES

Anna Lowenhaupt Tsing, Nils Bubandt, Elaine Gan, Heather Anne Swanson, "Introduction: Haunted Landscapes of the Anthropocene," in *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene* (Minneapolis: University of Minnesota Press, 2017), G1-G14.

Jason Waite, "The Entropic Silence of Fukushima," *e-flux Architecture: At the Border*, edited by Nick Axel, Jan Boelen, Charlotte Dumoncel d'Argence, Nikolaus Hirsch, April 2020.

Damian White, "Just Transitions/ Design for Transitions: Preliminary Notes on a Design Politics for a Green New Deal," *Capitalism Nature Socialism*, Vol 31, Issue 2, 2020.

#### NOTES:

1 John McPhee, *Basin and Range* (New York: Farrar, Straus, Giroux, 1981).

2 Anna Lowenhaupt Tsing, "When the Things We Study Respond to Each Other," *Anthropos and the Material* (Durham: Duke University Press, 2019).