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Media mapping and oil extraction: A Louisiana story

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Introduction

Dead trees with leafless branches grey against the sky, flooded roads, houses raised up on stilts: such are the marks of coastal communities in peril in this time of environmental volatility and degradation. Chief Albert Naquin states in the 2015 documentary *Can't Stop the Water* that '[t]he small Indian community of Isle de Jean Charles ... is the first community in the lower forty-eight states to be forced to retreat due to coastal land loss' resulting from the incursions of oil extraction and exacerbated by global warming.[1]

Written from the perspective of spatial media and ecomedia studies and influenced by human geography, critical cartography, and critical environmental justice, this article nominates the situated film as such, identifies its kinship with other geolocational media (e.g. from historical maps to aerial scans), and demonstrates how these media together co-constitute the environments they may seem only to sense, scan, photograph, map, mark, snake through, or hover over. Then, in the spirit of mapping as generative, this article experiments with fieldwork practice and a cartographic analytic to deepen our understanding of the 'production of space' as simultaneously social, positional, material, and mediated.[2]

How do geolocational media figure environments and communities at risk? How do they figure into them? By studying a range of media, from historical film production stills and maps for oil and gas prospecting to satellite

imagery and kite and balloon mapping, I reveal the entanglement of film and media with oil infrastructures on the Louisiana Gulf Coast of the United States; the mutuality of their ardent forces; the losses these formations have induced however inadvertently and incrementally; and the need to tread lightly in this exquisite landscape. In light of Kathryn Yusoff's insight that the 'catastrophe of climate change' is 'earth writing writ large', [3] this essay traces Gulf Coast media as earth *rewriting* and *remapping*.

Louisiana's story

Katrina and Rita, Gustav and Ike, wet hurricane-force sideways slaps across coastal areas. These storms from 2005 and 2008, and those that preceded, interceded, and followed them, have sculpted the environment, both natural and human-built. They have done so not only through the destruction they have wreaked, but also through the engineering feats they have engendered, and more prosaically but no less importantly, through the reinvention of roads, buildings, and other architectural arabesques.

These storms and related floods (80% of the city of New Orleans during Katrina) are interlocutors in the post-Katrina cultural conversation whose progressive ideological register is social ecology, or the conviction that those already disadvantaged before the storm suffer most when disaster strikes.[4] Increasingly, 'there is no such thing as a natural disaster' 'separable from the consequences of human action'.[5]

Then, in April 2010, the British Petroleum (BP) Deepwater Horizon drilling rig of the Macando Prospect in the Gulf of Mexico exploded and sank to the bottom of the sea floor. Known as the largest offshore oil spill in US history, the gusher flowed for 87 days – a liquid keening for the eleven men killed and the fate of a coastal environment hanging in balance.[6] In his 17th century eschatology, Thomas Burnet described bituminous black coal (along with salts and fossils) as 'ardent' matter lying with other metals 'in the dark and deep Womb of Nature', a forceful 'subterranean enemy' from which 'when the earth shall burn, we have reason to apprehend no small danger'.[7] Footage shot by crews from various remotely-operated underwater vehicles (ROVs), including those under contract with BP,[8] revealed the toxic hemorrhaging in real time.

The BP well blowout is both a catastrophe and an apt example of what Rob Nixon calls ‘slow violence’: a violence ‘of delayed destruction that is dispersed across time and space, an attritional violence that is an event or action that is typically not viewed as violence at all’[9] – which it most definitely is. Eight years after the event, we can now say that the damage to the Gulf of Mexico and Gulf Coast ecosystems from the spill and the use of chemical dispersants in the ostensible cleanup effort has been devastating, extensive, and irreversible in important aspects.[10]

Moreover, individual storms and euphemistically labeled ‘spills’[11] are symptomatic of an even deeper history and problem: the inherent injustices to human communities and more-than-human worlds fueled by the ‘engineering cosmology’ and highly-capitalised practices of oil extraction.[12] The BP discharge accelerated changes to the wetlands that had been occurring over the long term.[13] Beginning during the so-called transportation revolution of the 18th century with its canal dredging for commerce and industry and continuing in the 1930s and beyond, Louisiana’s story crucially concerns how the oil and gas industries have contributed to the loss of the coastal wetlands that serve as a natural buffer from the hurricanes and tropical storms that form over water and sweep in over the land.[14] William Freudenburg and his coauthors relate these incursions into the wetlands to the ‘proverbial death by a thousand cuts’.[15] In a 40-year period ending in 1977, they report, ‘approximately 6,300 exploratory wells and over 21,000 development wells were drilled in eight Louisiana parishes’.[16] Then 10,000 miles of canals[17] and pipeline corridors were cut to deliver the oil out.



Fig. 1: Source: U.S. Geological Survey.

