

1. Water

A while ago, in a nature documentary, I saw footage of a whale fall—the carcass of a sperm whale slowly sinking into those lightless depths of the ocean where the aliens live: the deep-sea caterpillars, the neon eels, and the fish who wear headlamps. In the abyssal zone, it's rare to have thirty tons of food drop from heaven. A team of six-gill sharks arrived soon after the whale's body came to rest. One by one, they drove themselves face-first into its huge sides—they seemed to take turns doing so. Each bite released a cloud of dim red blood. The sharks fed for days. After they left, the footage showed spider crabs and rock crabs creeping out over the corpse, which had, in the still water, taken on a strangely woolly appearance. Pale innards ballooned through the larger wounds in the blubber. Time lapsed, and then the footage showed the last edible scraps of whale flesh, covered with and surrounded by tiny mites and grains, all feeding. Scabbardfish darted in and out to prey on the parasites. Time lapsed again. Then there was nothing left but a skeleton that looked like the hull of an old, wrecked boat. Over days, weeks, months, then years, the camera closed in on the minuscule zombie worms who entered these bones, injecting acid to tunnel down and extract traces of fat. It can take decades for this process to crumble the fragmented bones into particles and disperse them into other forms until the entire whale has been transubstantiated.

I found the footage of the whale fall mesmerizing, though not exactly pleasant to watch. Certainly, there was a vitality to these queer, psychedelic beings and their inventive methods for making new life. The better part of me could appreciate that. But there was also something in me that felt sickened. I told myself that it was a natural process. Many people would describe it as beautiful. But despite my admiration for the chains of renewing energy, a part of me didn't want to watch the whale's majestic body being parceled out in units the size of a worm's bite. I think it was a sense of affinity—I understood the quality of beauty, theoretically, but in a more immediate and intense way, my body sensed that a human in the abyssal zone would take the place of the whale and not the zombie worm.

Christina Sharpe's *In the Wake: On Blackness and Being*, a study of the historical legacies of the transatlantic slave trade, refers in passing to marine scientists' studies of whale fall. In a slanting, revelatory passage, Sharpe describes the physical details of what would have happened to the body of a person thrown overboard: "There have been studies done on whales that have died and have sunk to the sea-floor. These studies show that within a few days the whales' bodies are picked almost clean by benthic organisms—those organisms that live on the seafloor." Smaller, human bodies, Sharpe tells us, would be unlikely to make it to the seabed in one piece.

Sharpe creates a speculative but informed account of the aftermath of the *Zong* massacre of 1781, in which more than 130 enslaved people were abandoned in the ocean. With the help of a marine geologist colleague, she describes the physical experience of a person who is thrown overboard, who encounters deepwater waves and is carried in the wake for a time, who floats and then sinks and drowns. She begins this narrative with disconcertingly technical terminology of transverse waves and perpendiculars, describing how the passage of a slave ship through water would create a wake—a V shape spreading outward behind the ship and disrupting the motion of the waves, moving across expanses of ocean with a ripple effect, diminishing as it widened. She discusses the depleted body mass of the people who were imprisoned on the ships. She mentions the sharks that traveled behind them. Then she poses a question: What happened to the bodies after they drowned?

Because nutrients cycle through the ocean (the process of organisms eating organisms is the cycling of nutrients through the ocean), the atoms of those people who were thrown overboard are out there in the ocean even today. They were eaten, organisms processed them, and those organisms were in turn eaten and processed, and the cycle continues. Around 90 to 95 percent of the tissues of things that are eaten in the water column get recycled.

