

WE CAN
ENSURE
THERE IS A
FUTURE
BY FIGHTING FOR
PERMANENCE
IN THE
PRESENT

-Solastalgia, Hannah Lindberg

CHANGING SKIES

CREATIVE NONFICTION

2022

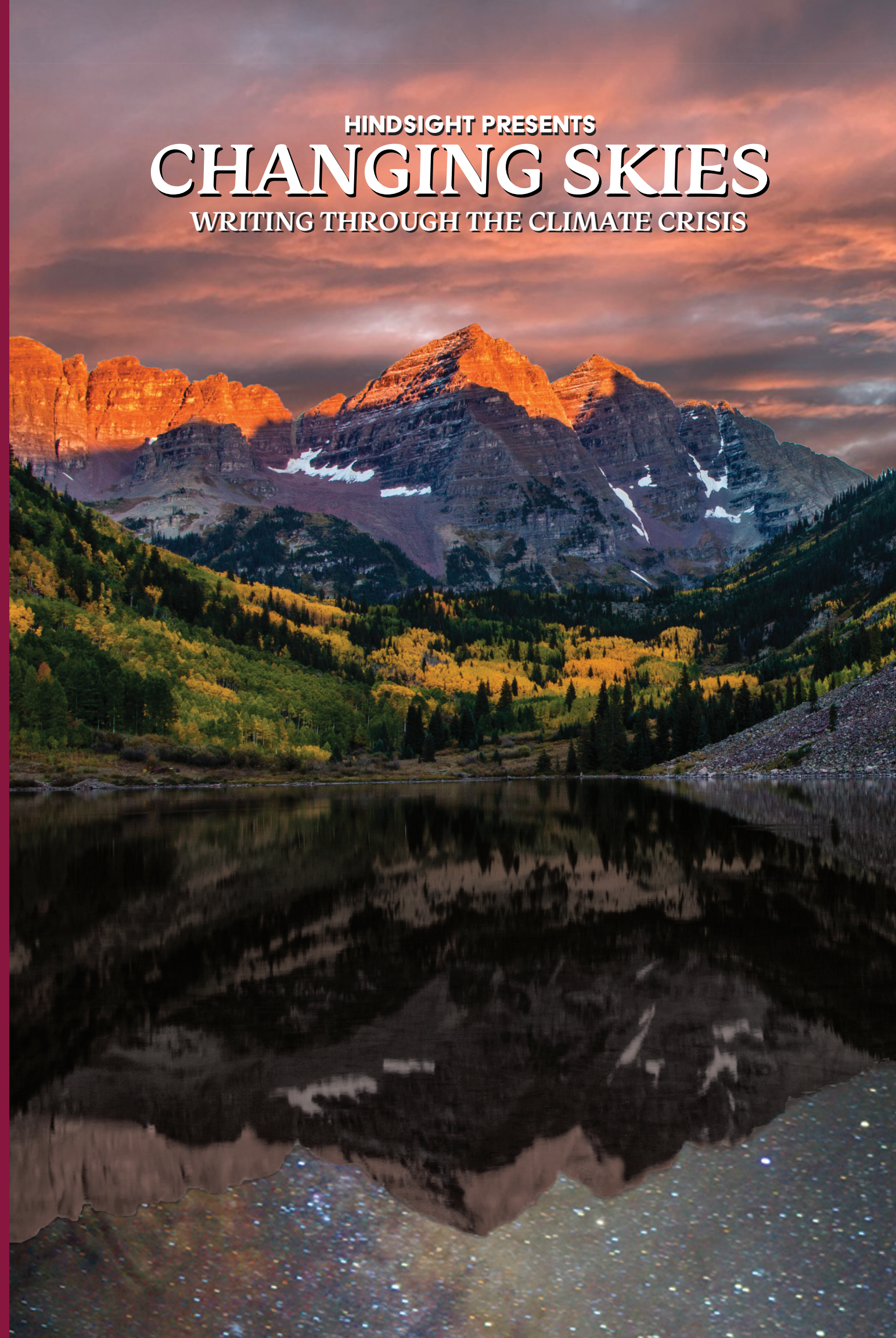


UNIVERSITY OF COLORADO BOULDER

CREATIVE NONFICTION

THE PROGRAM FOR WRITING AND RHETORIC and MISSION ZERO

HINDSIGHT PRESENTS
CHANGING SKIES
WRITING THROUGH THE CLIMATE CRISIS



CHANGING SKIES
creative nonfiction

2022
VOLUME ONE

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FOREWORD

by SHADIA NAGATI

15,000 sheets of glossy paper, 300 double-sized sheets of plastic-coated cardboard, thousands of hours on laptops writing, editing, emailing, digitally producing layouts and proofs, shipping, commuting, countless hours of light bulbs burning into dry eyeballs.

What’s the carbon footprint of printing a journal?

How much coal-burning electricity powers the printer? How many kilowatt-hours go into creating and reading the digital version? We can calculate these figures. We can make them smaller or larger.

How many people deny the threat of a changing climate? How many acknowledge it but remain indifferent? We can guess these numbers. We can try to make them smaller.

Climate writers seek more than reader “awareness”; they elicit the grief we share from witnessing irreversible environmental devastation. The places we love lose the nostalgia we hold for them when they no longer look and feel the same—changes that appear with fires, floods, and warming average temperatures. Jake Szabo’s “The Cube” transports us to time immemorial, when Coyote taught people how to survive off of the land; to the interruption from colonizers’ defilement of their homes, dispossession of their lands; to a second defilement through further man-made degradation. “Only as soon as we all acknowledge these traumas can we remedy them,” he reasons, “and unfortunately it may take generations to see how far we have strayed from the path.”

The pieces in *Changing Skies* present opportunities to communicate the trauma, opening dialogues to bridge the gap between despair and apathy. We have become divided over climate issues. Complete denial sprung up against perceived enemies: scientific evidence and the leftist, tree-hugging archetype. This dynamic has increased political polarization, hindering climate policy creation and action to mitigate further human-caused warming.

Changing Skies and Mission Zero collaborated to amplify the message: climate change is personal. Whether or not we act, or acknowledge its effects, we feel it. If we burn fossil fuels to print stories that will incite action, well, you know what they say about omelets.



Mission Zero’s Climate Action Fund supports multiple projects at the University of Colorado Boulder toward carbon neutrality by 2050. In addition to projects at CU,

Donors joining the Founder’s Circle can help promote Climate Action at other colleges and universities across the country.

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SOLASTALGIA

HANNAH LINDBERG

*O*ⁿ *e*

The thought of spending a significant amount of time in the desert climate preemptively dried my mouth and burned my skin. I spent my formative years between Colorado and Alaska, accustomed to extreme weather, but this was different. Stereotypical, western movie, sandy, dry *desert*. Desert with lizards and cacti and sand that would find its way into every crevice of your clothes so the best souvenirs and reminders of what ensued were orange tinted Chacos and a greater sense of urgency.



Art by JACK ELDER

Two

The earth here is desolate, but it is untracked, and it is beautiful. It is centuries old, but only in recent history did people walk, inhabit, and explore here. There aren't words that can describe the blend of landscapes that comes together under the wide-open sky, and quite frequently I find myself speechless when immersed within the red walls of the canyon.

Ruminating in the words of the volunteer ranger, "It's a hot one out there for early May," I settle on the pair of canyons nearly an hour down the wide dirt road. The descent is simple and marked with an occasional cairn. Dropping down first into a ravine nearly breaks the instinct that I must always go up—up to the sky, up the ski lift, *up* the mountain. But down I go: a naïve young twenty-year-old descending quickly into my first slot canyon. Backpack slung haphazardly across my shoulder, hot, dry sweat quickly soaks through the back of my shirt. I think about the guy in *127 Hours*, whose only option to escape entrapment in the remote Utah canyon is to cut off his own arm. I'm not prepared to do that; I forgot my pocketknife in the car. Not until that first drop and subsequent *thump* of my body hitting hard earth do I become fully aware of the risk potential in this situation. I hope the need to chase a constant adrenaline high is temporary, and someday I can enjoy something tamer, like knitting maybe. But for now, I feel the need to touch the last of the wildlands before someone more powerful than me decides they are no longer wild.

Three

The singular route into Escalante climbs a few thousand feet over mountain passes that resemble those of my childhood comfort in Colorado. As the car reaches the peak of US scenic byway 12, the two-lane road is a mere blemish over taupe sandstone sprinkled with sacred sagebrush. Eventually, this monotone gives way to deep red rock across the land and the road opens to the richest blue sky I have ever witnessed. The town of Escalante, home to 800 residents, is a dark spot on the landscape in the distance, and the last car we encountered was miles before. Arid plateaus grace us with their presence as they seemingly appear out of nowhere in the vast expanse of the Utah desert. Henry Mountains peek through in the distance. A river basin with a slight trickle of a stream comes into view, so small in such a large place, yet so important.

The shape of a canyon is one of the true shapes in nature that cannot be replicated. I'm fascinated by canyons because every time you get deeper, the soul of the earth thumps louder. At one point the same trickle of river had enough force to carve rock. As the water seeped through cracks and crevices, it slowly wore away to yield smooth walls and lines of various vibrant reds and oranges. I imagine this desert was a little less dry back then, and the thin white lines on the canyon walls following me on my adventure down its rim are evidence of the river's depth that slowly shrank to a trickle year after year of drought. Unnatural heat has dried up the lifeblood of the desert—water. The same water western states fight over to this day. The same water that would be rapidly depleted by extraction activities to remove the elusive natural resources through a sharp, disrupting scar within the rock.



How could anyone want to save this for anything but wonder, awe, and reverence, so that someone someday can experience the adrenaline high I can attest for, here deep in the soul of the earth?

Four

Grand-Staircase Escalante National Monument is positioned in Southern Utah somewhere between the mountains, sky, and desert. It represents over a million acres of untouched public land, that in theory, should be completely protected. The underuse, underappreciation, and lack of knowledge surrounding public lands in America is apparent through the sparsity of dull bumper stickers like “protect public lands” or “keep public lands public” in the sea of national park or unnaturally bright colored destination stickers. Due east of Escalante is its sister land, Bears Ears National Monument. Wildly untouched and unexplored, 2017 brought controversy and uncertainty to these wild places. Just like that, the borders of both Escalante and Bears Ears diminished to nearly half their original sizes under the premise that, someday, we might look for oil, coal, natural gas, or minerals deep down under the red rock, and allow cattle to freely graze the sagebrush and sparsity of plant life dotting the landscape. Under this bold assumption, a name given so fast was quickly stripped away with new borders seemingly drawn by a toddler as the last of the wildlands shrank with the swish of a pen. Borders aren’t nearly as permanent as we make them seem.

Standing here, I’m sad. I feel overwhelmingly powerless. And while I’m frequently confused by myself and others, the reason we’re put here, what we should do both now and later—acting with poise and gratitude now ensures there is a later. What is the best way to spend time that is so limited? I *overthink*. Surely, this isn’t it. The prioritization of political agenda, economic greed, disregard for wildlands, and lack of consideration sends me deeper into mourning for a place I’ve developed such closeness to in the shortest time.

It isn’t until nearly two years later I learn a word to appropriately encompass my thoughts and feelings. Anger, sadness, fear, helplessness.

Solastalgia.

You see, climate change isn’t natural; it’s human.

While I couldn’t see the exact pieces of land that were taken away from their protected distinction, I mourned. My soul’s instant connection with the beauty and untamed nature of this place fought with the American ideal that must always place ownership and purpose to land—often made in decisions of greed and carelessness. Can’t the sole purpose of these lands be that innately, wild lands are part of our identity? I can’t help but think that there’s no way the ones signing the paper have stepped foot into the rich, red dirt before they decided to make the decision to corrupt this sacred space. Since when did preservation not become an adequate purpose? There are countless other places we have already pillaged out of greed without ripping from the heart of southern Utah.

Every new act of land desecration in favor of human activity seeks to destroy the places that have made us, well, human. Not headlined in the news or political agenda is the rich history of the area. Archeological history holds rich importance to indigenous peoples. Species, now endangered by climate extremes, whose existence easily could be wiped by resource collecting on the land. Biodiversity, comfortably living on public land, soon to be eliminated by corporate pollution and interest. Untapped natural resources, soon tapped beyond their limit will leave the familiar, neglected reclamation site in its wake. The trickle of water that has made comfort in the deep canyons, is soon vulnerable to the same polluting activities that can overtake habitats. A land already touched by climate change is about to become a victim.

Five

I spend the next hour sitting cross-legged in the sand. The wind fills my soul with a familiar rumble as I look at the rock giants around me, but it doesn’t quite reach my eardrums. My heart pounds and reverberates.

The fight doesn’t have to end here. This land is still wild and can be for decades. We can ensure there is a later by fighting for permanence in the present. The rich dirt and current fragility of Escalante and Bears Ears can cradle future generations and not simply fuel the flame humans have stoked for years. We have voice and we have choice.

The sun is still high above Monument Valley, which is barely a shadow on the horizon. Heat graces my skin. This land is spiritual, grandeur in its purest form. It has its own heartbeat in the form of fleeting birds and rustling grasses. I lay my hands in the dirt, thankful for this opportunity to connect so deeply with the earth. As the sun sets, I can’t imagine this landscape overtaken by anything else but the intense orange, yellow, pink, and purple of the sky. The namesake formation, Bears Ears, is perched so precariously, yet it has survived thousands of years of wind whipping across the desert. Thousands of years of wind to be wiped out by ink on paper. ♡



THE LAST HAWTHORN TREE

KRISHNA SHARMA

Are those my limbs
Tangled in the power lines?
No, they are the hawthorn tree
Whose frozen scarlet berries rip the air with color

It's my mother's tree
The last hawthorn tree on Hawthorne Ave

Winter brought a diamond shawl
That laid across the tree
Its berries crimson crystals
That would fall, a rain of rubies

Something in that tree
Made it slowly claw the wires
Wires sprouted up like weeds
Draped across its sacred limbs
To fuel my house and keep us warm
Run our freezers, televisions

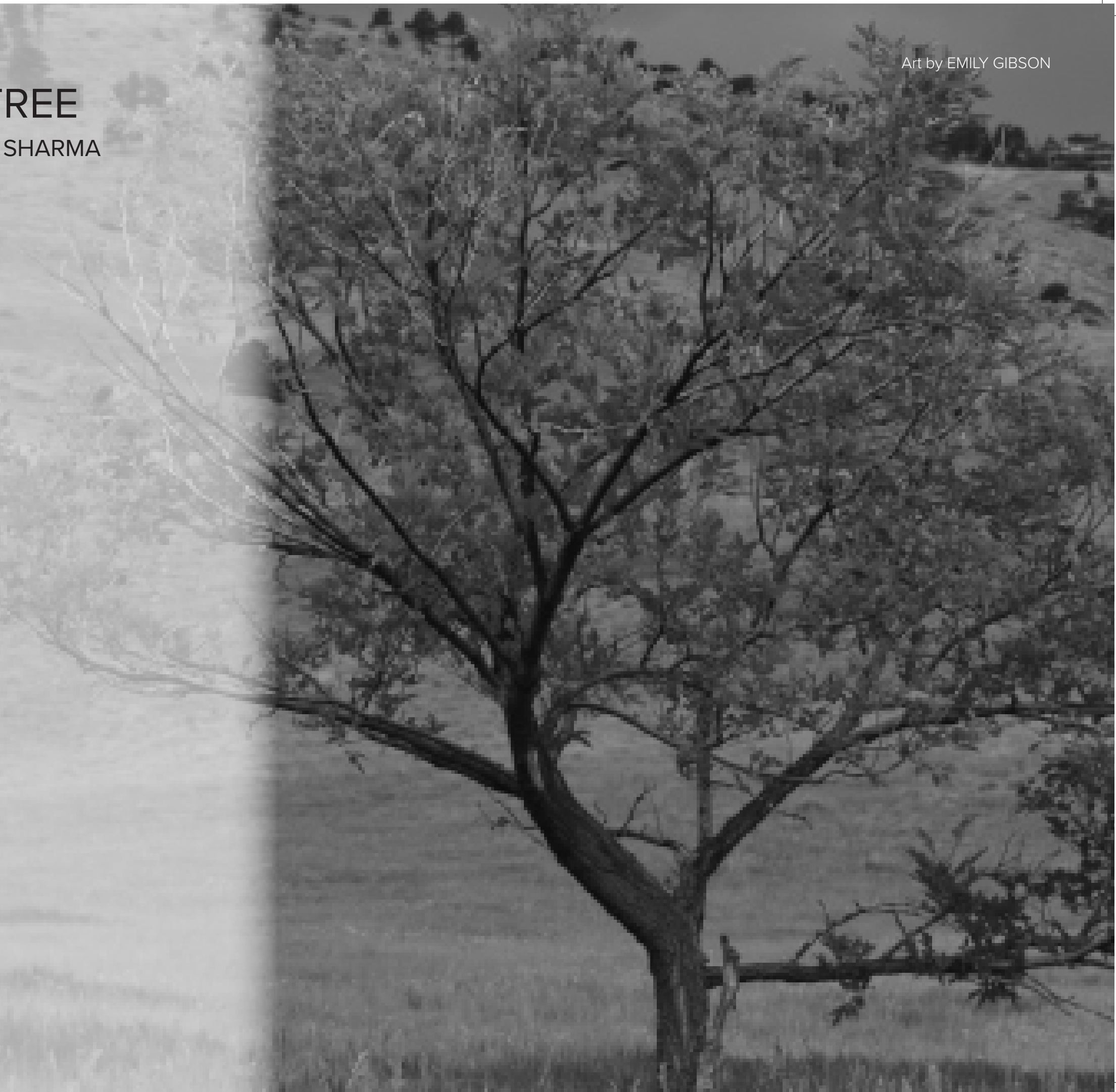
Winter lost its frantic breath
Instead approached with lazy gait
The ice storms of my youth
Are leagues stronger
Than what I see now

I was 12 when the hawthorn tree on Hawthorne Ave lost its grip
On my mother's power lines
We put it to the axe
But did we cut down winter too?

No berries
No ice
No diamonds
No rubies
No grave marks the spot
Where the last hawthorn tree on
Hawthorne Ave fell

I had the last hawthorn tree on Hawthorne Ave
The last tree on
The last hawthorn tree on Hawthorne Ave

Now I don't have winter either.



THOMAS

A.J. ADAMS

Natural disasters never come at a good time. In December 2017, the searing grind of completing my dissertation had barely abated, and I was still adjusting to life. Yet, the wildfire that would become the largest in California history—for a short time—ignited when extreme winds brought two power lines into contact, showering molten aluminum into the crispy undergrowth in the canyon below. The fire was named Thomas—after the nearest landmark to the ignition site, Thomas Aquinas College—the saint who insisted that faith and reason are not mutually exclusive.

In December, autumn rains would have normally soaked the vegetation, ending the fire season. In the fall of 2017 that did not happen. Scientists have tracked the shrinking California rainy season: as it contracts into shorter timeframes, it lengthens the fire season and focuses intense rain into shorter periods, creating a perfect storm for late autumn wildfires immediately followed by heavy rains, which in turn create mud flows.¹

This is exactly what happened.

That night, while heading into a late meeting with colleagues, I had to lean into the wind to keep my footing. It blew sand into my eyes and dry leaves into my hair. Two hours passed indoors. When the meeting had ended, I checked my phone. I had an unusual number of text messages, none of which made any sense:

“You can stay at my place if you need to.”

“Stay put. I’ve got the dogs and I’m coming to meet you.”

“Hey, I saw about the fire. Are you ok?”

