Imagining Energy Futures
Undergraduate Science, Art + Design Competition

WHAT MIGHT THE WORLD LOOK LIKE AFTER FOSSIL FUELS?

Supported by the Atkinson Center for a Sustainable Future’s Academic Venture Fund and the Mario Einaudi Center for International Studies

Competition Winners
Spring 2017
Imagining Energy Futures
Collaborative Science, Art + Design Competition
Open to All Cornell Undergraduate Students

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Fall 2017

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What might the world look like, and be like, after fossil fuels?

Cornell undergraduates are invited to imagine the energy futures of our planet in this science, art and design competition. Working in teams across disciplines, emerging scientists, artists, engineers, designers, and writers at any stage in their undergraduate studies will create projects that help us imagine sustainable energy in the real world.

Winners will receive cash prizes, and their work will be shown, heard, or performed in a public exhibition.

The competition is co-sponsored by the Mario Einaudi Center for International Studies and the Atkinson Center for a Sustainable Future’s Academic Venture Fund.

Competition Organizers:

Dr. Anindita Banerjee, Associate Professor of Comparative Literature

Dr. Debra Castillo, Emerson Hinchliff Professor of Hispanic Studies

Dr. Albert George, Graduate School Professor of Mechanical and Aerospace Engineering and Systems, John F. Carr Professor of Mechanical Engineering Emeritus
Underground: Project Gaia

Reade Otto-Moudry, A&S (Biological Sciences)
Kayla Aulenbach, CALS (Biological Sciences)
Ashley Herzig, A&S (Undecided/English)

Winner of the 2016-2017 Imagining Energy Futures Competition
My legs ache as I navigate the famous twists and turns of Lombard Street. At this time last year, I would have had to fight through throngs of tourists, getting in one last gawk at my city before it went the way of Atlantis. Goddamn vultures could sense it wouldn’t be long, not after New York went under. Now it’s just me and the tumbleweeds, wandering aimlessly through a city of closed schools and empty streets.

I remember watching New York drown on TV, can still feel the chill that ran down my spine as I watched the unfeeling waters of the Atlantic breach the city’s last defenses. There had been almost no warning and the reporters speculated that thousands would die as they fled inland.

The disaster infuriated my older sister. Alisa was online organizing a protest with her classmates at SFAI before the next commercial break. I could hear her ranting to her friends in the next room over, “this never would have happened if those capitalist fuckers paid an iota of attention to the planet. And what about government transparency? Like they expect us to believe they didn’t know the dams were breaking down. Fascist assholes!” I just shut off the TV and put in my earbuds, trying to focus on SAT prep.

That spring, the riots got so bad that the federal government declared a state of emergency and placed the coastal cities under martial law. Despite the unrest, my life went on as usual. I went to school, stressed over failing my math final and fretted because I didn’t have a date for prom. No one could imagine what was in store for my ill-starred city.

It started slowly, with small cracks in the Great Bay Area Dam going unmended. Then a few bayside residents were “temporarily relocated” due to flooding danger. I went to protests with my sister, until those were shut down. Roadblocks popped up on routes passing through the deserted neighborhoods. A curfew was enacted, supposedly to prevent unrest. Still, when the announcement came, it was a shock. They had given up on us. After surviving countless earthquakes, plagues and fires, San Francisco was to be vanquished by a fucking science experiment.

My high school held a special assembly to announce the good news. California was to be the first state in the U.S. to join a grand global endeavor, official name Project Gaia. In response to the rising sea level, thinning ozone layer and the resulting deluge of clusterfucks a la New York, an international collective spearheaded by the US of A had agreed to take drastic measures in defense of mother earth. Each nation would gradually move its citizens to great underground cities, powered only with renewable energy. With the exception of the solar, wind and hydroelectric plants necessary to power the underground communities and the agricultural space needed to feed them, the land would be left untouched, giving nature time to heal without human interference.

Predictably, Alisa jumped straight on the conspiracy train. “Have you heard about the citizenship agreements, Mara? To join the new United States of Mole People, you have to commit to government controlled housing and employment, restricted travel, a limit on how many children you have in the future, not to mention...
signing away your first amendment rights until “peace and stability have been established”. What the fuck does that even mean? I’m not selling my soul to go live in the City of Ember."

I countered by pointing out our lack of options. “We could go east,” I offered in a deadpan, “but what good would that do since they’ll all be underground with us in ten years? It’s not like we can stay here. You’ve seen the announcements. They’re going to blow the dams and God help those poor suckers who are too dumb and/or stubborn to leave.”

“So what, we should just go along like proper sheep, let ourselves be herded into some lifeless bunker and hope the mess we made just magically clears itself up?” Alisa snapped. “That’s bullshit and you know it. Not to mention the whole signing away your free will and basic civil rights.”

“Well what do you propose instead?”

“We should set out on our own, head north. Remember Leah?”

“Sure, she was in your photography class freshman year. Didn’t she drop out?” I’d seen her at the bay-side protests last month. If I hadn’t heard her distinctive throaty growl calling my name, I doubt I would have recognized her. Leah had lost weight and cut her long colorful hair, wore camo and work boots in place of her customary sundress, but it was her eyes that threw me. There was something unsettling behind her weary gaze, a cold disillusionment that stood out among the bright-eyed idealism of the demonstrators.

“She’s in town recruiting for the Neo-Pioneers. I’m going to sign up for the next expedition out. Come with me.”

“Alisa, are you insane?” My sister has always had an iconoclastic streak, but this was going too far. The Neo-Pioneers are a fringe environmentalist movement based in the Alaskan wilderness dedicated to returning to a pre-industrial lifestyle. I’ve seen a lot of their “ambassadors” lately, scavenging for new recruits among the restless crowds protesting Project Gaia. They described it as an Eden for the modern era, a community of like-minded individuals living in harmony with the land and with each other. The US government didn’t appreciate the Neo-Pioneers squatting on federal park land, especially in light of the recent disappearances of several Denali rangers and suspicious fires in government facilities. Their new Eden didn’t exactly fit my vision of paradise either, as it made up for its lack of hot showers, air-conditioning and free wifi with a surfeit of domestic terrorism, but hey, each to her own. “Are you prepared to join the struggle against those tyrannical, and woefully underpaid, servants of empire otherwise known as park rangers? What crime are they guilty of, boring local kids to tears with fire safety lessons?”

“Those rumors are completely unsubstantiated. The Neo-Pioneers aren’t terrorists, they’re just people trying to find a better way of living.”

“Assuming that’s true, what would we do up there, start a farm? The only thing I know about animals is that they’re delicious. You don’t even like camping! And what if you get sick? Do you really believe that Neo-Pioneer bullshit about how “nature is a more powerful healer than penicillin”? Face it Alisa, we wouldn’t last a year out there.”

“It’s a new world, Mara. I’d rather die young with the wind in my hair and the sun on my face than rot
I reach the top of Russian Hill and sit in the deserted street, watching the sun set over the pastel city. My thoughts drift back to the day I said goodbye to my sister. Alisa hadn’t bothered to hide her tears as she made one last plea for me to go with her. I just smiled and shook my head, not wanting to send her off with angry words.

I hope she’ll be happy in her new life. Waiting here, alone in my deserted city, I envy her the company of other believers. But perhaps I’m not the only one sitting out this vigil. I see a candle in the window of a pink Victorian down the street, hear someone singing from an open window. Closing my eyes, I hum along with the mournful tune till the crashing waves drown out our song.

(Sustenance)

(Day 1)

I woke with a start this morning. There was cold sweat running down my neck and I was breathing hard. I didn’t have a nightmare last night, rather that same recurring dream where I am running and laughing with bright colors all around me…. But when I opened my eyes this morning I was greeted by the same dull walls, the same dull blanket, and the same dull clothing. I shouldn’t complain. It’s not like I remember what it was like not being holed up underground, but sometimes I wake up wishing and yearning for the life I never knew.

On my way out the door, I kissed little Matthew on his forehead. He looked so precious in his slumber. He starts his first day of school today with the other 5 year olds, and it took him forever to fall asleep last night he was so excited. I wish I could stay home and walk him to school, but John got to do that since I needed to be at work, especially today, Distribution Day.

I began the long run to work, tossing around the details of last night’s dream in my head. Eventually I saw the large white building ahead and I slowed down to control my breathing before I started up the stairs into the government headquarters.

I quietly took my seat behind my nameplate, Alexis Rother, Vice President, Western Quadrant, and began looking over the outline for today’s meeting while my fellow board members trickled into the meeting
We flew through the meeting, as we always do on Distribution Day, and with each topic we moved closer and closer to Topic J.

Today, there were three new delicacies to take home to our zone market along with the usual potatoes, wheat, chicken/gravy, and other staples that help to feed each of our communities underground. Above ground, the orchards, I believe that is what they are named, are finally starting to grow food. According to our updates, it took a while to get the trees to start growing again and to have enough to divide amongst the markets. But today we have red apples, green pears, and a brown fuzzy kiwi, which, we discovered, when you open it up it is green on the inside. We have one representative from each of the 11 zones and each one gets to take home a trailer full of enough food for their community for a week.

I grab my zone’s trailer, fill it up, and head home. I have to take a roundabout way home because I don’t fit on the regular walkway with the four-wheeled food wagon. The trailer has little motors on the inside and is battery powered so I just get to sit on top and hold the controller to direct it home. I once learned that they had wheeled vessels called “cars” above ground that could take people from place to place, however those vessels released toxins into the air. My trailer is powered by electricity, responding to the directions I put into the remote telling it which way to turn. It works kind of like the human speed segways that certain government officials use to get to work, the ones who are too far away to run like I do every morning.

When I finally arrive home, Matthew is sound asleep. Distribution Days are my longest days, and I know it is the only work day I don’t get to see my baby boy, but I still miss him. I wanted to hear about his first day at school. At least I will get to see him tomorrow. John told me about his first day with his new class. He teaches environmental biology. He knows quite a bit about the history of the pollution epidemic that drove human-kind to take refuge underground. John and his peers teach the students about the tragedy as a way to prevent history from repeating itself. They also try to figure out solutions and new ideas to send above ground. His first day is always the hardest, introducing 5th graders to why we are underground and everything that has lead us to this point. For some students, it is their first time hearing about our history as their parents never really explained it to them well. Others have false information, and a select few already know about the history of our descent.

(Day 2)

Market days! My favorite days of the week, today and tomorrow. I get to stay home and set up tables full of food for people to shop for their families. As I prepared my table, I thought back to when I was just under 10 years old, when we were all evaluated to see if we would fit well into the Surface Detail Training Program. It is very interesting, as I now have a bit of insight into how these kids are chosen. The military branch observes children of this age, mainly trying to narrow down the group of candidates to a small pool they are interested in analyzing further for the program. They are looking for the ability to learn quickly and focus on the task at hand.
They also look for children who express unique problem solving skills. They quickly dismiss other kids and the military observers tag them for a different employment branch. I now know the reason I am in the government sector is because I was eliminated from the recruits for the Surface Detail Training Program in the last round of cuts. The kids that don’t surface, literally by the skin of their teeth, end up working for the government and have the closest connection (other than the military branch) with those who have been sent to the surface. While I would have been honored to serve my quadrant and go above ground, there is part of me that is relieved I didn’t have to leave my family and my friends. That’s always the catch about having children down here. You get to start a family, but there is a chance you will only get to spend 10 years with your kids. It’s why I get so torn up about leaving my little Matthew every day. I hold my hand to my stomach where my baby girl is growing, wondering where her fate will lead her in 10 years.

I shake the thought out of my head and put the finishing touches on the food table. Half of the zone shops today, the other half tomorrow, switching off every week who gets first dibs on this table of food, but more accurately, who has the best chance of taking home some sort of delicacy that week. I look at the other tables set up around me: clothing and fabrics, home improvement materials, kitchen and home living materials, basic school supplies, craft supplies, toys, and even some spices are sold.

When everyone, well, those who decided to come, descended below ground, warehouses full of these supplies were compiled into stockrooms. Then representatives of each stockroom bring items to market day upon the requests that residents submit throughout the week. Our currency, which is not really a currency, allows each resident to get what they need, and then a small amount of what they want each week. For example, my husband and I work for food tickets. Each week, as long as we fulfill the minimum duty at work, we are given enough food tickets for ourselves and since Matthew is still a dependent, we get tickets for him as well. Once he turns 16 he will be responsible for himself. Then, we have the opportunity to do tasks above and beyond the minimum at work. When we complete these tasks, we can start working for other tickets. Home supply and clothing tickets require the least amount of additional work because often these are supplies we actually need to function, such as soap, dishes, maybe a nail to fix a floorboard that is popping up in our home. The last category is luxury tickets. These can be saved up from week to week and used to buy toys, books, craft supplies, spices for our (fairly bland) food, and other items that we can live without. This is why these items have lasted so long, because people are much less wasteful than they were above ground. Toys are passed down from generation to generation, and people are generally more careful with what they do have so it doesn’t break.

