

ALSO BY ALAN WEISMAN

An Echo in My Blood

Gaviotas: A Village to Reinvent the World

La Frontera: The United States Border with Mexico

THE
WORLD
WITHOUT
US



ALAN WEISMAN



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*In memory of
Sonia Marguerite*

*with lasting love
from a world without you*

drive 100 miles south, take a train across the border to the city of Brest, submit to pointless interrogation, and hire a car to drive back north. Andrzej Bobiec's Belarusian counterpart and fellow activist, Heorhi Kazulka, is a pale, sallow invertebrate biologist and former deputy director of Belarus's side of the primeval forest. He was also fired by his own country's park service, for challenging one of the latest park additions—a sawmill. He cannot risk being seen with Westerners. Inside the Brezhnev-era tenement where he lives at the forest's edge, he apologetically offers visitors tea and discusses his dream of an international peace park where bison and moose would roam and breed freely.

The Pushcha's colossal trees are the same as those in Poland; the same buttercups, lichens, and enormous red oak leaves; the same circling white-tailed eagles, heedless of the razor-wire barrier below. In fact, on both sides, the forest is actually growing, as peasant populations leave shrinking villages for cities. In this moist climate, birch and aspen quickly invade their fallow potato fields; within just two decades, farmland gives way to woodland. Under the canopy of the pioneering trees, oak, maple, linden, elm, and spruce regenerate. Given 500 years without people, a true forest could return.

The thought of rural Europe reverting one day to original forest is heartening. But unless the last humans remember to first remove Belarus's iron curtain, its bison may wither away with them.

CHAPTER 2



Unbuilding Our Home

“‘If you want to destroy a barn,’ a farmer once told me,
‘cut an eighteen-inch-square hole in the roof.
Then stand back.’”

—architect Chris Riddle
Amherst, Massachusetts

ON THE DAY after humans disappear, nature takes over and immediately begins cleaning house—or houses, that is. Cleans them right off the face of the Earth. They all go.

If you're a homeowner, you already knew it was only a matter of time for yours, but you've resisted admitting it, even as erosion callously attacked, starting with your savings. Back when they told you what your house would cost, nobody mentioned what you'd also be paying so that nature wouldn't repossess it long before the bank.

Even if you live in a denatured, postmodern subdivision where heavy machines mashed the landscape into submission, replacing unruly native flora with obedient sod and uniform saplings, and paving wetlands in the righteous name of mosquito control—even then, you know that nature wasn't fazed. No matter how hermetically you've sealed your temperature-tuned interior from the weather, invisible spores penetrate anyway, exploding in sudden outbursts of mold—awful when you see it, worse when you don't, because it's hidden behind a painted wall, munching paper sandwiches of gypsum board, rotting studs and floor joists. Or you've been colonized by termites, carpenter ants, roaches, hornets, even small mammals.

Most of all, though, you are beset by what in other contexts is the veritable stuff of life: water. It always wants in.

After we're gone, nature's revenge for our smug, mechanized superiority arrives waterborne. It starts with wood-frame construction, the most widely used residential building technique in the developed world. It begins on the roof, probably asphalt or slate shingle, warranted to last two or three decades—but that warranty doesn't count around the chimney, where the first leak occurs. As the flashing separates under rain's relentless insistence, water sneaks beneath the shingles. It flows across four-by-eight-foot sheets of sheathing made either of plywood or, if newer, of woodchip board composed of three- to four-inch flakes of timber, bonded together by a resin.

Newer isn't necessarily better. Wernher Von Braun, the German scientist who developed the U.S. space program, used to tell a story about Colonel John Glenn, the first American to orbit the Earth. "Seconds before lift-off, with Glenn strapped into that rocket we built for him and man's best efforts all focused on that moment, you know what he said to himself? 'Oh, my God! I'm sitting on a pile of low bids!'"

In your new house, you've been sitting under one. On the one hand, that's all right: by building things so cheaply and lightly, we use fewer of the world's resources. On the other hand, the massive trees that yielded the great wooden posts and beams that still support medieval European, Japanese, and early American walls are now too precious and rare, and we're left to make do with gluing together smaller boards and scraps.