15

I had not encountered anything like this strangely simple history despite years of studying the slave trade at secondary school and university, and reading about the ocean and visiting it. In theory, Sharpe's composed, precise narrative of the disintegration of these people—drowning as an ecological phenomenon—could have the effect of naturalizing the atrocities it recounts. But the alternative story that comes out of these carefully verified facts gives a very different impression. Its disturbing simplicity passes from documentary to something else, like the slow footage of the whale fall. Frame by frame, the film shows only what was present: a series of apparently simple organisms, busy with their ordinary metabolic processes. But gradually, as species take part in a complex choreography of feeding and rotting, the enormous diversity and complexity of the abyssal zone comes into view, and a dilated understanding of life emerges. Sharpe's story makes a different enormity appear. She describes what happened in the wake of the *Zong* two and a half centuries ago with precision, but her description leads to a wider understanding of the lasting effects of the wake. She invites her marine geologist colleague to explain the ecological legacy of these drowned bodies. The sodium of human blood, her colleague explains, would have a residence time ("the amount of time it takes for a substance to enter the ocean and then leave the ocean") of 260 million years. In this very particular respect, the Atlantic carries a physical testament to the transatlantic slave trade, in the present. It continues to cycle around the planet, at scales too minute and dispersed to be detectable by the ordinary human body. If you have ever swum in the ocean at Lisbon or Atlantic City, Cape Town or Rio de Janeiro, Monrovia or La Rochelle, Paramaribo or Galway, you've swum in this blood.

2. Fire

When I first read Sharpe’s history of systematic cruelty told as a story of particles and mineral traces, it seemed like an ecological narrative of a kind I hadn’t read before, and I thought of the title of a nonfiction book by the German novelist W. G. Sebald that I had read years earlier: *On the Natural History of Destruction*. I went back to the book to check and found that the title wasn’t Sebald’s phrase—it originated, in fact, not with a literary publication but with a killing campaign.

Solomon Zuckerman was a senior scientific adviser to the British government during World War II. His job, working on various research teams, was to design Allied bombing campaigns so that they would wreak maximum destruction. Over the course of the war, Zuckerman took a particularly innovative approach to his investigations. He had to-scale images of bomb plots drawn up for his inspection. He analyzed photographs of bombed German cities. He carried out research into night vision and comparative methods of troop transport. He had the idea of commissioning all schoolchildren ages ten to fourteen in the city of Hull to write an essay on the theme “what happened to me in an air raid.” (The results of this project were “roughly analysed, but [he] never had time to get down to the job of producing a picture of an air raid as seen by children.”) There was something holistic and questing about Zuckerman’s search to understand the force of destruction. But every piece of information he gathered was driving towards a single purpose: to use this knowledge to maximize the efficacy of Allied bombing campaigns, which is to say, to raze more buildings and kill more people. Zuckerman helped to standardize a kill rate for different types of bombs that indicated casualties per area. He commended the use of smaller bombs, such as fragmentation bombs, which counterintuitively caused greater damage, as they lodged themselves in bodies with a depth and obstinacy that would defy medical efforts to extract them.

Zuckerman was no pacifist. But when, towards the end of the war, he was able to travel to mainland Europe to inspect some of the effects of his projects on German soil, something was exposed: he hadn’t foreseen the true consequences of what he was doing. His autobiography states that he was witness to a “devastation ... greater than anything I had ever seen.” And yet, he describes this devastation only glancingly, in generic terms (a town is “badly damaged”), or in brief glimpses (trees in a wood near Aachen have suffered “decapitation”). The images of destruction are shadowy. There’s a sense that something is missing.

Back home in England, over a meal with the writer Cyril Connolly, Zuckerman devised a plan to write an article for *Horizon*, a journal that Connolly edited. The article would be called “On the Natural History of Destruction,” and it would detail the effects of the bombing of Cologne and Aachen. Zuckerman never wrote it. He was never able to express what he had seen: “My first view of Cologne, and particularly of the cathedral, cried out for a more eloquent piece than I could ever have written.”