So far this system seems to run pretty smoothly. Everyone has their place in society and even though I work for the government, I am no better off than a family of teachers. Apparently before the pollution epidemic, teachers had terrible income whereas the government was extremely rich and corrupt because of the income gap. I have a suitcase full of paper money in my home, something my great-great grandfather brought down with him when he left his home. Two suitcases, that is all he brought, and the first one was filled with money that is completely useless down here.
After the first day of market, I came home with a box of crayons and a coloring book that I purchased with luxury tickets John and I had saved up to celebrate Matthew’s first day of school. He was so excited when he saw it. John and I both knew that the very first lesson of school is art. One that encourages kids to use their imaginations. The color that bounced around the surface, due to the illumination of the rays of the sun, is an effect the engineers of our light bulbs never got quite right.

Matt told me all about his art lesson from yesterday, running around the house with his arms out like “a bird momma, I am a bird!!” I understand the purpose of the lesson, to give children their first taste of using their imagination, something that we, the government, noticed was lacking in children ever since they came down here and lost bright blue sky, soft green grass, animals, trees, plants... I talk as though I actually know what it was like. I don’t. I have just heard so much… seen pictures at the government headquarters. It teases me. Teases me into wishing that I was above ground. Even though I know once you surface, you can never come back.

(Day 3)

Today all the school kids come to the market to pick out school supplies that they need for the year. Each school year, students are given the materials they will need. Matt gets to come pick out one folder, one mechanical pencil, one pen, and a big eraser. The older students, in their 8th year of school, take a thick binder, used for all their classes until they graduate, and a pack of led for their pencil.

We learned at a very young age that there is no room in our underground society for waste. Everything we own is reused, repurposed, and recycled. This is our last chance to keep society going because if we destroy our home underground, there is nowhere left to go.

John and I had second day pick of groceries at the market this week, but luckily there were still some apples left for us to take home along with our weekly allotment of groceries. John also picked up a shirt, because he wore through one of his others, and that was all we needed this week.

(Day 4)

I left fairly late today since I got to ride the food trailer back to work. Again, I am the first to arrive, so I quietly take my seat and review the agenda. On the list of topics to cover I see “Market overview, Energy update, and Waste profiles.” With only three topics to cover I am pleased to notice that I should be returning home fairly early tonight.

The market overview was relatively routine. Every zone representative discussed any hiccups they had at market that week which is helpful to us all as we address the situation to prevent it from happening in our own zone. Generally the worst issues we have are a crate of food spilling over or spoiling. Recently we received
new HEPA filtered crates to prevent spoiling, and spilling happens from carelessness, so we just remind each other to take time and care when setting up for market.

As far as energy goes, this is one of the most confusing topics we discuss in our meetings. We know that the Surface Detail Program is geared toward producing energy to run our communities underground, but it is difficult for us to understand their systems. Lately though, we have noticed our energy reserves increasing, as production appears to be outpacing consumption. This is a result of the technological updates we received about ten years back. The light bulbs we use take virtually nothing from our energy supply and our stoves and ovens were updated to heat efficiently and quickly by minimizing the loss of heat in the new dome shaped cookers. The only motorized vehicles are used by military officials and government employees. Everyone else lives close enough to their jobs and to school to walk. We were able to cut out the use of heaters and air coolers as the below ground temperature is roughly 64°F, a comfortable temperature for everyone living here. As our energy supplies grow, however, we are hopeful that we will be able to update technology for everyone in our communities. The next system we are planning to implement are smart tablets for each of our students. Currently, we have enough working smart tablets left over from before the pollution epidemic to give one to every teacher in our quadrant. We believe that giving every student a tablet will reduce school waste even further, allowing us to entirely eliminate paper, pencil and pen use. Even though the paper can be recycled, we noticed our supplies are running dangerously low due to a lack of new production. All the trees above are apparently being used in some way to better the environment, so they are not being harvested.

The waste profiles go quick. Each zone reports how much waste was produced that week and also the average amount per family. In general, these numbers are very low and have gotten even lower. We have paper recycling plants used to recycle student’s school work when they graduate, and other school supplies are reused until they are falling apart, and even then they are often repurposed. Children wear cloth diapers that get washed and reused, cloth tissues, cloth napkins, anything you could imagine, we have found a way to repurpose to lower our waste yield. This was one of the most important tasks upon descending underground because pollution on the surface had become so severe that it was no longer habitable. Also, we learned quickly that if we created a lot of waste there would be no where to put it, so we found ways to reduce the amount of waste each family produced. Since then, we have reduced each family’s yearly waste to about one liter.

After my meeting I returned home. John cooked dinner. We have chicken, bread, and a few apple slices. Matthew was singing the alphabet when he was eating. He told me that they learned the alphabet today and they were supposed to practice it during family day tomorrow, although it seemed like he already knew it very well. He was also counting to 100, even though they were only introduced to numbers for the first time at the very end of the lesson. Matt seems to be learning quickly. I remember taking at least three days to learn the alphabet, and at least another three to pick up on the counting patterns. I hope that the 5 year old instructors have come up with new methods to teach the alphabet and numbers, and that all Matt’s classmates have learned just as quickly as he has. It scares me that he might be ahead of his class already on the fourth day of school.
(Day 5)

I woke up today, the last day of the week, excited to start family day. Family day is focused on teaching our children how important it is to use everything we own to its fullest potential. We take things around the house that are breaking down and turn it into something else we can use.

We are using John’s ratty shirt today. We have just enough good material to turn it into a tote bag that Matt can use to transport his school work to and from school. As we work on the bag, Matt tries to color the bag with his colored pencils to make it “more exciting,” his words, not mine. Unfortunately, he quickly discovered that colored pencils don’t exactly work on fabric.

Once we finished our recycling project, we had enough time to play a family game. So we pulled Hi Ho! Cherry-o out of the closet. This game came from John’s house when he was a kid. His ancestor who descended brought this game down with her and it has been passed through his family ever since. While we were playing, we practiced counting and number recognition with Matt. At the very end of the game, Matt pointed to the bird on the board and said, “Mom, I want to see a bird. Will you take me to see the birds?” I was shocked at his question, but thankfully John answered assuring Matt that one day we would take him to see the birds.

As I was lying awake in my bed staring at the ceiling I could not help thinking that he very well might see the birds one day. But it would be without me.

Surfacing

He looked up, squinting. The lights shone overhead, as they did every day. Just like the sun. Or at least that’s what he’d been told. He’d never seen the sun himself, but he knew the lights had been designed to mimic its properties. Mimic being the key word. Even with all the energy in the world, there was no way to create a light that could emit 9.5 x1025W. At least not without melting everyone. The light included. But they worked well enough. And the lights weren’t his job anyways. In a few hours he’d be leaving them behind. He supposed he should be excited to see the surface, but he wasn’t really. He wasn’t sad to leave the underground, but the excitement of the surface had been worn away long ago in the daily grind of training. And that was what they
wanted. Excitement meant carelessness, and carelessness meant mistakes, and on the surface, mistakes were costly.

The barber pushed his head back down, away from the glare of the lights, and the buzzing of the clippers behind his ear dragged him back to the present. He bounced his leg impatiently against the linoleum tiles, frowning slightly as stray hairs collected in the already stiff collar of his Dress Blues.

At 1600 hours, his platoon was formed up in perfect ranks on the parade square, nestled into the government complex on the southern border of Zone 5. He’d never quite understood the purpose of the Commissioning Ceremony; 33 nearly identical boys and girls, who nobody underground had seen for six years, and who nobody underground would see again, lined up in their perfectly ironed uniforms, insignia glittering under the bright daytime lights, to receive their assignments. Upon being summoned to the small stage, he marched quickly and purposefully, raising his hand in a sharp salute. The Lieutenant General called him to ease, and he pulled his arm tightly against his side, looking straight ahead as a gleaming number 7 was pinned to his lapel, sitting across his chest from the W displaying their home quadrant. He shook the General’s hand stiffly before returning to the ranks of his platoon, standing in silence as the ceremony concluded.

After being hurried back into the building, they were led down several narrow hallways, which eventually let out into a large, brightly lit auditorium hall. They filed in, taking seats designated by their newly assigned zones. He sat in a stiff chair, mindlessly leafing through the briefing folder on the table in front of him, until the General’s voice called their focus to the front of the room. He congratulated them quickly on their commissioning, and proceeded to brief them on the events that were to unfold over the next several hours: Equipment issue, transport, and surface transfer.

Equipment issue was, as always, a brisk exercise in hurry up and wait. They were directed into another hallway where they stood in two lines, boys and girls. As he walked down his line, he was tossed a MOLLE ruck set, two ACUs, two sets of underclothes, and a pair of steel-toed tactical boots. Weapons, patch kits, tools, and the rest of their equipment, they’d been told, had already been issued to their zone bases. They changed into their new ACUs, neatly folding their blues and leaving them in piles along the edges of the room, before being ushered out the back of the building. The three person details were loaded into HMMWVs, each with a large zone number painted on their sandy yellow, dusty sides.

He sat in the shaded interior of the HMMWV as it jostled back and forth over the narrow pedestrian streets. The appeal of their first moments of uninterrupted quiet in days hadn’t been lost on the detail, and they sat in silence. The drive to the surface transfer station in Zone 7 would take about 10 hours, covering more than 600 miles. The farthest any of them had traveled since they were 10 years old, and farther than most people would travel in their whole lives. As they drove, people gathered in the streets to watch them pass, and parents hoisted children up on their shoulders. It was unusual to see a vehicle in the streets at all, let alone a truck. He wondered what they were thinking as they watched.

He wondered if he would miss the underground. Miss his family. He wondered if they would recog-
nize him. Or if he would recognize them. It had been six years since he’d been home. Or at least since he’d lived in his mother and father’s home. His father had been so proud when he’d been put under observation to determine his candidacy for a Surface Detail Training Program. His mother hadn’t said anything to him, but he remembered lying awake at night and listening to them fight. Later that year, when the decisions came out, and his family was notified that he had been selected for the program, his father had hugged him tight, told him how proud he was, what a good boy he was. His mother had cried. In the six months before he departed for the base where he would spend the next six years, his mother stopped talking to him entirely. She no longer smiled at him, no longer hugged him after school, or kissed his cheeks when he left in the mornings. Just looked at him with that sad, distant stare which he came to know so well. It was the same stare she had in the picture he carried. The one that had been taken the morning the General had come in the shiny black car to take him to the base.

He ran his thumb over the crinkled photograph absentmindedly. It had hurt, being ignored like that. But he’d never resented her for it. He understood. Even as a ten year old. Going to the surface meant going away. It meant never coming back.

They dozed on and off as they drove; falling asleep to the regular swaying of the truck and waking up with sweat dripping down their collars. The mean earth temperature in the Western Quadrant was about 62°F, and they lived another 140 feet below that. With the temperature increasing at a rate of 1°F for every 70 feet below the surface, the temperature underground sat at a constant 64°F. Inside the HMMWV, the three of them produced a combined 12 BTU a minute, raising the temperature of the interior by roughly another 3°F, meaning that without any consideration for the heat generated by the engine, they were sitting in a steamy 67°F; more than enough to make you sweat in an ACU.

Eventually the HMMWV pulled to a stop, and the detail was ushered out the back of the vehicle and into a small building. Inside the building was the Zone 7 transfer station; a small elevator-like capsule that would carry them to the surface base. The three of them squeezed into the capsule, facing the driver as he prepared the transport. This was it. The last time he would see underground for 40 years. And just like that it was over. The door sealed with a click, and they began to accelerate upwards, the seams in the metal shaft flashing past them.

He felt the pressure build in his ears as they approached the surface, opening his jaw wide to release it with a satisfying pop. Eventually the capsule slowed to a gentle stop, the door clicking as it slid open. They stepped out into a small room, separated from the rest of the base compound by a heavy metal door, which unlocked with a swipe of their identification cards. They filed into the wide mess room where their mentors, the previous surface detail for Zone 7, sat waiting. He walked towards his mentor, stopping a respectful distance in front of him and saluting quickly. The older man laughed loudly in response, holding out a hand, which he shook awkwardly. After brief introductions, they were all released to their rooms with specific instructions for the remainder of the day. He tossed his MOLLE towards the foot of the bed, flopping onto the thin, bare mattress for a moment before forcing himself back out the door and into the hall.
The rest of the day was spent on base orientation; facilities, emergency contingency plans, supplies, and specs, all relayed in a seemingly endless stream of minutia. The new detail was issued clothing, tools, kits, and weapons, and eventually allowed to retire to their rooms for the evening. The base resembled, in almost every way, the underground; it had no windows, and was illuminated with the same lights that had shone overhead his whole life. When the base had been constructed, the ozone layer was so eroded that the UV index rarely fell below 20, necessitating full-body protective suits for surface expeditions, and entirely eliminating the prospect of windows. Even now, with the ozone layer much repaired, and the most noxious pollutants almost entirely cleared from the air, the base maintained energy efficiency with its thick, insulated walls. The room, also, was familiar; completely bare and laid out identically to his quarters in the Zone 5 underground base.

