

Technical *Lands*

editors

Jeffrey S Nesbit
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A Critical *Primer*

Technical lands are spaces united by their “exceptional” status – their remote location, delimited boundary, secured accessibility, and vigilant management. Designating land as “technical” is thus a political act. Doing so entails dividing, marginalizing, and rendering portions of the Earth inaccessible and invisible. An anti-visibility of technical lands enables forms of hypervisibility and surveillance through the rhetorical veil of technology. Including the political and physical boundaries, technical lands are used in highly aestheticized geographies to resist debate surrounding production and governance. These critical sites and spaces range from disaster exclusion and demilitarized zones to prison yards, industrial extraction sites, airports, and spaceports. The identification and instrumentalization of technical lands have increased in scale and complexity since the rise of neoliberalization. Yet, the precise theoretical contours that define these geographies remain unclear. *Technical Lands: A Critical Primer* brings together authors from a diverse array of disciplines, geographies, and epistemologies to interrogate and theorize the meaning and increasing significance of technical lands.





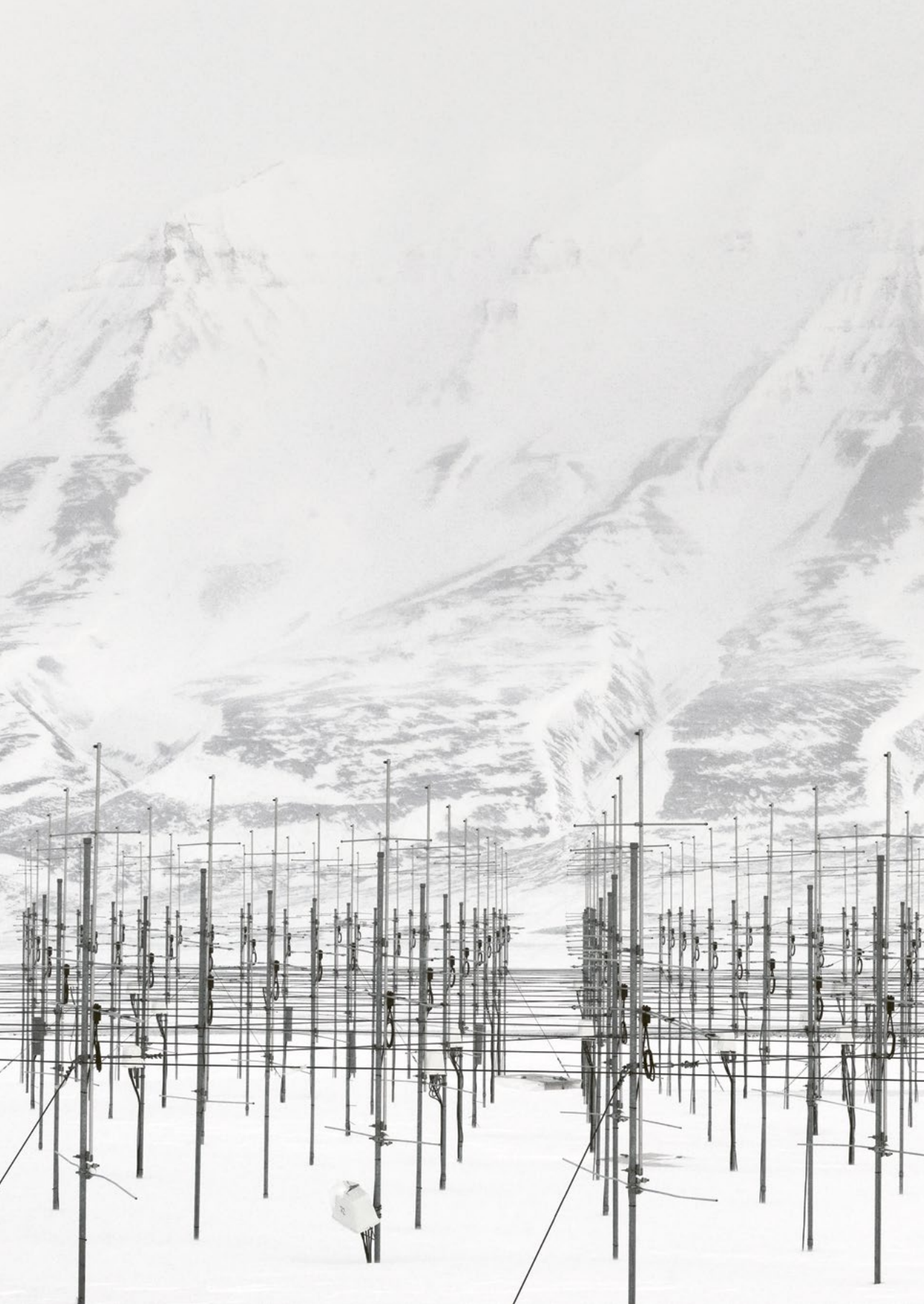
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JOVIS