The result has been an onshore flow of saltwater into freshwater marshes. The building of massive, intertwined levee systems also confined the Mississippi and surrounding rivers, inhibiting the watershed's natural meanders and the downriver flow of sediment that would otherwise replenish the land. According to the United States Geological Survey (USGS), Louisiana has 'lost just under 1,900 square miles of land between 1932 and 2000'.[18]

This is the supposedly constructive and productive but eventually destructive infrastructure of Gulf Coast 'oil modernity', in Mona Damluji's evocative term, that I seek to reveal as such by mapping oil media.[19]

Louisiana Story, Beasts of the Southern Wild, and mapping the production of space

Maps play a number of roles, explains John Pickles: they are 'archive[s] for geo-referenced data', 'pictures of the spatial order of the world', 'tool[s] for investigating spatial relations', and 'object[s] of aesthetic and historical interest'.[20] The map is not only a purpose-built device that shows with precision the geological features of a region or accurately identifies property names and boundaries. It is also an epistemological and historical proposition 'embedded in a set of practices and institutions that affect the ways in which we live our lives in the modern world'.[21] With reference to the scholarship of J.B. Harley, co-founder of The History of Cartography Project, Pickles presents an extended discussion of the map as a 'social creation' that negotiates and actually brings into being spatial relations.[22]

To begin this media mapping with cinema, I acknowledge Tom Conley's brilliant discussion of the map-to-film relationship as 'strangely coextensive' and his corollary principle that 'films *are* maps'.[23] In a similar vein, Giuliana Bruno writes of the motion picture as a form of 'site-seeing' that is 'the very synthesis of seeing and going – a place where seeing *is* going'.[24] What might we say more site-specifically about the 'strangely coextensive' relationship between the telling films, *Louisiana Story* (Robert Flaherty, 1948) and *Beasts of the Southern Wild* (Benh Zeitlin, 2012), and the byways of oil extraction?

Well blowouts occur frequently. More than 60 years prior to the BP spill, there was another gusher: that of the wildcat oilrig in bayou country seen in Robert Flaherty's *Louisiana Story*. Sponsored by Standard Oil, this 1948 'docufiction' film portrays a Cajun family who greet the arrival of a strange floating contraption with a sense of curiosity and portent.[25]



Fig. 2: Flaherty Production Shot by Todd Webb, 1947. Standard Oil (New Jersey), SONJ_49919, Archives and Special Collections, University of Louisville, <https://library.louisville.edu/archives/home>.

Figure 2 shows the water-well oil derrick being towed along the bayou where the family lives. As the story unfolds, the boy alternates his fishing and alligator hunting activities – beautiful, famous shots by renowned documentarian Richard Leacock of J.C. Boudreaux paddling his pirogue – with overtures to the crew of the rig: cheerful, friendly, and capable men who welcome the boy aboard the drilling platform. The subsequent well blowout is presented in a dramatic sequence of rapid, graphic editing and musical exertion as a forceful expulsion of mud, water, steam, and oil that is capably contained by the closing of a valve. At the end of the film, the derrick is towed away – as if its presence were a passing interlude – leaving in place the assembly of valves and fittings called a ‘Christmas tree’ that regulates the flow of oil through the pipeline beneath the water (Figure 3).[26]



Fig. 3: Still frame from *Louisiana Story*.

In *Parallel Tracks: The Railroad and Silent Cinema*, Lynne Kirby analyses the ‘special kinship’ between cinema and the railroad, discussing train carriages as a common setting for silent films (and jostling romantic encounters) and trains themselves as a significant early conveyance for moving camera shots. Going beyond these practicalities, she explores the mutual business interests of railroad and motion picture companies and situates cinema and railroad as ‘complementary [technological and cultural] experiences’ that ‘shaped the modern world and its subjects’.[27] The Union Pacific, the Canadian Pacific, the New York Central, and other railroads supported filmmaking as commercial advertisement even where these de facto promotional films ‘were not marketed as such by the filmmakers’.[28]

Likewise, in the case of *Louisiana Story*, oil company and film production realised their interests as complementary experiences. Though Standard Oil was not given a screen credit, the film was enabled by the infrastructure of oil extraction and could not have been made as such without it. The debate over whether, ideologically speaking, the film is pro-oil or, alternatively, a portrait of a simple, vanishing lifeway is not the point here.[29] Infrastructurally, the film is a primal scene of oil and media modernity, the contours and meaning of which may be made sensible through cartographic analysis. In preparation for his filmmaking, Flaherty engaged in serious research into oil prospecting and extractive processes and in concentrated production

planning.[30] Standard Oil was highly supportive.[31] Personnel (the crew of Derrick #12) (thanked in the film’s head credits [as Derrick #1]) and equipment from the subsidiary Humble Oil were placed at Flaherty’s disposal to be used as conveyances for the set pieces – or even *as* mobile set pieces, in the case of the floating derrick – and platforms for the camera.

To analyse this situation, first there is the creative geography of the editorial assembly that comprises *Louisiana Story*: the physical location and filmic materialities, in combination, create the fictive world of the film.[32] The boy-on-the-bayou sequences are certainly significant, but the film’s narrative arc begins at the point of the derrick’s arrival and ends with its departure. From this perspective, the film is a 78-minute oil extraction montage made up of shots of actual industrial equipment taken at different places and times. Placing the components of the oil sequences in a critical centrifuge with the film as its axis of rotation, I proceed by identifying the far-flung locations whence they came. To be sure, identifying the physical shooting locations is not the be-all and end-all of the spatialised reading practice I proffer here: rather it constitutes the primary research in relation to which the film’s scattershot creative work of geolocative visualisation is made legible.

