THE AGENCY OF LAW IN NATURAL DISASTER: A HISTORICAL ANALYSIS

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I. INTRODUCTION

What people perceive as “natural disasters” typically take place when extractive industries operate at levels high enough that the ecological systems from which they draw resources lose their ability to buffer transient shocks, whether of environmental or technological origin. Legal institutions whose purpose it is to prevent such disasters from taking place may in fact encourage them, insofar as they must also broker competing demands for greater access to resources. Legal institutions may adapt to ecological instability in the wake of such disasters, learning from the experience more or less successfully depending on the

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conditions under which the disaster takes place. This paper will
develop these ideas in the context of a number of noteworthy
disasters, including the sinking of the Deepwater Horizon in
2010.

The Deepwater Horizon disaster of April 2010, was a near-
perfect example of what the sociologist Charles Perrow called a
“normal accident.” Perrow is a sociologist, now emeritus at Yale.
In 1984, he published a book called Normal Accidents: Living
with High-Risk Technologies, in which he theorized that
cascading, catastrophic failures are inevitable in engineered
systems that are highly complex, with many different sub-
systems tightly coupled to each other, and run at high intensity. 1
Such failures, Perrow insisted, are essentially unpredictable
because they develop chaotically: some emerge out of unforeseen
interactions between parts of the system itself, while others
ramify the effects of random impacts from the external
environment. The technology itself is the source of failure, not
necessarily any shortcomings of the people operating it. For
Perrow, nuclear power plants were the laboratory example of
high-risk systems; the 1979 accident at the Three Mile Island
station in Pennsylvania inspired his study of the problem. 2
Even petrochemicals, which Perrow thought were a mature, well-
rung industry with “substantial economic incentive to prevent
accidents,” offered “some of the best examples of system
accidents” simply because of the nature of their technology. 3

Diane Vaughan, another sociologist, approached the 1986
destruction of the space shuttle Challenger in much the same
way. More than Perrow, Vaughan emphasized the human,
sociological factors that contributed to the Challenger disaster. 4
NASA, she found, had developed an institutional culture that
tolerated – “normalized,” in her word – higher levels of risk than
turned out to be appropriate. The structure of authority inside
the complex, multi-layered, high-flux space agency also ensured
that information about environmental risks to the orbiter on that
cold January day did not register appropriately. 5

1. CHARLES PERROW, NORMAL ACCIDENTS: LIVING WITH HIGH-RISK TECHNOLOGIES
2. Perrow, supra note 1, at vii.
3. Id. at 101
4. Diane Vaughan, The Dark Side of Organizations: Mistake, Misconduct, and
Disaster, 25 ANN. REV. SOC. 271, 271-305 (1999). See also James F. Short, Jr., The Social
Fabric at Risk: Toward the Social Transformation of Risk Analysis, 49 AM. SOC. REV. 711,
5. DIANE VAUGHAN, THE CHALLENGER LAUNCH DECISION: RISKY TECHNOLOGY,
study of the Challenger launch earned her a place on the investigation into the loss of the shuttle Columbia in 2003: “Both Columbia and Challenger were lost,” that investigation concluded, “because of the failure of NASA’s organizational system. . . . Despite all the post-Challenger changes at NASA and the agency’s notable achievements since, the causes of the institutional failure responsible for Challenger have not been fixed.”

Vaughan added a historical dimension to the Columbia analysis, in two ways: on one hand the Challenger loss had actually enhanced political pressures that had from the beginning encouraged NASA officials to discount known risks. On the other, the Challenger disaster had had no impact whatsoever on the ingrained process by which NASA “normalized” hazards over time, in which “[a]nomalies that did not lead to catastrophic failure,” rather than drawing attention to problems, became “valid engineering data that justified further flights.”

The Presidential commission charged with investigating the Deepwater Horizon disaster analyzed its subject in similar terms, although the report made explicit reference to very few scholarly works and none by Perrow or Vaughan. It began with the observation that “complex systems almost always fail in complex ways” – words taken from the final report of the Columbia disaster. In the Deepwater Horizon case, as in that of Columbia and Challenger, multiple structures of authority shared responsibility for different parts of the Deepwater Horizon enterprise, although in the latter case the notoriously risk-

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6. 1 COLUMBIA ACCIDENT INVESTIGATION BOARD, REPORT 195 (2003). The Columbia report stated the theory succinctly:

   Attempting to manage high-risk technologies while minimizing failures is an extraordinary challenge. By their nature, these complex technologies are intricate, with many interrelated parts. Standing alone, the components may be well understood and have failure modes that can be anticipated. Yet when these components are integrated into a larger system, unanticipated interactions can occur that lead to catastrophic outcomes. The risk of these complex systems is increased when they are produced and operated by complex organizations that also break down in unanticipated ways.


