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Effects of pollution in the Hudson River on commerce

From the time of Henry Hudson's exploration of the Hudson in the early 17th century, if not before, the Hudson River has been a powerful force for commerce on the East Coast of America. Its fortune is inexorably linked to that of New York City, and all of New York State. How did the Hudson move from being a tool of commerce and industry into a force that drove against big business's use and exploitation of it?

This paper focuses on the twentieth century conflicts between commercial and individual and environmental use of New York's Hudson river. Commercial use of the Hudson from companies like General Electric and Consolidated Edison started to become an environmental problem in the second quarter of the twentieth century¹, though awareness only really began in the 1960s, with groups like Scenic Hudson starting to organize responses in the 1970s. Reactions in the public view and the media increased dramatically from 1970s through the 1990s, and has continued into the twenty-first century.

How did what was once a convenient resource to be exploited transform into a billions of dollars of costs to corporate America?

It's stunning to look at how most of the damage (and recovery!) of the Hudson River watershed has happened within the the last century. It is only in the last century that mankind has gained to ability to so seriously damage the environment, and far less recently

¹G.E. received a permit for discharge of PCBs into the Hudson as early as 1930. This suggests that the dumping may have begun substantially earlier... [Lewis], p. 271.



Courtesy of U.S. Geological Survey.

Figure 1: The Hudson River watershed, and eastern New York. The Hudson runs up the eastern side of the state from its mouth at New York City up through Hudson, New York, Albany, Troy, and up to Hudson Falls and Lake Tear of the Clouds in the Adirondack Mountains.

that we have become aware of our ability to do so, and the ramifications of that activity.

There has been a sea change in our view of the Hudson; we treat environmental concerns seriously and with real resources, where they were previously ignored and marginalized. While we cannot go back in time and prevent historical wrongs of PCB dumping, and sometimes we cannot pay for immensely costly cleanups, the dumping that led to that pollution could never be considered acceptable today.²

The balance of power between those who dictates the use of our natural resources and those who consume them has changed radically over time, as well. There has always been a tension between government and and corporate, or even a three-way tension between regulatory interests, big-business interests, and individual interests.³ But it is only in the late twentieth century that the power of the individual has reached the point of being effective against those other forces.

Environmentalism has lead to a dramatic change in the way the Hudson is treated. It has become a cultural and social phenomenon, and an entire movement. School children who grow up in the Hudson River watershed are taught about the environmental movement, and might even take field trips on sloops like the *Clearwater*.⁴ It has led to annual festivals celebrating the native fish (e.g. Hudson River shad) and the culture of the Hudson.

Clearwater is a organized movement of Hudson River activists started in the late 1960s by folk singer Pete Seeger (“Until people start to love their river, it’s going to be a sewer.”) with an emphasis on education and outreach. Clearwater’s advocacy revolves around an 18th century Dutch -styled sailing sloop, *Clearwater*, which sails up and down the Hudson,

²Which is not to say that dumping does not happen or does not continue. But when it happens it happens under-the-table and illicitly, not legitimately or as something societally acceptable. [Harr, Zaillian].

³[Pinchot, Muir]

⁴[Clearwater]

and accomodates thousands of schoolchildren on field trips and as an education laboratory.⁵ Clearwater is both an example of the changes in that balance of power, as well as instrumental in causing those changes: without popular support, there would never have been a Clearwater movement, but without the success cleaning up the Hudson, Clearwater would not have stayed a viable and effective advocacy and teaching group.

The Hudson has been the victim of several major incidents of pollution, and concomitant reactions from society. Probably the two best-known are General Electric's dumping of PCBs, and Con Edison's Storm King power generation facility, but there are scores of small-scale incidents that contributed.⁶

In the case of G.E., it took decades for the balance of power to shift away from corporate interests towards a middle ground between environmentalists and large companies. What began with awareness in the 1960s transformed into a war, with battles fought in the sphere of public awareness, within the media, within the court system, where it continues today, with a surfeit of foot-dragging. These battles are also not without economic significance. It is a notable achievement that ordinary citizens have been able to compel the investment of billions of dollars in cleanups and transformations.