In the late 1990s, Sebald picked up the pieces of this fragmented project. He went into libraries and archives to study photographs and contemporary accounts of the Allied bombing campaigns from the perspective of Germans on the ground. Out of these documents he pieced together an ecology of the aftermath. Like Sharpe’s account of the slave ship’s motion in the water, Sebald’s narrative begins with some technicalities of horror. He describes the bombing raid as a physical event—its sounds, fires, and the waves of pressure—and as with Sharpe’s account, the piecemeal simplicity of this history is oddly unsettling. There is something dissociative about a description of war as chains of interactions between beings and forces, rather than as the exclusively human story of nations and disagreements. The violence and intense heat of the explosions left behind a litter of biological matter. Sebald describes the effects—on the ruined buildings, parks, and streets—of melted fat, of clumps of flesh and bone, and of bodies cooked in the water that had gushed from bursting boilers. He includes a grainy photograph of charred black forms on cobblestones, and he also mentions that the lilac and chestnut trees had a second flowering in the spring of 1943. In this, an account of a bombing campaign, it’s Sebald’s attention to the habits of the flowering lilac, rather than his depiction of charred bodies, that feels out of place.

By collecting incidental details from contemporary narratives, Sebald was able to put together a description of the wider environment after the bombs: standing chimneys, torn net curtains, and the smell of decomposition in the air. People experienced a “sudden craving for perfume.” The bombing raids made refugees of entire cities’ populations. Moraines of rubble stood the height of two-story buildings. People flowed from one place to another. There was nowhere to rest. And it wasn’t only human residents who were displaced and mobilized. The most striking change on the ground was observed in the populations of parasitic creatures who thrive on unburied bodies: “‘Rats and flies’ ... the multiplication of species that are usually suppressed in every possible way.” Over time, plants and larger animals began to reestablish themselves. One contemporary author noted that the date of a building’s destruction could be inferred from the maturity and diversity of the weeds, flowers, and trees growing through its ruins.

This depiction of Germany’s ruined cities originated as lectures that Sebald delivered in Zurich in 1997. The lectures were called *Luftkrieg und Literatur*. The word *Luftkrieg*, “air war,” is a German military term for aerial warfare—the lectures most obviously address Allied air-force campaigns and their effects on Germany—but the title has other resonances, in Sebald’s time and today. Where he describes how a bomb’s physical effects are held in the atmosphere, *Luftkrieg* could also be taken to mean war *in* the air. The atmosphere still holds those effects long after the war is over. And now, after Sebald’s time, *Luftkrieg* has another meaning again. In the twenty-one years since the geological term “Anthropocene” was popularized by Paul Crutzen, the idea has gained traction among the geological community, though there is still no agreed date for the inception of the Anthropocene as an epoch. One period that has been nominated is the historical moment that Sebald is describing: the final years and immediate aftermath of World War II. During this time, explosives of unprecedented power, including the first atomic bombs, were detonated. This moment is seen as a critical turning point because the

detonations left discernible and lasting effects on the atmosphere, including a spike of radionuclides—a human signature on the air. Consensus (among geologists, at least) is gathering around this spike as a marker for the beginning of the Anthropocene, a period of anthropogenic influence on the planet that is causing an extinction emergency. If this period is ratified as the inception of the Anthropocene, then the *Luftkrieg* that Sebald describes is also a war on the air itself, a war on the breathable world.

3. Air

In 1997, the year that Sebald delivered his lectures, Belarusian author Svetlana Alexievich published *Chernobyl Prayer* (released in the US as *Voices from Chernobyl*), a tale of over fifty million radionuclides. The book is an oral history of the infamous nuclear disaster of 1986, as told to the author by survivors. It carries an oblique epigraph taken from the Georgian philosopher Merab Mamardashvili: “We are air: we are not earth.” War on the air is war on life.

Chernobyl and its surrounding towns, villages, and forests have become known as the Exclusion Zone. Alexievich’s book is a collage of her conversations with inhabitants of, and exiles from, the Exclusion Zone. As a collective, these voices create a natural history of destruction that takes in more than any individual would ever be able to witness. The chorus notices how wildlife responds to the disaster, and then how human bodies were poisoned, and then how animals were treated, and then what happened to the landscape, and then, over time, the lingering sicknesses and the effects of death and grief. They describe their own bodies as contaminated objects.