7. CAIB, supra note 6, at 99-102, 195-97. The physicist Richard Feynman, who participated in the investigation of the Challenger accident, compared launching shuttles to playing Russian roulette.

insensitive British Petroleum company was in charge of the entire operation. Human failures, any number of which had the potential to generate civil and/or criminal prosecutions, combined further in the BP case with the significant shortcomings of government agencies whose job it was to oversee safety for workers, neighbors, and the environment. Available targets of liability aside, the fact remains that unforeseeable, chaotic failure is an inevitable companion to high-risk technologies like nuclear power, space exploration, and deep-sea mining.\(^9\)

Complexity, then, breeds chaos. Regulators may prepare more or less competently and honestly for unpredictable failures, but it is not possible in the nature of the case to eliminate them because such failures arise from the nature of highly-engineered, high-flux systems themselves. Indeed – and this is the point of this essay – the legal system plays an important role of its own in generating disasters like the Deepwater Horizon blowout because its job is not only to minimize the likelihood of disasters and to cope with them when they do occur but also to sustain the productive activities that inevitably generate them. In its way, law is a complex, highly engineered, tightly coupled, high-flux system all by itself, built up over time in response not only to changing threats to public welfare but also to the imperative to promote continuous growth in economic product.

Even when legal institutions are not captive to interests bent on developing high-risk resources whatever the social cost, they must nonetheless broker competing demands for developmental and environmental goods. One important way in which they do this is by diffusing the cost of risk, whether across society at large, onto future generations, or across groups in the present who are unable to defend themselves in the political process. The result is a political economy that runs its resource systems as intensively as possible given available technology, knowledge of potential hazards, and the cost of insurance. The higher the flux and the more complex the technology, again, the more unavoidable the occasional, unpredictable catastrophe becomes.

As a historian, I aim to demonstrate this idea by offering stories of three instances in which people used law and legal institutions to overcome obstacles to intensifying development in particular extractive industries, in each case pushing their

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resources past the point where catastrophic failure (such as that which occurred on the *Deepwater Horizon*) became sooner or later inevitable. They all occurred in my own state of California, and they all involved different resource industries. The first is the collapse of the California sardine fishery in the 1940s, which, in terms of sheer resources lost, ranks as one of the great natural disasters in our history. The second concerns the Sacramento Valley floods of the late nineteenth century, which grew out of the interaction between intensive gold mining and changing weather patterns. The third disaster episode took place along the Southern California Coast in 2005 and had to do with interactions between weather, coastal geology, real estate, and the avocado business. The lessons of all three point in the same direction as that of the *Deepwater Horizon* catastrophe, especially with regard to the ways in which people used law and legal institutions to bring them about.

My perspective on this problem owes a great debt to James Willard Hurst, who was Professor of Law at the University of Wisconsin between 1939 and 1980 and who invented the field of legal history as it is mainly practiced today. A protégé of Brandeis and Frankfurter, Hurst was a Legal Realist who understood legal change in terms of the effective demands that people place on the system, the most effective of which typically stem from the economic impulse to squeeze profit from the world. In a competitive economy, people exploit their resources to the limits of their capacity; people who find their expectations frustrated by technology, by politics, or by nature, turn to law to help them overcome these barriers. Hurst’s masterwork is a legal history of the Wisconsin lumber industry, which cleared thirty million acres of prime timber in the space of a generation and left in its wake a depauperate waste of sand farms and cutover land.\footnote{See generally J. Willard Hurst, *Law and Economic Growth: The Legal History of the Lumber Industry in Wisconsin* (1964); see also Arthur F. McEvoy, *The Lumber Book*, 10 ENVTL. HIST. 724, 724-25 (2005).} Hurst showed how people at all levels of the system – from judges and legislators to entrepreneurs and landowners – used law deliberately, inventing new institutions as they went and making new rules where necessary, to increase the flow of resources into the market: to “release . . . creative human energy,” as Hurst put it.\footnote{J. Willard Hurst, *Law and the Conditions of Freedom in the Nineteenth-Century United States* 5 (1956).} The waste of the Lakes States pinelands – like the loss of the California sardine a less well-known disaster than, say, the Dust Bowl, but comparable in its
mechanics as well as its magnitude to its more famous cousin—was a policy choice to turn resources into cash as rapidly as possible: as Hurst put it, “[w]e would realize the greatest present production we could from the land, though . . . this meant throwing away much that a broader future development could use.”

Hurst was a thoroughgoing modernist who concerned himself mostly with government-in-the-economy issues: in addition to his timber book, he wrote books on the legal history of money and the history of the business corporation in American law, although he also produced one of the leading studies of the American law of treason during his time with the Navy during the Second World War. Hurst did not think in terms of nonlinear, stochastic interactions between complex systems. He appreciated the importance of interdisciplinary study of law, however, having written one of the first modern sociological studies of the profession. As a product of the New Deal, moreover, Hurst was throughout his career concerned with the economic catastrophe of the Great Depression and the limits on people’s ability to use law to steer blind market forces in less destructive directions. “The structure of legal institutions itself,” he insisted, “was a major factor in determining what they accomplished or what they could accomplish.”

Following Hurst, I claim that complex events like the Deepwater Horizon disaster manifest the interaction between ecology, economic activity, and legal regulation. Analyzing that interaction requires synthetic, interdisciplinary work in scientific, economic, and social as well as traditional legal sources. Hurst was also a follower of the Protestant theologian Reinhold Niebuhr and, as such, keenly aware of what he called “the tragic element, not just in life but in human history, the sense of limitations of energy, courage, imagination, vitality that adhere in being a human being.” Hurst admired Americans’ ability to use the law creatively to promote reason and progress, but with equal force he underscored the moral aspects of government’s failure to defend diffuse, intangible, non-pecuniary

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12. Id. at 70.
16. Id. at 375; see generally Reinhold Niebuhr, Beyond Tragedy (1938); Reinhold Niebuhr, The Irony of American History (1952).
values against society’s overweening – what Niebuhr would have called “prideful” – determination to uproot the world in the service of short-term profit. From this point of view we might usefully think of the Deepwater Horizon as a lesson not only in engineering and ecology but in the wages of pride, as well.