“At Tarrytown, residents knew each day what color General Motors was painting its production of trucks by the color of the Hudson. By 1960 Manhattan was pumping 165 million gallons of raw sewage a day into the river.”⁷

⁵Growing up and going to school near the Hudson, I had several opportunities to visit and ride the Clearwater. It was quite educational and a lot of fun...I have avoided the temptation in this paper to capitalize too much on personal experience, outside this footnote. I grew up in an apartment building on a lot adjacent to the north border of Yonkers, NY, adjoining Hastings-On-Hudson, NY. From my bedroom and our living room, you could look out on the river view of the Hudson.

Curiously, Hastings-On-Hudson, the nearby village, was also the site of one of the more notorious Hudson river polluters, the Anaconda Company. Anaconda manufactured wire and cable and polluted both the river and their dockside property with heavy metals, solvents, PCBs, and asbestos for thirty years from the 1950s to the 1970s. The plant cost to clean up the Hastings facilities was in the tens of millions of dollars; a lot of money, but peanuts compared to the major cleanups for G.E. I discuss later. [Riverkeepers]

⁶[Riverkeepers], pp. 17-31

⁷[Lewis], p. 262.

Tom Lehrer’s popular 1965 song “Pollution” characterized the specific case of Troy, NY (and thus the Hudson)⁸:

If you visit American city,
You will find it very pretty.
Just two things of which you must beware:
Don’t drink the water and don’t breathe the air!
Pollution, pollution!
They got smog and sewage and mud.
Turn on your tap
And get hot and cold running crud!
:
Lots of things there that you can drink,
But stay away from the kitchen sink!
The breakfast garbage they throw out in Troy
They drink at lunch in Perth Amboy.

The Hudson river environmental movement has been very closely tied to folk music, and Clearwater founder Pete Seeger successfully managed to tie the two together in a popular way. In the listeners of his music, Seeger found a group of people who cared about the environment and a force that could be harvested as a wellspring of popular support for the river. Songs like Rick Nestler’s *The River That Flows Both Ways*⁹ inspired community and caring about the river, as well as education. The Hudson does indeed “flow both ways”; as an estuary—an aquatic environment where ocean saltwater mixes with river freshwater, and tidal forces and ocean currents ply with downstream river flow—the Hudson is home to a fairly rare environment for river flora and fauna. Nestler’s song helped to place that specific knowledge in the minds hundreds of thousands. More generally, the popular awareness of the river played a huge role in public perception and getting the political will to make progress in its cleaning.

⁸[Lehrer]

⁹[Nestler]

Polychlorinated Biphenyls (PCBs) are excellent insulators used in transformers and other electrical equipment dating from the early twentieth century. Unfortunately, they are also toxic if ingested, linked to birth defects, developmental disorders, as well as cancer, and are molecularly similar to DDT.¹⁰ Awareness of PCBs in the Hudson as an environmental problem began in the 1975, and slowly developed. General Electric had been dumping PCBs into the Hudson River near Fort Edward for over forty years, under a legal permit from the federal government. In 1973, the Niagara Mohawk Power Company removed a small obsolete dam near Fort Edward, stirring up hundreds of tons of PCBs that lay in the sediment beneath it. In 1974, the EPA found bass containing 350 ppm of PCBs in the Hudson, 70 times the 1974 legal limit of 5 ppm.¹¹

