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OUTSIDE: PERSPECTIVES ON NATURE IN A CHANGING CLIMATE

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ABSTRACT

As climate change threatens our earth and political opinions on the topic remain polarized in the United States, I completed a radically local project for my honors thesis that seeks to understand human attitudes about nature and conservation. I selected six participants for interviews to represent a variety of opinions, disciplines, and backgrounds. I invited these individuals to reflect on their experiences during the interview process and then wrote nonfiction profiles on each person. With the stories enclosed in this thesis, I aim to inform the reader on these varying perspectives and encourage them to examine their own connection to nature.

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INTRODUCTION

Motivation

One question inspired this project. It is a question that we likely ask ourselves frequently, but only subconsciously. By the time it reaches the front of our mind, it contorts itself into something more dismissive, annoyed, aggressive: *Why would you think that? How can people believe that?* We ask ourselves these questions when fighting back eyerolls or certain phrases in some long argument.

These questions are not rooted in anger, condemnation, or hate, though. Rather, I think they stem from a different feeling entirely: curiosity.

This project was born from a question that lies concealed below the leaf litter of personal idiosyncrasies and prejudices—often accumulated over years and years—that makes its true nature hard to see. Once the egotistical mess that says "I'm right, I know best, here are the facts that make me and my ways correct" is brushed away, the question becomes obvious.

Brush away the leaves and you can find it, devoid of any feelings of judgment or self-righteousness.

What is it like to not think like me?

Springing from that question in my own mind came the one that started this project.

What is it like to not think like I do about the natural world?

Method: The New Journalism

My goal for this project was to document the perspectives of other people on nature. I aimed to write profiles in a mode similar to new journalism, a style I discovered and gained significant experience with under Toby Thompson's expert instruction in his Introduction to

Creative Nonfiction Writing and Advanced Nonfiction Writing courses. This genre combines elements of journalism with creative writing techniques to provide a comprehensive picture of a subject's biography, personality, appearance, and mannerisms. Prominent writers, including Truman Capote, Joan Didion, and Hunter S. Thompson, pioneered this technique of writing in the 1960s. While the genre declined in popularity after a few decades, it did not disappear, and it still serves as an excellent method for incorporating journalistic, fiction, and nonfiction writing methods.

In recent years, writers have been using new journalism to investigate issues like climate change through profiles. Works such as Seamus McGraw's *Betting the Farm on a Drought*[1] and Mary Robinson's *Climate Justice*[2] helped to bring this method to mind for this project, because the chapters in each are dedicated to specific people and connected by McGraw's and Robinson's journalistic narratives. I felt the new journalism format best suited the project because it provided an opportunity to explore these interviewees' lives and present them in a manner that would interest the reader—and perhaps lead them to reflect on their own story.

In March 2019, I met with Dr. Julia Kasdorf to explore the possibility of writing this project as a creative honors thesis. After she became my thesis supervisor, we first determined that this project would be a journalistic venture intended to tell stories in the new journalism tradition, and we immediately began planning the first phase: finding people. We considered several questions—should the interviewees all be strangers? Should they be located in State College, Penn State University, or all of Pennsylvania? Should they be random passersby or should there be an effort to track down participants in certain demographics? We ultimately determined that locating the interviews in State College best fit the project. As a large university town in rural Pennsylvania, State College has a population with diverse origins, political

perspectives, and stories. By choosing to include participants affiliated with the University and those who are not, we included those with varying levels of professional and personal attachment to Penn State as well as those who have put roots down in the college town landscape (or both).

By May 2019, I began the process of finding people to talk to. I used a multi-pronged approach, since the population of State College is reduced in the summer, and I employed more methods to compensate for the absence of students. Firstly, I used some word-of-mouth in my workplace and among friends to take advantage of pre-existing connections. If all worked out, a colleague or friend of mine would remember my project in a conversation and mention it to someone. I also posted in an online Penn State community a brief outline of my project and an intake survey that allowed me to discriminate between potential interviewees. This survey asked about places lived, ethnicity, gender, college major or career, and included a few statements to agree or disagree with (e.g. “I enjoy being outside”) as well as an optional question, “Why should I tell your story?” In total, I received thirty-one responses and selected three of my interviewees from these. I also created a flyer requesting interviewees and posted it in local businesses and on campus bulletin boards. My final method of people-finding entailed waiting for strangers to take the bait, but much more directly. I sat at coffee shops with a sign that advertised the possibility of free coffee in exchange for a conversation—but, like many college students, I do not have a lot of money, so I held myself accountable to only buy the person a drink if I conducted a full interview with them, rather than just an intake conversation.

For interviewing, I used a set of questions to move the conversation along. New questions arose contextually, but the core questions could recover a fairly thorough picture of each person’s life and beliefs. These questions were asked as follows, in order:

1. What's your name and age?
2. Where were you born?
3. Where did you grow up?
4. Tell me about your childhood.
   a. What did you do for fun?
   b. What was your family like?
   c. Did you go outside much?
   d. Is anything different for children today?
5. Why did you leave/stay in your place of origin?
6. How did your upbringing inform your perspective?
7. How is your environment now different?
8. What do you do?
9. Is your career in any way inspired or influenced by the environment?
10. How can you affect the environment?
11. What does nature mean to you?
12. Why should people care about the environment/why should we not worry?
13. Do you advocate for the environment in any way? How? Why/why not?

Some questions, such as 7, were contingent on other questions (5, in this case). Others were removed or not asked if the interviewee moved on to answer them, e.g. from question 11 to 12. I also asked additional questions, either in the interview or afterward via email, to get a more accurate representation of an interviewee's particular memory.

In total, I interviewed six people and recorded the conversations on my smartphone. At the time of interviewing, the difference in the subjects' ages spanned nearly four decades, with the majority in their twenties. They came from several states and had lived in three countries. The interviewees varied in vocation, religion, political standing, and more, as will be clear in the remaining pages.

After an interview was complete, I transcribed the entirety of the conversation. This allowed me to capture mannerisms, laughs, pauses, and other nonverbal nuances that characterized the interviewee more fully. In total, I transcribed about 27,000 words, or roughly 90 double-spaced pages. I completed the transcripts while scheduling and conducting. Interviews ran from May 2019 through August 2019.

Upon finishing a transcript, I began to write its profile piece. The profiles were written in roughly the order that the interviews were conducted. However, this is not the final order, because a slight adjustment in the chronological order of the profiles better distributed thematic ideas and distinct formats across the length of the whole document. Each profile, in turn, is written in the format that I felt best represented the voice and personality of the interviewee. After completing each profile, I sent it to its subject for their review.

What follows are the stories of these six individuals. You will accompany them on past journeys and in recollections of childhood memories. Within their accounts, you will be introduced to their worries, hopes, and senses of humor—or lack thereof. They will show you uncanny similarities in some beliefs and drastic contrasts in others: just ask the one who prefers to stay in their apartment for days how they would feel about walking into the woods and putting their face in the dirt (which another interviewee loves so much). And, most importantly, each of these six will inform, and perhaps challenge or intrigue, you on the "how" and "why" they see nature as they do.

I hope that you enjoy getting acquainted with them. I certainly did.

ANN BUTLER

ENRICHMENT

13,171 feet.

Ann looked around, surveying the surrounding mountains. Blue glacial lakes sat below white-streaked ridges that rolled, wavelike. Other hikers snapped photos as they savored the view. Moments before, the group had taken a photo together. Claire, a guide, motivated them to smile with the misquote “smile with your face, not with your eyes!” A photo was certainly necessary, as getting up to the Cloud Peak summit in Wyoming had not been easy—climbing more than seven thousand feet of prominence on a hot July day was, to say the least, a fairly atypical workout for Ann and the rest of the group.

Above, clouds hung thickly, looking sluggish. During the ascent, the group worried about rain, since rainfall had begun consistently at 1 p.m. for the past few days. That time was fast approaching. On the way up the mountain, the ten hikers had climbed vast swathes of talus. Each footstep in the clattering scree Ann made thankful for the dryness. She hoped the weather would hold out but remembered the words of Will, her instructor for the trip: at altitudes like this, warm sun could turn to thunder and lightning at a moment’s notice.

But now, at the peak, Ann got her wish. No rain fell to make her regret the ascent, and only wind tousled her ponytail’s thick, brown curls. As her heart rate began to relax, she felt the accomplishment fill her with contentment and calm. *You can’t beat the satisfaction of climbing a mountain,* she thought.

I did this, and not many people get to, and I could. The experience was hers.

It was certainly not the norm for her. Not three weeks ago, Ann had been in a different sphere. For fifteen years she grew up in suburbia, the streets lined with impeccably spaced trees, snaking between highways and trainlines. Wyoming was different. Wyoming was *space*. Wyoming was wildness and roughness, beautiful chaos compared to the aesthetics of Ann's hometown: orderly, neat, all symmetrical and repetitive like a rose-cut ruby.

She may as well have been on a different planet. Like a woman on a moon mission Ann wore extensive equipment—a sixty-pound, ninety-liter capacity backpack, fully half her own weight—and covered unfamiliar ground with every step. Rather than a sun-bleached American flag, an iron cross stood on the mountaintop overlooking Glacier Lake as the only marker of civilization. The population density of her home state, New Jersey, the densest in the nation, reached over 200 times that of lonely Wyoming. Quiet, vast, six-person-per-mile Wyoming.

Right now, on the summit, the vastness was refreshing. With no civilization in sight, no signs of humanity save for the group she stood with, Ann felt comfort. This place, despite its remoteness, was not empty; there was life here. It ran along the ground and the ridges that cracked and wrinkled the earth. The wind and clouds shifted constantly, with more energy and vitality than any interstate filled with people in speeding machines.

And shift the air did.

A rumble of thunder moved across the sky like a crack in plaster. The separation of the earth from the air began to shrink as wind picked up and brought gray nothingness down toward them. Ann realized with a surge of adrenaline that Cloud Peak was demonstrating to its name.

Moving quickly, the group packed up and started back down the trail. Visibility had already begun to drop, and the scenic vistas from just a few minutes before disappeared. Ann, walking last, could see only the backs of the hikers before her. Clouds surrounded them now and

obscured the glaciers, ridges, and lakes. Whereas Ann could see for miles just minutes before, she could now only discern objects in a twenty-foot radius When rain began to pelt the group, the effect only worsened.

Ann soon realized their situation was more hazardous than they had thought. As the group descended a narrow portion of the path, taking careful steps to avoid slipping on the moist rock, she looked down to her side. Barely two feet past her hiking boots lay an edge. Beyond the edge was nothing. In a moment Ann knew what it meant: no one had noticed the dropoff because of the fog.

"Hey, guys," she said over the sound of rainfall and thunder.

A few heads turned to face her, their bodies still stepping down across the rocks. "Yeah?"

"We should probably squeeze in tighter," Ann replied calmly. "We're *kinda* about to fall off a cliff."

Other hikers glanced at their feet and along their path. With exclamations, they agreed and moved into single file.

The walk continued. Excitement and fear buzzed in the air. Ann looked back to her right toward the dropoff, careful to keep her distance, then looked back at the ground to place her steps. Pouring rain dropped onto the gravel and ran down rock faces. Ann looked back to the side again, and again her sense of danger heightened.

A brilliant plume of electricity flashed before her. It hung in midair, visible for only a second, but it was unmistakable. *Holy shit,* Ann thought. Not only was the thunderstorm raining fury on them, but they were surrounded by an immense electrical charge. The hikers could be scorched by lightning at any moment.

Ann walked faster. Others had seen it, too, and the group's pace quickened. Ankles rolled and backpacks joggled as they all scurried down the slopes.

The remainder of the journey proved safe, though. The group strolled back into camp later that afternoon drenched and exhausted and ready for sleep. Nevertheless, Ann felt her heart grow full. Backpacking in the Bighorns had yielded yet another adventure, and her trip was far from over.

She had risen at four-thirty that morning, and her body told her it had had enough for one day. She walked over to her tent and sat down to take off her boots. Solid ground felt so good after a day spent traversing loose rock. Ann moved her daypack to lie down on her sleeping bag.

With tired body and refreshed spirit, she slept.

❧

Now, four years later, Ann reflects on the experience as we sit in a café. "It's such a great story to tell," she says with a laugh. "It's just so iconic." She smiles a lot, and makes jokes, her round face becoming rounder with each grin. Glasses frame her brown eyes below a widow's peak that starts the part in a head of thick, curled hair.

Born in Glen Rock, New Jersey, Ann experienced quintessential suburban life. The town's residents mostly commuted east to New York City on one of the town's two train lines. Education, finance, and professional services employ much of the population, making suits, ties, and heels more common than jeans and work boots in Glen Rock. Despite the metropolitan atmosphere, Ann spent much of her childhood outside. "My mom always had us out," she says. "She's an elementary school teacher, and was always big on early childhood development." This "development" consisted of exposure to the outdoors—in the classic cry of the American mom: "it's a beautiful day, what are you doing inside, get out of the house."

And Ann had more than her neighborhood to run around in. Visiting her grandparents in Leesburg, Virginia, she stepped into a woodland that seemed fantastical in its apparent removal from society. There was no wi-fi to speak of—but young Ann had no phone, anyway.

"It was great to just go outside and then come back to see my parents at dinner," Ann says. "The environment was controlled enough. If I got lost, you could find me in a half hour. But there's enough brush and growth there that made it really feel like I was being independent."

In the several wooded acres where Ann's grandparents made their home, she and her siblings gallivanted through their own little kingdom. They played games, followed streams and paths, formed territories and gave names to land features. Ann cites one example of an activity with some potential for hazards. "We'd grab a ball of twine from my grandpa's workshop and go make bridges across streams," she says, with a pause, then continues: "with sticks that should *not* have held up."

Ann grins again. "But hey, I mean, I'm still here."

"Did you ever get hurt?" I ask.

She nods vigorously. "Yeah. Oh-h-h, yeah. My mom would just patch us up and send us back out." Indeed, though the kids relished the freedom the woods provided, they were never too far from help.

"It was great," Ann continues. "People say that kids now are too sheltered because they don't get that as much, and it's sad to me. Of course, I can't judge parents. I'm nineteen. But I didn't really have access to technology when I was very young. I mean, I had to ask my parents to get on the family computer to play Neopets for an hour, and things like that, but it wasn't much more than that. Kids three years younger than me grew up in a different world."

"Now ten-year-olds have iPhones and it's a little weird," I say. My own experience with smartphones and devices already dates me somewhat. I did not own a cell phone until I was about twelve and had to wait until fifteen to get a smartphone. Until then, I relied on my iPod Touch for music and staying up to date with the apps that were popular at the time, like Flappy Bird or Ask.fm. It isn't 2013 anymore, though. Now, smartphones are a staple of teen life—nearly 90 percent of adolescents in the United States have one—and they aren't an unfamiliar sight in the hands of children, either.[3]

Ann agrees that there is something odd about kids owning smart devices. "Yeah. Really freaky."

