

For Good Measure

The Role of Regulatory Records in Environmental Maintenance

(Eira Tansey & Hillel Arnold, for SHOT 2017)

Shortly after FEMA began revising flood insurance rate maps in 2011, southeastern Louisiana homeowners, parish leaders, and Senators Vitter and Landrieu challenged the federal agency's approach. They claimed that the maps over-represented federal levee infrastructures, and under-represented local levee improvements (Shaw, 2013).¹ Parish officials and residents argued that the official federal maps implied less flood protection than what the locals thought was accurate - and there were fears that the federal maps would lead to higher insurance premiums.

After several proof of concept case studies, Community Roundtables, and ongoing pressure from Congressional representatives, FEMA revised its approach to incorporating local levees into flood insurance rate maps.² This had a drastic effect on mapping risk. Next door to New Orleans, 40,000 homeowners in Jefferson Parish were reclassified from a 100-year base flood zone requiring significant flood insurance to a lower risk zone.³

As environmental and property records, and as the products of regulation, these flood maps have a highly complex relationship with maintenance. Do they give a sense of false safety? Do they create impossible maintenance requirements, obligating the Corps of Engineers to the unfeasible task of controlling nature? Do they obligate FEMA to delay inevitable support for a flood-prone area, since even an accurate levee map does not account for the thresholds of combined sea-level rise and storm surge?

Like many other infrastructures of maintenance, these maps are often invisible. Most people take them for granted, and they blur into the background of our daily lives. But when these same infrastructures of maintenance threaten to increase household budgets by several thousand dollars, they suddenly become visible - and contested.

¹ http://www.nola.com/politics/index.ssf/2013/07/fema_maps_draw_criticism_from.html and http://www.nola.com/opinions/index.ssf/2013/07/femas_maps_arent_ready_to_go_e.html

² <https://www.fema.gov/final-levee-analysis-and-mapping-approach> and https://www.fema.gov/media-library-data/20130726-1922-25045-4455/20130703_approachdocument_508.pdf

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http://www.theadvocate.com/new-orleans/news/article_f13c1ed0-7eda-11e7-86a5-1353f39a83de.html

Defining maintenance (Hillel)

Maintenance is often described as an invisible form of labor. This invisibility is not merely a coincidental characteristic of maintenance, rather it is actively produced by architectural interventions that hide the bodies of maintainers from consumers, by normalization of infrastructure in which this work takes place, and by modes of professionalization which value the obscuring of breakage, repair, failure or bias.⁴ As a result, the bodies and effects of maintenance have largely been excluded from historical discourse.⁵

Maintenance is also work that must be done continuously and consistently in order to be done effectively.⁶ As a result it relies on set standards against which change can be measured, expert knowledge about which measurements matter, and what change in those measurements means.⁷

Ideally, this monitoring is followed by repair, when necessary. Although repair is often conceptualized as a “return” to a state of wholeness, purity or completeness, we argue that such a conception is insufficient in the context of environmental regulations. Instead, repair must constantly negotiate change by improvising and by attempting to improve incrementally.⁸ However, it is also true that repair does not always happen, even when it is desperately needed. Deferral or cancellation of maintenance - which we argue is often a conscious choice - usually results in failure of systems and infrastructures at scales varying from inconvenience to disaster.⁹

⁴ Strebel, Ignaz. “The Living Building: Towards a Geography of Maintenance Work.” *Social & Cultural Geography* 12, no. 3 (May 1, 2011): 243–62. <https://doi.org/10.1080/14649365.2011.564732>, Denis, Jérôme, Alessandro Mongili, and David Pontille. “Maintenance & Repair in Science and Technology Studies.” *TECNOSCIENZA: Italian Journal of Science & Technology Studies* 6, no. 2 (January 29, 2016): 5–16., Denis, Jérôme, and David Pontille. “Beyond Breakdown: Exploring Regimes of Maintenance.” *Continent*. 6, no. 1 (March 22, 2017): 13–17, Eggers, Dolores M, John Villani, and Richard Andrews. “Third-Party Information Providers and Innovative Environmental Technology Adoption.” *American Behavioral Scientist* 44, no. 2 (October 1, 2000): 265–76. <https://doi.org/10.1177/00027640021956206>. The conceptualization of infrastructure as something that “sinks into the background” is drawn from the work of Susan Leigh Star.

⁵ Russell, Andrew, and Lee Vinsel. “Innovation Is Overvalued. Maintenance Often Matters More.” *Aeon*, April 7, 2016. <https://aeon.co/essays/innovation-is-overvalued-maintenance-often-matters-more>.

⁶ Graham, Steven, and Nigel Thrift. “Out of Order: Understanding Repair and Maintenance.” *Theory, Culture & Society* 24, no. 3 (n.d.): 12-13.

