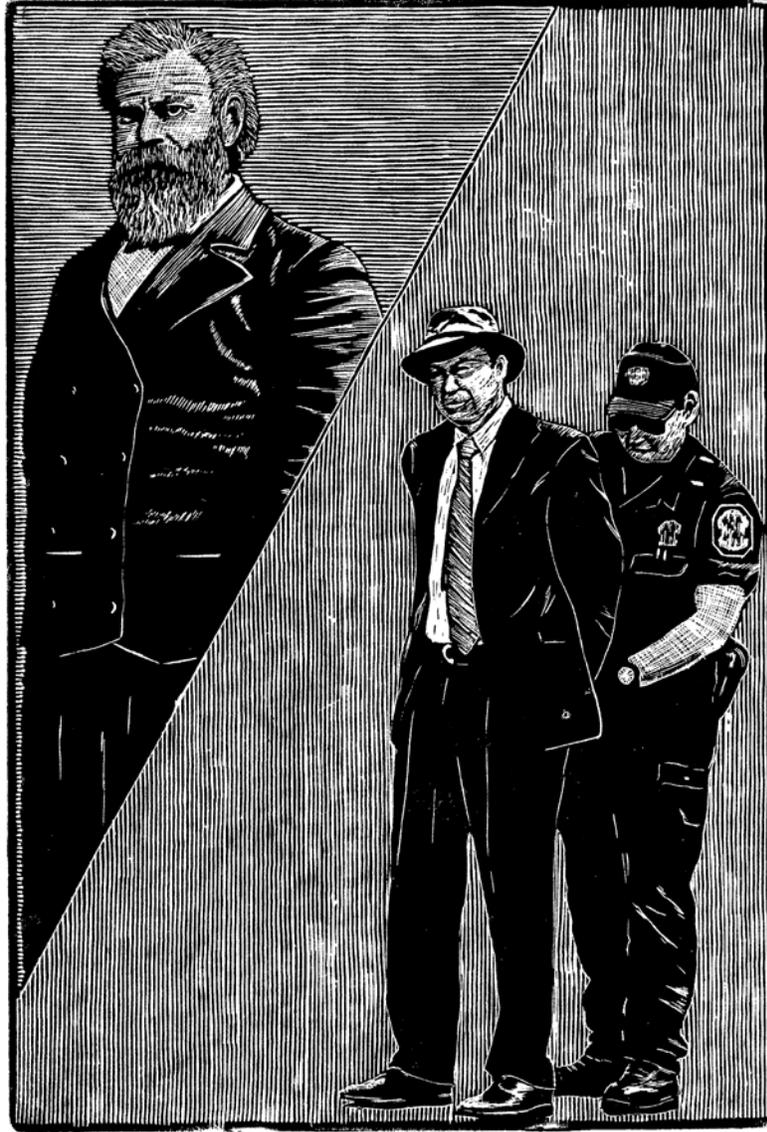


Unearthing Parallels: John Wesley Powell and James Hansen



Separated by more than a century, there are foreboding similarities between John Wesley Powell's 1890s warnings about the mistakes in the rapid settling of the West and today's forewarnings by James Hansen, the world's foremost climatologist, formally of the National Aeronautics and Space Administration (NASA), about global warming.

Powell told Congress and others of the folly of the government's 160-acre western settlement policy and developers' bloated dreams of transforming the Southwest into a paradise with irrigation. Powell knew there wasn't enough water.

Hansen has given multiple warnings over the last several decades to Congress, America's fossil fuel companies and the public that global warming will prove disastrous if allowed to remain unchecked. The atmosphere contains too much carbon dioxide (CO₂). Hanson's science is the basis for agrarian West Jackson's admonition that "We live in the most important moment in human history."

In both the case of Powell and Hanson, too few people were willing to listen.

As the globe gets warmer, big oil and other fossil fuel lobbyists lean harder. Congress and President Barack Obama have equivocated *ad nauseam*. One can't help but ask: "How could this happen again, first to Powell and now to Hanson?"

When the settlement of the West was unfolding, the government and audaciously assuring boosters, land speculators and dreamers promised settlers boundless opportunity by way of free land and unlimited water. Would-be westerners were told that rain was plentiful—straight-faced, developer's assured prospects that "settlement improved climate, rain follows the plow"—and irrigation would soon follow.