She treasures the trips to her grandparents' for the lack of access to technology, among other reasons. "My neighbors and friends back home never got that experience, that feeling of independence," she says. "During summers they didn't go down to some place like Virginia. They did New York things."

But her family was not partial to New York things. They often visited a cousin's farm, where the children would do chores at their mother's request. Where other Glen Rock kids grew up getting familiar with the city on their own trips, Ann and her siblings would be feeding chickens at this little piece of the middle of nowhere.

The fact that Ann and her family were misfits in Glen Rock does not bother her. Instead, it makes her laugh. "I wanted to get out of New Jersey. I didn't really fit in there," she says. "I mean, it was really metropolitan where I grew up—and my family is just…very likely to shop at Target." At this quip, I could picture a family, not entirely unlike my own, caring little about keeping up appearances and looking wildly out of place in an area booming with opportunities and overflowing with money. Ann and I laughed.

To get out of New Jersey and leave the New York City metropolitan area, Ann came to Penn State, where she studies environmental resource management. It was not always like that, though. She applied to Penn State with the goal of being an engineer, nowhere close to a major dealing with dirty fieldwork and ecology. Ann prefers it that way. “If I had gone out of Glen Rock High School for Ag Sciences,” she says, “people would’ve looked at me funny,”—presumably how they would look at someone funny for getting their clothes at Target.

Why switch from an engineering track to environmental resource management?

“Engineering is not what I thought it was,” says Ann. So, when she came to consider other options, she remembered her trip to Wyoming. Years before, in high school, she signed up for a twenty-one-day backpacking trip with the National Outdoor Leadership School. And while those twenty-one days were only a few weeks, they gave Ann the perspective with which to discern her true passion: nature.

It was not an easy ride. The group of 14- and 15-year-olds were given a crash course in survival skills: cooking, navigating, and making camp—all in rugged grizzly country. Ann and the other hikers received rations by horse. The group hiked up to eight miles a day wearing heavy packs, so that by the end of the trip they had hiked nearly 80 miles. “It was the most difficult thing I’ve ever done in my life,” says Ann now.

The sweat and tears paid off, though. Hiking glaciers and mountains in the Bighorns acquainted the group with the magnificent wildness of the landscape (as did the inevitably rolled ankles). Though the surroundings were remote, Ann knew—and could see—life being breathed into the earth. It was, after all, June and July, and Wyoming was at its most vigorous. Wildlife such as elk, golden eagles, bears, and pronghorn antelope moved through the sky and along the earth. The hikers followed suit, ascending slopes and navigating canyons. There was much to see

on their trek. Green grass and wildflower reds and blues brought color to swathes of rocky terrain. And when the group made their ascent of Cloud Peak, the setting became all the more dramatic. Unpredictable summer weather became much more intense when you stood on top of the world.

"I didn't totally know what I was getting into," Ann says about the trip. "But that's what made me fall in love with nature."

But what is nature exactly to a person who has learned it through textbooks and data, and then learned it for real? How does Ann's experience in studying environmental principles stand up to her experience with living them? I consider the words of one of my favorite writers, Aldo Leopold, here. The reputed father of wildlife ecology and prominent conservationist once wrote on the dangers of formal schooling: "Is education possibly a process of trading awareness for things of lesser worth? The goose who trades his is soon a pile of feathers."[4] Now, over seventy years after Leopold published this question in *A Sand County Almanac and Sketches Here and There*, the term "experiential education" and its related phrases "hands-on" and "real-world" have become more and more popular for teaching kindergarteners and undergrads alike. So, was Leopold right?

Ann would probably tell you the answer is no. Her approach to learning about nature combines textbook, classroom-oriented lessons supposedly "of lesser worth" with the "awareness" that experiences like Wyoming would impart.

"I think you can break up the idea of the outdoors into different parts. For me, you have outdoors and you have the environment.

I like the independence of it. I like the freedom of being able to sit alone on a mountaintop and look out on an 'everything the light touches is yours' kind of situation." I

chuckle at her reference to *The Lion King.* She continues. “It’s freeing to get that kind of accomplishment.”

“Is it your recharge?” I ask.

“I’d say so. I think it’s important to make time to think deeply and unpack everything you’ve been experiencing. If you can’t take a minute and step back, then you end up losing yourself.”

She pauses, then adds definitively, “*That’s* the outdoors,” before going on to explain the second component of her nature concept.

“The environment—the reason that I’m majoring in that—is because *holy shit.* It’s beautiful and it’s *so* cool.” Each adjective is emphasized, and Ann’s tone has become more urgent and intense. Like many people, she gets passionate when talking about the thing she loves. Unlike some people, though, she curses rarely and reserves the words for statements such as these, where the words “wow” and any variant of “astounding” or “amazing” just is not enough. As her eyes and face lit up to talk about the subject, I could see the excitement for the outside world that gave it a “holy shit” factor.

“It’s the most complex and efficient system in the universe, because it’s everything,” she says. “I have trouble putting it into words. I’m going to move really well through this conversation and then I’m going to stutter a lot when I explain this,” she laughs, “because, like… it’s overwhelming to me how *well* everything works together.”

To illustrate the concept of interconnectivity for me, Ann offers some examples. “I want to think of a better example than a keystone species, because that’s such an easy one,” she says. And it’s true; long before I ever became interested in ecology, wildlife science, or conservation, I had the concept of the keystone species beaten into my brain circa the fourth or fifth grade. For

many years after, my knowledge of ecological principles consisted mainly of this definition—a species that plays a critical role in maintaining the balance of an ecosystem—and a vague awareness of the trophic pyramid, or the flow of energy upward through an ecosystem (à la *The Lion King* again, with the Circle of Life concept).

Nevertheless, Ann chooses a keystone species example, likely because it tells such a good story.

"The wolves in Yellowstone started attacking campers. So, they killed all of the wolves. Now, when you lose all of the wolves, all of the sudden you're having a lot of prey that's springing up. You have way too many bunnies. You have way too many lower animals that the wolves would have preyed on. Since you have all of these herbivores, right, they're destroying the grasses. Okay." She gestures with her hands as she moves forward in retelling the process, illustrating the definitiveness and logic of it in her eyes. "Since the grasses are all dying, right, it's leeching the soil. There's not enough nutrients. Once all the grass kinda disappears, the integrity of the soil is…kinda shot. So, everything starts falling apart. Streams start widening, because you can't keep up the banks. The whole thing ends up being a marsh, a barren wasteland of nothingness—whereas fifteen years earlier it was beautiful, like you would think."

She's right. A Google image search of "wolves Yellowstone before and after" shows you photos and artists' depictions of the difference in Yellowstone's landscape, separated by time and the presence of the predators. Without wolves, Yellowstone looks desolate: the water is discolored, the grasses are brown due to overbrowsing, and few animals beyond the elk roam the wasteland.

The images showing the results of wolf re-introduction tell a different story. For one, species richness is increased. Bears, eagles, trout, aspens and willows, to name a few, have

begun to fill their ecological niches at Yellowstone. The plants are greener and grow larger with no abundance of elk to browse them down. The unrealistic depiction of so many wildlife, fish, and plant species in one small space achieves its teaching purpose, because the park with wolves and the park without appear as two different worlds.

Examples like this fill Ann with excitement for what she does. She views nature (in her words, the environment) as a space for reflection, but that's not what gets her going. Instead, it is the opportunity to learn from such an expansive and complex network of interconnecting systems, of gathering knowledge from the unconscious proceedings of nature to further our own enrichment.

"It's a tool for learning, for reference," Ann says.

I wholeheartedly agree. Recognizing a kindred spirit in nature nerddom, I decide to share something I learned in one of my classes—frog saliva is a non-Newtonian fluid, meaning it changes its viscosity when a force is applied.

"Like…" Ann sighs. "That's *so* cool! That's so cool, and none of the geniuses I just left at my job in Hammond Building are going to be able to think of that." While it's clear she's just making a joke at the expense of Penn State's engineering student body, her point is clear—

"Nature is a tool in a lot of ways. For learning, for reference." She cites an example from her job at a 3D printing lab. "We use a plant-based polymer to print. Even for that kind of thing, we're able to look into 'what does nature say?'"

Ann is interested in spreading this excitement for natural phenomena around. Her Girl Scout Gold Award project consisted of developing an environmental education program in her hometown. Modeled after the Outdoor School program at Shaver's Creek Environmental Center near State College, Ann's project created a space for children to enjoy a quintessential camping

experience—campfires, group activities, starlight—while learning about the other species and principles that make up the natural world around them.

"I hope that I can help people appreciate nature while it's still here," says Ann, referring to today's ongoing loss of wildlife habitat and extant species. "Outdoor school is the right idea; I want to try to reach farther out and make it more prominent in the community." In her career, she aspires to engage her community with nature more comprehensively, surmounting the economical or racial obstacles that make outdoor recreation and education less accessible to certain groups.

"It's not a pay-to-play situation," she says. "It's for everyone. We all live here, so we all deserve our nature." She cites the national parks as an example. "That's why we need to fund them; that's why the American taxpayer pays for things like Yosemite."

And while Ann is only a sophomore at Penn State, she is enthusiastic about her post-graduation opportunities. With her bachelor of science degree, she intends to work at a place like Shaver's Creek, or Yosemite, or the National Outdoor Leadership School, enriching others with a combination of "education" and "awareness."

Whether or not that awareness entails a short lesson on ecology or a treacherous ascent toward a mountaintop of thunder and rain remains to be seen. But Ann, no matter what, is excited to continue learning for as long as she lives.

JUSTIN PIERCE

DOGMA

Justin Pierce deals in absolutes as stark as his clothing. He wears a perfectly white scoop-neck tee and black jeans. He is talkative, but intense—as I quickly learn when he pulls out a chair and sits down at my table with no greeting, smile, or handshake. When I ask him if he's interested in getting a drink, he declines. I continue sipping Earl Grey that has been steeped too long.

He indicated in his survey that he was enthusiastic to share his perspective, and that he would be interested in reading the completed project even if he were not selected. As I looked down at my notebook to begin the interview, he assumed a purposeful demeanor and asked—not without some suspicion in his voice—"Are you just going to go through a list of questions, or…?" He spoke matter-of-factly, not joking or laughing but willing to share an occasional smile. I used the conversation to probe, and Justin issued his beliefs that sounded like they are facts to him.

Absolute #1: He can't say where he's from.

Some people live their entire lives without leaving their home state. Many lack the opportunity or means to travel outside their home country. And some, like Justin, have hopped so much across the map that they lack significant attachment to any particular place.

Born in Hong Kong to an American father and Chinese mother, Justin experienced little of the city before his family moved to Shanghai when he was an infant. Shanghai was his home for a few years before his family moved to Toledo, Ohio. At the age of five, Justin found himself moving to Shanghai once again, where he remained for a few years of childhood.

"I lived as downtown as you can get," he said. "I was a couple blocks away from the bigger buildings," he continues, referring to skyscrapers like the 1,380-foot Jin Mao Tower in the city's Pudong District. And downtown had its benefits. "Everything's in Shanghai. Anything you can think of." Justin described the tendency in China to develop an area or construct a building to serve a large population that may never appear. He used the example of a mall: a shopping complex towering over 15 stories, filled with fully staffed stores, would frequently be nearly empty.

During his early childhood, Shanghai was massive and continuing to expand. Justin, always fascinated by satellite imagery, says that Shanghai now would be much "more gray" in color on the map than it had been when he lived there. It's no exaggeration. With a population of over 24 million, Shanghai is the second-most populated city in the world.

When Justin, only eight, came to America with his family to live permanently, the change was drastic. Whereas Toledo is still a city, it pales in comparison to Shanghai's amount of map "gray." To Justin, Toledo was much, much smaller, and offered, as expected, fewer amenities. As he reflected on the rest of his life in America, Justin expressed some regret at leaving Shanghai's activity behind. "I always missed Shanghai; there's so many things you can't do in America that you can do there."

But coming to live in an unknown, smaller city across an ocean and a continent offered benefits—even if it meant losing access to so much excess. In Shanghai, Justin could not remember seeing animals other than the pets being sold in the street, but near Toledo ducks congregated in his backyard. Birds made nests in his house. In Shanghai, imported palm trees grew downtown to emulate beach cities in the United States. In Toledo, though, native trees and

shrubs populated the Pierce yard. Justin did miss Shanghai, but he did not wholly dislike the new setting.

It provided him with opportunities he had not enjoyed in China—hunting, for example. This practice continued when the family moved again to Florida, and then to Latrobe, Pennsylvania.

Back in China, Justin had already begun to explore outdoor recreation through another avenue: fishing. The fish farms were not "real fishing," according to Justin, but in the United States, he got to try the authentic sport. This led him to discover his preference for fishing over hunting based on one particular reason.

Absolute #2: Fish are less alive.

Justin's father, born in rural Ridgway, Pennsylvania, was no stranger to hunting. He grew up in the wooded Clarion River valley where the number of deer, beers, and ATVs per capita are skewed rather highly—something I can confidently guess as a fellow native of the same valley. So, when Justin came to America with his parents, his father saw an opportunity to share his background with his son through hunting trips.

The locations varied as widely as the game. Justin learned to hunt in locales from the canals of Palm Beach to the hardwood Pennsylvania forests. Together, he and his father spent many hours in the early mornings waiting for a sign—whether the crash of a white-tailed deer through underbrush or the movement of an alligator in the water.

But Justin was no fan of hunting. "The only reason I did it was to spend time with my dad," he says.

To Justin, it is all about an equal playing field. "Maybe someday I'll actually enjoy hunting if I only did archery and I made my own bow. Then it wouldn't be cheating."

Hunting is cheating, he says, because hunters are given too much of an advantage. “I think a gun is cheating. It’s not fair. It took humans 2,000 years to make a gun, and a deer doesn’t have that.”

Bowhunting with a self-made bow, though, evens the playing field: “It’s making it with your own hands and it’s your own strength.”

Though Justin opposed hunting for its unfair taking of life, he never expressed feelings of sentimental feelings of sympathy for the animal as those who oppose hunting often do. I have heard before that hunting is inhumane, completely unnecessary, cruel—the list goes on and on. I held some of those opinions myself before learning the value of hunting for conservation and ecosystem management. Still, I could never pull the trigger on an animal, so I appreciate those who can take an animal’s life responsibly and respectfully to keep the ecosystem healthy. But Justin echoes none of these sentiments. He does not feel that deer are cute, or that shooting them without a real need for food in today’s world of Walmarts is unneeded. Modern hunting is just taking low-hanging fruit. Rifle hunting is no challenge…and thus not worth the deer’s life.

Fishing, though, is different, and presents a challenge actually worth pursuing.