II. THE CALIFORNIA SARDINE FISHERY

My first historical story of intensification, complexity, and cascading failure is the fishery for sardine that developed off the coast of California early in the twentieth century and collapsed, spectacularly, in the years following World War II. At its peak in the 1930s, this was the most intensive fishery in the world and one of the few profitable industries in Depression-era California; its collapse is one of the great environmental calamities in the nation’s history although its loss has not been much remarked, perhaps because the sardine is an uncharismatic animal whose fate played out underwater. A fishery is a renewable resource, to be sure, and its relevance to petroleum exploration might not seem obvious at first glance. It is also true, for one thing, that this fishery was entirely a creature of fossil fuels: it became feasible only when gasoline engines became available for small boats and it grew into a major industry only when the energy-intensification of farming in the Midwest generated a demand for the fish as feed for livestock. More important, the sardine fishery became part of a complex, tightly-coupled, high-flux food system and succumbed to cascading failure once it grew beyond its capacity to withstand random fluctuations in its environment.

The first decade of the twentieth century was an opportune time to fish sardine in California. Boats, workers and cannery gear had fallen idle as overfishing and mining pollution destroyed the once-bountiful Central Valley salmon fishery; gasoline engines became practical about the same time, as well, which made it possible to harvest a schooling fish like sardine in coastal waters. Oceanographic data indicate that the biological productivity of California coastal waters, which could vary

significantly over time, was also very high at the time: fish were visibly abundant and, once people matched the right tools to the resource, easy to catch.\textsuperscript{20} The problem was the limited market for canned sardine; even export markets in Asia could support only part of what the fishery could produce. Military procurement generated a substantial burst of demand during World War I, but disappeared as soon as the war was over. Chronic overproduction thus kept everyone in the industry teetering on the edge of bankruptcy almost from the beginning.

One problem that limited the potential growth of an industrial fishery for sardine was the enormous volume of waste that canneries produced. California processors sold the waste to Chinese gardeners for use as fertilizer or, more typically, dumped it at sea. Pressed to remove water and oil and then dried, cannery waste was a high-value, easily transportable feedstock for livestock, and the U. S. Department of Agriculture began promoting it for poultry and hogs during World War I.\textsuperscript{21} It caught on in California soon thereafter; canned fish for food rapidly became a sideline and fishmeal the industry’s main product.\textsuperscript{22} Like sardine fishing, intensive hogs and poultry were new industries at the time, made possible by electric power for farms and gasoline trucks for distribution. Fishing, then, became coupled not only to the marine ecosystem and to the market for food but also to the gigantic, increasingly energy-intensive U.S. food industry.\textsuperscript{23} As such it became impossible to regulate, the demand for industrial byproducts overwhelming any influence

\begin{thebibliography}{9}
\bibitem{AndrewSoutar} Andrew Soutar and John D. Isaacs, \textit{History of Fish Populations Inferred from Fish Scales in Anaerobic Sediments off California} (1969); see also Paul E. Smith, \textit{Biological Effects of Ocean Variability: Time and Space Scales of Biological Response in Rappports et Proces-verbaux des Reunions} 119 (Conseil Internationale pour l’Exploration de la Mer eds. 1978).


\bibitem{Thompson} Will F. Thompson, California Fish and Game Comm’n, \textit{The Scientific Investigation of Marine Fisheries, as Related to the Work of the Fish and Game Commission in Southern California}, in Fish Bulletin no. 2 (1919); W. L. Scofield, \textit{Fertilizer, Stockfood, and Oil from Sardine Offal}, in 7 California Fish and Game 207, 207-08 (1921); see also McEvoy, supra note 18 at 132, 140.

\bibitem{McEvoy} So tightly coupled, in fact, that in the 1960s a few cents difference in the price of California fishmeal could raise the price of California poultry and eggs to the point where national distributors would buy from Midwestern producers instead, significantly reducing the income not only of California poultry producers but also of the cotton growers who supplied cottonseed meal for poultry feed. At the time cotton was the state’s leading cash crop. McEvoy, supra note 18, at 218; Dan Huppert, \textit{An Analysis of the U.S. Demand for Fish Meal}, 78 Fishery Bull. 267, 267-76 (1980).
\end{thebibliography}
that conservation officials, much less the fishery’s ecology, might have had on management of the resource.24

Sardine harvests grew in pace with energy-intensive agriculture until by the mid-thirties the fishery, now spread as far north as Vancouver, landed more than 700,000 metric tons each season. Biologists working for the State of California grew concerned about the size of the harvest; some recommended limiting the catch, perhaps to 250,000 tons, while others recommended prohibiting the reduction of whole fish to byproducts so as to insulate the stock from demand pressure.25 Neither policy made much headway, particularly as agribusiness firms effectively resisted such efforts in the state legislature. Catches began to come up short in the late 1930s, as the harvest bumped up against the fishery’s capacity to produce and as the favorable marine conditions of the turn of the century gave way to a less stable, less productive regime overall.26