The resin in your cost-conscious choice of a woodchip roof, a waterproof goo of formaldehyde and phenol polymer, was also applied along the board's exposed edges, but it fails anyway because moisture enters around the nails. Soon they're rusting, and their grip begins to loosen. That presently leads not only to interior leaks, but to structural mayhem. Besides underlying the roofing, the wooden sheathing secures trusses to each other. The trusses—premanufactured braces held together with metal connection plates—are there to keep the roof from splaying. But when the sheathing goes, structural integrity goes with it.

As gravity increases tension on the trusses, the ¼-inch pins securing their now-rusting connector plates pull free from the wet wood, which now sports a fuzzy coating of greenish mold. Beneath the mold, threadlike filaments called hyphae are secreting enzymes that break cellulose and lignin down into fungi food. The same thing is happening to the floors

inside. When the heat went off, pipes burst if you lived where it freezes, and rain is blowing in where windows have cracked from bird collisions and the stress of sagging walls. Even where the glass is still intact, rain and snow mysteriously, inexorably work their way under sills. As the wood continues to rot, trusses start to collapse against each other. Eventually the walls lean to one side, and finally the roof falls in. That barn roof with the 18-by-18-inch hole was likely gone inside of 10 years. Your house's lasts maybe 50 years; 100, tops.

While all that disaster was unfolding, squirrels, raccoons, and lizards have been inside, chewing nest holes in the drywall, even as woodpeckers rammed their way through from the other direction. If they were initially thwarted by allegedly indestructible siding made of aluminum, vinyl, or the maintenance-free, portland-cement-cellulose-fiber clapboards known as Hardie planks, they merely have to wait a century before most of it is lying on the ground. Its factory-impregnated color is nearly gone, and as water works its inevitable way into saw cuts and holes where the planks took nails, bacteria are picking over its vegetable matter and leaving its minerals behind. Fallen vinyl siding, whose color began to fade early, is now brittle and cracking as its plasticizers degenerate. The aluminum is in better shape, but salts in water pooling on its surface slowly eat little pits that leave a grainy white coating.

For many decades, even after being exposed to the elements, zinc galvanizing has protected your steel heating and cooling ducts. But water and air have been conspiring to convert it to zinc oxide. Once the coating is consumed, the unprotected thin sheet steel disintegrates in a few years. Long before that, the water-soluble gypsum in the sheetrock has washed back into the earth. That leaves the chimney, where all the trouble began. After a century, it's still standing, but its bricks have begun to drop and break as, little by little, its lime mortar, exposed to temperature swings, crumbles and powders.

If you owned a swimming pool, it's now a planter box, filled with either the offspring of ornamental saplings that the developer imported, or with banished natural foliage that was still hovering on the subdivision's fringes, awaiting the chance to retake its territory. If the house's foundation involved a basement, it too is filling with soil and plant life. Brambles and wild grapevines are snaking around steel gas pipes, which will rust away before another century goes by. White plastic PVC plumbing has yellowed and thinned on the side exposed to the light, where its chloride is

weathering to hydrochloric acid, dissolving itself and its polyvinyl partners. Only the bathroom tile, the chemical properties of its fired ceramic not unlike those of fossils, is relatively unchanged, although it now lies in a pile mixed with leaf litter.

After 500 years, what is left depends on where in the world you lived. If the climate was temperate, a forest stands in place of a suburb; minus a few hills, it's begun to resemble what it was before developers, or the farmers they expropriated, first saw it. Amid the trees, half-concealed by a spreading understory, lie aluminum dishwasher parts and stainless steel cookware, their plastic handles splitting but still solid. Over the coming centuries, although there will be no metallurgists around to measure it, the pace at which aluminum pits and corrodes will finally be revealed: a relatively new material, aluminum was unknown to early humans because its ore must be electrochemically refined to form metal.

The chromium alloys that give stainless steel its resilience, however, will probably continue to do so for millennia, especially if the pots, pans, and carbon-tempered cutlery are buried out of the reach of atmospheric oxygen. One hundred thousand years hence, the intellectual development of whatever creature digs them up might be kicked abruptly to a higher evolutionary plane by the discovery of ready-made tools. Then again, lack of knowledge of how to duplicate them could be a demoralizing frustration—or an awe-arousing mystery that ignites religious consciousness.