“Fish are less alive, I think,” Justin says. “They can stay alive if I do it right. It’s more fun. I feel like I have more control, and I can catch more. There’ll be days where I can catch, like, thirty fish.” Curiously, although a fish is less alive than a mammal, Justin is still invested in treating it with the care necessary to keep fish alive during catch-and-release angling. And this is not necessarily easy. Though safely returning the fish to the water can sound as simple as pulling out a hook and tossing the fish back, a lack of care and concentration on the angler’s part can easily kill a fish. A fish may swim away appearing unaffected once it’s returned to the water, but it may actually be at a vastly increased risk of death and could die within a few hours. This

phenomenon, known as catch-and-release mortality or hooking mortality, occurs because of intense physiological stress placed on the fish during angling and can be reduced in frequency with proper techniques and tools. Some of these include setting the hook quickly, leaving the fish in the water while removing the hook, avoiding touching the gills and underbelly, and using a barbless hook.[5] Of course, it is unrealistic to assume that every angler can follow guidelines like these perfectly for every fish on the line—I know that I certainly can't. On more occasions than one, I have hastily (and anxiously) given a hooked fish over to a more experienced angler for hook removal and release. Handling a fish responsibly takes considerable practice and constitutes the challenge that Justin just does not perceive in hunting.

And for Justin, fishing is about more than sport. He mentions that his father has a camp in Brookville, Pennsylvania, not far from Ridgway and not far from my own hometown. "It's brand new. We just built the pond and stocked it this year." As he talks about the property, his thoughts venture into the future. "I still would want to retire in a place like my dad's in Brookville."

From a person who has moved so many times and enjoyed the benefits of one of the world's largest urban centers, this wish does not seem quite characteristic.

<u>Absolute #3: He wants the experience.</u>

Living out his days on a quiet, wooded plot is an attractive goal to Justin, who also aspires to build and operate his own greenhouse at some point. The idea of a serene atmosphere and removal from urban life is more than enough for a retirement spot.

Though the rural Brookville property seems as apt a retirement destination as any, Justin is interested in moving around. "I still want to live in a city sometime. I never really got to experience that." It is true, since his time in one of Earth's most highly populated areas restrained

his freedom by way of, well, childhood. Growing up in a major city and living independently in one as an adult are two entirely different ballgames, albeit with the same field and bats.

Justin maintains he would never, ever retire in a city, but—"If I could have both"—a large city with all its activity and a woodland property offering real solitude—"that'd be nice…just move every six months. It's just wanting the experience. That's all there really is to it: not having the same thing all the time. I mean, I moved every three years of my life so far; being in Pennsylvania has been the longest I've ever stayed in one place," How long, exactly? The answer is mind-boggling to me, who lived in one house for my whole life before coming to Penn State at the age of eighteen. Justin's longest duration in one place is five years—and that includes moving between Latrobe and State College.

While Justin has appreciated what living in so many environments has done for him, there is one place he couldn't stand: Kansas. "Worst place I've ever been. The people there are nice, but... it's so flat. There's tornadoes every week. It was small-town, so there was nothing to do." Curiously, Justin seems not to care for rural and small when it is in a place like Kansas that lacks the tree cover of a state like our own. I wonder to myself if that is not too uncommon, and if it is our ancestors' encoding that makes us miss forests and the rustle of leaves in a barren steppe or a desert. We do, after all, share a common ancestor with chimpanzees, and our evolutionary line was swinging through branches and climbing with all fours in treetops long before it began to walk on two legs. The adaptations are still with us today to some degree: lifting your arm above your head will show the rotation of your ball-and-socket shoulder joint, unique to primates and adapted to provide a full range of motion for swinging through trees. Maybe our shoulders are not the only pieces of us that are still better-suited for life in the woods, in a place like Brookville rather than Kansas.

Absolute #4: Everything's nature.

While Justin has expressed his preference for the forests of the eastern United States over grassland, he finds ways to connect to nature in any setting.

This does not seem on the mark at first, though. "I like being outside, but I will never wake up in the morning and think, 'I want to be in a forest right now,'" he says. Compared to the comfort and familiarity of his apartment, the comfort and remoteness of the woods does not seem to measure up.

Nevertheless, Justin sees value in "nature." His appreciation for it originates in his own concept, tempered by a significant scientific background and analytical perspective.

"I think everything's nature," he says. "I can't draw a line. Aren't humans part of nature? We're a species, too. So, if we make something, how is that *not* nature making it?"

To challenge him a little, I ask him about a point he mentioned earlier in the conversation. "You mentioned gene editing. Do you think that's natural, too?" It seemed to be a more extreme example of humans disrupting the 'natural order.'

"I'll put it into this perspective," he says. "We're literally the universe experiencing themselves. So, no matter what we do, the universe is doing it, too."

"Everything that has conspired to make you 'you'…" I reply, leaving words out of my sentence for him to fill in the gap.

"Yes; I don't separate myself from the environment," he says. "It's like, this is a cup right now"—he picks up my now-empty cup of Earl Grey—"if I were to eat this cup, like, 10 percent of it would turn into me." It was an apt, yet somewhat gross, example. But then, much of nature is substantially gross. Humans are not an exception.

When I ask him what he does or does not appreciate about nature, given his broad definition of the concept, he provides a confident answer. “I haven’t *thought* about appreciating it enough,” he says; earlier, he spoke about spending much of his time in his apartment and preferring to stay indoors despite his love for pastimes like fishing. “I don’t think that I don’t appreciate it at all, and I can think of a time when I didn’t have this perspective. This perspective is just—this table’s made of atoms. And it’s nice to know that.”

When we picture “nature,” the “environment,” the “outdoors,” the images often fall into these categories: wildlife, plants, topography, weather. Since early childhood, we are conditioned to associate trees with nature, often in their simplest depicted form: a brown trunk with a green fluffy canopy like a cotton ball. We see bears and owls and rabbits and turtles in our children’s books and begin to catalog morphologically diverse animals such as these in our brains as living, breathing examples of nature. When it rains or snows to cover a landscape in fog or the largest of blankets, we sigh and think of the unpredictability, serenity, and solitude that such a natural image evokes. Eventually, nature becomes a broad concept represented by attractive or charismatic symbols. A bright green leaf. A gray wolf. A snowflake. A tiger. For many people who don’t invest much time outside, examples like these seem to serve just fine as natural icons. But what about people like biologists, chemists, and engineering students like Justin, who don’t have to fit nature into those boxes? These individuals can perceive more easily the unnoticeable and seemingly insignificant structures or processes that allow that gray wolf to breathe or that snowflake to form. Sayings like “stop and smell the roses” underline the value of appreciating small details; Justin appreciates the little things at a scale so small it borders on the anti-cosmic.

“I could look at a forest and say there’s a million trees there, or I could zoom in on your phone and there’s a million types of bacteria there,” he says. “It’s all the same thing.”

I imagine that this acknowledgment of all life as viable representations of the vast universe would make him somewhat less egotistical. “You don’t seem to be very…human-centric,” I say.

“I care a lot about humanity,” he says. He does: he invests in companies that support the causes he does, he votes consistently, and he aims to do research work that will benefit society. To him, being part of a STEM field is an honor because, in his words, “society is caused by STEM.” He sees knowledge, experimentation, and data as the primary vehicles for progress as a species. Is caring about humanity synonymous with seeing humans as the most important organisms on the planet, though? “No, not really.”

So, what does an introvert homebody like Justin do with that perspective? For one, he stays informed. He is aware of the danger that climate change poses, and has already proved, to humanity and other the millions of species that call this planet home. “You can’t say that people have had no impact on the atmosphere—that’s just impossible,” he says. He acknowledges that the sheer size of the Earth can lead people to believe that their actions cannot possibly have an effect on the climate but addresses this misconception with another truth statement: “Everything we do creates heat, too.” Laws of thermodynamics are like the Ten Commandments to him.

He’s no activist, however, and few of us are. “I’ve known about this for so long, but I don’t really do anything. It’s kind of sad.” He does take a few steps to lessen his footprint, such as recycling and avoiding driving when he can, but he admits to not having made significant lifestyle changes.

It is a catch-22 for many. The more popular, small adjustments to one’s daily routine for combating climate change are numerous: avoiding plastic straws, shortening showers, unplugging appliances when not using them. Unfortunately, these are the adjustments that do not

make nearly as significant a difference as other habits like curbing consumption and cutting down on travel—but they are the steps that tend to get people the most engaged, because they still feel like they are making an impact.

"It's hard for me to feel like I can make any kind of impact when there are a lot of places bigger than me that are doing a lot more polluting," I tell Justin. Plastic straws, for example, constitute less than 1% of the ocean's plastic pollution.[6]

"The best thing I could have done would be to kill myself, I guess," Justin jokes. "I would make a huge impact on the environment if I did that."

Dark humor aside, Justin knows he could do more for the environment given the prominence of climate action in recent years. He knows about the consequences of climate change. He does not make the large, life-altering choices—going zero-waste, becoming vegan, or any other "green" directive that has been depicted in media and pop culture as a meaningful sacrifice to help the planet. But he does some. And he's not alone.

Absolute #5: Humans are the same.

Justin's years spent in different continents and climates have taught him a few lessons. Whether it is city-dwellers in Shanghai, conservative folk in backwoods Pennsylvania, or the upper-middle-class beach crawlers in Florida, there is little difference in attitude about something as vast and alarming as climate change. "In general, it's pretty rare to go to an extreme to save the environment," says Justin. "I know a couple of people who have given up meat, but just a couple. In the *hundreds* I've met. I guess they're like me." Like him: perhaps fairly aware, well-intentioned, but lacking a significant impetus to put the earth's welfare ahead of their own.

Justin's observations about people extend beyond their attitudes towards conservation. "If anything, moving from so many places has taught me what a human is," he says. "They cherrypick all these differences… They're really kind of all the same."

In my experience, much different from Justin's, he is correct. My anthropology courses opened my mind to the concepts of genetic diversity and phenotyping, demonstrating race as a social—and very historically significant—concept with no biological basis whatsoever. The phrase "cross-culturally" appeared time and time again in assigned journal readings, so that in a small forest-dwelling society in the South Pacific or Western society in an atmosphere saturated with technology and media, humans could, and tended to, share behaviors. I have found anecdotally that I can reach perfect agreement (in every point but the underlying fundamental belief) with someone differing from me in almost every aspect of identity in twenty-first-century Western society: gender, ethnicity, economic background, place of origin, religion, sexuality, political ideology. Interacting with the variety of people I have met at Penn State has further supported how similar all seven-plus billion of us can be.

Justin has a point, though. We convince ourselves that humans oppose each other. Every human can feel that they are undoubtedly right. But for a topic as immense in scale as climate change, it is important to remember that those differences are indeed "cherrypicked." We all tend to care about similar things—ourselves, loved ones, interests—and when those things we care about are threatened, we will work to protect them.

Justin uses absolutes to understand his universe. I will expand upon one he has already made.

<u>Absolute #5.1: Humans are the same, and they can be very good to the world they call home.</u>

GRANT GREIDER

DISCOVERY

Light, streaked. Oily faces. Dye in water. Paint splatters. Fire, exposed skin, pastels, blurred limbs, two-tone lamps and grasping hands. Grant Greider's photography is a mixed bag, exposing human experience and movement in all sorts of ways. He shoots parties and nightclubs. He shoots studio portraits, covering his subject with flames and lustrous goo and aggressive light. He shoots himself—and his friends—dancing, jumping, screaming, laughing. He loves documenting people because he is curious.

"I want to expose things; I want to have a conversation." With one of his series, "Slippery People," he aims to show raw (and sometimes disgusting) moments that can only be found in a few settings: parties, clubs, and bars where people are at their most uninhibited.

About those settings, Grant has no qualms. "I know what I'm getting into, and I'm just there to be a part of it," he says. "Not even to enjoy it, but just to see what's going on."

That drive to find out, to place himself in the situation before understanding it or necessarily being comfortable with it, was what plunked Grant down at the table across from me in the first place. I had been sitting outside a café on College Avenue for at least an hour watching people walk by, read my sign, and continue walking. Out of the café walks a young man, tall and broad. As he moves toward the sidewalk from the door, he glances at my table. I know he's in.

He sits down. "I don't need free coffee because I practically live here, but I'm intrigued," he says to my sign, which hangs over the edge of the table:

TALK TO ME
AND YOU COULD GET
FREE COFFEE!

Before I finish explaining my project to him, he seems excited to talk, or "have a conversation," as he puts it. As he introduces himself, he takes off his baseball cap and runs his hands through long hair that is bleached platinum and finely crimped. Like the photos that he takes, he's a lot. He laughs often and frequently makes jokes, so that I feel like I am the one being loosened up to talk rather than the interviewee. He conforms to his own agenda only, and it shows through his style. Gold hoop earrings accent the muted colors in his outfit: an olive tank and deep red, yellow, and green patterning on his cap. Brown eyes peer out below thick brows (blond), a curly beard (blond), and shaved fuzz on his undercut (also blond, but not as blond as the top). He is witty; when I ask him about his childhood, he quips "*Ooh,* we're going to *therapy* now!" with a hearty laugh.

❧

Growing up in Elizabethtown, Pennsylvania, not far from the state capital, Grant experienced the "charm" of a small town with the added touristy influence of Harrisburg and Hershey to the north, as he humorously explains to me.

"Whenever people ask me 'where am I from,' I show them an article that someone from my hometown posted on Facebook. It was something like 'I'm not a feminist because Jesus doesn't want me to be,'" Grant says with a laugh at the prevalence of Christianity and right-wing views in rural areas. "That's where I'm from. It doesn't matter geographically where."

But Grant's hometown is not just the picture of stereotypical small-town America. "It gave me the best of both worlds," he says, given his proximity to the small cities of Harrisburg, Lancaster, and York. He has acquired an appreciation for more urban settings on the grounds that

he is an arts student. “To be successful,” he “should probably learn to like urban settings,” he says. And he does.

Despite this appreciation, though, and his jabs at small-town values, he has also developed an appreciation for the more rural, middle-of-nowhere locales. But why *would* an arts student with a taste for new experiences find solace in such a setting?

“Quiet. It’s quiet. This is something that a lot of people don’t touch on. Whenever people say that ‘there’s nothing to do’ in a place like State College, to me that just means you need to *find* something to do. And that search is rewarding in a way, because if you find something to do, it’s like, ‘I found a secret!’”

This ‘search’ for the next thing to do, or, frequently, create, got Grant’s hands dirty from childhood onward. “I was definitely an arts student from the get-go,” he says. “I was on the creative path. I wanted to see something new.”

He was not the type of child that fixated on one hobby or game. Instead, he occupied himself in all sorts of ways. His father, an Amtrak engineer, encouraged him to spend time outside. “He’d always want to be somewhere close to the environment. He’d have to drive in to Harrisburg, get on the train, go into Philly—and he’s just always in crowded areas. So, he did lots of hiking, biking, keeping active,” Grant says. And his father’s carefully maintained work-life balance influenced Grant in turn. “That was…kinda a big part of my memories and attachments with him. Just being outside. Even yard work.”

Grant’s mother spent less time outdoors due to the time commitment of her nursing career. Nonetheless, she did what she could, and as a result Grant shared some time outdoors with her as well. A native of England, she instilled an appreciation for cricket in young Grant.

The two were committed to bringing their son out of the house in their own ways, but there was one pastime they both shared with him. In the summers, they broke out the red-and-yellow tandem kayak. Grant's parents would often take turns with him, and they would enjoy the sunshine together.