The alarm on the wall woke him the next morning to the bright shine of the lights. He sat at the edge of his bed for a moment, wearily rubbing his eyes before pulling on his ACU over a clean set of underclothes and reporting to the mess. His mentor tossed him an MRE as they walked, which he stuffed into one of the compartments of his MOLLE. He hesitated momentarily with his hand resting on the handle, suddenly unsure, before pushing the door open and stepping out into the surface.

The light, real sunlight this time, blinded him for a moment. The intensity of the light washed out his vision, which slowly returned in patches of vibrant green, red, blue, and yellow. He blinked hard, trying to adjust to the assault of new sensory information. The narrow band lighting underground fragmented the color spectrum, eliminating the smooth transitions, chopping them up into small color bites. The blackbody radiation of the sun illuminated the surface in a spectacular display of color. As he looked around, he shook his head lightly, attempting to clear the ringing from his ears. The millions of diodes and circuits underground and in the base had given off a constant hum, the absence of which he found deafening. As his ears adjusted, the silence was punctuated with the rustling of grass in the breeze, the screaming of seabirds overhead, and the slow scraping of tree branches against one another. The air also brought a barrage of new scents; salt, dirt, green, warm, which stood in sharp contrast to the non-smell of filtered and recycled air they breathed underground. The moisture in the air, the warmth of the sun, and the movement of the breeze bristled across his skin, sending minute tremors across his body and making his skin break out in pronounced goosebumps.

A loud whistle pulled him out of his stupor, and he jogged over to the ATV where his mentor waited. They unplugged the vehicle from the charging port, and set off towards the coast. They planned to drive through the major wind farm on the eastern edge of Zone 7 and down to the coastline’s hydroelectric plants. The ATV jostled them back and forth over the uneven, rocky ground as the drove, and the scattered rays of sunlight prickled hotly on the back of his neck. Rivulets of sweat quickly began to drip down his back, only to be greedily whisked away by the cool breeze kicked up by the ATV.

The turbines rose up out of the mountain like giant white bones, giving it the appearance of a jagged spine. They spun enthusiastically in the wind, each producing just over 4J of energy every minute. His mentor popped the maintenance hatch off the base of the nearest turbine, having him run diagnostics and demonstrate
basic skills. It was an easy test. The electrical system of the turbines were identical to the models he’d been trained on underground, and electrical engineering came naturally to him, the tangle of wires breaking down into distinct pathways in his head.

They left the wind farm a few hours later, continuing the long drive towards the coast. The sun rose directly overhead, and had begun to creep towards the western horizon when they finally stopped, parking the ATV a few meters from the cliffs. A damp, salty wind blew off the water, sticking to his hair and clothing. He walked to the edge of the cliff, where the rock sheared off, giving way to the ocean. Underground water only came from taps. It was constantly recycled, filtered, and fortified, giving it a slight odor of chloride and chlorine. At the training base there had been a small pool for swimming instruction, but it was minute compared to the seemingly endless expanse of the water that lay before him now, stretching out to the far reaches of his vision.

Agricultural runoff from the time before the underground had caused the ocean shores to eutrofy, choking them with HABs. Over time, the concentration of nitrogen and phosphorous had been slowly consumed by the algae, leaving the water streaked with feathery tendrils of emerald and ruby, which stood out against the faded turquoise of the copper laden seawater. He knelt, eyes fixed on the surging waves as they careened against the rocky shore, sending mist flying up the sheer sides of the cliffs to settle like a fine dew over his face and arms. He blinked slowly, awed by its immense power, as the pink and orange rays of the sinking sun played amongst the dancing veins of color.
Reference

Maps

The quadrant divisions of the United States following the move underground.

The zone divisions of the Western Quadrant.
Index of Terms

ACU: Army combat uniform
ATV: All terrain vehicle
BTU: British thermal unit
HAB: Harmful algal bloom
HMMWV: High mobility multipurpose wheeled vehicle or “Humvee”
MRE: Meals ready to eat
MOLLE Rucksack: Modular lightweight load-carrying equipment
Mean earth temperature: average temperature 20-30 feet underground
Black Hole Power Plant

Scott Bollt, College of Engineering

Dalton Price, CALS (Biological Sciences)
Dear Editor,

As I think we all have become acutely aware over the past few months, a very important energy bill is making its way towards ratification. It concerns the construction of a massive black hole power plant. While everyone is familiar with the bill, many of us everyday folks feel out of the loop because we don’t have the information and knowledge we need to think critically about the arguments given by both sides of the issue. If there are any readers here that are experts from either side of the issue, could you briefly introduce your respective arguments in a way that someone like me can relate to? Someone needs to bridge the gap between the general public and those of the energy sector.

- Anonymous
Dear Anonymous Reader,

I am glad that there are people in the public so interested and involved in this matter. It is good to see. I will try to address your questions to the best of my ability.

Currently the world is powered through fusion reactors of a variety of sizes ranging from that of a refrigerator to that of a large building. They have been a reliable energy source for over a hundred years but have some key flaws. First, they are responsible for our current state of global warming. The reason for this is fusion power sources, despite their advanced nature, run off of one of the simplest principals in energy production: the heat engine. Thus they are limited by Carnot’s theorem in terms of efficiency. In real terms, this means that no matter which way you slice it, the power source has exhaust consisting of a large quantity of heated air. Back when fusion power was first tamed this was not an issue since only a few dozen building sized fusion power sources were needed for the entire world’s supply. However, we are now at the point where heat emissions from these power sources are becoming a significant factor in the Earth’s heating. As a result, global warming is accelerated. This is a massive issue that needs to be addressed sooner rather than later or else we will see similar issues to those experienced in the early 2100s. Fusion power also has its own radioactivity problems. Even though it is far safer and less radioactive than fission, fusion power devices still make the device’s inner walls radioactive over time since some of the neutrons emitted during the fusion reaction reach the inner walls of the reactor and change their elemental composition. This may not have been an issue when humanity produced a few dozen terawatts but, now that we produce 25 petawatts, we are collecting quite a pile of highly dangerous radioactive waste. Despite our advancements in rocket technology there is still a 1/1,000,000 chance that any given rocket will explode. Since we will need to use many of these rockets to get rid of the material it means that there is a 1/10,000 chance that getting the material off of Earth will cause our extinction. That means we are stuck with this stuff, which is a bad deal from any perspective.

So why black hole power? What does it do to fix our issues? Well first, a single black hole power source could provide more than sufficient power for all of humankind. Just one plant. Also, the black hole power plant will work based on light and electron collection, meaning it will be very efficient. No heat problems there. The
black hole power source will also be able to create all this power without a single ounce of radioactive material produced—something that has not been done since we first took advantage of coal. All of this is great but you may ask, “won’t the black hole envelop the earth?” Here you would be wrong. You see to achieve 25 petawatts of emission power, the black hole has to be very small rather than very large. Even though the black hole will have a mass similar to the great pyramid of Giza, it will have a diameter only around the size of a subatomic particle. This makes it impossible for the black hole to destroy even a very small part of the earth before it evaporates. For practicality, the black hole will have to be kept in a geostationary orbit but, if it were to fall out of orbit, although extremely unlikely, it would not do anything catastrophic. I think it is important people understand that. While we are on the topic of misconceptions, I do want to clear up the idea that we could use the black hole power source to dispose of hazardous materials. First of all, the black hole power source will be incredibly efficient, so it will not need large quantities of matter to operate effectively. That means it will not be able to consume the hazardous materials quick enough. There are countless other issues with the waste disposal idea, but I really just wanted to bring this up to deny some of the claims being made by people who are aligned with myself on this issue. I want the power plant built but I will not be dishonest in order to achieve that goal.

In closing I would like to say that we should build the black hole power plant because it will bring about a better, cleaner, and longer lasting energy solution. It is something that will take hundreds of years to complete since we will have to corral the black hole into our solar system, but when it is done it should solve our energy crisis. No more global warming, no more safety concerns, and no more radioactivity.

- Sara Gamaleldin, scientist
Letter to the Editor, November 11, 2474

Dear Anonymous Reader,

Thank you so much for expressing your interest in the matter and bringing to light this extremely important issue. My name is Yiqi Liu and I am the voice of the ecoterrorists. If you have not already heard of us, we are an environmental advocacy group that promotes sustainability through a violent platform. Yes, I said violent. We no longer are able to just sign petitions or stand out front of city halls. We have seen for decades that they do not care; they only cause more problems. We were warned of this by the founders of the original environmental movement, the millennials. They predicted that our environmental crisis would escalate and every global move towards sustainability made by those in charge of global affairs would inevitably lead to the detriment of our environment. For example, in the case of hydroelectricity, the plants destroyed ecosystems and polluted the aquatic habitats. They began finding heavy metals that were used to construct these plants in the fish we consume. Eventually, they terminated all hydroelectric plants and began using patch technology intended to utilize the body’s unused energy. However, the amount of waste produced from each of these patches daily began filling our landfills at unprecedented rates. Finally, we were able to harness the potential of nuclear fusion, but it was significantly less sustainable than we anticipated. We must unite to make our voices heard now more than ever, as the Global Space and Energy Foundation is pushing that new, more dangerous bill designed to make us entirely reliant upon black hole energy production.

Ever since the initial discovery of the black hole in space, it has been feared. To this day, over four hundred years later, we still do not know much about black holes. Scientists ponder the potential of this natural phenomenon, both in terms of energy and destruction. Sure, if it worked out, we could produce a lot of energy. Despite this, the risk of this is far too high. Even before we begin using this energy, we must find a black hole, corral it, and bring it to Earth where twenty-one billion people live. Does this sound safe to you? A few scientists have come out and declared their opposition to this black hole project, raising questions about it expanding and consuming our Earth, but were harshly criticized by their colleagues who just want to end this energy crisis once and for all. We are no longer choosing the best option for the environment; we are doing a series of trial-and-error that is destroying the environment and will get us killed. The ecoterrorists will not stand for this.
We must unite amongst ourselves in order to achieve our superordinate goal: saving the environment from irreversible degradation. We must mobilize our people—children, scientists, ecoterrorists, economists, elders, and more—and prepare for war. Every legislative checkpoint this black hole energy bill passes, we will bomb a Global Space and Energy Foundation building. We will have our crew members outside of every country's capitol building, protesting against and threatening those who are contributing to this project. We will break into as many of the black hole energy conferences, make our opinions known, and kill every single one of the attendants. It may seem brutal but if we don’t do this, they will bring a black hole, one of the most unpredictable and dangerous pieces of our universe, to our home. The ecoterrorists will not let this happen.

Now, I promise you that your concerns are valid. Your short letter speaks for billions of people who are confused and scared about this new energy technology. However, now that the ecoterrorists are making a stand, we hope this fear will dissipate. No longer will these world leaders exclude us from the discussion. We deserve a seat at the table and will fight for it. I ask that you, and whoever else is reading this, to stand up to the injustice. We are in this together.

- Yiqi Liu, leader of the ecoterrorists
Lake House Stories
Charisse Foo, B.Arch. ’18
What might a floating community mean in terms of architecture and identity? Instead of a holiday home with picturesque views, left empty for half the year, these lake houses form the setting for a floating extension of the present-day Eco Village in Ithaca, built upon cooperative community and ecological awareness. *Lake House Stories* tell of community rituals (*The Descent, Moving Day*) as well as reimagined architectural typologies (*Dream House*) that propose new ways of inhabiting space, emerging from a reconsideration of one’s relationship with water as a new, shifting ground.
01
The Descent
The Descent asks what a coming-of-age ritual might be in a modern, sustainability-oriented community - a tribe defined by its close relationship to the water. It is also interested in the symbolism of such rituals: rebirth from the womb of the sea, emerging from the belly of the monster, and resurrection from the depths.

The story takes the opportunity to illustrate the most isolated living spaces of the community: the lab and deep farms at the bottom of the lake, which are used for research. It explores the systems in place for self-sufficiency, making reference to existing underwater labs and farms, most notably Aquarius, located in the Florida Keys National Marine Sanctuary, and Nemo's Garden in Noill Bay, Italy.
It was entirely voluntary, of course.

The whole village came to see him off.

He's always been one of the best in the labs...

There's absolutely no reason to worry...

The fifth one this year, isn't that something!