A Critical Primer





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Scents of Spatial Order

Sensing Technical Lands

Shannon Mattern

Rigid lines of Douglas firs climb a mountainside. Arrays of calibration grids—like those you’d see at the optometrist’s office but blown up for a satellite’s eye—are sprinkled across the desert. Giant tractors till grooves into the Iowa prairie. A pastel patchwork of brine pools carpets the Atacama Desert. Eerily abandoned zones trap the ghosts of nuclear tests. Acres of dry lots enclose thousands of cows waiting to be shipped off for processing. Acres of solar panels and miles of gigantic wind turbines populate energy farms. Armies of pumpjacks pull oil to the earth’s surface. Polychromatic stripes of tulips stretch out into the Dutch countryside as far as the eye can see, while polychromatic shipping containers cluster into metallic mountains on the Rotterdam docks. Deep gouges in the landscape mark the blasting or cutting away of limestone and marble. Putrescent ponds hold the tailings of nearby mines. Runways and rhizomatic airport terminals converge at odd angles, mediating between aerial and terrestrial logistics.

These scenes index “technical lands,” which, as the editors of this volume explain, exemplify “sites where global knowledge practices and aesthetic categories have converged to literally transform the physical geography of the land.” I’ve used a different term: “indexical landscapes.” In 2015, I organized a symposium at ArtCenter College of Design, in Pasadena, CA, that examined how our “landscapes have long been shaped using techniques and technologies that render them ‘intelligent’ and intelligible—either to the people who inhabit them, or to the various tools we use to cultivate, navigate, and operationalize them.” These terrains “index, materialize, and even render perceptible, the logics behind their own organization, management, and use.”¹ Those logics encompass specific protocols of operation, legal codes, and systems of administration. The aforementioned spatial forms and aesthetics—the factory farms and container ports—also manifest epistemologies and ontologies that equate land with property, that reduce natural materials and living things to “resources” demanding exhaustive extraction and optimization, that regard geography as abstract space to be traversed as efficiently as possible.

We typically perceive the organizational and operational logics of technical lands through visual representation: maps and charts, photographs, and aerial imagery. Allan Sekula, Edward Burtynsky, Peter Goin, Richard Misrach, Trevor Paglen, Richard Mosse, Josh Begley, and Jenny Odell are among those who often deploy specialized imaging tools—including large-format and thermal radiation cameras, telephoto lenses, and cranes—as well as repurposed satellite images, to index the distinctive morphologies and colors of container ports, mines, nuclear test sites, border zones, top-secret military sites, maximum-security prisons, parking lots, and landfills.² Some of these sites, like satellite calibration targets and massive distribution centers, even function as images themselves; they’re what Harun Farocki called “operational images”: machine-readable images that do or effect things in the world, like tuning satellites or orchestrating robots.

This volume’s editors argue that such technical or indexical terrains possess hypervisuality and susceptibility to surveillance, and, at the same

¹ Shannon Mattern, “Indexical Landscapes Symposium @ ArtCenter College of Design, October 29,” [wordsin.space.net](https://wordsin.space.net/2015/10/06/indexical-landscapes-symposium-art-center-college-of-design-october-29/), last modified 2015, <https://wordsin.space.net/2015/10/06/indexical-landscapes-symposium-art-center-college-of-design-october-29/>.

