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Introduction by Kara Murphy Schlichting, Queens College CUNY

In Seismic City: An Environmental History of San Francisco’s 1906 Earthquake, Joanna L. Dyl demonstrates how careful attention to the material aspects of nature can reframe the understanding of even well-known events. Disasters, she reminds us, are not departures from a “norm” but reflections of the paths of power across material environments and economic and social structures. To drive this point home, Dyl focuses on the mutually-influencing relationship between humans and nature in San Francisco. Human decision-making made San Francisco and its residents particularly susceptible to seismic dangers. Whether leaders were—or are today—willing to reckon with this reality, or if they will deny the hazards of San Francisco’s environment, is a question that looms large in both Dyl’s work and the reflections of this roundtable’s participants.

Benjamin Johnson opens this roundtable by reflecting on how historians can use disasters to speak to the themes of urban development, whiggish narratives of technological fixes for urban challenges, and the intersection of race and environment in cities. As part of his reflection, Johnson asks Dyl to further consider one of the sub-arguments of Seismic City: the idea that control over urban form and environment is also about social control. Like Johnson, Christopher M. Church highlights the importance of seeing so-called “natural disasters” as intrinsic to the urban environment. Church underscores the important—and sobering—lesson of this book, especially in the face of increasingly frequent extreme geophysical and meteorological events: that non-human nature’s central role is intrinsically connected to human choices in so-called natural disasters. Seismic City challenges the notion that humans are beyond nature, or in control of it in the lead up to and the events of the 1906 earthquake, the immediate aftermath, and the longer period of rebuilding that followed.

In a similar vein, Scott Gabriel Knowles applauds Dyl’s work for moving beyond the history of the disaster itself to consider the larger historical moment, encompassing the long-term scale of social and economic questions leading up to and following the event. Knowles praises Dyl’s attention to multiple time scales as a strength of Seismic City. Different temporal scales such as the long-term process of coastal land making and the quick construction of the boom town converged during the 1906 disaster; the short-term event of earthquake and fire made visible the inequalities inherent in San Francisco’s urban form and the social prejudices, especially anti-Chinese sentiment, long at work in the city. Knowles, like Church, also identifies Dyl’s approach to the agency of non-human nature as a strength of this book.

As a historian of late-twentieth century San Francisco, Lindsey Passenger Wieck finds that Seismic City reveals the long roots of urban beautification drives, governmental attempts to control “undesirable” communities, and the habitation of public spaces. She also identifies a fourth parallel between the early and late
twentieth century: a history of environmental injustice and inequity in how disasters disproportionately affect certain racial and socio-economic segments of the urban population. Wieck sees a central theme to understanding San Francisco across these two time periods: the way that San Franciscans rebuilt the city to conceal, rather than come to terms with natural hazards.

Joanna L. Dyl gamely responds to a number of compelling questions. She explains how she balanced analysis of an event and its context in order to approach the 1906 earthquake as a process unfolding across days, months, and years, rather than an isolated instance. She also explicates why moving beyond Anthropocentric narratives of human control over nature is essential to understanding “cities as functioning ecosystems.” Dyl cautiously considers the connections Wieck draws to the early twenty-first century, specifically in light of San Francisco’s unfolding housing crisis. She considers what early-twentieth-century San Francisco might be able to teach contemporary residents, in the face of calls for resiliency; in so doing, however, Dyl suggests that an unwillingness to fully address the region’s seismic threats has cast a long shadow over the region. Urban environmental history and disaster studies have much to teach today’s cities as they face fire ecologies, changing coastlines, and plate tectonics. Recognizing the dynamism of the ecosystem is essential to understanding what happened in San Francisco in 1906 and what will unfold in the city’s seismic future.

Before turning to the first set of comments, I would like to pause here and thank all the roundtable participants for taking part. In addition, I would like to remind readers that as an open-access forum, H-Environment Roundtable Reviews is available to scholars and non-scholars alike, around the world, free of charge. Please circulate.
Early on in her ambitious, almost kaleidoscopic study of San Francisco’s legendary 1906 earthquake, Joanna L. Dyl observes – or perhaps complains? – that the “relative absence of disasters from historical narratives reflects the ways in which disasters have been understood as departures from history — breaks in the normal order of things — rather than as integral to human history” (9). Her treatment of the multiple causes and consequences of the earthquake and fires that reduced the United States’ leading west coast city to rubble in the course of just a few days testifies to the ways that historians can use disasters to tell illuminating stories about urban development, the racialization of city spaces, and ideas of technological mastery.

*Seismic City* is based on deep research into the politics, labor relations, and daily life of San Francisco before and after its immolation. Dyl traces the development of the port city, especially the ways in which the use of fill to expand land into its bay created seismic vulnerability; carefully recreates the fires that destroyed most of the city in the wake of the earthquake; details the changing reconstruction efforts; and explains why efforts to replace Chinatown faltered in the face of resistance by Chinese and their allies. In later chapters she frames the well-known 1907 streetcar strike as part of an ongoing struggle for control of the public space of the streets; demonstrates how efforts to avoid a plague epidemic changed numerous aspects of the city’s built environment; and uses the construction of the well-known Panama-Pacific Exposition of 1915 to explain how little the city’s leaders had learned about seismic hazards. At appropriate moments she gazes beyond San Francisco and the early twentieth century to other work on the politics of “natural” disasters, using concepts such as Naomi Klein’s “disaster capitalism” to ask questions about the social dynamics of post-disaster San Francisco (176).

Dyl’s broad approach is of a piece with the last decade or so of environmental history in its insistence that nature is not just the world of creation clearly beyond human control, but also an idea replete with multiple, changing, and sometimes contradictory meanings, and a material reality even in undeniably human-made places like cities. “This history,” Dyl writes in the introduction, “is a story of the intersection of natural forces with human choices, nonhuman nature with the built environment. The resulting narrative illustrates the impossibility of separating nature and culture even in the modern city” (10). She sounds this note again in the conclusion, arguing that “[t]he disaster itself and the debates about urban nature demonstrated the complexity of power relations in the city and the ways in which environmental, economic, and cultural forces interacted in shaping its history” (279).