The discovery of PCBs in Hudson River fish, especially in striped bass, was not well-understood at first. Tests in 1975 found much lower levels, between 4 and 11 ppm, in Hudson River striped bass. Concern was raised about whether 5 ppm was even a reasonable limit, and scientists studying the issue almost seemed to laugh it off, while at the same level questioning the then limits: “My gut-level reaction is that I would not want to eat any fish with a concentration over 1 ppm, and I think the most desirable goal would be to get rid of all PCBs. As a matter of fact, all of us here love to eat Pacific salmon in the summer, so we deliberately avoid analyzing it,” said Dr. Robert Risebrough of UCB.¹² As of 2008, the EPA limits PCBs to 0.0005 ppm in drinking water, and the FDA limits PCBs to between 0.2 and 2.0 ppm in fish.¹³

The results of the battle over G.E.’s PCB dumping are ambiguous—neither G.E. nor the environmentalists won all the battles, and there’s been a lot of back and forth between,

¹⁰[NYT0875]

¹¹[NYT0376b]

¹²[NYT0376a]

¹³[CDC]

and no one side prevailed absolutely. New York State ordered G.E. to stop the continuing to discharge PCBs, but G.E. resisted, threatening economic sanctions, and Governor Hugh Carey overrode the Environmental dept. Federal Environmental Protection Agency Superfund legislation was passed in 1980, and Fort Edward was added to the Superfund list in 1984, nine years awareness of the problem arose. G.E. embarked on a lobbying strategy to avoid paying, with successive legislation passed to delay the cleanup¹⁴, along with significant PR efforts (General Electric owned the National Broadcasting Company, NBC, giving them quite an advantage in NBC's TV coverage of these issues). As Eliot Spitzer said in 2000 (when he was New York State Attorney General and suing G.E. on behalf of New York State), "What begins to happen is the offending party can say, 'You've survived this long. Why bother?' They become beneficiaries of their own delay."¹⁵

Major losers all around were the small commercial fishermen, who made their livelyhood fishing striped bass ("stripers") and shad from the Hudson. Regulations prohibiting the sale of 19 species of fish from the Hudson instituted in 1976 dramatically affected the livelyhoods of these fisherman, who had to turn to other locations, other varieties (those less prone to bottom-feeding, where the PCB-laden sediment collects), or to give up fishing entirely. These problems were not limited to the Hudson, either. The striped bass are migratory fish, who spawn in the Hudson and then travel out into the Atlantic, and return to the Hudson to spawn. Fisherman throughout the Atlantic Fishery were affected.¹⁶

G.E. successfully delayed the EPA's final order for 16 years, until they were finally ordered to dredge 3 million cubic yards of sediment in 2000. But G.E. challenged the SuperFund law in federal court, at first winning in 2004, but then settling. Since then, G.E. has been

¹⁴G.E.'s Jack Welch, now retired as CEO, was at the time a newly-minted Vice President who was tasked with dealing with the Hudson. Welch has been much-lauded in business circles, and praised as an excellent manager. At the same time, he's been the driving force behind G.E.'s postponement tactics. [Cassidy]

¹⁵[Kolbert]

¹⁶[NYT0376b]

gearing up to begin the cleanup, and while preparations have begun, dredging will not begin prior to 2009, “at the earliest.”¹⁷ The cleanup is estimated to cost three-quarters of a billion dollars (in 2007 dollars).

G.E. has managed to delay their cleanup by over 34 years. Massive awareness of the PCB problem resulted from this saga, but G.E. still managed to avoid committing real dollars and effort to the problem, and has successfully waged a very significant delaying action. At this point it looks as though they will be required to proceed with the cleanup, but it has not happened yet.

Consolidated Edison (colloquially, “Con Ed”) is another example of big business and river use. As New York State’s primary electrical utility, Con Ed was one of many users of the Hudson, and also one of the major disrupters of its ecosystem. In the early 1960s, Con Edison completed the Indian Point nuclear power plant near Peekskill, New York. That plant used massive quantities of Hudson River water as coolant, sucking in thousands of fish per hour. The used coolant raised the temperature of the river significantly enough to disrupt the aquatic life.¹⁸

The mastermind behind Con Ed’s Indian Point project, Con Ed’s vice president for power plant construction, Mowton Le Compte Waring, planned to continue to exploit the river with his next project in 1963: the Storm King Mountain reservoir at Cornwall, NY just north of West Point. Storm King would pump water into an 8 billion gallon reservoir at the top of the mountain during low demand periods, and generate hydroelectric power from that water during daytime demand periods.