When Grant considers the times he spent either in that old tandem or, later, his blue solo kayak, he sees the value of his parents' intent to expose him to the outdoors. "I see parents who are telling kids, 'hey, you need to go outside; hey, you need to do this,' and I think that's almost necessary. I think having a connection with outside is… it makes living your time here more *memorable,"* he says. "I'm struggling to remember things I did inside with my parents." While the difference for Grant was between playing outside and playing inside with toys, games, and the like, the difference for children today is closer to playing outside and playing inside—with screens. While Grant does acknowledge that today's children are more exposed to technology than ever, he does not believe the stereotype that all is lost for children connecting to the outdoors, or that kids will never spend their time on anything but an iPad from here on out. He puts his faith in parents like his own who set an example for children to appreciate the outdoors—and the memories that, to Grant, are such a valuable result.

And for Grant, there is no better example of a vivid outdoor memory than…

"I vividly remember breaking my arm!"

"Oh, God," I mutter.

Grant laughs his belly laugh. "I was exploring a tree," he begins. "It was a tree that fell down; it was a big storm." As he recollects, he repeats himself: each new permutation brings another aspect of the memory back. "It was a tree that fell down, a willow tree. I was nine years old. I remember there was a house cat, a farm cat, and it was sort of following me, and I fell out

of the tree and landed straight on my left arm like *that"*—he shows me, arm hugged to his chest—"onto this big bushpile of sticks."

"That's…not fun," I reply.

"Y-y-yes," he says, laughing. "I was very, very angry at that cat because it fell down so gracefully."

Despite this injury, or rather *because* of this injury, Grant thinks it is important for kids to be in similarly hazardous situations on their own. "I hate to give the old-man answer of 'it builds their character'"—at this his voice switched into a higher, more crotchety and shaky register to go with the joke—"but I think exposing kids to dangers gives them a heightened sense of what *is* dangerous."

"It's like when you're little and you want to touch a hot stove, and your parents say 'don't touch it,' but you want to, so they say, 'okay, touch it!'" I reply.

"But if you tell your kids *to* touch it, they're not going to touch it." Again, he switches into his old-man persona. "That's just how ah see it."

So, while curiosity can get children into trouble, particularly when they are roughhousing outside, Grant sees the learning experience associated with it as valuable. He is not climbing trees or exploring (trespassing) in woods around his house like he did as a boy, but experiences such as these helped to shape the thrill-seeking, investigative personality that sits before me today.

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Grant doesn't consider himself a nature photographer. He finds himself bored by much of the art that the outdoors inspires. "I think people have seen enough landscapes, enough nature drawings where you really can't do too much else."

But Grant is curious, and bored by convention, and creative. His first nature-oriented project rejected those clichés—depicting a valley, or forest, or sunset on a lake, or perhaps wild animal caught staring at the camera—and instead examined the less stereotypical visuals in nature.

"I wanted to expand my horizons," Grant says about his project theme, "but also—I kind of wanted to *reconnect* a little bit, and I wanted to do something that involved discovery. So, everything that I photographed was very small. And my idea was 'let's show as much detail as possible. Let's enlarge it as much as possible so you can see all those tiny little details.'"

The result, titled *Discoveries,* is a series of black-and-white film prints, all shot in macro to depict the "tiny details." Grant's subjects include found biotic—or once biotic—objects: the seed pod from a sweetgum tree, a dragonfly, and a dead Queen Anne's lace flower. Other items. although not picked up from somewhere on the ground in Pennsylvania, are still "natural" in origin, such as an orange slice. Grant shot each photo on 4x5" film and developed them all himself. Shooting digitally may have been easier, but using a darkroom gives him "room for experimentation," he says. He then scanned the negatives, used Adobe Photoshop to enlarge the images, and printed them at a massive scale to give the viewer a chance to "discover."

"I want to have more conversations about this," he says about the theme of his project. "I remember thinking during the project, 'Wow. There's so much more than I thought there would be.' I like the idea of noticing that, and everyone else noticing that, too, like, 'oh my gosh, what's *in* there?'"

Avenues like this permit Grant to appreciate nature. He isn't an outdoor nut by any means. He does not mountain bike hundreds of miles in a summer, fly fish, birdwatch, or

generally check any boxes that would label a person as a recreationist. But he can engage with nature indirectly through the boxes he does check: curiosity and adventurousness.

Another box that I have discovered in Grant is his enthusiasm to share. He acknowledges that he is not the most engaged with nature—saying "Not the environment; I know that's the kind of answer you're looking for" when I asked what inspired him to create art as a child—but charges forward throughout the conversation nonetheless. On paper, or in a survey, he might not seem like a "nature person," much less someone who spends time thinking about it. But here he sits, talking excitedly and offering thorough answers to my questions—as well as his many opinions.

❧

"I think people do care about the environment," Grant says. "People can think about the environment all they want; *doing* something about it is the hard part." When I ask him if he does anything about it, he laughs. "Oh, I recycle. That's about it."

While Grant acknowledges that doing is much harder than just thinking, and that his own example supports the notion that the average person is not doing much to combat the Anthropocene's climate crisis and ecological destruction, he is not a fatalist. "I work for Starbucks. We're probably one of the biggest plastic pollutants. On the optimistic side, I was working this morning, and five to six customers in a row came in with reusable cups."

To some of us, this may seem like nothing. A handful of customers forgoing contributing to plastics waste by getting their coffee in a reusable mug seems to pale in comparison to the eight million tons—sixteen *billion* pounds—of plastic that is dumped into the oceans every year.[7]

It does not seem like nothing to Grant. "I think it's starting to become a trend: 'hey, let's do something about the environment.' It's a drop in the bucket, but collectively…" His voice

trails off as he presumably considers what a full bucket would look like for the world—and for the thousands of businesses like Starbucks, and the billions of people that go about their lives.

That is part of the problem for climate change deniers, according to Grant. “I don’t want to say that it is invalid,” he says regarding the belief that climate change is a hoax, is not a significant and pressing issue, etc. “Everyone has worries and values. I think that those worries and values are very short-term, and that they are economic,” he says about the concerns of climate change deniers. No frustration or irritation enters his voice. While he clearly disagrees with climate change denial, he does not sling names or make snarky, condescending remarks about those on the other side of the issue. He does not talk like he knows everything but rather empathizes with those “worries and values” to place himself in the shoes of those who reject the scientific basis of climate change.

It is characteristic of him. Whether he is talking about an opinion he doesn’t share, or a passion he lacks, he seems to meet the topic in his mind with openness that reflects his undying curiosity. He talks about people or subjects he is unfamiliar with and manages to show engagement rather than boredom or apathy. The same is true for nature. Though this genial photographer knows that he’s not an outdoorsman, he is never going to stop exploring and experimenting when he runs into things that are green and living. Only his black-and-white film prints of small objects carry the moniker “discoveries,” but they represent the way Grant sees so much of the world: he wants to crack it open, examine it, and share.

DONNA SUMEREAU

OPTIMISM

Donna and her brothers burst out of the house and into the front yard. Morning dew immediately soaked their shoes as they hurried toward the road. It was spring in Connecticut, and green things sprung up left and right. They were excited to see the plants and know them as a sign of incoming summer. Today's adventure would take them out to the Lake, and who knew what they would find there, and who knew what they would learn.

Their path went down the street. From the Lake to their house the street became a dead end, and thus many of their journeys started this way. The three children slapped the pavement with their feet, not bothering to walk quietly. The robin-song of a few hopeful suitors rang clearly in the trees beside them, down along Chalk Hill Road toward the Lake, and further into the Woods beyond their home.

Then, suddenly, the peace of the surroundings changed. Her brother, Thomas, was the first to spot it.

"Guys! Whassat?" As fast as his finger could point, the children were already taking off toward the odd shape in the road. A robin flitted further into the Woods to avoid the commotion.

As they approached, smiles crossed their faces—"Whoa! It's a turtle!"—and quickly changed to stuck-out tongues and wrinkled brows. The turtle had been a victim of the road.

Nearly in unison, like a choir: "EWWW-WW!"

The scramble began: they needed dissection tools. Spreading out to the sides of the road, Donna, Tom, and Doug searched for sticks. It did not take long for a slightly rotted stick and a scaly, straight twig to turn up.

Scalpels and forceps in hand, they squatted down and got to work. Each poke and prod yielded another cry of disgust: "That's so *gross," "Ugh! What* is *that?" and the like. And yet the children were excited at their find. It was something they had never seen before, and seeing this poor smashed thing made the living ones all the more precious.*

It wasn't long before the idea popped into Donna's head, and they all remembered what they had been doing in the first place.

"Guys," she said, "this one got here, so there's prolly a lot at the Lake!"

"Yeah!" her younger brothers assented. "Let's go!"

The surgical tools were left forgotten in the road beside the morning's science experiment as the excited voices of the Roedema kids faded toward the neighborhood pond. There was more to explore.

❧

When I meet Donna Sumereau outside the entrance to the Paterno Library on a warm July morning, she is sunnier than the weather. Introducing myself and shaking her hand, I see that she returns—and maybe surpasses—the enthusiasm and warmth that I bring to every interview. I looked forward to speaking with her, as she had indicated in her survey response that her perspective might be unique: "I bet my philosophy re: nature is unusual."

We make our way to a table inside and begin talking about her background.

Born in Schenectady, New York, Donna moved to Monroe, Connecticut with her family when she was very young. There, the adventures began. Living in a suburban neighborhood with the flowery moniker of "Lakewood Estates," she spent her days roaming around with her siblings and the other neighborhood children.

Opportunities to explore the outdoors were everywhere. Woods surrounded the neighborhood and crept up to Donna's childhood backyard as if they intended to take it over someday. A small pond just opposite of her house was a spooky, dark swamp in warm weather, but transformed into a skating rink with the freeze. The larger pond that gave Lakewood Estates its slightly exaggerated name was a hub of activity.

"The community was very friendly. All of my mom's friends lived around the lake," Donna says. She smiles a lot, and her tone sounds content. "We went to the lake every day in the summer, rain or shine. That was just what you did. You walked to the lake and you sat there with your neighbors and just played in the water."

For Donna, the lake indeed represented the warmth of the community, but not just. Like the woods, the tiny pond, all the rocks to be turned over and big trees to marvel at, the lake was a marked destination on the exciting map that her young self made. The ordinary became fascinating; the dirty and sludgy became enchanting; everything was a landmark for the children to explore. The lake was just the biggest feature on the mental adventure map.

That's what's missing for children today, according to her. "My kids had it different, my grandchildren have it different," she says. "They just don't have—my favorite word I keep saying is 'free.' They don't have the freedom… to just *go out* and do what they want." Somewhat surprisingly, she does not mention technology, screens, smartphones or Snapchat or video games. She just wants kids to experience the agency that she enjoyed at a young age.

This freedom built in Donna an independence and confidence to carry with her wherever she went. For this reason, being alone in the woods, an unpleasant experience for some, never once bothered her.

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Autumn, and the temperature was just right. The maples had begun to drop their leaves and make a noisy carpet.

Now that school was out for the day, Donna was enjoying one of her favorite parts of her routine: walking.

Her route took her west through the woods. It was a short walk. Nevertheless, she savored every second: after spending eight hours in a metal chair under low classroom ceilings, she found the holes that the sunlight cut through the canopy reassuring. She didn't always have to sit inside, she knew. She was still free to relax out here when she needed to, and she lived so close that it was never more than a moment's walk outside her home. Besides, she needed the break. Eighth grade was busier and required more homework than she expected.

Of all the sounds—wind, chittering of songbirds, squirrels rushing through the understory—her footsteps were the loudest. She began to correct them. Each foot rolled from heel to toe, and what had previously sounded like the loud crunching of crackers became the slow unfold of a crumpled paper.

A few boulders were scattered in here. Today was a good day to sit on one. Turning, Donna ventured off of the trail toward a familiar stone. She put her bookbag down and ran her hand over the rock's surface to brush off most of the debris. Leaves and sticks and little bits of grit were swept away with a soft scraping sound.

She sat down and drank it in. The scent of leaf-decay mixed with the cool in the air—somehow that coolness always had a smell, just like the cold in winter. Though the trees were beginning to go down for their sleep, she still felt comforted by their presence. A feeling of peace washed over her. Not just, though: there was also reassurance, warmth, and a sense of welcoming and harmony, like one would feel around an old friend.

God is good, *said the feeling.*

She sat for a few minutes longer before slowly taking to her feet and returning home.

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After spending her childhood in Monroe, Donna moved again during high school. The New England woods and Lake disappeared. Corn and cows replaced them in Mansfield, Ohio.

"We were on the edge of nothingness. It was all, like, barren, but next to us was the school and the city," says Donna. With a smile, she recollects: "It was perfect." Evidently, she is not picky: as long as she is around some things that grow, she is happy.

And she will tell you that she is not the only one. "I feel that being outside is healing and healthy," she says, emphasizing "outside" as a catch-all for any place out of doors, regardless of wildness or removal from civilization. "If you can't be outside, just having plants in your house is healthy for us." She stands by the abundance of scientific data that supports these assertions. A 15-minute walk in the woods lowers the amount of the stress hormone cortisol by over 15 percent and reduces blood pressure and heart rate. Viewing scenes of nature causes the brain's anterior cingulate and insula—associated with empathy and altruism—to light up. A walk through an arboretum can improve attention skills, such as short-term memory, while a city walk does not. Numerous studies speak to the health benefits of spending time outdoors or around plants (depicted, or the real thing).[8]

But that's not all. Beyond the scientific studies, Donna sees the additional positives of being around green things. "Some kind of energy from them is…healthy. Not just because they give off oxygen—and that's good for us. But I think that's better for us, emotionally and spiritually and mentally." As a grown adult in her fifties, she echoes the sentiments of her childhood self: "To be able to get outside is…*good* for us."

Donna continued to enjoy these effects wherever she lived. After Mansfield, she moved again to attend Otterbein University in Westerville, Ohio. Then, after marrying, it was on to New Jersey, then a town in Pennsylvania, and she finally landed in State College. She speaks fondly about each period, with never a complaint or utterance of difficulty during those years. The arrival of children sounded, from her perspective, like a piece of cake.

That's largely because she loved, and loves, kids, and enjoyed sharing nature with them. An important part of raising children consisted of accessing her own inner child. She references a passage from priest Anthony de Mello's book *Awareness:*

> The great Krishnamurti put it so well when he said, "The day you teach the child the name of the bird, the child will never see that bird again." How true! The first time the child sees that fluffy, alive, moving object, and you say to him, Sparrow," then tomorrow when the child sees another fluffy, moving object similar to it he says, "Oh, sparrows. I've seen sparrows. I'm *bored* by sparrows." If you don't look at things through your concepts, you'll never be bored. Every single thing is unique. Every sparrow is unlike every other sparrow despite the similarities.[9]

For her, nature is about appreciating the uniqueness of every sparrow. "When you name something, it takes away the magic," she says, citing an example: "I remember my son picked up an acorn, y'know, and there's a million acorns. But *that* acorn was, like, 'wow.' You just…let yourself—you just see the *magic."*

It seems that she has achieved the impossible, the unattainable dream of so many grown men and women. My own father mentioned it once in a casual conversation. "If I could go back to any age," he said, "I'd want to be eight years old." Donna, too, is in touch with her inner child, and it keeps her discovering and interested.

