SCARLET

MAGAZINE

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THE SCIENCE ISSUE

“How do we progress without forgetting?”

– andrea haenggi, sci-artist-in-residence, Paul Robeson Galleries

***Scarlet* Magazine** (SM) is a production of the Journalism Capstone course in the Department of Arts, Culture and Media at Rutgers University-Newark (RU-N). The magazine is a collaboration between students in the department's Journalism and Graphic Design programs. This issue, made possible through the generous support of the Chancellor's Office at Rutgers-Newark, is devoted to covering science. SM was founded in 2011 by RU-N student Cortney Coulanges.

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NASA's Solar Dynamics Observatory took this image of the sun in 2010. Licensed under Creative Commons.

Spotlight on Science

With scientists and their work under political attack, we tell stories that reveal how science shapes our campus and our communities

By Darius McClain

The science issue of *Scarlet* Magazine was produced and published at a time when anti-science rhetoric is rampant in politics and social media, and the Trump administration has slashed hundreds of millions of dollars of funding for research that affects the environment and public health. Thousands of government scientists and staff at the Centers for Disease Control and Prevention, the National Oceanic and Atmospheric Administration, the Environmental Protection Agency, the National Institutes of Health, the Food and Drug Administration and the National Science Foundation have been laid off. They include cancer and HIV researchers, vaccine regulators, infectious disease specialists and specialists on preventing gun violence. All of this has unfolded while the real-world impacts of the work they do, such as outbreaks of preventable illness and extreme weather events, are being felt every day.

In the midst of what feels like a cultural revolution against science, it's important to remember just how much it matters in our lives and on our campus. This semester's issue of *Scarlet* will attempt to do exactly that.

We explore the brain science that unlocks what it means academically for students when they lack food, in Bioje Holmes' piece about food insecurity on campus, and we explore the implications of food that doesn't get eaten, in Aaliyah Amos' story about our university's role in teaching New Jersey youth how food waste contributes to climate change.

This issue also features Rutgers students and faculty dealing with the implications of technology in their everyday lives, through the rising use of artificial intelligence (AI) on campus, which Shenyeng Sun explores in "To AI or Not to AI."

Nagely Castro delivers a story about grad students conducting environmental research by collaborating with the communities they're studying, an approach that faculty won a major national grant to implement. As professors and researchers deal with the fallout from the cuts coming from Washington, Anel Mata-Payerro features some of the important work at Rutgers-Newark now in limbo – from Alzheimer's research to mentoring future scientists of color.

The issue also highlights ways that science inspires art. We profile the current science-artist in residence at the Paul Robeson Galleries andrea haenggi, whose exhibition repurposed and reimagined found objects from the toxic mudflats of the Passaic River. Nakara Johnson interviews Professor Rachel Mundy, whose book *Animal Musicalities* shows us how humans are more like other animals than we think and, also, how science and music are interconnected. Cass Guinto offers a personal essay and Kelvin Marshall, a poem, that showcase how the elements of space and nature can spark creativity. Finally, we feature photographs of Paterson from a documentary project that the Environmental Protection Agency commissioned at its founding, to capture what the United States was like before environmental regulation. I contributed an essay about the images, and we included a piece of short speculative fiction by Haneen Alatiyat that imagines what could happen if the agency collapses.

This issue of *Scarlet* comes at a turbulent time for our campus, and campuses everywhere, as their pursuit of scientific truth is under fire. But we hope that our stories show that even in these times, there are many willing to fight for it.

Darius McClain is a senior majoring in Journalism.

In the midst of what feels like a cultural revolution against science, it's important to remember just how much it matters in our lives and on our campus. This semester's issue of *Scarlet* will attempt to do exactly that.

In 1974, an inspector for the Environmental Protection Agency took pesticide samples from containers on the docks of the Port of Newark. Photograph by Dan McCoy / Documerica.

Meet the people and projects at Rutgers-Newark potentially affected by federal funding cuts and anti-DEI orders

By Anel Mata-Payerro

"I've been doing this for two decades, and now it's going to be pulled out from underneath me."

– Professor Alexander Gates

MIDDLE IMAGE: Payton White, a neuroscience doctoral student, is part of the Aging & Brain Health Alliance and its community outreach team. Courtesy of Payton White.

Science Research in Limbo

When Distinguished Professor Alexander Gates joined the Rutgers-Newark faculty in 1987, it was considered a feat to have one or two students majoring in Earth & Environmental Sciences. For 22 years, he watched Newark students miss out on STEM jobs and opportunities. He worked to attract and retain more science majors through small grants before winning funding for a project that he now considers his life's work.

In 2009, the National Science Foundation awarded him a $5 million, five-year grant as part of the Garden State-Louis Stokes Alliance for Minority Participation (GS-LSAMP) program, which seeks to increase the number of students from underrepresented minority groups pursuing STEM careers. The program started with 488 students in 2009, and by 2021, after continuous renewals, it increased fourfold to 1,956 students, Gates said.

Now, after two decades of work, several of Gates's projects are "canceled or on hold" due to the Trump administration's executive orders aimed at dismantling diversity, equity and inclusion (DEI) initiatives.

"Maybe it's time to retire," Gates said he thought to himself after hearing the news. "What am I going to do? I've been doing this for two decades, and now it's going to be pulled out from underneath me."

On Jan. 20, the day of his inauguration, Donald Trump signed the first of a series of executive orders targeting all DEI programs, which halted research grants provided by the National Science Foundation, among many others. Two weeks later, the National Institutes of Health said it would cut research grants by capping the indirect cost recovery rate (ICR) at 15%.

The ICR funds, also called overhead funds, cover costs that are not directly related to the research project but are still necessary for operation, such as lab operation, maintenance and departmental administration. In a Feb. 10 statement, Rutgers University announced that the cap would be tantamount to cutting the 2025 budget by $22 million, with a $57.5 million annual loss projected by 2026.

A federal judge blocked the cuts on the same day, but the fate of these research projects remains unclear as of press time.

In 2023, Rutgers-Newark received 23 awards totaling $9.5 million from the NIH, including a five-year $7.4 million grant for "Pathways to Healthy Aging in African Americans," a longitudinal study conducted by Mark Gluck, a neuroscience professor and head of the Aging & Brain Health Alliance, the RU-N research group that conducts the program.

Since 2015, the study has followed African Americans ages 60 or older with elevated risks for dementia. It tackles the knowledge gaps often present in Alzheimer's disease research, such as detecting the asymptomatic phase of the disease before irreversible brain damage occurs and observing how environmental, lifestyle and genetic factors affect the risk. It also tries to find low-cost interventions and ensure outreach to those in need.