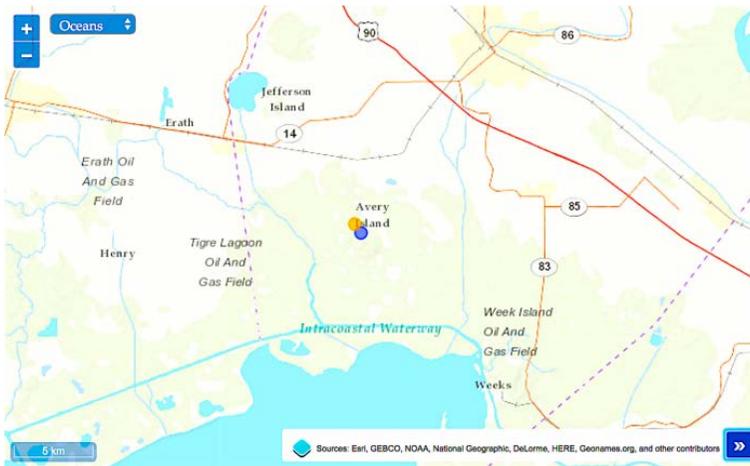


Fig. 4: Oil and gas fields in and around Avery and Weeks Islands. Sources: Esri, NOAA, et al.

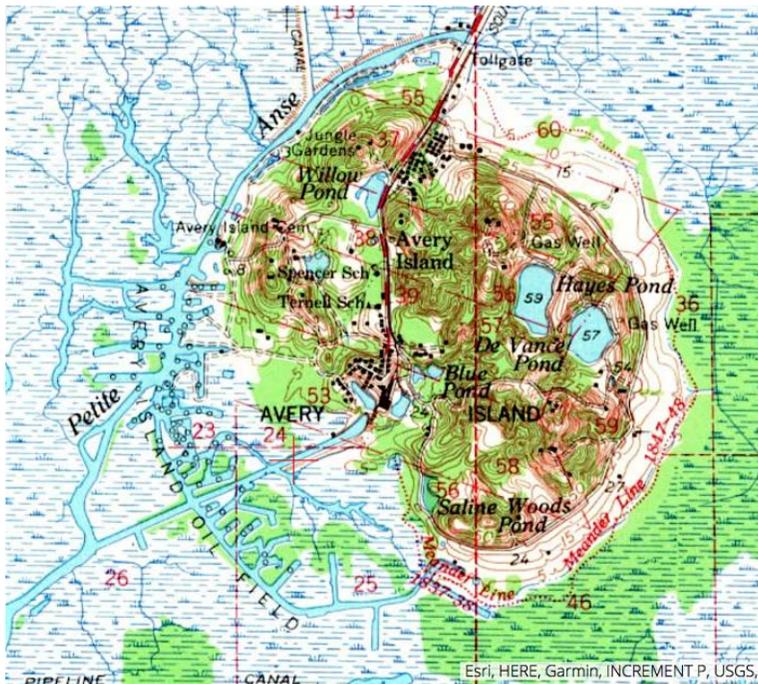
From sources including the published diary of the editor Helen van Dongen and discussions by cinematographer Richard Leacock,[33] we know that the single derrick seen in the film is a composite structure made from shots of multiple drilling rigs and helped in its fiction of singularity by the avoidance

of a proper establishing shot of the entire apparatus.[34] By researching, in addition, the metadata from thousands of *Louisiana Story* production and location photographs and also historical photographs of oil extraction in the area[35] the profilmic map emerges, its latent contours leached out of and visible now upon the oil field.

The Humble Derrick crew aboard the platform were filmed in the Avery Island-Bayou Petite Anse, in the Cypress swamps or 'Jungle Gardens' of what is still today the McIlhenny Tabasco Co.[36] This was also the site of an initial, incomplete attempt to film a blowout,[37] and where the 'Christmas tree' remains in place, according to McIlhenny archivist Shane Bernard.[38] The diegetic arrival of the derrick was filmed miles away off Weeks Island[39] (near to the location of the boy's family home that, in the fiction, is in Bayou Petit Anse[40]). The actual blowout that Flaherty was obliged to wait around for and film – since the simulated blowout did not satisfy – took place about 60 miles away.[41] Also, in testimony to the film's embeddedness in an energy ecoeconomy, the blowout had to be filmed with a hand-cranked camera since the presence of a camera battery would risk explosion.[42]

Beyond these specific derrick locations, the map of the film is even more expansive. Leacock writes that the 'film was shot over a huge area from near the Texas border, toward New Orleans'.[43] Some of the alligator footage was shot in the Sabine National Wildlife Refuge in Southwest Louisiana on the Texas border.[44] The famous spider web image comes from Little Pecan Island, accessible only by boat via a narrow waterway off a curving bayou.[45] Additional shooting took place at two oil refineries, in Texas and Baton Rouge. Leacock indicates that the footage could not be included in the final film since company executives were horrified that the company had shot 'every illegal and polluting aspect of what goes on there'.[46] Footage of intensive prospecting by seismograph crews in Texas which included 'dynamite explosions and recording the reflection pulses from deep data' was accomplished but scrapped because it was decided that the material was as boring as 'one of those army training films on how to clean a rifle'. The spider webs were much more beautiful opined Leacock.[47]

The deep mapping of the film's ecological footprint requires knowledge of the companion map: the archive of oil violently prised out of this prime ground for energy development in the United States. According to Jason Theriot in *American Energy: Imperiled Coast*, the 1930s and 1940s were a key period in this history.



