Situation Normal? Repairing a Risky Ecology

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Social Studies of Science 2007; 37; 135
DOI: 10.1177/0306312706069436

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Keywords repair, risk, power, built environment

> The river goes through New Orleans like an elevated highway. Jackson Square, in the French Quarter, is on high ground with respect to the rest of New Orleans, but even from the benches of Jackson Square one looks up across the levee at the hulls of the passing ships. Their keels are higher than the Astro Turf in the Superdome, and if somehow the ships could turn and move at river level into the city and into the stadium they would hover above the playing field like blimps. (John McPhee, 'Atchafalaya', in *The Control of Nature*, 1989: 61)

Several years before hurricane Katrina, I first learned about the precarious situation of New Orleans and the Gulf Coast from reading John McPhee. The epigraph above always struck me as a particularly vivid way to imagine the relationship between a built environment and the environmental hazards that can be 'built-in' to it. Though McPhee is writing about levees and barges on the Mississippi River (not the levees along Lake Pontchartrain that ultimately failed), he conveys a clear sense of risk inherent in this landscape. Of course, McPhee was far from the only or even the first person to suggest that New Orleans could be in trouble if struck by a major hurricane. The New Orleans *Times-Picayune* (*Times-Picayune* Staff, 2002) ran a four-part story about just such a possibility in 2002; *National Geographic* magazine (Bourne, 2004) listed a category 5 hurricane strike on the Gulf Coast as one of the most dangerous disaster scenarios facing the USA; and the US Federal Emergency Management Agency (FEMA) engaged in an simulated emergency response exercise just over one year before Katrina (Schleifstein, 2004). Excepting certain key figures at the highest levels of the US government,[1] it seems that 'everybody knew' that the Gulf Coast was especially vulnerable to a powerful hurricane. Even someone like me, who has never been to New Orleans or even Louisiana knew about this vulnerability.

Thus, the question on so many of our minds in the aftermath of so much devastation, death, and dystopian chaos: *Why?* How could 'everyone know' about this risk, and yet, once Katrina struck, the most dire scenarios were realized in fact? It is going to take a great deal of time and exhaustive study to provide a full answer to this question, but resources in science and

Social Studies of Science **37/1 (February 2007) 135–142**

ISSN 0306-3127 DOI: 10.1177/0306312706069436
www.sagepublications.com

technology studies, environmental sociology, and environmental history provide a theoretical context for understanding how 'risky' practices and places can become 'normalized'. In this comment I can only briefly address these issues, but I argue that conceptualizing the Gulf Coast as a social and material 'ecology' can help us see how people and things get put into a particular form in a particular place and become difficult to change (Star & Griesemer, 1989; Henke, 2000a, 2006). This ecological approach has the advantage of treating built environments, at least metaphorically, as organic, with a specific history of growth and improvisation in response to structural constraints. The interaction of the natural with the built, and of culture with structure, helps us to see the full complexity of risky places: how they develop through a kind of life course that is only partly subject to control.

I use a 'repair' theory of practice to explain the attempt to manage and control complex social and material environments, drawing on and expanding upon the ethnomethodological conception of the term (Schegloff et al., 1977; Schegloff, 1992, 1997; Henke, 2000b). Though ethnomethodologists have typically used repair as a way to describe the interactional maintenance of order in everyday conversations, built environments draw our attention to both the cultural and the material ways we interact with and attempt to repair the never-ending and often unpredictable fissures of social and natural order. I find this repair framework to be a useful way to think about our relationships to built environments because – like the way language is both flexible and structured – it strikes a balance between order and change. With an understanding of how our relationships with built environments are both structured and open-ended, I intend to explain why communities like those on the Gulf Coast continue to face risk and potential disaster.

Perspectives on Risk and Technology, Culture, and Nature

There are two broad ways to think about a disaster like Katrina, and especially the way that such an event can be considered both likely and unanticipated at the same time. In both cases, we can attribute this seemingly contradictory state of affairs to the 'normalization' of risk. The first perspective is a cultural approach, and is well represented by Diane Vaughan's (1996) *The Challenger Launch Decision*, an ethnographic look at the decision-making process at NASA that led to the launch and tragic explosion of the Space Shuttle *Challenger* in 1986. Vaughan concentrates on the decision-making hierarchy of NASA, particularly the 'command structure' that evaluated potential threats to a Shuttle launch. Vaughan argues against the common perception that NASA managers acted as 'amoral calculators', more interested in the political needs of their organization than safety. Instead, Vaughan focuses on the organizational culture of safety and decision-making within NASA, tracing the fatal decision to entrenched norms and patterns of communication within the Shuttle command structure. Vaughan argues that NASA's organizational culture 'normalized deviance', making the risky seem routine and leading to the decision to launch *Challenger* in the face of warnings.[2]