My colleagues and I pieced together the rapidly-unfolding events. A wildfire had started just to the east. The wind was pushing it rapidly toward town. We had to get to our families and get out. Goodbye. We literally scattered to the winds, in the direction of what matters most.

Outside, the dry gale picked up intensity. I couldn’t smell smoke yet. My spouse pulled into the parking lot just as I was stepping outside. I climbed into the front seat. The dogs were happy to see me, as usual, but anxious. The back seat was piled high with blankets, sleeping bags, dog food. We didn’t yet know where we were going.

I texted back the friend who had offered the four of us a place to stay in her little apartment southwest of town.

Once we arrived, we were still exchanging polite greetings when one of our dogs relieved herself in the middle of the living room floor. Embarrassed, already feeling like

1. Swain, Daniel L. A Shorter, Sharper Rainy Season Amplifies California Wildfire Risk. *Geophysical Research Letters* 48, no. 5, 2021.

a burden, I leapt with cupped hands to catch the rest of the warm lumps before they, too, landed on the carpet. We were all laughing at the absurdity of it—I couldn’t myself believe what I had just done—and I made my way to the toilet to flush them.

“Wait—where are you going?! Take it outside!!” She yelled. But it was too late. I washed my hands. All five of us were on edge.

She generously gave us her bed and took the sofa, though we knew none of us would be getting much sleep. This would be the first of many sleepless nights. At dawn, she gently tapped on the door, her voice muffled from concern but sharp as it squeezed through the crack in the door jamb.

“Guys?”

“Yeah?”

“The fire is getting close to here now too. It’s time to go.”

She was eerily calm, despite the fact that we were all trying to escape the biggest natural disaster any of us had ever experienced. She works for a nonprofit that deploys dogs to search for victims in the eye of the world’s biggest crises. Her composure was steadying, strengthening mine.

Bleary-eyed and sleep-deprived, we packed our things. Where would we go next? Whom should we call? Clearly, going west again was not a good idea; if the fire was really this out of control, it would burn all the way to the coast (and it did). I took a chance.

“Meet me at Esther’s,” I said. “I’ll call her on my way.”

She answered immediately.

“Hi—are you ok?”

“Can we come over?” I asked, giving up trying to hide the shaking in my voice, finally grasping the magnitude of the situation.

“Come over.” It was more of a demand, as if to say, don’t think. Don’t ask. Just come.

I took a deep breath and gripped the wheel tightly. I was dizzy. It was difficult to focus. The sun was coming up and the birds were at their peak daybreak energy. A small songbird flew directly into the left headlight of the pickup and ricocheted at an angle into the shrubs at the side of the road. None of us saw this coming.

We should have, though. Our area had not burned for more than 30 years, creating a buildup of fuel for an intense wildfire. It had not rained yet this water year, which began in October. The intense, easterly, dry, hot winds, which usually abate by mid-fall, were still here, and were in full force.

We caravanned and took the coast, trying to give the approaching front of the wildfire a wide berth. Cars flowed north on the 101, meeting their daily rush hour appointment for gridlock as if nothing was amiss. Overhead, a reddish-brown sky streak stretched across the highway and out to the ocean. It reminded me of the midcentury horror movie *The Blob*: a sinister, amorphous being wreaking havoc on unsuspecting victims just trying to have a nice time at the local swimming hole. The beach was tranquil, the ocean on a different time sequence than the fire.



We arrived at Esther's. In Oxnard, south of Ventura, we were sure to be safe, separated from the fire by concrete, agricultural fields, freeways. And we were. We walked into the house and while we were exchanging our greetings, as if on cue, our other dog relieved herself on the rug in the middle of the living room floor. This time I neglected to dive for it. I was tired.

"It's alright," Esther reassured us. "This carpet has seen worse than that."

Although we did not yet know it, this would be our home for the next ten days. We had more questions than answers. The local news was not helpful, just reel after reel of reporters standing in front of one burning mansion after another, lamenting the loss of people's stuff. The most useful information came from a community group formed on social media. Our neighbors were reporting from the front lines. Some had decided not to evacuate, to instead weather the firestorm with garden hoses, rakes, and shovels.

As it was December, Esther had decorated her house, with delicious delights in reach. I wasn't very hungry during the evacuation, but one thing I did find appealing was the dish of red and green chocolate candies that sat on the counter. I ate so many, emptied and refilled the dish so many times, that I felt guilty and bought more bags to replace them before we left. I mindlessly popped them like pills while scrolling social media, refreshing, refreshing, hoping for answers that slowly trickled in, then having to separate the alarmist chaff from the information wheat.

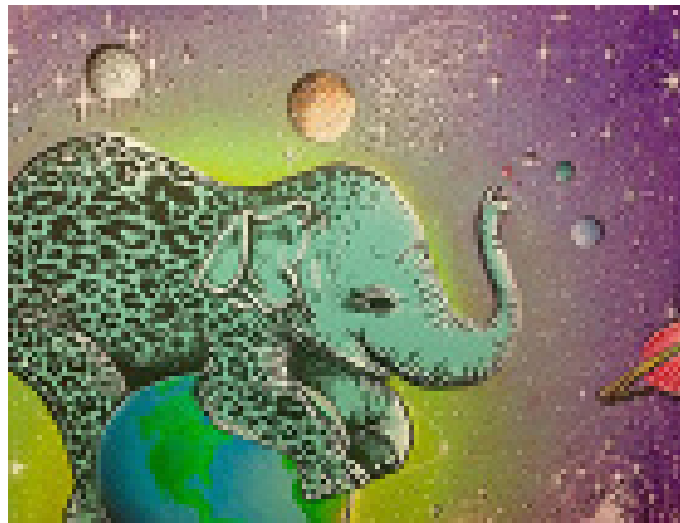
Night after night we tossed and turned, lucky if we got a few hours' sleep. Still, we were safe and warm. Each night Esther and I would get together in the living room to eat ice cream and watch DVDs of *The Marvelous Mrs. Maisel*. Esther grew up in New York City at the time that the storyline is set. Observing her watching was more fulfilling than watching the show myself. For those couple of hours each night, I was elsewhere. I would see comfort and nostalgia in her eyes and would miss a past I had never even known. ♡



A CONSERVATIVE PROPOSAL

SHADIA NAGATI

The liberals can't get anything right. The Wall Street Journal reported that the recent Intergovernmental Panel on Climate Change "shows less cause for panic" and that the planet will more likely warm three degrees Celsius than five degrees.¹ Less cause for panic doesn't sound like a climate crisis to me. Al Gore must've set off their alarm bells with *An Inconvenient Truth* fifteen years ago. This documentary bombards its audience with digital projections of flooding in China and India (biggest polluters) and parts of Manhattan (worst city in the U.S.), including the Islamic center built on the site where Americans died on September 11, 2001. "They can measure this precisely," Gore asserts of rising water predictions attributed to the global warming theory.² How precise have they proven to be?



Environmentalists label researchers such as Exxon-funded aerospace engineer Willie Soon as "climate change deniers," but these researchers spit the facts: climate change simply does not threaten human beings any more than it has for all of mankind's existence.³ Skeptics called Soon's credibility into question, ignoring the fact that conservative think tank the George C. Marshall Institute* awarded him their Courage in Defense of Science award.⁴ The fossil-fueled scientist discovered the true culprit of global warming: the sun!⁵

Soon's work aligned with other studies coming out of the Marshall Institute that sought to defend Ronald Reagan's Star Wars* plan from rebellious scientists. The "Union of Concerned Scientists" attacked Star with verbal torpedoes, but Reagan's empire struck back. Physicist William Nierenberg (speaking of Manhattan) released the "Changing Climate" report, presenting research that verified an increase in carbon dioxide emissions, but found no need for alarmism, as the Marshall Institute would conduct atmospheric experiments to monitor emissions.⁶ The Nierenberg trials sufficed for government placation; why the American public needed more action towards weaning us off fossil fuels confounds me. Surely, they wouldn't call it "natural gas" if it damaged the environment!

1. Ip, Greg. "IPCC Climate Change Report Shows Less Cause for Panic—But More Urgency to Act." *The Wall Street Journal*, August 11, 2021.
 2. Guggenheim, Davis, Director. *An Inconvenient Truth*. United States: Paramount, 2006.
 3. Oreskes, Naomi, and Erik M. Conway. *Merchants of Doubt*. Bloomsbury Press, 2010.
 4. Climate Change Awards, 2014. climatechangeawards.org/willie-soon/.
 5. Baum, Eric. "Sunspots May Cause Climate Fluctuations." *The Harvard Crimson*. April 14, 2009.
 6. Oreskes, Naomi, and Erik M. Conway. *Merchants of Doubt*. Bloomsbury Press, 2010.

Globally, governments spent \$366 trillion on renewable energy projects from 2011 to 2018, but carbon dioxide emissions continue to rise.⁷ Safer for the environment? Ha! Just ask bats, one of wind power's greatest casualties. So-called progressives install wind turbines to capture "natural power," but these dang things kill almost as many bats as domestic cats do!⁸ The United States and twelve European countries built offshore wind farms near coastal towns and plan for more.⁹ Joining bats in protest, we hear from wealthy coastal elites who gasp at the thought of a spoiled ocean view from their beachfront vacation homes. Their grandfathers broke hardworking backs to earn the millions of dollars invested in these homes. Governments have no authority to impinge on leisure homes. These renewable energy advocates are full of hot air.

Growing economies mean growing pollution and waste. We cannot avoid this simple fact. What will we do, stop buying things other than necessities? We may as well quit our corporate jobs, too! Work makes you free, and we can sum up economic freedom to a burgeoning economy in one word: plastics. The cheapest, most versatile material has recently been villainized by eco-terrorists and sea huggers, who choke us with pictures of bloody, contorted sea turtles. They want us to stop using one of our most important resources because plastic waste in the ocean has started to form rock/plastic hybrids called plastiglomerates.¹⁰ They detest these colorful contraptions that wash up on shores, sprinkling the sand with bright colors. Well, I say let them eat Funfetti cake. Throw the plastic in the ocean and we'll enjoy beautiful neon colors of rocks and sand, like in the fish tank at your pediatrician's office.

One cannot, however, ignore that human beings have negative impacts on the environment. You may be familiar with the Earth "overshoot day," the day of the year when we have used natural resources that should last the entire year. This year, it fell on July 29th, meaning the entire globe uses 1.7 times the amount of resources that can be naturally replenished. The average U.S. citizen, however, uses four times the replenishable amount.¹¹ We can't deny that as GDP and population increase, so does pollution. Economist Reverend Thomas Malthus* detailed the possibility of depleted food supply in what we now call a "Malthusian catastrophe": exponential population growth will eclipse linear resource renewal.¹² Malthus, a man of God*, advocated for abstinence (from sex, not eating) to reduce the population. Don't go Keeling over just yet, I do not condone giving up sex to stop carbon emissions. As idyllic as a society without relationship complications may sound, I'm afraid I can't live without indulging in my God-given marital rights.

7. ÓhAiseadha, Coilín, et al. "Energy and climate policy—An evaluation of global climate change expenditure 2011–2018." September 16, 2020.

8. Ibid.

9. Ibid.

10. De-la-Torre, Gabriel, et al. "New plastic formations in the Anthropocene." *Science of the Total Environment* 754, 2021.

11. "Earth Overshoot Day 2021." Geneva Environmental Network, July 28, 2022. genevaenvironmentnetwork.org/events/earth-overshoot-day-2022/.

12. Pham, Nhat Minh, et al. "Environmental consequences of population, affluence, and technological progress for European countries: A Malthusian View." *Journal of Environmental Management* 260, 2020.



Now, we've overlooked the simplest solution to this tragedy of the commons, a solution that will reduce emissions, plastic pollution, the energy crisis—hell, even bigger problems like traffic and having to wait 45 minutes for a table at the Cracker Barrel. Call it eugenics, euthanasia, population control, or what you will: kill 'em. If we humanely slaughter the amount of people necessary to reduce the global population to 25%, we can all live like Americans without worrying about the libs trying to install solar-powered electric tofu stands on every corner. We'll begin with everyone whose health and fitness would flunk them out of Basic Combat Training. Can't run up a flight of stairs? Dead. Pass out after running thirty miles in the freezing rain? Nope. These weaklings will not stand a chance in our Newtopia. We can finish the job COVID started by eliminating anyone over sixty and anyone with pre-existing health conditions. This will serve to improve overall health statistics—diseases will disappear when the genetically inferior bodies hosting them disappear. Right now, U.S. cancer cases are up because we have the best testing in the world, and we have the most testing. If we start killing right now, we'd have very few cases of cancer.

Think of the billions of dollars we could save by eradicating the root problem: people. Forget installing solar panels and having to take the extra step to get a \$4,000 rebate when you file your taxes. Screw recycling! Throw your trash in the ocean and someday we'll gawk at fossilized Crystal Pepsi* bottles instead of dinosaurs in museums. Society will flourish. There will be no Earth, no World. Just two billion good, old-fashioned Americans, keeping the environment safe from Democracy. ♪

* Now Defunct.



Art by ALLISON NOWELS

IN THE DEEP WHITE

CLAYTON MONTGOMERY



Art by PARKER HALCOMB

It's one of those things you don't realize until it's happening: you're out enjoying a day in the Colorado high country. It's winter, but the sunshine warms you from above, and the wind sends little specks of crystalline snow swirling all around you. They sparkle in the light.

You're standing on the top of a mountain whose name most people will never know, just another anonymous peak. You strap on your skis, feel the familiar click of the bindings. Maybe you give your friend a high-five before pointing your skis downhill, or maybe you're alone. You make your first turn, beginning your way down the slope.

The snow is soft. Light and delicate. It invites you to ski harder, turn deeper, go faster. You oblige. Your turns are flourishing and a smile has found its way to your face without you even realizing it. But then, you notice a crack in the snow. And now all the snow around you is cracking. The whole slope moves like a wave quickly rushing back to the ocean. It whisks you off your feet, almost gently. And now you're now sliding in it, uncontrolled, downhill. This is an avalanche, you realize, and you're no longer smiling. The snow, which is carrying you, engulfing you, picks up speed. Faster and faster you're racing downhill. Some snow gets in your mouth and your nose, and you find it harder to breathe. You cough as the avalanche grows more violent all around you. And now you're approaching the tree line, and you're moving very fast. If you hit a tree, you'll die. But you don't hit a tree. You get lucky. But you notice yourself sinking deeper in the snow. You try to swim with flailing arms. In an avalanche, snow behaves more like a liquid—this you remember that from an avalanche course you took years ago. But the swimming is pointless, and your sinking continues. And now you're up to your neck. Your eyes. It's above your head.

The avalanche stops. You can't help but feel a sense of relief, but you notice the snow has now solidified like cement. You can't move, and it's dark. Buried alive. You can hear the dull pounding of blood in your ears. The heat of your breath melts some of the snow in front of your face. It helps you to breathe a little easier, but you realize it won't last long. Eventually you will run out of oxygen.

If you went out with friends, they'll start searching for you, that is, if they weren't buried themselves. If you're alone, you'll have to pray that someone sees the fresh avalanche path, or by some other miracle, comes looking for you. Either way, someone might find you, but if not, well, that's how it happens.





Colorado. Winter 2021. Twelve people died in avalanches amidst an explosion of interest in backcountry skiing¹. Seven of those deaths came in February alone. One avalanche outside of Silverton killed three people and buried another. It took Search and Rescue two days just to recover their bodies. Another deadly slide occurred in March when a pair of skiers exited a backcountry gate (“backcountry” meaning mountainous terrain that’s wild, beyond the boundaries of defined ski areas). One of the riders triggered a slide and was buried. Unfortunately, he didn’t survive.

Across the nation, 37 people died in the winter from 2020 to 2021, the most seen in a single season since at least 1950.² Avalanche deaths are on the rise, with the past fifteen years seeing annual death tolls rise into the thirties multiple times.³ Over the past few years, interest in backcountry skiing has exploded. Mountain states such as Colorado have experienced a population boom and, with that, more people accessing the backcountry.⁴ Worse yet, with the closing of ski resorts during the first waves of the COVID-19 pandemic, people took to the backcountry in greater numbers—new converts to a dangerous game. At ski resorts, avalanches are prevented using explosives and other techniques, but in the backcountry, the dangers are often hidden and up to the individual to discern. Many of these backcountry novices have little-to-no knowledge about avalanches and how to stay safe from them. Avalanche information centers across the country have put out ad campaigns warning people, begging people, to stay away from the backcountry without proper training. They’ve doubled down on their education efforts to keep people safe, but if the past few years are any indication, the problem of avalanches in Colorado will continue to worsen.⁵

According to François Louchet, “an avalanche may be defined as the destabilization and flow of part of the snow cover.”⁶ Snow destabilizes, and as it moves downhill, it flows like a liquid. Over the course of a winter season, snow piles up on slopes in layers. There’s the layer of snow from early in the season on the bottom, and then the most recent snow on top. Some snow is thick—dense with water, heavy—while other times it’s light and fluffy. The factors that create different types of snow are many, ranging from temperature, humidity, and how much water a storm is carrying. All it takes is one of these layers to fail, wherein it cracks and loses all stability, to trigger an avalanche. This sends all the snow in that layer, and usually all the layers above it, hurtling down a slope.

1. Colorado Avalanche Information Center. “US Avalanche Fatalities.” CAIC.

2. Page, Charles, Dale Atkins, Lee Shockley, and Michael Yaron. “Avalanche Deaths in the United States: A 45-Year Analysis.” *Wilderness and Environmental Medicine* 10, 146-51, 1999.

3. Statista. “Number of Deaths Due to Avalanches in the U.S. 2021.”

4. State Demography Office, Colorado’s Changing Population §.

5. Condon, Scott. “Safety from the Slides: CAIC Looking to Educate What Is Anticipated to Be a Large Backcountry Crowd.” *AspenTimes.com*. AspenTimes.com, November 26, 2020. [aspentimes.com/news/safety-from-the-slides/](https://www.aspentimes.com/news/safety-from-the-slides/).

6. Louchet, François. “Snow Avalanches: Beliefs, Facts, and Science.” *Oxford Scholarship Online*, December 2020. oxford.universitypressscholarship.com/view/10.1093/oso/9780198866930.001.0001/oso-9780198866930-chapter

Not all snow, however, is created equally when it comes to stability. Weak, “sugary” snow (like the kind that’s impossible to make snowballs from) plays a part in many avalanches. This friable snow is incapable of supporting heavier snow on top. If there’s a layer of sugary snow hiding somewhere in a slope, all it takes is a skier, snowmobiler, or more snowfall to trigger an avalanche. Once these weak layers are created, they tend to stick around for the entire winter, and rarely improve in stability. Of course, there are multiple different kinds of avalanches ranging from slab, loose snow, and wet snow, but in general, it’s usually these weak layers that are to blame.

Avalanches are fickle animals, varying in type, and even more in size and severity. The Colorado Avalanche Information Center (CAIC) rates avalanches on a scale of one to five, which measures their likelihood and size. On this scale, a one implies low avalanche danger, where a five would indicate the potential for severity. Similarly, when it comes to measuring avalanches, a D5 is the highest possible rating for an avalanche, which is code for absolutely massive.