It's only a week, after all.

He'll be fine, you'll see...
He left their voices behind, beginning his Descent.

Past the farms he’d worked in so often,
past the waters he’d played in as a child,

going deeper

and deeper
into the waters he called home.
He'd been here before.

He'd spent two summers with the deep farms and lab.

He knew the algae farms that provided oxygen for the lab, and the gym with its bikes that generated electricity.

It hadn't changed.

But this time there was no one to welcome him as he sat in the moon pool, computers humming in the background.

He was more alone than he'd ever been.
This was how it would be:

He would spend a week in the underwater station with no human contact. He would survive and return.

He would dive to collect samples and contribute to the lab's ongoing research.

He would provide for his own food, water, electricity, and oxygen.

He would maintain the lab, log in data and run analyses.

He would work on the farms, growing land crops seemingly impossibly underwater, cleaning nets, refilling tanks, and more.

It was nothing new, strictly speaking.
Alone at the bottom of the lake,

he would survive,

learn the ways of the water,

surrounding him from all sides -

learn to share in its life, which

would be the life of his people.
He'd turned twenty-one the night before.

It was time for him to learn the secrets of the water that had swallowed him.
After a week, he would surface.
The entire village would be there: the village that had raised this child.
Dream House
Dream House is concerned with housing typologies and the fantasies that give rise to them. In an underwater environment, the tension between the emotional concept of a home and the architectural typology of a house can be reconsidered. Negotiating between the individual and community, private retreat and communal living, the mobile underwater house questions the balance between dehumanizing standardization and flamboyant formal expression, and additionally reverses the traditional solid/void, figure/ground relationship of the built form in space.

The story shows plans and sections of 5 types of residential units, an overall plan of the residences and housing types, views of the underwater units and playgrounds, and an overall massing of the community.
Yes, we've always wanted to live by the water...

...and this view is breathtaking!

Why, this is just the tip of the iceberg. 70% of our buildings and 90% of our farms are underwater.

There are far more interesting views beneath the surface, if you care to join me.

The water is, after all, crystal clear, thanks to the efforts of our farmers and researchers.

There are hanging gardens, floating houses, all sustainable and efficient...

The kids especially love the underwater playgrounds.
Perhaps you both will find your dream house here, like many of us have.

Let me show you around. This unit is empty, for now, but fully furnished.

We usually recommend these to new residents.

Now that we’re inside, we can detach the walkway,

release the water from the tanks - which, by the way, have filters so that the released water is cleaner than it was before -

and float to the surface.

This flexible family house converts to an open cabin when it surfaces.

Retract the roof and you have your own private dock.

Oh, and an operable skylight too! It can do so much in the winter, you know our winters...

Each unit has its own monitoring system, which tracks electricity and water usage. All these statistics are anonymously displayed in our Education Center.

The convertible outdoor area doubles up as a spacious living and dining room.

Of course, the master bedroom has a fantastic panoramic view...
But we have so much more! Let me show you the standard submerged houses.

Fully submerged, the house is free from anchorage to the ground, so it rotates easily. When the ceiling becomes a floor too, you get double the floor area.

In this standard 330sf studio, you can make your home at any depth in the lake.

One floor for the day, one for the night. One for rest and one for work; one private and one public.

Each house has the same docking unit that connects to the tunnels or jetties we have.

Many of us work from home, after all.

A transparent polylactide casing surrounds the whole house, filled with water that regulates its rotation.

We keep the standard houses simple.

There's a very nice economy about it.

If you're feeling adventurous, though, our new line of suitcase houses have proved very popular over the last couple of years.

Since we're underwater anyway, this doesn't obstruct any views out of the windows.
If you're looking for something more economical right now, we have the suitcase studio.

It's very cozy, at 230 square feet.

My son lives in one of these and he loves it.

The bedroom and living room share the same lighting and vertical space, so it doesn't feel cramped at all.

The walls and floors are all magnetic, so you don't have to worry about chairs falling on your head. That would be unfortunate.

Of course, it takes some getting used to.

Our designers have been coming up with some really innovative products. Magnetic fabrics and polymers have been so popular recently.

Never leave cooking unattended, as I'm sure you know...

If you don't cook or entertain very often, this floor is all you need for a good night's rest.

After all, most of us take our meals at the Common House.

There's really no need for all this redundancy.
Let me briefly show you the rotating house.
And of course, every house can dock at any of our 100+ connection points.

Sometimes people like to move around.

You usually find older families in the deeper dwellings...they get a little more attached to their spots.

We have no formal neighborhoods; informal ones develop naturally.

Each house is a private retreat amidst our communal life, so it's important that we have as much flexibility as possible.
Sometimes people want their own additions, too.

It's a little harder than usual since our houses are submarines, but we have our team of engineers.

They've done a lot of innovative design for our single-family residences.
Living underwater means that our houses are built to withstand floods, earthquakes, and similar natural occurrences.

Our children learn to swim and dive at a very early age.

We've always lived in a tiny flat in the middle of the city.

Exactly. Here, we are surrounded by water, not air: fullness, not emptiness.

Always a box in a grid, always ordered and suspended in the air.

Imagine if homes were not merely shelters from the outside elements, but places carved out from a large living fabric of earth and water.

It was terribly impersonal.
Why don’t you both stay for the weekend?
03
Moving Day
Moving Day explores the tradition of moving house:
what stays and what goes? In a floating community that
relocates itself by tradition every 50 years, what are the
rituals that evolve to make sense of this disruption? It is
also interested in the architectural implications of archival:
the attempt to physically store, record, or preserve the
intangible, and how that might manifest in a built form.
Moving Day makes reference to historical traditions of
Moving Day - in New York City and Quebec, for example -
when all leases in the city would expire at the same time,
and thousands of individuals simultaneously relocate.

The memory capsules and the Archive are depicted, with
interior views of the Common House. An elevation of the
entire built mass of the community is also shown.
It's been 50 years, who'd have guessed?

I was just a boy the last time we moved...

Wow, you were there?

You mean you saw the previous Archive? And the memory capsules?

Oh, I remember it well. You know those containers you got a week ago...

Tell us what it was like, won't you?

Yes, I put Mr Sunfish in!

Sleep tight, Mr Sunfish...

...so that some kid in the future will know there were fish like him once, when they're all extinct.
Yes, everyone gets their own capsule, and you put whatever you want in.

I put my pet rock in, the one I found at the bottom of the lake.

I'll miss you, pal.

I hope you put the photocopy in, not the original...

Shh...you're safe here.

All those rejected manuscripts...

Do you think the wine will last, honey?

Plants don't grow in that thing, you dimwit!

I've already locked it.

Your wedding dress? Are you out of your mind?

It's not like I'll use it again...

And who knows if they'll still have weddings then?

It's yours, yours alone.
50 years from today maybe someone else will open it,
or maybe you’ll open it yourself.

There’ll be many old forgotten names on those capsules, waiting to be remembered.

It’ll be like they were still here!

For a while, at least.
The Archive waits and watches at the bottom of the lake.

Its eyes are the outer layer of sensors and machinery that continually record the lake conditions in its immediate vicinity. A bank of data continues to be built up over its lifetime.

The heart of the Archive is where the capsules are stored, waiting.
The memory of our community,

put into little capsules and labelled and stored,

sheltered against wind and water and soil and time.
A sea of objects...

A field of containers...

A city of memories...
And now it's all the way at the bottom of the lake!

Yes, so people in the future can find it.

You know what they say...

Our community moves, but our memories and actions remain.

Moving day again, right on time

50 years since we anchored over here, started the farms, all that.

The final 10-year report's getting proofread, and our food stores are full...

Time to move on.

Now the reefs are doing well...

No way, that's always been a reef...

The wetland?

Look, it's the old Archive!

Ah, McKinney's Point, where we used to be...

Yes, we used to have houses and farms there.

They weren't as fancy as the ones we have now, and in those days more of us lived on the surface...

Aw, it's not half as fun on the surface!
It was opening the memory capsules that was the most fun...

You got to look at all of them all along the gallery, and pick the one you wanted.

Some people like the mayor and head farmer get official ones,

but everyone gets to choose and remember.
It was like opening presents on Christmas day, but all through the night while the houses sailed.

To the new place?

Yes, it'll take a few days to get there.

Will there be playgrounds?
The Nuclear Millennium: Collection of Journal Entries about the Nuclear World

Laura Cvetkovski, A&S (Chemistry)
Akira Shindo, College of Engineering
Jia Yi Wang, A&S (Biology)
Introduction

I leave this book open to anyone who feels the need to express their past. It can be a happy, sad, or even a mysterious experience; anything of importance is welcomed. However, the experience must be related to nuclear energy in some way or another. By doing so, future generations will have a better understanding of how humanity has developed alongside nuclear energy. I do not know how anyone will come upon this book. If you are reading this, then I assume you have acquired this book somehow. If you decide to write in this book, please do not keep the book to yourself. The point of this journal entry collection is to spread the knowledge to others and future generations to come. Once you finish, give it to a friend, donate it to a library, put in a time capsule, or do anything that will preserve the knowledge stored in this book. I assume that this book will be around for a while, so I have made this book with a material that will not whither for a very long time. To start this off, I will place this book in Olin Library in Cornell University.

-Anonymous, 2016
Journal Entry #1:

I wrote this journal entry when I was a college student. Things were a lot different then. I want everyone to read this to see how things were, once we all had hope for the future. Reading these journal entries from when I was young and naive will give insight to future generations into what course the world could have taken. We could have saved the earth by harnessing its natural resources. I hope by reading this, you will see that.
I stepped outside. The rainy wind stung me as I hastily pulled out my gloves and umbrella, neither equipped to handle the harsh Ithaca winter. Knowing that, as the earth slowly absorbed carbon dioxide, the gradual reversal of global warming would lower the temperatures even more made me shiver. I had a hard time appreciating the advancements of the Energy Revolution when it meant that the weather would become slightly more unbearable, even if it would be many more years before it happened. The Energy Revolution had been on my mind all day since my 8:00 AM History of Energy class at Cornell University in which the professor explained the class’s upcoming research paper on the topic. The key would be to focus on only a specific aspect of the Energy Revolution, and I was planning to approach it from a cultural and societal perspective. I opened the door to Olin library and could immediately feel my body begin to defrost.

How the Energy Revolution Empowered the Individual and Changed American Culture. I had been staring at these words for half an hour. I assured myself that a title page was better than a blank page. I had ambiguous ideas about what I wanted to say in the paper but had a difficult time thinking of how to verbalize them.

Most experts agreed that the illegalization of fossil fuels was the inciting incident of the Energy Revolution. I decided that I too should begin here, while also including background information on the important events and changing of ideas that helped cause the revolution.

How the Energy Revolution Empowered the Individual and Changed American Culture

From 1880 to 2050, the average worldwide temperature rose 3.2 degrees celsius. In the period from 2050 until the present, 2090, temperatures have been generally stable. This 40-year delay from when fossil fuels were outlawed to when the temperature finally stopped increasing occurred because the earth had a delayed response to the atmospheric changes. Carbon gas emissions from fossil fuels plagued the earth for half a century after they were outlawed. This amount of time would have been longer if not for photosynthesizing carbon capture plants that expedited the process of global cooling. However, these plants could only aid in sustainability efforts and the reversal of global warming. Sea levels still rose 1.6 meters from 1880 to 2050 and many species of arctic animals came dangerously close to extinction as the effects of global warming melted their habitat.

In the mid 19th century scientists first considered the possibility of the greenhouse effect; two centuries later fossil fuels were outlawed by the American government as a source of energy. By 2041 when the law was put into place, the national government had been taking steps for several decades to ensure that the transition from fossil fuels to sustainable energy sources would be as painless as possible. This legislation change signified a gradual shift in national energy usage that had come to a climax. Many were concerned about what state the U.S. economy would be in once the coal industry dissolved, but because the process took place over so many years, most of the large coal companies had sufficient time to transition to another commodity before the law was passed. Several even switched to sustainable energy and provided training for their employees to adapt to their career change and to climate change. The negative effect on the economy caused by the outlaw of fossil fuels was not nearly as significant as coal supporters had worried it would be.

The Energy Revolution transformed how Americans obtain energy and their individual and collective environmental output, but it had cultural effects as well. Energy production and distribution became decentralized as sustainable energy power plants were made to provide energy for the community in its close proximity. No longer were large government companies working intimately with the national government in control of a majority of American’s energy sources.
In 2019 when President Trump’s destructive environmental policies encouraged skepticism of the need for environmental protection policies and of climate change itself, Cornell University set a precedent for many other organizations when it became dependent on its unique geothermal system for energy. Cornell’s system was the first of its kind in the United States, having the ability to distribute the hot underground water to multiple different buildings so that one centralized system could power the entire campus. Today, a modernized version of that same system from over a century ago is the main source of energy for the University. After Cornell developed its geothermal system, other universities switched to similar systems to combat not only climate change but also societal hostility towards environmental awareness.