Vaughan's account of the *Challenger* accident has been very influential in providing a frame for explaining socio-technical disasters (including the more recent *Columbia* shuttle explosion in 2003). There are already news accounts that question whether the Army Corps of Engineers (responsible for the construction and maintenance of the levee system around New Orleans) may have a 'broken safety culture', similar to the one that Vaughan found for the *Challenger* explosion.[3] Vaughan's account of the normalization of deviance as a cultural process has also been criticized, however, most notably by Charles Perrow in his equally influential *Normal Accidents*.[4] Perrow discounts the importance of organizational culture for explaining accidents and instead argues that the actual structure of complex technologies such as spacecraft, nuclear power plants, and even comparatively 'low-tech' systems such as dams and marine transportation are inherently risky. The risk comes from their very design, where the various elements that comprise these technologies interact in complex, unanticipated ways and are 'tightly coupled', enabling catastrophic failures to develop quickly and unpredictably. According to Perrow, these technologies will lead to accidents that are 'normal' – we can expect systems with these characteristics to eventually fail and cause disasters because of their inherent design.

These two perspectives each focus on how risk is 'normalized', but with divergent explanatory categories; Vaughan makes a constructivist argument about the ability of organizations to normalize risk through culture, while Perrow presents a case that borders on technological determinism, emphasizing the structural effects of organizational and material design. The effects of Katrina, however, point to the need for a framework that can account for the cultural and technological aspects of accidents, as well as the environmental context of their interconnections. This is where I believe that an ecological conception of built environments can be very useful. Conceptualizing built environments as a complex ecology of culture, practice, and materiality helps us see how we create and shape our relationship with the landscape, but it also emphasizes that, following environmental historian Richard White (1995), built environments are 'organic machines' – they have a kind of power that we may attempt to manage, but ultimately fail to subject to total control.

Repairing Built Environments

Over the last decade I have been working to understand industrial agriculture in the USA as a kind of built environment. Agriculture is a good case for studying the interaction of culture, practice, and environment. Though successful farming is based on careful planning and stable practices, there are constant problems that interfere with production. Farming, therefore, requires a balance between control and accommodation, and is subject to constant repair. The form of repair, however, is not random; it is structured by the local social and material ecology.

While studying repair in the context of industrial agriculture, I have noted two rough categories that help to explain the form that repair takes in specific instances of trouble: repair as 'maintenance' and repair as

'transformation'. Repair as maintenance is an attempt to solve problems by 'tweaking' elements within the structure of a system, keeping as much of the system intact while remedying the trouble. Repair as transformation is a more radical set of changes to the actual ecology, in which the very relationships between culture, practice, and environment are substantially reordered. In most cases, repair as maintenance is the 'default' form of repair, and – especially for those actors with significant investments in the structure of an ecology – is greatly preferred to a more ambitious transformation. At first this distinction may seem obvious: of course it will always be more convenient for actors to maintain a system rather than create a new one. But we only really understand why it seems convenient to maintain a system when we uncover its structure and explore the interests at stake in the balance between order and change. In many cases, maintaining the structure of an ecology may take just as much effort or as many resources as transforming it, but maintenance of the status quo is beneficial for a select group of actors. In this way, the repair of sociomaterial ecologies is also often the maintenance of power.[5]

The history of the built environment along the Gulf Coast, and especially in New Orleans, has been the story of repair as maintenance. A number of environmental histories of New Orleans follow the work of geographer Peirce Lewis (2003), who terms the city 'impossible but inevitable' (Lewis, 2003: 19; see also Kelman, 2003; Colten, 2005). In this view, New Orleans' location at the terminus of the Mississippi River was too good to pass up as the site for a port, but the recurrent danger of flooding meant that the city would always be subject to potential disaster. Indeed, from its founding in the 16th century, the risk of flooding in New Orleans was 'normalized' simply because the Mississippi flooded consistently, about every 2 to 5 years, often overrunning and breaking through levees (Davis, 2000: 88; Colten, 2005: Ch. 1). Though levees have always been a part of flood control in New Orleans, in the 19th century a 'levee-only' policy was adopted, in large part because levees afforded the most protection from high water, without requiring large areas of land (in contrast to outlet channels and reservoirs, which mimicked the 'natural' behaviors of river branches and swamps). Thus, although the 'jacketing' of the river in ever higher levees actually created higher flood waters, the policy was favored by elites, especially land owners and developers, who sought to expand settled areas onto land that was once considered swamp (Kelman, 2003).

Once the land was developed, it became difficult to turn back the clock, and the extensive levee system formed a built environment that reflected the economic interests and power structure of New Orleans, creating a sociomaterial structure for future action. This process was illustrated in the extensive flooding along the Mississippi in 1927, when New Orleans was threatened by rising flood waters along the city's levees. City elites conspired with the state to dynamite levees south of the city, in St Bernard Parish, to serve as an outlet for the rising waters and protect the city from flooding. Nearly 10,000 residents of St Bernard Parish were evacuated, and their homes and livelihood were destroyed as the parish became an enormous

holding reservoir (Gomez, 2000; Kelman, 2003: Ch. 5). Despite the destruction of St Bernard Parish, as an act of repair, this strategy kept New Orleans dry, preserving the structure of both the levee system and power relations in the city.