Scientists had observed irregular fluctuations in the harvest since the beginning of the fishery; California had established a State Fisheries Laboratory in Los Angeles in 1917.27 State scientists, whose responsibility it was to conserve the resource, pointed to overfishing as the likely cause and recommended both that the state impose limits on the catch and prohibit the reduction of whole fish to byproducts, so as to insulate the stock from demand pressure. Scientists working for the United States Bureau of Fisheries, who had better ties to the industry and no responsibility for conserving the fishery, traced the observed anomalies to environmental causes independent of fishing pressure.28 Processors and their allies in agribusiness,

27. Working with historical data from the sardine fishery and other sources, some scientists have theorized that unexplained perturbations, such as scientists observed in the 1930s may presage major ecological changes in a predictable way. See Chih-hao Hsieh et al., *Distinguishing Random Environmental Fluctuations from Ecological Catastrophes for the North Pacific Ocean*, 435 NATURE, 336, 336-40 (2005); Marten Scheffer et al., *Early-Warning Signals for Critical Transitions*, 461 NATURE, 53, 53-59 (2009).
meanwhile, made sure that the state biologists’ increasingly urgent warnings about overfishing made no headway in the state legislature, whose responsibility it was actually to regulate commercial fishing. The result was a policy stalemate under which pressure on the stock continued unabated.29

The fishery collapsed suddenly, in a cascade, in the late 1940s. A few unfavorable seasons after 1945 wiped out several generations of new fish, while overharvesting stripped the population of the older fish that normally would buffer such shocks to the population. The stock began to decline steeply, first at its northern edges and steadily southward into its spawning area off the coast of southern California and Mexico. Boats and workers followed the stock southward until the entire fishery packed into the waters off Los Angeles; there they made short work of what remained of the harvest until by the mid-1960s sardines became statistically undetectable in California waters.30 Demand for fishmeal remained strong, however, and to meet it, California sardine processors moved their plant and equipment to Peru, where by the early 1970s they had colonized, developed, and ultimately destroyed an even larger fishery for the biologically-similar Peruvian anchoveta.31 Research in the 1960s indicated that, while environmental fluctuations might have disrupted the sardine harvest temporarily, the enormous harvests of the thirties and forties so depressed the stock’s natural resilience that collapse became inevitable.32

Our knowledge of the complex relationships between fishing and environment continues to develop, although controversy persists. Some authors observe that populations of sardine-like fishes fluctuate both over wide geographical areas and far back...
into the geological record and discount the significance of fishing pressure. Others maintain that fishing pressure interacts with environmental change: some claim that exploited fish populations respond more dramatically to fluctuations in climatic conditions because harvesting alters the age composition and the geographic distribution of the target stock. In a similar vein, others argue that harvesting exerts a disproportionately larger impact on depleted fisheries, thus exacerbating their decline. These scientists urge a more precautionary approach to managing such fisheries. Sardine stocks off the Pacific Coast of North America began to recover in the 1980s: fishing, which California had put under moratorium in 1967, began again under tight control by U.S. and Canadian agencies. Continued differences in scientific opinion notwithstanding, the historical collapse of the sardine fishery seems to have triggered a shift in the regulatory climate, at least.

As dissimilar as a sardine fleet might seem to the Deepwater Horizon rig, then, they share several things in common. Complex dynamic systems of many kinds, from fisheries to financial markets, seem to exhibit generic behaviors


independently of their particular characteristics. In this case, both an oil rig and a fishing fleet both represent significant capital investments in volatile, imperfectly knowable environment, made both possible and necessary by an economy based on fossil energy. For another, both the Deepwater Horizon project and the sardine fishery failed catastrophically when random disruptions cascaded through them in ways that nobody could have expected but which the intensive, interlocked nature of both enterprises amplified to the level of catastrophe. Both, finally, left significantly damaged natural systems in their wake. The ominous lesson from the fishery, not duplicated as yet in Gulf region oil exploration, is that the sardine industry continued its campaign of destruction, the dwindling fleet sustained by prices that reached as high as a dollar each for what few fish anyone could find, until the business withered away. Meaningful regulation of the industry, in this case, became possible only when there was no longer any capital invested in it.

III. THE SACRAMENTO VALLEY FLOODS

Precisely the same dynamics of intensive development, tight coupling, and catastrophic failure played out in the Sacramento Valley floods of the late nineteenth century. The floods, which struck the valley in the 1870s and 1880s, inundated cities, destroyed newly-developed farmland, and polluted fisheries as far away as San Francisco Bay. They triggered a significant change in California’s political economy, as mining yielded its hegemony to agriculture. The immediate cause of the floods was excessive rainfall, to be sure, but what made a particular level of precipitation excessive in this case was the way in which the mining industry, using legal tools, had transformed the hydrology of the Central Valley in the decades after the Gold Rush of the late 1840s and early 1850s.