In modern times, the integration of energy collecting mechanisms and everyday objects has increased exponentially. New technologies attempted to utilize every sustainable energy source possible. Gyms are now almost always built with workout machines that store the small amounts of energy produced by a step. Roads, bridges, and other infrastructure throughout the country incorporate energy collection in their designs so that the small amounts of energy that vehicles exert while going down hill is conserved and reused due to slight displacements the cars create going down the road. The shift to a sustainable energy system was the most general and fundamental result of the Energy Revolution, but the Personal Energy movement was an important subsection of the revolution that resulted in a culture of environmental awareness and autonomy over energy.

Solar clothing was essential to the dawn of the Personal Energy movement. This movement was a key factor in the transition from a non-democratic energy system to local and more individual-centric energy systems. Scientists and designers worked together to create clothing embedded with fibers that collect solar power and convert it to energy. In 2035 solar clothing was released on the market. This type of direct, immediate way of collecting solar power allows the individual person to have a better understanding of where their energy comes from and how much energy they use than if the energy were to come from a central location. Each person having the ability to be partly in control of the collection and conversion of their energy empowers the individual and inspires further innovation.

Long-term studies performed on children who consistently wore solar clothing showed a positive correlation between the wearing and usage of the clothing and creativity and inventiveness. When children know that they are independently collecting their own solar energy and seeing firsthand how that energy can then be used, it is an impetus for them to look for solutions to more problems on their own. Curious and innovative children inspired to solve small problems grow up to be the professionals coming up with creative solutions to large scale problems. Helping children realize their potential to find solutions early on in their lives created a culture that fostered innovation more so than it had previously.

Thirteen-year-old James Becker, one of said curious children, was practicing with his middle school cross country team while wearing solar clothing when he first considered the possibility of expanding personal energy collection so that the energy expended during exercise could be collected and reused like solar energy. As a project for his science fair, he studied the mechanics of solar clothing and adjusted them to a pair of shoes that collected energy with each step the wearer takes. Since then his original shoe design has been modified and sold all around the world. Like solar clothing, these shoes come with a small attachment that stores the collected energy and can be used to power small, highly efficient technological devices. Allowing people of any age to have a basic understanding of a process that is integral to modern humanity empowers them to believe that they can solve difficult problems and make a difference in the world.
The crowd erupted into applause as New York Senator and presidential candidate John Williams walked on stage to the podium. I was sitting in Bailey Hall, preparing to take notes for my latest History of Energy assignment. He waved diplomatically to the large group of college students and waited for silence.

Williams began talking about his energy ideas twenty minutes into the speech. I vaguely knew that his company had claimed to be developing a way to use fossil fuels as energy in a way that wouldn’t harm the earth. To me, it sounded too good to be true.

“Right now, our country is running mainly on fusion, solar, wind, geothermal, and hydropower. None of these energy sources are without significant flaws, however. Let’s start with fusion power. What so many thought would be this perfect, magical source of energy is in fact quite flawed. We all know how frustrating it is when our local fusion reactor malfunctions and it takes days or even weeks for maintenance to fix it. And what about solar power- it’s great when it’s sunny and the panels on top of our houses and the energy-collecting fibers in our clothing and shoes have enough energy to power our devices, but once again we all know what happens when the weather isn’t so perfect. If you’re rich enough to afford one, you can use your backup battery. If you’re a part of the majority of the population, however, you have to depend on the low-quality energy distributed by state and national governments that is below the amount that the average American family needs. Those who live near wind, geothermal, or hydro plants get to reap the benefits of them, but these plants require specialized locations and are decentralized so that only those in direct proximity are able to use the energy. We can do better than this, America. It’s time for a change. We need to go back to our energy roots and legalize the use of fossil fuels.

“Now, I’m not talking about the old-fashioned coal-burning. No, the system that the scientists in my lab are developing will be much more advanced. Minimal destruction to the environment will be required to mine the fuel in this new system. This type of fossil fuel burning will not cause harm to the ozone layer and will not create any type of greenhouse effect like the old fossil fuel burning did. I won’t bore you with the science, but if you’re interested it’s all williamsinc.com” Ava opened a new tab with this website as the Senator continued to talk about the benefits of his new energy system. She looked at the information under the tab about energy. There was suspiciously very little of the actual science that he had just assured the audience was there. The process was described in vague terms that sounded too simplistic to work. According to the website, scientists could drill for oil by inserting a powerful tube into the earth with minimal destruction to the environment. Apparently, scientists were developing a way to collect harmful emissions before they could contaminate the air and cleanly dispose of them. This was all hypothetical though as none of the technology had actually been developed yet. Ava was skeptical of the sparse explanations that failed to actually explain the process. His solution had no valid evidence and no means to be accomplished.

“That’s why, if I become President, I will make an executive order to make fossil fuels legal again. The only way we can continue to progress as a nation is if we have a stable energy source backing our technology. In order for my scientists to put their plans into action and test their designs, we need to legalize fossil fuels for energy, with some restrictions of course. This is a necessary next step for America, which is why a vote for John Williams is a vote for the future. Thank you Cornell University!” Amidst standing ovations and deafening applause, I was lost in her thoughts attempting to process everything. Everyone around her was engaged in lively conversation, discussing the Senator’s ideas. I knew what he was saying sounded good, but if scientists who had researched the topic for many years in the 21st century couldn’t come up with any effective ways to use fossil fuels in a non-harmful way, I had a hard time believing that now, when fossil fuel burning was illegal, his company could find the solution. I was surprised by the audience’s seemingly blind optimism.

Analysis of Senator Williams’ Energy Proposal
There will never be a perfect energy source to power the world. Flaws are an inevitable aspect of this system as they are with any system. As Senator Williams explained at his talk to Cornell this past weekend, nuclear fusion reactors often need maintenance support to run well and solar power requires nice, cloud-free weather. Our methods of collecting energy are highly advanced and cutting-edge, but they are not perfect.

The scientists at Williams Inc. are so far away from developing the necessary technology that burning fossil fuels would do a lot of harm to the environment before it did any good. Additionally, voters should consider how significantly Williams will benefit if his plan succeeds. He referred to the professionals attempting to develop the environmentally safe system to burn fossil fuels as “my scientists” because they are working for his company. Also, Williams owns large portions of land in the U.S. that are known to have large underground oil reserves. The land became much less valuable many years ago once fossil fuels became illegal, but the value would skyrocket if the oil could be used for fuel. His biggest motivation to legalize the use of fossil fuels for energy appears to be to make himself richer and for his company to gain success. This opposes his claims to be motivated by improving the U.S. as a nation and suggests he plans to make national decisions for the benefit of himself.

Our energy system may not be perfect, but it is better. It would be a huge mistake to repeat history and go back to fossil fuels. Only by maintaining the current sustainable energy system will a clean, liveable earth be ensured for future generations.
Journal Entry #2

I found this book in a nearby public library. The introduction gave me a particular interest in writing my own experience with nuclear energy. This event happened just about a year ago, and it has had a profound impact on my life. I thought this was worth sharing with future generations to give an idea of what nuclear energy can potentially do. The following is my experience.
No one believed him. Not a single bit. What a big mistake that was. I should have listened to him and convinced our family to move somewhere else before that day. The day, when everything changed.

My alarm went off at 7:30AM. I woke up as usual. I did my daily morning routine: stretch for a bit, get changed, and check outside my window. Most of the time, the smog covered the sky, and I rarely saw the beautiful blue color. Humans used too much fossil fuel, which caused the pollution. Although fossil fuels ran out in 2088, there was still smog in some places. I wish I could look up and see the blue sky like it’s a normal thing some day.

I went off to school as usual with Amanda, my little sister. As I walked out, I heard my mom calling for me. “Jack, you forgot your lunch!” She handed me a brown paper bag with something inside it. It was a bacon and cheese sandwich, my favorite. “Okay have fun in school,” she said. She went back home, and we continued to walk.

Every time we go to school, there was one place that I always felt uncomfortable walking through. It was the corner where the homeless guy stayed. His name is Andrew Snyder, my dad’s ex-coworker. My dad worked at the Morristown nuclear reactor. Mr. Snyder worked with my dad until one day, when Mr. Snyder started acting strangely. He started shouting that “Morristown is doomed! Everyone needs to evacuate immediately!”

His coworkers, including my dad, tried to calm him down, but he continued to freak out. Something has happened to him. He continued to act strangely for a couple more hours until his boss fired him for being very disruptive at work. No one still understands why Mr. Snyder acted like that. Ever since that incident, he could not find another job. He got kicked out of his house and was living as a homeless person. Every time anyone walked past him, he would shout at them: “Get out of here! Save yourselves! Something terrible will happen to the reactor!” No one in the nearby neighborhood believed him. Morristown is located in possibly the safest place for a nuclear reactor. There hasn’t been an earthquake in the past 400 years, and there have never been any other natural disasters on record that could harm the reactor in any way.

After leaving home, walking past Mr. Snyder, and getting shouted at, we finally arrived at our school. Morristown is a fairly small town, so there is only one school for elementary and middle school. I’m in 8th grade right now while Amanda is still in 3rd grade, but we still attend the same school.

In class, I always sit in the seat next to the window. Whenever I get bored with class, I just enjoyed the view outside. I could sometimes see the Morristown nuclear reactor in the distance on a sunny day. Whenever I see it, I wonder how dad’s work is going. My dad didn’t really talk about how his work was back home, so I never knew what it’s like to work there.

My dad started working there as soon as the reactor was built. It was actually a strange phenomenon to see the many nuclear reactors being built across the world. Ever since we ran out of fossil fuels in 2088, humans started to rely heavily on nuclear energy. Fortunately, scientists invented the “absolute safety” mechanism in 2044. This tool effectively counters any dangers that can potentially cause a nuclear meltdown. With this invention, there have been no nuclear disasters since Fukushima in 2011. Ever since the invention of the “absolute safety” mechanism, nuclear energy became a very safe and environmentally friendly option. Many countries started to make more nuclear reactors not only to produce large amounts of energy, but also to do so without
polluting the environment as much. When fossil fuels finally ran out, this process expedited, and over 100 reactors were built in America since 2088. Morristown nuclear reactor is one of them.

Nuclear energy is used in various parts of our life today. It’s used to run electricity in houses, to fuel our self-driving maglev cars, to power the warp technology that allows rockets to travel to Pluto and more. Especially since reactors use nuclear fusion to generate power, it generates far more energy than the reactors from the early 21st century, which used nuclear fission. It would be impossible to use large amounts of energy without substantially harming the environment without nuclear energy. This is all thanks to the “absolute safety” mechanism. Very few people fear a nuclear meltdown anymore because it’s almost impossible to happen. Like many others, Morristown nuclear reactor had the “absolute safety” mechanism implemented, so we were pretty sure we would be safe.

Or so we thought.

As I was staring out the window, I felt a little shake. It was a small vibration, but it was certainly something that I don’t experience everyday. A few seconds later, I felt a much larger shake. Everyone in the class started panicking. It was an earthquake! Our teacher told us to evacuate in the school yard. We all rushed down the stairs and out the building. When I went outside, Amanda was already there. She looked terrified. Everyone was like that. Morristown has never experienced an earthquake in 400 years. Not only that, this earthquake was massive. It had a magnitude of 9.7, the biggest ever recorded in human history. The earthquake continued for about two minutes. Shortly after the quake stopped, there was an announcement from our teacher. “Students, we will be evacuating to a place away from the reactor since the quake could have damaged the reactor severely and potentially cause it to explode. We understand that the safety mechanism is implemented in the reactor, but this earthquake was massive. We will evacuate just in case if the safety mechanism fails. Our destination is Bedford, which is about 30 miles away from here. Follow your teacher’s guidance and get on the buses so we can evacuate as soon as possible.”

The maglev buses travel at around 600 miles per hour, which would take us to Bedford in about 5 minutes. On our way, we saw a bunch of maglev cars on the highway. They were all fleeing Morristown like us. I became worried about my parents. Especially dad since he works at the reactor. I called them on my iHologram, but they didn’t pick up. Amanda was continuously asking me what’s going to happen to Morristown if the reactor actually explodes. I could have told her about the radiation that will spread, but at the same time, I didn’t want to get her worried. So I just answered: “I’m not sure.”

Once we arrived, we stayed at the gymnasium of Bedford middle school. It was the only building available that could keep a large group of children safe. Shortly after we arrived, there was a large booming sound from the distance. I immediately knew what that was. The reactor exploded, and the sound could be heard from Bedford. Amanda started to burst into tears because she was worried about dad. I wanted to cry too, but I held it in because I felt like I needed to stay strong in times like these, especially when I’m the older brother.