According to Gluck, African Americans, as compared to white Americans, are over twice as likely to get Alzheimer's, less likely to seek and receive treatment, and over 50% less likely to participate in biomedical research. To combat this, he and his team began community engagement efforts in 2009, establishing trust and partnerships with key community sites, such as churches and public or subsidized housing.

"There is no quick, easy, or cheap way to successfully recruit older African Americans to aging and brain health research," Gluck said in a YouTube presentation describing their efforts. It took 19 years of community engagement, more than 16 people acting as recruiters and, crucially, funding from the NIH to execute it all.

Payton White, a neuroscience Ph.D. student and member of the alliance, is part of the community engagement team and conducts her

Courtesy of Alexander E. Gates.

Several of Professor Alexander E. Gates' projects are canceled or on hold.

own research on how sleep affects aging and neurodegeneration. She began exploring Alzheimer's research as an undergraduate at the University of Michigan and worked as a clinical research coordinator at New York University for two years before coming to Rutgers-Newark.

"My research has always been focused on the Black community," she said. "There is this stigma … that Black people are really hard to recruit for research … [but] the truth is that people are just not trying to [get them to] participate in research, and the community is not really aware of research and what that would even look like."

Courtesy of Mark Gluck.

Professor Mark Gluck directs the Rutgers Aging & Brain Health Alliance.

White came to this conclusion through her first-hand experience with the community while delivering educational presentations and cognitive testing at senior centers, public housing and churches as part of the engagement team. In her work at the housing sites, White said, she sees glimpses of her late grandmother in the study participants, making her feel even more connected to her work.

"Everybody knows someone with Alzheimer's disease. There's a lot of people who are taking care of people

with Alzheimer's disease, and you don't actually realize until you go out into these communities," she said. "It makes me—basically makes me not want to quit because this Ph.D. is very hard." Besides community outreach, White conducts sleep research, which pertains to the early detection aspect of the program's mission. The lab sends participants home with sleep monitors and compares the brain activity of high-risk and low-risk individuals to identify changes in the brain before it's too late.

Eventually, White says she hopes to look at the effects of exercise on sleep and whether that can mitigate the risks.

That's the area of expertise of Jennifer Greene, the research coordinator of the partner study "Exercise to Improve Brain Health in Older African Americans," which is also part of the Aging & Brain Health Alliance. That clinical trial focuses on how exercise can change or improve brain health in older African Americans. As part of the study, researchers collect blood and saliva to evaluate cognition before and after participants attend hour-long exercise classes three times a week for six months.

For Greene, it's all about the community.

"I started working in the industry in like 2011, and I love fitness, but … it's very much, like, wealthy and white," she said. "You know, every gym I worked in, it was really expensive to hire a personal trainer, and it just wasn't hitting a lot of other people of other cultural backgrounds, socio-economic backgrounds."

Greene also studied exercise for her master's of public health thesis, for which she surveyed participants to see what they knew about the need for exercise. She said she was shocked at how little participants knew about its importance. Few knew, for instance, that 150 minutes of exercise a week is the recommended health guideline.

Courtesy of Jennifer Greene.

Jennifer Greene is research coordinator for the Aging & Brain Health Alliance.

With this in mind, Greene said she's nervous about the possible NIH funding cuts that could hit the university.

"We've seen such an impact on this community, and how much the studies have helped them and all the community building that we had done," she said. "If anything changes, that would impact this community in a really negative way. It would be devastating."

Anel Mata-Payerro is a sophomore majoring in Journalism.

Waste Not, Warm Not

A Rutgers program teaches students how to fight climate change by limiting food waste

By Aaliyah Amos

Imagine a box of pizza with ten slices for dinner. Before serving the food, three slices are thrown in the trash. That's how much food is wasted in America.

All this wasted food contributes to global warming as it rots. Many people don't know this fact. A Rutgers program is trying to spread awareness—by starting with young people. Taking advantage of a new mandate in New Jersey to teach climate change in elementary schools, it has hired six AmeriCorps members this year to implement a curriculum about food waste at 11 schools across the state.

The program dispatched Ashley Price to the Marion P. Thomas Charter Schools in Newark, where she educates fifth graders about climate change and works in the cafeteria to reduce food waste.

"I didn't have climate change classes or anything when I was younger," Price said. "But now, [in] New Jersey, [we] have to teach in public schools about climate change."

She experiments with different ways to engage students to help them develop positive attitudes about healthy and sustainable eating habits. During a recent class, using Chromebooks, she shared videos of cartoon superheroes dressed in Earth-themed suits and capes to fight as protectors of food systems. Her students have responded well to her interactive curriculum, called "Guardians of the Food Galaxy," she said.

"They're usually engaged because it's something different than their regular classes," Price said.

The program was the brainchild of Jennifer Shukaitis, a Rutgers associate professor, and her colleagues at the Rutgers Cooperative Extension. In 2018, they formed the Rutgers Cooperative Food Waste Team to reduce food waste at schools. The Food Waste Team provides schools with detailed lessons to use as part of the curriculum.

In the United States, 30 to 40 % of the food supply is wasted, the U.S. Department of Agriculture reports. This includes food spoiled by mold, fresh produce that rots due to transportation failures, or food thrown out by people simply buying or cooking more than necessary.

Shukaitis explained the science behind how the waste that pervades landfills harms the environment.

"Anaerobic digestion takes place, and it produces greenhouse gases such as methane," she said. "These are the types of gases that we know to be harmful (to) our environment and contribute to the warming trend that's happening on our planet."

The food system is responsible for about 8 to 10 % of greenhouse gas emissions, according to the United

Ashley Price teaches fifth-graders at Newark's Marion P. Thomas Charter School about how food waste contributes to climate change.

Photographs by Aaliyah Amos.

Nations Framework on Climate Change. Manufacturing machines to process food releases carbon dioxide, while food waste in landfills generates methane. Wasting food also wastes the natural resources, such as energy and water, used to grow, process, package and transport it.

Price's students learn the connection between food waste and climate change through their food waste curriculum, which educates them about greenhouse gases and potential ways to help.

"It's really important to educate the younger generations about what's happening and ways that they can take action," Price said. She said that she believes this learning gives them hope that sharing their food at lunch can help make a change.

The New Jersey law went into effect two years ago, mandating the teaching of climate change to students from kindergarten to high school. Last year, Governor Murphy allocated $4.5 million to continue supporting climate change teaching and expanding it to higher education.