At a few points in *Seismic City*, this insistence on the breadth of environmental history seems to become an end in of itself rather than a means for understanding how the disaster changed San Francisco. To me the most frustrating parts of the
book are the instances in which Dyl emphasizes the methodological sophistication of twenty-first century modern environmental history (as epitomized, implicitly, in her approach) in ways that do not do much to explain the events of the early twentieth century. For example, the class dimensions of earthquake relief, she writes at the end of chapter three, “reflected a pattern of urban nature as contested terrain in the disrupted environment of San Francisco, demonstrating how regaining control over urban nature and rebuilding the city meant reasserting control over its people” (128). Similarly, in her detailed analysis of the streetcar strike, she goes to great lengths to “illustrate the impossibility of separating environmental events such as the 1906 earthquake from their broad social and economic contexts” (165), and goes so far to state that a real understanding of the strike “requires that we consider the streets as both work environment and transportation environment, as a place where people encountered nature and each other within a complex matrix of environmental, economic, and cultural factors” (171). Yet I was left unconvinced that an environmental history approach did much to explain the causes or outcomes of the labor conflict.

Ironically, given the author’s insistence on the virtues of methodological sophistication and the protean aspects of nature, the more material aspects of her argument – that is, the lines of inquiry in which the material aspects of nature are foregrounded, as they long have been in environmental history – struck me as the most rigorous and convincing. Who perceived cities as outside of nature, and how did their understandings change (or is it endure?) as a result of the cataclysmic events of 1906? Dyl does little to pursue the questions of meaning that she raises on the cultural side of her argument. In contrast, her informed speculation that the dramatically expanded rat habitat of broken water, gas, and sewer systems gave rise to the bubonic plague outbreak that took at least 172 lives (205) is quite persuasive, especially in light of similar rodent population explosions in the wake of later, better documented disasters. Public health officials at the time targeted rat habitat with numerous and aggressively enforced regulations that required foundations and floors to be made of “concrete, gravel, or packed earth, materials that did not provide hiding places for rats” (220). The regulations led to the condemnation and destruction of thousands of ramshackle dwellings and dramatically raised the costs of building or maintaining stables and chicken coops. Over a thousand of the former and an extraordinary eleven thousand of the latter were consequently torn down within a few years (223-4). Because thousands of poorer San Franciscans raised chickens on their table scraps as “an important element of the subsistence strategies,” these measures made plebeian San Franciscans both effectively poorer and more dependent on the “industrialized chicken factories” of the Bay Area, “part of a broader and ongoing process in which food production became disconnected from the city” (225).

In a sense, the book is at its best when Dyl is the most old-fashioned as an environmental historian. The early descriptions of the city’s creation of “made land” (35), its volatile fire regime (30), and the careful reconstruction and explanation of the specific geography of collapse and fire (63) were particularly impressive. Dyl
argues that the quake’s aftermath bolstered the supposedly widespread “perception of cities as existing outside of nature” (236), pointing to the denial of continued seismic risk and (quite ingeniously) the destruction of an urban chicken industry by zealous anti-rat measures aimed at preventing a plague epidemic. San Franciscans, she argues, lived in a city both materially and ideologically more removed from non-human nature after the disaster than they had before.
it is tempting to view humanity as wholly distinct from nature. In the West, the Christian tradition considers humans to be the children of a divine creator, while the secular tradition treats humans as creators in their own right, masters of the natural world. But these views are, in many ways, two sides of the same coin: Adam named the beasts of the Earth to claim his dominion over the natural world just as scientists examine and describe natural laws in an effort to bend them to their will. Neither tradition treats humans as embedded within nature, as part of it; instead, nature becomes either humanity’s subject or its adversary, an externality that needs to be tamed, controlled, or defeated. Consequently, disasters make humans feel small: like ants in the proverbial anthill, humans transform dirt into complex societies, but deep down they fear that the boot of nature might kick it all away in an instant. This is the root of our fascination with disasters: they force us to acknowledge our own vulnerability and marvel at the cruelty of nature.

However, in telling the story of the 1906 San Francisco earthquake and fires, Joanna L. Dyl’s *Seismic City* reminds us that humans and their societies cannot be so easily extricated from nature, and that disasters are not an aberration of life on earth—nature behaving badly, as it were—but an integral part of it. Earthquakes are natural geological occurrences, the byproduct of tectonic plates moving across the earth’s mantle at a virtually imperceptible pace. And though historians typically focus on humans as the main actors in their narratives of change over time, environmental history—and disaster studies, in particular—casts its gaze on the natural forces that shape life on earth. When looking at earth’s processes on a geological timeframe, Dyl explains, “the earth remains a dynamic place in which humans are not the only agents of change” (7). The colliding of human conceptions of time with much longer geological time yields the impression that geophysical events like earthquakes are abnormal. Whereas our lives are measured in mere decades, earth’s natural processes span hundreds of thousands to hundreds of millions of years, so when a 7.8 magnitude quake arrives, it feels atypical to us even though it should be treated as inevitable. Therefore, as Dyl demonstrates, humans’ relatively short-term activities—and shortsightedness—intersect with long-term geophysical and meteorological forces to produce what we call disasters.

*Seismic City* thus blends two main currents in environmental history and disaster studies: an interest in how non-human actors have made human history, and how human actors have created what we might otherwise call “natural disasters.” The relationship is reciprocal, in many ways. Humanity builds cities, roadways, and manufacturing districts, only to watch forces of nature—in this case, an earthquake—wipe them from the map. Meanwhile, our actions—the very construction of those cities, roadways, and manufacturing districts—is what transforms a natural geophysical event into a disaster outright. Does the roadway traverse a floodplain, and does it lead to a neighborhood of ramshackle homes inhabited by poor individuals made poorer by decades of discriminatory
governmental policy? Is the manufacturing district constructed atop “made land” that liquefies under the vibrations of an earthquake? Are wooden homes placed so close together and the water supply so dramatically insufficient that a mere spark might turn an entire city to ashes? Such concerns animate historians’ interests in disasters, which put on plain display what happens when human choices meet inevitable natural occurrences. To paraphrase Marx, humans make history, but they do not make it as they please; they make it through an evolving and reciprocal relationship with the rest of nature.