Without any contact from dad and mom, we spent the night at the gymnasium.

The next morning, my teacher came up to me and told me to follow him. We walked outside the gymnasium and he stopped at an empty corridor. He took a deep sigh and told me the news that I feared the most. “The safety mechanism of the reactor was not designed to withstand an earthquake of that magnitude, and the reactor exploded. Jack, your mother was late in evacuating, and she was still near the reactor when the explosion happened. When she was screened for radiation contamination before exiting Morristown, she was determined to be severely contaminated with radiation. She is at a hospital now to get treatment for acute radiation poisoning. Apparently, your father was at the reactor when it exploded. I’m very sorry to inform you that... that your father
is no longer alive.” It was as if an arrow pierced my heart. I was not physically hurt, but it was the most painful thing that I have ever experienced. I started crying. It was just too much.

When I first visited mom, I was shocked to see her. She lost all her hair, and there were some red spots on her skin. I learned that this was one of the effects of radiation poisoning. Amanda and I visited her every day, but it was depressing to see her get weaker day by day. Her skin condition got worse, she seemed to be very fatigued everyday. Infections and dehydration continued to weaken her, and there really was no sign of improvement.

After about three weeks, she passed away.

Ultimately, the government made temporary houses for evacuees and subsidized us. That didn’t mean anything to me. No matter what the government does, it cannot give me back my parents.

Nuclear energy is dangerous. It may be useful, but the catastrophe that can potentially happen is massive. No matter how small the chances of such event happening, it can still destroy people’s lives completely. I have learned this fact in school but always thought that such tragedy would never occur to me. I was wrong. It destroyed my family and my life. It is a scar that can never be completely healed.
Journal Entry #3

I found this book in an antique shop in Chicago, Illinois. My life as of now isn’t very interesting although I am working for a research company that is focused on developing genetic engineering to combat the effects of radiation. For people in the 24th century, the effects of nuclear radiation from constant nuclear energy accidents can be seen every day in the physical manifestation of its effects on our DNA. Over 20 years ago when I was 15 years old, I kept a journal that I would write in occasionally. This was my first entry.
I sat at the dining table testing out my new carbon steel-enhanced Biotech 6.0 arm listening to the morning news. My parents were busy in their study designing a new hologram for the MADD protest later that night.

My mom is a project designer for Mothers Against DNA Deformities. Years ago, MADD was actually for mothers against drunk driving, but nobody drinks alcohol or even drives their own cars these days. According to my biology teacher, “the current 26.3% rate of moderate to severe birth deformities for live births ranging from speech impediments to reptile-like skin can only be attributed to the high levels of radioactive materials circling in the atmosphere and drinking water supplies in the last two centuries”. If you walk in the streets of most cities, I think you would definitely see some graphic holograms of deformed children displayed on the streets. If you stay long enough, you will most definitely see a group of angry mothers protesting in the streets about their worries for future generations of children.

I was born missing my right arm but it was easily replaced with a bionic limb. In fact, I want all of my limbs to be replaced with bionics. Even all of my aunts and uncles are amputating their healthy limbs to be replaced with the latest Biotech 7.1 series limbs. Apparently to some people, the only valid reason for keeping your original flesh-and-bone limbs is that you can actually feel pain which “makes you more human”. Actually, I think it would be cool to have 3 more bulletproof limbs that I can store snacks in.

I think the real issue with defective DNA is that it always leads to a significantly shorter lifespan. The average lifespan for a person born two centuries ago was the highest ever recorded at 119.4 years. I don’t think I will be able to live for 30 more years even though I am receiving many organ transplants. Even though this might sound sad, many of my friends are going through the same situation as well.

As I listened to the weather forecast, I figured that it would be a great day to take a walk with my sun umbrella since the sun was going to shine very brightly through the afternoon. My service robot named Sonny helped me tuck my hair under my anti-radiation helmet and buckle my anti-radiation chest shields in place. In order to increase my energy efficiency score and receive a coveted gold star from the city government, I was given the incentive to generate my own energy for summer break.

When I was fully geared, I grabbed my sun umbrella by the front door and entered the lift that was a few steps from the front entrance of my home. Since I live in an underground radioactive fallout-proof home, I have to transport to the surface every time I need to complete a task. I only live 50 feet underground, so I am honestly dreading the day my parents will use their savings to purchase a house in the fancier neighborhoods that are even deeper underground.

As I stepped outside for the first time in four days, I admired the Robocops patrolling the major avenues with sleek ray guns that glistened under the sunlight. The towering oblique-shaped office buildings in the distance casted odd geometric shadows on the mostly empty streets. I carefully opened my iridescent-colored sun umbrella to begin charging it. I completely emptied the energy contents playing virtual reality games with my friends last night so I would need to stay outside for quite a while. After attaching it to the holster on my right arm, I began my journey to the observatory deck above my school building where most of my classmates go to talk and play.

Since it was still very early in the morning, only Azura sat at the observatory deck to charge her sun umbrella as well.
“When was the last time you saw Juno?” Azura questioned me when I sat down in the open chair besides her. “I heard his new transplants were unsuccessful so he has been stuck in the hospital for one month.”

“Juno’s mother actually came to my house last week and I found out that she’s the CEO of MADD. She was a really scary combination of sad and angry. My parents were up every night for the past week making new holograms for her,” I replied, remembering her cold, sullen face when she walked through the front door.

When I peered down 300 feet into the streets below I saw several MADD advertisements in the distance. These hologram artwork ads with horribly deformed children as their centerpieces always include routing numbers where people can donate to various research organizations.

Azura’s white hair slipped out of her anti-radiation helmet as she gasped. “Do you think Juno is going to die?” she dared to whisper.

“I hope not,” I sighed. After hearing Juno’s mother scream and cry last week as I awkwardly sat in my room, I knew that Juno was probably on his deathbed. Azura was likely aware of this fact as well, but it is very difficult to state such an unfortunate fact out loud.

“Why do we even keep all those nuclear plants around? People are moving underground and wear metal shields. And kids still end up in hospitals,” Azura said moodily as she voiced her thoughts.

“I think that’s why our parents are always so angry,” I replied. “They can’t give up nuclear energy for some reason even though it is making their children sick.” I don’t understand most things, especially chemistry and physics, but I do understand that it is hard for loving parents to outlive their own children.
Journal Entry #4

I have kept this book to myself for several weeks after finding it in my local library as I was intending to write an entry about my current work in the in China’s Ministry of Science and Technology which is heavily tied to nuclear energy. However, my experience today is certainly worth writing about.
I was waiting patiently in my office to receive feedback from the Genetic Center for the results of my fertilized eggs. If the genetic cleansing was successful, then my husband and I would finally be able to produce non-defective children that would live healthy lives independent of bionics.

As soon as I saw a new document appear in my inbox, I immediately opened the contents to receive the good news. The editing of defective DNA was finally complete. My flattened cranium, lack of nostrils, and missing limbs as well as my husband’s severe lung and liver ailments would not be passed down to our offspring. They would look as perfect and be as healthy as children were originally over 1,000 years in the past. My eyes suddenly filled with tears as I rapidly forwarded the document to my husband as well as our immediate family.

The human genome was studied intensively by all nations starting over one millennia in the past, but only the research agencies of the American Alliance across the Pacific Ocean were truly able to harness and manipulate all DNA through widespread public donations and funding. Although the American Alliance openly shared their genetic engineering technology, the extremely conservative A.I. programs leading the Chinese Union were not open to accepting the new technology that was restoring the health and purity of future generations. After battling the conservative A.I. programs for a decade to accept DNA cleansing and waiting three years for my own successful DNA cleansing, I was basking in the fulfilling results of my hard work.

I logged into the homepage of the New Shanghai Science Hospital to register for an anti-radioactivity umbilical chamber where my first child would be grown. After I made the deposit, I increased the temperature in my bodysuit in preparation for the cold weather and prepared to travel to Wayfare Park on the easternmost end of New Shanghai to refresh my mind.

“Please proofread the solar funding proposals and forward them to the directors after I leave today,” I instructed my A.I. assistant robot. If A.I. could be legally programmed to express emotions and empathize with humans, then I would actually have had another sentient being to celebrate the good news with that afternoon.

After journeying to the outermost edge of Wayfare park, I peered downwards over the ledge towards the surface of the Earth over 11 miles below my feet. Since the vast majority of human-occupied buildings were constructed underground, I could only identify the various wind plants and nuclear power plants littered throughout the city of Shanghai. There were still small bands of people that refused to move to the colonies of floating SpacePods and continued living in the underground neighborhoods of Shanghai. Still, I was disturbed by the fact that I could never pinpoint any signs of movement on the surface below.

These days, I feel somewhat guilty for my happiness. My early childhood on the surface was filled with anti-radiation imageries. Now, I could forget about the radiation that man left on the Earth to plague the planet for hundreds of millennia and live a worry-free life in the stratosphere. The only visible remnants of the radiation were the visibly obvious genetic defects that were present in the overwhelming majority of the Chinese Union population. Fortunately, by the next generation, all of these defects would be purged through genetic cleansing and life would return to a purer state where people didn’t require an average of 9 bionic limbs and 13 transplanted organs throughout their lifetimes to survive.
I heard several loud shouts from a large group of uniformed students a short distance away from me. As I turned my head to figure out what the commotion was about, a student suddenly bellowed, “The Pudong plant is having a meltdown!” Within minutes, hordes of people rushed towards the glass observatory walls to record the smoke erupting from the plant below. I noticed that most people were expressing how “cool” it was to observe a meltdown with 11 miles of atmosphere and several layers of highly protective glass protecting them.

Although the accident could potentially destroy the livelihoods of those living in Old Shanghai, I couldn’t help but realize that it would only lead to more paperwork in the office as well as a slight dip in the already plentiful energy supplies for those living in New Shanghai. After the service robots on the surface repaired the plant within several years, New Shanghai would return to a state of normalcy. Humanity saved itself from fossil fuels during the Energy Revolution, but they were on the verge of dephasing all of its nuclear power plants several centuries ago. Now that nuclear energy is basically sustainable, the possibilities for the future seem endless.
Exploding Horizons

Gregory Kaiser, College of Engineering
Tianmu Yu, A&S (Psychology and Economics)
Earth was a glorified generator. There were turbines in the water, turbines on the hills, solar cells on farms, in gardens, in backyards, and on rooftops of skyscrapers. Much of the potential energy of the Earth’s useful solar flux and lunar gravitational potential was captured through these processes. Power generation was divided between the individual and the state with mutual respect. Wind energy which lines the contours of the land was supplied by large control systems and high efficiency transmission lines, while solar energy remained local. Even in dark and cold climates, large arrays captured light effectively. Though invisible to many, rugged machines under the waves tapped into tidal rhythms, absorbing the dynamic pressure of water through the pull and push of the Moon. In this way, the people on Earth began to connect to the universe and understand that their sources of life lie far away in space. The distant Moon and Sun became symbols of the purity of modern energy. While secularism dominated, a kind of worship still existed in humans and found an outlet in their main celestial bodies. They trusted the long cycles of the solar system because the Sun always rises and the Moon always orbits and these energies were seemingly infinite and unending. The time horizon for energy consumption became unquestionably distant. The dignity of Earth came from the happiness of its people, and from the surplus of energy and food.

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Wind buffeted against a sail, propelling a woman forward with great speed along a coastline full of people. The people were small to her, and she did not see their faces. She scanned the beach with her eyes, trying to capture the immense number of beings, but the image was a blur of their multicolored skin, clothing, and belongings. Intent again on her sail, she saw the air blowing it into a rounded triangle, edges flapping, yet somehow rigid with constant force. Air billowed around her and over the structure of her vehicle and she suddenly felt greater than a human. She was a part of the sail and part of the board and a part of the great movement of air across the earth and along this coastline. She could barely understand how such a large system existed around her. The woman pulled harder on the sail, tightening with her right muscled arm and with her left: a piston actuated surrogate.

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The United Nations announced that thermonuclear fusion at the core of the Sun was reaching its limit as it exhausted its hydrogen fuel. Humanity sent thousands of probes to investigate this possibility, and every mathematical model and prediction showed that the “red-giant” phase of the sun would happen ahead of schedule. A helium flash will occur when the combination of the Sun’s internal pressure and temperature reaches a critical value, long after our puny planet is evaporated like a mote of dust caught in a furnace. Instantly the nations of the world divided into two parties: the Earthers and the Wanderers. The Earthers wanted to stay and hope for the best, living out the rest of humanity’s days in peace on the planet that served us well, to die along with our spaceship like any good captain. Eventually many Earthers began to disbelieve the mathematical models, telling their children and eventually themselves that this disaster was not possible and would never happen. The Wanderers believed humanity should seek longevity by escaping to outer planets and further into the stars, when the time came.

