

Cleaning-up Late Industrialism: Analytic Strategies and Tactics

Kim Fortun, Department of Anthropology, University of California Irvine, April 2018
[Previously (until July 2017) for many years at Rensselaer Polytechnic Institute¹]

April 4 version: 2800 words

Slide: cover with shale rock

In this presentation, I'll share findings from both my own research and research done by other anthropologists and in the interdisciplinary field of Science and Technology Studies, suggesting how a cross-scale, cross-system analytic can help us learn from and theorize across toxic contamination cases while recognizing the powerful ways local history and context shape how environmental cleanup works out. I'll draw from my work to characterize what I've termed "late industrialism," a historical period roughly beginning in the mid-1980s, when environmental governance had come of age but also began to ossify – in ways that has made it *more* difficult to deal with toxics.² There are, however, important counter-currents, which I'll point to here, giving new grounds for regenerative environmental action.³ Characterizing both the trouble with and possibilities for regenerative environmental action casts anthropologists in important roles – as analysts, educators and advocates. I'll return to this in concluding.

I have worked to characterize "late industrialism" for a number of years (2012, 2014), striving to draw out how environmental health knowledge and politics has changed since the 1980s, when I did research in the aftermath of the 1984 chemical plant disaster in Bhopal, India.⁴ In many ways, Bhopal has stayed at the center of my research, orienting my interest in both fast and slow toxic disaster, in the historical formation of the the environmental health sciences, in the way science works (and doesn't) in law and policy, and in the many facotrs that work against good environmental sense.

¹The presentation refers to my years teaching engineering students at RPI.

²The Toxics Substances Control Act (TSCA), for example.

³The "informating of environmentalism," for example, through right-to-know laws and the development of techniques for critical data analysis, visualization and sharing. See Kim Fortun, 2004. "From Bhopal to the Informating of Environmental Health: Risk Communication in Historical Perspective," *OSIRIS* 19/1: pp283-296. Special Issue, "Landscapes of Exposure: Knowledge and Illness in Modern Environments," edited by Gregg Mitman, Michelle Murphy and Christopher Sellers / Kim Fortun. 2012. "Biopolitics and the Informating of Environmentalism" in *Lively Capital: Biotechnologies, Ethics, and Governance in Global Markets*, edited by Kaushik Sunder Rajan. Duke University Press.

⁴Kim Fortun. 2014 "From Latour to Late Industrialism," *HAU: Journal of Ethnographic Theory*. 4/1. p309-329 / Kim Fortun. 2012 "Ethnography in Late Industrialism," *Cultural Anthropology* 27/3, pp. 446–464.

Part of what late industrialism affords or points to is the way contemporary lives, communities and spaces are produced through the interaction of many scales and types of systems, sedimented with history, laced with commercial interests. Ecological and atmospheric systems. Technical and political economic systems. Discursive and perspectival systems. All interlaced and synergistic. The tight coupling and dependence of these scales and systems produce what sociologist Charles Perrow has termed “normal accidents” – almost inevitable system failures resulting from system dependencies and incapacity to deal with what hasn’t been planned – whether mechanical or human error, organizational incapacity or corruption, extreme weather, etc.

Let me suggest how this how this can be captured analytically, in a manner that both learns across cases and respects the particularities of each case, leveraging collaboration. My examples will be from Houston in the wake of Hurrican Harvey.

Slide: analytic structure

The analytic structure I’ve shown [see FIGURE 1 below] here directs attention to many scales and types of systems, helping us visualize if not fully articulate cumulative effects. It draws out factors and forces that *contribute* to contamination, exposure and vulnerabilty, and to incapality or unwillingness to recognize and address contamination. It also draws out factors and forces that can help reduce contamination, risks and exposures.

Each layer of qeustions can be addressed broadly – asking how the structure and workings of national law impacts contamination and clean-up, for example, and also very locally – asking how the history and way of living in a place conditions what happens there, and the way factors and forces from outside come to matter. The systems in play thus must be considered relational – animated, accelerated, slowed, and so on – by their entanglement with each other, with many kinds of agency (human and otherwise) at work. (500)



Slide

I’ll start at the bottom – at what I’ve called the **climatic level** – to point to the way atmospheric conditions – including extreme weather – are stressing contamination sites. A starting question can be simple: ***How is climate change created new stress on contamination sites?*** In Houston, the most obvious stress is increasingly intense storms bringing huge amounts of rain. When Harvey stalled over Texas, it dumped 50 inches of rain over a few days, making it the biggest rain storm in US history – a so-called “500 year” storm. But Houston has had three 500-year storms in as many years. Clearly, our ways of thinking and talking about the risks are not keeping up.