Price focuses on food waste reduction efforts, such as cafeteria food audits and "share tables." The food audits demonstrate how much food is wasted by fifth graders at the school.

"We go in and weigh what would have been garbage," Shukaitis said.

Students hear the call, "Don't go to the garbage. Bring your trays to us." The Food Waste Team, along with the AmeriCorps member, measures food from the five food groups—dairy, protein, fruits, vegetables and grains. Small scales are placed under the buckets, typically measuring protein and grains together.

"If you walk past a garbage can after a lunch period, you're going to see lots of food in there that, you know,

$166 BILLION
spent on wasted food

133 BILLION POUNDS
of wasted food

Source: U.S. Department of Agriculture, 2010

Kindergarten students line up for lunch in the cafeteria at Newark's Marion P. Thomas Charter School.

not that you would, but you probably could pick it out and eat it, right?" Shukaitis asked. "It's perfectly edible food that is being thrown away."

Shukaitis explained the importance of going to schools that have high school lunch participation: to be able to receive a standard serving size.

"If we're working in a school where kids mostly bring lunch from home, we really can't get reliable measurements from those lunches," she said.

Food audits are done at the beginning and the end of the school year to track progress. The first audit is like a pre-test for the students to see what they know about food waste and climate change. An AmeriCorps member then teaches 15 lessons, and a post-test is done at the end of the year to track any differences.

The program also promotes share bins as an alternative to garbage bins if the students do not eat the food.

"It's a table or area of the cafeteria where kids can put food that they didn't eat but is still edible," Shukaitis said. "If they have a banana that they didn't peel or a cheese stick that they didn't open…"

This food can be redistributed during afterschool programs, at the nurse's office, or during backpack Fridays, when food is sent home. "If the school social worker or family liaison knows families they know to be food insecure," Shukaitis explained.

As the school year progresses, students have more questions about food waste and its environmental impact.

The AmeriCorps connection stems from Shukaitis' previous experience working with the service organization. The grant spans three years, and this is its second year. The 2023-2024 school year, the program's first, included eight AmeriCorps members serving at schools across the state. Afterward, they completed a survey.

"It was overwhelmingly positive—that they had great experiences, that they learned a lot," Shukaitis said.

Some volunteers decided to become full-time teachers as a result of the program, she added. Shukaitis said that all but one of the schools in the previous school year saw a reduction in food waste.

Thirty-one percent of food is wasted in America. Imagine a box of pizza with ten slices for dinner. Before serving the food, three slices are thrown in the trash. That's how much food is wasted in America.

Source: U.S. Department of Agriculture, 2010.

The Rutgers Food Waste Team will next focus on reducing food waste at community colleges through a new grant from the New Jersey Department of Environmental Protection. In partnership with the nonprofit Share My Meals, the Food Waste Team will conduct food waste audits at the colleges. According to Shukaitis, any extra, non-contaminated food will be distributed to food pantries or other resources for food-insecure college students.

Rutgers-Newark students are actively working to reduce food waste by beginning a campus-wide composting program. Composting food scraps helps repurpose waste that would otherwise end up in landfills, where it contributes to climate change. Instead, compost provides nutrients for the soil that can be used for gardening.

The RU-Eco Club, made up of undergraduates, is partnering with Lynn Riker, the administrative coordinator of dining services, and professors to get composting on campus.

Jaxon Shain, an environmental science major and member of the student-run club, said that 508 pounds of food were wasted over five days at the Stonsby Commons dining hall in April 2024, a statistic confirmed by on-campus dietitian Nicole Cipriano. Since then, Stonsby Commons has stopped its self-serving buffet style, instead having workers serve the students for portion control. Although this has been helpful, composting at the dorms is Shain's main goal.

"Newark is a food desert," Shain said. "We hardly have any production and need organic matter for the soil here. It makes sense to get some compost going."

Shain practices composting in his dorm room by drying out the leftover food and then using a Vitamix FC-50 food cycler to grind it into what he calls a "stinky powder" – or compost powder. This can then be added to soil to provide nutrients from the food to the plants.

Drawing on his knowledge as an environmental studies major and his work with the Greater Newark Conservancy, Shain said that he believes the university should prioritize traditional food composting bins.

"Just put your food in the compost, then you get a whole bunch of rich soil and a lot less atmospheric gases," Shain said.

This soil can be used to support The Healing Garden, the community garden at the campus' Clement A. Price Institute on Ethnicity, Culture and the Modern Experience, where local chefs, faculty, staff, and students collaborate to promote community agriculture.

According to a study in *Nature Portfolio's* scientific reports, composting food scraps results in at least 38 % fewer greenhouse gas emissions than throwing them away in landfills. Price suggested that the Healing Garden and dining halls partner to integrate a composting and fresh produce system that would benefit everyone.

The RU-N Pantry+ currently composts spoiled food to help reduce its contribution to food waste, said Hend El-Buri, its director of nutrition and food security.

The AmeriCorps program was created by the Rutgers Cooperative Food Waste Team through a federal grant, as part of the Rutgers community's efforts to combat global warming. Its focus makes it vulnerable to recent executive orders by President Trump.

Shukaitis received an email stating that she is no longer allowed to use the words climate change, diversity, DEI, or environmental justice.

"At Rutgers, they have several offices focused on DEI and how to incorporate (it) into our recruitment, material, marketing and everything, and to have that sudden shift, I had to go back and change my application in the federal system," she said.

The uncertainty surrounding climate change initiatives leaves Shukaitis unsure about the future of these programs.

"For now, it's just a language change in my application, and that's all I'm planning on doing," she stated firmly.

Aaliyah Amos is a senior majoring in Journalism and minoring in Social Justice.

Guardians of the Food Waste Galaxy, cartoon superheroes displayed on student Chromebooks, are part of the curriculum at Newark's Marion P. Thomas Charter School.

The Hungry Brain

Rutgers is tackling widespread food insecurity among students, which hurts academic performance

By Bioje Holmes

When Princeton Addo first came to Rutgers, he was constantly hungry. Recently, over a lunch of beef brisket, macaroni and corn bread at the Paul Robeson Campus Center, the senior Biology major recalled the shame that he felt at the time.

"There's no level of preparation that can get you ready for the amount of sacrifices you have to make just to eat in college," said Addo. "My first year living on campus was hell. I think I got the groove of it now, but I was basically starving and too embarrassed to say anything. I mean, how do you tell someone you didn't eat dinner last night because you had to use the money on laundry."

