
The Carbon Connection

Having seen pictures of the devastation did not prepare me for the reality of New Orleans. Mile after mile of wrecked houses, demolished cars, piles of debris, twisted and downed trees, and dried mud everywhere. We stopped every so often to look into abandoned houses in the Ninth Ward and along the shore of Lake Pontchartrain to see things close up: mud lines on the walls, overturned furniture, moldy clothes still hanging in closets, broken toys, a lens from a pair of glasses . . . once-cherished and useful objects rendered into junk. Each house had a red circle painted on the front to indicate results of the search for bodies. The holes punched through ceilings in some houses showed the desperation of people trying to escape rising water. The smell of musty decay was everywhere, overlaid with an oily stench. Despair hung like Spanish moss in the dank, hot July air.

Ninety miles to the south, the Louisiana delta is rapidly sinking below the rising waters of the Gulf. This is no “natural” process, but rather the result of decades of mismanagement of the lower Mississippi that became federal policy after the great flood of 1927. Sediments that built the richest and most fecund wetlands in the world are now deposited off the continental shelf—part of an ill-conceived effort to tame the river. The result is that the remaining wetlands, starved for sediment, are both eroding and compacting, sinking below the water and perilously close to no return. Oil extraction has caused most of the rest of the damage. Channels have been cut that crisscross the marshlands, allowing the intrusion of salt water and storm surges. Wakes from boats have widened the original channels considerably, further unraveling the ecology of the region. The richest fishery in North America and a unique culture that once thrived in the delta are disappearing and so is the buffer zone that protects New Orleans from hurricanes. “Every 2.7 miles of marsh grass,” in Mike Tidwell’s (2003:57) words, “absorbs one foot of a hurricane’s storm surge.”

And the big hurricanes will continue to come. Kerry Immanuel, an MIT scientist and once greenhouse skeptic, researched the connection between rising levels of greenhouse gases in the atmosphere, warmer sea temperatures, and the severity of storms. He is a skeptic no longer (2005). The hard evidence on this and other parts of climate science has moved beyond the point of legitimate

dispute. Carbon dioxide, the prime greenhouse gas, is at the highest level in at least the last 650,000 years. Carbon dioxide continues to accumulate by over approximately 2.5 parts/million/year, edging closer to what some scientists believe is the threshold of runaway climate change. British scientist James Lovelock (2006) compares our situation to that of being upstream from Niagara Falls on a boat on which the engines are about to fail.

As if this were not enough, the evidence now shows a strong likelihood that sea levels will rise more rapidly than previously thought. The third report of the Intergovernmental Panel on Climate Change (2001) predicted about a 1-m rise in the twenty-first century, but more recent evidence puts this figure at 6–7 m, the result of accelerated melting of the Greenland ice sheet and polar ice, and the thermal expansion of water (Kerr 2006).

Nine hundred miles to the northeast as a sober crow would fly, Massey Energy, Inc., Arch Coal, and other companies are busy leveling the mountains of Appalachia to get at the upper seams of coal in what was one of the most diverse and relatively undisturbed forests in the United States and one of the most diverse ecosystems anywhere. Throughout the coalfields of West Virginia and Kentucky they have already leveled 456 mountains across 1.5 million acres and intend to destroy a good bit more. Coal is washed on site, leaving billions of gallons of a dilute asphalt-like gruel laced with toxic flocculants and heavy metals. An estimated 225 such containment ponds are located over abandoned mines in West Virginia and are held back from the communities below only by earthen dams prone to failure either by collapse or by draining down through old mine tunnels that honeycomb the region. One dam did fail on 11 October 2000 in Martin County, Kentucky, when the slurry broke through a thin layer of shale and into mines and out into hundreds of miles of streams and rivers. The result was the permanent destruction of waterways and property values of people living in the wake of an ongoing and mostly ignored disaster.

This is typical of the coalfields. These areas are third-world colonies within the United States, a national sacrifice zone in which fairness, decency, and the rights of old and young alike are discarded as so much overburden on behalf of the national obsession with “cheap” electricity. For his role in trying to enforce even the flimsy laws that

might have held Massey Energy slightly accountable for its flagrant and frequent malfeasances, the Bush administration tried unsuccessfully to fire Jack Spadaro from his position as a mine safety inspector in the Interior Department. Eventually they forced him to retire.