Nor, by extension, are our ways of governing these risks, especially in ways attentive to what can be termed the **eco level**, where we need to ask: ***What landscape and ecological features shape contamination dispersions and exposures – and how climate stress hits the ground?*** Consider, for example, the complex watershed formation that drains into the Gulf of Mexico through the City of Houston. Flood control, however, has not been treated as a regional matter. Rice University civil engineer Phillip Bedient (interviewed by ProPublica) insists that flood control in Houston should be treated as a regional problem, but that it clearly isn't – noting that the "the city doesn't talk to the county. The county certainly doesn't know how to deal with the Corps of Engineers.... Nobody's in charge."

The problems associated with flooding are of course exacerbated because Houston is peppered with chemical plants. There are 500 in the region, and over 40 with "worse case" scenarios in the city limits. These plants are part of the landscape, yet people that best understand how they work rarely work alongside people that understand Houston's watershed, soil types, and other ecological features. Questions about all these systems need to be pulled into one frame. Thus the importance of highlighting the **techno level**, and questions like this: ***What technologies produce contamination, and enable clean-up? What data do we need to visualize these technologies and their impacts? What expertise is available to make sense of and work with this data?***

This, then, gets us to what I've called the I've called the **edx level**, where we need to ask: ***What expertise and reseach shapes how contamination is understood and addressed, and what scale is it produced?*** In studying air pollution in Houston for many years, for example, we've learned of the importance of research initiated outside of Texas, because of political push back against such research locally. Relevant research fields are also under-developed. In the wake of Hurricane Harvey in Houston, for example, Texas A&M epidemiologist Jennifer Horney described both diverse contamination and routes of exposure (during the storm and during clean up), and how *unprepared* we are to understand the effects. Partly, this is because of lack of data, some sequestered by FEMA and other government agencies. It is also because disaster epidemiology is still an emerging field. Horney explains that "epidemiology is more than 150 years old, but applying it in disaster settings is relatively new."⁵

The number and education of experts also impacts what I've simply called the **data level**, where we need to ask: ***What data and communication infrastructure supports – or undermines – recognition, characterization and clean-up of contamination? What data practices and cultures characterize a particular site?*** Our research has shown that Houston has far less public data capacity than other

⁵Horney, Jennifer: <https://theconversation.com/scientist-at-work-measuring-public-health-impacts-after-disasters-85148>

major metropolitan areas (New York City, for example), and a political culture that works against disclosure. We've even been told about organizations losing state funding just for releasing data that went against industry interests. Further, acute disaster can license further information withholding. Journalists have now reported that as Harvey unfolded in Houston, there were over a hundred serious toxic releases to water and air. Only two received attention during the storm, and data on others has not been disclosed because "the investigation is ongoing." Journalists report that there hasn't been any enforcement action. A Harvey disease registry has now been funded, but hasn't yet been established.

Available data in turn shapes what I've called the **nano level**, the level of subject formation and cultural framing: There are questions we can ask here: ***What cultural frames and dispositions enable or deflect recognition of contamination, and engagement with contamination complexities?*** In my research over many years, I've worked to characterize the epistemic biases that keep environmental health injuries from making sense – because of "in-body" constructs of disease, for example, and from what has been termed ecological "rift" among urbanites – that undercuts their sense of their embeddedness in ecological systems.⁶ In Houston in the wake of Harvey, these biases were evident in the notable lack of attention to the health risks of mold as well as toxics during clean-up.

Such epistemic bias, of course, impacts different social groups in different ways, at what can be termed the **micro level**, the level of practice. Many questions need to be asked here, but a starting question is simple: ***What practices expose people to or protect them from contamination?*** In Houston after Harvey, easy mobilization of undocumented workers in the clean-up has been particularly worrisome and unjust.

At the **meso level** there are also many questions: These two are basic: ***What social groups (contamination stakeholders) are in play and what are the dynamics between them? What organizations are in play and how are they situated in contamination cases?*** In many cases – in both Pennsylvania and Texas, for example – state departments of environmental protection are deeply embroiled with energy industry interests, positioning them to continually discount contamination and associated harms. Often, city scale actors partner with the federal EPA to try to push back.