The chronology of this natural history, as it’s told in the book, begins before the human community knew that anything had happened. Several people noticed that other species were exhibiting unusual behaviors that morning. Anglers, digging for worms, couldn’t find any. The worms seemed to have buried themselves much deeper than usual, a good half meter down in the earth. A beekeeper who went out into his garden was struck by the silence: “Couldn’t hear a single bee—not one! ... The bees knew, but we didn’t.”

Only after the civilians were transported out of the Zone did the incident begin to manifest itself to the wider human population. Firefighters, soldiers, and volunteers began the attempt to put out fires, to seal the leak, and to clean up. They took the force of the radioactivity and were the first to embody it. Alexievich’s book begins with an extraordinary narrative that is both a passionate love story and a detailed pathology of radiation poisoning. It is told by Lyudmila, who had, at the time of the explosion, recently married Vasily, “Vasya,” a firefighter. Vasya was called in to a fire at the power plant in the middle of the night. At seven o’clock in the morning, he hadn’t returned. Lyudmila went to the local hospital. There was a police cordon outside. She pushed and cajoled her way into the building, and inside she found Geiger counters “going berserk.” Lyudmila was six months pregnant.

She begged to see her husband and was allowed through, for fifteen minutes. “He was all puffed up and swollen. His eyes were almost hidden.” At ten o’clock that morning, the first person died, an operator from the plant. Lying in bed, Vasya described to his wife how the roof of the power plant had been covered in burning bitumen: it was “like walking on hot tar.”

A friend advised Lyudmila to give Vasya milk, and the two went off to get some for all the first responders. But when they drank it, they became violently sick. They lost consciousness. Vasya was put on a drip. Meanwhile, outside the hospital, human life continued more or less as normal. People were buying bread and sweets from the shops in town. Pastries were sold from open trays. But there were soldiers everywhere, and workers washing down the streets with white powder.

The next morning, the firemen were flown to Moscow and their clothing was burned. Lyudmila followed Vasya there, concealing her pregnancy from his medical team so they would permit her to visit him. She was told that Vasya’s central nervous system and bone marrow had been affected. Then his stomach started rejecting food. “He began changing: every day, I found a different person. His burns were coming to the surface. First these little sores showed up inside his mouth[...]. The lining of his mouth was peeling off in these white filmy layers. The colour of his face ... The colour of his body ... It went blue. Red. Greyish-brown.” Hospital staff warned her not to get too close to him. He was given a bone marrow transplant. “He was passing stools maybe twenty-five, thirty times a day. All bloody and goeey. The skin on his arms and legs was cracking. His whole body was coming up in blisters. When he turned his head, clumps of hair were left on the pillow.” Clean sheets were rapidly bloodied. Doctors told Lyudmila that this body was dangerously radioactive: “This isn’t your husband, it isn’t the man you love.” She stayed at his bedside.

During the last two days of Vasya’s life, Lyudmila said, she’d “lift his arm and the bone would be all wobbly, hanging loose, the tissue hanging out.” He was coughing up pieces of lung and liver. He spent a fortnight in the radiation sickness clinic. “It takes fourteen days to die.”

Lyudmila’s account of what happened to the body of a first responder is attentively detailed, itemizing the intimacies of the body’s deterioration and the dates and times of day when each event took place. After Vasya’s death, the slower or less visible effects of the radiation became apparent. Lyudmila’s baby died soon after she was born. Lyudmila said that many of the doctors and nurses who had first treated the firemen in the hospital, where the Geiger counters had been going berserk, also, in time, fell sick. At the time of her conversation with Alexievich, Lyudmila was living on a block in Kiev to which many former employees of the nuclear plant had been relocated. These workers, she said, “[have] all got serious illnesses, disabilities.” Lyudmila herself, though still young, had recently suffered a stroke. The medium- and long-term effects of the accident at Chernobyl on the people of Ukraine and Belarus are still disputed, but there is evidence of elevated rates of birth defects and infertility, as well as leukemias and other terminal diseases across large populations and wide distances.