A Rutgers University survey in late 2022 of more than 7,000 students across all its campuses revealed that almost one in three undergraduates experience food insecurity. The problem was most acute on our campus. Nearly one in two undergraduates among the 910 students surveyed at Rutgers-Newark reported signs of food insecurity such as weight loss, skipped meals and worry over affording food. About a quarter of graduate students at Newark—and across the entire university—were food insecure.

These numbers reflect a growing problem across the country, with consequences for academic performance. Nationwide, a quarter of university students are food insecure, according to a 2020 study by the U.S. Government Accountability Office. Another New Jersey university, Rowan, has found that almost half of its undergraduates experience food insecurity—and that the food insecure were twice as likely to have GPAs in the bottom 10% and three times less likely to have GPAs in the top 10%.

With tuition and the cost of food rising, some students find themselves facing tough choices that can affect their success in class.

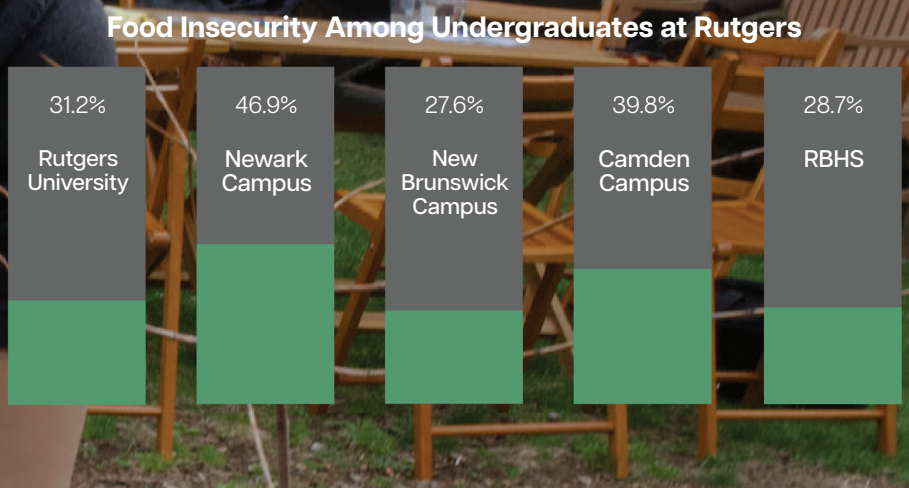
Take Sravya Kanagala, an international grad student without a meal plan. Before she graduated in December, with an M.S. in information technology, she told *Scarlet*: "I literally just purchased a book I need for class from Amazon because it went on sale. It's November; it might be a little too late, but I couldn't afford it before. I had to eat."

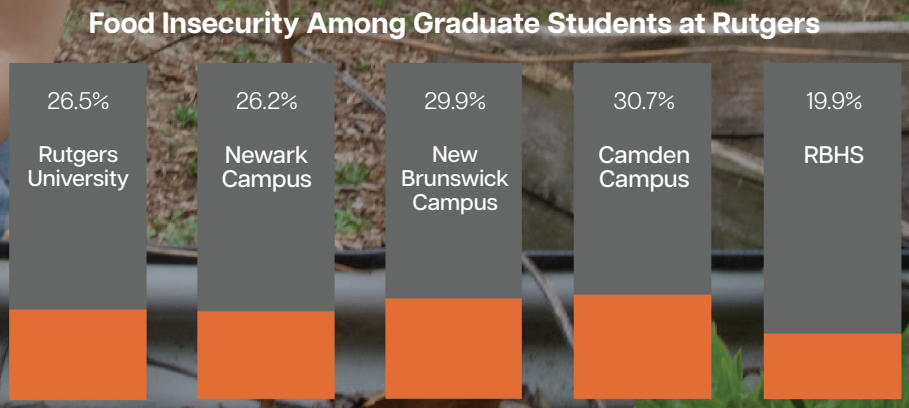
Freshman Astrid Lopez has also made trade-offs. "Even with Pell and all the help FAFSA can give, I'm barely able to cover tuition. I have a financial hold on [my] account as we speak," he said last fall. To remove the hold, Lopez had to cut what he spends on food.

Food insecurity is defined as limited or uncertain access to nutritious and safe foods. It can cause severe mental health challenges for students, including anxiety and depression. They often report feelings of isolation that exacerbate their struggles to succeed academically.

Dr. Saul Bautista, a physician, Rutgers alum and medical director of Ethos, a N.J.-based project that advocates

> **“I literally just purchased a book I need for class... It might be a little too late, but I couldn’t afford it before. I had to eat.”**
>
> – **Sravya Kanagala,** former grad student





Professor Alexandra Chang does spring planting in the campus healing garden, which supplies the RU-N Pantry farmer’s market with kale, spinach and carrots.

Photograph by Naim Ali-Pacheco.

Food insecurity affects one in three Rutgers students, according to a 2022 university survey of 7094 students. The rate is highest at Rutgers-Newark, where it impacts one in two students. The survey included 910 students from our campus.

Source: Rutgers University Survey.

Refrigerated lockers around campus allow students to pick up food from the RU-N Pantry at their convenience.

Photography by Bioje Holmes.

for farm-based, healthy eating, said that hunger and inadequately nutritious food creates cognitive barriers. "If you're hungry and you are a student trying to work and study, your mid-brain is going to take over," Bautista explained in an interview.

The midbrain is a small but important part of the brain stem. It processes emotions and controls reflexes. It also affects movement, including eye movements, and processes vision and hearing. Bautista said that, when the midbrain takes over, higher brain functions, such as logic, will no longer work properly.

To combat food insecurity, the university connects students with resources beyond campus, such as enrolling them to receive help from the government through SNAP (Supplemental Nutrition Assistance Program). It also established the RU-N Food Pantry on the Newark campus in 2017. Students who register with the pantry can place online orders weekly for a range of food, from canned goods to fresh produce, frozen meat and dairy items such as milk and eggs. The pantry strives to offer healthy options that serve all cultures and diets, pantry coordinator Bryan Barros said. "We try to get seasonal produce," he said. "In summer, you may see strawberries, whereas in the fall, there are more potatoes and apples."

Professor Alexandra Chang works in the campus healing garden started by Rutgers faculty and community members in the backyard of the Clement A. Price Institute for Ethnicity, Culture and the Modern Experience.

Photograph by Naim Ali-Pacheco.

The food pantry also hosts a monthly farmer's market with fresh fruits and vegetables. It's free to Rutgers students and staff. Chiamaka Nwanoro began regularly visiting the market during her sophomore year. "Mostly, I get greens, onions, carrots, fruits — definitely strawberries and bananas," she shared.