"Either nothing's a miracle or everything's a miracle, right?" she says, smiling.

This perspective became more important to me after my own internship at Childhood's Gate, the Children's Garden at Penn State's Arboretum. For a summer, I worked part-time with

two other young women in the one-acre green space filled with opportunities for "children of all ages" to explore, as the entrance sign reads. Our duties included cleaning, such as keeping spaces swept and toys organized, and the occasional manual labor when we set up canopies and tables for activities. The bulk of the work, however, focused on making a visitor's day more special. Be they three years of age or seventy, we greeted them with a smile, happily engaged with them in conversation (often about where they were from, or wanting to go climb on top of the big cave, depending on their age), and shared activities with them. For two hours each day in the summer season, the Children's Garden offers free creative activities and crafts for any participant. It was in these activities that I got to learn a lot from the young visitors about seeing the world, even as I taught them about counting rings on a tree or owl calls. The activities were not only educational, but also designed sustainably. One example was dubbed "Leaf Creatures." To prepare, an intern needed to gather leaves from trees around the garden, taking care to remove them from different branches and not take too many from one tree. Next, the intern would set up a table with paper, glue, markers, and the leaves for visitors to create their own art. Kids and adults participated enthusiastically. During my Leaf Creature shifts, I could teach inquisitive visitors about trees using the leaves as an aid, all the while encouraging their creativity and imagination. I also enjoyed the opportunity to be a kid for a short while.

Many of the adults, though, did not see the 'magic' that Donna mentioned. Too many times, an adult chaperoning a child approached the table and looked on as their young son, daughter, grandchild or nephew or niece set about creating another masterpiece. If I said, "You're welcome to create your own, too," and showed the adult my example Leaf Creature that I had made that morning, it wasn't unlikely that the adult would decline. "Oh, I'm not an artist," they said. "I can't draw," said a grandmother, or a father said "I'm just not very creative."

Meanwhile, the child enthusiastically slapped their leaf onto the paper, scribbled and scribbled, added colors and drew out of the lines, often creating artwork with a completely unrecognizable subject. When asked, however, the little girl or boy would respond in a flat tone, "It's a dog," or "it's a snake," because that was obviously what it was, and they felt confident in their translation of an image from their imagination to the paper. So many adults lacked this capacity. I watched sadly as a grandmother asked her grandson what he wanted to draw, heard him say "butterfly," watched him begin scribbling away, and promptly scolded him. "That's not how you draw a butterfly!" For the remainder of the butterfly drawing, she guided the boy's hand to draw a generic butterfly shape. The expression on his face that showed his excitement moments before became one of boredom. It was clear to me then: the grandma thought she was helping her grandson to learn, but was really stifling his imagination and exploration. The magic of creating that butterfly was all but gone because he had been forced to copy some pattern when he could have been portraying it as only a four-year-old could.

Donna understands that this kind of exploration and expression is important for everyone. She wants more people to see the world as they would in childhood, to get excited about the seemingly mundane or everyday.

To share this excitement with others, Donna also loves to work with children. In addition to raising her own boys, she has taught preschool and babysat the neighbors' kids. While she has moved around in jobs and roles since then, those opportunities stand out to her as most enjoyable. It did not matter whether the children were hers or not, because Donna would still get them outside and engaged as much as possible so that they could really be kids. In summer, the kids would sit on a blanket—or blanket of grass—and read, or play with (occasionally chewing on) toys, or sing rhymes. Kiddie pools and tubs of water became swimming pools. The stroller

ride to the park, or walk for the older children, led the young ones to all kinds of adventures: swinging, climbing, running, collecting leaves and rocks and acorns, game-playing, listening to sounds, napping. Winter replaced the grass-green knee stains with rosy cheeks as Donna took the kids out into the snow, where the youngsters enjoyed rolling around and making snowballs.

Donna had another goal with these efforts: getting the children closer to God's work. A Christian, she sees nature as an expression of God's creativity. When asked for an example, she responds with a general statement: "How can you not see? How do you pick an example? Anything. It doesn't have to be a sunset or anything dramatic. Just *anything*. A bird, or grass…" The words of Anthony de Mello seem to reappear in her statement—everything is magical if you look hard enough.

She acknowledges, though, that nature is not always beautiful and harmonious at first glance. Animals making a meal off of other animals, often in the most grisly of ways, used to bother her—how could that fit into God's plan? How could He provide life for organisms that just end up killing each other? But her understanding of the problem is tempered with a grasp of ecological principles. "It's all orchestrated," she says. "You think of things going on where nobody observes them—like there's these things way in the depths of the ocean, or in Antarctica—there's *life,"* she continues, voice still filled with wonder. "Things are born and they die, they eat each other and they mate, and you think, 'what's the purpose?' But it's all just a beautiful orchestra. Everything affects everything else. Everything's so different, y'know, every tree is different. You might say that 'snowflakes are all different,' but also, there's no two trees alike, and no two *people.*" In that difference, defined on scales from macroscopic to atomic, with variations in iris color or strands of DNA, Donna sees the 'conductor' of the orchestra most. "God is so creative," she says. "How does he think of all those different"—here, she considers

what the Lord might think when creating something new—"'hmm, I haven't made *this* one yet.' There's so much variety and so many different species and personalities. It's just amazing. it's so much fun."

While we differ significantly in situation, experience, and ideology, there is no reason we cannot agree. We are more alike than I'd think.

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The lazy July sun still hung lower in the sky as Donna departed that morning. It was a Saturday, and it had been a little while since she took a leisurely bike ride. Her weekday rides were pleasant, but they always ended when she got to work. This time, she wanted to pick a destination that didn't start a shift.

She headed toward town. The air still felt cool on her face, but she knew that within a few hours things were going to heat up. The last few weeks had been especially rainy, particularly at night, so most days were more humid than usual—and in Pennsylvania, humid summers were not unusual. Nevertheless, she loved it all. She would take the sweat and mosquitoes in summer, or the slushy conditions in winter, over sitting inside in front of the TV any day.

The scenery began to change. Lawns and manicured redbuds, maples, beeches gave way to parking lots and roadside wildflowers. Chicory and field thistle added cool hues to the sunlit golds and greens of the grass. Donna rode with a relaxed cadence; she was not here so much to exercise her body as to clear her mind. Besides, the punishing hills in State College were more than enough to get a burn going.

She moved north towards campus. This was the best time of the year to visit, in her opinion. Students were still around, but few enough to make the sidewalks and roads feel roomy and to keep the atmosphere from getting too busy. But, she reflected, it really was a pity that

Nittany Lions didn't get to spend May through July here, because they missed campus at its most beautiful.

Up the hills she went, down Pollock Road, and then up Shortlidge. Across campus she zigged and zagged, moving steadily toward the north side of University Park. It had been a while since she had visited the Arboretum, and that became her destination on a whim.

Moving up Bigler Road, she crossed Park Avenue after a long wait at the light, then continued on past the glassy Katz Building. She turned left toward the parking lot and deposited her bike in the rack. With a smile and a short sigh, she walked between the hedges into the H.O. Smith Botanic Gardens. Catbirds mewed and goldfinches chattered. She was not the only one happy to be alive, it seemed.

Inside the garden, she walked around the circular sidewalk until she reached Childhood's Gate. This children's garden invited "children of all ages" to enjoy its wonders, and Donna felt that magic pull her right in under the green-and-orange glass panes of the archway.

She looked around, seeing the bronze bison, cave, glass house, and plant-woven Susquehannock huts. In the "stream" a toddler played, supervised by her mother. The sound of chimes echoed from the back of the garden, where mallets on strings allowed visitors to play their own tones.

Donna smiled. What would she explore today?

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Donna's response to the question of climate change seemed uncharacteristic at first.

"I don't really care. What's the big thing about it? Who cares?" she said, with no irritation in her voice but instead legitimate curiosity. It seemed that a person so invested and

emotionally attached to the environment would feel a need to protect it, so why did Donna casually dismiss the matter?

For one thing, she admitted that she was not too familiar with the underlying science. "The climate does change over eons and eons, and it may be affected by what we've done, but… so what? It's going to change anyway." When I inquired about her thoughts on the effects of 'what we've done,' she made it clear that she perceives one. "We absolutely have an effect—but I wouldn't *worry* about it, not with recycling or anything like that. I'm a little conscious of it, but I don't think we have to get all upset about it."

Donna did express a curiosity to learn about the problem, however. We talked briefly about the different scales and scopes of problems related to climate change, such as extreme weather events and human health issues. I maintained that I did not intend to change her mind, and she maintained that she was interested in learning more. "No, I'm interested," she said when I reinforced that I did not want to condescend or preach.

It became obvious, then, that she was not a climate change denier. She did not oppose climate change data but did not perceive its significance. When you do not live in the Arctic Circle, or on a flooding island in the South Pacific, it does not seem like that big a deal. There are bigger deals. "So what," she said, without a trace of dismissal in her tone. Our conversation sparked more interest in the problem for Donna, but not without a slight cost.

"Does it make you feel helpless?" she asked me.

"It can," I said. I spoke about the danger of climate change fatalism and its tendency to paralyze people with despair—a pitfall written about by Michael Mann, a prominent climate scientist at Penn State.[10] Beyond fatalism, feelings of depression and mourning over the present and future effects of climate change are becoming more and more common. This phenomenon,

dubbed “climate grief,” can also promote apathy and inaction among the environmentally minded.[11] Because the group that is most likely to care about the environment, outdoorsy people from Boy Scouts to biologists, is also the group most likely to feel inert about acting on its behalf, climate fatalism and grief pose a serious problem. Donna seemed to agree.

“Worry—just as a verb—it’s just not helpful. It’s negative. We can be respectful, and expect the best, and be a little more relaxed. Positive attitudes are helpful because they’re just…” Donna smiles. “Positive.”

On the topic of climate change, Donna had learned just a small amount about the worrisome data in our conversation. She had seen for herself how hopeless the prospects could seem given the brutal facts. But those did not intimidate her. She walked away from the conversation a little more conscious and glad to have learned something about the issue. Later, she sent me a kind email thanking me for the conversation, appreciating the new perspective.

Whether you are contending with a problem as big as climate change, or just trying to do your part in whatever small way you can, Donna has it right. “You have to be mature, and composed, and sensible.”

Indeed, the first ingredient to any kind of positive action is hope. As Donna says, “Being upset and worried and thinking it’s awful is not going to help anybody.”

SANJAY SRINIVASAN

INTERCONNECTION

I am greeted with a warm welcome as I step into Sanjay's office in Hosler Building. As the Department Head for Energy and Mineral Engineering at Penn State, he is busy. Nevertheless, he made time to speak to me a few weeks before the craziness of the fall semester began. In his fifties, he wears a mustache to complement his hair (both salt-and-pepper), and looks at me with warm brown eyes through the black frames of his glasses. We talk easily. He seemed thrilled about the project since our email exchange.

What follows is his perspective. In an effort to preserve his voice, I edited the transcript lightly, working to place similar concepts together and to remove any tangential conversational points. Everything else has been left largely untouched.

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I was born in India in a small town called Salem.

I grew up in New Delhi—that's urban. I think we spent a whole lot of time playing outdoors. That's one of the biggest differences between the generation now and then. For us, school got over at three or three-thirty. We were in the playground… until pretty close to when I started going to college. We would play all kinds of games. Badminton, cricket, we played tennis.

There was a lot more time spent just playing with people, communicating with people. I would play with people whose age ranged from two to three years younger than me to about 10-15 years older than me—just a whole range of kids and people coming together. You know, we

never had to—communication is always face-to-face—never had a cell phone, never had any media. In some sense, you know, you learn to deal with the socialization.

Supposedly smartphones make you more socially active, but without any…human interface. Y'know, you just type something, somebody responds something there. So, you know, I just feel like, when you say certain things and you watch the person's reaction to it, and then you condition yourself to say the next thing that will not affect them in a certain way… To me, that was a beautiful way to learn to interact with people.

Whereas today, when someone sends a message, he or she is not really bothered with how that message plays out directly. Unless a reaction comes through.

We also learned teambuilding. We knew how to function as a team. It's the same thing: you go to a Boy Scout gathering or a baseball game, how the kids learn they're part of a team, how the team dynamics work.

In some of the bigger neighborhoods, in New Delhi, for example, you'd go and play games just like you'd play home games or away games. But not formerly organized like Little League—much more informal.

In my childhood, New Delhi was a very nice place to live. Traffic was very manageable. You could go from one part of the city to the other just by using public transportation. It's the capital city, kind of fashioned after Washington D.C., so very beautiful gardens, wide roads.

I had a very small family. I am the only child for my parents. My father was a civil servant. He was a fairly high-ranking government official. Mother was a housewife.

We had a beautiful house, big house. Government bungalow. Yard, garden. In India, government officials get auxiliary quarters. It was a palatial existence, if you ask me.

In the yard, we had tomatoes, potatoes. We had all kind of vegetables. We had a very nice Chinese mandarin tree—beautifully small oranges. Big roses…my father was a big rose collector. We had fourteen or fifteen different types of roses.

It was a very nice place. New Delhi is really congested now, and definitely you can't move around just using public transportation—too many people. It's close to sixteen million. Lot of air pollution.

There was one thing the Indian government did that I thought was very impressive. All the major metropolises now have a very highly connected metro system. And New Delhi was one of the first cities in the world which converted all their buses and all their smaller modes of conveyance and all the three-wheelers to compressed natural gas. So, I thought that was remarkable, because you could see the pronounced decrease in pollution.

In the time I grew up, there was all this Iran business and shortage of oil. I thought it was a good idea to study petroleum engineering. I knew a little bit about how that was an important field.

I was also attracted to the novelty. The very little I read going to libraries told me that one of the big challenges in petroleum engineering was to develop resources that you really cannot touch and feel. To me, that felt like, 'wow.' I cannot touch and feel an oil deposit, right. A hydrocarbon deposit deep in the subsurface. Kind of caught my imagination.

I had the option to go into music. I'm a percussionist. I was very much into music. Then the parents wanted me to go engineering—that was very clear. Everybody in my age group—that's where the big jobs were, that's where all the big opportunities to travel overseas were. So, I chose this. I got this admission into this degree for petroleum engineering: 'That's so cool; I

don’t think many people do that, and I’m gonna do that, and it’s gonna take me 900 miles from home! I’m gonna pick that.’

After undergrad, I took my GRE and applied to USC Santa Barbara. USC was the best four years of my life. I had been surprised when coming to America, though.

I’d never seen freeways—Los Angeles is intimidating even for an American. I’d never been used to a laundry machine for washing clothes. There were some familiar elements, and there were some things that I had to get used to.