After the evacuation of the Exclusion Zone, a few people insisted on returning to their homes, even though it was, and still is, illegal to live there. They witnessed the disturbing tokens of an irradiated environment and recalled these signs for Alexievich. One woman described how the hens’ combs had turned from red to black. “And we couldn’t make cheese. We went a month without soft cheese or hard. The milk wouldn’t sour, it curdled into lumps, these white lumps.” The vegetable plot “went white, completely white, like it was dusted with something.” Only the “Colorado beetles carry on crawling, same as before, eating our spuds, gobbling up every last leaf. They are used to poison. Just like us.”

Alexievich also spoke to the cleanup workers on the so-called bio-burial sites, who had a “new human yet inhuman task”: they buried earth in the earth—that is, “they buried in concrete bunkers contaminated layers of soil, along with their entire populace of beetles, spiders and maggots. Insects whose names they didn’t know or couldn’t remember. They had an entirely different understanding of death, encompassing everything: from the birds to the butterflies.” One speaker described the landscape that had been created anew by this process as “a genuine moonscape: fields covered in white dolomite, stretching out to the horizon.” The surface layer of contaminated soil had been removed, and the dolomite sand poured in its place. Birds lurched out of the sky onto the windscreen of his car, “as though they were blind... They seemed suicidal.”

Later, Soviet authorities sent marksmen into the Exclusion Zone to dispose of the contaminated domestic animals who remained. Alexievich, on one of her own trips into the Zone, heard the “shrieking” and “helpless cries” of the animals. One marksman told her that the animals “couldn’t understand why we were killing them. They were easy to kill. These are pets: they don’t fear guns, don’t fear man, come running to a human voice.” He described killing pet tortoises, rabbits, coypus, a poodle, a nursing Alsatian with her puppies. “Not a pleasant feeling.” Horses and cattle, they did not shoot.

Over time, the speakers bore witness to the Zone’s slow return to feral and wild animals. Foxes took the chickens, and wolves got to some of the cattle. Others were sold abroad. “The heifers had leukemia, so they flogged them off cheap.” Like Sebald and Sharpe, Alexievich is attentive not only to the human world, but to how anthropogenic destruction articulates itself on a wide landscape. The final phase of Alexievich’s natural history is this expansion across global spaces. Like the exported cattle, the radiation traveled across continents: by day four, Alexievich writes, fallout clouds were drifting above Africa and China.

4. Earth

These natural histories of destruction are distinct—they’re not the same story. Only a revolutionary or confused historian would consider Chernobyl, the transatlantic slave trade, and World War II in the same study. They have different causes, victims, and legacies, and each author is concerned with a distinct subject. Sharpe’s subject is “Blackness and being.” Her book was published in 2016, and so she was writing and thinking in a political climate different from that of Sebald and Alexievich in the late 1990s. Sebald’s concern was German cultural memory of World War II. For Alexievich, the new world of the accident at Chernobyl was the story. These different subjects are brought into focus in the books, and they are irreducible: they can’t be dissolved into one another.