To supply the food pantry and farmer's market, Rutgers partners with community organizations such as MEND (Meeting Essential Needs with Dignity), a hunger relief network based in Essex County, and the Community Food Bank of New Jersey, along with Rutgers' own garden, located at the Clement A. Price Institute for Ethnicity, Culture and the Modern Experience.

In the "healing garden," started by community members and Rutgers faculty, students can find flowers along with kale, spinach and newly sprouting carrots, providing a fresh breath of air in industrialized Newark. Its founder Alexandra Chang, associate director of the Price Institute and a professor who teaches eco-arts, noted two important goals of the farmer's market: accessibility and community. She said that many students enjoy its casual atmosphere. It is quite popular, with lines often starting well before the opening of the market.

Newark chef Charlene Messer has hosted "test kitchens" at the pantry and garden to demonstrate to students what they can do with all the produce they receive. That responds to a problem cited by some students. "I could go and get things from the food pantry but if they're giving out potatoes or something, what am I going to do with a potato?" said Zen Gibbs, a Rutgers senior. Chef Charlene's test kitchens aim to solve this issue.

Many students still have not heard about these solutions or don't use them due to stigma. Hend El-Buri, the food pantry's director, said that one of the biggest barriers that she has come across is students' unwillingness to seek help because they do not feel "needy enough." To counter this, she said that Rutgers tries to create a low-key environment where no questions are asked through its food programs.

Thanks to a $100,000 donation from an unnamed alumni, the food pantry has introduced new refrigerated lockers around campus, allowing students to pick up their ordered food privately whenever they want, using an individualized code that stays active for 24 hours. Locations include Smith Hall and RBG Plaza.

Gibbs offers words of advice for incoming students: "I'm a senior so I'm almost done with this. If I could offer anything to freshmen or prospective students, don't go to bed hungry because you're too cool to ask for help. The school just offers way too much."

Bioje Holmes is a senior majoring in Journalism.

Grad student Khondaker Nur Alam explains to students how a soil pollution simulation connects to the research conducted over the past year.

Photographs by Nagely Castro.

Science That Gives Back

Graduate students learn to conduct environmental research with, and for, communities

By Nagely Castro

Last summer, Rutgers-Newark graduate student Suah Yekeh was collecting soil samples from the Passaic River when she noticed a homeless encampment had formed nearby. Her worry was that people might be using the river, a designated Superfund site, as a resource for food and water. Then she saw it firsthand.

"I saw people with coolers—someone caught an eel, someone caught a fish—and they were taking it home with them," she said.

For Yekeh, one of six graduate researchers studying the environment in Newark as part of a $4.3 million grant from the National Science

Suah Yekeh prepares soil samples from the Passaic River as part of her research with the Newark Geoscience Initiative.

Foundation, the moment reinforced why sharing environmental research with communities matters: they need the information to protect themselves from risks like contaminated water.

Data was not all that Yekeh collected that day. She also came away with a new understanding that scientists shouldn't just take from communities, but also give back to them—and include them in the research process. That insight is the whole point of the Newark Geoscience (NewGeo) Initiative, the Rutgers-Newark program awarded the grant, which seeks to nurture collaboration between scientists and the communities they study.

The Earth and Environmental Sciences professors who proposed the initiative argue that the people most affected by environmental hazards often hold key insights into the issues they face, yet they are rarely included in scientific conversations.

"What has been missing in our discipline—even though we are environmental scientists—is we don't often take what we learn and share it, or apply it, or adapt it to local communities." said Professor Ashaki Rouff, a principal investigator for the NewGeo grant. "So we are trying to train our grad students to think about ways in which they as scientists ... can use [this] research for good, to help communities, society and help humanity."

As part of the grant, six graduate students worked closely with two community partners. Yekeh worked with the Newark Water Coalition. Its co-founder and executive director Anthony Diaz said: "They have allowed the community in this project to lead the way entirely." This, he reflected, was different from his past partnerships with several other academic institutions.

Decades of neglect and broken promises have made many in the community skeptical of outside researchers and policymakers. Fallon Davis, the founder and director of the nonprofit STEAM Urban, an organization that integrates STEAM education with expressive arts to empower Black and brown communities, is also cautious about rushing into partnerships with institutions.

"I like to listen. I like to understand exactly what the goal is... and if they're trying to extract from the community or they're trying to build with the community," Davis said.

But the initiative won their trust. "The fact that [this program] centered BIPOC graduate students [and] it

was led by two Black women, I was very intrigued and very interested in being a part of it," Davis explained. "It impacts my involvement, because it did center equity."

Newark has a long history of environmental challenges, from lead contamination in the city's drinking water to the dumping of toxic waste in nearby neighborhoods. In 2019, residents learned that thousands of homes had been receiving lead-tainted water, despite reassurances from officials that their supply was safe, according to the Natural Resources Defense Council.

The city is also home to several Superfund sites, highly toxic areas designated by the Environmental Protection Agency for cleanup. One of the most well-known is the Diamond Alkali site, a former pesticide and chemical plant along the Passaic River, which left behind dangerous levels of dioxin, a toxic compound linked to cancer, according to the EPA.

Despite this, some people continue to fish in the river, unaware that it is illegal and unsafe.

When Yekeh witnessed this firsthand, it underscored the gap between scientific research and public awareness. NewGeo hopes to bridge this gap by training its first cohort of six graduate researchers to communicate their findings directly to the community. The students plan on creating accessible informational materials and expanding outreach to K-12 audiences to ensure Newark residents receive clear, science-backed guidance on environmental risks. They say that they are working actively to ensure that results are shared beyond university labs and paywalled academic journals.

The initiative's leaders said that it formed research teams using a process designed to build trust from the very beginning. Before forming teams, both community partners and students had the opportunity to learn about each other and later formed groups based on shared scientific curiosities and the expertise of the students.

"We're starting from the graduate level because they're the next scientists," said Shavonne Hylton, program coordinator of NewGeo. "We see them as the next generation workforce and they're going to be the ones influencing the next generation."

The team that works with the Newark Water Coalition gathered data about the city's soil, water and air. They collected samples all over Newark, in Weequahic Park, the Passaic River and nearby Newark Airport.

Davis's team, at STEAM Urban, collected data from its Healing Garden. They collected samples from the raised beds that grow produce for the community as well as examined what was underneath the garden. Tests on the samples confirmed what they knew about the pollution in Newark's environment: The raised beds were contaminated with toxic metals.