Winter 2019. Colorado experienced a winter storm that dropped feet of heavy, wet snow across the state. According to the *Aspen Times*, Colorado experienced 87 D4 avalanches in the 2018/2019 winter season alone. This dwarfs the 24 total D4s that were reported from 2010 to 2018. That March also saw three D5 avalanches when most forecasters had thought that size impossible for Colorado.⁷

D5 avalanches, never seen in Colorado until that 2019 season, are of course the most spectacular. They contain the power to rip up thousands of trees. One of the D5 avalanches in Aspen was two miles wide and filled the creek at the valley floor with snow. Another massive avalanche outside of Hinsdale destroyed the sheriff’s home while he and his two daughters were asleep inside. Somehow, they survived largely unscathed, though their house was literally flattened.

Skiers and snowboarders assume a certain risk when they venture into the backcountry. They know (or at least they should know) that they risk triggering an avalanche that could leave them helplessly buried beneath a mountain of snow. But the sheriff and his family hadn’t assumed a risk. Motorists on roadways are similarly unsuspecting. Nobody expects an avalanche to come roaring down a mountainside while they’re driving. But in 2019, that’s exactly what happened, more than a few times. One avalanche even managed to completely bury three unsuspecting cars:

On March 7, 2019, an enormous avalanche released high on the west side of the Tenmile Range. It roared down an existing chute... above Copper Mountain—toward Highway 91... snow thundered through 1,100 linear feet of dense forest, snapping or uprooting every tree in its wake before burying three vehicles on the highway—and five people inside them.^{8,9}

8. Condon, Scott. “Researchers Take Deep Dive into Large, Intense March Avalanche Cycle in Aspen, State.” *The Aspen Times*, November 8, 2019.

9. O’Neil, Devon. “Takeaways from Last Season’s Historic Avalanche Cycle.” *Colorado Summit Magazine*, December 16, 2021.



The people on Highway 91 weren't harmed, but the trauma they endured will likely stick with them for a lifetime. Similarly, Interstate 70, the vital east-west artery in the western U.S., was buried a few times in the span of two weeks—the worst instance resulted in a ten-hour closure of the highway. Luckily, no cars were fully buried, though many people were stuck in deep snow for hours. The March 2019 avalanche cycle was nothing other than Biblical in size and scale.

With the increasing death toll, and with the growing magnitude of avalanches, it's worth asking the question: are avalanches getting worse?



With each passing day, climate change bears down harder on us. “The influence of climate warming becomes every day more and more visible in our environment, and more particularly in mountainous areas,” wrote François Louchet. In Colorado, we're already seeing signs of this change. In an avalanche-specific context, one team of researchers analyzed tree ring data in the Himalayas to learn about the correlation between climate change and avalanche risk. They found that “the warming observed in recent decades has been accompanied by increased snow avalanche frequency in the Western Indian Himalayas.”¹⁰ In the context of avalanches, climate change is highly visible, utterly terrifying, and deadly.

According to early avalanche research, the correlation with climate change is obvious. Changing climate equates to more frequent and larger avalanche events. Louchet offers more insight: “In such a transient period, the succession of heavy snowfalls and thawing episodes would probably favor spontaneous full-depth avalanches with larger run-out distances.” As identified by Louchet, “full-depth avalanches” essentially send the entire winter's snowpack hurtling down the slope all at once. A rise in full-depth avalanches would mean more D4 and D5 avalanches like those seen in the 2019 season—events that change the landscape forever. They're the kinds that reach very high speeds and destroy homes without warning.

An article published in Aspen Journalism explains how future winter storms are expected to be warmer, and the snow that they drop will have a greater snow water equivalent (SWE).¹¹ More water in snow means that it's denser, heavier, and more difficult to support on a slope. The snow that catalyzed the epic March 2019 avalanche cycle had a very high SWE, which caused the lower levels to naturally fail (almost none of the largest avalanche events that year were human-triggered). “Increased activity will likely be driven by warmer, more extreme storms [...] which

10. Ballesteros-Cánovas, J. A., D. Trappmann, J. Madrigal-González, N. Eckert, and M. Stoffel. “Climate Warming Enhances Snow Avalanche Risk in the Western Himalayas.” *Proceedings of the National Academy of Sciences* 115, no. 13 (March 27, 2018): 3410–15.

11. Stewart-Severy, Elizabeth. “One Year Later: What the March 2019 Avalanche Cycle Hints at on Climate Change.” *Aspen Journalism*, March 9, 2020.

hold more energy and thus deliver lots of precipitation and wind. Avalanches at higher elevations, which in Colorado is usually above treeline, are likely to be bigger and more destructive.”¹² This is entirely consistent with the cycle, when most of the large slides began well above treeline before barreling into the valleys below.

Back to the question: are avalanches getting worse? Yes. These past few years of giant avalanches and staggering death tolls are the beginnings of a new normal. In this future of larger, more frequent avalanches, the consequences will be severe. Users of the backcountry will have to be even more careful and able to stomach more risk. And should they decide to brave the backcountry, they could trigger avalanches that crash into mountain-side communities, where people have built homes and roads and bridges. Colorado and other mountain states will have to spend millions more on avalanche mitigation and the winter death tolls will continue to rise. So too, will the destruction of unsuspecting communities. It's time to start finding real, tangible solutions, otherwise we'll face tragedy after tragedy, winter after winter. ❧

12. Ibid.



DESIDERIUM

GRACE SCHWENK

Looking out my window what do I see
but the grasp of spectral hazing looming in the Valley.
When I long to see
the sublime beautiful Bitterroots standing
tall and proud
above me.

What do I see
but the limp and lifeless bodies of dry grass clustered about my yard. When I long
to see
green strands grow in
lush, vivacious
a lawn buzzing with bumblebees.

What do I see
but the orange apocalyptic sun
poking out
sheepishly through the haze.
When I long to see
the bright, white sun
front and center
against the vibrant blue sky.

What do I see
But the creek behind my house dry and empty
haunted by the ghost of rushing water.
When I long to see
my little sister running
up from the gushing creek hands covered in mud
as she cups a frog to show to me.

What do I see but a sprinkler
resting upon my neighbor's roof
intending to ward off the ferocious flames.
When I long to see my old lab dashing
in and out of a grounded sprinkler watering the grass.

What do I see
but the helicopters
dipping their red buckets
into our irrigation pond.
When I long to see darkness
as I cannonball off the dock into the water.

Looking outside my window what do I see
but the black bear and her two cubs scurrying through my yard
fleeing the relentless torch raging behind them.
When I do not long to see the frightened forest animals displaced from their
habitat running into a bullet.

I look outside what do I see
The forests are burning all around me.
When I long to see a way of life,
now long gone, as I once knew it.



THE RAINS

MELIA HAWTHORNE KLINGLER

I come downstairs and my mom is on the phone with Tio Jose and Tia Saida again. “We used to be able to predict the rains,” Tio Jose says. “Every spring the clouds would gather low in the sky and then we could say, ‘The rain will start tomorrow.’ And the next day we would be sitting on the porch sipping *café con leche* and the rains would come.”

My mom shakes her head and by the way her eyes look sad I know she’s thinking over the well-worn conversation about how things just aren’t the same anymore. I’ve heard it too. Before, everything worked like clockwork. The people of Cuatro Cruces would work the soil, placing each fragile seed in the ground. The rain would come and make things grow and the village would become green and lush and sleepy under the weight of humidity and growing fruit. Then, after the monsoons had passed, while the soil was still wet, the children would run out and everyone would harvest. The women would gather at Church to make tamales and the trucks, laden with fruit, would head into town. Then the rains would stop and the tin roofs would become hot with sun. Coffee season. The air would smell like freshly picked coffee beans and Christmas, a promise of another year of crops and rain.

That promise is broken now. The rains, once well behaved, have become a fickle child who hides when he’s called and jumps out when he’s not wanted. The crops drown, the roads collapse into squelching pools of mud, and Tio Jose and Tia Saida call my mom again. “We used to be able to predict the rains,” they say. “What’s happened to our beautiful Earth?”

Often, with the clicking of a tongue and the sorrowful shake of a head, the conversation turns to *Los gringos*, their supersized companies and supersized machines that beat the earth, squeezing every last drop of life from her. Ravenous for pineapples and profits, they devour the land and spew grey clouds into the sky. Tio Jose sighs. “You have to be gentle with the soil, let it run through your fingers and treat it gently, like a lover.” *Los gringos* and their harsh language don’t know how to speak of love.

And now my mom is asking about Don Orlando. “How’s the farm?” She wants to know if the lush paradise where she fell in love with my dad still exists. Does the stream still gurgle and do the *manzanas de agua* still grow red and delicious and do the howler monkeys still try to chase away the early hours of the morning with their cries? And I have to watch her face fall as she hears that, for the first time since Sibú cursed his people a thousand years ago, Don Orlando’s river has run dry. “Baptisms were strange this year,” says Tia Saida. Spraying down believers with a hose isn’t the same as watching them emerge, soaked and smiling, from the same clear water that flows from Nicaragua to Panama.

I run back upstairs because I don’t want to hear any more. I don’t want to hear about the rains or us being here and them over there. I want the pain that seeps through the speakerphone to evaporate into the warm summer air. I want to be back in Cuatro Cruces, sipping coffee on the porch, watching the rain fall steady once more.



Art by WEISS BLEIWEISS

WHEN THE CLIMATE CHANGES WE CHANGE

CHRISTINA EISERT

“Do not trouble yourself much to get new things,”
said Henry David Thoreau in Walden.
“Things do not change; we change.”

I’ve never particularly loved the term “climate change.” Instead, I prefer the terms “climate chaos,” or the “climate crisis,” because “change” is often seen as a good thing. I mean, Americans like change. A popular president recently ran on “Hope and Change.” When we want to make things better, we “change things up.” A little “change will do you good,” we tell one another when our lives or even our wardrobes become too routine. Change is something Americans tend to embrace. It’s just in our nature. So, when the climate changes, Americans don’t necessarily get concerned. After all, America isn’t really where most of these changes have happened, so far. Africa, the Caribbean, and South Asia have been far more likely to feel the effects of a changing climate, though they contribute far less greenhouse emissions than China, the United States, India, Russia, and other industrialized nations.^{1 2} Middle America has for decades adapted an out-of-sight, out-of-mind attitude toward the drought, flooding, and famine other members of the human family have already been living with due to climate change. It has been others’ fate to reap the chaos. Climate change has meant change in other ecosystems in other parts of the world, for other people. For a long time, most Americans were fine with that.

However, Americans can no longer escape the chaos. We are a part of the climate. Americans’ lives are changing right now due to rising greenhouse emissions, much of this emitted by the people of the United States throughout the course of the industrialization of our nation.³ The American people can no longer expect to be insulated from the consequences of our massive emissions. Instead, the chaos is coming home. We can choose to care. We can choose to educate ourselves, to prepare and meet this change head on. Or, we can let it catch us unawares, the way it caught me, my family, and our entire community the morning the Marshall fire burned through Boulder County, killing two, destroying more than a thousand structures, and displacing tens of thousands of people.⁴

1. Eckstein, David, KünzelVera, SchäferLaura, and Germanwatch. 2021. Global Climate Risk Index 2021 Who Suffers Most Extreme Weather Events? Weather-Related Loss Events in 2019 and 2000-2019. Bonn Germanwatch Nord-Süd Initiative E.V.
2. “Greenhouse Gas (GHG) Emissions Climate Watch.” n.d. climatewatchdata.org. climatewatchdata.org/ghgemissions/end_year=2019&start_year=1990.
3. EPA. 2019. “Inventory of U.S. Greenhouse Gas Emissions and Sinks US EPA.” US EPA. April 11, 2019. epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks.
4. Strange, Chet. 2022. “Their Neighborhood Levelled by Fire, Grieving Residents Wonder: Can They Go Home Again?” Washington Post. January 25, 2022. washingtonpost.com/nation/interactive/2022/marshall-fire-colorado-rebuilding/.





December 30, 2021 was a truly beautiful morning. Morning light shone through the sun catchers. The pine boughs smelled deeply of menthol and earth as the wind tossed them. Squirrels ran friskily along the back fence, though the dozens of birds that normally flitted through the tree branches were nowhere in sight. Smoke poured into the sky in a quick black column behind us as I packed my two teenage boys into the car to go get haircuts.

As we pulled away, the big picture emerged, and I realized the source of the smoke was close by. Very close. I then noticed that cars were streaming out of the Costco parking lot adjacent to our neighborhood. No phone call or knock on the door had to come for me to realize we needed to evacuate. I attempted to turn my car around and head back to our house to collect our dogs and some personal items, but was stopped by firefighters. My heart broke and my voice cracked as their words began to hit me and I made a horrible realization. “My dogs!” I yelled in a panic. From where we were, I could see the back of my house. I decided to go for it. I drove around the firefighters and pulled back into my neighborhood.

It was already a hellscape. The atmosphere was thick with a rush of fire and smoke. The approaching inferno sucked the oxygen out of the air, replacing it with acrid chemicals and soot from my neighbors’ already burning homes. Dinner-plate sized sheets of ash rained down from the sky, actively burning at the edges. They landed on the car and were piling up on the roof of my house as I approached. A barrage of intense heat and sound met me as I leapt from the car. The fire storm was upon us.

Hardly able to see or hear, I ran up the stairs still lit with Christmas lights, opened my front door, and screamed inside for the dogs. The fire alarm was blaring. I was unable to step inside, unable to grab things that sat where they’d been left, just a few feet from me across the living room. Our Christmas tree stood in the front window, newly opened presents still lingering beneath it. My laptop was on the kitchen table. Everything we owned, every precious heirloom and a lifetime of memories, was in that house. There was no time for that now.

I could see my young dog, Bella, hiding behind the couch and frozen in fear. I called to her and to my elderly dog, Sasha, who was now bolting up the stairs from the basement, a terrified look on her normally sweet face. Petrified, neither came to me. In a last-ditch attempt, I screamed to the dogs as if I had a bullhorn: “Let’s go!” They came. I will always be so grateful that they did. So many of our friends and neighbors were unable to save their pets that day. I got the dogs safely in the car and took off. After that, we never saw our home again.

However, we were not out of the woods yet, as we quickly found ourselves stuck in the traffic now streaming out of the giant shopping center that lay between us and

safety. Cars were everywhere, many simply frozen in the middle of the road, unsure of where to go. Barely able to see through the thick smoke, I tapped my horn as I drove so that people would know we were there. Trapped behind hundreds of shoppers who were scared but not quite aware of the approaching cataclysm, the situation was becoming more dire. Choking on smoke and trembling with terror, I feared the firewall that was now devouring our neighborhood would soon overtake us. I decided to get off the road. I turned my car and tentatively put a tire up on the sidewalk. I paused for a moment to look at the wide eyes of each of my children, took a deep breath, and drove straight into the park—past the playground and basketball court where we had played a thousand times, cutting through the center to get out of the neighborhood. Instinct taking over, I headed for clear skies and breathable air. As we broke out of the smoke we looked back and saw the extent of the inferno. Our entire neighborhood was gone.



For decades perceived as the purview of the far flung world, like perpetually flooded Indonesia or drought-baked Sub Saharan Africa, long the misfortune of those without the agency to demand attention from media or policy makers—like the Gullah Geechee Nation whose native heritage is sinking into the sea as their islands off the coast of South Carolina succumb to sea level rise—the chaos wrought by climate change is now unfurling itself across the European, Australian, and North American continents.⁵ The data gets harder to deny as fires taint the air, beaches wash away, and the heat rises.

It is hard to deny something that wipes out your home and almost kills you.

We can no longer pretend to be passive observers, clicking through the news of hurricanes and famine, safe in our Middle American cocoons. Change is coming; in fact, it is here. We can change, too. Or we can wait. We can continue to deny the reality of what is happening to us, of what we are doing to ourselves and the world, and wait passively for the consequences to occur as more drought and more fires dehydrate the West, as coastal communities are wiped out, as mass extinction unfolds and wars break out over scarce natural resources.^{6 7} We can wait until it is too late, even for Middle America.

We are a part of the climate, and as it changes, we change. As we lose polar bears and butterflies, we also lose artifacts and architecture, art and history—even our favorite sweaters and teapots passed down to us by our grandmothers. This affects us. We change. Like it or not.



5. “Rising Seas Threaten the Gullah Geechee Culture. Here’s How They’re Fighting Back.” 2022. Environment. July 27, 2022. nationalgeographic.com/environment/article/rising-seas-threaten-the-gullah-geechee-culture-heres-how-theyre-fighting-back.
6. “Wildlife Populations Have Decreased 70 Percent in Only 50 Years, Report Finds.” 2022. Popular Science. October 13, 2022. popsci.com/environment/living-planet-index-70-percent-decline/.
7. “Is Climate Change Causing More Wars? - the YEARS Project.” n.d. Theyearsproject.com. Accessed October 18, 2022. theyearsproject.com/latest/is-climate-change-causing-more-wars#:~:text=Evidence%20links%20rise%20in%20temperature.



CHANGING SKIES

Many things have changed in my life since this fire. It is my new reality. The home I shared with my children, our beautiful neighborhood, our park—it is all gone. Our community is already rebuilding, but nothing will ever be the same. I will always feel that fire bearing down on me, threatening to burn away everything I know and love. It is creeping up on you, too.

The other day I found a bag tucked into a corner of the small apartment I rented after my family lost our home. Inside I had placed the shoes we wore as we fled for our lives that morning—a pair of green suede ankle boots. I liked these shoes a lot before the fire. Since then, I have not been able to even look at them, no less wear them. I hid them away because seeing them triggered real trauma, even panic attacks, soon after the fire. But now, as I untucked this bag and sucked in my breath as I realized its contents, I feel grateful to have them. In fact, I loved them. Ashes still cling to the familiar green suede and a slight smell of woodsmoke lingered. I took them outside, dusted them off, then slid them on. They still fit. Not everything about me has changed. ♡



THE SAN JUAN RIVER

KATE BAUGH



Sand and pebbles blasted my face as I poked my head out from behind the dingy Bureau of Land Management restroom to check if the adults were back from shuttling cars to the river's stakeout. The three youngsters—my younger brother Jack, my friend Scarlett, and I—had sought refuge there to escape the brutal upstream wind that whipped off the San Juan River, pelting sand and gravel from the boat ramp into every exposed inch of skin, and sending anything left unsecured flying into the vegetation far beyond our reach. Storm clouds gathered in the west, above where the river flowed under a bridge and disappeared around a corner into the canyon. Rain spit on us. We dreaded and longed for the sight of our returning parents; this would mean a reprieve from the stench of the only shelter available, but also that we would have to shove our motley fleet of rafts and kayaks off and strain against the wind, hoping the shifting current would help us travel downriver to our campsite and toward eight days of falling into the soothing rhythm of life on the river. Such was the beginning of one of our San Juan river trips, a thirteen-year tradition that began in 2003, until the year before Scarlett and I went off to college.

I grew up rafting on this river and no two years were ever alike. One particularly low water year, my dad and I smashed our waterlogged and unresponsive rental canoe into a rock that towered over our heads, leaving a deep dent in its plastic bow. The next high-water year, my dad wedged his raft on top of the same rock, now barely submerged, with the powerful current threatening to flip the heavily laden baggage boat like a child's plaything. Sometimes the heat and bugs were so intense I wanted nothing more than to jump into the river to take shelter in the shade of the scraggly vegetation clinging to the banks. Other years we huddled grumpily on the rafts through days marked by wind and rain.