⁷ Houston, Lara. “The Timeliness of Repair.” *Continent*. 6, no. 1 (March 23, 2017): 51–55.

⁸ Houston, Jackson, Steven J. “Rethinking Repair.” In *Media Technologies*, edited by Tarleton Gillespie, Pablo J. Boczkowski, and Kirsten A. Foot, 221–40. The MIT Press, 2014. <http://mitpress.universitypressscholarship.com/view/10.7551/mitpress/9780262525374.001.0001/upso-9780262525374-chapter-11>, Denis, Mongili and Pontille, Graham and Thrift, 6.

⁹ Poorly maintained levees in New Orleans, the rollback of emissions standards despite hard evidence of their impacts on climate change, legal loopholes which allow Houston-area

Finally, the conception of maintenance on which this paper is built relies on insights developed by feminist care ethics, specifically that labor which is feminized is often invisible, emotional and performative, and has unique and irreplaceable social value.¹⁰ Through these ideas we are able to understand maintenance as a form of care work.

Brief intro to environmental regulation (Eira)

The broadest formulation of environmental policy covers cultural practices, rituals, laws, or rules meant to control people's interactions with the environment. Contemporary environmental policies typically address three areas: regulation of pollution, regulation of natural resources, and protection of natural and cultural heritage (Andrews, 2006).¹¹

Environmental governance is necessary because individual choices inevitably impact collective resources. The absence of environmental governance leads to issues of commons depletion and free-riding, by endangering public health, and by undermining future generations' ability to access natural resources.

In the US, these issues are typically regulated, adjudicated, and enforced by some level of government, depending on the problem and the jurisdiction. Under common law tradition, governments have obligations to enforce contracts, define markets and property rights, and address collective action problems. These often result in contradictory and competing interests. American environmental law reflects these tensions, and is characterized by federalism that delegates legal responsibility to multiple authorities (Lamdan, 2017).¹²

The widespread settlement of land and the commodification of natural resources were the de facto forms of environmental governance during the 19th century. With the end of

developers to build inside flood reservoirs are just a few recent examples of the ways in which environmental regulatory infrastructures are consciously undermined.

¹⁰ Major themes in feminist care ethics can be found in the work of Carol Gilligan, Nel Noddings and Joan Tronto. Writers who have drawn connections between care and maintenance include Silvia Federici, Ruth Schwartz Cowan, Nancy Fraser, Laura Forlano and Christopher R. Henke. In the context of environmental regulation, we acknowledge the contribution of activists such as Lois Gibbs, who centered her role as a caregiver in organizing the Love Canal movement.

¹¹ Andrews, R. N. (2006). *Managing the environment, managing ourselves: A history of American environmental policy*. Yale University Press.

¹² Lamdan, S., & Environmental Law Institute,. (2017). *Environmental information: Research, access & environmental decisionmaking*.

the American Revolution, the US government rapidly asserted public control over as much land as possible, through large sales like the Louisiana Purchase, or using legal and military means to systematically undermine indigenous land claims. The federal government then sold or granted most of its land assets to individual white settlers or private corporations - many of whom had already been squatting on the land before they were granted legal recognition. By the 20th century, the massive transformation of land into a privatized economy had massive repercussions, as landholders polluted or exhausted natural resources without accountability.

Given the socioeconomic organization of contemporary American society, some form of environmental governance is “both necessary and inevitable” (Andrews, 2006.) The notion of environmental regulation entered American consciousness with the turn towards the romanticization of wilderness, and the rise of the Progressive Movement. The designation of national parks for long-term preservation, the conservation of natural resources like forests, and local attempts to improve municipal sanitation and pollution characterized early environmental regulations. From the 1950s to the 1970s, atomic age anxieties grew about the effects of chemical technology on humans, animals, and crops, and many states and cities were either unwilling or unable to clean up devastating pollution. With increasing political pressure to make changes at the federal level, President Richard Nixon signed a reorganization order creating the Environmental Protection Agency - consolidating responsibility for many existing environmental regulations across various federal entities under one agency.

Contemporary environmental laws take the following forms: informational and planning laws intended to aid environmental decision-making, pollution control laws, resource management laws to restrict exhaustion of animals and plants, chemical regulation laws, and liability laws that assign responsibility for pollution clean up (Lamdan, 2017).

The ability to regulate the environment across long periods and large areas requires significant quantities of information - what is added to or removed from the environment, who is performing such acts, and who bears ultimate responsibility or authority over a situation. Regulation is not possible without information. Therefore, we propose that recordkeeping is a critical aspect of maintaining contemporary American environmental regulations.