Figs 5, 6: Bayou Petit Anse and Avery Island before (1937) and after (1963) oil field dredging. Sources: Historical Maps and Charts, USGS, et al.

Second, before and below the film's creative geography runs the crew's dependency on existing roads and canals – literally, how they got around – in the extractive landscape. The film production actively partnered with the oil industry's entrenchment in Louisiana's carboniferous substrate during the preamble to saltwater incursion and the 'coastal erosion crisis'.^[50]

Nicole Starosielski historicises and theorises fiber-optic cables in the Western Catskills as a 'pipeline ecology' 'entangled' (in Karen's Barad's term) with the 'disparate histories' of tree growth and rural electrification, waterways and railways, diary production and agrarian resistance, and with the prospect of future fracking. Similarly, the production logistics of *Louisiana Story* were reliant on 'infrastructural connections' and 'the ecologies they appear to bypass'.^[51]

Over their fourteen months of location work, Flaherty's company traveled back and forth on natural bayous giving onto roads and human-dredged canals cut into the landscape, with the movements of the production com-

pany radiating out from their headquarters in a house in Abbeville, Vermilion Parish, conveniently situated in the midst of the Louisiana oil and gas fields.

Here are a few relevant excerpts from van Dongen's diary and a map I sketched to imagine the company's movements and think cartographically.

August 29 Possible to shoot swamp part in afternoons? We got swamp buggy, but have to go out on light survey first. Do not know how it works and how we will visualize transition from marshes into open waterways without going through *dull part of dredging* (28, emphasis added).



Fig. 7: Another 'dull part' of the petroleum landscape. Lafourche Parish, Edwin Rosskam and Louise Rosskam, photographers, 1944. Standard Oil (New Jersey), SONJ_01823, Archives and Special Collections, University of Louisville, <https://library.louisville.edu/archives/home>.

October 3 With Hebert's boat down Vermilion River, west [sic?] on the Intracoastal Canal and up the Avery-Delcambre Canal. Hebert lets me drive his boat all the way through Intracoastal Canal and almost up to the Humble Wharf at Avery Island (36-37).



Fig. 8: Shrimp fishing boat on the Intracoastal Canal south of Houma. Charles E. Rotkin, Photographer, 1950. Standard Oil (New Jersey), SONJ_61767, Archives and Special Collections, University of Louisville, <https://library.louisville.edu/archives/home>.

November 6 By car to Intracoastal [Canal]-then by boat through Intracoastal to Pecan Island. Get stuck on White Lake. High wind. Turn around (52).

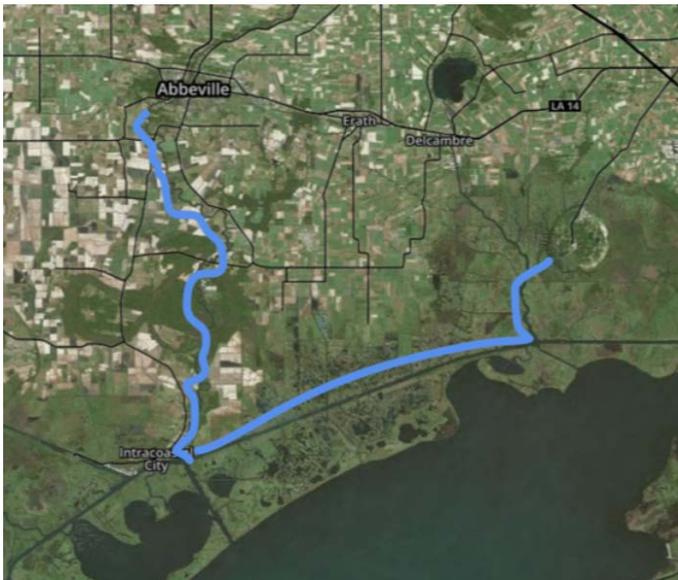


Fig. 9: Imaginative cartography. Map by author.

Whereas *Louisiana Story* might seem to have gone its own way by avoiding the explicit promotion of its sponsor and concluding with a passage in which the derrick is towed away, in fact its production thoroughly exploited the oil industry's aquatic transportation infrastructure at a pivotal moment in its history. The (un)sustainability of *Louisiana Story* is 'deeply tied to the systems and environments it traverses'.^[52] The film is a 'petromelancholic' figure^[53] or 'investment that inheres in modernity', part of the fossil fuel infrastructure that was cutting into bayou existence.^[54]

Returning to the present, the BP disaster and the filming of *Beasts of the Southern Wild* began the same day, with the crews making their ways around floating containment barriers.^[55] The film's narrative features extinct au-rochs emerging from Ice Age glaciers and a storm with shades of Hurricane Katrina flooding the 'Bathtub' community of fisherfolk located on the other side of the levee from the city.