² John Beck, “The Purloined Landscape: Photography and Power in the American West,” *Tate Papers* 21 (Spring 2014), <https://www.tate.org.uk/research/publications/tate-papers/21/the-purloined-landscape-photography-and-power-in-the-american-west>; Andriko Lozowy, “Picturing Industrial Landscapes,” *Space and Culture* 17, no. 4 (2014): 388–97; Kerry Oliver-Smith, curator, “The World to Come: Art in the Age of the Anthropocene,” Harn Museum at the University of Florida, September 18, 2018–March 3, 2019; Joshua Schuster, “Between Manufacturing and Landscapes: Edward Burtynsky and the Photography of Ecology,” *Photography and Culture* 6, no. 2 (2013): 193–212.

time, opacity—a resistance to being seen and scrutinized. These lands, much like a cubist painting or glitchy digital image, are embodiments of the “scopic regime” of modernity and are works of art in their own right. And, as with much fine art, how we render these sites visible can contribute to their fetishization. In *Cartographies of the Absolute*, Alberto Toscano and Jeff Kinkle note “a tendency in the visual arts, and photography in particular, for a fixation with the symmetrical and homeomorphic properties of the logistical landscape”—all those transportation hubs and oil refineries and factory farms—“whose paradoxically photogenic character stems in many ways from its inadvertent mimesis of a modernist, minimalist geometry whose rules of representation are already deeply incorporated into the grammar of artistic form.”³ Literary scholar John Beck finds that this is especially true of landscape photographs of technical lands:

The landscape has been shaped according to the needs of the mode of representation, and the value of landscape photographs—a value transposed onto the terrain itself from its composition as images—so often lies in what they leave out: Indigenous inhabitants, industrial devastation, military installations, prisons, toxic contamination, and the rest.⁴

I’m particularly interested here in what these visual representations and ocular “operational” indices leave out—not what we don’t see, but what other sensory dimensions are occluded. I want to examine what we can learn about technical lands by listening to and smelling them. We’ll examine how these other senses also serve “operational” purposes by disclosing the functional logics and mechanisms driving technical lands, and by supporting diagnostic functions in case of malfunction; stench and clamor can signal inefficiencies and vulnerabilities. Sounds and smells can also manifest the broader environmental impacts of optimizing terrain while, at the same time, exposing the impacts on individual human and more-than-human bodies. These non-visual senses can help us appreciate how those bodies are integral parts of the technical apparatus—they work to ensure the smooth functioning of spatialized operations—while also often bearing the burden of their dysfunction. Yet sound and smell can also facilitate modes of resistance and divulge that which *escapes* the terrains’ technical logics. In what follows, we’ll examine the sounds and smells of two categories of technical lands—spaces of industrialized agriculture and spaces of extraction—and reflect on how broader sensory attunement could inform the design and governance of these terrains.

The Plantation, the Slaughterhouse, the Factory Farm

From the sugarcane fields in the Canary Islands of the fifteenth century to contemporary Indonesian palm estates and American prisons, the plantation has constituted a critical *dispositif* within the genealogies of industrialized agriculture and racial capitalism.⁵ It’s also an early example of a

³ Alberto Toscano and Jeff Kinkle, *Cartographies of the Absolute* (Winchester: Zero Books, 2015), 204.

⁴ Beck, “The Purloined Landscape.”

⁵ Katherine McKittrick, “Plantation Futures,” *Small Axe* 42 (2013): 1–15; Sylvia Wynter, “Novel and History, Plot and Plantation,” *Savacou* 5 (1971): 95–102.

technical land. As historian John E. Crowley (2016) notes, visual representations of slavery throughout the Atlantic world, from the mid-sixteenth to the mid-nineteenth century, “privileged machinery over people. This privileging largely took the work of slaves for granted and, intentionally or not, deflected attention from slavery.”⁶ By fetishizing the conventionally “technical” dimensions of technical lands, these images failed to capture the embodied agents central to their operation and to acknowledge that those bodies were themselves integral parts of the technical apparatus.

Yet sound gives voice and agency to these laboring subjects. Shane White and Graham White, in their canonical *The Sounds of Slavery: Discovering African American History through Songs, Sermons, and Speech* (2005), examine the bells and horns that commenced the workday, the crack of the master’s whip, the songs of the field, the baying of hounds on the heels of a runaway—as well as the more reparative sounds audible *outside* of work, like the din of the Black marketplace, the celebratory clamor of the festival, and the performative dimensions of Black sermons.⁷ Coded sounds, embedded in sermons and songs, could also serve as means of resistance.

