

An Earth WITHOUT PEOPLE



A new way to examine humanity's impact on the environment is to consider how the world would fare if all the people disappeared

Interview with
ALAN WEISMAN

BACK TO NATURE: If all human beings vanished, Manhattan would eventually revert to a forested island. Many skyscrapers would topple within decades, undermined by waterlogged foundations; stone buildings such as St. Patrick's Cathedral (at right in artist's rendering) would survive longer. Weeds and colonizing trees would take root in the cracked pavement, while raptors nested in the ruins and foxes roamed the streets.

EDITORS' INTRODUCTION

It's a common fantasy to imagine that you're the last person left alive on earth. But what if *all* human beings were suddenly whisked off the planet? That premise is the starting point for *The World without Us*, a new book by science writer Alan Weisman, an associate professor of journalism at the University of Arizona. In this extended thought experiment, Weisman does not specify exactly what finishes off *Homo sapiens*; instead he simply assumes the abrupt disappearance of our species and projects the sequence of events that would most likely occur in the years, decades and centuries afterward.

According to Weisman, large parts of our physical infrastructure would begin to crumble almost immediately. Without street cleaners and road crews, our grand boulevards and superhighways would start to crack and buckle in a matter of months. Over the following decades many houses and office buildings would collapse, but some ordinary items would resist decay for an extraordinarily long time. Stainless-steel pots, for example, could last for millennia, especially if they were buried in the weed-covered mounds that used to be our kitchens. And certain common plastics might remain intact for hundreds of thousands of years; they would not break down until microbes evolved the ability to consume them.

SCIENTIFIC AMERICAN editor Steve Mirsky recently interviewed Weisman to find out why he wrote the book and what lessons can be drawn from his research. Some excerpts from that interview appear on the following pages.





WHO MIGHT

Nature, it is said, abhors a vacuum. If humans were to disappear, could another species evolve into a tool-making, crop-raising, language-using beast that would dominate the planet? According to Alan Weisman, baboons might have a reasonable shot. They have the largest brains of any primate besides *Homo sapiens*, and like us they adapted to living in savannas as forest habitats in Africa shrank. Writes Weisman in *The World without Us*: "If the dominant ungulates of the savanna—cattle—disappear, wildebeest will expand to take their place. If humans vanish, will baboons move into ours? Has their cranial capacity lain suppressed during the Holocene because we got the jump on them, being first out of the trees? With us no longer in their way, will their mental potential surge

If human beings were to disappear tomorrow, the magnificent skyline of Manhattan would not long survive them. Weisman describes how the concrete jungle of New York City would revert to a real forest.

"What would happen to all of our stuff if we weren't here anymore? Could nature wipe out all of our traces? Are there some things that we've made that are indestructible or indelible? Could nature, for example, take New York City back to the forest that was there when Henry Hudson first saw it in 1609?"

"I had a fascinating time talking to engineers and maintenance people in New York City about what it takes to hold off nature. I discovered that our huge, imposing, overwhelming infrastructures that seem so monumental and indestructible are actually these fairly fragile concepts that continue to function and exist thanks to a few human beings on whom all of us really depend. The name 'Manhattan' comes from an Indian term referring to hills. It used to be a very hilly island. Of course, the region was eventually flattened to have a grid of streets imposed on it. Around those hills there used to flow about 40 different streams, and there were numerous springs all over Manhattan island. What happened to all that water? There's still just as much rainfall as ever on Manhattan, but the water has now been suppressed. It's underground. Some of it runs through the sewage system, but a sewage system is never as efficient as nature in wicking away water. So there is a lot of groundwater rushing around underneath,

trying to get out. Even on a clear, sunny day, the people who keep the subway going have to pump 13 million gallons of water away. Otherwise the tunnels will start to flood.

