

Anthology of Forests

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Waterlines

excerpt of an essay by Geoffrey Martin

Francis and I awoke to see our breath iced in dendritic patterns on the tent above us. Slung from a tree overnight, the water bag was frozen like a winter pond. Too cold to cook, we tightened our pack straps and headed down the trail, granola bar packages peeled open like bananas-in-hand. For two hours we stepped our way into a ravine rolled thick in sphagnum moss and covered by wide boughs of cedar and spruce. An hour later we were ascending again, tracing the leafless flank of Glastonbury Mountain in the noonday sun. We stopped to peel off a layer and to drink of last night's water.

By early afternoon, we stepped onto the Appalachian Trail, an intersection marked by a sleep shelter and bear-box. A clear spring creek tipped down the incline. Someone had wedged a halved PCB pipe into a ledge of rock. It ran water forever off its end like a garden feature.

Before turning south on our loop, we stashed our packs and headed unencumbered for the peak. Climbing the fire tower's fifty feet of steel risers, we stood above the mounded top of the mountain. Pine-pricked forest and stark brown hills to the horizon in every blue direction. We turned in wonder. Fat flakes of snow fell on three hundred and eighty thousand acres of stillness.

This was a vast, living ecosystem gone already to hibernation at the end of October. Animals curled tight like the shapes of seed and nut, hearts beating long and slow and steady.

Describing the ground-view after a C-123 blew overhead, a South Vietnamese farmer and captured NLF fighter recounted: "All the fields along the two banks of a small

river were utterly destroyed. Even the people's vegetables and fruit-tree gardens near the fields were ruined. According to the people, after the spraying, the tree leaves were wet as if soaked in oil. The water had a film on the surface, which looked like fat skim. A little while later, the leaves became dry and fell on the ground. Rice stalks turned dry, banana trees sank, potato and manioc became soft and rotten. The pineapple was tainted, the coconuts split, and the jet fruits fell on the ground."

South Vietnamese peasants began shrouding their orchards with sheets and covering their wells for fear of poisoning. To protect certain villages from NLF infiltration, the Army of the Republic of Vietnam and US Forces relocated people into "strategic hamlets" surrounded by barbed wire. They were not Winning Hearts and Minds.

Meanwhile, 500,000 American soldiers were fighting in Vietnam through the late 1960s. Peter Sills opens his 2014 legal history of Agent Orange with the story of one of them, Dave Maier, who left Cleveland for Vietnam the morning after his wedding. Ten years later, he was undergoing chemotherapy for soft tissue sarcoma and had his arm amputated.

But in 1967, his station ship was pushing up the Mekong River where advance defoliant missions had cleared the mangroves. The river water that ran from the ship's taps was the color of tea: "the men brushed their teeth with it, showered and shaved with it, did their laundry in it." And Maier, who had read Carson's book when it was first published, recalls: "I'm up there on the deck, and I'm looking at that river, and all this crap floating through it, it's like a dead river, and not much vegetation along the sides. And I thought, 'if there ever was a silent spring, this is it.'"

Snow fell for two hours as we traced our way down from the summit. Somewhere at a lower elevation, the sleet became rain. We stopped to pull on rain gear, which funneled water to our boots. We found ourselves hiking another ridgeline and again saw no signs of spring water beside which to camp. We kept walking.

In darkness, we stepped off Glastonbury's long slope. We were cold and hungry and worried. A signpost in the glare of our headlamps pointed toward a spur trail cutting back to a pond where there would be space to pitch the tent and water deep

enough to fill the bag.

A half-mile up the trail, a sudden gurgling at our wet feet stopped us in our tracks. Search beams from our headlights caught sparks of water spilling from the side of the hill we had just descended. It was clearer, certainly, than the stagnant pond water up ahead. Francis immediately went to tamp down a spot for the tent in the middle of the trail while I squatted in the rain and got to bailing, the tin mug shaking in my hand from the wet and the cold.

Eighteen months after her book came out, Carson died of cancer at fifty-four years of age. She knew her work had launched a maelstrom of domestic debate, but there is no evidence she knew of the scale of chemical warfare in Vietnam. Most of the public didn't yet know either.