People who came to California to mine gold in the late 1840s and early 1850s encountered a climate that was on the whole stable and benign. There were a few very rainy seasons during the Gold Rush, and the geology of the Valley is such that floods


are very common to the region; seasonal flooding was, indeed, the main source of the Valley’s tremendous agricultural productivity. The floods did little damage during the first few years of Euro-American settlement because business activity in the region consisted mostly of placer mining and its supply, none of which required much in the way of construction or other capital investment. Working only with hand tools and the natural flow of the streambeds they prospected, placer miners displaced tons of gold-bearing rock through the 1850s but without causing a great deal of damage to the system. A significant flood in January 1862 washed a decade’s worth of mining debris down into the Sacramento Valley and out into San Francisco Bay, flooding the new capital at Sacramento and covering what few riparian farms there were with a concrete-like mixture of sand, mud, and gravel known as “slickens,” but the region seems to have recovered without too much trouble. Miners had depleted most of the easy placer deposits by then, so that damage to the industry itself was negligible.

The mining industry was not yet finished with the Sierra, however. Because most of the Gold Rush took place during dry years, early California law concerned itself primarily with the problem of getting scarce water to the mines in the lower foothills. This required legal engineering as well as the civil kind: in 1855 the California Supreme Court ratified the miners’ informal practice of appropriating rights to use water by diverting it from its natural course; thus inventing, for the benefit of miners, the system of water rights that would come to dominate the Western half of the United States. The state legislature even authorized miner’s to exercise the power of eminent domain, allowing them to ditch across private land as they needed to deliver water to their works. In 1859 the state

44. *Possessory Act*, 1852 Cal. Statute § 158; see *Burdge v. Underwood*, 6 Cal. 45
made appropriation rights transferable, which made it possible for corporations to accumulate water in the amounts needed for high-intensity mining.\textsuperscript{45}

Appropriation and transferability made it possible for mining to enter a new and more destructive phase. So-called “hydraulic” mining collected great quantities of water under high pressure and washed entire hillsides of mud and gravel into placer sluices in order to get at what gold there was to be had.\textsuperscript{46} During the mostly dry years of the 1860s, hydraulic mines loaded millions of cubic yards of debris into the watercourses of the lower Sierra. Canyons that earlier would have contained floodwater and buffered its flow now had so much of the concrete-like debris in them “that a railroad track might be laid upon their beds for [75 miles or more],” as one court put it.\textsuperscript{47} In 1884 the bed of the Sacramento River was in some places twenty feet higher than it had been in 1860. Towns like Marysville, where the riverbed rose above street level, had to protect themselves with ever-more complicated systems of dikes and sloughs.\textsuperscript{48} Mining, agriculture, and town life became tightly coupled to Sierra Nevada hydrology and correspondingly vulnerable to random perturbations in the flow of water.

The rains that came to the Sacramento Valley in 1875 and 1881 were unremarkable: at 24 and 26 inches, respectively, they were just over one standard deviation from the historical mean but far less than the 36 inches that fell in 1862, for example. So degraded was the Sacramento watershed’s capacity to buffer floodwater, however, that the floods of \textgreater 75 and \textgreater 81 did far more damage than their larger precursors. Many more farmers and town dwellers occupied the Central Valley than in the 1860s, moreover, and the precarious stopgaps that they had built up to protect them from flooding were unequal to the task.\textsuperscript{49} In 1882 Edwards Woodruff, who grew wheat on some 1,700 acres near Marysville, sued the largest of the hydraulic mines on the Yuba River for nuisance.\textsuperscript{50} The permanent injunction that came down

\begin{itemize}
\item \textsuperscript{45} \textit{McDonald v. Bear River Co.}, 13 Cal. 220, 232-233 (1859).
\item \textsuperscript{46} ROBERT L. KELLEY, GOLD VS. GRAIN: THE HYDRAULIC MINING CONTROVERSY IN CALIFORNIA’S CENTRAL VALLEY: A CHAPTER IN THE DECLINE OF THE CONCEPT OF LAISSEZ FAIRE 21-56 (1959).
\item \textsuperscript{47} \textit{Woodruff}, 18 F. at 758.
\item \textsuperscript{48} \textit{Id.} at 765; KELLEY, supra note 46 at 67-68.
\item \textsuperscript{49} \textit{Woodruff}, 18 F. at 765-66; see also KELLEY, supra note 46 at 66-67.
\item \textsuperscript{50} \textit{Id.} at 229-30.
\end{itemize}
two years later, in Woodruff v. North Bloomfield Gravel Mining Company, ended the mining industry’s hegemony over California business and politics. The case now famously stands for the proposition that nuisance law shifts entitlements between competing economic interests in response to changes in their relative contributions to net social product.

Legal agencies played a crucial role in bringing hydraulic mining to an end, just as they had from the beginning created the industry, sustained its growth, and encouraged its socially destructive habits. Prior appropriation predominated in the Sierra, not because it was peculiarly adapted to the California environment but because it made large-scale corporate mining convenient and it enabled the mines to collect the ever-increasing volumes of water it needed to draw out what remained of the Sierra’s gold. Mining debris flushed out of the Sacramento River system in a gigantic, slow-moving wave over the decades following the industry’s demise. In its place, though, California farms and cities re-engineered the Sacramento-San Joaquin system to a level of intensity higher than the most ambitious mining executive could have imagined. Today, indeed, there are few more tightly coupled, high-intensity, disaster-prone resource systems in the world than the Central Valley watershed.