Connecting environmental recordkeeping to ideas of maintenance (Eira and Hillel)

Recordkeeping as infrastructure

Recordkeeping involves both the production and maintenance of records.¹³ In the professional literature of archivists - which is what we both are - it is often defined as the capture of information which documents the activities and functions of people and organizations *as well as* the ongoing work which ensures these records are findable and usable over time.

We propose a less anthropocentric notion of records and recordkeeping which does not draw artificial distinctions between information and records, or humans and the environment. Take, for example, Harold Fisk's 1944 maps of the Mississippi River alluvial valley, records of both a river channel that no longer exists, as well as the way in which humans have indelibly altered the natural environment.¹⁴ Human activity - building locks and levees, reinforcing banks, diverting tributaries - is intertwined with records of so-called "natural" events like floods.¹⁵

For an example of how regulatory infrastructure builds on recordkeeping activity, consider the EPA notice-and-comment rulemaking process, by which environmental legislation and executive orders are turned into enforceable rules. The first step of this process is the publication of a proposed regulation in the *Federal Register*. This regulation is usually supported by an "open docket," or a set of supporting documents including impact studies, court rulings, public comments on the proposed rule, and previous versions of regulations. After a period of time - usually 30 days - during which public comments are accepted, the EPA issues a final rule.¹⁶

Every step of this process relies on the authenticity of multiple documents - and often multiple versions of multiple documents - as well as the creation of durable links between documents to connect dockets and comments to proposed rules, and differentiate between proposed and final rules. Metadata uniquely identifying documents, describing them, logging their chain of custody, and recording changes must be created and updated over time. Monthly and bi-annual summaries of activities have to be released. With between five and six hundred proposed and final rules created every year by the EPA alone, one can easily imagine the amount of labor involved, even

¹³ See the definitions for this term in the International Council on Archives' *Multilingual Archival Terminology*: <http://www.ciscra.org/mat/mat/term/293>

¹⁴ These maps are available at <http://www.radicalcartography.net/index.html?fisk>

¹⁵ Another potentially informative example are core samples, which document the properties of natural substances and their changes over time, changes which are often caused by human activity.

¹⁶ The description provided here is very broad, and does not include many of the additional processes that take place before, during and after the rulemaking process, all of which result in additional records. For a more detailed view of the rulemaking process, see the Reg Map at <https://www.reginfo.gov/public/reginfo/Regmap/regmap.pdf>. It is also worth noting that nonregulatory agencies - such as the Department of Investigation and the Department of Transportation - conduct environmental assessments and impact studies.

without accounting for pre- and post-rulemaking recordkeeping, which can be equally voluminous and critical.¹⁷ This is the work of recordkeeping.

There are direct parallels between the characteristics of this recordkeeping work and the more generalized conception of maintenance we began with. Recordkeeping structures - at the federal level but also at the state and local levels - are notoriously invisible, encoded in complex records schedules which can be challenging to find.¹⁸ The products of these recordkeeping processes are often hidden behind links, embedded in systems as data, or accessible only via FOIA requests. This recordkeeping is also work that has to be performed continuously, not only to keep the stream of proposed and final regulations flowing, but also to ensure compliance with and enforcement of existing regulations.

Once rules are created, the EPA and state agency partners then rely on the records created during this rulemaking process, along with monitoring data, to enforce regulations and ensure compliance.¹⁹ Ideally, the recordkeeping process provides evidence, accountability, and a means of measurement; all things that regulatory infrastructures are built on. However, it is also easy to see how a failure at any point in the recordkeeping process would dramatically undermine regulations: public comments would be ignored, rules lacking evidence of due process made legally vulnerable, monitoring and enforcement rendered toothless. As with other forms of maintenance, the deferral or cancellation of this labor has potentially catastrophic results.

It is worth noting here that just as feminized forms of maintenance like domestic labor are often not recognized as “real” work, the recordkeeping apparatus which supports environmental regulations is also often described as “red tape,” that is, unnecessary and inconvenient bureaucratic bloat which gets in the way of innovation and profit.

There is no question that the rulemaking process is complex, especially when one considers that the EPA is just one of many federal agencies with oversight of environmental regulations.²⁰ Nor can there be any doubt that the recordkeeping

¹⁷ Lamdan, Sarah, Beyond FOIA: Improving Access to Environmental Information in the United States (July 7, 2017). 29 Geo. Envtl. L. Rev. 481 (2017), p 491. Available at SSRN: <https://ssrn.com/abstract=2893783>.

¹⁸ For example, although a New York State records schedule exists, the state Department of Environmental Conservation’s records are in many cases explicitly exempted from this schedule. I was unable to find a records schedule for either the NYS DEC or the New York City Department of Environmental Protection.

¹⁹ Compliance and enforcement for a number of significant EPA regulations, including the Clean Air Act, the Clean Water Act, and the Resource Conservation and Recovery Act, are administered in partnership with state agencies through the State Review Framework.