Change is the only constant in this ever-shifting landscape. The San Juan River emerges from its headwaters in the mountains of Colorado and begins its journey as a clear, trout-laden mountain stream before swelling to the broad, sediment-laden river that meanders through deep multicolored canyons in Southern Utah. Several native and endangered fish species call these turbid waters home, such as the bonytail chub, razorback sucker, and Colorado pikeminnow.¹ Here, its insistent flow has revealed millions of years of geologic history of the American Southwest while it journeys toward its confluence with the Colorado River, now under Lake Powell. Over the 84 mile stretch of river between the launch at Sand Island, past

1. Kearsley, Lisa. *San Juan River Guide: Sand Island to Clay Hills Crossing*. Flagstaff, AZ: Shiva Press, 2007



the boat ramp at Mexican Hat, and down to the takeout at Clay Hills Crossing, the river meanders through a remote and varied landscape. Our journeys began where the river sweeps across a wide floodplain, populated by scrubby vegetation and contained by sheer sandstone cliffs that were sometimes adorned by dark desert varnish dripping down from above. After the river passes through Comb Ridge's multicolored spine and into a narrow red canyon, the cliffs briefly fall away to reveal the Mexican Hat boat launch and dusty gravel road that winds up to the dwindling 1920s oil-boom town of Mexican Hat. We would often stop to tie up the rafts and trudge up the road to treat ourselves to some hard-earned gas station ice cream at the lone Exxon station before returning to our rafts to once again plunge under a bridge and disappear around a bend into the canyon, leaving behind the last civilization for the next 57 river miles. Past Mexican Hat, the San Juan enters Goosenecks State Park, where the river has dug itself a steep-walled and winding path into fossil-rich gray limestone that replaces the now familiar red sandstone. The river thunders through many of its few "real" rapids below the Goosenecks.

Government Rapid, one of only two class III rapids on the San Juan, presents the river's final challenge before a two-day slack water section prior to the takeout. Below this rapid is where I see lasting changes in the canyon.

The San Juan River flows into Lake Powell shortly after the takeout at Clay Hills Crossing. However, the water begins to slow much further up the canyon causing the entrained sediment to fall to the riverbed, creating a treacherous labyrinth of shifting sandbars. Slickhorn Gulch, a spectacular side canyon rife with cool, clear swimming holes, spat massive boulders into the river during powerful forgotten flash floods to form the final named rapid of the river, Slickhorn Rapid. We often pulled over and camped at one of the willow-lined sites near the mouth of Slickhorn where we had to contend with the river's hydraulics dragging us away from the promise of a comfortable camp and swimming in the cool waters of the side canyon, and out onto the turbulent water created by Slickhorn rapid. The last year we rafted as a group, we secured one of the coveted Slickhorn campsites on our permit, but nearly floated past it on placid chocolate-colored water because we were expecting the telltale sounds of a looming rapid to alert us to our approaching destination. We were baffled by this

change until John, Scarlett's dad and our river sage who has been running the San Juan since 1993, reminded us that silt deposits had been traveling upstream and must have finally smoothed the rocks that once formed the rapid.

This haunting reality brought back something he said many years prior: in 20 years the river would probably be unrecognizable due to the impacts of Glen Canyon Dam and Lake Powell. In its pre-dam state, the river sustained human life in the region for millennia. People have used the San Juan as a water source since the first Paleo-Americans made their way to the region around 10,000 years ago. Ancestral Puebloans inhabited the area from approximately 500-1300AD. The river's water sustained agriculture along the banks of the river for this population.² Their traces can still be seen today in hastily abandoned cliff dwellings, complete with thousand-year-old corn cobs and pottery shards. Today, the Navajo Nation borders the southern bank on the lower segment below Mexican Hat, and the San Juan provides a major source of water for the region. European settlers were enticed by the potential for farming and agriculture enabled by the river and established extensive farm-based communities, particularly along the upper stretches of the San Juan near modern-day Farmington, New Mexico. Further west beyond where the San Juan drains into the Colorado River, the lower Colorado basin states of Arizona, Nevada, and California saw several destructive floods in the early 1900s. These floods obliterated agriculture and left the desire for dams along the unpredictable Colorado River to provide flood control, stored water, and hydroelectric power.³ Today, it is tamed by 15 dams spaced every few hundred miles.⁴ The once mighty Colorado no longer meets the sea in the gulf of California, except during unusually wet years, due to the American Southwest's insatiable thirst.⁵

The Colorado is joined by several rivers, including the San Juan, under Lake Powell. Lake Powell is held back by Glen Canyon Dam, one of two dams that bookend the Grand Canyon; its sister Lake Mead is impounded by Hoover Dam near Las Vegas. These two dams work in conjunction to supply power and water to the region. Completed in 1963, Glen Canyon Dam was constructed to meet the

2. Kearsley, San Juan River Guide: Sand Island to Clay Hills Crossing.

3. Glen Canyon Dam. 2.kenyon.edu/projects/Dams/glen.html.

4. Migiro, Geoffrey. "How Many Dams Are There on the Colorado River?" WorldAtlas. WorldAtlas, August 30, 2018. worldatlas.com/articles/how-many-dams-are-there-on-the-colorado-river.html.

5. Glen Canyon Dam. 2.kenyon.edu/projects/Dams/glen.html.



terms of water agreements between the upper and lower basin states and Mexico. It provides carbon-free hydroelectric power to six states and supports a booming tourism economy. Millions of visitors flock to the region every year to explore the intricate coastline and fantastical red sandstone formations in personal watercraft or rented houseboats.⁶ At highest capacity, the water level reaches 3,700 feet above sea level, spreading out across the landscape and flooding numerous side canyons to create a twisted coastline. However, this water level has been declining due to extended drought conditions in the upper basin states in the 21st century. On February 10, 2022, the water level reached 3,529', the lowest elevation seen since filling began in 1963.⁷ The losses of water from Lake Powell due to evaporation and seepage into the porous sandstone walls amount to enough water to supply domestic water to 4 million Americans for a year.⁸ In addition to causing the loss of water due to percolation and evaporation, the reservoir also flooded or altered many sites that are important to the Native Americans of the region, including the Navajo Nation, Hopi, and San Juan Southern Paiute.⁹ Most notably, the Rainbow Bridge. The Rainbow Bridge is a soaring natural sandstone bridge made easily accessible by the swollen waters of Lake Powell, and therefore vulnerable to damage from overuse by thousands of annual tourists. This site has strong spiritual and cultural importance to many native groups in the region. These losses have spurred conversations about whether the dam is actually beneficial or if the reservoir should be drained and the dam removed. Proponents of removal say that if terms of the water agreements were renegotiated with more current water flow data, the need for the dam would be negated and the renowned beauty of Glen Canyon could once again be revealed. Opponents of reservoir removal bring up the loss of a reliable source of hydroelectric power, a loss of income to those supported by the tourism economy, and a loss of lifestyle to those reliant on the water for farming and agriculture in the arid western states. Some compromise plans have been drafted, such as preferentially



filling Lake Mead first to mitigate some of the evaporation and percolation issues surrounding Lake Powell, while still maintaining the benefits of hydroelectricity generation and flood control.¹⁰

We could feel the effects of Lake Powell on the last day of our San Juan adventure. Our exhausted group pulled into the final camp at Steer Gulch after a long day of slogging the rafts over a maze of sandbars deposited by stagnating waters.

When we tied up our rafts and assessed the campsite, we were met with a haze of bloodthirsty mosquitoes who called the algae riddled pools in the side canyon home. The droning cloud was so thick and starving for weary campers that we made the decision to raft out the last few miles to the takeout despite the looming dusk. We hastily packed up the few things we had brought to shore and shoved our rafts back out into the slow current, leaving behind the marshy mosquito homeland. As the darkness intensified, we were glad for the slow current for once: it would keep us from missing the last possibility of getting off the water before encountering a non-navigable waterfall created by the silty deposits of Lake Powell's still waters forcing the river over a sandstone ledge. We rafted in moody silence, individually digesting our trip and misfortune with the last campsite. The steadily falling canyon walls suddenly opened up and revealed an awe-invoking sight: the full moon had poked its head over the pale pink cliffs and reflected off the river as we emerged from the canyons for the final time. It sparkled off the calmly eddying waters and held everyone spellbound. Content to float and watch, we pulled our oars into the boats, so the only sounds were the quiet splashing of river otters playing in the shallows and crickets singing on the vegetation-choked shores. After what felt simultaneously like a lifetime and a fleeting instant

of watching the moon's pale light illuminate the canyon scene, the oars were gently lowered into the water and the rhythmic creak of the oarlocks and slow splashing of the paddles resumed until our headlamps illuminated the sign warning of the dangerous waterfall ahead, signaling us it was time to steer our rafts towards the boat ramp and end our journey. 🍷

10. Balken, Eric. "Fill Mead First: A Different Approach to Managing the Colorado River." 2019. riversimulator.org/Resources/Conferences/GWC/2019/FillMeadFirstDifferentApproachToManagingColoradoRiverBalken2019GWCSC.pdf.

6. Glen Canyon Dam. 2.kenyon.edu/projects/Dams/glen.html.

7. Lake Powell water database. lakepowell.water-data.com/index2.php.

8. Glen Canyon Dam. 2.kenyon.edu/projects/Dams/glen.html.

9. Sproul, David Kent. "A BRIDGE BETWEEN CULTURES: An Administrative History of Rainbow Bridge National Monument." Rainbow Bridge NM: Administrative History, 2001.



THE LANDING PLACE

Interview with LONNI PEARCE



This spring, Changing Skies editor-in-chief Ian Hall had the opportunity to interview Dr. Lonni Pearce, the Associate Director for first-year writing at the University of Colorado Boulder. Lonni, along with her husband and two sons, were some of the many people impacted by the Marshall Fire, a wildfire that raged for two days and destroyed many homes. In our conversation, she recounted the events that led to the loss of her family home and offered some insight into the realities of climate change.

This Interview was recorded on April 25th, 2022.



HALL: Tell us a bit about your experience when the fire started. Were you all at home? How did you hear about the evacuation notice? How did you hear about the fires themselves?

PEARCE: It was December 30th. It happened over the holidays. I was sitting at a table doing a jigsaw puzzle with a window behind me, and all of a sudden, things got really dark. I turned around and there was a giant cloud of smoke. My first thought was “Oh, there must be a brush fire someplace.” I started checking social media and saw that there were some reports of a grass fire close to Marshall. We live... lived in Louisville, south of Harper Lake, so I didn’t worry too much because that’s a ways away. But we kept seeing clouds of smoke, started seeing more things on social media, started seeing that the fire was moving toward Superior, which is the next town over. When we saw that Superior was being evacuated, I told my Husband, “This is weird, but we may have to evacuate.” [...] We started thinking about things a little bit. We took a video of all the rooms in our house. I started checking the emergency website. Then we heard we had to evacuate, and we had about 20 minutes. There were law enforcement driving through, smoke was just everywhere. We just grabbed a few things, our cat, and evacuated.

HALL: I noticed you said “Live” and then corrected yourself to “Lived.” Is this transitional period still affecting you and your family, and if so, how? How have you tried moving on?

PEARCE: As far as being a transition period, well, first of all, we’re still trying to figure out what we’re going to do. We’re either going to sell our lot and move someplace else, or rebuild, which seems more likely. During the transition, everything moves more slowly than you might imagine. We’re still waiting for our lot to be cleaned up, so it’s still basically the same as it was right after the fire. We’re renting a duplex, [but] we don’t call it a home, we call it “the landing place” because it just feels like a temporary place right now, it just feels like where we’re going to be for a while. We’ve been really fortunate that there has been a lot of community support to help all the families really. I mean, we have basic support we need for furniture and kitchen stuff and clothing. But, yeah, it doesn’t feel like home. So, it’s both a weird space of, looking back on what we lost, but we also have to start making plans for where we’re going, and we didn’t choose this, we weren’t in any way ready to do any of this, so there’s a lot of balancing. Like, there’s all the emotional stuff about losing our house and losing all of our things that we loved and treasured. But then there’s the mundane things of, “Okay, we have to, you know, sign up with FEMA for debris removal.” So, there’s the pragmatic stuff and then the emotional stuff in there, and you have to jump back and forth.



HALL: Colorado has seen a lot of fires in 2022, so far. From Marshall to NCAR, experts have said that we may be in for an above-average fire year. How have you and your family prepared for the possibility of more fires?

PEARCE: I’m very aware now of some of the government conversations around wildfire preparedness, around emergency evacuation systems. There’s a conversation going on in Colorado right now about the wildlife- kind of wildland urban interface and how we have to do a better job of that space that’s for where urban areas join wildlands and grasslands and that we need to do a much better job of thinking carefully about those kinds of spaces, because that was clearly a big part of this problem, that it moved so quickly through the grasslands and just jumped right into neighborhoods.

HALL: Would you say that your experience with the Marshall fire and its subsequent fallout has altered your opinion on things around climate change, or made you more aware about some of the things that climate change can have an effect on?



PEARCE: We were already really concerned (about climate change). I think a lot of people who live in this area are very aware of the concerns of climate change. And certainly, we had never ever anticipated that our quiet little urban neighborhood would go up in flames. I mean, that just seems, like, completely unreal, and still feels very unreal. So, I don't think it's altered my views, but it's made them really deeply personal. Also, I do think that in areas, especially the American West, where we don't have a lot of water, we're going to have a lot of wildfire problems, and we're going to have a lot of water problems. We should start thinking about urban design differently, landscaping differently, anything we can do to conserve water is going to be really important. I've learned a ton about building codes, so there was a big conversation in Louisville about Building codes and thinking about more sustainable building codes, fire resistant structures.

HALL: Is there anything you'd like to say to others that were impacted by the fire, or that are maybe worried that something like this could happen to them, either living in Colorado or anywhere else that's prone to fire risk?

PEARCE: Have an evacuation list, even if you think you don't need one. Know exactly what you would grab if you had 20 minutes and know exactly where it is in your house. Don't worry about stuff that can be replaced. Birth certificates can be replaced, but the drawings my sons made in third grade can't. Think about your treasures. Also, think about participating in something that makes you feel hopeful about the future. While we're aware that climate change is going to continue to affect



our area for a long time, that there's no quick change, I think that it's important that people become involved in something that they feel hopeful about; Nature conservancy, wildlife preservation, planting a garden. Doing some things that make you feel hopeful and also recognizing the power of collective action, that when a lot of people do make changes, it does make a difference. Pay more attention to local politics. Know what's going on in your community and influence government on the levels that you can. And also appreciate kindness. When the fire first happened, the first thing that we heard was "Okay, file a claim with your insurance, and start making a list, you're going to have to list every single thing in your house for your insurance policy," which is gut wrenching and awful. Fortunately, we did not have to do that, but we had started to. I started a list of the things that I treasure that I know we can't replace. But I also started a kindness list, because people were incredibly

kind, and total strangers shared food, clothing. So, in the midst of crisis, human beings take care of each other. We're grateful for that.



Since the Marshall fire engulfed more than 6,000 acres of land in Boulder County, thousands of people remain in transition. The landing place, as Dr. Pearce christened it, is the continued reality for many who still live in limbo. Though those family homes and memories will never be replaced, efforts are being made to return these victims to some semblance of a normal, comfortable life. A group of designers hailing from all corners of the Colorado architecture community have joined forces to create the Firewise Colorado RESTORE Passive House, a cost-effective, energy efficient, small-footprint house design meant for the victims of the burn.¹ The Passive House model is nothing new, having been introduced to Europe in 1991 by designer Dr. Wolfgang Feist.² As of 2022, roughly 200 Passive House designs have been verified by the Passive House Institute of the US (PHIUS), a non-profit that reviews and certifies each Passive House to ensure they meet the climate-efficient standards expected of the project.³ Each house is built with three distinct requirements in mind, regarding air circulation, energy usage, and internal climate control. In Colorado, RESTORE Passive House is taking advantage of the Colorado government's \$10,000 rebuild incentive offered to designs that fit the bill of eco-friendly and electrically-efficient.⁴ For the victims of the Marshall fire, this means an opportunity to start fresh, with climate compatibility at the forefront of their minds while looking for a new home.

Look for the full video interview with Dr. Lonni Pearce on our website, CHANGINGSKIES.ORG.



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THE CUBE

JACOB SZABO

When the tides flowed in enveloping all the land, Eagle clutched in its claws Hummingbird and Coyote, lifting them from the blue below. Eagle carried them to respite atop a mountainous pinnacle, all surrounding it submerged. After the waters receded, Eagle instructed Coyote to search for land. Coyote found the valley exposed. There, Coyote found a wife to birth the people, and he taught them to survive upon the land.

Red rust hides amongst the gray rock and golden grasses. They come out from the cave, their skin painted in speckled red. Toward the ocean, tan hills sit below green-blue mountains who rise like men at the break of dawn and cast the sun's shadow when it falls. A summit, whom they call the resting place of the hummingbird, "Umunhum" in their native tongue, protrudes from the earth. Its gift comes in the water, who flows down its canyons leaping and scuttling into the bowl below.

The missionaries arrived on horseback with the clip-clap of hooves upon raw soil. From the Ohlone they heard stories of a red ore found in the caves below the towering mountains of the west. The Spaniards recalled their native Almaden, with its vast red mineral riches buried deep, bringing exploitation and wealth. They dubbed the place "New Almaden." Axe in hand, they marched into the cave at morning's call, the dull echo of iron on stone welcoming them through the wooden arches into blackness. Thousands labored tirelessly digging and shoveling behind the roar of extracting furnaces. And quicksilver flowed like chrome molasses, its heavy sediment festering at the bottom of riverbeds and hiding in flesh and bone. A century of devastation passed, and with it trees fell, rubble amassed, and the hills grew like volcanoes, stark and devoid of life.

Atop Umunhum, they erected a tower of stone and metal, a rotating array upon a stone pedestal. Searching for cold war rockets that'd never come, it poisoned its holy surroundings all the while. In company, radio towers were raised on the ridges as spinal columns communicating messages both to minds and the environment. The desecration of the physicality of Almaden made it lose its soul, even its humble farmhouses have been corrected to blend with the façade of the modern era.

From my childhood I recall the rain, the shade of greenery, the transparent air. Every year the heat becomes more suffocating, the sun blazes everywhere you tread, and the air obscures the mountains. You find yourself walking streets in an orange haze, dancing a claustrophobic and aimless waltz. Some days I hope the whole place burns to the ground and the ashes fertilize the valley. I imagine nature



reclaiming the structures, and over millennia her slow erosion washing away the evidence of our meddling.

Things don't need to return to their prehistoric conditions. Rather we must conserve and cherish our history, revitalize it, and embrace it, not ignorantly trample and forget it. As a child I found mystique in Almaden's environmental beauty, charming with its sense of isolation from the concrete jungle that the urban spread of the rest of San Jose conjures. But no longer do people plant trees in the place, they simply cut them away when they become an inconvenience, the environment holds importance only so long as it isn't an obstacle to suburban autopilot.

I want this place to ooze the nostalgia that a familiar place does, a place where you can feel the homeliness of childhood in adulthood, a place where you don't see the terrain grow gray and the sky grow blank. To see the environment conserved and valued, the landscape not seen as disposable but instead a part of us. To protect the environment, to conserve our history, to embrace the legend and follow the lessons taught by Coyote.

There is a folk legend known to the residents of Almaden and abroad telling a tale of a back road in the hills of the mining district. On Hicks Road, a colony of blood albinos congregate on the roadside awaiting potential victims in the night. To me, the story exposes the demons of our history. Rising from the grave, the blood albinos who seek vengeance and pleasure in killing those that left them behind remind us of the unmarked graves we've built upon and forgotten about. The story exhumes those laid to rest for the cause of destruction. They are all the Indians gone mad by mercurial waters, all those who stroked carving away at hilltops from the treeless sky, they are our haunting guilts of those who passed by our physical demolitions.