As I read these very different books, then, I wondered why I had the strong impression that they shared something—that their way of inhabiting these worlds had some common vision, one that did not diminish the distinct nature of their interest. Each narrative approaches a complex tragedy in a way that is disconcertingly down-to-earth. Each history gives fine-grained details of what happened, where, when, and how. Each notices multispecies interactions and the environmental stories that arise within and through human catastrophe, attentive to minute organisms and to global spaces, so that humanity comes to be shown as part of a living world—not in a sentimental sense, but physically. The intimate ephemera and experience of human life—net curtains, newlywed passion, the panicky feeling of being caught in a rising wave—are involved with benthic organisms, heifers, potatoes, dolomite sand, cockroaches, flowering chestnuts, six-gill sharks, and Colorado beetles. All of these things are continuous in a world that also contains the bitumen that stuck to Vasya’s boots, the cesium 137 and tellurium 132 that were released from the No. 4 reactor; the thermite and magnesium used in the bombs that were dropped on Dresden; the planks of English oak that built the ships. Over a decade ago, the historian Dipesh Chakrabarty wrote an influential essay on how climate change affects historical narrative, and his first premise is that “anthropogenic explanations of climate change spell the collapse of the age-old humanist distinction between natural history and human history.” Even in 2009, this didn’t feel like a radical idea. And yet it’s still unusual for any storyteller—historian or novelist—to describe the effects of a war on a particular species of insect. It’s still unusual for an author who is writing on slavery to pay attention to the residence time of sodium in the ocean. There are exceptions to this—Indigenous narratives and science fiction come to mind—but within a wide and frequently mainstreamed tradition, feelings and particles, thoughts and weather fronts, seem to exist on separate planets. We find ourselves, as Alexievich puts it, “living in one world, while our minds remain stuck in another.” “We can’t catch up with reality.”

The shared experience of these distinct narratives is the experience of catching up with reality. Each is the story of a disaster caused by white cultures, told in a plain and literal form. They show how white history has inscribed itself on the land, in the sea, and in the air. The ecology of anthropogenic disaster, as we see it here, is the story of extermination as both systematic and uncontrollable. Bodies starve for breath underwater and melt in extraordinary heat; chromosomes are pulled apart by radiation. As accounts of what humans are capable of, these historical narratives do not give much to hope for. Then why write or read or even think about them—catastrophe, disaster, atrocity, mistake—and what does anybody gain by itemizing how they happened on the ground? None of the authors here try to conceal

their sense of uncertainty about the direction they are taking as they attempt to write about horror that is big and bewildering. Sebald frets over the question of how to write from “the ruins of an annihilated world.” Sharpe asks herself, how does one account for “surviving the ship when the ship and the un/survival repeat?” Alexievich wonders, in her introduction to *Chernobyl Prayer*, “What is this book about? Why have I written it?”

These questions are tentative and inconclusive because they are questions put to the present. Each author is clear about this: their story is not consigned to the past; it unfolds in the reader’s presence. Sebald is concerned not with recording what the war was but with the war’s memory and legacy. Even as he was writing, at the end of the twentieth century, there was no answer to the question of how to confront the suffering of Nazi citizens—of whether to confront their suffering at all. Perhaps this was why he found himself struggling to uncover the simple facts about their experiences. All the documents he came across, even the most personal, were sanitized, elliptical, clichéd. Postwar novels about life during the bombing campaigns were elaborately overwritten. Sebald came to believe that German writers had been instrumental in the deliberate and collective forgetting of the essential details of the bombing raids, “a self-imposed silence.”

Why does this matter? When confronted with “vast catastrophe,” Sebald writes, it is the simple and truthful account that is worth creating. He compares the German literature to a personal diary kept by a doctor in Hiroshima, Japan, during the same period. In plain, factual prose, the doctor recorded experiences in Hiroshima during and after the explosion of the American nuclear bomb. Sebald describes the Hiroshima diary as a text “notable for [its] precision and responsibility.” “The ideal of truth inherent in [the] entirely unpretentious objectivity [of works such as these] ... proves itself the only legitimate reason for continuing to produce literature in the face of total destruction.” *On the Natural History of Destruction* wants to show that what we remember of our pasts, and what we choose to forget, shapes the character of every emergent world. And this is a process that Sharpe discovers over and over in the stories of *In the Wake*. She shows how historical atrocity is a condition of the present: the transatlantic slave trade is animated, today, in oppressive or violent anti-Black laws, systems, and human interactions. The book, as the title suggests, is not only the story of the Atlantic slave ships but also the story of their widening wake: how the legacies of the transatlantic slave trade have lasted and changed shape with time, creating new forms of dispossession and bodily danger, “the common conditions of Black being in the wake.” Sharpe begins with the physical events of the transverse waves at a slave ship’s stern, but from there she finds Hurricane Katrina, medical inequalities, the twenty-first-century carceral system, police brutality, and everyday racism being drawn into the outspreading waves of the wake. She quotes Toni Morrison: “It is all now.”