Speculatively fictional though it is, the film – and its flood- and melt-scapes – was realised *in the current landscape*.^[56] According to Associate Producer and Location Manager Casey Coleman, the flooded Bathtub community as depicted after the fictional storm was created from actual fishing camps on the north side of Lake Pontchartrain that had been abandoned after a hurricane. Then, after the fictional floodwaters recede, the drained Bathtub Community reemerges in Terrebonne Parish, 'played by' the actual 'sinking' Isle de Jean Charles.^[57] The dead trees are no movie magic; they were killed by saltwater intrusion. Every filming location on the Isle de Jean Charles is already gone, casualties of the combined symptoms of climate warming: increased storm volatility, sea level rise, land loss.^[58]

In fact, the social ecology of *Beasts* is more uneven and uncertain than the film with its racially integrated money-poor/resource-rich community suggests. Southern Louisiana 'is a land of hydrological haves and have-nots', writes journalist Barry Yeoman.^[59] The Isle de Jean Charles was once four miles wide and home to 500 families, many from the Jean Charles Band of Biloxi-Chitimacha-Choctaw Indians who had been pushed by encroaching white settlement down to the ends of the bayous. Now the island is a thin strip 1,000 feet in width and most of the families have been forced to leave. The Island Road built in 1953 and featured in *Can't Stop the Water* is often under water.

I visited the island guided by Alida D. Naquin, a Cajun woman who had married into a Biloxi-Chitimacha-Choctaw family. She introduced me to members of this community who also appear in *Can't Stop the Water*.^[60]

From the deck of his elevated home, Roch Naquin directed our attention to a small canal dredged in the 1960s in the service of oil extraction. In the past, he told us, this artificial waterway could not have been seen from the homes along the road from which it was separated by a thick wood.[61] This is the community that has earned support for relocation from the US Department of Housing and Urban Development. Of course their strongest preference has been to continue to live or have the option to live on the island, and efforts to rebuild and elevate houses after each storm have been strenuous. But in the face of unmitigated land loss, the community have educated the public, as Chief Naquin sought to do at the United Nations, and participated actively in planning and place-making activities.[62]

In this case, the filmic partnership is not so much with extraction-in-progress but with the damaged landscapes that are the results of this plunder.

From ASTER scanning to kite mapping by citizen scientists: Resource media ecologies of the Gulf Coast

How might the relationship between media and extractivist enterprises and their aftereffects be redesigned? The challenge is enormous. In *The Cinematic Footprint* Nadia Bozak introduces the term ‘resource image’ to probe how the cinematic image and its technological underpinnings exist as ‘the manufactured resources of industrialized culture’.[63] Taking the example of the large-format photographs of massive industrial incursions by renowned photographer Edward Burtynsky seen in *Manufactured Landscapes* (Jennifer Baichwal, 2006), Bozak references the mined silver in the nitrate compound from which analog film stock is constituted. ‘Burtynsky’s photographic enterprise could be mapped back to the same deleterious processes he was determined to bring to society’s attention’, she writes. Although Bozak chooses to focus on films that are reflexive with regard to their resource genealogies, her book establishes that all photographic images are resource images. In fact, all media are ‘resource media’, Nicole Starosielski and I and also Shane Brennan have argued.[64]

This section focuses on two modes of aerial imagery with very different media resource footprints in a highly technologised space that industrial incursions have made vulnerable.[65] ‘Mapping back to the same deleterious processes’ with which I began, British Petroleum’s response to the blowout was to limit area access by journalists, photographers, and scientists. Aerial

flights and photography, and the airspace itself, were contained.[66] Images of the spill were nevertheless produced by media operating at different scales, above and below the off-limits zone: key in this regard is the NASA Terra satellite imagery and imagery from the digital and infrared cameras of the Public Laboratory citizen science kite and balloon mapping project.

The Terra satellite was the first of the earth-observing spacecrafts explicitly designed to explore ‘the connections between Earth’s atmosphere, land, snow and ice, ocean, and energy balance’ to understand ‘Earth’s climate and climate change’ and ‘to map the impact of human activity and natural disasters on communities and ecosystems’.[67] The Terra satellite’s oil slick images were captured through the ASTER process and are scientifically significant. And, yet, we must also acknowledge the large size of satellites’ ecological footprints – from the natural resources and industrial and labor processes that go into the manufacture and launch of a satellite itself to the materials and processes behind scanning technologies and other apparatuses. Then, of course, there is the fuel to consider. The satellite was launched into sun-synchronous orbit from Vandenberg Air Force base in California aboard an Atlas-Centaur [IIAS] expendable launch vehicle using liquid hydrogen rocket fuel, a process that often requires fossil fuel to split the molecules and release the energy.[68] In short, this satellite media object intended for the study of climate change and productive of ‘resource images’ of the BP blowout is at the same time – and inevitably – a participant in the energy ecology that BP has dominated.