Thus tracing the interaction of human choices with natural forces, Seismic City is broken into seven body chapters. The first chapter, “Making Land, Making a City,” explores the “contingent and checkered character” of “San Francisco’s transformation from a motley collection of tents and adobe huts into the metropolis of the Pacific Coast” (17). Juxtaposing economic and cultural considerations against the seismic certitude of catastrophe, the first chapter explores how human decision-making worsened the effects of nature on the growing city. Building on “made land—created by artificially filling the marshlands and shorelines of the Bay—heightened the vulnerability of the region to the area’s constant seismic events. Contrary to its history of crisis and adaptation in the late 18th and early 19th century, and despite warnings provided by earthquakes in the late 1860s that would foretell many of the problems to come, San Francisco grew exponentially during the seismically calm 1880s and 1890s and charged headlong into the catastrophe that was 1906.

The second chapter, “Catastrophe and its Interpretations,” tells the story of the earthquake, outlining how the risky human choices from the previous chapter threw society into a crisis. The earthquake was only the beginning of the catastrophe, as for three days after the quake, fires burned throughout the city due to shoddy wooden construction, inadequate firefighting services, and sheared water mains, not to mention the city’s hilly topography and the peninsula’s winds. Dyl explains that the earthquake and its aftermath caused San Franciscans to reconsider the notion of technological progress in the face of nature’s power. To reconcile their own feelings of inadequacy, and to assure financial investors, officials drew a sharp line between the earthquake and the fires that followed. In doing so, they denied the perennial risk of seismicity along the fault line and privileged human control: they sought ways to build sounder buildings and improve fire codes, rather than acknowledge the forces of nature outside their control.

The next chapter, “Bread Lines and Earthquake Cottages,” explores the catastrophe’s societal aftermath, as some fifty thousand people were thrust from their homes into camps and forced to rely on public charity and governmental assistance. The conditions were dire, which in turn led to mobilization, often led by women, for better “subsistence, housing, sanitation, and transportation” that would prefigure later fights for environmental justice in urban neighborhoods (97). Ultimately, the pleas of such activists fell on deaf ears, only “exacerbat[ing] preexisting conditions of poverty and instability” (126).
Using Schumpeter’s notion of creative destruction, the following chapter, “Rebuilding and the Politics of Place,” builds on this theme. It examines how master planning met reconstruction efforts to exacerbate the city’s conditions of “poverty and instability.” The earthquake had presented the opportunity to make San Francisco into the “City Beautiful,” a city planning strategy centered on broad boulevards and Beaux-Arts classical monuments, but doing so meant attempting to forcibly expel the city’s Chinese inhabitants and dislocating the urban poor in order to overhaul the city. But treating San Francisco as a blank slate proved difficult, and as Dyl shows, individuals’ attachment to the Old City and a “complex matrix of property and power relations” overcame the post-disaster “ambitions of planners, engineers, and politicians” (163).

Centering on the 1907 streetcar strike, the fifth chapter, “Disaster Capitalism in the Streets,” blends together labor and environmental history to describe how workers tried to use the disaster to fight for higher wages and more secure employment. Disaster capitalism—the blending of profit-seeking with disaster recovery—led to increases in labor demand as officials and financiers scrambled to rebuild the city. However, unions flexed their muscles only to have their power sapped by recession and unemployment as the economy took a downward turn. In this chapter, Dyl clearly demonstrates that social histories have an environmental dimension: non-human agents like earthquakes can open new opportunities for humans to assert their rights, just as they can limit what sort of change is conceivable.

Dyl carries this observation through into the next chapter, “Plague, Rats, and Undesirable Nature,” which explores the impact of the disaster on the city’s non-human residents: the rodents who proliferated following the disaster and consequently spread disease and fear among the city’s human residents. Dyl demonstrates that the earthquake and fires had transformed San Francisco into “a rat paradise,” which in turn led to outbreaks of bubonic plague most heavily concentrated in the city’s working poor neighborhoods (205). A legion of health officials and rat catchers descended upon the city to combat the epidemic, while officials resolved to pave the city and push all livestock out of the city’s limits. The environment, Dyl shows, altered human and animal behavior, which in turn “modernized” the city’s urban environment with public waste collection, a new and expanded sewer system, and the replacement of wood with concrete as a building material.

Finally, “Symbolic Recovery and the Legacies of Disaster” looks at how the Panama Pacific International Exposition in 1915 served as the crowning achievement of San Francisco’s recovery. With its glitz and glamour, the exposition promised the orderly control of nature at the hands of technocrats, but this promise was illusory: the site itself being built on made land that once again amplified the risk of seismic destruction. Over all its chapters, *Seismic City* challenges the notion that humans are somehow apart from or above nature, instead showing time and time again how humanity is but one actor amid a panoply of other natural forces.
Through her study of the San Francisco earthquake and fire, Dyl provides a sobering reminder of what can result from humanity's blindness to the rest of the natural world. Denying the inherent ecological risk of living in a geophysically hazardous region—either by assuming the supremacy of technology over nature, or by willful ignorance—produces human suffering and economic devastation that can bring out humans’ best and worst selves. Dangerous geophysical events are as natural as they are inevitable, and, as Dyl shows, society needs to plan to mitigate their effects.

Dyl's warnings should become even more alarming once we consider the effect human actions are increasingly having on the strength and frequency of dangerous geophysical events. As our society plunges headlong through the Anthropocene era, witnessing human-initiated climate change concomitant with post-industrial society, it is likely that extreme natural events will become all the more frequent. Meteorologically, there is more heat—and thus energy—in our climate than ever before, resulting in stronger storms, longer droughts, and more intense weather. It may well be that our faith in technological progress has blinded us, like it did a century before in San Francisco, to the dangers of unfettered societal growth.