Graduate student Xinting Wang captured air particles near a New Jersey Department of Environmental Protection (DEP) monitoring station in Elizabeth and identified the toxic metals in the air near the Newark Airport. She said her goal was to "fill data gaps" from previous research by other scientists and essentially bring the data up to date. But her preliminary finding reflected the results of previous testing done by the DEP, which found arsenic and lead.

The graduate researchers said that they recognize that Newark residents are aware of the pollution that they live with. What sets their approach apart is their collaboration with community partners who possess local knowledge that outsiders may not have.

For example, when Khondaker Nur Alam, known as Tutl, faced obstacles getting water samples with little to no soil from sites like the Passaic River, Davis offered rainwater collected by the Healing Garden. Without this collaboration, Alam might not have known the water was available.

During a conference last November, both teams presented their preliminary findings. The information they gathered at that point was not shocking. What the dozens of photos presented did reveal was that the

graduate students spent significant time in the field with the community.

Some photos from the STEAM Urban team's presentation showed Caro Cano, whose equipment malfunctioned during her eight weeks of sample collection, nonetheless remaining present in the garden, showing community members her other tools and explaining what she had planned to learn about the garden's underground environment.

"They [STEAM Urban] had their own programs with students, so we were trying to be involved in that as well, having smaller outreach activities within the garden," she said.

Graduate students often work with samples purchased for their research, but the NewGeo students collected their own samples. Alam worked alongside Diaz to gather water samples all over Newark.

"When I started doing this research outside of the lab I started thinking more in a practical way," he said. It also opened his eyes to the scale of the environmental challenges in Newark. "We knew about environmentally polluted areas but to this extent? Never," he said.

"I like to understand exactly what the goal is ... and if they're trying to extract from the community or they're trying to build with the community."

– Fallon Davis, STEAM Urban founder

The initiative will last two years. Now at its halfway point, the program is helping the graduate students prepare for the next challenge. Elementary and high school teachers are training them to explain their hypothesis and preliminary findings to audiences unfamiliar with the technical jargon and complex equipment names they typically use.

The students are planning for another summer of research. Katherine Rodriguez, who tested the soil in STEAM Urban's garden, plans to find out where exactly the toxic metals are coming from: the garden itself or the soil that STEAM Urban buys for its raised beds?

"Now, they're doing another year of research in the Healing Garden," Davis noted, pleasantly surprised. "So it's not like they just did it and left—they're actually here to create results, which is profound to me."

LEFT: Students observe Yekeh's demonstration of how water interacts with sand and soil to simulate the impact of pollution.

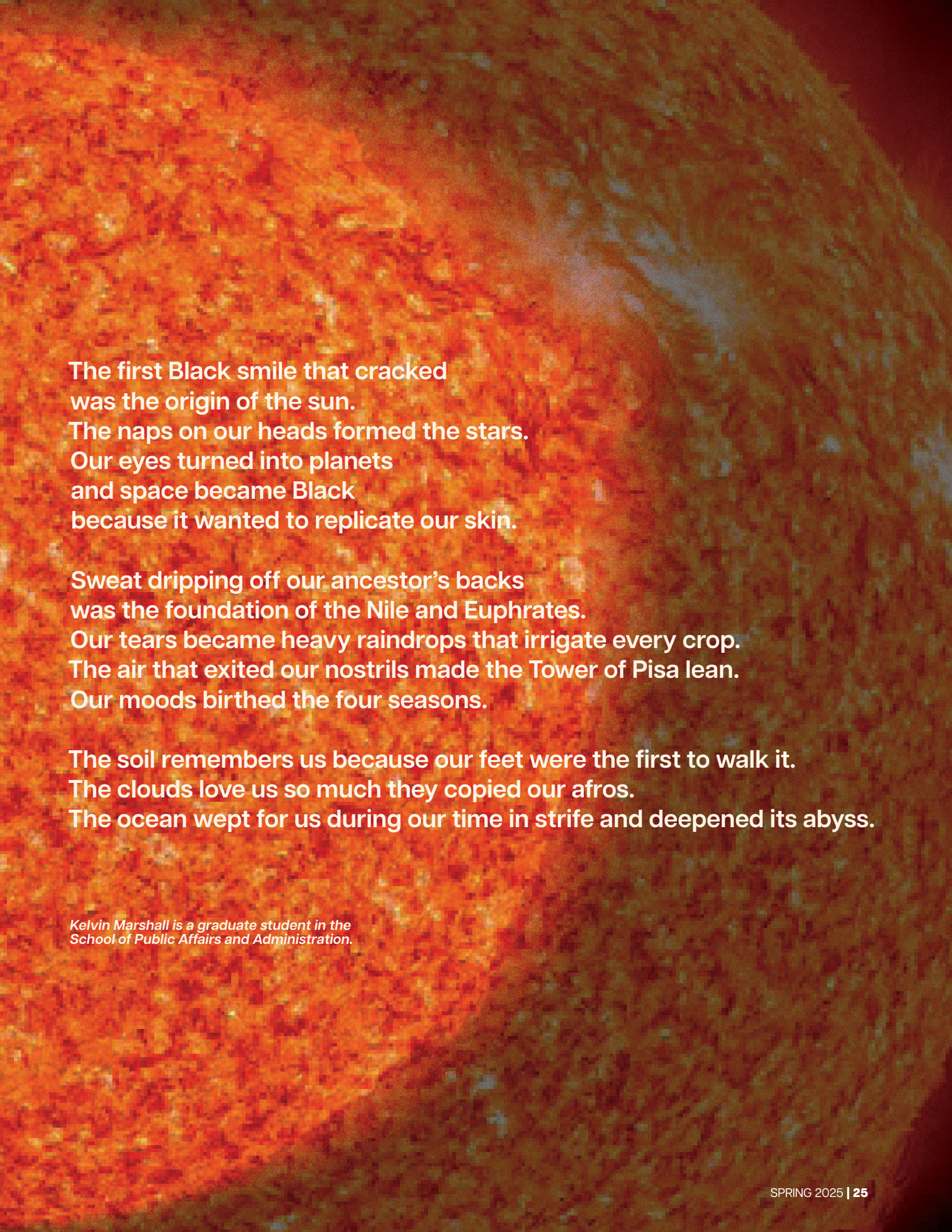
RIGHT: A student pours water into a bottle of sand as Yekeh looks on, guiding the experiment she prepared with NewGeo research partner Khondaker Nur Alam.

Nagely Castro is a senior majoring in Journalism.