For them do Almaden's residents silently cry for a reckoning, for someone to say something and inspire change. Only as soon as we acknowledge the trauma of environmental destruction can we remedy it. And while it may take generations to see how far we have strayed from the path, this fate remains inevitable. Most of us will find alienation in our own homes and change will bloom from there. ♪



SEVEN YEARS

GRACE DONNER



Art by JACK ELDER

Something old

I unzipped my tent and stepped outside onto the moss-covered granite in which we set up camp. My dad was by the fire already cooking breakfast. The smell of rolled oats mixed with damp springtime was a calming wake-up. My sister squatted by the lake, pumping water into our filter to make coffee with breakfast. As we paddled to this campsite, we passed moose, birds, elk, deer, and fish. I never knew how lucky I was to experience such untouched earth. I never knew that others did not. I never knew that others lacked this desire. It was this unknown innocence of experiencing beauty that guided me through life. After all, I was only seven years old.

Something new

I lay on my front lawn, feeling the sun rays kiss my warm skin. The grass was the greenest it had been that summer. Not any greener on the other side. I bit into my chicken nugget dipped in the special sauce from Chick-fil-A, enjoying the simple pleasures of life. Then I took a sip of lemonade from their Styrofoam cup—not my most sustainable moment. After cleaning up I headed to the trash and noticed my friends had dumped theirs in the recycling. When I asked why, they said, “I literally do not care.” I said, “How can you be sitting outside on this beautiful day, enjoying this beautiful weather, and not want your future children and grandchildren to enjoy this same life?” The frustration I felt made me realize that not everyone looked at the world the same way I did. I guess that’s just a part of growing up.

Something broken

I sat at the picnic tables, surrounded by all the other kids in my fourth-grade class. The teacher led a quiz to see how many total Earths we would need to survive if everyone lived like us. My mother gardened and my dad hunted. We had our own well for water, but we used a lot of heat during Minnesota winters. I thought about the amount of trash I had used that day. I brought a reusable bag for lunch and only had one snack in a wrapper. Along with a few other things I counted, it fit into a small milk carton. I still needed three Earths if everyone lived like me.

Something bruised

I drive an old car with the worst gas mileage ever. Pumping horrible chemicals into the atmosphere I claim I want to protect. I am a sucker for fast fashion and get Starbucks tri-weekly. I preach all these tips for sustainability, but who’s to say I’m correct?



The world around us
On the ground that we step
Cannot be fixed
Until our views are met

Fixing what is broken is contingent on the collective realization that something went wrong, and we need to act to reverse its effects. But in this day and age, society cannot agree on anything. How can we fix anything in a world of cancel culture? Someone will say one wrong thing, and no one will give them the air to fix their words. This pandemic made us the un-United States. No one can agree on how to be nice and how to forgive. Never mind trying to fix the broken things.

A group of climate activists, scientists, and artists set up a clock in Times Square showing us the countdown until our time is up. Our time to reverse our destruction of the natural world. “How long does the world have left to act before an irreversible climate emergency alters human existence as we know it?”¹

A set of LED lights rapidly counting down. A symbol of a bomb. “A slow-motion carbon time-bomb we are dropping on ourselves and all of Nature.”² If this makes you uneasy, anxious, stressed, or worried, then it is doing its job.

There’s another clock in NYC that tracks the amount of US debt. It was created in 1989 to encourage a change in our country’s actions regarding financial decisions. At its early stage the total read \$3 trillion, and it now sits at \$29 trillion.³ It begins to make me think... will the climate clock not matter either? Maybe in a few more decades there will be a new clock aiming to encourage our society to create a sense of collectiveness we have yet to learn.

We have about seven years left to try to agree. Agree to fix this broken thing that some people don’t even believe is broken. Cut the selfish actions and feelings and think about someone else for once. Think about everyone else for once. Think about this planet for once.

We have about seven years to reverse the effects of climate change. The effects of our mindlessness, our carelessness, our overlooking, and our greed. In seven years can we all agree?

We have about seven years to find the missing pieces. The pieces to put this broken thing back together. The pieces to convince the people that this thing is broken. The pieces to convince the people that we know how to fix it.

We have about seven years to fix this broken thing. Seven years to come to an agreement. Seven years to learn how to forgive. Seven years to learn how to love. Seven years to appreciate the world around us and find the collective desire to preserve the most natural state. ♪

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EARTH OVERVIEW

MARCUS TEN LOW

The sun blisters the day wide open.
Possessed with money, obsessed with tough dealings,
Humans grow fat on the flesh and secretions of livestock,
Purchasing and unwrapping and dwelling
Among the feedings of technology and its endless, shaping machinations.
I never denied that shades of emotion like love, affection, and more
Were a part of this;
But also thoughtlessness,
Awash with the slogans and prowess of corporations.
It became rationale for sex and procreation too.
The dumping grounds are a shimmering expanse of multicolour.
Vast tracts of land are not only divided up
But are carved up, cleared to make way for cattle and other animals.
You hear the stockmen and -women whingeing about drought,
Flood, fire, and natural disaster re-perpetuated by their acts.
It's no longer natural.
Fighting the elements, and pulling out their bolt guns,
Manning kill-lines and factories of sentient beings
To kill what they've bred as soon as profit makes itself appear.
In the cities
Are the threads of roads, the push and pull of traffic.
Locked out of millions of empty rooms,
Beggars sit, kneel, lie stranded along streets
Filled with this plug of motion.
If only we knew, but in the spirit of showing rather than telling,
The world's blister will only show once it has become
(Not only a frown of obstinance, but)
A bruise, a boil, a cyst, too late
A cancer of the moral death of humankind.





BURN AREA

GEORGE HAKALA

Winding mountain roads always made me sick when I was young. I grew up on such drives: pilgrimages to small mountain towns and scenic trips through Rocky Mountain Park. I can't count how many times I've buried my head between my knees on the slopes of Berthoud Pass.

And yet, despite growing up where the wild things are, I've never felt natural out in nature. Don't get me wrong, I still buy a fishing license every year and I've made a tradition of boys' trips to the mountains, but the endless expanses of green pinning over slanted white canvas never serve as more than a backdrop to coincidentally remote experiences. The awe-inspiring views are, for me, usually just shrug-inducing.



Winding mountain roads always made me sick when I was young. Now, in the driver's seat, it's the blind corners and Boulder cyclists that turn my stomach. Google Maps directs me to the heart of Lefthand Canyon.

Whistling wind rattles the canyon walls. Smokey the Bear warns, "Fire Danger." Sheer slates of tan rock break up the seas of green that flank me on either side. When I turn up towards Salida, I pass another bad sign.

"Entering burn area."

You wouldn't know it otherwise. The golden leaves of fall only get more vivid the further into the valley I go. That is, until I round a bend and see the aptly named Bald Mountain. Mossy green coats the base, climbing up the mountain until cutting off, revealing a straw yellow hillside dotted by charcoal tombstones. Ashen graveyards crown the mountain ridges.

Bighorn Mountain, its peak torched by last fall's fire, looms over the valley. A gray bird rests atop a mostly bare pine tree midway up the east side of Gold Hill's namesake. Does it remember when these hills bathed in flame? Kindling cracks underfoot as I climb the hill to get a closer look at its charred remains. The bigger logs don't creak like normal as I step over them. Instead, a knife crashes through a phonebook as my foot snaps the fragile, hollow layers of the firewood.

Along the fire line aspens wear coats of dalmatian fur, their bark only teased by flames. One tree, felled by a crack at the base, bears its tan-gray-



brown bark to the heavens and hides its burned side in the dirt. Just five feet away lie the not so lucky ones. Branchless blackened pillars tower over charcoal stumps across the sweeping expanse.



Until recently I would never have thought to spend my afternoon sitting in the site of a forest fire, much less writing about it. Maybe it's because I spent the year cooped up inside, like everyone else through the pandemic, that I seem to finally hear the call of nature. But I'm not convinced by that. While we all spent 2020 inside, things got pretty heated outdoors.

The Cameron Peak Fire, East Troublesome Fire, and Pine Gulch Fire. 208 thousand acres, 192 thousand acres, and 139 thousand acres. Burned. The top three largest wildfires in Colorado history; each came in the summer of 2020.

This wasn't some coincidence of time and space that just so happened to devastate Colorado's forests. No, this was a long time in the making, an unwatched pot reaching its boiling point.

A 2014 study of fire-regimes in Rocky Mountain subalpine forests found that fire severity worsened as summers got warmer and dryer, a consequence of global warming. "Over decadal to centennial time-scales, future climate warming may have more notable influences on fire severity, through direct impacts on fuel moisture and indirect impacts mediated by vegetation and fuels."¹ As temperatures rise and summer precipitation falls, forests get dryer and dryer, making them more perfect fuel for scorching wildfires. The climate crisis is finally leaving real, tangible marks on our Earth. Burn marks.



Lefthand Canyon left me unsatisfied, so I set out to get a better idea of what Colorado's largest wildfire looks like a year later. About 40 minutes out from Mummy Pass, I decide again to forgo my formal destination and instead simply wander off from the side of Buckhorn Road. On one side of my van, there's exactly what you'd expect from a national park: a lush forest bed resting beneath pine green pillars that seemingly go on forever. On the other side, nothing remains.

Dead logs resemble smelted steel ingots, their bark almost scaly, shining in the unusually warm November sun. Tufts of soot painted stone jut up from ash gray dirt only adorned by the fallen leaves of other forests, carried here by the same winds that stoked last summer's flames. I can tell the fire leapt from peak to peak. Seas of straw underbrush pool in the valleys where burned beams stick out like remains of an ancient shipwreck.

¹ Higuera, P.E., Briles, C.E. and Whitlock, C. "Fire-regime complacency and sensitivity to centennial-through millennial-scale climate change in Rocky Mountain subalpine forests, Colorado, USA." J Ecol, 102: 1429-1441. 17 July, 2014.

Violent winds storm the hills, so I take shelter behind a crowd of coal-colored rocks. Rays of light materialize in clouds of ash and dirt; an illusion of stillness.



Winding mountain roads always made me sick when I was young, but they can't be blamed for my thoughts on the trip back from Roosevelt National Forest. It's so easy to get caught up in the moment and lose track of the unraveling thread that is climate change. I never really cared to hold on to it in the first place, until I got out there to see it for myself. But now I can't unsee it, the desolate forests. The burn marks. ✨



A STUDY IN ELUSIVENESS

TASHA SMITH

I.

If you venture just below the equator and veer toward the east coast of Africa, you will reach Zanzibar. A quick snapshot reveals pristine white beaches framed by lush greenery. The forests are home to monkeys, antelopes, and lonely leopards who bear their endangered status like weights upon their chests. Chances are you will never catch one, as generations of elusiveness guide the leopard's careful slink through the shadows of the palm trees.

On these islands live Old Gods, their hands weathered by the elements; the dirt underneath their nails is a remnant of their good work. Unassuming at first, they form the tenets of knowledge and stability for the local communities, and in their blood runs generations of quiet observation, as much a part of the landscape as the motion of the clouds.

It is strange to think about our instincts, programmed into us from generation to generation. Is my love of the summer rain—of parchment paper—really the love of my great-grandfather, passed down to me?

I am sad to see the smiles of the Zanzibari farmers wane when they describe the recent drought. It is mumbled in speechless statements as they wring their hands and run their fingers through their beards; less water means less harvest. The main island and its cousin Mafia Island were once called the "Spice Islands" due to their spoils. But now that the rain has stopped nurturing the soil, the livelihood of the farmers is put into question as their profits suffer. The available fish are smaller, less hearty, shrinking as the hunger of their hunters grows.

There's a certain feeling of loss associated with the change of the only things we think of as stable. The Earth is a funny thing because it's not something that we have ever truly owned or could ever truly own. She does not belong to us. And yet we have grown up with her, and we have thought ourselves attuned to her cycles.

And who are closer to the Earth than her protectors, those who tend to her gardens and harvest her fruit? Something about this way of living seems more attuned to our purpose.

The farmers have done nothing to upset the natural order, and yet they suffer. The loss is infinitely more severe because it is felt by countless generations of people who have been born on the island and put to rest on the island. It is felt by future sons and daughters who will sense that something has changed, that something is not right, in the very core of their beings and in their bones.



II.

With every season comes a different view of the city, its buildings holding unquantifiable histories and memories. The city of Milan has been here since time ran backward, and it lives on in ancient paintings and ancient stories. It is populated by ghosts, but that is precisely the charm of old cities. And ghosts can make just as good of friends as anyone.

In this city, there is a small boutique. Its contents are carefully chosen and picked through by the owner to present only the best to its patrons, the style savvy city-dwellers who are lucky enough to live in one of the world's four fashion capitals.

The owner has aged gracefully. Her health has declined, but it has made no impact on her demure personality or her quiet professionalism. She has been in the industry for a lifetime and has traveled Europe extensively. Her collection contains all the best pieces from all the best places. She can quietly tell you about the only places worth going to in the heart of Paris; she can piece together your expertise with a quick glance from your collar to your boots.

Remarkably, she does not keep this knowledge to herself. You need only ask, and she will give you the key to her wealth of wisdom. She will smile and invite you to brunch, where she will serve you pasticciotto and espresso as light breezes fan the curtains in the windows seen from the patio.

Fashion is marked by the seasons. A long-awaited spring collection, a lukewarm fall collection: the boutique owner is well-attuned to these shifts, adjusting her wardrobe accordingly as they arise, storing the sundresses and light trousers of summer to welcome winter's fur and peacoats.

But in Italy, temperatures are rising slowly, and wildfires are growing in prominence. The waters of the Mediterranean Sea lap playfully at Venice and threaten to pull it underwater. In the Mont Blanc massif, the Planpincieux glacier dances closer to boiling, flirting with the Val Ferret valley like a lover crossed. What must it be like, to live underneath a falling glacier? When I imagine falling from the sky, the trip is endless, and I live full eternities before my limbs hit the ground. Can you live an entire life in freefall?

I see generations living in the valley as the glacier's shadow licks at the edges of the village.

If only winter would come to Milan. The boutique owner longs to see the frost cover the windows and the snowflakes come drifting softly down. Her winter collection is gathering dust.



III.

Colorado mountain winters are exceptionally beautiful. The evergreens catch the snow with arms unfolding. The Colorado landscape is a strange mix of green and dry. Soft rustic browns litter the ground in summer, the trees a muted green, unlike the wet, saturated foliage of the Pacific Northwest.

I'm lying on the couch waiting for the year to start. I keep running but I always land at a standstill. Yesterday, our car was stuck behind a train for an hour as the snow fell and we waited for the crews to get it up and running again. It's funny, two moving objects meeting at a crossroads and having no place to go. I keep daydreaming about taking a train far, far away up into the mountains and beyond this place. But a train is what is keeping me rooted.

It's windy today—too windy to drive, he says. It's okay, I get it. But why is my happiness so fragile that canceled plans hit me as hard as that train does?

But it's not only windy... There's a fire burning, a far from metaphorical fire, and it is burning north and south of us right at this moment. I'm the type who's addicted to the news. Constantly refreshing Twitter, refreshing Instagram, refreshing Safari. It's like a TV show with writing so random, so surprising, that I'm stuck to the screen. There's a shooting nearby—there's another shooting nearby—there's an anniversary of a shooting nearby. Born and raised in Colorado, it's in my blood.

My mom is texting me. The fire is getting closer, but I don't think it's going to reach us. I think it's safe to fall asleep.

I've always tried to get into minimalism. I want to be free from possession, from objects that keep me from living and being in the Now. But something always stops me; we've evolved to rely on our comfort things, our baby blankets.

So, I can't imagine losing everything.

"What would you take? What three items would you take?" We ask each other quietly, slowly nodding off in muted nests of light and sound. We hold each other when the future is uncertain. I don't deserve to sleep when there are people spending 24 hours awake in graveyards.

The snow comes the next day, but it's just a few hours too late. Didn't you get our call? If you had only come a day before we would have welcomed you. But now you taste like ash.

The downfall of life will be climate nihilism: the belief that we are trapped in a building, burning, with no escape and no way to stop the spread. And yet we are the ones dousing it with gasoline, urging it onwards and feeding its appetite. One day the rain will cease to fall in Zanzibar. One day the glacier will fall into Val Ferret valley.

There is a marked difference between lighting up a burning house and watching a boulder rolling down a hill, pushed at its beginning but otherwise unaided, its unstoppable motion fully out of our control. We can put down the gasoline, but

first we must believe that we can stop the fire. For things will always end, just as they must always begin, but the difference between lying still and living in this world is that to live in it you must first believe in it. ♻️



NYC, 20TH CENTURY

TAMAR SHAPIRO-TAMIR

Remember the big ships
In the harbor,
The worn, the tired, the huddled masses
That shuffle off them,
Spending their last coin for
A place to rest their heads tonight.
Remember the buildings
That rise ever higher,
Threatening to, when they
Inevitably tumble down,
Take the sky with them.
Remember the time
When man literally
Reached his peak,
When he made himself
Equal with the gods,
When he built an empire
On a base of democracy,
On a grid of lies,
On the backs of woman, child and animal.
Remember this tall, proud city,
This shining emblem,
The new Rome.

Remember what happened to Rome?
You will.
You will remember when you watch
The sky come crashing down into the sea,
Squashing the city flat,
Sending the ships under
In a huge tidal wave
That will rise up,
Towering into the universe
Like the skyscrapers before it,
That will come back down
And wash over teeth, eyes, everything.
Remember as you suck in
One final deep breath.
Remember as you dive
Beneath the surface.
Remember for the millennia
That you drift through oblivion.
And when the world rebuilds itself,
And a new race of beings comes to power,
Resurface, and tell them
What you
Remember.



THE LAST SONGBIRD

DONALD GUADAGNI

Would you notice one less snowflake or even if the snow was fake? Childhood memories as it seems are nothing more than fondest dreams. December snows I would embrace and walk to school with lifted face, all so white and crystal clean, those snowflakes now forgotten dreams.

The decades pass and now it seems, cold winter rains replaced those small white dreams. Each passing year the snow and cold retreat beyond the new year's hold. Transparent nights and twinkling stars gave way to haze that swept the dimmest ones away. Light pollution and emission haze cloak night skies with stagnant greys.

5000 stars up in the sky, when I was young each one was a prize, each year it seems as I recall, the number dwindled, the number now small, I think last night I stood outside, the stars all but gone, all that is left and all that remain too faint to be beautiful, too few now remain. Another childhood dream fades slowly away in a world that embraces profit and decay.

Winter solstice used to mean all things resting to wait for the spring, the last few years I watched winter die, as it merged into nothing more than brown dead time. No longer the slumber through darkness and cold, just languid decay, just warmth and black mold.

There was a joy that was the spring, when children played and returning birds began to sing, each year, it seems, from childhood days, fewer birds return, fewer stay to brood. The grass and trees never turn quite green, muted, blunted, is all that I see. Bygone days of vivid blues, of fluffy whites and bright green hues. The air is now a dull grey haze, the vivid colors from my childhood days, washed away, muted, and replaced with industrial haze, industrial waste.

When I was five, ubiquitous white butterflies danced in the sky, things and creatures everywhere, fireflies chased in the twilight air, time passes by, each year it seems, these creatures were just childhood dreams. The stunted flowers and hot spring days seem to have melted these creatures all away. The spring showers that I adored are now sluggish drizzles for a few days, no more.

Summertime in my mind was the ultimate dream, the greatest reward and freedom from school, lazy times to play, and swim outside and explore. Everything was alive by day and by night, creatures, cicada, crickets and mice. As the years slowly passed and time moves on, that cacophony of life, diminished, retreated, until it was gone. The days are too hot, the summer too long, the monsoons have retreated and now they are gone.