Smell also exhibits and shapes the spatial logics and politics undergirding the plantation. In *The Smell of Slavery*, historian Andrew Kettler (2020) demonstrates how foul odor was associated with the racialized Other and racialized spaces—the slave ship and quarters, for example—and how that conditioned disgust justified the commodification and dominance of African bodies. Those prejudices also impacted the way plantation space was designed and inhabited. According to Kettler, the French ethnographer, architect, and slaveowner Monsieur Antoine-Simon La Page du Pratz warned plantation owners that enslaved people “ought not to be placed so near your habitation as to be offensive.”⁸ The slave camp should have a “bathing place formed by thick planks” and should be sited to the north or northeast of the plantation home, “as the winds that blow from these quarters are not so warm as the others,” and are thus less likely to carry a foul odor from the camp.⁹ Yet smell, like sound, could also be deployed as a tool or technique of resistance: the cooking of traditional foods could deter white masters from interfering in enslaved people’s affairs, and decoy scents could be used to confuse a bloodhound in pursuit of a runaway.

The plantation’s system of aesthetic governance laid the groundwork for future deodorized spaces of capitalist labor: “A stinking African, formed through hard labor and racist discourse, instituted capitalism by helping to create a later pecuniary system which truly did not smell, a system of numbers in space”—the kinds of actuarial, logistical, and “smart” landscapes we see everywhere today, and which we explored in my “Data Artifacts, Infrastructures, and Landscapes” class at The New School in 2020.¹⁰ Literary scholar Hsuan L. Hsu explains how colonial practices of olfactory governance, many of which are still used today—valuing or suppressing particular smells, forcibly deodorizing foreign and abject bodies, distributing smells unevenly across spaces and populations, and subjecting particular bodies to noisome smells—can produce both deodorized spaces that

⁶ John E. Crowley, “Sugar Machines: Picturing Industrialized Slavery,” *The American Historical Review* 121, no. 2 (2016), <https://doi.org/10.1093/ahr/121.2.403>.

⁷ Shane White and Graham White, *The Sounds of Slavery: Discovering African American History through Songs, Sermons, and Speech* (Boston, MA: Beacon Press, 2005).

⁸ Andrew Kettler, *The Smell of Slavery: Olfactory Racism and the Atlantic World* (Cambridge: Cambridge University Press, 2020, Cambridge Core e-book), 90.

⁹ Kettler, *The Smell of Slavery*, 91.

¹⁰ Kettler, *The Smell of Slavery*, 22; Shannon Mattern, “Data Artifacts, Infrastructures, and Landscapes,” Graduate Seminar, The New School (Spring 2020), <https://datainfra.wordsinspace.net/spring2020/>.



fig 1 Union Stockyards, Chicago, 1947.
John Vachon, public domain

“truly [do] not smell,” as well as noxious atmospheres: two spatial conditions that, as we’ve observed and will continue to observe, often exist in tandem.¹¹

Just two years after enslaved people were ostensibly liberated from the plantation, its spatial and sensory regime was reborn at the Union Stock Yard & Transit Co. in Chicago, in 1865. Here, Kettler’s “numbers in space” are actualized. The stockyards, art historian Jason Weems writes, “materialized new conditions for the conceptualization of living bodies,” both animal and human, “first rescaling them from the level of individual beings to that of the limitless multitude—whose primary markers were efficient mobility and extractable materiality—and then reconstituting them in the new industrial forms of commodity and capital.”¹² The physical space embodied the logics of the accounting ledger.

fig 1

The sheer scale and sublime efficiency of the operation drew tourists, especially those who were in town for the 1893 Columbian Exhibition, and inspired the creation of various guidebooks and illustrated histories. The visualization techniques deployed in these venues were like those Crowley described with regard to the plantation, although here, in the stockyards, the “machinery” had grown to comprise the entire technical landscape: everything, animate and inanimate, within the frame was a cog in the machine. Typically, we’d see a bird’s-eye photograph encompassing the entire spatial apparatus, ground-level photographs that aimed to cultivate a sort of “embodied” spectatorship, and a diagram depicting animals as assemblages of saleable meat parts: the body itself as a technical landscape. But Weems argues that “the vast and labyrinthine physical expanse of The Yards and its equally extensive and intricate system of operation” overwhelmed the viewer. Even The Yard workers depicted in the images were overwhelmed and diminished in comparison to the “towering steel apparatus.”¹³

Tourists experienced “shock and revulsion,” and guidebook readers experienced “psychological incongruities” upon confronting the “visual juxtaposition of piled, lifeless bovine bodies with the abstract, rationalizing diagrams of those same bodies viewed as commodities.”¹⁴ How to reconcile pain, sentience, and mortality with the stockyards’ rationalization, depersonalization, and abstraction? Perhaps they’re ethically and affectively irreconcilable. Guidebook readers and tourists simply couldn’t comprehend “mortality at such a staggering scale.”¹⁵ Weems writes:

The program that emerged for visualizing The Yards marked an attempt to simultaneously comprehend, celebrate, and disarm the massive-scale slaughtering system, and to rationalize its diminishment of living bodies (and beings) as inviolable wholes. The failure of the imagery to do so embodied, in drained blood and rendered flesh, the incommensurabilities of scale that existed between living bodies and industrial systems.¹⁶

Those “incommensurabilities” weren’t merely of the scalar variety; they were sensory, too. Images of The Yards failed to convey the space’s heat,

¹¹ Hsuan L. Hsu, *The Smell of Risk: Environmental Disparities and Olfactory Aesthetics* (New York, NY: New York University Press, 2020), 153.

¹² Jason Weems, “Scale, a Slaughterhouse View: Industry, Corporeality, and Being in Turn-of-the-Century Chicago,” in *Scale*, ed. Jennifer L. Roberts (Chicago, IL: Terra Foundation for American Art, 2016), III.

¹³ Weems, “Scale,” 122.

¹⁴ Weems, “Scale,” 129–30.

¹⁵ Weems, “Scale,” 118.

¹⁶ Weems, “Scale,” III.

humidity, and stench. “The stockyards pushed the limits of the mind, soul, and, perhaps most strikingly, senses,” Weems argues; visitors “described the pungency of excrement and offal, the piercing cries of stuck hogs and the hiss of knives passing through flesh, the clammy heat of the killing floors and the chill of the refrigerator rooms, and the slipperiness of blood under their feet.”¹⁷ Those visitors and guidebook readers sought to “see the yards,” but their macro-scale visual order and assembly-line logistics simply couldn’t contain the *other* sensory input that wafted through or pierced the air and bled across the floors, inciting repulsion, shock, and trauma.

¹⁷ Weems, “Scale,” 115.

Political scientist Timothy Pachirat, through his ethnographic work in a contemporary slaughterhouse, finds that the spatial partitioning of the plant into functional areas (each of which represents a different ontology of the animal), and into “dirty” and “clean” zones (distinguished by whether the animal on the line still has its hide), represents a modern, technical means of instantiating a deeply rooted social tendency. The history of civilization, he argues, echoing Norbert Elias and Alain Corbin, is “a process of quarantine and concealment, showing how a concern for classifying, confining, and segregating by smell” in historical societies later “came to be interpreted primarily as a reordering of the visual economy.”¹⁸ The visual order represents an attempt to tame, to deodorize, to dampen the more unruly senses—but they tend to resist containment, both within the plant and in the broader environment.

¹⁸ Timothy Pachirat, *Every Twelve Seconds: Industrialized Slaughter and the Politics of Sight* (New Haven, CT: Yale University Press, 2013), 279–80.

Pachirat describes the plant’s internal sound- and smell-scapes. On the kill floor, one hears the rhythmic “pffft, pffft, pffft” of “the knocker’s” pneumatic bolt gun, used to stun the animal. This sound indexes the transformation of cow or pig into beef or pork. In the cooler, “the day is an interminable aural barrage, deep and throbbing. The cooling system is the constant background noise for everything that happens. The long, sharp cling, cling, cling of the half-carcasses straining with the force of gravity on their pulley wheels punctuates the dull background roar of the fans.” On the kill floor, the smell “varies from place to place, but it is always organic, a combination of feces, urine, vomit, brain matter, and blood in various stages, from fresh to congealed.”¹⁹ In the cooler, smells, “dulled by the cooler ... are almost nonexistent.”²⁰

¹⁹ Pachirat, *Every Twelve Seconds*, 40.

²⁰ Pachirat, *Every Twelve Seconds*, 39.

But outside, especially in the summer heat, the smells of death permeate the surrounding area. As Pachirat exits the interstate, heading toward the slaughterhouse’s “olfactory kingdom,” he encounters a roadside sign: “To Report Manure Spills or Odor, Call 444-4919.” He continues:

An empty assertion of bureaucratic power over the unruliness of smell, it is one among numerous symptoms of the ongoing conflict between the messiness of mass killing and a society’s—our society’s—demand for a cheap, steady supply of physically and morally sterile meat fabricated under socially invisible conditions. Shit and smell: anomalous dangers to be reported to the authorities in an era in which meat comes into our homes antiseptically packaged in cellophane wrappings.²¹

²¹ Pachirat, *Every Twelve Seconds*, 3.