Jack, the chief attorney for the largest corporation in the world, and I take off with our pilot, Hume Davenport, in a four-seat Cessna. The ground recedes below us as we pass over Charleston, West Virginia, and the Kanawha River lined with barges hauling coal to power plants along the Ohio River and points more distant. To the west on the horizon is the John Amos plant owned by American Electric Power that, by one estimate, releases more mercury to the environment than any other facility in the United States as well as hundreds of tons of sulphur oxides, hydrogen sulfide, and CO₂. For a few minutes we can see the deep green of wrinkled Appalachian hills below, but very soon the first of the mountaintop removal sites appears. It is followed by another and then another. The pattern of ruin spreads out below us for many miles, stretching to the far horizon on all points of the compass. From a mile above, trucks with 12-foot-diameter tires and draglines that could pick up two Greyhound buses in a single bite look like toys in a sandbox. What is left of Kayford Mountain comes into sight. It is surrounded by leveled mountains and a few still being leveled. "Overburden"—the mining industry term for dismantled mountains—is dumped into valleys covering hundreds of miles of streams, an estimated 1500 miles in the past 25 years. Many more miles will be buried if the coal companies have their way. Coal slurry ponds loom above houses, towns, and even elementary schools. When the earthen dams break on some dark rainy night, those below will have little if any warning before the deluge hits.

Spadaro is our guide to the devastation. He has a knack for describing outrageous things calmly and with clinical precision. A mining engineer by profession, he spent several frustrating decades trying to enforce the laws, such as they are, against an industry with friends in high places in Charleston, Congress, and the White House. In a flat, unemotional monotone he describes what we are seeing below. Destruction of the Appalachian forest aside, the math in these operations is all wrong. The slopes are too steep, the impoundments too large. The angles of slope, the dam, the weight, and the proximity of houses and towns to the overburden are the geometry of tragedies to come. He points out Marsh Fork elementary school situated close to a coal-loading operation and a huge impoundment back up the hollow. In the event of a dam failure, the evacuation plan calls for the principal to use a bull horn to initiate evacuation of the children ahead of the 50-foot wall of slurry that will be moving at maybe 60 miles an hour. If all works according the official evacuation plan, they will have 2 minutes to get to safety, but there is no safe place for them to go. And so it is in the

coalfields—ruin at a scale for which there are no adequate words; ecological devastation to the far horizon of topography and time. We say we are fighting for democracy elsewhere, but no one in Washington or Charleston seems aware that we are depriving some of our own the rights to life, liberty, and property.

On the circle back to Charleston, Tom Hyde, the corporate attorney calls this a "tragedy." We all nod knowing the word does not quite describe the enormity of the things we have just seen or the cold-blooded nature of it. In our 1-hour flight, we saw maybe 1% of the destruction now metastasizing through four states. Until recently it was all but ignored by the national media. We have known of the costs of mining at least since Harry Caudill published *Night Comes to the Cumberlands* in 1963, but we have yet to summon the moral energy to resolve the problem or pay the full costs of the allegedly cheap electricity that we use.

Under the hot afternoon sun we board a 15-person van to drive out to the edge of the coalfields to see what it looks like on the ground. On the way to Kayford Mountain, we take the interstate south from Charleston and exit at a place called Sharon onto winding roads that lead to mining country. Trailer parks, small churches, truck repair shops, and small, often lovingly tended, houses line the road intermixed with those abandoned long ago when underground mining jobs disappeared. The two-lane paved road turns to gravel and climbs toward the top of the hollow and Kayford Mountain. Soon the first valley fill appears. It is a green, V-shaped insertion between wooded hills. Reading the signs made by water coursing down its face, Jack Spadaro notes that this one will soon fail. Valley fills are mountains turned upside down: rocky mining debris, trees illegally buried, along with what many locals believe to be more sinister things brought in by unmarked trucks in the dead of night. He adds that some valley fills may contain as much as 500 million tons of blasted mountains and run for as long as 6 miles. We ascend the slope toward Kayford, passing by the "no trespassing" signs that appear around the gate that leads to the mining operations.