I wonder, however, if Dyl sees a way out: we know that geophysical and meteorological events are inevitable, but must disasters be so? In the book’s conclusion, she asserts that “disasters are part of the urban environment” and suggests that all cities, to one degree or another, must accept them as endemic to modern life. I am inclined to agree, even though such an outlook may on the surface appear rather dire. It would seem that humans can only ever mitigate disasters, rather than prevent them entirely. And even then, mitigation efforts always seem to get lost in the shuffle as the memory of the last disaster fades. Making the urban environment more disaster resilient would mean not just accepting, but constantly reflecting upon humanity's place within nature as one among many agents of historical change. If we accepted our place within nature, would new safety standards, building codes, and technological solutions always prove to be somehow insufficient? Would new technologies always lead to new perils, as they did with the nuclear reactor at Fukushima? Would societal intransigence continue to stand in the way of making the changes needed to harden a city against natural events? Would we still have to resolve ourselves to the fate that our choices will inevitably react with the rest of the natural world to disastrous ends? I would say yes, but I hope that I am overly pessimistic.

My musings aside, Seismic City has presented us with much to think about. Not only is Dyl's intervention timely, but her monograph is well-researched and her prose clear, concise, and stylistically engaging. Seismic City synthesizes the latest in disaster studies to shed new light on the human consequences of so-called natural catastrophes. Though it is by no means the first book on the topic of the 1906 San Francisco earthquake, Seismic City stands out as one of the few scholarly treatments of the disaster, and it marks a significant contribution to the fields of U.S. history, environmental history, and disaster studies.
John Ripley Freeman was perhaps the most famous engineer in America at the time of the 1906 San Francisco Earthquake. Freeman, a post-Civil War generation MIT graduate and technical polymath, made his living as an “insurance engineer,” a sui generis expert in post-disaster investigations. Looking back on the 1906 disaster in his book *Earthquake Damage and Earthquake Insurance*, Freeman wrote “History for more than 2,000 years has recorded no earthquake so widespread in its violence as to make it unsafe for an insurance company to write earthquake insurance.” Freeman—who had also studied the 1903 Iroquois Theatre Fire and the 1904 Baltimore Fire, and was an astute observer of what we now call “disaster sociology”—recognized no useful distinction between disasters of nature and disasters of man—the Earth was a system and the built environment just another stratigraphic layer. Risk could be rationally calculated and managed through the accumulation of disaster data across time and with the application of science, engineering technique, and wise standard-setting in the public interest. Strong barriers between the social sciences, the hard sciences, and engineering were not yet totally erected in Freeman’s heyday—how could they be? These tools were new, their institutions were new, and the laws that would govern disaster response in America were yet to be written. In his report, though, Freeman was already displaying some of the disciplinary jealousy that would come to dominate American disaster research in the decades to follow, remarking that “the writer will venture...to express regret that there was not at least one experienced structural engineer among those who surveyed the damaged buildings” (his bold typeface).

Joanna L. Dyl’s *Seismic City: An Environmental History of San Francisco’s 1906 Earthquake* recaptures this moment in time, demonstrating a method of disaster history that is attentive to competing conceptualizations of the natural, the unnatural, and the social and political forces exerted in the early 20th century to differentiate and separate the two. The book is, as Dyl describes it, “a story of the intersection of natural forces with human choices, nonhuman nature with the built environment,” a narrative that “illustrates the impossibility of separating nature and culture even in the modern city” (10). There are to my mind two keys to this methodology, and Dyl deploys them both with skill. First, the history must not linger only in the event, the disaster itself. This is difficult, considering that in terms of historical source materials for the San Francisco earthquake (or any disaster, so-called) the researcher will uncover piles of newspaper coverage, voluminous governmental correspondence and special reports, photographic collections, and oral histories. The event, as far as the record is concerned, is the thing. But the event obscures almost everything that truly matters in the story, it doesn’t lead us anywhere near the answers to questions like: why did people think the buildings

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2 Freeman, 188.
were safe, or how had people explained previous earthquakes and managed their fears, or why did politicians use the earthquake as a chance to remove poor people and ethnic minorities from the core of the city? The questions that actually matter in terms of helping us understand the political economy of American urbanization. To do THAT the researcher has to turn the temporal dial back in time and then forward past the event—the time frame has to lengthen and the action must slow down.

I found Dyl’s book satisfying in this mode. She slows down the history of San Francisco’s urbanization (usually compressed into a couple of breathless sentences in conventional tellings), and she sketches out for the reader the multiple disasters, happening at different temporal scales, that finally converged in 1906. We learn a great deal about the land that had to be taken from the water to make a city—a city that had to be made to facilitate the lifting of minerals from other land over a hundred miles away. “Even in San Francisco’s infancy,” she writes, “speculators anticipated that the town’s growth would depend on its port, and they did not hesitate to commodify both the land of the coast and the water of the bay, delineating and selling lots that consisted of nothing but mud and shallow water” (24). You might get rich in those heady days, but you might also find yourself up to your neck in mud. Earthquakes that were once lost to time out of mind, now became “disasters,” shaking that revealed the haphazard construction and unstable “made land” of the city, shaking that toppled candles and stoves, shaking that led to ruinous fires.

With this slow disaster firmly established, the reader is then able to understand the rush-to-reconstruction after the 1906 earthquake not as the rebirth of a great metropolis, but rather the continuation of an environmental transformation already well underway. The rapidity of reconstruction makes a great story, but it is the continuities here that matter: the inequalities fomented by land use before the earthquake are only made more visible afterwards. Those forced from poorly built homes became refugees in the city’s parks and in its most marginal spaces. “Those camps were situated in the city’s parks,” Dyl tells us, “and in its sinks, areas normally used more for dumping waste than for residences.” Dyl is in league here with writers like Carl Smith (Urban Disorder and the Shape of Belief: The Great Chicago Fire, the Haymarket Bomb, and the Model Town of Pullman), Mike Davis (Ecology of Fear: Los Angeles and the Imagination of Disaster) and Jacob Remes (Disaster Citizenship: Survivors, Solidarity, and Power in the Progressive Era) in documenting the myriad ways that class and racial conflicts between paternalist elites and disaster victims only demonstrated at the surface the pre-disaster tensions that had been building at subsurface layers over the preceding decades.3 Dyl (slightly anachronistically, but still effectively) invites us throughout the volume to see in

these post-earthquake battles the same lines of conflict that would come to define the environmental justice movements decades later, when toxins in the air and water once again traced out lines of privilege and discrimination in the city.