Public Laboratory for Open Technology (or Public Lab) strives to present an alternative energy economy with its low carbon footprint and high commitment to civic science, or science ‘that questions the state of things’ rather than merely serving the state.[69] ‘[I]nspired by the information blackout surrounding the 2010 BP Oil Disaster’ and the closing of the airspace above it, this grassroots mapping project engages with ‘maps ... as evidence for ... [a] community-owned definition of a territory’ in order to ‘identify, redress, remediate, and create awareness and accountability around environmental concerns’. And it is all done with kite and balloon mapping by members of the public.[70] Public Lab produced low-elevation imagery of the BP spill and, in another project, used kite photography to advocate for a response to a ‘new distributary arm’ of the Mississippi River that would let it ‘feed protective marshes and swamps with nourishing sediment and water’.[71]

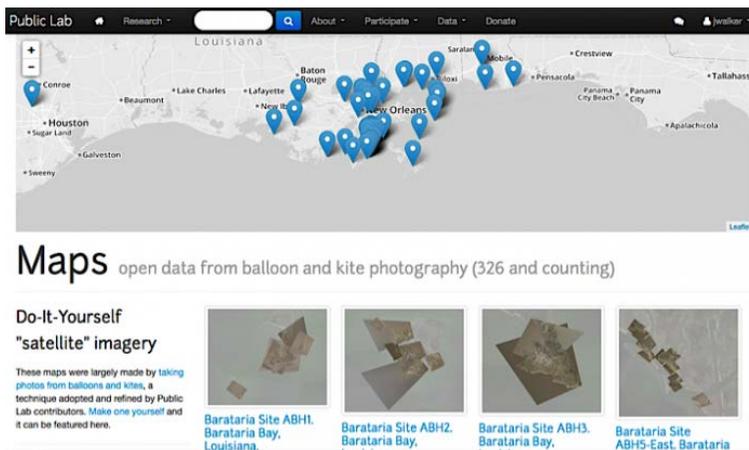


Fig. 10: Public Lab: a DIY environmental science community.

I want to approach a conclusion by combining information provided to me by Chief Shirell Parfait-Dardar of the Grand Caillou/Dulac Band of Biloxi-Chitimacha with data collected on a kite-mapping expedition with fellow Public Lab community members.[72] On my visit to her tribal territory, Chief Parfait-Dardar pointed out trees in the distance, indicating that they were once part of a much deeper stand that has now been encroached upon by water. She informed me that her community is affected by the depletion of small-scale and commercial fishing prospects due to saltwater inundation of the freshwater marshes. The functional interdependency of marine and human ecosystems is breaking apart. The next day, driving down the bayou, Public Lab colleagues and I saw, to the right, a healthy Cypress swamp, and, to the left, ongoing oil extraction (the 'dull part', as van Dongen put it). From cameras borne aloft by a kite, we took some low-elevation photographs of the waters that are eating away the marshlands on the other side of the forest where I met Chief Parfait-Dardar. We posted our images to the Public Lab archive as evidence of the moribund wetlands and in solidarity with activist, lightly-mediated, and community-defined visions of territory.

Conclusion

This article has mapped the extractive kinship between media and oil over time and along and above the bayous and canals of the Louisiana Gulf Coast.

As cuts in the wetlands and toxic injections into the atmosphere have disastrously and unevenly affected human and more-than-human communities, media are manifest in tandem.

The *Louisiana Story* narrative of cheerful oil and *Beasts of the Southern Wild* with its apocalyptic postcursor exist as representational texts in and through expeditionary and navigational processes enabled by the infrastructure of oil extraction. Like all films, their nature is that of the ‘resource image’. But then, more specifically, planted as they are in the oil and gas fields of Louisiana, their roots draw from and, in the case of the later film, also serve to question the fortifications of big oil. These cinematic cartographies, I have argued, are kin to other geolocational technologies that abide along the bayous, sampling, imaging, and sensing, and treading heavily or lightly as the case may be.

‘There are many ways to “cut” into’ or ‘und[o]’ the ardent ‘forms of becoming that are coconstituted with fossil fuels’, [73] suggests Kathryn Yusoff. Here I have advocated the following: embracing media practices that are in tune with instead of exploitive of natural systems; mapping media and designing alternative maps; learning from and supporting those communities in need of resources to stay, or, where absolutely necessary, to migrate – together – up the bayou. The case studies discussed in this article are meant to be revealing in and of themselves and indicative of what we can come to know by thinking about all the ways that maps and documentaries – and mapping and documenting – influence, mold, and inhabit one another.

Author

Janet Walker is Professor of Film and Media Studies at the University of California, Santa Barbara. A specialist in documentary film, trauma and memory, and environmental media, her six books include *Feminism and Documentary* (with Diane Waldman, 1999), *Trauma Cinema* (2005), *Documentary Testimonies* (with Bhaskar Sarkar, 2010) and, most recently, *Sustainable Media* (with Nicole Starosielski, 2016). She is the co-recipient of a 2017-2019 Mellon Foundation Sawyer Seminar grant for a project titled Energy Justice in Global Perspective and co-founder of a new, open access University of California Press journal titled *Media+Environment*. Walker’s book-in-progress is about media, mapping, and critical environmental justice.