With global climate disruption now causing havoc the world over, today's indistinguishable partisans of limitless economic growth and progress suffer a similar unbridled optimism and the same mistaken certainty harbored by those boosters of yesteryear.

Powell, renowned geologist, ethnologist and explorer, was the most conversant, knowledgeable, and experienced man alive when it came to the nature of the arid

Southwest. He was the government's leading scientist. Over time, with exploration and surveys under his belt, he came to see the West and its limits with an unsurpassed clarity. Powell supported the Anglo peopling of the West, but hoped to stem the anarchy of American settlement. Rather than blind faith in unlimited supply and unrestrained exploration, as noted by Wallace Stegner, Powell urged "conservation of an already partially gutted continent and planning for the development of what remained." Powell relished the hope of insuring that science guide the West's economic development.

A hands-on bureaucrat who had earlier forged the Green and Colorado Rivers—the first person known to boat the entire Grand Canyon—Powell spent a good deal of time in the Southwest and compiled comprehensive data in support of his later, better-informed and more nuanced view that the government was unwittingly encouraging settlers on a path to hardship and failure.

Similarly, today, few question that James Hansen is the world's foremost climatologist. After 40 years at NASA, grappling with the never-before-appreciated climate phenomenon of global warming, Hansen retired in early 2013 to devote himself fulltime to climate science and its implications for public policy. He views the task of curbing the planet's accelerated warming as necessary for the preservation civilization.

As with Powell's warnings, the United States government has ignored Hansen's exhortations about global climate change. Oil, coal and gas companies, others affiliated with the fossil fuel industry and politicians with fossil-fuel war chests dismiss him as an extremist. Millions of dollars have been spent to hire fringe scientists to conduct pseudo-science disputing the risks of global warming.

Devotees of the unrestricted free market maintain the vigil, kneeling at their

cherished altar of progress. Their faith is unshakable; their motives beyond question and being right, a certainty. They have no doubts about the virtues of progress and growth. Incapable of compromising, reflection or, God forbid, being wrong, they grasp the thinnest of threads in order to preserve their entrenched growth and progress-based ideology. If it snows inordinately, or out-of-season—in Chicago or elsewhere—“you see, global warming is a scam.” If a scientist is careless in a private e-mail communication that can be read differently than intended, he or she is a “paid whore.”

Republican Senator James M. Inhofe (R-Okla) believes global warming is the biggest hoax ever perpetrated on the American public. Inhofe and colleagues like him see another dark conspiracy reminiscent of the McCarthy era among the likes of Al Gore, the United Nations, MoveOn.org, George Soros and filmmaker Michael Moore. Some climate-denying politicians have even taken to quoting the Bible to deny both climate change (Rep. John Shimkus [R-Ill] God’s post-flood promise to Noah in Genesis 8:21-22: “Never again will I curse the earth...never again will I destroy all living creatures as I have done.”) and evolution (Rep. Paul Brown [R-Ga.] climate alarmists are little more than “condescending elites...[telling] a lie from the pit of hell”), while the more astute (Sen. Sheldon Whitehouse [D-R.I.] bemoan the “magical thinking” of those self-satisfied believers who suggest some nanny-God “will tidy-up-after-us...and clean up our mess.” We have been living in a curious time when 73 percent of the American public believes in the virgin birth, while in 2016, 55 percent doubted the risks of climate change. We have been living in a world where most people believe in something scientifically impossible while doubting something that is not only scientifically probable, but now a certainty. Fortunately, an October 2016 survey—from Manmouth University—found that 70 percent

of America now believe the climate is changing, although another survey—a 2016 YouGov poll—found that only 9.2 percent of Americans rank global warming as their biggest concern.

The extent of Powell and Hansen’s efforts to reverse these catastrophic debacles is dizzying. Recognizing the similarities between the two men, their warnings and the economic and political interests that rejected their counsel out-of-hand, is sobering. What history confirmed about Dr. Powell’s forewarnings suggests the current repetition by an astonishing number of policymakers and a large percentage of the public ignoring science will usher in a past that will not merely repeat itself but a history that risks the future of civilization.

Powell was 49 years of age when he made his dire warnings before the 1893 International Irrigation Conference in Los Angeles. Hansen was 48 years old when he first alerted the nation to global warming in testimony before Congress in 1988. Powell earned his PhD in Geology; Hansen’s PhD is in Physics. Both taught at universities, Powell at Illinois State University, Hansen at Columbia University. Powell was the second director of the U.S. Geological Survey from 1881 to 1894 and headed the Bureau of Ethnology at the Smithsonian Institution until his death. Before retiring, Hansen headed NASA’s Goddard Institute for Space Studies for more than 20 years.