Larry Gibson, a diminutive, bulldog of a man fighting for his land, meets us at the summit, really a small peak on what was once a long ridge. The family has been operating a small coal mine on Kayford since the eighteenth century. Larry is the proverbial David fighting Goliath, but he has no slingshot unless it is that of moral authority spoken with a fierce, inborn eloquence. Those traits and the raw courage he shows every day have made Larry a poster child for the movement; his picture has been in *Vanity Fair*, *National Geographic*, and other newsstand magazines. Larry's land has been saved so far because he made 40 acres of it into a park and has fought tooth and nail to save it from the lords of Massey Energy. They have leveled nearly everything around him and have punched holes underneath Kayford because the mineral rights below and

the ownership of the surface were long ago separated in a shameless scam perpetrated on trusting mountain people.

Larry describes what has occurred with a model of the area that comes apart, somewhat like the mountains around him have been dismantled. As he talks he illustrates what has happened by taking the model apart piece by piece, leaving the top of Kayford rather like a knob sticking up amidst the encircling devastation. So warned we walk down the country lane to witness the advancing ruin. Fifteen of us stood for maybe half an hour on the edge of the abyss watching giant bulldozers and trucks at work below us. Plumes of dust from the operations rise up several thousand feet. The next set of explosive charges is ready to go on an area about the size of a football field. Every day some 3 million pounds of explosives are used in the 11 counties south of Charleston. This is a war zone. The mountains are the enemy, profits from coal the prize, and the local residents and all those who might have otherwise lived here or would have been recreated here are the collateral damage.

We try to wrap our minds around what we are seeing, but struggle with the enormity of it. The oldest mountains on Earth are being turned into gravel for a pittance, their ecologies radically simplified, forever. Perhaps as a defense mechanism from feeling too much or being overwhelmed by what we have seen, we talk about lesser things. In the late afternoon drive back to Charleston, we pass by the coal-loading facilities along the Kanawha River. Miles of barges line up to haul coal to hungry Ohio River power plants, the umbilical cord between mines, mountains, and us—the consumers of cheap electricity.

Over dinner that night we hear from two residents of Mingo County who describe what it is like to live in the coalfields. Without forests to absorb rainwater, flashfloods are a normal occurrence. A 3-inch rain can become a 10-foot wall of water cascading off the flattened mountains and down the hollows. The mining industry calls these “acts of God,” and the thoroughly bought public officials agree, leaving the victims with no recourse. Groundwater is contaminated by coal slurry and the chemicals used to make coal suitable for utilities. Well water is so acidic that it dissolves pipes and plumbing fixtures. Cancer rates are off the charts, but few in Charleston or Washington care enough to notice.

Pauline and Carol from the town of Sylvester, both in their seventies, are known as the “dust busters” because they go around the town with white cloths, wiping down flat surfaces that are covered with coal dust from a nearby loading facility. These are presented as evidence of foul air at open hearings to the irritated and unmovable servants of the people. Black lung and silicosis disease are now common among the young and old who have been exposed to the dust from surface operations but who have never set foot in a mine. They have little or no voice in government; they are considered expendable. Pauline, a

fiercely eloquent woman, whose husband was wounded and captured by the Germans in the Battle of the Bulge in 1944, rhetorically asks “is this what he fought for?” The clock reads 9:30 pm; we quit for the day.

To permanently destroy millions of acres of Appalachia to extract maybe 20 years of coal is not only stupid, it is derangement at a scale for which we as yet do not have adequate words, let alone the good sense and the laws to stop it. Unlike deep mining, mountaintop removal employs few workers. It is destroying the wonders of the mixed mesophytic forest of northern Appalachia once and for all, including habitat for dozens of endangered species. It contaminates groundwater with toxic substances and heavy metals and renders the land permanently uninhabitable and unusable. Glib talk of the economic potential of flatter places for commerce of one kind or another is just that. Coal companies’ efforts to plant grass and a few trees here and there are like putting lipstick on a mutilated corpse. The fact of the matter is that one of the most diverse and beautiful ecosystems in the world is being destroyed along with the lives and culture of the people who have stayed behind in places like Sylvester and Kayford.