If you were a desert dweller, the plastic components of modern life flake and peel away faster, as polymer chains crack under an ultraviolet barrage of daily sunshine. With less moisture, wood lasts longer there, though any metal in contact with salty desert soils will corrode more quickly. Still, from Roman ruins we can guess that thick cast iron will be around well into the future's archaeological record, so the odd prospect of fire hydrants sprouting amidst cacti may someday be among the few clues that humanity was here. Although adobe and plaster walls will have eroded away, the wrought iron balconies and window grates that once adorned them may still be recognizable, albeit airy as tulle, as corrosion eating through the iron encounters its matrix of indigestible glass slag.

Once, we built structures entirely from the most durable substances we knew: granite block, for instance. The results are still around today to admire, but we don't often emulate them, because quarrying, cutting, transporting, and fitting stone require a patience we no longer possess. No one since the likes of Antoni Gaudí, who began Barcelona's yet-unfinished Sagrada Familia basilica in 1880, contemplates investing in construction that our great-great-grandchildren's grandchildren will complete 250 years hence. Nor, absent the availability of a few thousand slaves, is it cheap, especially compared to another Roman innovation: concrete.

Today, that brew of clay, sand, and a paste made of the calcium of ancient seashells hardens into a man-made rock that is increasingly the most affordable option for *Homo sapiens urbanus*. What happens, then, to the cement cities now home to more than half the humans alive?

Before we consider that, there's a matter to address regarding climate. If we were to vanish tomorrow, the momentum of certain forces we've already set in motion will continue until centuries of gravity, chemistry, and entropy slow them to an equilibrium that may only partly resemble the one that existed before us. That former equilibrium depended on a sizeable amount of carbon locked away beneath Earth's crust, much of which we've now relocated into the atmosphere. Instead of rotting, the wood frames of houses may be preserved like the timbers of Spanish galleons wherever rising seas pickle them in salt water.

In a warmer world, the deserts may grow drier, but the parts where humans dwelled will likely again be visited by what attracted those humans in the first place: flowing water. From Cairo to Phoenix, desert cities rose where rivers made arid soils livable. Then, as population grew, humans seized control of those aquatic arteries, diverting them in ways that allowed for even more growth. But after people are gone, the diversions will soon follow them. Drier, hotter desert climates will be complemented by wetter, stormier mountain weather systems that will send floods roaring downstream, overwhelming dams, spreading over their former alluvial plains, and entombing whatever was built there in annual layers of silt. Within them, fire hydrants, truck tires, shattered plate glass, condominiums, and office buildings may remain indefinitely, but as far from sight as the Carboniferous Formation once was.

No memorial will mark their burial, though the roots of cottonwoods,

willows, and palms may occasionally make note of their presence. Only eons later, when old mountains have worn away and new ones risen, will young streams cutting fresh canyons through sediments reveal what once, briefly, went on here.

CHAPTER 3



The City Without Us

THE NOTION THAT someday nature could swallow whole something so colossal and concrete as a modern city doesn't slide easily into our imaginations. The sheer titanic presence of a New York City resists efforts to picture it wasting away. The events of September 2001 showed only what human beings with explosive hardware can do, not crude processes like erosion or rot. The breathtaking, swift collapse of the World Trade Center towers suggested more to us about their attackers than about mortal vulnerabilities that could doom our entire infrastructure. And even that once-inconceivable calamity was confined to just a few buildings. Nevertheless, the time it would take nature to rid itself of what urbanity has wrought may be less than we might suspect.



IN 1939, A World's Fair was held in New York. For its exhibit, the government of Poland sent a statue of Władysław Jagiełło. The founder of the Białowieża Puszcza had not been immortalized in bronze for preserving a chunk of primeval forest six centuries earlier. By marrying its queen, Jagiełło had united Poland and his duchy of Lithuania into a European power. The sculpture portrays him on horseback following his victory at the Battle of Grünwald in 1410. Triumphant, he hoists two swords captured from Poland's latest vanquished enemy, the Teutonic Knights of the Cross.