IV. LA CONCHITA

My third exemplar is a relatively small one: a landslide that took place in the coastal Southern California town of La Conchita in 2005. The La Conchita slide left few traces behind it, except on the lives of the people who lost homes and loved ones and in the pastiche of scars and slides that mark the coastal bluffs of southern California. It was no “focusing event” that catalyzed significant social change, as did Triangle Fire of 1911, for example, or the oil blowout that took place nearby at Santa Barbara in 1969. Nor did La Conchita enable regulatory change by destroying the capital investments hitherto impeding it, as did the California sardine collapse of the 1950s. Despite the nationwide press coverage that attended it, the La Conchita slides ultimately generated little more than a handful of lawsuits.


and – despite their significance for the parties – not ones important enough to make anybody rethink the structure of property entitlements in that little neighborhood. What makes the story useful here is that, as in the other two cases, what turned ordinary events into disasters was people’s insistence on getting in the way and staying there, using every available legal mechanism to do so.

There are two ways in which we can usefully consider the La Conchita slide, however. One is as a species of “normal accident,” in the sense that the sociologist Charles Perrow used the term. California’s more-or-less integrated schemes for managing land and water use make up just the kind of tightly-coupled, high-flux, disaster-prone system that Perrow described. We can also think of the La Conchita slide as a control case, in which we can see the law working in its everyday capacity to allocate environmental risk. As such, La Conchita is an interesting study in the ways in which the law, in its workaday mode, uses abstract principles of property and tort to do that allocation. It offers a peek at what Willard Hurst called the “working principles” of our legal order: principles “defined and expressed primarily by action;” principles of law “not so much as it may appear to philosophers, but more as it ha[s] meaning for workaday people and [is] shaped by them to their wants and vision.”

La Conchita is a little unincorporated area of maybe 160 houses, on the coast below Santa Barbara, just across the Ventura County line. Anyone who has driven north from Los Angeles on the 101 freeway has passed by it, likely without noticing it. The Los Angeles Times described La Conchita as “a place where working people could find a little slice of coastal paradise – a haven for surfers, fishermen, construction workers, retirees and assorted oddballs.” The US Geological Service, on the other hand, marks La Conchita as one of the most unstable bits of real estate on the continent, packed as it is into an 800-foot wide strip between the highway and a 600-foot high, 35° bluff of porous marine sediment with an active seismic fault running across its face.

53. Hurst, supra note 11 at 5.
Developers first built houses on the parcel in 1924. Before then it belonged to the Southern Pacific Railroad, whose tracks run along the coast here. The SP had some buildings on the site, but after a landslide destroyed one of its trains and killed four of its workers in 1909 the railroad leveled the parcel and sold it off a few years later. What started out as a collection of weekend homes became a permanent community during the post-World War II southern California boom. The “surfers and oddballs” of La Conchita share their little slice of coastal paradise with the La Conchita Ranch Company, which in the mid-1970s began irrigating avocado and lemon trees at the top of the bluff, which had formerly been given over to lima beans and other dry-farmed crops.\(^{56}\) By the 1990s there were some 40,000 trees on the bluff.\(^{57}\) The company had a permit from the California Coastal Commission to build the ranch, conditioned on its promise to implement a drainage and erosion-control plan that apparently never took form.\(^{58}\) Indeed, in the early 1980s the ranch apparently replaced its drip irrigation system with a more water-intensive one as the avocado trees planted in the 1970s reached maturity.\(^{59}\) The company restructured itself as a limited partnership in 1991, allegedly to insulate itself from liability for landslides.\(^{60}\)

Rainy season along the Southern California Bight typically runs from October through May; records going back to the 1860s show a seasonal mean of a little more than 18 inches. January and February are the wettest months, averaging about four inches each per year.\(^{61}\) In 1909, the year a slide killed four railroad workers, annual rainfall exceeded 36 inches. More than 15 inches fell in January of that year alone. The heaviest single month on record is January, 1995, which had almost 22 inches.\(^{62}\) In March of that year 600,000 tons of earth broke away from the bluff and destroyed nine houses. 2004-05 was another wet year,


\(^{60}\) Polakovic, supra note 59 at B1.

\(^{61}\) Santa Barbara County – Flood Control District, *Official Monthly and Yearly Rainfall Record* (1867-2010).

\(^{62}\) *Id.*
just under 37 inches in all; this was Santa Barbara’s third-highest total on record. On January 10, after 15 days of moderate- to-heavy rain, part of the 1995 slide remobilized and slid down the bluff, in a few seconds as opposed to the several minutes that the 1995 slide had lasted. This time, the slide took 36 houses and 10 lives with it.63

Rainstorms and unstable landscapes are nothing new in Southern California, although the South Coast has had more above-average rainy seasons in the last ten years than in any comparable period since World War I. The period from 1945-1975, on the other hand – the period during which Southern California experienced its most rapid development – was one of the calmest, driest climatic episodes in the region’s history. Volatility is the norm here. Extreme volatility also characterizes the market for La Conchita real estate: houses whose assessed value had gone nearly to zero in the wake of the 1995 slide – as lenders and insurers refused to touch them – brought half a million dollars or more ten years later.64 Homeowners who might have left in the wake of 2005 slide reported that the size of their mortgages prevented them from taking advantages of federal relocation loans that were available to them.65