These technical lands allow for the delivery of deodorized meat through the displacement of undesirable smells. Onsite odors can be “managed” by treating animal waste, filtrating smelly gases, or designing complex ventilation and oxidation systems. Following in the footsteps of La Page du Pratz, plant owners often consider atmospheric conditions, wind direction, and the proximity of commercial and residential development when choosing locations for their facilities.²² Recognizing that the animal body itself, especially when subjected to the violent processes by which it is rendered into “meat,” is bound to emit odors, the most packers can do is trap the foul odors in sealed zones, where only a largely immigrant workforce and terrified animals will have to smell them. The sensory segregation of the plantation persists.

The Foundry, the Refinery, the Chemical Plant

The local sensory-environmental politics around factory farms and meat-packing plants resemble those in extraction zones. Kettler, who earlier explained how olfactory politics justified the reduction of enslaved people’s bodies to tools and commodities, has also examined how particular smells’ ideological associations evolve over time, in relation to their cultural and political-economic contexts.²³ Prior to the Industrial Revolution, the presence of sulfuric smells was typically regarded as a sign of evil. After all, hell is made of fire and brimstone, which is simply an archaic name for sulfur. When coal became central to industrialization and its economic spoils, sulfur was newly associated with progress and profit.

fig 2

Through their 2012–16 fieldwork in the technical lands of the Peace River oil sands in Alberta, Canada, anthropologist Tristan Lee-Jones observed how such olfactory politics continued to play out both synchronously and locally. In Peace River, the smell of oil production, a mixture of “rotten eggs and freshly poured concrete,” was differently perceptible and meaningful to different subjects.²⁴ Some, especially those regularly exposed to chemical vapors in their homes, described headaches, frequent bouts of nausea, watery eyes, and itchy skin, while others—including many oil workers and energy regulators—denied that the odors exist. “You can’t smell it after you work with it for years,” one of Lee-Jones’s interlocutors proposed, imagining that her anosmatic neighbors have simply been desensitized to the stench.²⁵ Meanwhile, a local Métis elder worried that wildlife would be driven away by the odor and noise.²⁶ On a local Facebook forum discussion, some folks argued that:

the smells were the product of nervous people’s overactive imaginations. If emissions did exist, said others, surely industry could be trusted to ensure that there were no negative health impacts. Some wrote that industry had provided such tremendous economic benefits to the region that even to speak about potential contaminations could irrevocably damage the town’s good relationship with industry.²⁷

²² Agency for Toxic Substances and Disease Registry, “Odor Control” (n.d.), accessed July 25, 2021, https://www.atsdr.cdc.gov/odors/odor_control.html; “Meat Processing Odor Control,” Anguil, accessed July 25, 2021, https://anguil.com/case_studies/meat-processing-odor-control/.

²³ Andrew Kettler, “Queer Mineralogy and the Depths of Hell: Sulfuric Skills, Early Modern England, and the North American Frontier,” *Journal of the Canadian Historical Association* 30, no. 1 (2019): 115–43.

²⁴ Tristan Lee-Jones, “Living and Dying Through Oil’s Promise: The Invisibility of Contamination and Power in Alberta’s Peace River Country,” *Extracting Home in the Oil Sands: Settler Colonialism and Environmental Change in Subarctic Canada*, eds., Clinton N. Westman, Tara L. Joly, and Lena Gross, (London: Routledge, 2020), 73.

²⁵ Lee-Jones, “Living and Dying,” 72; see also Warren Cariou, “Tarhands: A Messy Manifesto,” *Imaginations* 3, no. 2 (2012), <http://imagination.glenclon.yorku.ca/?p=3646>.

²⁶ Lee-Jones, “Living and Dying,” 73.

²⁷ Lee-Jones, “Living and Dying,” 72.



fig 2 An oil field, between 1900 and 1920.
Detroit Publishing Co., Library of Congress

They had to practice rhetorical deodorization for the purposes of political-economic self-preservation.