Animosity and resentment grew between the two groups. The Earthers seemed cowardly to the Wanderers for giving up so quickly to the prospect of death. Later they seemed ignorant or stupid for not preparing for the worst. The Wanderers saw themselves as pragmatists, survivors, and as the true heritage of mankind which perseveres through any trial or tribulation. By continuing the human race, they would be the ultimate natural selection for those who value life over death. To the Earthers, the Wanderers were both cowardly and desperate, clinging to every chance at life no matter the cost. Like children grasping and clawing at strangers in shallow water, the Wanderers fear death and love life with no concept of consequence for those around them.
or for their own moral center. The Earthers saw themselves as honorable children of the Sun and Moon, who were given life by the world on which they live and who will allow their lives to be taken back to the heavens in a glorious fireball. Unfortunately, both groups bore weapons and an all too human propensity for war...

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After several decades of research and development, the Wanderers realized that fission power is not viable for interstellar travel. The incredibly high energy demand alone was too much, even for such a dense energy source, not to mention the collateral waste and potential for disastrous meltdown on generational ships sent into deep space with a need for self-sufficiency. They put their efforts into magnetic confinement fusion, but were hindered by the thrust to weight ratio for such complex machinery. Science stumbled upon a miracle: magnetized target fusion. The hydrogen-isotope fuel is initially confined at a low density in a magnetic field then heated into a plasma shot which slams into an intricate heat-to-thrust converter at much higher efficiencies than the earlier stellarator models. The entire process resembles a massive gun of light, and the cyan color coming from these high efficiency engines became a romantic trope of popular culture. By harnessing our sun’s energy, we began to emulate it, creating our own centers of Solar worship on board: The Engines. Humans felt like they had rediscovered fire itself and prepared to carry pieces of the Sun with us throughout the cold dark expanse of interstellar space like torches through the wilderness back on Earth. With a plan to move first to Mars, buying time and testing their travel skills and tools, the Wanderers set out...
Diary Entry
Earther Colony 5
The year is __________

Four days ago, Michiko went on a trip above ground. She never came back. I heard others were going missing, but she didn’t seem like the type to take the risk of going alone. Some say that people are joining the Wanderers on Mars. I think it’s already too late...

The priests told us many times that the Sun was infinite and unending. Scientists agreed that for billions of years, we would be safe on Earth. In the textbooks, we read of a great panic that swept over our planet, motivating almost half the population to run from the planet further into the cosmos. My ancestors did not believe, and did not leave. We came underground, we were told, to escape the war that broke out on the surface, and to stay away from the invisible radiation that plagues the wildlife above. Horror stories of two-headed animals and bears with ten claws on each paw haunted children’s dreams.

I remember only a year ago, when Michiko offered to show me something “unbelievable” above ground. She brought me through a series of tunnels and elevators to an observation deck at a height of 5,000 meters. The room was dark but she knew exactly where to go. An old monitor hummed and clicked to a pale form of life and showed me our great Sun. Though we never stepped outside, I trusted her telescope in which I saw the Sun greatly enlarged, red, visibly undulating, and full of dark spots. I began to hum the prayer I had known all my life, in praise of the life-giver, the light-bringer, the one that guides, and the energy that binds us all.

My friend broke my focus. “This is the real sun, not the one our teachers show in the model of the solar system, not the one our scientists “gather data from”. Don’t you see? The Sun is in critical condition. It’s going to explode.” She became frantic, pacing with heavy steps back and forth, breathing hard and sighing without her voice, as if suppressing a yell. “The Wanderers were right. Our families were wrong. We were deceived! We have to get off this planet, or at least get our kids off; we have to do something!”

“How many people have you told?” I asked, wondering how to tell my parents this news, how to tell the entire underground this news, without being found out by the leadership who had been lying to us.

“I’m about to tell as many people as I can in person, the way I’m telling you, to avoid being tracked over the comm system. Then, I think we should let news spread by word of mouth. Rumors are harder to kill than messengers…”

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Earthlings demanded a migration effort right away. After the public uncovered their lies, the Earth leadership quickly began pleading with the Wanderer government on Mars to allow immigrants to join them. They already had a colony, well structured, well ordered, and sustainable (for the time being): a web of bubbled homes and tunnel connections from the city center to the farthest farmland. Unfortunately, the planet was naturally dead and was sustained artificially. The atmospheric cycle was limited to a single body of water, generated laboriously from warming water in the soil, and irrigation was difficult to balance with thirst. To allow immigrants would put too much of a burden on their already difficult-to-maintain agriculture system on such a barren world. A central power existed to try and create a local atmosphere through greenhouse gas factories, constantly combating loss due to strong and unmitigated solar wind stripping the air away. Magnetic shielding from charged cosmic rays was only be provided to some, and fissile materials in the Martian soil supplemented power to a limited extent. Energy was stored inside methane instead of batteries, created by a reaction of water and carbon dioxide in the air.

This leadership was harsh, their hearts hardened by the difficulties of frontier survival. The dignity of Mars
came from a protection of the farmland and crops that sustain life. Unknowingly passed on by Earth was the myth of Ares and the belief that force and state power are the strongest way to secure peace. The harvest was protected by the power, and the power sustained by the harvest. When one waned, therefore, the other faltered. Happenstantial loss of crop yield from influx of people would cause a collapse of this system, so Mars became socially toxic and the Earthers were rejected. Soon, requests for settlement became demands. Old hostility became aggression. Threats became actions…

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Glare glinted across the surface of a satellite, rotating slowly along its major axis. Solar wind invisibly swept into dark sails unfolded to their full surface area. No sound came from this wind. No light was seen. But a pilot watched velocity change steadily on the monitor. He tried to forget the streams of cosmic ray particles washing over his brain, threatening to short circuit its intricate connections, while supplying momentum to his vehicle in space. Below, beings couldn't be seen, only the color of a blue patch of water and a circle of green land. Focused, the pilot looked to his horizon: a curved and hazy atmosphere meeting the dark emptiness of space. Because his consciousness laid within the machinery living on stacked parallel circuits, he took readings of the quality of the atmosphere using sensors as if they were fingers and arms and eyes. A light flashed below and an object burned through the atmosphere, headed downwards, leaving a thin trail of smoke that abruptly cut off. The pilot felt a circuit close in his neural network and a tingle in his belly: a nuclear engine powered by a small amount of high density radioactive fuel. The decay of matter fueled his existence, and now the decay of matter will attempt to end the existence of his colonial creators. A mushroom silently grew from the edge of the green part of the red world…
Diary Entry
Earther Colony 5
The year is _______

Sorry, it has been a while since I wrote something down. It is tough living underground for so long. I'm trapped here because the temperature has been fluctuating between negative 130 degrees to 220 degrees on the surface. It's funny how I came down here because of a fake war, and stayed because of a real disaster...I was born in the pre-Wandering era, and now we are in the Era of Escape. Life has been different, but I made my decision to stay.

Even though I know that it is useless for me to learn anything, I enjoy reading about the history of mankind on this planet. When I look at history, I found it surprising how books and movies portrayed society. I do not understand why humans spent so much time pondering about their own emotions. We used to be existentialists who tried to compensate for the incomprehensibility of nature by categorizing things we could not understand with aesthetic values. Whether with technology or fine arts, we pushed the envelope further and further to re-experience the sublimity of new and uncanny creations. It has never been difficult for us to sense beauty. But it is merely a means of self-deception. We found the galaxy beautiful, but were terrified of the incomprehensibility of it. This terror thrilled us, and this encounter polarized our society. Some ran away from it, under the ground, like me. Some ran towards it, seeking thrill and survival. Eventually even those on Earth felt the call of the universe's deepest void.

Now, the desire to live and to escape from the sun overwhelms everything else. There is nothing that can emotionally move us; there is nothing that can surprise us. Technology lost its sublime value: all it does is to help us survive. Technoaesthetics are fragile: they break down when we know the truth about our own fragility.

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Mars was not entirely wiped out by the nuclear blast that the Earthers used to clear their own territorial claim. They had few resources when they arrived, and lived mostly on the generational ships that they used to get to the red world. The Martian society was devastated, destroyed, and thrown into their own ships on the other side of the oasis they had spent so long creating. Now humanity really had no home. Those left on Earth were soon to be consumed by the Sun. Those on Mars had abandoned their homes on a planet which was also forsaken, though they had more time before their new home would also be engulfed in flame. All of us ran away. No new Wanderer needed many sentimental objects to remain connected to the Earth, for the metal of their new flying homes were mined from rock of the Earth and Moon. All plants and animals stored were of Earth, with a few Martian variants scattered throughout. Each engine was a piece of the Sun, fusing hydrogen scooped from surrounding space. Long live the Sun.

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Further and further humans diverged from their ancestors becoming independent of mind, then independent in spirit and later even independent in body: merely passing as shadows of humanoid figure. Records were lost and the terrible crime committed on Mars was forgotten, and we dreamed as Earthlings once did of reaching out to the stars and colonizing other worlds in our image. We stared as we left the solar system, watching both of our homes floating weightlessly in the red light of our dying sun. It looked peaceful, like nothing was wrong and we should turn around and return to our old livelihoods. But we knew time on each world was severely limited. With the wave and smile of a small child at the viewing window, we turned our backs. Shortly thereafter, we received an assist from Jupiter, a farewell from an old friend, to send us on our way. The Sun joined the constellations and we slowly escaped its danger, which became insignificant with distance. The migration will take generations: centuries and millennia living on ships. We cannot possibly understand what will happen in such a long time in the future. We are afraid. We are lost. We are all Wanderers now.
When Skies Are Gray

Victoria Louison, A&S (English)
Sylvia propped an elbow on her desk, set her chin on top of her closed fist, and took a moment to rest her eyes. Aside from quick and infrequent blinking, eye closing was not exactly encouraged while watching the security feeds. Keeping both pupils fixed on the screen was, after all, essential to the surveying portion of the job. But to ask someone to stare into vast nothingness of the ocean for hours on end and forbid them from taking naps in between, she felt, was wildly unfair. She'd taken the job because she'd never been more than three levels down before and had always been curious about what the bottom of the ocean looked like. Now she was forced to look at it all day. While living at the bottom of the shelter, she thought she would discover an array of magical creatures that lived under the sea. She would not describe any of the things she saw in the water as magical but she did get to see up close what kind of newfangled technology was used to keep everything functioning. It was like a giant roundish pyramid, the shelter. 700 meter tall with nine layers, the foundation rigged to the ocean floor where she now worked, and a cluster of pipes that jutted out from the sides and wrapped around the whole thing. Like if the tower of Babel had trendy exterior plumbing she'd thought. And working on the ground floor was supposed to be cool and exciting. It turned out her job mostly entailed tedious field work like clearing waste from the filters or rotating a camera. Otherwise, she was regularly assigned to security, making sure nothing jostled the pipes, clogged the pipes, or damaged the pipes in any way. Sometimes deep sea unclassifieds swam by and she had to tell them to keep moving. That had been exciting at first. Now 15 months into the job, Sylvia was regretting her decision and realized she had vastly overestimated the thrill of Deep Sea living. It was nowhere near the mermaid fantasy land that she had imagined, they were so far down that light could not reach. It was horribly depressing. It also didn’t help that the entire front half of the offices were encased by windows so there was nothing but an endless expanse of charcoal gray any time you turned your head.

Sylvia let her eyes flutter closed and used her free hand to absentmindedly repeat the same command on her keyboard, each key press shifting the view to the next set of cameras. It seemed there was nothing out there today. She had been successfully lulling herself into a half sleep when she felt a light clawing at her elbow and something damp pressed just under her chin.

“Wake up” someone said directly into her ear.

Sylvia groaned quietly and tried to ignore the clawing and the wet chin but the voice repeated itself. “Wake up. Sylvia. Wake. Up Sylvia.”

With a distressed whine Sylvia straightened up and opened her eyes. She swatted gently at the dog to let it know she was awake. It stopped licking her face but it did begin to pace back and forth in front of her chair and continued to repeat itself.

Sylvia leaned back to look down empty the row of chairs to glare at Anita who was holding back a smile. “Are you happy now? I’m wide awake and I’ve got dog saliva on my face.”

Anita shook her head. “Reckless. Taking a full fledged nap on the job in front of everybody” she motioned for someone nearby to take her seat then walked over and plopped into one of the chairs closer to Sylvia.

“It was just for a minute, I was getting a headache. Look nothing’s there, it’s no big deal” she pressed the key more vigorously making the screen flash with each camera change.

“You know viperfish like to gnaw at the temperature gage. There were some around 5-48 a couple of hours ago.”