¹⁷[NYT0507]

¹⁸[Lewis], p. 263

Waring’s Storm King project aroused a small but vocal movement in opposition, primarily not because of its environmental effects, but because of its potential to disrupt the visual and natural historical environment (“the view”). Mocking Con Ed’s environmentally-unfriendly “Dig We Must” motto, the movement kicked off with an armada of 50 yachts bearing the sign “Dig You Must Not” in September, 1964.¹⁹

This movement, “Scenic Hudson,” included both naturalists and “wealthy Manhattanites” with weekend houses overlooking the site. Scenic Hudson applied its PR machine and produced a flood of newspaper and magazine articles pitting itself as a small David battling Con Ed’s Goliath; Hudson River advocate John Cronin characterized the River as becoming a national “cause célèbre”²⁰ from their work. In 1965, after the Federal Power Commission approved the Storm King Project, Scenic Hudson sued in federal appeals court and stunningly, they won—it was the first time an environmental group had won a case of this sort.

The battles over this landmark decision continued over the next fifteen years, with Congress adding additional regulation in in 1969 and 1970, and additional federal appeals court cases in 1973. In December of 1980, Scenic Hudson and Con Ed settled; Con Ed not only abandoned the Storm King project, but also agreed to deploy measures at Indian Point

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Photo of a man kneeling by a large pile of dead fish. □
See: Boyle, Robert. *The Hudson River: A Natural and Unnatural History*. New York, NY: W.W. Norton, 1979. ISBN: 9780393008449.

Figure 2: Robert Boyle’s iconic photograph of dead striped bass from Con Ed’s dump at Indian Point [Boyle].

¹⁹The amusing headline: “Armada of Foes Invades Site of Con Ed Project on Hudson” [NYT0963].

²⁰[Riverkeepers], p.33.

to reduce fish kills, and to fund millions of dollars in research on fish in the surrounding watershed.²¹

Storm King was a clear victory for the environmental movement, and one that set a tone of optimism for future advocacy about the river, and for similar battles throughout the country. It showed that large corporate polluters could be fought in court and battles could be one, and transformed the environmental legal landscape.

After (and during) the Storm King saga, there were significant changes to the regulatory landscape. In 1972, the Federal Water Pollution Control Act (aka the “Clean Water Act”) was passed to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”²² The Clean Water Act built a permitting system for industrial pollution, and granted the federal government substantial ability to regulate water pollution. Today’s Clean Water Act even references the Hudson specifically (§1266), with explicit specifications for dealing with PCBs.

In 1980, Congress passed the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), colloquially known as “Superfund.” Superfund, like the Clean Water Act, was a direct response to environmental nightmares found during the 1970s.²³ Superfund levied taxes the industrial companies and uses those taxes to collect hundreds of millions of dollars to clean up hazardous waste sites.

In the twenty-first century, the Hudson remains an estuarine mixing ground between the forces for environmental purity and the remnants of past corporate indiscretions. The Hudson today is cleaner than it ever was, you can swim in it, fish in it (and eat that fish!), sail on it, live on its banks, and simply revel in its beauty. On the other hand, with G.E.

²¹[NYT1280]

²²[FWPA]

²³[CERCLA, epaCERCLA]

poised to begin dredging the Hudson next year, it's quite likely that PCB-laden sediment will be disturbed as it is removed, and the Hudson will see a short-term increase in PCB levels during the process. The environmental movement has made great strides at reducing corporate domination of the river and restoring its utility for recreation and appreciation, but there is still work to be done.

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