In Sarnia, Ontario, oil refineries and foundries emerged in the mid-nineteenth century and were later joined by other petroleum-related production facilities and chemical plants. Before the area's transformation into "Chemical Valley," its Aamjiwnaang First Nation residents had experienced and understood their environment largely through smell—through plants and soils and foods and fire pits. "Each fragrance, in its time and season, characterized particular parts of the reserve and connected those places with specific events and practices important to community life," writes anthropologist Deborah Davis Jackson.²⁸ Initially, she acknowledges, the smells of industry would have carried positive connotations; as both Kettler and Lee-Jones describe, to many folks, emissions are olfactory indices of money. But as the community became more aware of the harmful environmental and health effects of industrial pollutants, local industrial smells became associated with disease and death.

Oil and gas development—especially hydraulic fracturing—also generates noise that can be deleterious to public health. The sounds of drills, pumps, compressors, flares, vents, and truck traffic can cause stress, disturb sleep, elevate blood pressure, and increase one's risk of heart disease. Wildlife, particularly songbirds, are affected, too. Strategies for mitigation are like those for odor: siting facilities to take advantage of natural noise barriers, like hills and trees; building perimeter sound walls; maintaining equipment to ensure that it's operating as efficiently and quietly as possible; using electric motors on that machinery; and limiting vehicle traffic.²⁹

While the nineteenth-century arrival of these capitalist and settler-colonial extractive forces effected displacement by pushing human and more-than-human inhabitants from the land, Jackson explains that the ongoing transformation of the Aamjiwnaang smellscape (and, we can imagine, soundscape) has effected for its First Nations inhabitants continual "dysplacement," or a feeling of alienation and disorientation while still present in one's ancestral homeland.³⁰ One can be physically present yet sensorially and psychically removed. The smells of these extractive technical lands perform slow violences on those who live downwind, and their grand spatial order—rendered horrifically spectacular by photographers like Burtynsky and Mosse—belies the sensory injustices they exact on local bodies. As interdisciplinary scholar Macarena Gómez-Barris argues in *The Extractive Zone*, "the extractive view" manifested in such images, which deploy "the gaze of *terra nullius*, represent[s] Indigenous peoples as non-existent."³¹

Design And Sensory Attunement

Gómez-Barris proposes that early colonial modes of visualization, like the map, and newer visual technologies—including satellite images, LIDAR point clouds, and interactive maps—continue to "facilitate capitalist expansion, especially upon resource-rich Indigenous territories."³² The state and the corporation map in order "to accumulate, to convert, and

²⁸ Deborah Davis Jackson, "Scents of Place: The Dysplacement of a First Nations Community in Canada," *American Anthropologist* 113, no. 4 (December 2011): 608.

²⁹ Ann Brody Guy, "Noise Pollution from Oil and Gas Development May Harm Human Health," *WVU Today*, December 22, 2016, <https://wvutoday.wvu.edu/stories/2016/12/22/noise-pollution-from-oil-and-gas-development-may-harm-human-health>; Earthworks, "Oil and Gas Noise," Earthworks (n.d.), https://www.earthworks.org/issues/oil_and_gas_noise/; Jake Hays, Michel McCawley, and Seth B.C. Shonkoff, "Public Health Implications of Environmental Noise Associated with Unconventional Oil and Gas Development," *Science of the Total Environment* 580 (2017): 448–56.

³⁰ Davis Jackson, "Scents of Place," 616.

³¹ Macarena Gómez-Barris, *The Extractive Zone: Social Ecologies and Decolonial Perspectives* (Durham, NC: Duke University Press, 2017), 6.

³² Gómez-Barris, *The Extractive Zone*.

³³ Gómez-Barris, *The Extractive Zone*, 8; see also Candace Fujikane, *Mapping Abundance for a Planetary Future: Kanaka Maoli and Critical Settler Cartographies in Hawai'i* (Durham, NC: Duke University Press, 2021).

³⁴ Gómez-Barris, *The Extractive Zone*, xv.

³⁵ Gómez-Barris, *The Extractive Zone*, xx.

³⁶ Gómez-Barris, *The Extractive Zone*, 15.

³⁷ Shannon Mattern, "Ear to the Wire: Listening to Historic Urban Infrastructures," *AmoDern 2* (2013): <https://amodern.net/article/ear-to-the-wire/>; Shannon Mattern, "Sonic Archaeology," in *The Routledge Companion to Sound Studies*, Michael Bull (New York, NY: Routledge, 2018), 222–30; Shannon Mattern, "The Pulse of Global Passage: Listening to Logistics," in *Assembly Codes: The Logistics of Media*, eds., Matthew Hockenberry, Nicole Starosielski, and Susan Zieger (Durham, NC: Duke University Press, 2021), 75–92.