Origin

By Kelvin Marshall

NASA's Solar Dynamics Observatory took this image of the sun in 2010. Licensed under Creative Commons.



The first Black smile that cracked
was the origin of the sun.
The naps on our heads formed the stars.
Our eyes turned into planets
and space became Black
because it wanted to replicate our skin.

Sweat dripping off our ancestor's backs
was the foundation of the Nile and Euphrates.
Our tears became heavy raindrops that irrigate every crop.
The air that exited our nostrils made the Tower of Pisa lean.
Our moods birthed the four seasons.

The soil remembers us because our feet were the first to walk it.
The clouds love us so much they copied our afros.
The ocean wept for us during our time in strife and deepened its abyss.

Kelvin Marshall is a graduate student in the School of Public Affairs and Administration.

AMERICA, BEFORE THE EPA

One photographer's images from Paterson show what's at stake in environmental justice

By Darius McClain

Soon after it was founded in 1970, the Environmental Protection Agency (EPA) called on photographers from across the country to showcase the many environmental issues that the agency was founded to address. From 1972 to 1977, seventy freelance photographers created snapshots of the country, from the decline of the United States' national parks and forests to the damaging effects of air and water pollution. But one photographer's work sticks out: Brooklyn-born photographer Danny Lyon, who was already well known for his work documenting the Civil Rights Movement. While many photographers capturing New Jersey gravitated to landscapes fouled by oil spills or garbage or smog, he took a different approach for his images from Paterson in June of 1974.

Paterson at the time was in the midst of its transformation into a majority Black and brown city, as it was just 36% white by 1980, down from 70% in 1970. Today, the state's Environmental Protection Agency considers it an environmentally "overburdened community," or an area dense with many historically vulnerable people, who speak limited English or are low income or nonwhite, as well as many industrial pollutants. It has one of the highest asthma rates in the state. Almost from its very beginning, the city was a hotbed of industrialization, from the manufacturing of silk, paper and cotton to the building of locomotives, guns and aircraft engines. When industries shut down or moved to other areas, the community was left with the environmental damage, from the toxins in the air to the pollution in the Passaic River. The vestiges from abandoned textile mills and factories include cancer-causing asbestos.

In his captions, Lyon alludes to the rise of suburbs after World War II.

"THE INNER CITY TODAY IS AN ABSOLUTE CONTRADICTION TO THE MAIN STREAM AMERICA OF GAS STATIONS, EXPRESSWAYS, SHOPPING CENTERS AND TRACT HOUSES."

Highways and suburban sprawl created a whole new set of environmental problems that still affect the residents of Paterson. Interstate 80, which runs through the city, was completed the year before these photographs were taken. The surge in carbon and other harmful emissions coming from the growing number of cars and diesel trucks on the road did not help the air quality.

The rest of Lyon's caption expresses the true heart of the city, through his unique lens.

"IT IS POPULATED BY BLACKS, LATINS AND THE WHITE POOR. MOST OF ALL, THE INNER CITY ENVIRONMENT IS HUMAN BEINGS, AS BEAUTIFUL AND THREATENED AS THE 19TH CENTURY BUILDINGS THEY INHABIT."

gutted, with many regulations and key findings, such as one that declared greenhouse gases a threat to public health, being rolled back. The administration has already fired more than 500 of the agency's workers. Its new director, Lee Zeldin, a former Congressman who received political contributions from oil and gas companies, has filled top positions at the agency with former lobbyists for industries that it regulates and has promised mass layoffs as part of a 65% cut to the agency's funding.

In the eye of all this, Lyon's collection of photos reminds us of the human element at stake: of who can be put at risk, or still saved.

Darius McClain is a senior majoring in Journalism.

Lyon focused his attention on the people in the city, seeing them as endangered as the homes they lived in. Indeed, the homes in these photos have seemingly been left for dead, but instead, they're still there, standing tall and proud, just like the people being photographed. A Puerto Rican flag mural can be seen in the background of some of the photographs, and Lyon even snaps a picture of an emblem of the flag on a car, in what he says is "an indication of the growing pride of minorities in their heritage." And this sense of their own dignity shows in the photos, from two Black youth posing with a dog, to a young Latino man walking across the street in style, to a Latina holding a child on a porch with a girl posing for the camera in the background. Lyon's photographs capture the humanity that shows us why the planet is worth protecting in the first place.

And now with the Trump administration closing the EPA's Office of Environmental Justice and External Civil Rights, which was created in 2022, there is one less major agency to protect the very types of communities that Lyon documented. The EPA as a whole is in danger of being

01: A Puerto Rican flag emblem is a symbol of the "growing pride of minorities in America in their heritage," Lyon wrote.

02: This Paterson house has weathered the city's changes.

03: Paterson residents, as "beautiful and threatened" as the buildings in their neighborhood, gather on a porch.

04: Lyon's photos were meant to show the humanity at the center of communities affected by pollution.

05: Even with brittle buildings in the background, generations stand strong, posing for Lyon's camera.

06: A Latino man walks across the street in style, transcending the trash surrounding him.

Photographs by Danny Lyon / Documerica.

A piece of short speculative fiction imagines a future without the Environmental Protection Agency

By Haneen Alatiyat

The Giv

Chappell Roan's "The Giver" billboard stood there mocking everyone in the area. Fifty years of smog, acid rain, and fires had eaten away at its frame, but the iconic line still stood: "Cause, baby, I'm a Giver!" No one knew why the billboard was still there; even the artist had since passed. The billboard outlasted everything, including the homes, roads, and people's lives; everything had since collapsed.

Beneath it, the city lay in ruin. Once, decades ago, before the air became toxic, the sounds of traffic, music, and shouting filled the streets. Now, the silence was unnatural and thick like the polluted haze that swept over the city, choking the sun. Sidra stood beneath the billboard, staring up at the faded face of the singer. She adjusted the strap of her breathing mask and checked the oxygen meter on her wrist. It blinked red.

"Shit."

Low air.

She felt her stomach drop. She had less than two hours before the canister at her waist would expire.

Panic tightened her lungs, causing her to breathe faster. She forced herself to calm down. The more she wasted air, the quicker she'd die. Sidra tugged the oxygen tube, ensuring the connection to the canister was secured, then scanned the area for any sign of movement or life. The shadow markets weren't far. If she made it there in time, she might be able to get a refill. She pulled the hood of her coat tighter around her face, shielding her skin from the wind. She'd never known a time when the air was free.

The world hadn't always been like this. There had been a time when something called the Environmental Protection Agency (EPA) had been tasked with keeping the country livable.