In the 20th century, this pattern continued, even in the face of hurricane-related flooding. In the 1960s, New Orleans experienced flooding from two hurricanes (Hurricane Betsy in 1965 and Hurricane Camille in 1969), neither of which struck the city directly, though they were very large and powerful and caused extensive damage throughout other areas of the Gulf Coast (Colten, 2005: 145–46). New Orleans' levees were supposedly built to withstand waves and storm surges associated with a 'Category 3' level hurricane, but Katrina, deemed 'a strong Category 3' when it struck the Gulf Coast, raised questions about the engineering and viability of the levee system (Bankoff, 2005; US National Oceanic and Atmospheric Administration, 2005). More recently, development of wetlands and coastal areas has increased the risk of storm surges from strong hurricane winds (Colten, 2005: Chs 5–6). And, in just the past few years, the Bush administration has sought to cut funding for levee maintenance and repair in the New Orleans area (Bunch, 2005).

For all these reasons, it is hard to say that the risk from flooding and hurricanes was 'normalized' along the Gulf Coast – 'everyone knew' about the risk, and yet the hurricane that was predicted, perhaps even expected, created needless death and disruption. In an environment that seemed to call out for a transformative repair, maintenance of the status quo has been the norm. By tracing the history and structure of power that created this built environment, we can see how a maintenance approach to repair has continually reproduced risk.

Conclusion: The Form of Repair along the Gulf Coast

What does this bode for the future of the Gulf Coast? Of course, the scale and scope of rebuilding along the Gulf Coast, in whatever form it takes, will be massive. Billions of dollars will be spent, homes will be rebuilt, and communities will be reestablished. But will the built environment of the Gulf Coast ultimately be maintained or transformed? Though it is still far too early to predict the aftereffects of what is likely the most extensive disaster in the history of the USA, it appears that a maintenance approach to the repair of the Gulf Coast is already underway. Initial reports on the rebuilding of New Orleans and other communities along the Gulf Coast indicate that there has been little or no coordination of efforts among the various federal, state, and local government authorities. Few homeowners living along the most vulnerable stretches of the coast are electing to rebuild according to more stringent (and more expensive) standards for flood-prone areas (Lipton, 2005). Homeowners in New Orleans are wheeling and dealing with building inspectors in order to rebuild homes on lots deemed unsafe (Nossiter, 2006). Though many seem to agree that the

levees and other safeguards protecting New Orleans must be upgraded to protect the city from the strongest Category 5 hurricanes, it is unclear whether the political will exists to make this happen, especially in the face of cost estimates of more than 30 billion dollars (Schwartz, 2005).

The ecological approach I am proposing here emphasizes the importance of social and material structures in responding to trouble, but it is also important to stress that structures do not absolve us from responsibility. This point is similar to William Julius Wilson's argument about the plight of the urban poor in the face of deindustrialization; the working poor, especially poor African Americans, were and are trapped in jobless urban areas as manufacturing jobs declined over the past three decades, and after much of the middle class fled to suburban areas (Wilson, 1980, 1997; Conley, 1999). The process has been structured by large-scale historical trends in political economy, but that does not make it right. Urban poverty cannot be fixed with band-aids, and the Gulf Coast will not be transformed with them, either. These issues are entirely related in the case of New Orleans, where two-thirds of its residents were African American, and nearly 30% lived below the poverty line (Fussell, 2005). Especially in the city of New Orleans, poor African Americans were disproportionately impacted by the flooding, meaning that, if transformative steps are not taken to help the disadvantaged return to the city, New Orleans could lose as much as 80% of its African American population (Logan, 2006: 1). In this way, a maintenance approach to the repair of the Gulf Coast, though not surprising, is disappointing and even shameful. Without a combination of leadership from the state and pressure from the public, activists, and intellectuals it appears that New Orleans and other parts of the Gulf Coast will be just as risky in the future, and that the poor may not be allowed to return at all.

Notes

1. On 1 September 2005, three days after Katrina landed on the coast, President George W. Bush infamously claimed, 'I don't think anybody anticipated the breach of [New Orleans'] levees', in an interview on the television show 'Good Morning America' (ABC News). A few days later, Secretary of Homeland Security Michael Chertoff said that Katrina 'exceeded the foresight of the planners, and maybe anybody's foresight', and was therefore 'breathtaking in its surprise' (Anonymous, 2005).
2. See Fine (1984) for an older but still relevant overview of the literature on organizational culture; Beamish (2002) takes a similar approach to explaining industrial accidents.
3. Professor John Logsdon, a member of the Columbia board and director of the Space Policy Institute at George Washington University, said, 'It seems to me any comprehensive investigation of a major failure should be looking at organizational as well as technical issues' (Schwartz, 2006).
4. Perrow (1999: 379–80) attacks Vaughan's explanation of the *Challenger* accident directly in an afterword to the updated edition of his book.
5. For a more specific case study, see Henke (2006), where I treat the response of agricultural scientists and farmers in California to the 'threat' of environmental regulation from the state. I am currently completing a book manuscript that considers the issue of repair in agriculture using a series of historical and contemporary cases.

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