Carson never knew the ways in which the modern environmental movement in the US would instigate a massive cultural shift and a slew of legislative victories: the creation of the Environmental Protection Agency by Republican President Richard Nixon, the bipartisan Clean Air Act of 1970 and Clean Water Act two years later. A complete ban on DDT in the US exactly ten years after *Silent Spring*.

And she didn't live to see the ways in which the environmental movement and the civil rights movement overlapped in the late 1960s with the anti-war movement. Normally staid scientists began petitioning the Pentagon to release health-impact data on its herbicidal weapons. And, as David Zierler traces out in *The Invention of Ecocide*, when those internal studies raised far more questions than they answered, scientists like Arthur Galston demanded permission to conduct independent field research in Vietnam alongside Vietnamese scientists. Galston, a plant biologist and chair of the Department of Botany at Yale, had a personal stake in the matter—his dissertation research on soy plants had unintentionally aided in the development of synthetic herbicides.

In October 1969, the *Los Angeles Times* published a leaked government study that linked 2,4,5-T exposure to various birth defects in lab mice. In an effort to head off the story, Nixon's White House quickly announced new domestic restrictions on the

herbicide. Subsequent studies on the military's rainbow herbicides raised even more alarms. In April of the following year, Nixon suspended Operation Ranch Hand entirely. suspended Operation Ranch Hand entirely.

"We have made Vietnam an ecological catastrophe," stated Denis Hayes of Environmental Action a few weeks later during the inaugural address of Earth Day in Washington, D.C. on April 22, 1970. "We cannot pretend to be concerned with the environment of this or any other country as long as we continue the war in Vietnam." Across the country, nearly 20 million Americans were marching in the streets on a Wednesday.

That 5% of Agent Orange produced in my hometown feels consequential. Call it my own guilt-by-association, but it has made palpable to me the fact that sites of contamination are not nearly as isolated as they seem. Elmira's own polluted well water and creek are connected, in ways unimaginable even a hundred years ago, to the dioxin-laden fishponds now surrounding the former US air base in Da Nang.

As with climate change, our grave environmental problems may be global in nature, but the risks are not borne out equally. Instead, they skew along disparate lines of race and class. Domestically, a host of new water emergencies have bubbled up in the last several years, including an on going lead poisoning crisis in Flint, Michigan, which is now spilling into Chicago, Pittsburgh, and elsewhere. In Lowndes County, Alabama, inadequate fresh water sanitation has led to one in three people testing positive for traces of hookworm, a parasite thought eradicated in the 1980s.

And in North Bennington, too, a few miles west of the Glastonbury trailhead, a contaminated-water scare that began two years ago has rippled downstream from the shuttered ChemFab plant, percolating in private wells.

A simple glass of filtered, treated water is beginning to seem not so much a gift or even a right but a strange and unnerving privilege.

Forty-five years after the Air Force incinerated its toxic herbicides at Johnston Atoll, Agent Orange is still with us, politically and bodily, which is to say, environmentally. In the US, Vietnam War

veterans are now "presumed exposed," a constituent part of the cost and care concerns at VA hospitals today.

It is also present, most crucially and tragically, in several dozen TCDD hotspots in Vietnam that continue to generate exposure threats. Around former US air bases, where three hundred thousand rainbow-striped drums were emptied, rinsed, and stacked or hammered flat at the puddled edges of runways, researchers continue to find elevated levels of dioxin in people's blood and breast milk.

Agent Orange no longer rains down from above. Its dioxin residues surface from the sediment of ponds, bioaccumulating up the food chain—just as Carson tracked with DDT in the US—in the fatty tissues of fish and ducks, the food staples of people living nearby.

Like Alfred Nobel endowing his peace prize with his dynamite fortune or the Union of Concerned Scientists forming in the aftermath of Hiroshima and Nagasaki, Arthur Galston spent the rest of his life working to contain the threat of ecocide (his word). He and other scientists used the term to define chemical warfare as a crime against humanity and nature on the order of genocide.