Alexievich is equally clear that her story should not be seen as past. “Chernobyl is not over. It has only just started.” This is not a book about Chernobyl as a localized geography, but a book “on the world of Chernobyl,” in the sense that the physical effects of the disaster have extended across the planet, altering the experience of time and space.

We’re still using the old concepts of “near and far,” “them and us.” But what do “near” and “far” actually mean after Chernobyl, when, by day four, the fallout clouds were drifting above Africa and China? The earth suddenly became so small, no longer the land of Columbus’s age. The world was infinite. Now we have a different sense of space.

“There’s nowhere to hide,” she writes elsewhere. “Not on land, in water or in the skies.” These white ecologies are stories of the planet that we live on now. Chernobyl’s radiation is still in Earth’s atmosphere. The buildings of Aachen and Dresden are still discolored by smoke from wartime explosions. The slave ship’s wake is still breaking in waves on Atlantic beaches.

A while ago, in a nature documentary, I saw footage of Pripyat, a ghost city inside the Chernobyl Exclusion Zone. David Attenborough’s gentle voice describes how, during the years following the evacuation of the area, “the wild has reclaimed the space.” I watched a red fox exploring an abandoned building, stocky wild ponies looking through empty windows. There were aerial shots of trees growing up in the spaces between tower blocks. “The forest has taken over the city.” Attenborough tells his viewers that the evacuation of the Exclusion Zone has turned the area into a sanctuary for animals that are very rare elsewhere. This was an incidental consequence of the disaster—an accident. It is, he says, “powerful evidence that however grave our mistakes, nature will ultimately overcome them.”

Attenborough, a nature broadcaster in his nineties, was reflecting on the changes in the environment that have been brought about over his lifetime. He wasn’t sentimental, noting coolly that while life on Earth is resilient, the human species may, or may not, survive. Even so, his careful, generous, informed narrative did not mention the conditions of the “sanctuary” he was describing. He needed the Exclusion Zone to be an exemplary landscape through which humans might glimpse hope to “make amends” and to “once again become a species in balance with nature.” And so he didn’t—couldn’t—mention the glaring fact that everything we watched (the slender birches, the horses playing, the elk picking a new pathway across a disused railway line) was irradiated. Nobody knew for certain how much, or what the damage would be. Watching the footage, I wondered why the fact that the environment was still highly radioactive was unmentionable. It wasn’t as though the viewers didn’t know. Of course, there was nothing to actually see—the animals weren’t visibly disfigured. I found another, shorter film about wildlife in the Exclusion Zone, in which an ecologist spoke to National Geographic about this condition. Like Attenborough, the ecologist noted the abundance of wildlife in the Exclusion Zone. Populations of raccoons, gray wolves, and red foxes were all thriving, apparently. But he also discussed a reality that is not visible to human viewers. The animals, he said, “appear very healthy on the surface.” This doesn’t necessarily imply that there aren’t “more subtle genetic effects.”