“People love cold water, it’s refreshing” Sylvia said blandly.
“Yes but ice is not. But you’re right the fish usually wait until after we take our naps before they try to wreck the pipes. And so what if we miss a breach or two? I’m sure no one would mind if we started pumping tube worms into people’s homes. In fact we should all just close our eyes right now.” Anita and softened her expression when she noticed Sylvia had put her head in her hands. “Hey” she said gingerly “would you like me to go get you some air?” She motioned to the vending machine across the room.

Sylvia waved the question away.

“Would you like some water?” Anita covered her smile with her hand.

Sylvia gave her a scathing look.

“Sorry.”

Sylvia hunched over the desk and massaged the areas around her eyes. “Ugh I’m fine. I’m just so bored and these fish are so ugly and this pressure is unbearable, my chest hurts and I feel like I always have a headache” she hung her head.

She noticed the dog was still circling her chair, still talking. “Ok we’re gonna have to turn you off Muttley.” He was only contributing to the headache. She patted her lap and the dog jumped up.

Muttley had one of the older models of the Real Talk implant. It was one of those communication devices that replaced the animals’ natural vocals with rough translations of the selected human language. It was pretty funny but Sylvia had to turn it off sometimes because Muttley would just go on about nonsense for hours. Like butts and playing fetch. She couldn’t even update it so he talked in a funny British accent because the things were discontinued about eleven years ago. It was originally meant for primates in the evolutionary theory programs. Then they started walking upright and trying to learn the language on their own, teaching it to other animals too.

It was kind of a disaster. A lot of them memorized the schematics for Real Talk before it shut down. There had been nowhere to run too, as there weren’t that many subsurface shelters at the time. Now the obsolete devices were just used to communicate with fish, steer them away from the water ducts. And to chat with dogs.

She found the controls underneath his collar and switched the setting to off. “There you go.” she said as she ruffled his ears “Aw I know you’re a good boy! You just talk too much sometimes” Sylvia set him back on the ground and he scurried off barking.

“What’s got you so exhausted anyway? You’ve just been in that chair all day” Anita continued

“It’s looking at this screen. It makes me so tired” Sylvia said.

“Yeah well since you’re so in need of excitement you could switch with me some time…”

“No thanks. I took that shift three days ago it was the worst. I swear I blinked for a second and David yelled at me for an hour.”

Compared to filter pipe duty to which Sylvia was often assigned, watching the hydroplant pipes required unwavering vigilance, and hopefully both basic engineering skill and sufficient bravery in order to fix the pipe.
then also ward off whatever broke it. The hydroplant pipes were the ones that powered everything in the shelter. When something went wrong with the filter pipes people just had to use bottled water for stuff until it was fixed. However if something were to seriously damage one of the plant pipes, the anti-pressure and oxygen ventilators would go out, the heating shuts down and everyone’s got a half hour to live. Not exactly the job you wanted to fall asleep on.

“Well you might have to take over someone’s place anyway” said Anita “Some shifts are being moved around since Michelle is almost in her second month. If she stays down here any longer the baby’s going to come out looking like a blobfish. And I think Dennis and Jim have to go to nematode extraction”

Sylvia groaned “So lucky.” she raised a finger “Michelle and her baby” she corrected “not Dennis and Jim, ew.”

Sylvia really missed living on the third level. Sure she probably would’ve had to go back to work on the seaweed farm again but the water was actually a little blue and you didn’t have to look at hideous deformed fish all day or wear these itchy pressure suits all the time. She sighed.

“I hope she brings those goldfish cracker things I love when she comes back.” Anita continued “If she’s going to come back.” Sylvia amended, “She can’t bring the baby down here, she’d have to commute. She’d get the bends every day. She’s probably going to stay up there.”

Sylvia whined “Ugh that means we’re going to have to get new people. And I’m going to have to train them—oh fish”

“Are you crazy you know we can’t train the fish” Sylvia looked at her, startled.

“No. Fish.” Anita pointed to the screen. On camera 7-82 a couple of anglers were milling about the ducts attracted by waste bits being rejected from one of the filters.

“Oh!” Sylvia scrambled for the microphone. “Um move away from there please.” The anglerfish didn’t move but continued to float around the tubes, the lures on their heads swinging slightly, their mouths wide open in confusion, shock, annoyance? It was impossible to tell, she didn’t know what they heard.

“Oh I think you left it on shark” Anita said with a lift if her chin.

She had in fact left the speaker setting pointing to the little pictorial that looked like Jaws. She turned it so it pointed to the fish symbol and raised the volume slightly “You’ve wandered into a restricted area. Please turn around. Preferably 20 meters to the left.” It took a moment but the anglerfish abandoned the waste pieces and swam away.

Sylvia made a noise of distress. “They look like angry tuna zombies.” She huffed, “I don’t see how some upright mammals could be as scary as flesh eating fish with jaws that unhinge.”

Anita pinched the bridge of her nose “Oh not again. I don’t see why you choose to keep sulking about this. How have you been down here so long and not gotten used to it? What’s on the surface that you miss that we’ve not got here?”

“Hamburgers, bike paths, naturally produced oxygen—”

Anita held up a hand to cut her off “Ok don’t be so dramatic. Burgers are unhealthy, submarines are much cooler and the electrolysis tank broke down one time, you have to get over that.”
“Well I can’t ok. We all could have suffocated or been electrocuted. Or both!”

Anita rolled her eyes. “You’re ridiculous, you know our plumbing system is impeccable and it’s not like we’re going to run out of water to power it. We could actually live down here forever.”

“Ugh stop.” Sylvia almost shuddered “Surely after nine years you’d think it’d be safe by now.”

“I don’t know, it’s bit of a mess up there. I wouldn’t take my chances.”

“There are are pretty bad things down here too. There was a goblin shark on 9-102 yesterday.” Sylvia gestured around her face “That thing is all teeth.”

“Hey, I wouldn’t recommend it, but if you want to go back up so badly you know the Scout Regiment is always taking volunteers” Anita said sarcastically.

Sylvia sighed deeply but didn’t say anything. She’d never seriously fought a human much less an enraged animal, she probably wouldn’t last a day.

“Exactly” Anita said pointedly “This is much better than fending off deranged chimpanzees at every turn. Plus we’ve got an endless supply of crabmeat” she added cheerily.

Sylvia shrugged “Yeah whatever.” she propped her elbow on the desk again and stared sullenly out the window into the dull gray sea “It’d just be nice if we could get some sun.”
WORLD NEWS

All Saved after Project 3:9 Rescues World and Launches New Era of Sustainability

By: Cecelia Jacoby and Claudia Cohen

NEW YORK CITY - President of Project 3:9 finally releases final programming meaning the final end to all fossil fuels has come at last. Despite the turmoil faced by most of the world previous to salvation, targeting specifically those affected by tremendous “natural” disaster, Project 3:9 has intervened just in time. A mere ten years after the world began to deteriorate and was surely headed for calamity, and its inhabitants headed for bereavement and death, Project 3:9 has saved Humanity. Here’s all we know about the project that saved us all…. 
Dr. A. Schopenhaur: Mhmm, tell me more... you bothersome brat

Patient 1:19: I just don’t understand why I’m here...

Dr. A. Schopenhaur: Because your insipid father mandated city-wide therapy

Patient 1:19: ...and there are so many other things I could be doing; like solar-board-nano-hovering, and my best bro just got this dope-ass micro-wind-gamer

Dr. A. Schopenhaur: Back to the task at hand, 1:19, how do you feel you’ve adjusted to Project 3:9?

Patient 1:19: Adjusted? It ain’t like it’s all that different from the old shit; all they did was get rid of some fucking gas that reeked anyway. All that’s changed is the honies are sun-kissed and I don’t got to pump any gas.

Dr. A. Schopenhaur: You have no idea what it was ten years ago, no idea about the “fucking gas,” not a clue about the hardship, and no thanks for the Project.

Patient 1:19: Anyways, I gotta peace, like I said, my bro just got this dope-ass...
END OF SESSION REPORT

PATIENT: 1:19

OBSERVATIONS: PATIENT NEITHER SHOWS REGARD FOR PROJECT NOR FOR PAST.

INFORMAL ASSESSMENT: AGGRESSIVE NARCISSIST

STATUS: ID

RECOMMENDATIONS: ESTABLISH HIGHER GRATITUDE, LESSEN EGO
Patient 3:6: I just don’t understand how we got here...

Dr. A. Schopenhaur: And how would you describe that sense of confusion?

Patient 3:6: Confusion? Try a permanent state of incredulity, no atheism, no rather total nihilism! How could there have been such a quick fix all along? How did no one possess the rational to implement it? Were we really so money-driven, so capitalist that no one remedied the world until the final moment? How could that even be? No. I have a strong sense that it isn’t, never was, and never could be. If the world has been fixed, its flaws remedied in just ten years, then it is no longer the world it is heaven, no, rather, a purgatory-inspired-limbo heaven in which we have just simply been plucked from what we thought we thought we might think we know into a suspended utopian falsehood

Dr. A. Schopenhaur: Mhmm I see. And how might one feel about living in such a “falsehood”? Go on, tell me what I already know about the injustice behind our hail mary salvation...

Patient 3:6: Well, I’ve just said it Dr., I feel concrete dubiety, and nothing less. How could we trust a world in which our officials solved our problems overnight? Many of my friends feel “hopeful,” “saved,” “cured,” but how could you even begin to feel anything but betrayed upon realizing that in order to be oh so saved we must’ve been thrust in harm’s way to begin with? I dunno Doc., I can’t help but feel as though...
END OF SESSION REPORT

PATIENT: 3:6

OBSERVATIONS: PATIENT UNABLE TO COPE NOR TO ADJUST.

INFORMAL ASSESSMENT: STRONG INQUISITOR

STATUS: ?

RECOMMENDATIONS: STOP ASKING QUESTIONS, THERE ARE FEW ANSWERS
Dr. A. Schopenhaur: Well what leads you to believe that you are unsafe?

Patient 21:18-21: I simply do not understand how anyone could feel safe. There was almost nothing, there was almost the end, there was almost sheer bleakness, yet now we’ve been “fixed” we’ve been saved and rescued? I refuse to believe that we’ve been anything but castrated, neutered, rendered completely subordinate.

Dr. A. Schopenhaur: And by that you mean…?

Patient 21:18-21: How could they have truly fixed anything with the Project? They thought fossil fuels were the big answer back in the day, and now we’re supposed to just believe that they’ve solved in all with solar panels and do dads that are so perfectly engineered that they’ll function forever? No way. Don’t buy it. Load of crap if you ask me. Nothing is “perfect” anymore, not when our world is up on crutches.
END OF SESSION REPORT

PATIENT: 21:18-21

OBSERVATIONS: PATIENT PARANOID ABOUT THE FUTURE, POTENTIAL LOSS OF COMMUNITY

INFORMAL ASSESSMENT: TRADITIONALIST

STATUS: ...

RECOMMENDATIONS: FIND HUMILITY
Patient 5:13: I just don’t understand why I have to attend these sessions

Dr. A. Schopenhaur: I see. And why’s that?

Patient 5:13: Well, I see no problem with the Project and I’ve adjusted quite fine to paradise.

Dr. A. Schopenhaur: Paradise?

Patient 5:13: Well, yes, paradise. The Project saved us all, it saved the world. So it came a bit late, and maybe not in the most well-mannered of ways, and perhaps a bit rushed as well, but it came either way. So, yes, Dr. Schopenhaur, I would call this our paradise.

Dr. A. Schopenhaur: And what of those who didn’t make it to “paradise”? Do you remember them? The islanders, the victims, the left-behinds?

Patient 5:13:
END OF SESSION REPORT

PATIENT: 5:13

OBSERVATIONS:

INFORMAL ASSESSMENT:

STATUS:

RECOMMENDATIONS:
Climate change is inevitably frustrating, there is a blatant need for a remedy and there are countless blatant, in-your-face, solutions. For goodness sake, we could outlaw cars, mandate bike use and lessen emissions override. Radical solutions, however, involve changing the pace and qualities of life as we all know it--herein lies the backwards miracle that will be our future as it pertains to energy use. There is an inconsolable need to find the perfect quick fix that will not only heal the environment but allow its inhabitants to continue to do everything that they are currently doing (despite the irony that it is due to these everythings that they do, that brought on the need for a solution in the first place). Our poetic essay is meant to absolutely, blatantly point out the absurdity that it is taking so long to find a long-term, renewable, sustainable, energy system. The answers are obvious, it is simply that we are not willing to give up our as-is lives to commit to a solution. Thus, our metaphors are obvious, our allusions apparent, because isn’t the solution to all of this just the same?
Imagining Energy Futures
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For Contest Rules Go To:
https://einaudi.cornell.edu/imagining-energy-futures

Questions?
Email: co27@cornell.edu
With Subject Line “Energy Futures”

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