These operations are justified on the grounds of necessity and cost. But virtually every competent independent study of energy use done in the past 30 years has concluded that we could cost-effectively eliminate half or more of our energy use and simultaneously strengthen our economy, lower costs of asthma and lung disease, raise our standard of living, and improve environmental quality. More complete accounting of the costs of coal would also include the rising tide of damage and insurance claims attributable to climate change. Some say that if we do not burn coal the economy will collapse and we will all have to go back to the caves. But with wind and solar power growing by over 25% per year and the technology of energy efficiency advancing rapidly we have good options that make burning coal unnecessary. And before long we will wish that we had not destroyed so much of the capacity of the Appalachian forests and soils to absorb the carbon that makes for bigger storms and more severe heat waves and droughts.

No one in a position of authority in West Virginia politics, excepting the former U.S. Congressman and noble patriarch of good sense, Ken Hechler, asks the obvious questions. How far does the plume of heavy metals coming from coal-washing operations go down the Kanawha, Ohio, and Mississippi rivers and where is it seeping into drinking water? What other economy, based on the sustainable use of forests, nontimber products, ecotourism, and human craft skills, might flourish in these hills? What is the true cost of “cheap” coal? Why do the profits from coal mining leave the state? Why is so much of the land owned by absentee corporations like the Pocahontas Land Company? Once you subtract the permanent ecological ruin and crimes against humanity, there

really is not much left. Those touting “clean coal” ought to spend some time in the coalfields and talk to the residents to understand what those words really mean at the point of extraction. And for those who assume that the carbon from burning coal can be safely and permanently sequestered underground at an affordable cost, I have ocean front property in Arizona to sell you.

Nearly a thousand mile separates the coalfields of West Virginia from the city of New Orleans and Gulf Coast, yet they are a lot closer than that. The connection is carbon. Coal is mostly carbon, and for every ton burned, 3.6 tons of CO₂ eventually enters the atmosphere, raising global temperatures and warming oceans, thereby creating bigger storms, melting ice, and raising sea levels. For every ton of coal extracted from the mountains, perhaps 100 tons of what is tellingly called “overburden” is dumped, burying steams and filling the valleys and hollows of West Virginia, Kentucky, and Tennessee. And between the hills of Appalachia and the sinking land of the Louisiana coast, tens of thousands of people living downwind from coal-fired power plants die prematurely each year from inhalation of small particles of smoke laced with heavy metals that penetrate deeply into lungs.

Like all life forms, we search out great pools of carbon to perpetuate ourselves. It is our mismanagement of carbon

that threatens the human future, and this is an old story. Humans have long fought for the control of carbon found in rich soils and deep forests, and later in fossil fuels. The root of all evil does not begin with money, but with the carbon in its various forms that money can buy. The exploitation of carbon is the original sin leading quite possibly to the heat death of a great portion of life on Earth, including us. This is what James Lovelock calls the revenge of Gaia, which, if it comes to pass, will be Hell on Earth.

David W. Orr

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Literature Cited

- Caudill, H. 1963. *Night comes to the Cumberlands*. Little Brown, Boston, Massachusetts.
- Immanuel, K. 2005. Increasing destructiveness of tropical cyclones over the past 30 years. *Nature*: 686-688. **Q2**
- Kerr, R. 2006. A worrying trend of less ice, higher seas. *Science*:1698-1701.
- Lovelock, J., 2006. *The revenge of Gaia*. Penguin, London. **Q3**
- Reece, E. 2006. *Lost mountain*. Riverhead Books, New York.
- Tidwell, M. 2003. *Bayou farewell*. Vintage, New York.

Queries

Q1 Author: Please provide the author affiliation.

Q2 Author: Please provide the volume number for references “Immanuel (2005)” and “Kerr (2006).”

Q3 Author: Please cite the reference “Reece (2006)” in the text or delete it from the list.