Perhaps the most disturbing detail in *Chernobyl Prayer* wasn't the execution of innocent pets, nor the peeling of a young man's skin, but the fact that so many of Alexievich's interlocutors described the experience of nothing—the lack of experience altogether. Many speakers discussed how they couldn't see or feel any change as the radiation pervaded their environment and their own bodies. One former member of the Belarusian parliament described how he entered the area as a visitor, "thinking it would all be covered in grey ash, in black soot." But when he arrived, "everything was beautiful. Breathtakingly beautiful! Meadows in flower, the gentle spring green of the forests." For an elderly woman who had returned to her home in the Zone, it was impossible to believe in something she couldn't see: "They're trying to frighten us! But we've got apples hanging in the orchard, and leaves on the trees, potatoes in the field. I don't believe there was any Chernobyl; they made it all up." Another speaker said something similar to what the scientific researcher on the National Geographic documentary said: "The cuckoos are calling, the magpies chattering. Roe deer are running about. But nobody can say if they'll carry on multiplying." Human perception falls short. Alexievich asks herself what, if anything, the Chernobyl experience has taught humanity. "Has it turned us towards this silent and mysterious world of those other beings?"

Watching the Attenborough documentary, I wondered how a person might make this turn. The images were beautifully clear, most of the species familiar to me, but I had a heightened awareness that what I was watching contained something that I couldn't see. The idea of entering into silence and mystery is challenging for anybody who has participated in cultures whose knowledge, whose sciences, are formed on empiricism: on a faith that human experience is the most solid foundation for human belief. As I write this, empiricist trials and research are gradually making it possible for the human world to open up again, through medicines, data analysis, and vaccination development: it would be especially small-minded, right now, to criticize the solid ground on which this research takes place. And at the same time, it is also clear that the ecology of disaster is an ecology that extends beyond what any human, or even a culture or collective of humans, can bear witness to. Perhaps these two truths need not conflict with each other. Human-centric, human-focused stories, told at the scale of the human, or through human perception, cannot accommodate the worlds we inhabit. The idea of telling stories that move through inhuman times and spaces is weird and daunting. It provokes questions about appropriation and the value of speculation, but it's also uncomfortable because it makes the human figure look so small. Chernobyl has been here since 1986, it is here today, and it will extend into the deep future, long after Alexievich and all her subjects and all her readers have gone. "The radionuclides strewn across our earth will live for 50,000, 100,000, 200,000 years. And longer. From the perspective of human life, they are eternal." This is a heartbeat in comparison with Sharpe's time frame; the residency time of traces of human blood in the ocean is 260 million years. But the numbers are so huge that it is difficult to fathom what the difference could mean to a person who is alive right now, picking apples in an orchard in Ukraine, or sitting on a tram in Germany, or pulling up a trawl net in the mid-Atlantic. Any ecology of human history exists at scales so far above and below human life that its operations are silent to us.

The academic Niall Martin has suggested that the value of Alexievich's book about Chernobyl lies in its ability to listen into nonhuman spaces: it pays attention to the ways in which human destruction affects nonhuman systems, communities, individuals. He argues that the absence of sound can be as telling as any noise. (Rachel Carson shared a similar thought when she invoked a decimated ecosystem with the title *Silent Spring*.) Martin recommends attention to that which we cannot hear—a kind of negative attention. This mode of attention is not an encounter between "event and sense," but "an encounter with something that is both present and absent," a tool for listening to silence. Inside the silence, he says, we "hear our displacement from the position of auditor: as species we hear what our environment hears—and, in listening for silences in that environment, we hear our own displaced position as auditors within the Anthropocene." I take this to mean that attunement with nonhuman silences and spaces is a way of placing oneself relationally. A person might understand her position in the world not by introspection but by looking out and paying attention to the agency of other things and beings, even when this view diminishes or displaces her right to priority.

Our effects on other beings, and the effects that other beings have on us, reveal what Alexievich calls "the invisible imprint of our stay on earth and in time." It isn't always possible to see this imprint positively, in the way that you might look out of the window and see a striped beetle or a tree with pale purple flowers, but it is possible to understand that human disaster runs beyond the frame of human experience. This simple truth is a reality that anthropocentric narratives are struggling to keep up with. A story that extends through the human and the other-than-human, across astronomical and submicroscopic scales, is a story with a widened sense of world. It could be useful now.