"There are places in Manhattan where they're constantly fighting rising underground rivers that are corroding the tracks. You stand in these pump rooms, and you see an enormous amount of water gushing in. And down there in a little box are these pumps, pumping it away. So, say human beings disappeared tomorrow. One of the first things that would happen is that the power would go off. A lot of our power comes out of nuclear or coal-fired plants that have automatic fail-safe switches to make sure that they don't go out of control if no humans are monitoring their systems. Once the power goes off,

PHOTOILLUSTRATION BY KENN BROWN AND PHOTOGRAPH BY EMILY HARRISON (preceding pages); KENN BROWN AND EMILY HARRISON (below left); KENN BROWN (below right); PARK JONG-HAK (Weisman); DAVID KEATING/CORBIS (baboon)

[THE INTERVIEWEE]



Alan Weisman is author of five books, including the forthcoming *The World without Us* (St. Martin's Press, 2007). His work has appeared in *Harpers*, the *New York Times Magazine*, the *Los Angeles Times Magazine*, *Discover*, the *Atlantic Monthly*, *Condé Nast Traveler*, *Orion* and *Mother Jones*. Weisman has been heard on National Public Radio and Public Radio International and is a senior producer at Homelands Productions, a journalism collective that produces independent public radio documentary series. He teaches international journalism at the University of Arizona.

HUMANITY'S LONG FADE-OUT: A TIMELINE FOR THE FALL OF NEW YORK

2 DAYS AFTER THE DISAPPEARANCE OF HUMANS

Without constant pumping, New York City's subway system completely fills with water.



7 DAYS

Nuclear reactors burn or melt down as their water-cooling systems fail.

1 YEAR

Street pavements split and buckle as water in the cracks freezes and thaws.

2 TO 4 YEARS

In New York and other cities, cracked streets become covered with weeds and, later, colonizing trees whose roots upheave sidewalks and wreak havoc with already damaged sewers.



REPLACE US?

to the occasion and push them into a sudden, punctuated evolutionary scramble into every cranny of our vacant niche?"

Hollywood, with its long series of *Planet of the Apes* movies, seems to agree with Weisman. A second out-of-Africa scenario could play out hundreds of thousands of years after the first. One wonders what the baboon archaeologists of the future would make of the extraordinary human artifacts—sculptures, cutlery, plastic bags—buried just beneath their feet. Weisman guesses that “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.” Even as ghosts, we could continue to shape the future.

—Edward Bell

the pumps stop working. Once the pumps stop working, the subways start filling with water. Within 48 hours you’re going to have a lot of flooding in New York City. Some of this would be visible on the surface. You might have some sewers overflowing. Those sewers would very quickly become clogged with debris—in the beginning the innumerable plastic bags that are blowing around the city and later, if nobody is trimming the hedges in the parks, you’re going to have leaf litter clogging up the sewers.

“But what would be happening underground? Corrosion. Just think of the subway lines below Lexington Avenue. You stand there waiting for the train, and there are all these steel columns that are holding up the roof, which is really the street. These things would start to corrode and,

eventually, to collapse. After a while the streets would begin cratering, which could happen within just a couple of decades. And pretty soon, some of the streets would revert to the surface rivers that we used to have in Manhattan before we built all of this stuff.

“Many of the buildings in Manhattan are anchored to bedrock. But even if they have steel beam foundations, these structures were not designed to be waterlogged all the time. So eventually buildings would start to topple and fall. And we’re bound to have some more hurricanes hitting the East Coast as climate change gives us more extreme weather. When a building would fall, it would take down a couple of others as it went, creating a clearing. Into those clearings would blow seeds from plants, and those seeds would establish themselves in the cracks in the pavement. They would already be rooting in leaf litter anyhow, but the addition of lime from powdered concrete would create a less acidic environment for various species. A city would start to develop its own little ecosystem. Every spring when the temperature would be hovering on one side or the other of freezing, new cracks would appear. Water would go down into the cracks and freeze. The cracks would widen, and seeds would blow in there. It would happen very quickly.”

How would the earth’s ecosystems change if human beings were out of the picture? Weisman says we can get a glimpse of this hypothetical world by looking at primeval pockets

MORE TO EXPLORE

Plastics and the Environment. Edited by Anthony Andrady. John Wiley & Sons, 2003.

Twilight of the Mammoths: Ice Age Extinctions and the Rewilding of America. Paul S. Martin. University of California Press, 2005.

Extinction: How Life on Earth Nearly Ended 250 Million Years Ago. Douglas H. Erwin. Princeton University Press, 2006.

The Revenge of Gaia. James Lovelock. Allen Lane/Penguin Books, 2006.

KENN BROWN AND EMILY HARRISON

4 YEARS

Without heat, homes and office buildings fall victim to the freeze/thaw cycle and begin to crumble.

5 YEARS

Large parts of New York may be burned by now; a lightning strike on uncollected dead branches in Central Park could easily start a catastrophic fire.