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Notes

- [1] Rebecca Marshall Ferris and Jason Ferris, *Can't Stop the Water*, 2015.
- [2] For groundbreaking scholarship on humanities-based fieldwork see Parks 2001 and 2013. On cartographic heuristics in the geohumanities see von Lünen & Moschek 2011, p. 249. Of course the concept of the 'production of space' is Henri Lefebvre's (see Lefebvre 1991).
- [3] Yusoff 2009, p. 1.
- [4] See Walker 2010 and Walker 2014.
- [5] Hartman & Squires 2006; Park & Miller 2006.
- [6] See Gulf Oil spill, Smithsonian Ocean Portal 2018.
- [7] Burnet 1816, pp. 448, 274, 443. My thanks to Tobias Menely for sharing his brilliant talk (Menely 2014).
- [8] For example, Oceaneering International. *Dirty Energy* (Bryan D. Hopkins, 2013) incorporates some such footage.
- [9] Nixon 2011, p. 2.
- [10] Smithsonian Ocean Portal 2018. See Harvey 2016. The Wikipedia entry for Deepwater Horizon Oil Spill is detailed, referenced, and up-to-date.
- [11] LeMenager also notes that the word 'spill' downplays the violence and volume of blowout events, citing James 'Bud' Bottoms on the 1969 Santa Barbara oil blowout. LeMenager 2014, p. 51.
- [12] On critical environmental justice and the inextricable relationship of the human and more-than-human worlds see Pellow 2018. The term 'engineering cosmology' is from Yeoman 2010 quoted in Fellerath 2012. A growing scholarly literature, including in the emerging area of the 'energy humanities', arrays in no uncertain terms the ravages of late capitalist 'extractivism'. See for example, Mitchell, Gómez-Barris, and Szeman & Boyer.
- [13] Freudenburg et al 2009.

- [14] See Freudenburg et al 2009, especially 'Carving the Marshes' (pp. 60-63) and 'The Loss of Natural Defenses' (pp. 111-134).
- [15] Freudenburg et al 2009, p. 118.
- [16] Ibid.
- [17] Fellerath on Yeoman 2012.
- [18] Anderson 2014, p. 4.
- [19] See Damluji 2013 and the forthcoming book. Focusing on the Middle East, Damluji uses the term 'oil modernity' to explain how oil companies 'continually mediate our world through *cultural infrastructures*' that help normalise 'fossil fuel extraction as fundamental to modernity'. Book Abstract.
- [20] Pickles 2004, p. 9.
- [21] Ibid., p. 20.
- [22] Ibid., pp. 47-49. See also Harley 1989.
- [23] Conley 2007, p. 1.
- [24] Bruno 2002, p. 245.
- [25] There is voluminous literature on the life and work of Robert Flaherty. Richard Meran Barsam deems *Louisiana Story* Flaherty's masterpiece (1973, p. 151). See also Murphy 1978, Rotha & Ruby 1983, Winston 1984, Coogan 1998, and Williams 2002.
- [26] The petroleum industry at the time was regarded by many as a great boost to the impoverished economy of the early 20th century; the environmental impacts were not fully understood. The-riot 2014.
- [27] Kirby 1997, jacket blurb.
- [28] Ibid., p. 23.
- [29] For example, Eric Barnouw, says that Standard Oil Company 'could expect' Flaherty to make a film focusing on 'unspoiled wilderness' and 'de-emphasizing oil'. Barnouw 1993, pp. 218-219.
- [30] See Box 44 of 92 Boxes comprising the Robert J. Flaherty – Papers, Special Collections, Columbia University Libraries, Butler Hall (accessed at the Flaherty Study Center). Items include research Flaherty amassed on 'oil' and 'oil survey'. Individual reports such as 'Conservation: Making the Most of Our Oil' and 'Flowing Gold: The Romance of Oil' by John J. Flaherty cover topics including the geography of ancient rivers and geology of sedimentary rock and oil and gas deposits. See also Flaherty's 'The story behind *Louisiana Story*', Box 44, and scripts and photographs, Boxes 45, 49, and 50.
- [31] Box 43 contains the film's financial records, while Box 44 also contains the Standard Oil Co. film proposal.
- [32] Michael Renov uses the term 'fictive' to develop his foundational insight that documentary films, though nonfictional, are nevertheless 'fictive' in their inevitable use of strategies of narrative, character, and rhetorical fashioning. I am reversing the concept of the fictive to get at how *Louisiana Story*, though a docufiction, weaves footage of an actual place into a creative geography.
- [33] Orbanz 1998 and Leacock 2000. See Richard Leacock's along with Frances Flaherty's audio commentary. Special Features, *Louisiana Story* DVD, Home Video Entertainment. Restoration by The Library of Congress, The Museum of Modern Art, and UCLA Film and Television Department [sic], International Film Seminars, 2003.
- [34] This sort of compositing is common, even in films that are genuinely documentary in nature and even in the most profoundly site-specific of films.
- [35] I conducted this research in the summer of 2016 at the Robert and Frances Flaherty Study Center of the Claremont School of Theology, Claremont, California, with the invaluable and generous