David Zierler points out that Galston and other colleagues were not simply concerned about the wanton environmental destruction in Vietnam and the exposure of millions of civilians and soldiers to dioxin: "these scientists also imagined more ecological dystopias and human health epidemics created by future wars fought with more sophisticated chemical weapons and advanced methods of environmental warfare." Driven by this fear, they campaigned for national and international bans on chemical weaponry, and their bureaucratic efforts were bolstered by worldwide public protest and political pressure.

In other words, the decade of destruction wrought by Agent Orange prompted the rise of planetary concerns. This was a new kind of global consciousness-raising that shifted public attention beyond the relatively more narrow fear of nuclear apocalypse.

In the summer of 1972, Stockholm hosted the first annual United Nations Conference on the Human Environment. Outside, a parallel conference, dubbed "Woodstockholm," played out with thousands of citizens in the streets and at adjoining concert stages and meeting venues alongside concerned scientists

and legal theorists from around the world.

In 1975, despite the protestations of the Department of Defense, President Ford finally ratified the fifty-year-old Geneva Protocol, renouncing first-use of chemical and biological weapons. Two years later, discussions between the US and the Soviet Union evolved into the UN's Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques. As a tactic of war, deliberate environmental destruction is now—it still is—an international crime.

Rain dappled the tent all through the second night, but we woke to bright sunlight and the fecund smell of earth composting itself. By 9 am our boots were damp, not soaked. We filled up our water bags a final time and set off to hike the remaining ten miles.

Along the way, broad-leaved ferns spotted the understory. On our map, Hell's Hollow Bridge turned out to be a long boardwalk. Its wooden planks spanned a shaded, mossy wetland cut through by numerous streams that tumbled towards Bennington.

From high above Route 9, we traced a cautious, thousand-foot descent along rocky steps and switchbacks to the narrow cut of river and road. We stumbled out onto the highway, elated and triumphant, following the gravel shoulder back to our car. We were out. And I had a half-gallon of water to spare.

I did not find myself in the Glastonbury Wilderness. There was no transcendent experience or great commune with nature as the early twentieth century conservationists would have it. But what I did feel afresh was a palpable concern for the whereabouts of my next drink of water, an elemental worry that might have been Francis's point all along.

The house I'm living in, here in Western Massachusetts, draws its water from a well hole in the side yard. Through the long winter months, while snow encased the windows and the wood pellet stove coughed out a modicum of heat, I drew off glass after glass of bright, faintly sweet, filtered water from the tap at my kitchen sink, and refused, I hoped, to take it for granted.

Throughout those months, I had been stepping my way through books on Agent Orange and came across an article by

Dr. Patricia Hynes in the *Peace Review*. The article, "The Legacy of Agent Orange in Vietnam," documents her 2014 research trip to several of the Peace Villages in Vietnam where many dioxin-affected children now live and are cared for, surrounded by gardens and orchards and animals. A number of the staff are retired veterans of the American War. In a way, they're continuing the fight, serving now the generational victims of a long-ago war. Hynes quotes a former general who expresses a determined will in the face of continued dioxin poisoning: "we beat the Chinese, we beat the French, we beat the Americans, now I want to beat Agent Orange."

A retired Professor of Environmental Health at Boston University, Hynes now directs the Traprock Center for Peace in Greenfield, Massachusetts, a town just west of here. We exchanged emails, discovered that we're practically neighbors, and met a week later at the one place in our tiny town there is to meet—an old mill converted into a used bookstore and café.

It was the first warm day in May, so we sat outside by the bedrock waterfall. Faint green lines were fracturing open hundreds of thousands of maple and oak tree buds. The bit of color felt long overdue. This was the first year I had caught myself waiting for spring, worried in mid-April whether it would even come. Now, bees were suddenly hovering at the rims of our hibiscus iced teas.

Hynes tells me first of returning from Vietnam and starting the Vietnam Peace Village Project, a fundraising effort to support the care and tuition of children at some of the villages she had visited. She also describes a more recent project, "10,000 trees for Vietnam," to support Phung Tuu Boi's reforestation efforts in the Luoi Valley.