20 YEARS

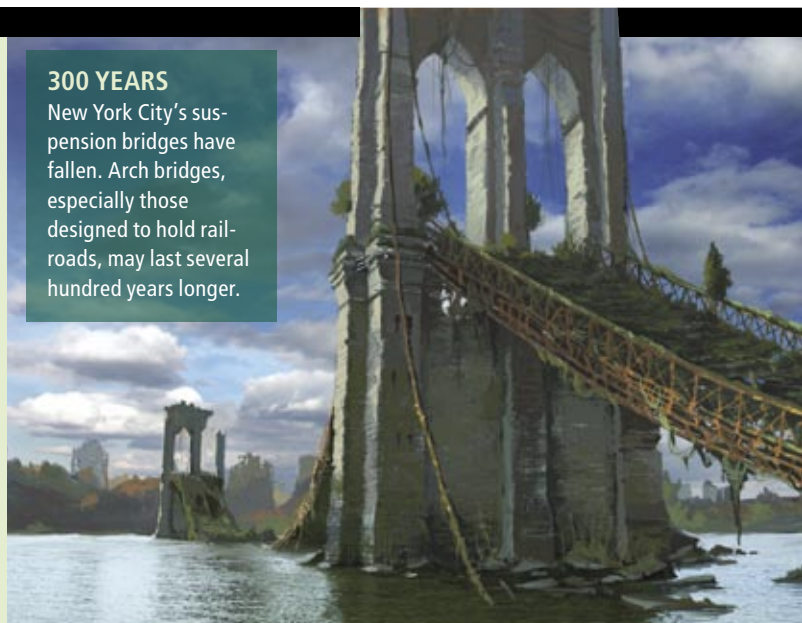
Dozens of streams and marshes form in Manhattan as collapsed streets fill with water.

100 YEARS

The roofs of nearly all houses have caved in, accelerating the deterioration of the structures.

300 YEARS

New York City’s suspension bridges have fallen. Arch bridges, especially those designed to hold railroads, may last several hundred years longer.



500 YEARS Mature forests cover the New York metropolitan area.

5,000 YEARS

As the casings of nuclear warheads corrode, radioactive plutonium 239 is released into the environment.

15,000+ YEARS

The last remnants of stone buildings in Manhattan fall to advancing glaciers as a new ice age begins.



35,000 YEARS

Lead deposited in the soil from automobile emissions in the 20th century finally dissipates.

100,000 YEARS

The concentration of carbon dioxide in the atmosphere returns to preindustrial levels.

10 MILLION YEARS

Bronze sculptures, many of which still retain their original shape, survive as relics of the human age.



where humanity's footprint has been lightest.

"To see how the world would look if humans were gone, I began going to abandoned places, places that people had left for different reasons. One of them is the last fragment of primeval forest in Europe. It's like what you see in your mind's eye when you're a kid and someone is reading Grimm's fairy tales to you: a dark, brooding forest with wolves howling and tons of moss hanging off the trees. And there *is* such a place. It still exists on the border between Poland and Belarus. It was a game reserve that was set aside in the 1300s by a Lithuanian duke who later became king of Poland. A series of Polish kings and then Russian czars kept it as their own private hunting ground. There was very little human impact. After World War II it became a national park. You go in there and you see these enormous trees. It doesn't feel strange. It almost feels right. Like something feels complete in there. You see oaks and ashes nearly 150 feet tall and 10 feet in diameter, with bark furrows so deep that woodpeckers stuff pinecones in them. Besides wolves and elk, the forest is home to the last remaining wild herd of *Bison bonasus*, the native European buffalo.

"I also went to the Korean DMZ, the demilitarized zone. Here you have this little stretch of land—it's about 150 miles long and 2.5 miles wide—that has two of the world's biggest armies facing off against each other. And in between the armies is an inadvertent wildlife preserve. You see species that might be extinct if it weren't

for this one little piece of land. Sometimes you'll hear the soldiers screaming at one another through loudspeakers or flashing their propaganda back and forth, and in the middle of all this tension you'll see the flocks of cranes that winter there.