Grey water it seems, is all that remains, to quench the thirst of the plants that remain; fresh water, it seems, is as scarce as the rains, the streams are all dry, just a trickle in the river remains. A childhood dream, to swim and to laugh and chase thunderstorms and rainbows that pass. I listen at night and strain to hear the childhood sounds that I found so dear. The death of stars, the creatures, the plants, the seasons it seems will merge into one at the last.

One season all year, my heart has great pain, as I listen to the last lone bird of the spring, the last song, the last hope, goes unanswered it seems, there is no reply, no echo, a vast loneliness, a tear and despair for the death of all things, if only we cared about these simple things. One last breath, one last gaze, the last green fades away, everything brown, everything grey. All childhood memories now lost in the haze.

DESTRUCTION OF THE AMAZON

KIMBERLY CASTELINO

The mata mata may not be the cutest animal you've ever seen. With its flat, ruffled head, it looks like a cross between a turtle and a leaf. However, like most animals in the Amazon, it serves an important purpose to the ecosystem. The mata mata resides in the rivers of the Amazon. It hunts by opening its jaws, creating a vacuum that sucks in any unsuspecting prey nearby and then expels the water out.¹ This animal is one of the more important predators of the ecosystem. They help control aquatic populations by feeding on small fish and invertebrates.² And while the mata mata is not currently on the International Union for Conservation of Nature's list for endangered species, by continuing to deforest the Amazon there is a possibility that this endearingly grotesque creature could vanish forever.

As the sun rises in the sky, the Amazon springs to life like clockwork. Morning dew drips off the leaves of towering kapok trees. Macaws emerge from their nests on their way to a morning meal and black panthers trudge back to their dens after a long night of hunting. Everywhere you look, something amazing is taking place. But while animals roam through the dense thicket of trees, an army of bulldozers and tractors tear through the Amazon, destroying every tree and plant in their path to make space for a new dominant species: Humans.

The Amazon is the world's largest rainforest and millions of species call it home, but forests are cut down to make room for farms, ranches, and living spaces. As the demand for products like beef rises, cattle ranchers expand into the rainforest. They cut down vast expanses of trees using bulldozers and tractors. Then, they burn down the remaining plants and tree stumps to clear the area for their cattle farms. While deforestation creates more space for farming,

1. "Mata Mata Turtle: The Dallas World Aquarium." *The Dallas World Aquarium*, November 25, 2013. dwazoo.com/animal/mata-mata-turtle/.

2. "Mata Mata." *Animalia*. animalia.bio/mata-mata.



it also demolishes the home in which all these magnificent species live. According to the National Science Foundation, "an average of 6,500 square miles of the Brazilian Amazon has been deforested," which is about 4,924 football fields.³ Scientists also say that the increase of human activity and climate change has brought the Amazon near a "tipping point".⁴ This means that the Amazon has reached a point where the impacts of deforestation could turn the once thriving rainforest into an uninhabited wasteland.

The Amazon is also known as one of "the most biologically diverse places on Earth" and contains nearly 10% of the world's known species. Namely, "40,000 plant species, 3,000 freshwater fish species, and more than 370 types of reptiles."⁵ But as fires continue to rage through the Amazon, it puts the

3. Cimitile, Matthew. "Amazon Deforestation: Earth's Heart and Lungs Dismembered." *National Science Foundation*, January 23, 2009. beta.nsf.gov/news/amazon-deforestation-earths-heart-lungs.

4. Sandy, Matt. "Why Is the Amazon Rain Forest Disappearing?" *Time Magazine*, December 9, 2019. time.com/amazon-rainforest-disappearing/.

5. "What Animals Live in the Amazon? and 8 Other Amazon Facts." *World Wildlife Fund*. worldwildlife.org/stories/what-animals-live-in-the-amazon-and-8-other-amazon-facts.



thousands of species at risk of becoming endangered or even extinct. Take *Atelocynus microtis*, the short-eared dog, as an example. This animal plays an important role in the Amazon ecosystem. By spreading seeds throughout the rainforest, it creates a new source of food and a home for other species. Demolishing the short-eared dog's habitat would not only further endanger its species, but also put other organisms that depend on it at risk. This chain reaction would cause mass extinction, resulting in a significant change in the Amazon ecosystem.⁶

We share the world with millions of other plant and animal species, many of which we have not discovered. Losing these unknown species could have a major impact on the Amazon's biodiversity, which is not only extraordinary but is something that keeps the Amazon ecosystem in balance. These species, although unknown, have a role in the Amazonian ecosystem that helps other species living alongside them to survive. A mass extinction from the effects of deforestation could have a major impact on people from all around the world. Scientists like Thomas Lovejoy have been researching the Amazon and how its biodiversity is vital to the world's climate. Lovejoy states that "Amazon biodiversity also plays a critical role as part of global systems, influencing the global carbon cycle and thus climate change, as well as hemispheric hydrological systems, serving as an important anchor for South American climate and rainfall."⁷ Preserving the Amazon is important; its biodiversity helps keep the global climate stable along with keeping all living things

6. Geib, Claudia. "For the Amazon's Rarest Wild Dog, Deforestation Is a Very Real Threat." *Mongabay Environmental News*, October 1, 2020. news.mongabay.com/2020/07/for-the-amazons-only-wild-dog-deforestation-is-a-very-real-threat/.

7. "Why the Amazon's Biodiversity Is Critical for the Globe: An Interview with Thomas Lovejoy." *World Bank*, May 22, 2019. worldbank.org/en/news/feature/2019/05/22/why-the-amazons-biodiversity-is-critical-for-the-globe.



healthy. Losing the Amazon will not only affect animals and plants, but the state of the world itself.

More than half of the world's medicines are derived from plants in rainforests. Extractions from plants yield anything from simple painkillers to Quinine, which treats deadly malaria.⁸ As the largest rainforest in the world, the Amazon could possibly contain some of the cures to treat the world's deadliest diseases. However, deforestation is preventing researchers and medical scientists from discovering and evaluating plant species from the Amazon. "Potential cures for devastating diseases like cancer and HIV/AIDS may then become extinct before they are ever discovered."⁹ People have been using natural resources as medicine for thousands of years. For example, the Matsés, a tribe native to the Amazon, has relied on the rainforest's raw materials to help or even cure diseases. Destruction of plants and animals could have a devastating impact on these tribes as well as others all over the world: "Around five billion people across the world rely on traditional plant-based medicines as their primary form of healthcare."¹⁰ Deforestation in the Amazon prevents pharmaceutical companies from manufacturing these medications, thereby restricting patients from accessing them.

For decades, humans have turned a blind eye to the destruction of unique ecosystems all in the name of profit. Yet the bulldozers keep coming, and if we continue at this rate, a few decades from now there will be no humans left to drive them. We are the last and best hope to stop deforestation and mass extinction. Countries around the world need to collaborate to preserve the Amazon before it is too late. If the Amazon disappears, it will have a massive impact on the world's ecosystem and humanity. ♡

8. Blair, Jenny. "An Encyclopedia of Medicine from the Amazon." *Yale School of Medicine*, February 12, 2016. medicine.yale.edu/news/yale-medicine-magazine/article/an-encyclopedia-of-medicine-from-the-amazon/.

9. Fullerton, Ken. "Forest Deforestation Threatens Medical Cures." *Sense & Sustainability*, October 12, 2017. senseandsustainability.net/2017/10/12/forest-deforestation-threatens-medical-cures/.

10. Ibid.



WHERE THE LIGHTNING STRIKES THE SAND

HOLLY HAGMAN

A swarm of gnats nibble on the carcass of a dead fish. Its bones, pin-like and ivory white, poke visibly through the sand. The remaining flesh is silvery and pale—a ghost reflecting the rays of the sun. Even with the rhythmic sloshing of the waves and chirping seagulls—the constant buzz unnerves me. As Paul and I move down the shore, we notice another fish, this time just the bones and a head. A pigeon lands near the water, pecking at what remains, enamored with his good fortune; the sand is his buffet table. We continue our stroll and feel seasick. Corpses littered the beachfront. Fish scales shimmer like lost coins, and rotting eyeballs, clouded, stare outward toward an endless, unreachable horizon.

Wishing desperately that I had worn sneakers, we dodge the bodies as we head toward the spot at the end of the sand where the creek feeds into the bay, the perfect spot to skip seashells. Paul is always careful to tell me when there is another corpse, a splintered piece of driftwood, or a shard of broken glass. The soles of my feet sink slightly in the warm, soft sand.

I bend down to grab a flat, white stone. Its rounded edges are perfect for skipping across the water, out toward the sandbar where seaweed sways gently in the breeze. I bend and flick my wrist, but the rock sinks with a violent plop as it disappears into the brackish water. Paul chooses an abandoned clam shell. Perhaps its curve creates the proper aerodynamic shape because it flies across the water, nearly landing in the thick brush of seagrass growing on the other side of the creek. I turn to grab another rock or shell and am faced with more death—a newly washed-up fish, this one covered in a thick layer of tiny, black flies.

Disturbed and a little nauseous, we decide to turn back, and go home. When we get there, we will scour the internet for answers to find out that vibrio bacteria often found in poorly prepared seafood is wreaking havoc on the local waterways. When I research these bacteria, I learn that they usually affect people with symptoms that mimic food poisoning. When Paul goes for a walk by the lake near his house, there will be more fish on land

than left in the water as a result of the bacteria's rapid spread. We consider the power of such bacteria, something so small with enough strength to make us ill without internal infection.

The salty breeze tickles my nose as I feel the sand sinking underneath my feet. I nearly step on a broken piece of a beer bottle left there, perhaps, by a teenager sneaking alcohol with his friends. Paul moves me out of the way, saving us both a trip to the hospital. He adjusts his glasses and wishes that we had instead found sea glass. As if by magic, I notice a small, white shard with dulled edges peering out of the sand.

I pick it up, brushing the dust off its rounded-rectangle form. I hand it to Paul, who smiles. He told me once that sea glass is made when lightning strikes the sand. The molecules of each grain change and fuse to create a tangible item, a cross between the scientific and the enchanted. I had always thought that sea glass was formed as a result of pollution, nature's way of creating something beautiful from its pain.

We leave the beach, brush the sand from our bodies, let the breeze knot our hair and the sun kiss our skin. Now, the piece of sea glass sits on my dresser, origins unknown. I wonder if it is from a secret bottle of booze left there by teenagers hiding in the reeds, smoking homemade joints, taking solace in the waves crashing to cover the sound of their vomiting on the sand. Instead, I like to imagine an electrical storm with dark clouds swirling over the water. A strike on the sand sends shards scattering across the beach, evidence of the supernatural—like hidden treasures for us to find.



REMEMBERING WHAT I FIGHT FOR

PALOMA SEIGEL

It's a Wednesday, or Thursday, or maybe Monday, or maybe it doesn't matter. It's summer and the sun is shining bright. Brighter here, in the high latitudes above the Arctic Circle. Much brighter. I pull my collar up above my chin to keep my skin from scalding. The sun here feels like daggers, burning me from every angle. Good thing it's a cold summer day in Greenland. Beneath my feet, the wooden gangplank creaks. Moss creeps out from the shade and reaches for sunlight, anxious to get its fill before the inevitable clouds roll in, before the sun dips below the horizon for half the year. We stay on the trail, though all I want is to run through the soft tundra, roll in the heather, and climb over rocks. The excitement is tangible. We speak in a hushed murmur, laughter occasionally ringing in the air. Rounding a corner and over a hill, the ice first catches my eye. Jagged skyscrapers of white jut towards the sky, floating on the bluest water I've ever seen. I want to race up and touch it all, the ice too perfectly chiseled to be true.

I want to touch it all before it's gone.

The trail ends and I tumble into the heather coating the rocks. Our grins are too wide to conceal as we settle into nooks in the granite. Alone I sit, entranced. Together, we are spellbound. I've never seen ice like this. I've never felt this vulnerable, this close to the heartbeat of the planet. With a roar, blinding white ice cracks into the river of turquoise, a cacophony of collapse. Through the granite, a cool wind whispers and tugs on the ends of my braids. Tears pool in the corners of my eyes. My heart is pounding; it's all I can hear. I am happier than I have ever been, and yet cannot stop crying. Each

crack and crumble sting me with more and more ferocity. Ice extends for what looks like eternity, but I know it's not eternity. I know it's all so very finite, so precious, so fragile. I am acutely aware of time, as I sit here cradled by the earth. I notice how very small I am, how very big this ice fjord is, and how very quickly it is flowing out to sea.

We all feel it. We are all silent.

Watching these icebergs that broke



off the Greenland ice sheet pour into the ocean is magnificent and terrifying. I am sixteen, and I already know too much about climate change to sleep at night. It is all I talk about with my friends, all I learn about at school, and all I feel as I sit here in the Arctic. I hear climate projections in terms of my birthday. By 2030, you will be getting married on a scorched earth, far from your coastal home that is now underwater. By 2050, your kids will ask you why you chose to bring children into a collapsing world. I know they will ask me that, because I ask my parents the same question. Some days I come home in tears, asking my mom why they thought to raise me in a world disintegrating before my own eyes. Will my children ever see ice? Will they know what healthy rivers look like? Will they learn to ski on real snow? In 2016, California's drought was so severe that I had forgotten what a snowstorm felt like. Snowfall became so novel that my dad would pull me out of school and up to the mountains at the faintest dusting of powder. By the time I am twenty-one, "nearly all" of the ski resorts in the United States will rely on artificial snow making, taking an enormous toll on already strained watersheds.¹

I am sixteen and I do not know that next year, school will be canceled for a week as wildfire smoke engulfs the air and obscures the sun. I do not know that I will have to stay inside because the air outside will suffocate me. The fires of 2017 in Napa County, just 45 minutes north of my home, will burn down over 8,000 structures and result in 44 fatalities.² That year alone, over 1.5 million acres of California will burn after five years of devastating drought.³ I will smell the smoke from my bedroom as I am finishing a homework assignment late at night and wonder why someone is having a bonfire on a Sunday at midnight. I will wake up to my best friend frantically calling me, in tears because her childhood summer camp burned down. I do not know how much I will miss the sunset, the blue sky, and the taste of crisp air. I do not know what it feels like to have my world turned inside out.

I sense, but do not know, that ice will alter my life's course. I will turn twenty-one and find myself skiing across an icefield in Alaska. Every day I will wake up to dig snow pits and drill ice cores. Every night I will contemplate the fate of Southeast Alaskan glaciers and the fate of the planet. I will try to hold my chin high as I feel wind twist through the granite and tug at my braids, feeling the ice crack beneath my feet.

I do not know because I am sixteen and I am in Greenland, sitting above a sea of ice, under a pristine sky, taking deep breaths in the glacial wind.

1. Jason Palmer, "Withdrawal Symptoms: Afghanistan goes hungry," *The Intelligence* by the Economist, podcast audio, February 11, 2022.
2. "October Fires' 44th Victim: A Creative, Globetrotting Engineer With 'the Kindest Heart.'" n.d. KQED.
3. California Department of Forestry and Fire Protection (CAL Fire). "2017 Fire Season." Cal Fire Department of Forestry and Fire Protection.



WHEN THE FIRES CAME

JEANINE PFEIFFER

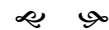
We were suspended, surrounded, subsumed by smokestacks.
Choking, we ran out of breath, out of words.

Until/while/after we evacuated, we endured no power, no phone lines, no Wi-Fi, no Internet, no potable water, no showers, and worst of all, no idea of what the hell [the literal hell] was going on, or where/why/for how long it would endure.

We fled to the coast, where it snowed ash. We hauled our horses, alpacas, and emus to fairground lots and searched for pet-friendly accommodations. We picked through donations, seeking the vegan, the lactose-free. We congregated at bars broadcasting nonstop radio coverage. We lingered in gas stations, hooked on reports of roads closed, neighborhoods gone.

Only the smartphone savvy could decipher the satellite maps when they materialized, angry polyhedrons outlining active fires and no-go zones laid over territories to our north and our south and our east and our west.

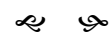
The rest of us gauged fire intensity using the tenor and depth of the stench, the shade and texture of smoke clouds, or the hue and structure of billowing plumes: dark grey + vertical = freakier, hotter, advancing fires; smudged ivory + horizontal = diminishing, dissipating fires.



Climate change, the great irrevocable amplifier, has screamed past every scientific prediction. Pandora's box has been flung open, and the demons are amongst us, gleefully turning up the volume on what we used to call "natural disasters."

When we translate the burps of carbon atoms trapped in ice cores and sea floors over hundreds of thousands of years, data for every planetary metric zigzags up and down graphs, apparently randomly but always within clearly defined upper and lower thresholds.

Humanity's box of demons remained shut until our parents' generation. At that point, like over-stimulated hippies grooving on E, the lines for global temperatures and ice loss and wildfire incidence and sea level rise and all those pesky greenhouse gasses began abruptly shooting straight up. They kept shooting up and up until they blew by the highest points on every graph, and the graphs had to be redrawn for this new geologic era, the era of the Anthropocene.



Art by SHADIA NAGATI



When the fires came, the Diablo winds—routinely occurring warm and dry, northeasterly winds—were the largest scale ever recorded, for any time or season or place. Slamming into local mountain ranges, the gusts accelerated, splintered, and became “squirrely,” spawning gales within gales at every possible elevation and creating infinite numbers of jiggered explosions.

Instead of “Diablo” we got “Diablo-plus,” customized versions of Dante’s Hell.

During the first week, our evacuation center was shut down, everyone to be moved elsewhere. The closest conflagration quadrupled in acreage, mocking the superheroic efforts of water-laden helicopters, firefighters, dozers, tanks, and the 747 jet dumping tons of crimson retardant.

There was no logical reason to remain cooped up on a patch of fairground asphalt. Yet despite the smoke, the irrepressible, inescapable, smoke, the unchanging updates of “0% containment,” the tenuous links to the outside (non-burning) world, most evacuees didn’t want to leave.

Our hearts claimed these hills, those oak trees, that river. Abandoning the area, even as a helpless witness, felt disloyal—until even more friends messaged and called, expressing concern, offering places to stay.

I left.

The fires remained.



The winds persisted.

Three counties distant, I kept vigil, devouring live-streaming news updates, constantly refreshing online maps, watching the polygons grow, the death toll mount, the acreage increase, the losses reach incomprehensible levels, flames traveling so fast that first responders were forced to flee instead of fight.

Local residents—although that term proved nebulous, fungible, a cruel joke—took in more evacuees. A city vivarium offered to care for homeless reptiles and arachnids, while regional animal shelters shipped off existing strays to make room for incoming ones. Media broadcasts repeated Red Flag warnings for dangerous air quality levels; stores ran out of N95 air masks.

We began obsessively using “d” words: deadliest, disastrous, devastation, dispossessed, displaced, destroyed, dental records, distinctive tattoo.



Hell was extinguished on Day Twenty-two, All Hallows’ Eve. By then, the smoke had burrowed so deeply into valley clefts that it was indistinguishable from the rest of our sky, the fringes of troposphere and stratosphere stitched together in shared misery.

Our post-fire zip codes echoed with deathly quiet, deader than graveyards, because anything that could have been obliterated, was.

Armies of electricians in powder-blue Pacific Gas & Electric trucks—from the same company that neglected rural transmission infrastructure, sparking uncontrollable fires that destroyed the beyond-ironically named town of Paradise—restored power, and life trickled back.

Community meetings heated up with debates over the tangled puzzle of rebuilding (or not) in fire-prone areas. “How can we make sure our buildings meet fire codes?” asked an audience member.