²⁰ These include the U.S. Fish and Wildlife Service (Endangered Species Act), the Department of Energy (Atomic Energy Act) and the Coast Guard (Shore Protection Act). <https://www.epa.gov/laws-regulations/laws-and-executive-orders>

infrastructure on which these regulations rely is so byzantine as to be almost incomprehensible.²¹ Who and what does this complexity serve?

Recordkeeping is not neutral

Recordkeeping is not a neutral act. What is reported and recorded reflects information necessary for regulatory fulfillment. Choices about recordkeeping - what to record, when to record it, who should record it, how often to record it, where to store it, and public vs proprietary access, reflect competing values attached to environmental information. For example, industries that discharge pollution in surface waters are required to apply for a permit under the Clean Waters Act. Reviewing a recent draft permit for a wastewater facility in the greater Cincinnati area (<http://wwwapp.epa.ohio.gov/dsw/permits/Draft/1IX00050.pdf>), this permit will last for five years. It requires the wastewater facility to self-report sampling levels of their discharges to one of the tributaries of the Ohio River. Sampling must take place Monday through Friday but the time of day doesn't have to be reported, and the permit holder must retain records for three years. One can imagine arguing for modifying any of these requirements upwards or downwards, based on your orientation towards deregulation or to environmental protection.

Therefore, the larger aggregate of environmental records are not a neutral body of knowledge, but one that often reflects deference to the idea that a continuous state of pollution discharge is inevitable, as opposed to operating from a premise that requires serious reduction of pollutants over time. To do this would require a recordkeeping apparatus free from the inherent conflicts associated with self-reporting to document compliance with such a scheme.

Recordkeeping can be further manipulated in a way that undermines maintenance infrastructure. A major example is what one might think of as bad-faith recordkeeping. Flood maps have become highly politicized forms of documentation that function both as a record of the past and a directive for future forms of maintenance. Flood maps have historically documented the likelihood of a major flood - typically a 1% flood (aka "a hundred year flood") in a given area. But these are based on historical records of flooding and topography, and not the anticipated changes of the future, in which riparian and coastal environments will likely radically change with subsidence and erosion, as well as changing weather events such as more intense hurricanes and thunderstorms. Flood maps are a directive in that those building in flood plains are required to carry flood insurance, and in some cases must meet more resilient building standards.

²¹ Lamdan, Sarah, Beyond FOIA: Improving Access to Environmental Information in the United States (July 7, 2017). 29 Geo. Envtl. L. Rev. 481 (2017), p 491. Available at SSRN: <https://ssrn.com/abstract=2893783>

Politicians representing areas reclassified as being in a flood zone fight against issuance of new maps since it raises the cost of homeownership for their constituents. While understandable, and a reflection of political failure to balance housing policy with environmental protection, short-term interests in altering flood map records lead to serious potential risk for flooding and further environmental degradation in the long-term ([LSU, 2016](#)).

Maintenance is often seen as a fundamentally conservative enterprise which, at its core, merely seeks to perpetuate the status quo. In the context of environmental recordkeeping and regulation, however, maintenance premised on the status quo is disastrous. If we base environmental maintenance only on what has already happened, we will inevitably be unprepared for the future. Instead, we need maintenance designed to achieve more than just stability. We need “speculative maintenance.”

This is maintenance that seeks not merely to repair or return to a nonexistent Eden, but one that looks to build future-facing infrastructure and recordkeeping. It means building holistic infrastructure, or infrastructure which supports care, judgement, and immediate adjustment.²² It anticipates inevitable environmental changes, many of which are brought about by humans - the pollution of air, water and soil; rising sea levels; unpredictable weather patterns - and attempts to mitigate the worst effects of these changes for the most vulnerable life forms first.

Like current regulatory practice, speculative environmental maintenance will be built on recordkeeping, that is, on the work of maintainers who record, classify, describe and preserve. It depends on information that is freely available, rulemaking processes that are transparent at all stages, and concepts of records which account for both human and natural activity. It requires labor and expertise that must be adequately compensated.

Moving towards speculative environmental maintenance and recordkeeping will be hard, particularly in the current political climate where environmental regulations are under attack through defunding, decreased personnel, and attempts to undermine recordkeeping.²³ Yet it is also essential. Environmental events of the last few months should remind us that we ignore speculative maintenance at our own peril.

²² See Ursula Franklin’s discussion of holistic and prescriptive technologies in [The Real World of Technology](#) (House of Anansi, 1999)

²³ See, for example <https://www.eenews.net/stories/1060059865> and <https://www.nytimes.com/2017/10/06/climate/trump-administration-environmental-regulations.html>