The **macro level** – of laws and economies – are also – of course – formative, and need to be in our frame. A starting question is again basic: ***What laws and economies undergird both recognition of contamination and clean-up initiatives?*** There is much to say here, with laws at all scales in play, and both enduring and emergent economic formations. But for now, in thinking about contamination in

⁶See Scott Kellogg's recent dissertation, and McClintock, Nathan. "Why farm the city? Theorizing urban agriculture through a lens of metabolic rift." *Cambridge Journal of Regions, Economy and Society* (2010): rsq005.

Houston associated with Hurricane Harvey, it is investment in the energy industry – by corporate leadership, managers, workers, and many many city residents that needs to be highlighted. Further, despite high combined risk from chemical plants and flooding in Houston, there is no zoning. High risk industrial facilities are in immediate proximity to schools. Contamination is considered exceptional and tolerable rather than routine, and health risks are actively discounted.

The dominance of the energy industry in Houston is of bolstered communicability – at what I've termed the **meta level**. Petrochemical smells in Houston are talked about by many as “the smell of money.” Economy trumps environmental public health. In the wake of Harvey, another recurrent discourse was also notable. Recurrently and emphatically, “Harvey” has been characterized as a surprise, as aberrant, and as no test for the future. I heard this repeatedly during a trip to Houston a few weeks after the storm. Despite excellent investigative reporting to the contrary in previous years. In analyzing contemporary, we thus need to always ask: ***What discourses advance – or undercut -- understanding and engagement with contamination?***

Finally, it's important not to miss what I've termed the **deurtero level**, following Gregory Bateson's conception of deutero-level learning – where we “learn to learn.”⁷ Our question here can be cast as follows: ***Where is there capacity to fundamentally re-think contamination and clean-up?*** Often, in my experience, this capacity emerges when groups focused on different problems, with different expertise, came together – working at what anthropologist Sharon Trawick has theorized as “faultlines.” This image is suggestive, pointing to a coming together of worry about chemical plant and flooding risks in Houston – which upsets entrenched assumptions that “containment” is a feasible contamination control strategy. This upset could be said to have originated three decades ago, in the right-to-know legislation passed in the United States after the Bhopal disaster – legislation that brought information and environmental activists together; legislation that resulted in the public availability of data showing that contamination is routine and on-going rather than exceptional. Legal and technical remedies remain to be unworked out, however. There is much work to be done. Identifying and supporting deutero capacity will be particularly important.

Slide

What I've tried to put forward here is a way of thinking about contamination that complicates it, but also sets the stage for collaboration, interdisciplinary insight, and new approaches to clean-up and risk reduction.

⁷This also could be termed the level of “cultural critique,” following George Marcus and Michael Fischer's conception of this in *Anthropology as Cultural Critique: An Experimental Moment in the Human Sciences* (1986, University of Chicago Press).

Where, then, does this leave the anthropologist? What roles can anthropologists play in these kinds of entangled systems?

First, and likely most important, is the way an anthropologist can help characterize the kind of holism I draw out here. Anthropologists are educated and thus have the (counter-cultural) disposition to understand how interaction of many parts of a system shapes the way both parts and the system overall behaves. In my work in more applied domains, I've recurrently been told that this is an important contribution. As anthropologists, we are taught to put and keep a lot of balls in the air, *and to tolerate the churn*. Education -- in many technical fields, especially (as in the engineering fields that I taught within for many years at RPI) -- often work to the contrary, producing allergies and resistance to this kind of churn -- rather than what could be called *churn acumen*. In late industrialism, churn acumen is especially important; anthropologists can help cultivate it by example and in their teaching.

As anthropologists, we also have a theoretical history that attunes us to the political implications of different ways of characterizing systems. Critiques of functionalism for assuming and helping reproduce system stability (and the reproduction of entrenched hierarchies of wealth, status, etc) have been particularly important. In studies of disaster -- fast and slow -- functionalist approaches, I've learned, tend to deflect attention from risk and vulnerability -- assuming that systems work rather than fail (and contaminate) (Fortun 2014).⁸ These theories and critiques (of how systems work) keep our own theory and practice reflexive, while also helping us understand the epistemic biases of the people we study and work alongside. Ethnographically, we can characterize how different contamination actors themselves enframe or ignore particular phenomena and problems, keeping things off the table, so to speak. This, in turn, can help us relay reflexivity back in to the communities we study, partly through our students.