“One of the fires was a mile wide,” responded an expert, “It doesn’t matter what you build with. Nothing will survive that kind of fire.”



Displacement begins as a geographical question, but quickly flares into a philosophical one. For decades I dreamt of an off-grid cottage nestled in the Northern California woodlands. I no longer trust this dream. Blackened, cratered moonscapes infuse our highways and byways, more common than road signs. Their acrid stink testifies that this can happen again: Anytime, anywhere.

I think of this as fires rage in the Arctic Circle, where once-stable landscapes are becoming unrecognizable, melting glaciers, thawing permafrost, their contours muddled into obscurity. In this New Not Normal, facing the erasure of areas once well-defined and the blurriness of places once conjoined, we struggle to know where we can go, where we can stay.

We who survive firestorms, floods, hurricanes, droughts, and rising seas, we have become climate refugees. Many of us, emulating prototypical refugees, relocate to blue and brown tarps, to tents and makeshift shacks peppering the streets of every Californian city. Others, like me, live invisibly in our vehicles, poised for takeoff, prepped for the inevitable.

Our transience, our disconnectedness, our inability to answer the simple question, “Where do you live?” when asked by a dating app, has reconfigured our essence, as the lines circumscribing who and what we are dissipate. Once solid, we liquified into tears. Eventually, wearily, our tears evaporate into gas, and we are able to inch back towards solidity.

Until the next time the fires come, and our world goes up in smoke. ✨



A REAL-LIFE ABILITY TO SEE THESTRALS

J. MAAK

“The only people who can see thestrals,” she said,
“are people who have seen death.”

—Hermione Granger in *Harry Potter and The Order of the Phoenix*, by J.K. Rowling

you shift weight, one foot to the other, avoiding eye contact, when a group’s eager conversation turns to bright forecasts for the stock market. you hear bones rattling as the Forbes 400 grows even more obscene, while you witness working mothers and grandmothers lining up at food banks to feed the children. you flash angry—one of the Kübler-Ross stages—when a friend regales how a corporation’s “gone greener,” which turns out to be mere micro-steps, treading water, greenwashing. day in, day out, busy LAX shakes your walls, hustling SUVs shudder by—yet no one stops puking endless emissions. you search for pretty ways to phrase it, so that someone might listen, as you hear words of hope tumble out of your mouth.



your garden journals—a mere twenty years’ worth, far less than a lifetime—document the changes, their citizen science somehow more horrifying than the official kind: spring bulbs finishing in March, when they used to bloom til May. European starlings and tropical parrots now common in SoCal. honeybees, curled fetal, dry and crispy. this year, one single week of rain, scant other measurable moisture.



your body tremors with the bark of chainsaws as once-tree-lined neighborhoods decimate their grand overstory. maybe they replant with twigs, which you know won’t capture meaningful carbon for two decades. more likely they rework barren concrete, sealing soil, laminating life. soon, they landfill the houses to build consumer palaces, lot-line to lot-line sans gardens—pushing away the very element that could save us from ourselves, teach us, help us reconnect.



and yet, a small voice tells you, through thestrals we gain the ability to fly.





Art by SUSANNA ANDREWS

HAVE YOU LISTENED TO WILDFIRE

J. MAAK

that time when wildfire coursed through the canyons
faster than the elementary schools could call
parents to come pick up the kids,
sirens screamed, charred chunks rained down,
you were all breathing thick orange-gray air.

what if we listened to our Mother,
listened to those who understand Gaia's messages,
those who hold the pulse of the land—
Chumash, Gabrieleño-Tongva, Kizh—
those who sense what the land needs next.

that gut-knowing the sickly orange smoke is coastal sage scrub,
the white smoke, when firemen arrive,
the black, your neighbors' houses.
those times you found curled gray ash on your car
and wondered whose home, childhood, memories it once was.

what if we listened
to Mohawk/Kanienkeha:ka, Cahuilla, Apache,
who know the old ways to manage fire—
seasonal ground burns, cultural burns,
moving with the land.

that time when brush fire burned
the churches, rectories, parish halls,
like a god's wrath proclaiming this society is on errant course.

what if we cleared invader plants,
nurtured native ecosystems to flourish,
following indigenous guides.

those many times your young family packed the car—
which stuffed animals to take, which to leave burn,
a decision no child should ever face.

what if we embraced managed retreat—
doomed the developers, stopped suburban sprawl,
designed for urban density,
built walkable, livable cities.

those times you heard the clatter of helicopters
arcing so close, you felt it pound your breastbone.
the mechanical voice of emergency broadcasts
a chilling overlay to the forced laughter,
the stunned silence of evacuees.

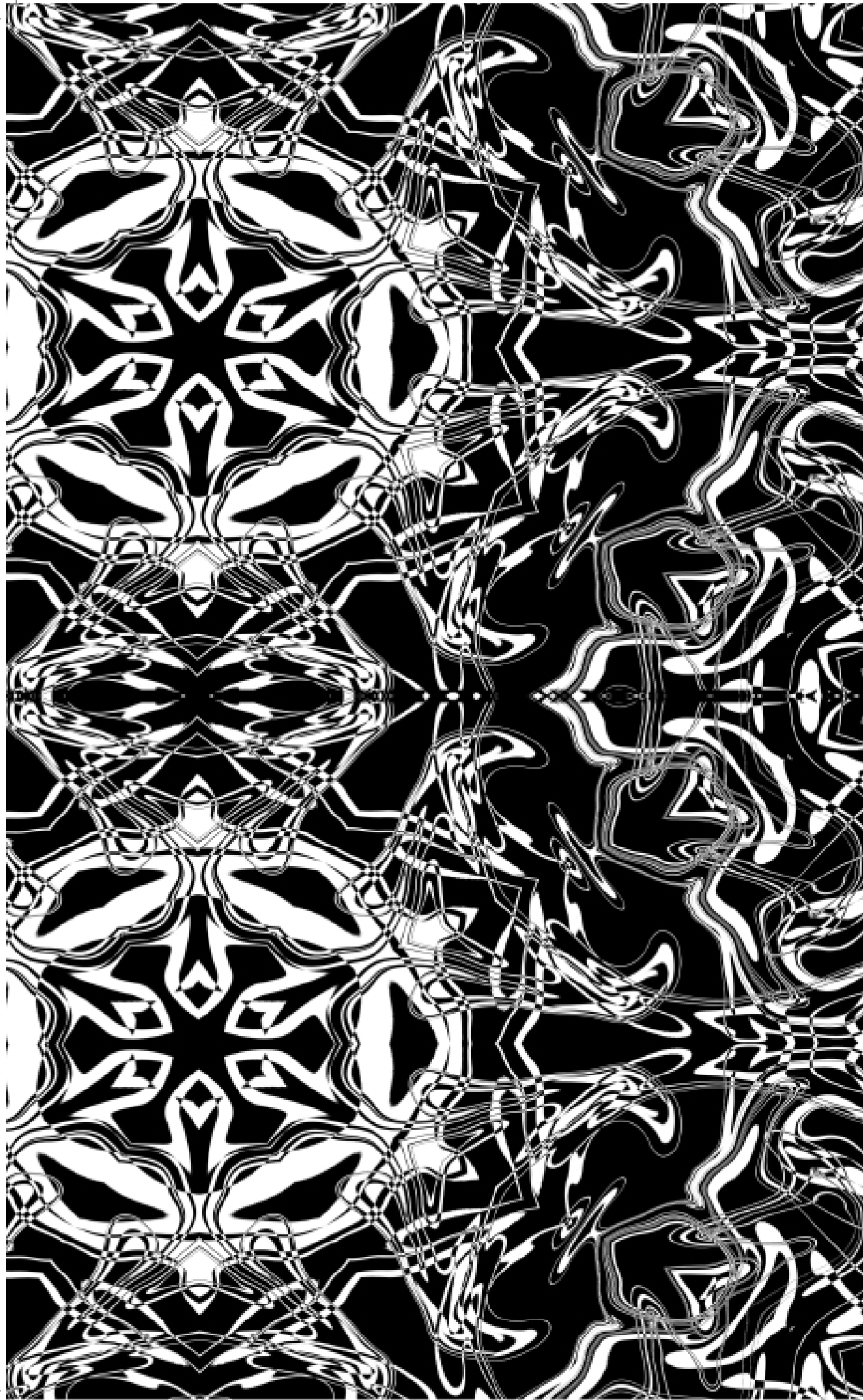
what if we got serious about climate—
foregoing fossil fuels forever, clipping consumerism,
supplementing sequestration—
to suppress the scale of megafires.

that moment when you realize:
over less time than your lifetime
fire season has now become every season of the year.

what if we, the colonizers, remembered
our own ancestry, rekindled the values
of that time when our ancestors knew, honored,
upheld agreements with the land.

that time when fire got you,
swept your family home of thirty years,
photos, mementos of your mother and grandma
now ash so fine it only qualifies as dust.
you comb the debris in futile hope—
nothing there to find.





MINING OURSELVES INTO A HOLE

MCKINLEY NAHUM

The places where Earth meets water summon a single, simple word: magical. Great ocean currents clash with hard landscapes in a never-ending battle for territory. For millions of years, land and water existed in equilibrium, allowing organisms of all kinds to exist in symbiosis. As we push further into the 21st century, this balance becomes further skewed.

Take Tokyo, Earth’s most populous city. Its residents rely on resources from both water and land. Japanese people have long appreciated life in all aspects, from climates and landscapes shaping the country to the diverse plant and animal life with which they strive to coexist. The majority of Tokyo’s 37 million people rely heavily on the city’s proximity to the Pacific Ocean for resources, leisure, and trade. These all lie at risk. The threat? The ocean itself.

Sea levels rising due to climate changes will greatly impact world cities. Shusaki Miyaji, a Japanese geographer, predicts that most of Tokyo will be underwater in the next 100 years if sea levels rise another 10 meters.¹ The melting of the Antarctic ice sheet results in climate change. If we continue to burn fossil fuels at the current rate, we will exhaust our supply in 150 years and raise the global sea level by 60 meters.²



You and a group of friends visit a local café on a beautiful Sunday morning. You pay for your coffee at the counter using Bitcoin. It’s the easiest and most secure way to send money, and you can do it straight from your phone! No pesky banks or cards necessary. Unknown to you, your small transaction used a massive amount of energy and pumped nearly 1,000 pounds of carbon dioxide into the atmosphere.³ How? It’s called cryptocurrency.

Cryptocurrency is a form of digital currency that has surged in popularity over the last decade. It relies on a peer-to-peer system that enables anyone with access to the internet to securely send money. The payments exist as a record in an encrypted

1. Murasaki, Kevin, Mark Kennedy, Layla Knight, & Christian Dakin. “What Would Tokyo Look Like if Sea Levels Rise 10 Meters?” Japan Insider, (August 9, 2021). japaninsider.com/what-would-tokyo-look-like-if-sea-levels-rise-10-meters
2. Grade Eight Learners. “Water is Life.” Republic of South African Department of Water and Sanitation, 2020. dws.gov.za/2020Vision/docs/GRADE%208%20LEARNERS%20-%20WS.pdf
3. Forex Suggest, “Global Impact of Crypto Trading.” forexsuggest.com/global-impact-of-crypto-trading/. Accessed Jan. 10, 2022.



public ledger while the cryptocurrency itself is stored in a user’s digital wallet. With no inherent value, its users assign its worth.

It seems like a revolutionary way to securely send money, but the way it functions harms the environment. Cryptocurrencies exist on a large, encrypted public ledger known as the blockchain. The blockchain holds the record of every transaction, consistently updated through a process known as “mining.” Mining is the process of validating and recording new transactions to the blockchain. People around the world use several computers to partake in the mining process. They refer to themselves as “miners.”

Miners must verify the authenticity of transactions, grouped into a “block.” The miners then compete with other miners to solve an incredibly complex algorithm. Once they solve the algorithm, they combine it with the data from the block. They then add the block to the ledger and chain it to the other blocks, verifying the transaction. The miner that accomplishes this first receives cryptocurrency in return for their efforts. The higher the price of the cryptocurrency, the more miners competing, and the harder the algorithms.

Bitcoin, the most popular cryptocurrency, is perhaps the most problematic when it comes to energy consumption. Capital Counselor⁴ predicts that there are around one million Bitcoin miners operating in the world. A study performed by UK financial site MoneySuperMarket found that a single Bitcoin transaction consumes 1,173 kilowatt hours of electricity.⁵ That amount of electricity would power the average US household for 6 weeks and the average UK household for more than 3 months. The cost of electricity for using Bitcoin to buy a latté or transfer money to a friend is around \$173. The electricity cost is never incurred to the person performing the transaction and is a direct result of the incredible amount of computing power required to validate the transaction. The process of mining is essentially trial and error and can take trillions of tries.

The problem of cryptocurrency becomes even more dire when looking at energy consumption from a global perspective. A University of Cambridge study calculated 2021’s consumption from bitcoin alone was 142.4 TWh of electricity.⁶ This accounts for 0.6 percent of the energy consumption of the entire world, more than the energy consumed in 2021 by Facebook, Google, Microsoft, and Apple combined.⁷

As the prices of cryptocurrency continue to rise, so does the incentive to mine it. Much of the energy consumed from cryptocurrency transactions comes from the burning of fossil fuels. In 2021, only 39% of cryptocurrency’s energy came from renewable resources.⁸ A 2021 Quartz article reported that 65% of Bitcoin mining

4. Puac, Sanela. “How Many Bitcoins Are There and Will They Ever Run Out?” Capital Counselor. February 23, 2022. capitalcounselor.com/how-many-bitcoins-are-there/
5. MoneySuperMarket. “Crypto Energy Consumption.” 2021. moneysupermarket.com/gas-and-electricity/features/crypto-energy-consumption/.
6. “Cambridge Bitcoin Electricity Consumption Index (CBECI).” n.d. Ccaf.io. ccaf.io/cbeci/index.
7. Ibid.
8. Ibid.

occurs in China due to cheap electricity costs, and 63% of that electricity comes from fossil fuels.⁹ Bitcoin Energy Consumption Index calculates that the carbon footprint of Bitcoin is equal to that of New Zealand, both emitting 37 megatons of carbon dioxide.¹⁰ If Bitcoin continues to rise in price, emissions from mining could rise dramatically.

The fight to slow the environmental effects of cryptocurrency is ongoing. Every year sees new regulations to edge towards renewable energy infrastructure. Unfortunately, mining rigs must be set up near existing renewable energy sources for the purpose of efficiency. There are also substantial changes that can be made to cryptocurrency algorithms to make them more energy efficient. One form of cryptocurrency, Ethereum, has already become the second most used in the world of crypto and does not require specialized equipment, saving 99.9% more energy.¹¹ While alternative methods may not be as secure, they are far more sustainable.

Perhaps the best method for making cryptocurrency more sustainable is through education. Over the past several years, organizations have been forming to help raise awareness for the negative impact we’ve been making on the environment through the rushed adoption of cryptocurrencies. The Crypto Climate Accord has many great resources to learn about the impact of cryptocurrency and is working towards the goal of having all blockchains powered by renewable energy by 2025.¹²

The real problem with cryptocurrency arises from users’ unawareness, not directly witnessing how much energy they expend with a simple transaction. We all love experimenting with new technologies—they can drastically improve our lives. As we progress through the information age, it’s important to learn how our actions shape our world. There’s a little bit of something for everyone in the realm of cryptocurrency, but it’s important to make informed decisions. Anyone with internet access can make the choice to prevent the release of thousands of pounds of emissions into the atmosphere. Through education and advocacy, the population can become more aware of their digital carbon footprint and work to shrink it. ☞

9. Li, Jane. 2021. “Bitcoin Has a Xinjiang Problem.” Quartz. March 3, 2021. qz.com/1978807/bitcoin-has-a-xinjiang-problem.
10. Digiconomist. 2022. “Bitcoin Energy Consumption Index - Digiconomist.” 2022. digiconomist.net/bitcoin-energy-consumption.
11. Rodeck, David. “What Is Ethereum? How Does It Work?” Forbes Advisor. Updated May 30, 2022. forbes.com/advisor/investing/cryptocurrency/what-is-ethereum-ether/.
12. “Accord.” n.d. Crypto Climate Accord. cryptoclimate.org/accord/.





THE UNFORTUNATE TRUTH OF SUNSCREEN IN THE CLOUD FOREST

ISABELLE SEASE

“Hey look! I think I can finally see the sky!” my sister, Margot, laughed as we trudged through dense Costa Rican cloud forest. That meant we were close to the top. Finally, I thought. My feet burned and my entire body was drenched in sweat. Despite being completely sheltered from the sun by the thick rainforest canopy for the majority of our hike, the heat was suffocating. As we made our final ascent, the canopy thinned, and we were blasted by the sweltering mid-day sun.

“Gosh! What a beautiful day!” my mom exclaimed. “Not a cloud in sight!” She was right; the sky was a bright shade of vibrant blue and despite the heat, I was happy to have escaped the rain.

As I peered out over the ridge at the top of the mountain, my heart began to pound. A vast network of trees and dense vegetation spanned my vision. I stood there quietly, listening. A soft breeze brushed against my face, comfortable and warm. Sounds of life saturated my ears. The air seemed to vibrate with the buzzing of insects; frogs croaked, birds screeched, and even the trees seemed to tremble with sound. Yet, the earth remained still. The forest below me felt infinite, untouched by the human hand. It reminded me of the images I had seen in textbooks of the Jurassic era: a world filled with abundant life and imminent danger. A time when reptiles ruled the land, and the idea of humankind was merely a fantasy. As my mind wandered to the unknown, a feeling of uneasiness crept over me. What exists within the impenetrable forest below? I looked for signs of human activity. None. Aside from the few trails that lie within the forest, the rest was virtually undiscovered. The forest seemed endless; one misstep and you’d be lost forever. Even so, I was unquestionably drawn to the boundless greenery in front of my eyes.

The cloud forest made me feel small, weak even. Standing atop the mountain, I was completely vulnerable. I had little control of the earth below me, a feeling somewhat unfamiliar in days of technology and suburbia. For my whole life, I felt as though I had power over my surroundings. But here, in the middle of the cloud



forest, I was defenseless, and while daunting, it was also peaceful. I found comfort in the idea of my own insignificance, realizing that my problems were trivial in a world so vast. The blisters on my feet and the smell of sweat permeating from my t-shirt did not matter, at least not here, in the face of the majestic cloud forest. Although I didn't know it at the time, I had just experienced a glimpse into the sublime.

Alain de Botton, British philosopher and founder of the "School of Life," describes the general consensus of the sublime to be "by virtue of their size, emptiness or danger, a variety of hitherto unconnected landscapes [...] such places that provoke an identifiable feeling that [is] both pleasurable and morally good."¹ In other words, the sublime consists of vast landscapes that arouse the mind to feelings above human comprehension, a pleasant mix of fear, wonder, and peace. However, the definition of the sublime is, as most things are, complex. De Botton explains how in the eyes of eighteenth-century Irish philosopher, Edmund Burke, "sublimity had to do with a feeling of weakness [...] a landscape could arouse the sublime only when it suggested power—a power greater than that of humans, and threatening to them."² Meaning, that in order for a landscape to evoke feelings of the sublime, it has to make the person feel small and insignificant in the process. Not in a humiliating way, but in a way that demands awe and respect. Sublime locations have the power to show us how our creation was at the hands of something greater than us, a higher power, a force that continuously reminds us of our own fragility and insignificance.³

In the case of the cloud forests, the vast network of trees reminded me of my own insignificance, not in a malicious way, but rather it returned my ego to a humble state. It helped me to understand my place on this earth, allowing me to accept the things that I cannot control, and find peace within the frenzy of life.