"But to really understand a world without humans, I realized I would have to learn what the world was like before humans evolved. So I went to Africa, the place where humans arose and the only continent where there are still huge animals roaming around. We used to have huge animals on all the other continents and on many of the islands. We had enormous creatures in North and South America—giant sloths that were even bigger than the mammoths; beavers the size of bears. It's controversial as to what actually wiped them out, but a lot of indications point the finger at us. The extinctions on each landmass seemed to coincide with the arrival of humans. But Africa is the place where human beings and animals evolved together, and the animals there learned strategies to avoid our predation. Without humans, North America would probably become a giant deer habitat in the near term. As forests would become reestablished across the continent, eventually—in evolutionary time—larger herbivores would evolve to take advantage of all the nutrients locked up in woody species. Larger predators would evolve accordingly."

THE WINNERS ...

Our demise would be good news for many species. Below is a small sample of the animals and plants that would benefit from the disappearance of humans.

BIRDS: Without skyscrapers and power lines to fly into, at least a billion birds would avoid breaking their necks every year.

TREES: In New York, oaks and maples, along with the invasive Chinese aianthus, would claim the city.

MOSQUITOES: As extermination efforts cease and wetlands rebound, great clouds of the insects would feed on other wildlife.

FERAL HOUSE CATS: They would probably do well dining on small mammals and birds in the posthuman world.



Thinking about an earth without humans

KENNY BROWN (above left); JEAN-FRANCOIS POE VIN (above right); RUSSELL GLENISTER (image 100); CORBIS (cat)



1 BILLION+ YEARS

As the sun brightens, the earth heats dramatically, but insects and other animals may adapt.

5 BILLION YEARS

The earth vaporizes as the dying sun expands and consumes all the inner planets.



TRILLIONS OF YEARS

Broadcasts of *The Twilight Zone* and other television shows, faint and fragmented, still travel outward through space.

can have practical benefits. Weisman explains that his approach can shed new light on environmental problems.

“I’m not suggesting that we have to worry about human beings suddenly disappearing tomorrow, some alien death ray taking us all away. On the contrary, what I’m finding is that this way of looking at our planet—by theoretically just removing us—turns out to be so fascinating that it kind of disarms people’s fears or the terrible wave of depression that can engulf us when we read about the environmental problems that we have created and the possible disasters we may be facing in the future. Because frankly, whenever we read about those things, our concern is: Oh, my God, are we going to die? Is this going to be the end? My book eliminates that concern right at the beginning by saying the end has already taken place. For whatever reason, human beings are gone, and now we get to sit back and see what happens in our absence. It’s a delicious little way of reducing all the fear and anxiety. And looking at what would happen in our absence is another way of looking at, well, what goes on in our presence.

“For example, think about how long it would take to wipe out some of the things we have created. Some of our more formidable inventions have a longevity that we can’t even predict yet, like some of the persistent organic pollutants that began as pesticides or industrial chemicals. Or some of our plastics, which have an enormous role in our lives and an enormous presence in the

... AND THE LOSERS

No doubt about it: our parasites and livestock would miss us. Below is a list of species that would probably suffer as a result of our disappearance.

DOMESTICATED CATTLE: They would become a delicious steak dinner for mountain lions, coyotes and other predators.

RATS: Bereft of our garbage, they would either starve or be eaten by raptors nesting in fallen buildings.



COCKROACHES: Without heated buildings to help them survive the winter, they would disappear from temperate regions.

HEAD LICE: Because these insects are so specifically adapted to humans, our demise would lead to their extinction.

environment. And nearly all of these things weren’t even here until after World War II. You begin to think there’s probably no way that we are going to have any kind of positive outcome, that we are looking at an overwhelming tide of geologic proportions that the human race has loosed on the earth. I raise one possibility toward the end of the book that humans can continue to be part of the ecosystem in a way that is much more in balance with the rest of the planet.

“It’s something that I approach by first looking at not just the horrible things that we have created that are so frightening—such as our radioactivity and pollutants, some of which may be around until the end of the planet—but also some of the beautiful things that we have done. I raise the question, Wouldn’t it be a sad loss if humanity was extirpated from the planet? What about our greatest acts of art and expression? Our most beautiful sculpture? Our finest architecture? Will there be any signs of us at all that would indicate that we were here at one point? This is the second reaction that I always get from people. At first they think, This world would be beautiful without us. But then they think, Wouldn’t it be sad not to have us here? And I don’t think it’s necessary for us to all disappear for the earth to come back to a healthier state.”



To listen to a podcast of the interview with Alan Weisman, log on to www.SciAm.com/ontheweb