Phung, the forester and director of the Nature Conservation and the Community Development Center in Hanoi, is now in his 70s, but he has been reforesting thousands of hectares of denuded land since he was 24 years old. Fighting back against the thick grasslands that have grown in place of defoliated jungle, Phung has been planting moringa and acacia trees, both fast-growing and drought-resistant. Their root

structures help improve the leached soil, and their canopies shade out the grasses, giving native hardwoods the chance to grow again. The trees also offer some economic opportunities for villagers, like harvesting seedpods, fruit oils, and timber.

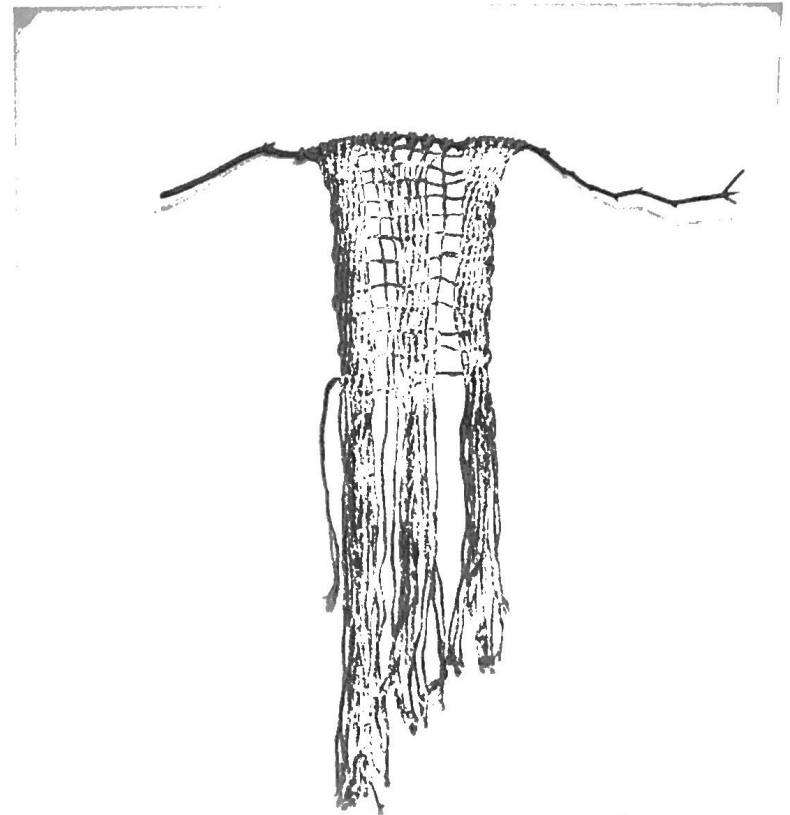
The water challenge in Vietnam, Hynes notes, is perhaps greater than the task of reforestation. Dioxin needs greater than the task of reforestation. Dioxin needs extended exposure to sunlight or applied heat to break down, so pond sediment, where much of the TCDD in Vietnam is currently sitting, has to be dredged up and heat-treated. It's possible, and it's currently being done at the Da Nang air base. But until there's more money and the political will to clean up other former US air bases and Agent Orange hotspots, exposure rates and congenital birth defects will remain preternaturally high. Here too, Phung continues his work, planting thick green, prickly bush fences,



hoping to hold people off from stagnant water and the fish those ponds contain.

Beside the old mill, Sawmill Creek was teeming with spring runoff. It spilled loudly down bedrock towards the Connecticut River where it would run south to the salt waters of Long Island Sound and then out into the North Atlantic, joining Earth's thermohaline circulation. When it comes to water, it's the simple and obvious that deserves repeating. Which is that every day, everywhere on earth, we seek fresh water out. We thirst for it, gulp it down in common urgency, live and die by it. It bears our weight and carries our scars.

After Hynes left, I stayed back and continued taking notes for half an hour. Then, standing up, I lightly brushed away a bee and drank the last drop of melted ice from my glass. ○



*Sculpture: Francesca Brown,
Into the Forest, I Arrive at Home 1, 2*