You have to be someone like my wife to come to a place like LA. She’s a big city person, she thrives on that kind of intensity. Has to see people. She hates my house here, because I like solitude. The reputation for cities is that it provides opportunities for nearly everyone, no matter what the background is. You could come in as a carpenter or a plumber, or a scientist or a researcher or an economist or whatever… there was an opportunity to *do* something,

My career took me from LA to San Francisco to Calgary to Austin. I never intended to be a faculty-type, and then I decided to do a PhD. I knew about how resource extraction happens, but my main interest was not in that, but in data analysis and things like that that had more cross-disciplinary use. That guided my career and that’s where I am right now. When this opportunity came, I took it because this was in a great college that I felt emphasized sustainability and it gave me the full scope of what I could do with what I know. I didn’t have to restrict myself to petroleum. I could work on meteorology problems, work on groundwater issues, all *kinds* of different things.

Petroleum engineering, though, is about upstream resource extraction. It’s this upstream part which is exploration and extraction. Putting it into the pipeline and taking it to the refineries is where the chemical engineers come. Petroleum engineering is broadly organized into four

main activities. One is, of course, exploration. How do you explore and find out where the deposits are? Second is, once you know where the deposits are, how do you access it? And then the third one is what can I do—how can I bring it out? It's not like it's a swimming pool; it's scattered all over the place. And the last aspect of it is: if I know these three, what can I do to improve recovery efficiency? What kind of processes do I implement to maximize the recovery?

And hydrocarbon recovery is still a very important activity. I know there's a lot of debate about climate change and that, but y'know, for the foreseeable future, especially natural gas will be a very valuable resource. And then the other thing—very important—is that although the world has produced so much hydrocarbon, you'd be very surprised to know we have recovered approximately 20 percent of the recovery source. So, there's a lot of resources still there. Given the fact that at least until 2050 there doesn't seem to be any abatement in energy requirements, I think petroleum engineers will be very important.

There are several misconceptions about petroleum engineering. Some of them…I wouldn't call them misconceptions. They're probably true. One is, of course, the fact that petroleum engineers do not really care about the environment. And so, I would say this. There have been some bad incidents, especially the blowouts, the Macondo well, the Exxon-Valdez. But by and large, those are incidents, and I think *culpable* incidents. Petroleum engineers—at least, their curriculum and the way they learn these things—you are taught really to respect the environment.

The second misconception… I know that companies make a lot of profit. But for the level of effort that it takes to extract these hydrocarbons, and the level of risk that people undertake to do that operation… You have to understand, it's a highly flammable liquid, and you're extracting it from environments where the pressure is very high, the temperature is very high. So, things

can go wrong. Considering all that, I would say that the compensation is commensurate. There's a misconception that somehow they're robbing the poor to pay the few employees who work. That's not really true.

But there are certain things that are true, that excessive capitalism and bottom-lines for companies have driven several decisions which should not have been made. One thing that I find highly objectionable is that you are recovering 12, 13 percent of resources from unconventional places [such as shale formations, tar sands, and the ocean]. And yet, companies don't want to invest in any technology, researching new technology to improve that recovery efficiency. If I had one well, and instead of 11 percent recovery, if I could get 30 percent recovery, now suddenly I've reduced the environmental footprint because I don't have to drill new wells. That concept has not sunk in, you know, because companies are driven so much by bottom-line. They say, 'Okay, who cares about doing this research? I'll just go punch a hole anywhere I want.' If you invest in research it doesn't show up in the revenue stream.

Here is an interesting thing. Even if fossil fuel energy dies out, the subsurface still exists. Agriculture is going to continue. You use some sort of chemicals or pesticides or anything, even manure, to improve your agricultural productivity, and these things run off into the subsurface. There are fluids flowing in the subsurface, groundwater, vapors, toxic floating vapors. You need to track where they're going because they eventually can affect your groundwater resources. A petroleum engineer has the skills to do that, to examine these complex processes at different scales. You observe certain things at the nanoscale that manifests itself at the kilometer scale.

I spent a lot of time over the last few days thinking, 'What is the problem? Why is climate change such an imminent threat now? Is curtailing fossil fuel consumption solely going to help us?' I came to the conclusion: no. The bottom line, the fundamental issue, is

overpopulation. But we don't have influence over controlling the population. So, the only thing we can do is the things we do right now to the best extent possible.

So, for hydrocarbon extraction, how do you do it in the optimal way? How do you ensure that there's not going to be methane emission when you drill? To me, all of these are sustainability issues.

And we have to do everything we can to control our incredible thirst for oil and gas. But at the same time, we have to understand that to maintain a certain quality of living, it's inevitable we use those. But then, if you use those, put processes into place that make recovery the *most* optimal it can be.

That's my argument for sustainability. Don't equate sustainability strictly with renewable energy.

To support sustainability, we can make people or students coming out of our programs very conscious of their environmental responsibility. Simple things, like, for example, how do you conduct your day-to-day life? Emphasizing multitransportation. Simple things. So that's one thing. You definitely need to condition their environment.

The second thing is that everything is not like everything else. How do you train people to have a more expanded horizon, to see how things interconnect with each other? That's very important, and I think college courses should emphasize that. That's what we're trying to work on—to open up people's eyes to how interconnected things are. For example, when we found that hydraulic fracturing was a mechanism to exploit hydrocarbon resources, and we looked only at that perspective, we lost sight of the big picture. That there could be a potential that these fractures might interact with groundwater systems. There is a potential that these fractures might not be controllable and they may trigger minor earthquakes. They raced ahead with it without

due diligence, and at the time I don't think they had a clue what they were doing, but the science now shows that there is no way for these gases to vertically migrate to contaminate any groundwater systems at all. So that bigger systems perspective is very important. And in my role, I can do that—I can think about curriculum that can emphasize that.

I advocate responsible use of resources to my children as well. Whether it be paper plates or cups or toothpaste or whatever—everything under moderation. If possible, be responsible. If you don't have to burn gas, don't.

And I care about environmental responsibility. I am a very outdoorsy person, partly because I like to be by myself quite a bit. I like to live in isolation. But nature, to me, is several things, more than that. Nature to me is the sounds of ripples on a lake. Nature to me is just the swaying of trees; I love watching them and hearing the creaks and groans. Nature to me is things that can be more dramatic, things like, for example, going to Yellowstone and staring at the geyser.

And like I said, I'm deeply passionate about music. So, to me, nature is all the sounds that I hear. If I'm on a train, I hear the rhythmic rattle. To me, that's telling me something. That's what nature is for me.

Without caring for nature, any move to arrest climate change or any addressing important issues will be thwarted. I've seen, for example, so many times…you go running on a bike path. Then you see three people walking side-by-side. To me, that's violating the environment. And I'm not saying 'environment' in the conventional sense—the air, the water—I'm saying how individuals interact with their *entire* environment. It's not just you in the whole universe.

People have to be aware of where they are and what their place is.

NATHAN GOLDNER

CULTIVATION

You don't have to meet Nathan to start to understand him; all you need to do is look at his desk. It is typically tidy—that is, in the front three-quarters that he uses to work. The back, where the desk touches the wall, is another story. In the back corner, a Pennsylvania DCNR map of Whipple Dam State Park sits atop another for Leonard Harrison and Colton Point State Parks. His lamp sits beside these, with a half-cut geode sitting inside its skeletal base. Tiny gray crystals sparkle inside the geode's core.

Then there are his books, kept together by petrified wood bookends, each one-quarter of a trunk's cross-section and vibrant with hues of burnt orange, plum, and celadon. There are reference books: a Golden guide to birds of North America first published in 1966, the Peterson field guide to eastern trees, and a good 'ol Pocket Ref. There are the woodsier tomes: the *Campers' Guide to Woodcraft and Outdoor Life, Finding Your Way Without Map or Compass,* and *The Wild Food Trailguide.* He has the books he read in childhood: *My Side of the Mountain, Rascal,* and the James Herriot veterinarian books that he loves because they are so "relaxing." Beyond these, miscellaneous science- and hobby-related volumes fill the space.

While Nathan avoids clutter, he tends to collect things. Beside his lamp sits an old bottle labeled "4/5 QUART" and made anywhere between sixty and ninety years ago by the Owens-Illinois Glass Company. Why is it there, and why is it partially filled with dirt and plant detritus? Because he found it in the woods, of course, some time ago.

The pattern continues on his windowsill. Beside a 3D-printed topographical map of Happy Valley and the mountains in Rothrock State Forest to the south, Mason jars filled with

various found items abound. Birch bark fills one, while another jar is devoted entirely to a large seed pod. There are oven-baked teaberry leaves, a coin jar, and one filled with moldy buckeyes. Tiny pinecones sit atop a purchased purple amethyst among a few round, flat rocks ideal for skipping on water.

Now, as we sit at my kitchen table on a Saturday, there are no personal effects and décor to read him by; there's only his plain gray t-shirt, jeans, and mug of Rothrock coffee he cups in his hands. Because Nathan is the only subject previously known to me, though, I understand him pretty well.

Seated at the table are a writer, blacksmith, an angler, a hunter, an engineer, a photographer, a mountain biker, and an Eagle Scout. Of course, this college apartment kitchen table only seats four, and just two chairs are occupied—one by me. Nathan Goldner is a Swiss multi-tool of a person where some of us (such as myself) are mallets, handsaws, pliers, specialized in just an area or two. He knows his way around a DSLR camera and a metal forge. He cooks like nobody's business and can sew without a thimble. He can cast a fly rod and sketch and tie the right knot for your need. And if his practical skills are not enough, he has a multitude of interests, from music to ornithology to reading to running. He often finds himself conflicted because he lacks significant time to devote to each and every one of his hobbies and curiosities.

Varied as those interests may be, they are all—save for one or two—inspired by one broader, older interest: nature. It has captivated him for as long as he can remember. Throughout his life, his love for the outdoors has continued to branch off into new subjects, all the while strengthening its core.

To find the seeds that first planted his love for all things outside, I have to turn back several years. I need to count the rings inward to when that neatly parted, deep brown hair was a bowl cut and his angled jawline was round with dimpled cheeks.

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"I was born in Kittanning, Pennsylvania," he says. His voice is a little nasally, a little rough with vocal fry, and not very low in pitch. As he talks, he rocks back and forth on the chair. "It was very rural."

About an hour's drive northeast from Pittsburgh, Kittanning sits on the east side of the Allegheny River. Its population of fewer than five thousand is supplemented by the West Kittanning borough across the river, which boasts just over a thousand residents.

Bordering West Kittanning, a patch of woods, and fields, Nathan's neighborhood provided ample opportunities for adventure. The yard was the first step with his partners-in-crime: "I'm the youngest of three. My brother, sister, and I are pretty evenly spaced apart, with about three-and-a-half years between each of us. We spent summers almost entirely outside."

Here, he begins to glance up, moving blue-green eyes toward the ceiling as he recollects. "We had a big backyard and swimming pool. For a really long time, I spent all of my time in the little creek that goes through my yard. There was a playset, and next to the playset was a firepit." His progression through spatial memory shows in his speech: "There were benches around the firepit made from logs that were sawed in half lengthwise with a chainsaw—Dad made them. There was also a large wooden goose that he carved with a chainsaw." He smiles. "It didn't look much like a goose."

He recounts many childhood adventures: driving an ATV for the first time at the age of four, driving the same ATV for the second time with a friend on the back and rolling it, picking

field garlic to ‘cook’ with, roleplaying on the trampoline, playing with snowball bush flower clusters and making bouquets. These memories and many others recounted in our ninety-minute interview, germinated in Nathan’s early childhood. Before Boy Scouts and high school clubs, before beginning to read about subjects that seemed interesting, he was just splashing in the creek. Sitting in the yard. Engaging in outdoor play of all colors and complexities.

Nathan did not accustom himself to the outside alone. His parents played an integral role in spreading those seeds. His father, a financial advisor, opted outside from an early age, and his influence meant that family vacations were spent camping and fishing. Nathan’s mother, an artist, experienced a different upbringing. “My mom was a farm girl,” Nathan says. “The family made their own clothes and grew over half of the food they ate.” This history led to a somewhat negative association with some outdoor activities—“She would say, ‘no, I don’t *want* a vegetable garden; I had one long enough when I was a kid!’”—but she still enjoyed time spent camping or in the yard. Her appreciation for the outdoors showed itself in her art. Several drawings and paintings of nature-related subjects, such as flowers, a deer skull, and a fisherman, still hang in the Goldner house after her passing.

To impart these values to their children, the Goldner parents employed a particular strategy. “My dad said this,” says Nathan. “I think it’s probably true. He said that a lot of people worry about—are they gonna get their kids to like the things that they do? And he said that their philosophy was just to keep doing the things they like, and then the kids will grow up liking them.”

It holds true: just look at Nathan’s wall in his room, and you will see his family having fun outside. Among the parks postcards hangs a photo of him, his father, and his sister rafting together on the Youghiogheny. His father, who worked as a rafting guide on the Yough in

college, got his kids into the sport. The two Goldner sons also participated in Boy Scouts and Nathan's sister was a Girl Scout. Then, when the Goldner children all reached college age, their yearly camping vacations became yearly backpacking trips.

Beyond sharing outdoor experiences with their children, Nathan's parents—particularly his mother—encouraged them to head out of the house. "My mom would turn off the TV and be like, 'It's a beautiful day outside. What are you doing?'" Although the kids had video games and movies and VHS tapes, read books and drew and painted and played with toys, such a comment would turn them all outside.

By the time Nathan entered young adulthood, those scattered seeds had transformed. His experiences with family, friends, and organizations cultivated his appreciation for the outdoors. Whether he took guided, organized nature walks at a state park with the Boy Scouts or just practiced his daily long-distance runs in high school, Nathan's routine put a lot of the woods in him.

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Nathan perceives nature as beneficial in many ways. "It makes you feel tough," he says. To him, the concept of "wildness" and removal from civilization can evoke a sense of thrill and danger; as an Eagle Scout who has also invested his free time in backpacking trips, Nathan is familiar with (and enjoys) the opportunities for self-sufficiency that the outdoors can provide. He knows, however, that civilization is often not far away at all in these settings. Nevertheless, the chance to put yourself in a remote place away from the walls and roof of your home still satisfies Nathan's need to "feel tough." It reminds him of how taken care of we are in our air-conditioned and heated houses, where we have a whole room dedicated to making food and numerous appliances that keep us comfortable.

He sees another value in aesthetics and an altogether different feeling of comfort. “It makes you think, ‘wow, this is really beautiful. And I don’t hear cars. And I don’t hear planes. And I don’t see light pollution. I see tons of stars and I hear wind and water and birds.’”

“A lot of people think that’s lonely or spooky,” I reply. How often is it that the dark woods are a setting for a horror movie, and the main characters are campers or hikers? How many people feel uncomfortable when they leave an area with cell reception, or when they hear an owl hoot at night?

“Yeah,” Nathan begins. “I… don’t know why I feel the way I do about it—probably just because I was exposed to it when I was growing up. It has to be that.”