- help of Professor Jack Coogan, Director; and in the online Standard Oil (New Jersey) Collection in Special Collections at the University of Louisville with the help of Delinda Stephens Buie and Elizabeth Ellis Reilly.
- [36] The fact of the filming in Bayou Petite Anse of Avery Island is well known. The famous footage of the Cypress swamps that appears at the opening of the film was shot around Weeks Island. Leacock 2000, p. 2.
- [37] Orbanz 1998, p. 32; see also Flaherty Study Center collection, Production Shot 42086, 'Derrick crew opening valve to release mud under high pressure to simulate oil blowout', photographed by Arnold Eagle, 1947-08, Avery Island, LA.
- [38] Shane Bernard, personal conversation with the author, 7 July 2016.
- [39] See van Dongen's hand drawn map titled 'General Outlay Locations', Orbanz 1998, p. 66; Orbanz 1998, pp. 43, 46, 48; Flaherty Production Shot #42929, 'Frank Hardy, J.C., and Bob Flaherty on the Weeks island rig', Todd Webb, 1947-06, Delcambre, LA. Note that the Flaherty Production Shot log contains some inconsistent information. Nevertheless, evidence from multiple sources indicates that there was a derrick at Weeks Island and that the Flaherty production unit shot images of a derrick at Weeks Island.
- [40] See Orbanz 1998, pp. 67-70; Flaherty Production Shot #43007, 'Old Jake's house on Weeks Island which is J.C.'s house in the film', 1947-05.
- [41] Barnouw 1993, p. 218.
- [42] Leacock 2000, p. 3. Since nothing electrical was allowed 'within a mile of the gas-spouting rig', Flaherty and Sidney Smith who filmed the sequence had to return with a Debric camera (instead of the usual Arriflex) which had a detachable electric motor and hand crank.
- [43] Leacock 2000, p. 2.
- [44] Orbanz 1998, pp. 36, 41.
- [45] Flaherty Production Shot #43266, 'Spider Web in the grass at Little Pecan Island', Todd Webb, 1948-01, Southeast, LA.
- [46] Leacock 2000, p. 4.
- [47] *Ibid.*, p. 3.
- [48] Theriot 2014, pp. 22-23.
- [49] *Ibid.*, pp. 15-16.
- [50] *Ibid.*, p. 3.
- [51] Starosielski 2016, p. 53. See also Barad 2007.
- [52] Starosielski 2016, p. 39.
- [53] LeMenager's 'Petromelancholia' chapter begins with the statement that '[I]oving oil to the extent that we have done in the twentieth century sets up the conditions of grief as conventional oil resources dwindle.' LeMenager 2014, p. 103.
- [54] *Ibid.*, p. 104.
- [55] There was a 'zero' day of film production prior to that first official day. Personal communication with Casey Coleman, 30 January 2013.
- [56] Kara 2014. Von Mossner 2014.
- [57] Personal communication with Coleman, 30 January 2015.
- [58] Mattos 2012. See also Banks 2012 and Zeitlin quoted in Mattos 2012.
- [59] Quoted in Fellerath 2012. See also Yeoman 2010.

- [60] I am grateful to Ailda Naquin for the knowledge and experience she generously shared with me on our visit to the Isle de Jean Charles in March 2016. I also thank Chris Brunet and Roch Naquin for inviting me into their homes and explaining the history and present situation of Isle de Jean Charles.
- [61] I thank Reginald Dupre, former Louisiana State Senator and Executive Director of the Terrebonne Levee and Conservation District, for talking with me in his office and sharing a planning map of the Morganza project dated March 2016. The Morganza to the Gulf levee project, a massive effort under construction, will pass south of Houma, leaving Isle de Jean Charles exposed to the Gulf. Digital storyteller and anthropologist Dr. Julie Maldonado introduced me to Cheri Dupre and it is thanks to the warmth and knowledge of these two extraordinary women that I was welcomed and taught by so many important interlocutors during my visit to Terrebonne Parrish.
- [62] Chief Albert Naquin and the Tribal Elders have been working for sixteen years to resettle their community together in a new location off the island. In 2016, the US Department of Housing and Urban Development gave a historic award of nearly 50 million dollars to the state of Louisiana's Office of Community Development-Disaster Recovery Unit for resettlement. See *Isle de Jean Charles Resettlement Project 2018*. Retreat too often plays out as 'government-planned relocation' schemes 'proceeding against the will of the people forced to move' (Koslov 2016, p. 360). Witness both the Acadian forebears of the Cajun community and the resistance of the people of Isle de Jean Charles. However, anthropogenic land loss on the Gulf Coast is such that Indigenous peoples here are engaging in common struggles and an activist and progressive 'case for retreat', as Liz Koslov has put it recently writing about multiple places in the United States and around the world.
- [63] Bozak 2012.
- [64] Walker and Starosielski 2016, Brennan 2016.
- [65] For germinal scholarship in geo-spatial and media infrastructural studies area see Parks 2013, Starosielski & Parks 2015, and Gabrys 2016.
- [66] In this, BP was backed by the Coast Guard-Federal Aviation Administration. Peters 2010.
- [67] Terra/NASA 2018.
- [68] Terra/NASA, see under About.
- [69] Public Laboratory 2016, website.
- [70] Ibid.
- [71] See <https://publiclab.org/wiki/stories> (accessed 4 November 2018).
- [72] I am grateful to Chief Parfait-Dardar for sharing her knowledge and her short film *Fighting to Save Home*, facilitated by Julie Maldonado. See <https://www.gcdbcc.org/what-we-do/> and <https://www.youtube.com/watch?v=rbphUxHHIDY> (accessed 3 November 2018). Many thanks to Public Lab community members Gerald McCollam and Shreya Subramani for the kite-mapping expedition.
- [73] Yusoff 2013, pp. 781, 792.