³⁸ Hsu, *The Smell of Risk*, 20.

³⁹ Daniel Fernández Pascual and Alon Schwabe, "Oranges Are Orange, Salmon Are Salmon," *The Paris Review*, August 17, 2020, <https://www.theparisreview.org/blog/2020/08/17/oranges-are-orange-salmon-are-salmon/>.

⁴⁰ Daniel Fernández Pascual and Alon Schwabe, "ADS3: Refuse Trespassing Our Bodies—The Right to Breathe," *Royal College of Art*, 2019–20, <https://www.rca.ac.uk/study/schools/school-of-architecture/architecture/ads-themes-2019-20/ads3/>.

expand the global economy"—in part by turning Indigenous terrains into technical lands.³³ Given the limitations of standard modes of visualization, Gómez-Barris wonders, what might we learn about these terrains, about their alternative ontologies and genealogies, about possible modes of resistance, by questioning "what lies beneath the visible world of the extractive zone"?³⁴ How might we "seek out less perceivable worlds, life forms, and the organization of relations within them"? What new forms of representation or documentation or projection might help us "see, hear, and intimate the land differently? What do we really know about the invisible, the inanimate, and the nonhuman forms that reside as the afterlives of the colonial encounter?"³⁵ Gómez-Barris describes various techniques for inverting the gaze, for "peering below, above, and through"; for revealing "a submerged, below-the-surface, blurry countervisuality"; for listening to environmental agents.³⁶

I want to pick up on her final provocation to ask what we might learn about technical lands—and what they once were, and what more they can be—by looking past visualization altogether, and instead by engaging with other senses. I've written elsewhere about what we can learn about infrastructures and the technical geographies of logistics by listening to them, and about how sound artists often help us auscultate these spaces and systems. I won't echo that discussion here.³⁷ But how might we engage with technical lands through smell? Hsu proposes that "to think with smell is not only to redistribute the sensible, à la Ranciere, "but to develop a sensory alternative to the system of Western aesthetics and its tendency to downplay invisible, environmental slow violence by framing the atmosphere as an empty space between (ocularcentric) subject and object rather than apprehending it as a material, biopolitical medium."³⁸ In other words, smelling technical lands reminds us that the atmosphere is part of their technical apparatus, and that environmental destruction is often a consequence of its technique or a manifestation of errors in its operational logics. Odors "sniff out" the inefficiencies and dysfunctions of technical lands.

How might thinking through smell inform the design of technical lands? We've already discussed how designers, engineers, and developers must be attuned to smell as they consider the labor conditions in, and environmental impacts of, these technical spaces. But how might an olfactory sensibility cultivate a deeper appreciation of the logics and politics undergirding the "design" of nuclear waste facilities, oil fields, and fish farms? Consider the work of Daniel Fernández Pascual and Alon Schwabe, who together form Cooking Sections, a research-design practice that thinks through food and its sensory and political geographies. Most recently, their work asks how the technical lands of orchards and fish farms have transformed oranges and salmon: the fruit, the fish, and their namesake colors.³⁹ Their 2019–21 studio at the Royal College of Art focused on the breath, pollution, contamination, and "how the built environment is entangled in biochemical pathways."⁴⁰ They sought to "incorporate metabolic thinking into architectural discourse" and to prompt designers to ask how we can remake "the world we now inhale, absorb, lick, sweat, and digest?" We can also look—or perhaps

sniff—toward the work of artist Beatrice Glow, whose olfactory installations engage with the colonial geographies of spice.⁴¹

Spice is perhaps a useful synesthetic metaphor for thinking about and designing technical lands, which are so often represented through flat, abstracted maps, aerial photos, and diagrams. Spices adds sensory depth and texture that can unfold over time. As temporal media, they are used to preserve and embalm. Through their cultural histories, spices blend local terroir and global systems. And they, too, often emerge from technical lands—from plantations and factory farms—yet they remind us that these spaces of abstracted logic and visual order are atmospheric and reliant on organic bodies and ecologies, who are themselves, in turn, transformed by the technical apparatus that order them.

⁴¹ Beatrice Glow, *Selected Works*, accessed July 25, 2021, <https://beatriceglow.org/exhibitions/>.

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