Both Powell and Hansen were well-regarded and decades-long government employees. Both men spent time with the unknown: Powell in the West where its arid climate only marginally understood, Hansen in the little-known world of the earth’s atmospheric CO₂, until recently, poorly grasped. Both men had a superior command of their science.

Powell knew well that rain followed neither the plow nor the railroad; Hansen is certain that the atmospheric increase in CO₂s, tracking the Industrial Revolution, from 275 parts per million to some 400 parts per million in a mere 200 years, is not a coincidence.

Just as Powell cautioned that rainfall was significantly less west of the hundredth meridian, Hansen warns that the planet will become irreversibly warmer and the climate increasingly more disruptive if the CO₂ in the atmosphere remains above 350 parts per million and passes the current 400 PPM.

Hands-on experience played a crucial role in the views of both men. The famous 1869 Powell Geographic Expedition boated the length of the Grand Canyon. A second expedition followed. His experiences, time and study in the Southwest altered Powell's earlier settlement views and led to his belief that the arid West was not suited for extensive agricultural development. Hansen's decades of research focused on remote satellite sensing of the earth's surface and led him to his belief that the earth's climate had changed dangerously since the Industrial Revolution and the burning of fossil fuels.

Hansen used telescopic observations of Venus as a young man and proposed that its hot surface was the result of aerosols trapping the internal energy of the planet. More recent studies by others suggest that several billion years ago, Venus' atmosphere was much like the today's Earth's, there was probably water on the surface. Runaway greenhouse effect resulted in the evaporation of water that led to a critical level of greenhouse gases in the atmosphere of Venus.

Hansen studied global mean temperatures from 1880 when records were first kept, through 1985 that demonstrated the increase in temperature paralleled industrialization and increasing fossil fuel use. He issued a report in 1999 concluding the previous year

was the warmest year since the instrument data was collected and that the rate of temperature change was larger than at any time in instrument history. Records for hottest month and hottest year have been continually broken. As of June 2016 the Earth experienced its hottest month ever for the 14th month in a row since reporting began in 1880.

Powell proposed the creation of a completely new set of governmental units he called “hydrological basins,” or large, regional watersheds as great bodies of commonwealths, numbering some 150 such units. Hanson has proposed litigation against the government based on its Constitutional fiduciary responsibility to protect the rights of the young and unborn to life liberty and the pursuit of happiness relying on the “atmospheric trust doctrine.” Hanson realizes that Congress and the Presidency are far too indebted to the special interest, Big Donor elite, just as Congress was when it rejected Powell’s science-based proposals. Pending litigation by Our Children’s Trust is the principal legal effort to compel government to address the crisis. Just as free land meant the people would come West in Powell’s era, as long as fossil fuels are the cheapest energy in this era, people will continue to use it and Hanson’s warnings will remain for naught.

Both Powell and Hanson believe(d) in the promise of science and technology and the sanctity of the common good as best determined by people who will live most directly with the results.

Wes Powell’s *Report on the Lands of the Arid Region*, published in 1878, provided a scientific argument for a radicle change in the nation’s land laws, the West must not continue to be developed under the standard 160-acre parcels of private property. Hanson’s *Storms of My Grandchildren: The Truth About the Coming Climate Catastrophe and Our*

Last Chance to Save Humanity, published in 2010, provided the scientific argument for the frightening reality that humankind is barreling to a climatic point of no return. In both instances, the nation's foremost authority on western lands—he knew the patterns of water, climate and geology—and the world's leading climatologist—he knows how the laws of physics and related climate science explain anthropogenic global warming—were dismissed, denigrated and even despised by Congress and the moneyed class.

Powell's principal opposition came from the railroad companies that owned 183,000,000 acres of land. Needing both travelers and commodities to ship, they aggressively lobbied Congress to reject Powell's policies and instead encourage farming. Undeterred by science, politicians acquiesced to the prodding of the railroads and adopted development policies to encourage pioneer settlement based on agriculture. Public policy followed the money then, as it does today.