A second methodological challenge for disaster studies scholars lies in the challenge to work beyond the conventional category of disaster as a demonstration of *nature unleashed.* Such narratives generally focus on the heroic work of bringing nature back to its senses after the disaster. What if disaster is, in fact, merely the revelation of an ecosystem’s full capacity for change—what if disaster is an unpredictable re-ordering of the human/nonhuman organic relationship, what if the most interesting aspects of a disaster are, in fact, changes to the inorganic components of a place? De-centering the human in the history of disaster means locating other stories to tell, and it once again challenges the conventional, modern conceptualization of the term. Rather than limiting its conceptual power to an “event that overpowers human capacities to cope”—the de-centered disaster could take on the ability to show geological and ecological systems functioning in pretty normal ways, but ways that become more and more alarming as humans compose “second natures” that obscure repetitive patterns of (for example) seismicity, waves, fires, and drought. In this same frame of mind, the 1906 Earthquake also comes along in the midst of a time period many geologists now term the “Anthropocene”—the time when humans are the primary geomorphological forces on the planet. As such, it could be that in the future the most consequential aspects of the great earthquake will prove to be not the charred layer of debris in the strata below the contemporary city, but the girding and paving, the channeling and concrete sculpting that followed, making further population growth and industrialization (and thus future toxicities, some nuclear) possible. *Now there’s a disaster story for you.*

It’s here that I confess my favorite part of this book is about the nonhuman animals in San Francisco. Although not unknown in the city before 1906, a bubonic plague outbreak after the earthquake initiated a war on rats. But a war on rats is not only about one unwelcome species, or maybe two if you count the plague-vector fleas. This war brought forth squadrons of rat catchers and health inspectors, and also a reorientation of the human-nonhuman species relationships in the city. Dyl skillfully outlines that the eradication of one species from the post-disaster city entailed much more thoroughgoing technological and spatial alterations. Cats and dogs could stay, but chickens, rabbits, and rodents had to go. “Horses . . . remained, but the new antiplague ordinances established a distance between horses and humans that had not previously existed” (222). Hundreds of stables were removed from the city—and “animals used for food production were almost entirely exiled from the city in the wake of the plague” (223). A new sewer system, citywide garbage collection, and the ultimate removal of wooden buildings in favor of concrete all flowed as tangible material changes to the city as part and parcel of this species segregation project (236). By the 1920s such universal markers of modernity no longer even needed to be explained—it was simply “uncivilized” to have rats and chickens in the city. Of course, rodent populations did not disappear from American cities after 1906, they were merely segregated into the poorer quarters as were immigrants and African-
American residents. And the harsh divide between the urban, the suburban, and the rural that seemed so intuitively progressive and modern in the early 20th century predicted an ever-growing (and politically volatile) distance between Americans and the food system, rural life and work, and the lands we use for waste removal.

The capital intensification that made San Francisco provides a continuous line through the 1906 earthquake uniting conditions of before and after. But, the disappearance of certain species from the ecosystem—first the plants and animals native to the space before dense human settlement, then the animals that initiated the first wave of that settlement—that is a discontinuity worthy of historical contextualization. To do it we need not be constrained by the city limits and the disaster event, we are free to embrace the Anthropocene analytic here, marking out a much longer timeline and more expansive geography. In doing that work we might not just look for accumulations, but also for absences: the missing horses, the chickens, the rats and fleas. It's a task of observation described recently by disaster scholar Manuel Tironi, drawing on his post-wildfire fieldwork in the Mesana improvised settlement above Valparaiso, Chile. Tironi describes looking for the fire: “as we walk, I can’t help thinking to myself, ‘Where is the fire? Where is the blast, the remainings of the burning catastrophe?’ There is vulnerability. We see poverty. There are degradation, mud and erosion. But the fire as an eventful and dramatic staging of carbonised things and sites proved elusive.” In the end Tironi’s eye lands on the burned stumps of Eucalyptus trees, neither alive nor totally gone yet, trapped in a sort of environmental purgatory. “Those stumps haunted me,” Tironi writes. “Not fully trees anymore, not completely rubble yet, they stood in an uncanny space between life and death. They also messed with linear temporalities.”

San Francisco’s made land, filled marshlands, exiled rats, and seismic shaking are all in the same uncertain temporal space—they are the missing, nonhuman features of an ecosystem, but just because they are missing does not mean they can never return.

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As a 20th-century urban historian who studies San Francisco, I’ve surprisingly never read much about the 1906 earthquake, and so I was happy to be invited to discuss Dyl’s *Seismic City*. From the beginning, Dyl captured my attention with her discussion of placemaking in San Francisco, detailing topics ranging from how the city’s wooden piers and plank roads were a fire hazard to how broken pipes after the earthquake created tunnels for rats to overrun the city. Dyl’s discussions of urban ecology and the built environment to captured my interest in urban landscapes. I’ve long looked to several San Francisco histories as groundbreaking studies of urban space and place. Dyl’s *Seismic Cities* now joins the ranks of Jessica E. Sewell’s *Women and the Everyday City*, Nayan Shah’s *Contagious Divides*, Brian J. Godfrey’s *Neighborhoods in Transition*, and Josh Sides’ *Erotic City* in my go-to list of San Francisco studies of space and place.

While I knew parts of San Francisco are on filled land, I did not know much about how this land was made or its impact on the city’s landscape. Dyl’s first chapter details the city’s explosive growth in the mid-1800s, demonstrating how residents converted watery spaces into usable land. By 1850, Dyl explains, land lots up to 35-feet underwater were incorporated into the city’s grid. To build on these sites, people anchored buildings to wooden piles, converted “ships into buildings, or employ[ed] fill to transform tidal lands into solid ground” (29). These detailed descriptions demonstrate the city’s spatial transformation. She also illustrates these changes using a wealth of photographs and several maps, such as this [1853 map from the David Rumsey Map Collection](https://r rumsey.com/1853_map) that shows the cove east of the city before it was filled. I finished this book with a better understanding of the city’s foundation, both the land on which it was built and the ways that some of that land was created.