He continues. “I want to say that it’s inherent, and that it’s weird that people feel that way, but I don’t know if I can, because there are so many people that don’t feel that way.”

When it came time to consider his next steps after high school graduation, Nathan knew a few things. He wanted to attend college. He wanted to leave Kittanning and the area to be able to see more, especially more of what he loved. “My brother and I would look at *Outside* magazine, and say, ‘Ohh, we want to go *here,* we want to do *this,’”* he says. “And my best friend and I were really into camping and photography. We didn’t have anywhere to do those things that was actually interesting.” One priority for his postsecondary planning thus became finding an area with outdoor recreation opportunities.

Another priority was, of course, choosing a discipline. Nathan deeply adored science. Chemistry and biology were favorite subjects. And because he could not ignore his passion for nature, he considered opportunities to keep the young tree growing—wildlife and fisheries science, forestry. “I was influenced by the environment and scientific curiosity,” he says. As a result, sustainability was another direction Nathan considered for combining his interests. Fields

like energy engineering grabbed his attention as he began learning more about renewable technologies.

Ultimately, though, he could not study everything. So, he chose the major that seemed like the most obvious. Was it environmental resource management? Environmental systems engineering?

The answer sits on his desk in a 600-page hardbound textbook co-written by his former professor. *Materials Engineering: Bonding, Structure, and Structure-Property Relationships.* Nathan came to Penn State to pursue a Bachelor of Science in materials science and engineering.

Broadly, according to Nathan, materials science is "the study of the materials that things are made out of and how the processing of those materials affects the properties." Everyday examples of materials science innovations include phone touchscreens, the aluminum body of a car, or even the glass baking pan you could use for dinner tonight.

That has little to do with conservation or helping the environment until you consider an "everyday" application that is becoming more mainstream by the day: solar energy. Nathan's research background is in transparent conductors. "They can make solar cells better. Solar cells need to absorb light to create energy. And if you use a transparent electrode material instead of a reflective one, you absorb more light." In his undergraduate research experience, he works with a professor who aims to make these semiconductors cheaper.

The cheaper the material, the more viable it becomes for a wide market. Sources of renewable energy have been falling in cost for years, and now that they have begun to compete with fossil fuels.[12] The work that is left for future researchers like Nathan lies in making it even cheaper, more efficient, and more reliable.

But his career aspiration does not come without conflicts. Nathan is acutely aware that the net effect of his existence on the environment will likely be negative. After all, he drives a two-plus-ton monster of a car, a 2003 Yukon XL, that gets 15 miles to the gallon. He has taken multiple cross-country trips. For much of his life, red meat was a staple of his diet. Because he does not fly frequently or drive long distances today, his carbon footprint is not the biggest it could be—but it is not insignificant, either.

"I think over a lifetime, I probably will have caused some large negative impact," he says. "I hope that… maybe I can do what I can to minimize that; maybe I can do something to outweigh it, counter it. That's the goal of the career dream."

Even his career of choice seems to weigh him down a little. "As a researcher, I'll probably have an even larger footprint. I've probably gone through thousands and thousands of nitrile gloves already. And then there's the energy costs…and I've only worked in a lab for three years."

He does not look upset, but instead just concerned when he continues. "You hope it's for something, and not for nothing." Like many outdoor enthusiasts with interests in conservation, he knows that his love for nature is a double-edged sword. In many cases, indulging enthusiasm for the outdoors can be detrimental for the ecosystems that nature lovers care so much about. There is no better exemplar for the issue than the overtourism currently plaguing national parks in the United States: in the last five years, 1.5 billion visitors have overwhelmed the facilities and fragile landscapes of parks, from ever-popular Yellowstone and Grand Canyon National Parks to smaller, tucked-away historic sites.[13] Trails are widening and harming fragile ecosystems. Roads and buildings are in desperate need of maintenance. And if that's not enough, many visitors pay little heed to the Leave No Trace principles. This list of seven guidelines, including "respect

wildlife" and "minimize campfire impacts", helps to mitigate the tragedy-of-the-commons issue of public lands, or the tendency of people to abuse their privileges to a shared resource.[14] Some visitors, however, still do their utmost to respect the preserved wilderness in the parks, packing out their trash, staying on-trail to keep the grasslands and forests as pristine as possible, making and disposing fires responsibly. These individuals are cognizant of the effect of many small, seemingly harmless actions on one delicate space.

Nathan is part of the latter group, in more aspects than just visiting parks. However, he is no preservationist—that is, someone who believes that natural spaces should not be modified, logged, mined, walked on, etc.—because, to him, it is not realistic. "For true preservation of nature, you wouldn't be able to *do* anything. You wouldn't be able to farm, you couldn't have timber, you wouldn't be able to mine." He does value preservationist spaces like national parks as well as national wildlife refuges and wilderness areas for their protection of unique landmarks, geography, and animal life. But Nathan believes that humans should be able to enjoy the benefits of the aforementioned resources. "Nature is the all-inclusive support pack for humanity and everything. It literally provides everything you could ever need," he says. "Need. *Not* want. Need."

History shows that when the distinction between all the resources you could ever want and only the resources that you need is lost, when people don't think before taking more than their share, things don't go too well. Take our home state of Pennsylvania: once almost completely green with over 90 percent forest cover, the state fell victim to overlogging in the 19th century. Forest cover dropped to less than 10 percent. Other resources suffered as a result, as shown by one lucrative wildlife drive in 1760. This hunt pushed animals toward the center of a thirty-mile circle in central Pennsylvania, resulting in a massive harvest of over a hundred

wolves, 114 bobcats, forty-one mountain lions, twelve wolverines, 111 bison, and many other species.[15] While animals like the bison are gone from the state for good, intense management efforts made it possible to restore some of Pennsylvania's forests. Today, Pennsylvania has about 60 percent forest cover.

Nathan learned principles to avoid outcomes like these losses of biomass, albeit on a much smaller scale. "Conservation was taught to me at a very young age. We would go out to pick berries, and somebody—my mom or my dad—would say, 'Don't pick all of them. You need to leave some for the birds,' or the animals, or whatever." He pauses. "As a kid you don't understand why, really. You're just like, 'oh, okay, I can't take all of these. I need to leave some.'" Later on, learning about hunting from his father taught Nathan more about sustainability, but in a different way: "We've changed things in the environment that we have to make up for. We've created really good habitats for deer and removed the predators that could eat them," he says, speaking broadly. "To keep them from, one, causing problems with car accidents, and two, eating all of the vegetation and stripping the forests that are left of their undergrowth, you have to maintain the population at a sustainable level. Because there aren't predators to do that anymore." In the case of the deer, sustainability for the environment around him meant taking more to keep the population lower than it could be, and not the inverse as with the berries.

Growing up taught him the importance of sustainability in finding food, but berrypicking is just one example of his philosophy governing use of natural resources. "I think conservation is necessary," he says, referring not to the definition of the word that you may think of—protecting the Earth and its resources—but to the dichotomy between conservation and preservation as strategies for managing natural areas. "We need things from nature. If you need things from

nature, you can't have preservation, obviously. But if you just take whatever you need or want and don't care about conservation, then it's unsustainable."

To uphold these standards in his own life, Nathan has contributed in a few ways. He does so monetarily: he has bought hunting licenses in the past, and still buys fishing licenses today. He pays for the right to stay at state park campgrounds. Then there are his habits. While his car is not the most efficient vehicle on the road, he avoids driving it when he can and primarily busses to campus (though, with over 190,000 miles on the odometer across seventeen years, the Yukon has likely already dealt all the emissions damage it can). When shopping, he tries to avoid buying food in plastic or Styrofoam containers. As we all know, though, packaging like glass jugs for milk are not mainstream anymore, and zero-waste shopping can be challenging. He recycles. He drinks from a reusable bottle. He has reduced his red meat intake from nearly constant to once a month, if that.

All of these are things that are fairly easy for a person to try without making a significant change in their routine or investing much energy. However, Nathan uses another often-overlooked avenue to advocate for nature: other people.

"I try to get other people interested in it. That's probably the biggest thing that I do," he says. "Taking them on hikes, taking them camping…"

"What about people that don't like to do that?" I ask. There are plenty. You probably know at least a few people who express disgust for all of the outdoors's unpleasantries: the heat or cold or humidity or bugs (ticks and mosquitoes and creepy-crawlies) or dirt or mud or weird sounds at night. A quick Google for "dislike for nature" yields some interesting results. "I Hate Nature. TOP 3 Reasons Nature Sucks" (a blog post). "Why I Hate Nature and LOVE Electricity"

(another blog post). Try typing "I hate being outside," and you will find endless listicles, forum posts, how-to articles ("Vacations for people who hate going outside," anyone?) and more.

Nathan is not too concerned with those people, though he wishes they could see his perspective. "I think most people that I've tried are people at least open to the idea. I guess I don't really have a lot of patience for people that don't." He cites an example, a friend who felt a lifelong disdain for going outside due to negative experiences as a child. Her openness to trying new things prevailed, though, leading her to try hiking and camping under the stars with outdoorsy types such as Nathan, another friend, and me. While her fear of spiders eventually drove us indoors, she still enjoyed the outing and felt optimistic about the possibility of going again.

So, he goes, doing his best to be environmentally conscious with the hand he's been dealt. As his time spent in State College grows, so does his familiarity with the abundant outdoor recreation areas in Centre County. So does his interest in various outdoor pursuits—hiking, biking, fishing, forest-bathing, camping, orienteering, photographing, foraging—and so grows that tree. It is well on its way now, with a dense canopy and thick-barked trunk. No matter the adversity that he faces, Nathan will always have that appreciation to lean on.

But that's not all. Thanks to a lifetime of tending, that tree produces abundant fruit to spread around. Nathan has a knack for planting those seeds in the minds of others—much like his parents before him. Even for those who never realized they could enjoy sitting under the trees, Nathan can encourage their own appreciation to grow. All it takes is a little care.

CONCLUSIONS

I hoped to achieve a few goals with this project. The most obvious of these is investigating differing attitudes about the environment and the experiences that formed these attitudes. The "investigation" process of finding people interested in the project and conducting a thorough interview surprised me with an opportunity to fulfill another goal I had not anticipated: informing and persuading. I am an English major who has worked part-time in a marketing communications position for over a year and a half, responsible for conducting interviews and writing stories about various people in Penn State's College of Earth and Mineral Sciences. Nonfiction classes have also increased my competence in writing about other people. My skillset, combined with what my upbringing, interests, and Wildlife and Fisheries Science minor have taught me about the natural world, places me in a unique position to open a dialogue about conservation and the like. So, while I did not intend to change any interviewee's opinion, some of them, such as Donna and Grant, welcomed the chance to learn more about a subject unfamiliar to them. I felt grateful that I could talk so freely about a subject as touchy as climate change or as esoteric as white-tailed deer population management to someone who felt differently or held an opposite viewpoint.

This rapport would not have been possible without something we could all use more of in the current climate: empathy. Trying to understand a handful of (mostly) strangers by stepping into their memories and perspectives allowed me to examine my own viewpoints. In conducting interviews not only as an objective party, but also as an empathetic figure, I collected information in a way that supported my second main goal: to cultivate empathy in the reader. My wish for this project is that it tells six distinct stories that encourage the reader to consider how their story has affected their own biases.

To do this justice, it was necessary to explore the backgrounds of my interviewees, but not only. Now, I would like to turn the microphone on the interviewer and disclose my own experiences and the ways they have constructed my own set of beliefs and values.

I was born in Clarion, Pennsylvania, and lived there until I was almost nineteen. To get an idea of what my hometown is like, use this thought experiment. You will be taking a mental trip.

1. Visit a large town, or moderately-sized city. New York, Philadelphia, Atlanta, and LA are too big. Think smaller.
2. Pick a direction.
3. Drive out of your town or city along a road in your chosen direction for an hour and a half.
4. If there is a large town or moderately-sized city close to your destination, repeat steps 2-3 until no cities are left. Stay indefinitely.

Clarion has fewer than six thousand residents: 95 percent white and nearly culturally homogeneous—as you might expect. An old logging and mining town, Clarion now exists as another small town in the Pennsylvania woods with the "charming" label and activities like "canoeing" in a "Things to Do" section of a recreation brochure. The presence of a small university slightly augments the younger population as well as the town's diversity. Often, the ideals of the more left-leaning University crowd and affiliates contrast sharply with those of the rest of the county.

There was never much to do. Stores constantly rotated through my town's mall due to the lack of adequate business, and the same was true for restaurants on Main Street. We experienced little variety in cuisine—the most ethnic food I had growing up was Penn Dragon. Owned by a Chinese family, it numbered among the handful of restaurants that were not bars or fast food.

The biggest event in Clarion by far is the Autumn Leaf Festival. A week long, it offers the best opportunities for Clarionites and non-natives to try—or most likely taste—something new. And like most small-town "festivals," it includes:

- a car show,
- country craft sales,
- horrifyingly delectable food (fried Oreos, anyone?),
- a concluding parade, of which I have been a part, about a mile long and somehow always in weather that is sweltering or a downpour.

Beyond that excitement, there was little to do. While the Clarion River and proximity to Cook Forest and Clear Creek State Parks provide ample recreational opportunities, these opportunities can lose their allure after a while. You can only go stomp around in the woods in the same places with your friends so much before you get a little bored.

Clarion was the center of my life growing up, because I went to school there and made friends there. I lived a few miles away, though, across the river to the west, in a little neighborhood called Marianne Estates. I was removed from what we called "downtown," though we all knew this term was a little bit of a mockery. While this location limited my access to friends before we obtained our driver's licenses, it also separated me somewhat from the elements of downtown I disliked: the streets that seemed too cramped, the houses that were too close together with their tiny yards, the lack of woods.

Later, in adolescence, some friends told me that they wished they could live in my neighborhood and not in Clarion itself. Downtown Clarion and Marianne were very different. A map showed the most obvious contrast. Unlike the right-angle mapping of the streets in Clarion, my neighborhood was laid out in interconnecting loops. From west to east, the streets (and drives, and lanes, and…) steadily climbed a 200-foot elevation. My house sits on Crestmont Drive, and as the name suggests, it is near the top of the hill. I took many bike rides with other

friends from around my ‘block,’ riding excitedly “to the bottom of the neighborhood” before painstakingly making our way back up.

Crestmont was one of the northmost streets. Parallel to it, and south, lay Ridgewood Road. The two doubled back on each other in a figure-eight so that Ridgewood became northmost at its eastern end. Where I lived, Crestmont formed the southern boundary of woods. Walking out of my driveway straight across the street and through the yard of the kind, old lady who did not care if I trespassed would place me at a slope that dropped off into woods. Endless woods.

I knew these woods fairly well, and I knew the way to go if I wanted to walk through them up to my neighborhood park about a quarter-mile to the northeast. Nevertheless, they entranced me, mostly because they felt a little endless. At the age where exploring these woods felt adventurous, I never dared to test them and see how far I could go (nor would I have been allowed). Continuing that walk from my driveway to Mrs. Pfaff’s to the woods to who-knows-where actually would not have yielded too much wildness. As it turns out, the woods hit a road after a mile and a half, so the feeling of immersion in a world away from people and buildings was an illusion. But the feeling of exhilaration would have been spoiled for me if I really plumbed their depths to find the “end” of them. I preferred to keep within my known areas, always glancing deeper in and imagining what I could find.