Throughout, the law – legislatures, agencies, courts both state and federal – has worked assiduously to maintain the Southern California land market at high levels of flux, tightly coupled to ancillary systems for water supply, fire suppression, and so on. Legal agencies like the Coastal Commission and the State Department of Water Resources do their best to accommodate competing uses like housing and agriculture, favoring no one interest over another but allowing them all to generate as much wealth as possible. To keep the town operating after the 1995 slide, for example, Ventura County rebuilt the street that runs along the bottom of the bluff and put up a retaining wall to hold back debris from the slide. The county also secured waivers against future liability from people who owned homes in the slide area.66 For good measure the county declared

63. Jibson, supra note 55 at 5-7.
66. Kelley & Saillant, ARisk Goes Hand in Hand with Beauty,” supra note xx;
La Conchita a “geological hazard area” and required homeowners to post “Enter at your own risk” signs on their buildings.67

The courts also worked to accommodate competing claims to this ephemeral property in the wake of the 1995 slide, fine-tuning the allocation of risk while allowing different uses to continue unimpeded as much as possible. La Conchita residents sued the ranch in 1996, alleging that its irrigation had caused the previous winter’s slide. Most of the plaintiffs settled for undisclosed sums and waivers against future liability.68 A few went to trial, wherein the Ventura County Superior Court found for the ranch on the ground that excessive rainfall, not irrigation runoff, had caused the slide.69 The ranch’s lawyer characterized the slide as “part of a natural geologic progression that had long plagued the area and the rest of the California coast,”70 and “a continuation of a geological progression that had been ongoing for eons.”71 A lawyer for the ranch told reporters, “I feel bad for the people, but then again, I don’t live under a 500-foot bluff, either... It’s a risk you take.”72 The slide, as the Los Angeles Times paraphrased defendants’ argument, “was a natural disaster, unfortunate, but no one’s fault.”73 Much of the testimony consisted of experts advocating one side or the other of “whether negligent irrigation practices or natural processes caused the disaster.”74 Posing the question in this way, nature or negligence, elided the causal significance of the ranch’s activity in that particular environment, thus shifting risk onto the residents. The decision did, however, allow both residential and agricultural uses to continue unabated for the time being.75


70. Id.
71. Id.
72. Id.
73. Id.
74. Id.
75. See generally RESTATEMENT (SECOND) OF TORTS § 431 (1965) (The actor’s negligent conduct is a legal cause of harm to another if: (a) his conduct is a substantial
A more likely explanation for the slide is that excessive rainfall and overwatering were jointly responsible for triggering the slide. It turns out that avocado trees require a great deal of water. The University of California Extension Service reports that it takes 36 acre-inches of water per acre per season to irrigate mature avocado trees; in only four years for which we have records has that much water fallen naturally onto that bluff.\textsuperscript{76} Irrigation, moreover, takes place during the growing season, which is normally dry. Geological Service photographs from September 2004 show clearly that the section of bluff that gave way six months later was already saturated with water at the end of the dry season.\textsuperscript{77}

Victims of the 2005 slide sued again. They tried the case to a jury this time, and under a causal theory very different from the one that had lost in 1996. This time the 36 plaintiffs alleged that the ranch had negligently failed to provide adequate drainage from its property, without specifying whether it was rainwater or tail water that had actually caused the slide.\textsuperscript{78} Plaintiffs won their verdict in August, 2008. Under California’s comparative-fault system, which allows juries to discount plaintiffs’ awards to the extent that they contributed to the harm, the jury split their verdicts more or less evenly between the ranch and individual plaintiffs. The jury held some plaintiffs who were landowners liable to their renters; at the same time the jury exonerated both the ranch manager and Ventura County.\textsuperscript{79} Two months later

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\textsuperscript{77} JIBSON, supra note 55 at 9.


Defendants settled the case by turning over $5 million in insurance proceeds and the keys to the ranch.  

Defendants did not suffer greatly in the outcome, inasmuch as the ranch had consistently lost money and the company had been trying unsuccessfully to sell it for the past 15 years. Defendant’s attorney wished the plaintiffs luck in trying to sell this piece of property because the place was uninsurable: “so to the extent that [defendants] were able to give this ranch to the plaintiffs with all those problems and walk away from future problems, they [defendants] are actually very happy.” The plaintiffs ultimately sold the ranch “as is” to a buyer from Carpenteria, another town just up the beach from La Conchita, for $2.5 million. The new owner continued to operate the ranch for citrus and avocado, although the Ventura County Star reported in 2010 that he had “done a lot to divert water from the landslide area, making it much safer.”

The La Conchita story lacks the moral punch of the California sardine collapse, much less that of the Deepwater Horizon disaster. One thing that stands out, however, is the interesting role that private law, in this case the law of causation in tort, played in discounting the risks of land and water use at La Conchita. The 1995 plaintiffs lost their case because they could not successfully argue that human forces interacted with “natural” ones to generate risk; the 2005 plaintiffs won not by registering the fact of synergy on the legal system, but by


82. Raul Hernandez, La Conchita Ranch Is Sold For $2.5 Million, VENTURA COUNTY STAR (Nov. 22, 2008, 12:00 AM), http://www.vcstar.com/news/2008/nov/22/la-conchita-ranch-is-sold-for-25-million/. (Noting the court-appointed receiver was surprised that there were a number of offers on the ranch and at the amount of the sale price). Tony Biasotti, Who Will Buy Land Won In La Conchita Case?, VENTURA COUNTY STAR (Sep. 18, 2008), http://www.vcstar.com/news/2008/sep/18/future-of-land-won-in-la-conchita-case-uncertain/ (Oct. 26, 2011) (Asserting established growers and brokers were also skeptical: “If you offered me that ranch for free, I would not farm it,” and another said “If I were a buyer, I wouldn’t want to touch that with a 10-foot pole.”).

finessing the issue. That causal synergy seems to be hard to argue in court suggests a persistence in our law of the nature-culture dichotomy that lots of people have written about, long after we all know better. The practical effect of this difficulty seems to be to privilege developers who would off-load the environmental risk of their activities to the public at large.