As anthropologists, we also can bring well-honed concepts into our analysis of how systems (including epistemes) are configured and behave as they do, with cascading effects. Gregory Bateson's conception of schismogenesis can help us understand escalating stand-off between social groups -- as often happens in contamination scenarios, for example. Adriana Petryna's conception of "biological citizenship" helps us understand the literally deadening effects of programmatic responses to contamination that makes access to resources dependent on people being sick, and *proving* that they are sick. Though very theoretically formulated, Petryna's book, *Life Exposed: Biological Citizenship After Chernobyl*, is also a primer on how *not* to design and build contamination rehabilitation programs.

⁸See Fortun, Kim. 2014. Ibid. <https://www.haujournal.org/index.php/hau/article/view/hau4.1.017>

Anthropological theory is often cast as at odds with practice. I don't think it is. In my experience, practitioners – junior and senior – often yearn for holistic understanding of the complex systems in which they operate. Even emerging practitioners – like the engineering students that I taught at RPI – are enrolled in this. I came to make it a goal of my teaching to send these students away with analytic structures like the one I've shared here, having used it recurrently, so that it becomes habit, a way of operating, so to speak. So that they think holistically and anthropologically, while also thinking as experts in other fields. I've had good collaborators in this experiment, teaching alongside and in conversation with Ali Kenner, Lindsay Porioery, Ali Morgan, Thomas DePree and Brandon Cosetelloe-Kuene among others – working with engineering and public health students, emergency responders and in post-Fukushima graduate programs in Japan designed to educate a new, internationalist cohort of radiation health experts. We've all worked in some way with this kind of cross system, cross scale analytic structure, using it to scaffold anthropological thinking among diverse students and expert communities.

Importantly, this kind of analytic also structures space for our own collaboration – so that we can continue to learn together, across the many cases we work on, asking many of the questions posed by our panel organizers here:

- How does race and ethnicity of communities affect cleanup strategies and outcomes?
- Who has decision making power and how do various stakeholders engage throughout the cleanup process?
- What are the economic impacts of cleanup?
- What stigma may be associated with cleanup processes?
- How do public and agency perceptions of risk differ, and how are those differences negotiated?

Slide

And we've begun to build technical support for this – “informating” anthropological practice to better address environmental public health. Our starting place was The Asthma Files, a research collective and digital platform, focused primarily on air pollution and associated harms.⁹

Slide

We've now begun to develop the Disaster-STS Network to support collaborative engagement with an even broader array of topics, drawing in an even more diverse set of collaborators¹⁰. This approach, in my view, is very promising, allowing us to leverage the empirical specificity that ethnographers are so good at

⁹<http://theasthmafiles.org/>

¹⁰ <http://disaster-sts-network.org/> I envision the DSTS platform as a means to interconnect and stay in touch with the students I've worked with in the post-Fukushima programs in Japan, for example; these students come from all over the world and will often return to their home countries with little opportunity for collective thinking about entwined sociocultural, political economic, technological, biological and ecologic phenomena.

KFortun Cleaning Up Late Industrialism short 4.5.2018

producing in a manner that builds comparative understanding and facilitate theory building. The paper version we've shared here can give you a sense of the approach. Let us know if you would like to join us online. We maintain an open call for new collaborators..

Thanks again to the panel organizers for bringing us together here.

FIGURE 1

SCALE OR SYSTEM	ANALYZING CONTAMINATION VULNERABILITY
deutero	What capacity (and sometimes forceful incapacity) is there to fundamentally re-think contamination and clean-up?
meta	What discourses advance – or undercut -- understanding and engagement with contamination?
macro	What laws and economies undergird both recognition of contamination and clean-up initiatives?
meso	<p>What social groups (contamination stakeholders) are in play and what are the dynamics between them?</p> <p>What organizations are in play and how are they situated in contamination cases?</p>
micro	What practices expose people to or protect them from contamination?
nano	What cultural frames and dispositions enable or deflect recognition of contamination, and engagement with contamination complexities?
info	What data and communication infrastructure supports – or undermines – recognition, characterization and clean-up of contamination?
edxo	What expertise and research shapes how contamination is understood and addressed?
techno	What technologies produce contamination and enable clean-up?
eco	What landscape and ecological features shape contamination dispersors and exposures?
climatic	How is climate change producing new stress on contamination sites?