Her use of vivid detail makes this book an engaging read. For example, she describes that during the city’s rapid Gold Rush growth, buildings could not be built fast enough. People arrived by water, abandoning their boats as crews went to look for gold. She describes that “more than two hundred of those abandoned vessels were drawn up onto the beach, where they served as warehouses, lodgings, and even a prison,” helping to accommodate the city’s growth. She quotes a Chilean visitor who detailed that the city was like “a Venice built of pine instead of marble. It is a city of ships, piers and tides...the whole central part of the city swayed noticeably because it was built on piles” (28). This description places you in 1840s San Francisco, with a view of its chaos and commotion. Later, she describes teams of fire fighters, army troops, and volunteers that took to the city after the earthquake, trying to create “firebreaks” with dynamite to stop the spread of fires. In reality, these largely untrained dynamiters started new fires, destroyed buildings, and killed residents, especially in Chinatown and the Barbary Coast (62-63). These vivid descriptions and attention to detail present immersive views of the city’s built environment during different stages of its growth.
As someone who studies San Francisco’s built environment, I was interested in her depiction of the inseparability of nature and human choices in disasters like the 1906 earthquake. She argues that disaster is the “dynamic interplay of seismic forces, urban fire regimes, social circumstances and the built environment of San Francisco. The specific characteristics of the city’s complex urban environment—most notably unstable made land and densely packed wooden dwellings—transformed a regional seismic event into a disaster of epic proportions” (53). In this case, human choices such as creating filled land and building on it exacerbated the natural forces to produce a disaster of this scale.

Dyl describes fires and earthquakes that took place before and after the 1906 quake. A recurring theme throughout Seismic City is that residents almost always sought a return to normalcy, often choosing to rebuild rather than changing where and how they built in the city. Engaging with the choices people made about rebuilding the city, changing its infrastructure and urban ecology, and addressing sanitation links together humans, nature, and the built environment. Ultimately, Dyl concludes humans almost always rebuilt in a way that “concealed natural hazards rather than eliminating them” (16). Residents, she argues, placed “their faith in modern construction, confident that technology had created a city proof against earthquakes” (53). Despite the ever-present risk of earthquakes, Dyl details how humans in San Francisco continually have viewed seismic activity and natural disaster as abnormal and unnatural, decentering the interconnection between humans and nature.

I study the late-1900s, and so, Dyl's work struck me because it echoed themes that would recur throughout the mid- to late-20th century in San Francisco. Themes like beautifying and transforming the city, trying to redistribute “undesirable” residents, and the use of public lands for domestic activities happen again and again throughout the city’s history.

Dyl details how elites used the leveling of the city during the disaster as a way to articulate and execute dreams for creating a better, more organized, aesthetically-pleasing place. In many ways, these goals reflected the shift to the “ideal modern city” which would be “a place where nature took the form of scenic views and pastoral suburbs rather than the unstable earth, blowing dust, working horses, and hungry chickens and rats that stubbornly persisted in the urban environment” (16). San Francisco would again see major attempts to transform the city throughout the mid-20th century, with attempts to replace blighted areas via urban redevelopment, with the downtown’s development into a hub of white-collar labor, and in the late-20th and early-21st centuries with the influx of tech dollars and workers spurring gentrification throughout the city. While Dyl details Daniel Burnham’s plans to create a “City Beautiful,” he’d be neither the first nor last in San Francisco to articulate dreams of an ideal cityscape on the Bay.

Dyl also describes efforts to remove Chinese residents after Chinatown was flattened in this disaster, along with working-class people and others living on
valuable land. While rhetoric established that Chinese residents deserved polluted land within the city's bounds, arguments about the movement of working-class peoples prioritized moving to the city's perimeters where they would enjoy the proximity to clean, fresh nature in an "idyllic suburban environment," which had "space for gardens and environmental amenities" (121). These attempts to move people out of the expanding city previewed later housing dislocations when the city experienced residents' white flight to the Bay Area suburbs, efforts to evict or remove residents from desirable areas of town, and the rent booms of recent decades.

A third parallel to historical themes in *Seismic City* include the habitation of public spaces. Dyl describes how displaced peoples took to the streets, public parks, squares, unused lots, and other city spaces after their homes were destroyed from the earthquake and/or fire. People inhabited bread lines, earthquake cottages, and street kitchens, living their lives in the open. Questions of domesticity, cleanliness, and the use of public spaces again emerged in the history of the city as hippies and homeless people took to the streets. The following description of Dyl's about the aftermath of this disaster could nearly refer to hippies or homeless people as well: "People of all classes were forced into visceral encounters with urban nature as they lived in the parks and cooked in the streets" (85).

None of this is to suggest that the earthquake of 1906 and its aftermath foreshadowed these developments directly. However, these transformations of the urban landscape contributed to the city's social, cultural, economic, and political trajectory, which then perhaps fostered these changes mentioned above. While, again, I don't seek to suggest causation, I do wish to propose that the narratives Dyl tells fit within the larger themes and patterns of San Francisco history.

Dyl also tells a story of environmental justice and equity by examining the disproportionate impact of this disaster on working-class urban residents. Dyl articulates that this inequity resulted in a "politics of place" as diverse residents "fought for their visions for their city" (13). Without "social safety nets" and in continual states of "permanent emergency," the city's poor, as well as people of color, women, and immigrants did not have the same level of resilience to bounce back after the quake as did wealthier residents (13-14).

One of the ways she demonstrates this inequity is through a discussion of the city's topography. She explains, "In 1906 only the poor had to live near their places of employment. Streetcar lines allowed the middle classes and more prosperous members of the working classes to move away from the congestion and pollution of business districts. Public transit had enabled the use of the hills for residential construction, and the wealthy had built their homes atop some of San Francisco's spectacular vistas" (74). While topography did not necessarily translate to the substantial impact on the working class, she demonstrates that the working class were more likely to live on made land, while elites were more likely to own homes on the hills which provided greater resistance to the shaking, splintering, and
liquefaction of the land elsewhere. One of the greatest factors shaping the inequities residents faced after the crisis was their access to funds to rebuild after the earthquake. Dyl’s commitment to exploring the relationship between inequity, economics, and the built environment provides an interesting contribution to the history of this city.