"Honey, do you want any sunscreen?" my mom called from below, jolting me out of my stupor. While annoyed, I was also grateful. My back was already the color of a ravishing sunset due to my own ignorance on a hike the day prior.

1. Botton, De Alain. *The Art of Travel*. (Pantheon Books, 2002), p. 163.

2. Ibid.

3. Ibid.

"For being in a cloud forest, there aren't many clouds," a man standing behind us joked. We awkwardly laughed, but unfortunately, it was the sad truth.

Cloud forests portray very unique geographical and climatic features. They exist within higher elevations of tropical regions and are sometimes called montane forests. Their distinct weather patterns are a result of moisture-laden air currents from lowland oceans that move up the mountains, cooling and condensing as they rise, due to colder temperatures as elevation increases. Subsequently, areas become enveloped in consistent cloud cover and high rates of precipitation.⁴ The unique weather patterns in the cloud forests yields an abundance of fascinating biodiversity ranging from epiphytes to venomous snakes. Although these cloud forests make up a small percentage of Earth's landmass, they generate a significant portion of the world's biodiversity.⁵

Unfortunately, due to the planet's warming temperatures, we are seeing a significant decrease in the cloud cover. Species that previously occupied lower elevations are beginning to migrate up to areas that have a more temperate climate, and species that relied on the previously cooler environments in the cloud forests are beginning to die off as temperature rises and precipitation decreases.⁶

Although we often hear about the bleak futures of our cherished natural landscapes, we rarely see the sad truth. Artist Hannah Rothstein creates a visual depiction of the future of our national parks through her collection National Parks, 2050. These pieces illustrate our national parks as toxic wastelands, juxtaposing our current lush and vibrant parks with images of stark and desolate landscapes. In the posters for Yellowstone National Park, Rothstein illustrates one poster with a robust geyser and bright colors, including the words "Nature Walks, Field Trips, and Campfire talks," shedding light on the aspects of national parks that we are so accustomed to.⁷

4. Helmer, E.H., et al. *Neotropical Cloud Forests and Paramo to Contract and Dry from Declines in Cloud Immersion and Frost*. (PLOS ONE, 2019).

5. Oliveira, Rafael S., et al. *The Hydroclimatic and Ecophysiological Basis of Cloud Forest Distributions under Current and Projected Climates*. (Annals of Botany 113, 2014), pp. 909-20.

6. Oliveira, Rafael S., et al. *The Hydroclimatic and Ecophysiological Basis of Cloud Forest Distributions under Current and Projected Climates*. (Annals of Botany 113, 2014), pp. 909-20.

7. Rothstein, Hannah. "National Parks 2050." Hannah Rothstein n.d, <https://www.hrothstein.com/national-parks-2050>.



In the other Yellowstone National Park poster, Rothstein illustrates the remnants of a geyser and a grizzly bear whom you can see virtually all of its ribs. The coloring in this poster is darker as well, using more greys and muted colors to depict the overall mood of the environment. The words in this poster are “disappearing geysers, dying trout, and starving grizzlies,” providing a rather grim feeling to the piece.⁸ By placing both depictions of Yellowstone side-by-side, Rothstein illustrates humanity’s effects on the environment as we enter a new era of life through climate change. She instills a sense of horror and fear into the viewer through the sheer vastness of the environments, which could fall into the category of the sublime—yet through a different understanding of it. Rather than depicting the sublime through the more common definitions, Rothstein can create visualizations for a new understanding of the sublime: the toxic sublime.⁹

Jennifer Peeples, an associate professor in the department of Languages Philosophy and Speech Communication at Utah State University, describes how the toxic sublime refers to “the tensions that arise from recognizing the toxicity of a place, object, or situation, while simultaneously appreciating its mystery magnificence and ability to inspire awe.”¹⁰ In other words, the toxic sublime is a result of the intense emotions inflicted by beautiful places that have been altered due to toxicity and pain, leading to the similar feelings of wonder and fear that the typical sublime invokes. The idea of the toxic sublime is fairly new, however that doesn’t undermine its relevance. As climate change rapidly alters the planet, the toxic sublime is inevitable for the most fragile and cherished locations, such as the montane cloud forests.

I thought back to our nature tour the day prior. The guide explained how climate change is driving the clouds away because the temperatures on the mountains are too warm for the water to condense, leading to a much drier rainy season. Even more so, these changes are happening rapidly. He told us that the rainy season shortens by about one week every year. “When I was a kid, we rarely saw the sun during the summertime, now, the sun is out every day,” he said somberly, “I fear that even my own children will never



experience the cloud forest in its full beauty during their lifetimes.” It seemed as if he were going to cry. “They are saying that these forests may not even be around in fifteen years or so.” I looked around, trying to grasp what he just said. The forest surrounding me was teeming with life. Moss wrapped almost every surface and the buzzing of the cicadas was deafening. Fifteen years. That is shorter than my own lifetime. In fact, I was starting school fifteen years ago. In the grand scheme of our planet, fifteen years is nothing, and for forests that have existed since before humankind, the loss is devastating. Climate change is occurring at an exponential rate in virtually every ecosystem around the world, and we are running out of time to stop it.

The World Meteorological Organization released staggering results in their most recent climate report. WMO researchers explained how “there is about a 40% chance of the annual average global temperature temporarily reaching 1.5°C above the pre-industrial level in at least one of the next five years—and these odds only are increasing with time.”¹¹ Given that global temperature increases are happening at an exponential rate, we are headed down a very grim, potentially catastrophic path.¹² In fact, scientists from the United Nations explain how the accumulation of heat in our atmosphere has “propelled the planet into uncharted territory, with far-reaching repercussions for current and future generations,” a terrifying fact for humankind, especially for us young college students.¹³ For the last 11,700 years, our planet existed in the Holocene, an era characterized by abundant growth and relatively stable temperatures. However, as human activity has ravaged the earth, we have moved into the Anthropocene: the era of the unknown.¹⁴ WMO Secretary-General Petteri Taalas describes how “increasing temperatures mean more melting ice, higher sea levels, more heatwaves and other extreme weather, and greater impacts on food security, health, the environment and sustainable development,” illustrating the interconnectedness of the systems on our planet and how our actions will ultimately affect every aspect of life.¹⁵

8. Ibid.

9. Bergman, Nicolas T., and Briwa, Robert M. *Re-envisioning the Toxic Sublime: National Park Wilderness Landscapes at the Anthropocene*. (Annals of the American Association of Geographers 111, 2020), pp. 889-99.

10. Peeples, Jennifer. *Toxic Sublime: Imaging Contaminated Landscapes*. (Environmental Communication 5, 2011), pp. 373-92.

11. *New Climate Predictions Increase Likelihood of Temporarily Reaching 1.5 C in next 5 Years*. (World Meteorological Organization, 2021).

12. Ibid.

13. Ibid.

14. *Anthropocene*. (National Geographic Society, 2019).

15. *New Climate Predictions Increase Likelihood of Temporarily Reaching 1.5 C in next 5 Years*. (World Meteorological Organization, 2021).



Unless humankind significantly changes our actions immediately, the fate of the earth and its inhabitants will cease to exist as we know it.

The acceleration of climate change is sort of like running down a hill. At first, you gain momentum. This period is great, you're moving fast, but still totally in control—such as the time when humans first discovered the magic of fossil fuels. But, with every step, that momentum builds. Factories are assembled and the air becomes polluted. As you begin to run faster and faster, you begin to lose control, which is exactly where humanity stands right now. Species are dying, the climate is changing, but we still have a chance. However, if you don't begin to slow down, face planting is inevitable, and there is no telling what the damage will be from there. Humankind stands on the threshold between control and destruction. Former General Assembly President of the United Nations, María Fernanda Espinosa Garcés, describes how “we are the last generation that can prevent irreparable damage to our planet,” warning that we only have 11 years to prevent catastrophe.¹⁶ Humanity is losing control, and if we do not act immediately, the survival of our species is extremely uncertain.

The sublime is often related to ideas of control, or rather, the lack thereof. De Botton explains how the sublime calls us to recognize that “the universe is mightier than we are, that we are frail and temporary and have no alternative but to accept limitations on our will,” meaning that in the face of the universe, we are utterly powerless.¹⁷ However, as humanity builds more cities, cuts down more forests, and pollutes more oceans, we begin to harness the landscapes that were once considered to be completely out of our control.

When the original theories of the sublime emerged, philosophers categorized powerful landscapes as sublime because they elicited senses of wonder and fear due to their sheer size and magnificence; a fear that often resided within the lack of power. They never would have predicted that one day, humanity would have the ability to destroy these vast expanses at such an abominable rate.

However, due to the powers of extensive capitalism and modern-day technology, the places that were once regarded as sublime are now becoming toxic wastelands. Although the idea of the sublime will continue to live on through centuries, it may only exist within its toxic version. In an attempt to control what was once out of our control, we lost control of something even greater: ourselves.

Humans have tirelessly manipulated the environment to fit our needs, harnessing the resources of the natural world and leaving destruction in our footsteps. As climate change hurdles towards us at an astonishing rate, we are losing what made us: mother earth. As time moves on, the nature that gave us the resources to prosper will cease to exist, and humankind will be left with somewhat of a shell of what once was.

16. “Only 11 Years Left to Prevent Irreversible Damage from Climate Change, Speakers Warn during General Assembly High-Level Meeting” *UN Press*, 2019.

17. Botton, De Alain. *The Art of Travel*. (Pantheon Books, 2002), p. 163.

Our planet has provided us with the food to nourish our bodies, the mystery to nourish our minds, and the beauty to nourish our souls; and without that, we are nothing. The sublime reminds us of our own humanity, but as we destroy the planet and lose our understanding of the beauty within the sublime, we begin to lose ourselves.

On my last day in Monteverde, I finally got to experience the cloud forest in its true glory. Standing atop a lookout, fifty feet above the lush greenery, I truly felt alive. The air was fresh and cool, smelling slightly of moss and fruit. The far reaches of the forest were hidden, veiled by the dense, opaque clouds that consumed us. They encircled my body, moving in and out with the natural flow of the air. The swollen, incandescent beasts produced a fierce howl, unlike anything I had ever heard before. The wind pierced through my thin jacket, sending shivers down my spine. Its menacing cry echoed through my ears, dominating every conversation; I had to scream to be heard. The wind, similar to climate change, is powerful, invisible, and remains unnoticed until the damage is already done. I close my eyes. Listen. Feel. Breathe. The earth below me dances to the song of life, but slowly but surely, gets drowned out by the cry of the wind. ♪



MY PLASTIC DINOSAUR

SPENCER STEPANEK

Consider this massive irony: I made a recent purchase after browsing the toy aisle. Boxes lined the shelves with images of small building bricks. This system of connecting components was known to practically every child to have been the most amazing thing ever. Some of their products depict quite realistic things; maybe you wanted to build a car, or a house, or a dinosaur. I like dinosaurs, so naturally I was captured. This one had two horns, green skin, and four stubby legs. I stared for a moment while I constructed it in my head. Nostalgia and other primitive, child-like sensitivities overtook me. I ripped it from the shelf and clutched it close to my chest. A sad thing would overcome me when I revealed the box's contents.

It was all as expected. Pouring the box onto your workspace reveals not but many small pieces, in many small bags. I tore through the plastic bags it came in and threw them away. I had all those pieces in a pile in front of me, those which would've been a dinosaur if I didn't freeze up. I stopped right in my tracks and considered the following: these small, versatile blocks are all made of plastic. Plastic is a petroleum product. Petroleum is derived from crude oil and crude oil is derived—hear this—from dead dinosaurs. My heart sank.

Never had I seen a greater symbol for human vanity than this pile of processed materials lying in front of me. They snap together and sit there—what a pathetic afterlife. Once, long ago, they died and sank into the ground. A Triceratops would cry and wail in pain for just a brief second. Its life flashed in front of its eyes and then it became a product, a good. Millions of years later we suck the essence of their lifeless bodies out of the ground. We drill and drill just to reach one of these lots of gas or oil. This process frightens me. I had never before thought of the implications of desecrating another life form so vividly. We literally use their aged, rotting corpses to sustain our little selves today!

I was unmoved when a dear friend of mine commented on my detail. “Actually,” she interrupted, “most of the petroleum underground was made from plankton.” Thank you. But still I stand perturbed and moved by this sad paradox. Since, I have dug around in my own time. The building bricks, which everyone regards as their favorite, are a plastic called ABS.¹ This injection-moldable stuff is made from dipping polybutadiene in acrylonitrile and styrene

1. “Acrylonitrile Butadiene Styrene - ABS Thermoforming and Injection Molding.” Advanced Plastiform, Inc., June 10, 2019. advancedplastiform.com/materials/abs/.



monomers. Much of that is bad for you. Some of it could kill you. Acrylonitrile is quite toxic and deadly.² But one of the components, styrene, is derived from petroleum (that's what those huge smokestacks are doing, burning crude oil and gas).³ And petroleum, is dead dinosaurs.⁴ Partly. Enough.

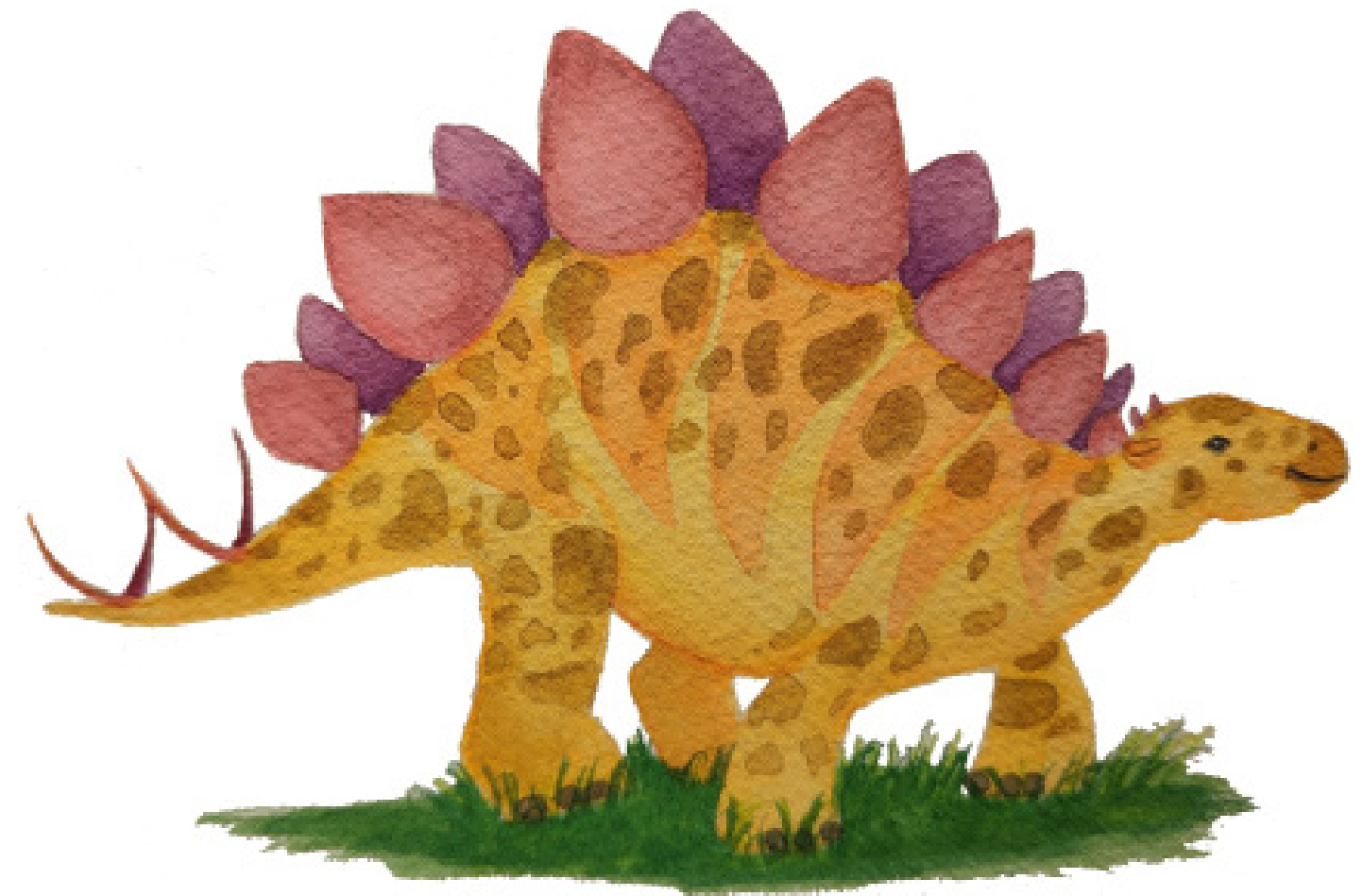
This flung me into a woe so immense I considered skipping school. I considered crying. I considered re-involving myself with 350.org, a climate activism group that hates crude oil as much as I do. I was distraught over the fact that we are literally rebuilding these massive creatures at a bite-sized scale, perfect for the grabby hands of a child. It hurt me that this principle goes so severely overlooked. Who cares about dinosaurs? We make fun of dinosaurs all the time—despite their name meaning, “terrible lizard”.⁵ As big and as horrifying as they were, they still died. Each and every one. Maybe that's why it's so easy to poke fun at them, given that there's no chance one will storm into your house and eat you alive. Now they exist solely in our image. On our bedsheets, in books drawn for kids, and as plush, huggable animals. Our image is one of quaint benevolence and aesthetic disposition. We would show our kids these things now, and rock them to bed while they grasp at a 50-foot-tall beast.⁶ Yes, I had to look that up. Do you know how tall the Brachiosaurus could get to be? Exactly. And now they stand, so valiant, a mere four inches.

In a way it makes me glad for the dinosaurs. They had the luxury of living without others tainting their bountiful planet. Humanity is doomed to sit and watch. It is torture to sit and wait for the day when banks stop investing in crude oil, if that day comes. If I were a Triceratops though, I wouldn't give a single damn what other dinosaurs were doing to the Earth. I wouldn't feel so—accountable.

But staring at my plastic dinosaur makes me feel responsible. I am furthering the irony with this quaint scene, a green triceratops made of many small plastic bits. I feel a collective shame that humanity should bear together. I feel the shame of a movement in climate action

that's larger than me. I want this irony to end. I only hope that, when humanity sees our final days, it was not the notion of this plastic dinosaur, our addiction to crude oils and other gross things, that led to our demise.

And so here it sits. Here on my table, pieces of a forgotten legacy. I try not to think about it. It's a symbol for our own end, as humans. To be honest it is quite close to driving me mad. I cannot shake the notion that someday, some alien thing will go for commerce and come back with a small, plastic human. They will sit there with it and attempt to disregard the plastic in the item. They might end up thinking about how those materials came to be. They'll think of why the sky is dark and black, and why the air is repugnant. And they might just blame it all on the tiny human sitting on their desk. ☹



2. "Acrylonitrile Butadiene Styrene - ABS Thermoforming and Injection Molding." *Advanced Plastiform, Inc.*, June 10, 2019. advancedplastiform.com/materials/abs/.
 3. "Styrene and How It's Made." *Michigan Foam Products LLC*, April 1, 2019. michiganfoam.com/styrene-and-how-its-made/.
 4. "Petroleum." *Encyclopædia Britannica*. Encyclopædia Britannica, inc.
 5. "Dinosauria: How the 'Terrible Lizards' Got Their Name." *Natural History Museum*.
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