The second salient fact is that, apparently, people will continue using state water to flood that cliff. Stepping back, we can say that the La Conchita slide was as much a legal artifact as it was a natural event. An otherwise unexceptional natural perturbation led to misery when people extracted wealth from nature at such a high rate and with such tight coupling between different uses that disaster was sooner or later inevitable.

V. CONCLUSION

The disaster at La Conchita, then, was as much a legal artifact as it was a natural event. As in the other disasters catalogued here, the sardine collapse and the Marysville floods otherwise unexceptional natural perturbations led to human misery when people intensified production from natural systems to the point where disaster became more or less inevitable. In each case people used law to sustain development at as high a level as possible: through research and development if need be, by rescue and rehabilitation at times, and always by adjusting a delicate balance between competing development interests. Sustaining production and profits at their highest possible levels was the job of the legal system: indeed, the measure of its commitment to liberty and progress.

Committed as our culture remains to liberal, economic individualism, our legal system does most of its pro-development work invisibly, much as it did in the nineteenth century, by adjusting the ground rules through which people do business. Even in the environmental area, those rules work best, we think, that most resemble speed limits and least interfere with the substantive choices that people make about how actually to use their property. Public efforts to balance human affairs with the natural order are a good bit clumsier. Government research responds better to interest groups in temporary crisis than it does either to economic rationality or to the long-term good of the

84. See generally Lynn White, Jr., The Historical Roots of Our Ecologic Crisis, SCIENCE, March 1967, at 1203-07. A germinal text in this literature; see also CAROLYN MERCHANT, THE DEATH OF NATURE 192-215 (Harper & Row 1980).
community. Government provides rescue and rehabilitation to the victims of crisis, but only if the particular event qualifies as a disaster through some calculus of politics, empathy, and causal attribution. Others, if they get noticed at all, are left to their fate and private insurance. In its overt activity as well as in its more hidden, systemic role, our system works mainly to balance power by means of a steadily rising economy, even when increased output intensifies pressure on resources and couples their natural fluctuations more tightly to public risk.

Indeed, in our own day much government resource allocation takes the form of shifting burdens of risk: of accident, illness, unemployment, or natural calamity. Were nuclear utilities left to the private market for insurance, for example, they would likely be unable to operate: the industry exists only because federal law since 1957 has limited the utilities’ total liability for nuclear accidents to a set amount ($12.6 billion since 2005) and assigns any liability above that to the government. In the 1970s and 1980s the D. C. Circuit Court of Appeals allowed nuclear utilities to discount the risk of catastrophic accidents to zero because the utilities themselves deemed such accidents as so unlikely as to be immeasurable. An even more subtle form of risk allocation, which may have contributed to the Deepwater Horizon disaster, was the Reagan Administration Council on Environmental Quality’s decision, later upheld by the Supreme Court, to repeal its requirement that environmental impact statements discuss “worst-case” impacts of projects under review. On a more local level, struggles over risk allocation between public and private agencies did much to determine the pattern of land use in La Conchita, California. The political scientist Jacob Hacker has argued that the systematic, downward transfer of risks of all kinds in the United States since the 1970s has amounted to a significant redistribution of wealth and power in the society as a whole.

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87. See 40 C.F.R. § 1502.22(b); see also Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 333-34 (1989).
The word “disaster” then, is a conventional term rather than a scientific one. It is easy enough to claim that people generally do not notice that the rain comes and goes, sea bluffs collapse, wildlife populations rise and fall unless they have investments at stake. It is a little more of a stretch to claim that development intensifies natural events themselves, though there is good evidence that changes in harvesting pressure triggered the collapse of the California sardine, that hydraulic mining magnified the flood potential of rainfall in the Sierra, and that irrigation destabilized the bluff at La Conchita. Best hidden, perhaps, is the systematic role that law plays in creating these disasters at every level. The law, indeed, works hard to disguise its instrumental role, as it shifts burdens and benefits from hand to hand in the abstract generalities of individual rights and public welfare.

Natural disasters, so-called, take place when people, deliberately or no, build or invest themselves into situations in which otherwise ordinary natural events, like drought or flood, have catastrophic social consequences. All three of the catastrophes noted here, the collapse of the sardine fishery, the Sacramento Valley floods of the late nineteenth century, and the La Conchita landslide of 2005, manifested themselves as “disasters” not because of any intrinsic quality of the natural forces that set them in motion but because the economy coupled itself so tightly to the resources’ ecology and because economic actors were able to shift the risks of enterprise in particular ways. Disasters are thus both social and environmental phenomena: they may be less an exogenous source of instability in human affairs than they are their manifestation and measure.