Throughout this book, I was left wondering whether this book was really an environmental history of the earthquake or of one detailing its aftermath. Dyl communicates from the beginning that the book tackles not only the quake (which is both the “starting point” and the “epicenter” of the book) but also the “environmental, economic, and cultural consequences” which impacted the city for years to come. It strikes me that this highlights the importance of a long chronology in disaster studies as authors seek to contextualize what comes before and after a disaster.

A few questions that I have for Dyl after reading *Seismic City*: 1) What do you see as the relationship between a long chronology and disaster studies? 2) I highlighted three parallels I observed above, but what parallels do you see between the content of your book and the later history of San Francisco and the Bay Area? 3) And finally, what topic or thread do you wish you’d been able to weave into this book but didn’t?

Arguing against the perception that as cities grow, nature fades, provides an important approach to studying 20th-century U.S. cities. While Dyl is hardly the first to make this argument, *Seismic City* offers an important contribution to the history of San Francisco by interweaving nature, human actions, and the built environment.
Response by Joanna L. Dyl, Scripps College

First I want to thank each of the reviewers for their insightful comments, and I want to thank Kara M. Schlichting for coordinating and editing the roundtable – and particularly for her patience through my many missed deadlines. I am honored to have *Seismic City* as the subject of a roundtable, and I am grateful for the opportunity to discuss the book here.

Both Scott Knowles and Lindsey Passenger Wieck have pinpointed one of the challenges of writing disaster history, which is striking an appropriate balance between the event and its temporal context. This is particularly challenging for a historian who wants to focus on a particular disaster, as I did, rather than examine a series of disasters across time or space. I have long had a fondness for microhistory, and while I would not call *Seismic City* a microhistory, the book seeks to delve deeply into a relatively narrow slice of time and a specific place. This balance between event and context is also crucial if one understands disaster as a process – a result of not just a dramatic movement of rocks along the San Andreas fault but also of decades of urban development that created a particular built environment and a particular social environment in San Francisco. My intent was to combine a close analysis of 1906 and its effects on the city with a longer chronology incorporating the region’s natural history, the city’s earlier history, and the lasting consequences of choices made in the aftermath of 1906.

The latter topic is one area where the limitations of scope of a single book came into play, and when Wieck asks what threads I wish I had been able to pursue more fully, the environmental history of San Francisco between the 1915 Panama Pacific International Exposition and the 1989 Loma Prieta earthquake stands out. The drama and obvious significance of the Gold Rush era has meant that San Francisco’s early decades have been the subject of extensive research, but much of the twentieth century has been relatively ignored, making it impossible to write the concise synthetic summary of those decades that I had hoped to include.5 There are many new stories for historians to uncover in those years, stories that will need to be connected to more famous eras of San Francisco’s history, including both the Gold Rush and the 1906 earthquake.

The second methodological challenge that Knowles discusses, the need to “work beyond the conventional category of disaster as a demonstration of nature unleashed,” also becomes particularly relevant and challenging for an urban disaster. There can be a fine line between identifying the ongoing importance of nature in the urban environment and celebrating a version of nature’s revenge on the city. Builders and residents of San Francisco made plenty of mistakes, but they

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also balanced competing interests and limited knowledge, to name just two reasons for choices that seem short-sighted in retrospect. However, and here I may be departing somewhat from Knowles’ analysis, disaster as a re-ordering of the relationship between the human and nonhuman – whether directly through the earth’s movement in a quake or indirectly as a result of paving in its aftermath – can be a valuable counter to Anthropocene narratives that imply almost total human control of the planet. I worry that such narratives of human dominance can echo and reinforce the anthropocentric arrogance that has contributed to so many environmental challenges.

What Knowles aptly describes as “de-centering the human” was very much a goal of mine, and it is an essential part of seeing cities as functioning ecosystems. Human choices and human needs shape those ecosystems – as with choices about the presence or absence of horses and chickens in San Francisco after 1906 – but nonhuman actors and forces persist as well. Benjamin Johnson correctly identifies my (admittedly somewhat old-fashioned) commitment to the material side of environmental history, although the material and the cultural constantly and inescapably interact as each influences the other. For example, in twenty-first century American cities, chickens are returning to at least a few backyards as largely middle-class proponents of urban gardening build elaborate coops for their birds. They seek to restore a sense of connection to nature in general and food production in particular, as well as to obtain healthy, humanely-raised eggs. And they often find themselves running afoul of long-standing regulations governing urban chickens, such as those passed in San Francisco in 1908. As ideas about the place of nature in cities have shifted with changing environmental consciousness, some urban and suburban residents are suggesting that chickens should once again be welcome in the urban environment.

That brings me to Lindsey Passenger Wieck’s thought-provoking discussion of themes that recur across a longer span of San Francisco’s history, in particular “beautifying and transforming the city, trying to redistribute ‘undesirable’ residents, and the use of public lands for domestic activities.” At the risk of again venturing from the historical realm to the contemporary, the last two themes are particularly striking in light of the homelessness and housing crises currently afflicting San Francisco. I would add to Wieck’s list another regional trend highlighted in recent years – the recurrent problem of what I call “environmental risk,” particularly the fires that have periodically swept through East Bay and North Bay communities. Where the nineteenth century experienced urban fires, such as the fires of the 1850s and 1906 in San Francisco, subsequent decades have seen wildland-urban interface fires, from the Berkeley hills fire of 1925 to the Tunnel Fire in the Oakland hills in 1991 and the Tubbs fire in 2017. Those fires, like 1906, resulted from a complicated matrix of development intersecting with environmental conditions ranging from winds and tree species to sources of sparks such as power lines. Thinking about the continuity between the impacts of a disaster such as the 1906 earthquake and fire and other forces driving urban tensions and change bolsters the argument for integrating disasters into broader narratives of urban history, rather than seeing
them as exceptional events that should be siloed within environmental history or disaster studies.