Although I chose not to go too far into the woods, the woods certainly came to us. Multiple oaks towered fifty to seventy feet over our heads. Trees planted decades before my birth had become large arbor vitae or formed a grove of hemlock and spruce. A sizable boulder half-buried in my backyard, once home to a delicate waterfall setup that emptied and pumped from a pond, had fallen into disrepair by the time I came along. I knew it only as a growth site for

mosses and the pond as a home for many frogs. In spring, the backyard filled with wildflowers: daffodils; forget-me-nots in pink, blue, purple; dandelions, of course; red dead-nettle. The plants that accompanied them, daylily, bleeding-heart, chives and hosta and forsythia, were all planted.

It was in these surroundings that I came to appreciate green things, wild things. Even the everyday backyard visitors like garden pests seemed to my childhood self like ambassadors of the natural world. I loved to see chipmunks run around my yard, to learn the names of the birds that came in spring, playing in snow and leaves and grass throughout the seasons. Anything that grew or flew or scampered filled me with wonder.

As I grew older, especially into my later teens, I spent more and more time exploring the local area. I kept a map of interesting locations. When my friends and I were not at each others' houses, we would be at that little tucked-away waterfall along Toby Creek or the rocks overlooking Miola Road. Unlike many rural teens, we did not use the outdoors as a cover for illegal activity. That didn't make us better than anyone. It just meant that we didn't need an excuse to go sit in the trees.

While getting older meant diversifying my interests, several of them retained a theme. A hidden interest I had assumed was a pastime became a passion: nature. The signs were there all along. In elementary school, I wrote "books" (sheets of paper stapled together complete with 'chapters' and illustrations) about wildlife; one involved a friendship between a red-tailed hawk and a sparrow, another a caterpillar, and yet another of my tales had a purple finch character alongside dragons and other fantastical creatures. When childhood friends and I played and pretended, we almost always did so in the yard or at the park. My toys were always stuffed animals or plastic animals with their own forest playsets that I called "habitats." Indoors or

outdoors, playing alone or with friends, at school or at home, the natural world was central to my expressions of creativity and fun.

Now, at twenty-two, my universe is still governed by my feelings and attitudes toward that great ambiguity, "the outdoors." I don't believe that you have to spend a lot of time in a wilderness area off the grid to appreciate the outdoors. I consider the outdoors, or nature, to be accessible from your own backyard, a neighborhood park, or even from outside your office window. As long as something green, running, flying, or crawling can be found to break up the monotony of concrete, steel, and glass that make up so much of our civilization, there is nature to appreciate. And I perceive its value in many ways.

I appreciate nature aesthetically. Its colors, for one, are my favorites—no matter how seemingly unpleasant the source. For example, there is decaying wood in a grounded log: a richer and deeper brown than mahogany or the darkest chocolate. The gray landscapes of winter dappled with shrubs in red and tan are just as perfect as summer's spectacular sunlit yellows and greens. Then there are the endless variations in form, in both the abiotic (nonliving) and biotic (living) domains. A weathered stone and the lichen that rests on it like lace. A white-tailed deer moving gracefully through underbrush. A belted kingfisher sculpting the surface of a lake with ripples as it dives to hunt. The aesthetic beauty in nature, from the microscopic to the massive, provides endless creative inspiration. As such, most of the art I have made from childhood on was inspired by animals, plants, and landscapes that, to me, felt like home.

I appreciate the natural world as a teacher. Who has not looked at the shape of a bird's wing before and seen the resemblance to an airplane before remembering that it is the *airplane* that resembles the bird? How can you not be amazed at the lynx's huge feet that act as snowshoes, the ability of a bat to hunt using its own sonar, or a shark's use of ampullae to detect

electrical signals? The examples are countless and instructive. Take, for example, a friend of mine in a mechanical engineering program. He began a research project to develop a hand prosthetic that could lock into place without additional energy expenditure. Imagine his surprise when he found that the foot and leg anatomy of perching birds allows them this exact capability. Nature is filled with blueprints and methods we have only begun to discover.

My love of nature has influenced my beliefs as well as my interests. I am not religious; nevertheless, I have a personal 'philosophy' that governs my actions. Beyond the more obvious moral guidelines like 'don't lie" and "be kind to others," I take other 'rules' into account. For one, I disapprove of lives being taken unnecessarily—be they human or not. Take, for example, treatment of spiders. A spider is found in the house. One type of person will always squish it. Another type of person will endeavor to trap it and release it, or leave it alone. Either way, the second person avoids killing it, because the animal did nothing to deserve death. (I am in the second group, if you couldn't tell). The life still matters, *even if killing it incurs no consequence*—and this is a rule I abide by for life from the size of the tiny insect to that of a trophy animal. However, there are a few exceptions: invasive plant species, for one. I know that species such as house sparrows are an issue, but I could never stomach killing them and pests that are threatening the lives of my houseplants.

I advocate for the removal of invasives despite the inherent value of their lives because of my other value: concern for the "natural order." My conceptual understanding of this term defines it as the way natural things should be without outside interference: balanced populations, habitats that can support diverse ecosystems, clean watersheds, etc. Destructive events like death, disasters like forest fires, and even mass extinctions are included in this list of things that "should be." While they can destroy a landscape or a species, they create room for other things to take the

places of those that have been culled. This is how an extinction event as drastic as the one that ended most dinosaurs resulted in extensive evolutionary radiation, or rapid increase in biodiversity, that allowed several previously unimportant groups like mammals to flourish. However, the current Holocene extinction, as well as climate-change-related disasters like the Australian wildfires, do not create the same opportunity for growth that a naturally-caused equivalent event would because they have occurred too fast and too often for the world's already threatened ecosystems to catch up. It is no wonder that the phrase "natural order" can be controversial and can appear at first glance to evoke the concept that "Mother Nature knows best." While I agree with that statement, I cannot agree with the implication that logically follows: "We should leave well enough alone and not meddle in nature's affairs, because our meddling will mess things up. Mother Nature can take care of herself." This sentiment may have applied hundreds of years ago before humans pillaged the earth to support their every want and need. It does not, in my opinion, hold any water now.

How can I advocate for a "natural order" and for human interference in our environment at the same time? The answer is that no semblance of a natural order *can* exist without careful management of our resources, wildlife and fish, and landscapes. It is true that "Mother Nature" can take care of herself when left alone. But centuries of development and irresponsible resource extraction have disabled Mother Nature's autonomy. Billions of years of existence wherein ecosystems exist in a near-perfect balance, billions of years of energy and birth and death and extinction and speciation and *work*, have been, essentially, spat on and kicked to the curb by humans in the Anthropocene. Animals that spent thousands and thousands of generations to adapt perfectly and beautifully to their surroundings now no longer can, simply because humans got behind the controls and threw Earth's settings out of whack.

Conservation is, therefore, our responsibility. Management is essential for the survival of our species and the various environments and delicate food chains that keep our Earth breathing. I believe in approaches such as deer hunting, controlled burning, stream restoration, and native plantings to address the ecological crises occurring in our own backyards. Without significant effort on our part, the natural order that I so adore cannot begin to maintain itself.

This perspective informs many of my decisions on various scales. On one end of the spectrum, I chose to minor in Wildlife and Fisheries Science to gain credibility and experience with the hopes of one day attaining a "dream job" in conservation-related communications. I tend to vote "green" and support policies that promote sustainable approaches and technologies. On the other end, I avoid killing creepy-crawlies like house flies, handle fish I catch with gentleness and speed to keep them from becoming too stressed, and get upset when I see others harassing wildlife or disrespecting the landscape. These actions do not make much difference in the long run—what does it matter if a millipede or an ant is smashed, or if a goose is frightened by a park guest threatening her young? Frankly, I don't really care for that kind of thinking. I subscribe to the philosophy that is best illustrated by the "starfish story" originally written by Loren Eiseley and since converted into a heartwarming parable.[16] A man walking on a beach sees a boy picking up starfish one by one and throwing them into the sea to keep them alive. There are hundreds of them. The man tells the boy that he could not possibly make a difference, as there are too many starfish. The boy replies that "it made a difference for that one." Compassion for people and the world around us begins at the smallest level and with the smallest of those differences.

Not everyone thinks like this, though. Many people have lived in the places I have and shared similar experiences, but no one has lived my life but me. This singularity motivated the

question that inspired this project. I care so much about nature, and feel a strong connection to its diverse catalogue of organisms. But that is not enough, for I am one of nearly eight billion. I wondered, what is it like to feel and think differently? How do others feel when they step outside of their homes to take a breath of fresh air or when they see a buteo hawk soaring overhead or when they leave a city and drive into the countryside?

This project constitutes, in nonfiction form, my attempt at exploring others' views on all that we call "nature" and "the outdoors". The exploration that consisted of meeting, interviewing, and writing about these six—Ann, Justin, Grant, Donna, Sanjay, and Nathan—allowed me to learn a lot about their worlds as well as my own.

What this project taught me transformed my thinking in a few ways. For one, it completely dismantled my concept of what it looks like to love and appreciate nature. Previously, when I thought about what it meant to like being outside, I pictured the activities and memories that so many outdoorsy types have in common. It looked like hiking. Car-camping. Trail running. Kayaking. These pastimes and more had been symbols of affinity for nature to me because my accumulated experience had built them into an if-then statement: if I want to take some time to appreciate the outdoors, then I do X thing. Anything that was not in that set of associations constructed by me and others in the outdoor-nerd community could not be enough, I thought. If a person did not check off enough of the boxes I had mentally constructed, then they could not really like being outside, could not really *get* it like I do, or like the millions of other outdoor enthusiasts do. I could not have been more wrong. There is no one right way to appreciate nature, as Grant and Justin illustrated to me through their stories. A person can detest the idea of camping or birding or any of the other things I would have considered to be criteria

for outdoor lovers yet still find ways to connect to nature that I could never conceive of. Grant's photography project and what sounds mean to Sanjay are just two examples.

Similarly, I learned that caring for the environment does not have to be as obvious or definite as I had once thought. To me, advocating for green causes looks like a number of actions:

- reducing carbon emissions,
- planting native in your yard,
- donating to conservation agencies,
- buying sustainably and from ethical sources,
- following Leave No Trace principles,
- keeping house cats inside to protect threatened herp populations,
- voting for candidates that support green policies,
- eating less red meat or no meat at all,
- reducing, reusing, and recycling.

Before completing this project, I thought of these as the only valid methods for environmental stewardship. Anything else was not enough, and people that did not make an effort to practice at least some of these clearly did not care about the earth's welfare at all. Once again, I was proven wrong. An approach like Donna's or Nathan's, familiarizing others with the outdoors to inspire a love of it in them, may not cut down on atmospheric CO_2. What it can do is lay a foundation for future appreciation and subsequent action on behalf of the landscapes and animals that the person cares for.

The importance of getting people outside is especially relevant for children, as shown by Donna's experiences with babysitting, my observations at the Children's Garden, and most of the childhood stories in these pages (including my own). The benefits of playing outside for children were familiar to me before, through personal anecdotes and data. I did not need a journal article to tell me that being outside has a great positive influence on children's mental and physical wellbeing as well as their development.[17] Because my own upbringing acquainted me so well

with these benefits, I did not believe I could learn anything new. Yet these profiles taught me more about the immense difference that playing outside can make in a young person's life and the endless permutations that it can generate. For Sanjay, outside play was badminton; for Donna, going to the lake; for Nathan, collecting things in the yard, and so on. Each of the interviewees had experienced some positive connection to the outdoors in their childhood no matter where they came from or how they feel about it now. Because none of the subjects expressed a dislike or aversion toward being outside, I want to assume that those two statements are related. Like Nathan said, I want to say that a love of nature is inherent to some extent—and for the extent to which it's not, taking kids outside is the first step to building it.

The final lesson that this project imparted to me echoes an assertion of one of my interviewees. As with the benefits of outdoor play, I also knew this anecdotally but never had the opportunity to learn it firsthand as I did here. I agree wholeheartedly with Justin: humans are pretty much the same, and it would do us a lot of good to remember that for the many tiny moments that make up each of our days or for reflecting on our broader, long-term goals. What do we care about? What do we want to accomplish, for ourselves or for others? I certainly appreciated the reminder. If I want to make a positive difference and share my compassion for nature with other people, I have to start with empathy, and empathy has to start with perceiving others as human beings to connect with.

I hope that these stories encourage the reader to consider (and perhaps challenge) their own origins and beliefs. After all, we aren't special. Just like the other millions of species that call our planet home, we can't grow without a little change now and then.

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EDUCATION

THE PENNSYLVANIA STATE UNIVERSITY, Schreyer Honors College **Class of May 2020**

Major in English; minors in Technical Writing, Anthropology, Wildlife and Fisheries Science

- Dean's List honoree all semesters
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EXPERIENCE

Writing Intern, College of Earth and Mineral Sciences, University Park, PA **Sep.2018-present**

- Communicates technical research findings from various departments in lay terms for public
- Interviews students and faculty on their achievements, research, and experiences
- Follows strategic communications guidelines for publication audience of students, faculty, staff, and public

Education Intern, Arboretum Children's Garden, University Park, PA **May-Aug. 2018**

- Supervised creative and educational nature activities for children using sustainable approaches
- Contributed to growth of dendrology- and botany-related programming materials
- Aided in development of informal garden curricula focused on place-based educational principles

Technical Writing Intern, Penn State Digital English Studio, University Park, PA **Jan.-Apr. 2018**

- Created hardware instructional resources for studio use
- Collaborated with supervisor to prioritize projects serving long-term studio goals
- Contributed media assets and document templates to online studio storage

LEADERSHIP

Nonfiction Coordinator, Kalliope Literary Magazine, University Park, PA **Apr. 2019-Present**

- Facilitates discussion of nonfiction committee to determine selections for magazine
- Organizes and distributes submissions to committee members for review

Communications Director, GLOBE Special Living Option, University Park, PA **Aug. 2017-Apr. 2018**

- Managed email correspondence of GLOBE events and community information with floor residents
- Promoted community through maintenance of social media presence

SERVICE

Animal Care Volunteer, Shaver's Creek Environmental Center, Petersburg, PA **Sep. 2019-Dec. 2019**

- Performed animal husbandry duties for wildlife zoo species, including reptiles, amphibians, and birds
- Educated public on conservation, life history, and identification of central Pennsylvania species

ADDITIONAL SKILLS

- Strong written communication and copyediting skills
- Strong interpersonal and interviewing skills
- Proficiency with Adobe InDesign, Illustrator, Lightroom, Photoshop; MS Office; Windows; macOS

ACTIVITIES

- Kalliope Literary Magazine, 2018-present
- Oriana Singers women's choir, 2017-2018
- The GLOBE Special Living Option community, 2016-2018