Opposition to Hansen's views comes from the coal, oil, gas and related industries. In the summer of 2012, the Carbon Tracker Institute in London published a report describing the amount of carbon already contained in the proven oil and gas reserves of fossil-fuel corporations and countries like Venezuela and Kuwait that hold substantial reserves and function much like fossil-fuel companies.

Various studies have shown that humans can pour roughly 565 more gigatons of carbon dioxide into the atmosphere by mid-century and still have a reasonable hope of remaining below the maximum carbon emissions that will push the planet past its tipping-point and into an irreversible and accelerating warming trend.

The Carbon Tracker Institute found that the world's major energy companies and countries hold in reserve 2,795 gigatons of oil, gas and coal or five times the 565 gigaton

maximum allowable for civilization to remain safe. The stock value of these companies reflects the market value of its reserves. The value of Wall Streeters' investment is directly related to this 2,795 number, a number that is dollars to them and a time bomb for everyone else. Because 2,795 gigatons is five times the maximum scientists think is safe to burn, these numbers mean 80 percent of reserves need to remain forever underground if the planet is to avoid the fate Hanson foresees.

In terms of millions and billions of dollars, these fossil fuel numbers are far weightier than the 183 million acres of land owned by the railroads that overwhelmed Powell's pleas. The risk that Hansen warns us about is similar in kind but catastrophically more worrisome in degree than the hazard Powell foresaw a century ago.

Having the foresight to anticipate devastating consequences of the ongoing western-lands free-for-all, Powell did what he could to insure that science guide the economic development of the West. In July of 1890, Powell told a Senate Appropriations Committee: "I think it would be almost a criminal act to go on as we are doing now, and allow thousands and hundreds of thousands of people to establish homes where they cannot maintain themselves." But enthusiasm for western expansion was ubiquitous. Powell then suffered several years of rough going as impatient politicians, entrepreneurs and others increasingly pushed back against the delay on western development caused by his survey.

The blowback came to a head at the 1893 Irrigation Conference in Los Angeles, when Powell differed with the attendees ("We delegates know that 'there is an abundance of water' to irrigate 'all, or nearly all, the arid lands in this Nation.'") and told them bluntly that: "Not one more acre of land should be granted to individuals for irrigation purposes." He cautioned: "Gentleman, you are piling up a heritage of conflict and litigation over water

rights for there is not sufficient water to support the land.” Catcalls and boos drowned out his warning. The hostility toward Powell transformed him from a wise elder to an erring pessimist.

For a myriad of reasons, Congressional appropriations not only ended for his Irrigation Survey of the West but the overall U.S. Geological Survey was also severely cut, in some areas by as much as 80 percent. Despite what by 1890 was an international reputation as the "go-to" arid-lands expert, the capitalists and boomers rejected his planned settlement approach and went so far as to suggest Powell was socialistic, un-patriotic and his ideas, un-American.

By 1893, the economic downturn deepened into the worst economic depression in the countries history. Chomping at the bit for access to the promised West of boundless opportunity—the settlement of free land and irrigation—triumphant industrial capitalism overwhelmed Powell's effort for a measured settlement policy.

Within a year, the temporary suspension of western settlement expected to allow surveying and planning was lifted, restarting the plunder of the West and assuring the inevitable mass failure of homesteads. His message was ignored until the Dust Bowl of the 1920s and 1930s. In terms of curbing the unrestricted settlement free-for-all, “prescient” is the term modern historians use to describe Powell.

Despite admonitions from high-ranking officials not to talk about how human-caused influences could have dangerous effects on climate, Hansen remained on the stump for over two decades. In 2011, he told President Obama and the U. S Department of State that approval of the XL Keystone pipeline—a proposal to pipe carbon laden tar sands oil from Alberta Canada to Texas—would be: “game over for the climate.”

The similarities between Powell and Hansen are clear: their analogous warnings, the parrot-like response from yesterday's railroads and today's fossil fuel industry, their respective detractors in Congress, and the similar rejection of science by promoters of the West and global warming deniers.

These parallels bode ill for the planet. If the government, business and partisans of the unlimited use of fossil fuels are allowed to continue with "business as usual," similar to how the pro-settlement and irrigation interests ignored Powell in his time, the consequences will be far worse than dire.

Notwithstanding the failure and hardship suffered by thousands of settlers and the damage and loss to the land, the West had time to adjust and begin its recovery. But for the planet, if we continue business as usual, there will be no "do-overs" or time to reflect on our failure to respect science.