Challenging such traditional divisions can also challenge fundamental definitions. Environmental justice activists have defined the environment as the places where people live, work, and play, a definition that contrasts sharply with the dominant perception of the environment as nonhuman nature or a place where humans are only visitors or intruders. Despite their insights challenging divisions between nature and culture, even many urban environmental historians still equate environment and nature in a way that fails to fully integrate the insights of environmental justice theorists. I make this point in chapter four, but it bears highlighting here. A definition of environment that emphasizes the predominance of nonhuman nature privileges environments where people play, particularly when applied to urban settings. Thus, environmental histories often focus on parks and recreational spaces. If we embrace a broader understanding of the environment, we must also explore the places where people live and work as environments worthy of study. For example, an environmental history analysis of San Francisco’s Chinatown in 1906 highlights the ways in which the very characteristics that most seemed to depart from pristine, wild nature—the buildings and alleys filled with people and their goods—fostered perceptions of Chinese people as unclean and belonging in a polluted environment, a manifestation of the biases so often applied to racialized spaces. We can extend the environmental history of a profoundly urban neighborhood such as Chinatown in other ways as well, for example by thinking about the routes of trade and transport that brought both material goods and plague from Asia, about the live chickens and squirrel legs disguised as frog legs (a rumored source of plague) for sale in the streets, about the presence of rats in the first years of the new century and their relative absence in the aftermath of the 1904 ratproofing efforts—one of those absences that Scott Knowles mentions.

In writing about the streetcar strike, I extended this understanding of the environment to consider the workscapes of San Francisco, particularly the city’s streets. There, the carmen negotiated an environment physically altered by the earthquake and fire alongside economic and social circumstances that pushed them to strike. Benjamin Johnson was, perhaps rightly, not entirely persuaded that environmental history helps to “explain the causes or outcomes” of the streetcar strike. However, the conflicts between labor and capital in 1906 and 1907, as well as the recession that afflicted city and nation by spring of 1907, are certainly crucial to understanding the limitations of recovery for ordinary San Franciscans and why their experiences of disaster extended for years after 1906. I believe this chapter represents a crucial piece of the story of recovery and rebuilding, particularly the complex and contingent mix of opportunities and constraints that working people encountered.

Christopher Church asks the difficult question of how we can use this history and its interpretation of disasters as intrinsic to a place like San Francisco to contribute to more resilient urban environments. I agree that “not just accepting, but constantly
reflecting upon humanity’s place within nature as one among many agents of historical change” represents one step in that process. Although I, like Church, lean toward the pessimistic view that “new technologies [will] always lead to new perils” – and most environmental historians and disaster studies scholars, following Charles Perrow, would probably agree – I believe deeper knowledge of the history and natural characteristics of the places where we live represents an important step forward.

This brings me back to Knowles’s suggestion that we look for absences as well as accumulations in studying and observing our cities. The nonhuman features of San Francisco, such as made land and seismicity, too often remain absent from our thinking and from our history. Constant redevelopment erases physical traces. Perceptions of cities as separate from and insulated from nature erase ecological and geological forces. And our narratives of history and urban development erase disasters.

Even such a prominent feature as seismicity in the Bay Area can suffer this erasure. I think of the offset curb in Hayward, California, that had long been used by scientists to document and illustrate the steady movement of the Hayward Fault – and that was “fixed” by the city in 2016. City officials had no idea that the misaligned section of pavement had any significance (although the new ramp they built improved the city's accessibility, complicating any rush to judgment). In a much more ominous example, Dean Macris, long-time San Francisco planning director, has said that the seismic safety of high rises was “never a factor” in planning for redevelopment of South of Market, despite the neighborhood’s unstable ground and history of severe damage during earthquakes. As I discuss at the end of Seismic City, at least one of those high rises, the Millennium Tower, is currently suffering from subsidence severe enough that it may become unsafe to live in even without the intervention of an earthquake. When urban planning decisions both small and large are not informed by local environmental history, they can conceal crucial environmental characteristics such as seismicity, with potentially ominous consequences for residents when the next earthquake inevitably occurs.

Integrating disasters can help us to extend our thinking about the places where we live, embracing a longer chronology that incorporates at least some understanding of geological time alongside an ecologically-informed construction of place. Such thinking would actively situate cities within environmental features such as watersheds and air basins as well as faults, fire ecologies, and dynamic coastlines. And, informed by environmental justice insights, it would think about the circumstances and vulnerability of the full diversity of human residents. These are

the subjects of urban environmental history and disaster studies, but they remain absent from most people's thinking about place. Truly incorporating such ideas could help us devise ways to live within dynamic natural environments.
About the Contributors

Christopher M. Church is assistant professor of history at the University of Nevada, Reno, where he teaches courses on French and Caribbean history, as well as classes on imperialism, disasters, and the digital humanities. He is the author of Paradise Destroyed: Catastrophe and Citizenship in the French Caribbean (Nebraska, 2017), which was awarded the 2017 Alf Andrew Heggoy Prize by the French Colonial Historical Society.

Joanna L. Dyl is an independent scholar and visiting lecturer in the Environmental Analysis Program at Scripps College and Pomona College. She earned her Ph.D. from Princeton University, where her dissertation received the Rachel Carson Prize for the best dissertation from the American Society for Environmental History. Seismic City is her first book and the 2018 recipient of the Historical Society of Southern California’s Martin Ridge Award for the best book on California history emphasizing the twentieth century.


Scott Gabriel Knowles is a Professor of History at Drexel University. His work focuses on risk and disaster, with particular interests in modern cities, technology, and public policy. His most recent book is "The Disaster Experts: Mastering Risk in Modern America" (UPenn Press, 2011), and he is series co-editor of "Critical Studies in Risk and Disaster" (UPenn Press, launch 2014). Presently he is also a faculty research fellow of the Disaster Research Center at the University of Delaware. Since 2011, he has been a member of the Fukushima Forum collaborative research community, with which I am currently co-authoring an edited volume on the Fukushima disasters.

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Lindsey Passenger Wieck is an Assistant Professor of History and the director of the Master of Arts in Public History program at St. Mary’s University in San Antonio. She received her Ph.D. in History from the University of Notre Dame in May 2016.
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