But by the late 2020's, federal environmental protections had been weakened to irrelevance. Factories once forced to limit emissions were now free to release pollutants into the sky unchecked. Pipelines were approved without any environmental impact studies. The Clean Air Act, which was once a safeguard against corporate greed, was dismantled piece by piece. The air thickened with industrial emissions, and acid rain became a daily occurrence. The atmosphere became so polluted that lung disease skyrocketed.

The poorest communities suffered first. Then the middle class. Then, everybody.

By 2035, Stratus Industries introduced a solution: privatized oxygen. At first, it was just a luxury, marketed as "clean, premium air." Then, it became a necessity. By 2040, the government was powerless. When the EPA fell, Stratus built air hubs, and it controlled who breathed and who didn't. By 2050, the air was no longer a right; it became a product. And Stratus owned every breath.

The shadow market used to be called Main Street, a bustling shopping plaza filled with diverse shops and restaurants. Children played in the city's water fountain while the parents watched. Musicians playing on the sidewalks made the streets even more lively. Now, it's just a maze of scavenged metal stalls, torn awnings, and rusting remains of old storefronts, a refuge for people with nothing to lose.

BACKGROUND IMAGE:
The George Washington Bridge is draped by heavy smog, with a view across the Hudson River to New Jersey in 1973.
Photograph by Chester Higgins / Documerica.

RIGHT IMAGE:
A shipyard worker in Louisiana protects himself with a respiratory mask in 1973.
Photograph by John Messina for the Documerica Project.

Illustration by Haneen Alatiyat.

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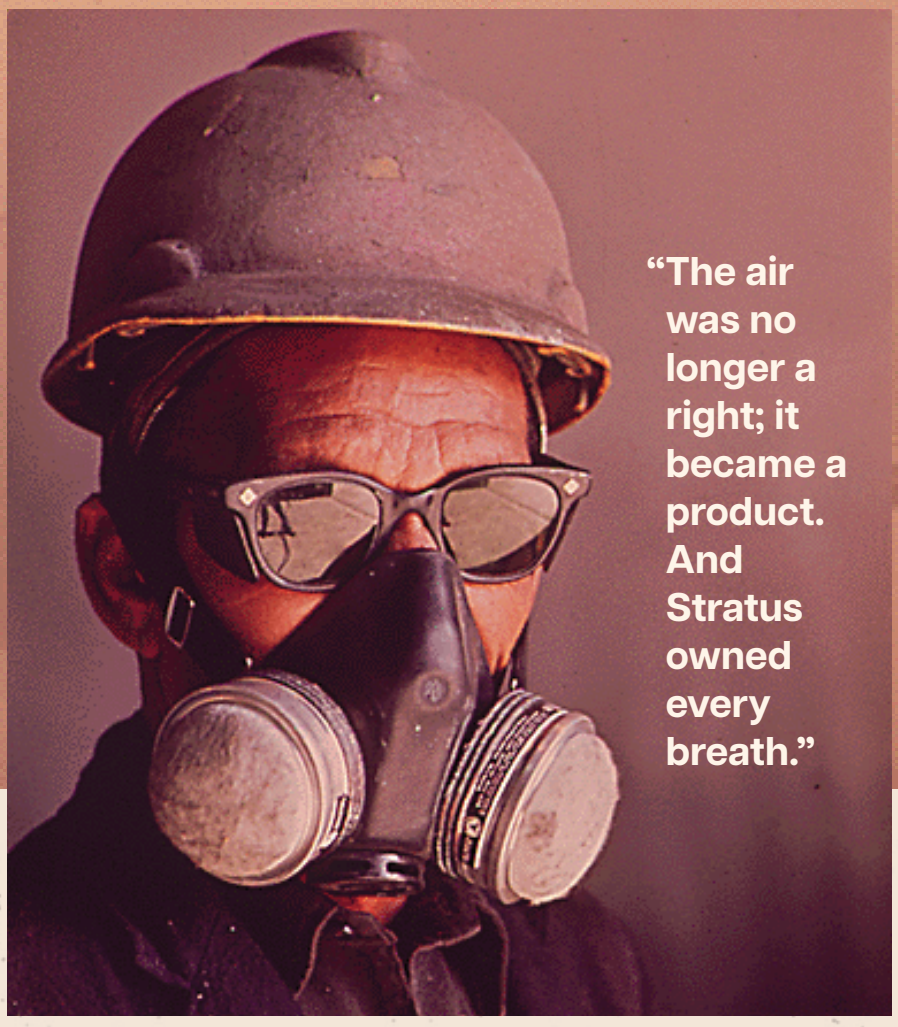


"The air was no longer a right; it became a product. And Stratus owned every breath."

The people wandered around the market like ghosts of themselves. Merchants with tattered clothes sold rusted equipment, worn-out clothing, and half-empty oxygen canisters with cracked seals. The air inside smelled of mold, sweat, and the faint metallic tang of recycled oxygen; it was thin and stale, barely enough to keep people conscious. Parents bartered their possessions for a few more hours of air for their children. A woman clutched a wedding ring in her trembling hand, begging for breath for the infant she had swaddled in rags by her chest. A man held out a family photograph, its edges frayed and brittle, as he tried to trade stories for air.

Sidra pulled the hood lower on her face, keeping her breath steady, trying not to waste what was left of the little oxygen supply she had left. She weaved through the stalls, hoping to find a vendor who wouldn't try to convince her to buy fake air. Some painted old canisters with fresh new labels, filling them with nothing but carbon dioxide. Anything to keep themselves afloat.

She stopped in front of a booth, where a man in a worn-out hazmat suit sat behind a metal counter. He had a collection of small canisters on display, some marked "AmeriBreathe," others unbranded, all overpriced.

"How much?" she asked, pointing to one of the smaller canisters.

The vendor looked her up and down, his cracked visor revealing sharp, distrustful eyes.

"Sixty credits," he said, his voice scratchy.

Her stomach clenched; this was more than she had. She instinctively reached for her knife, hands hovering over her hip, but she forced herself to stay still. A fight wouldn't do her any good.

Before she could even try to negotiate, a siren blared.

The Stratus Enforcement Drone descended from the sky, its red mechanical eyes sweeping the market like a predator searching for prey. The moment the sirens began, the market transformed into chaos. Vendors vanished into hidden passageways as the buyers scattered. A man with a cracked oxygen mask bolted in the opposite direction, but the drone was faster. It shot out a net that ensnared him. His mask shattered as he fell to the ground. He clawed at his throat, suffocating. This wasn't new in the market; everyone had seen it before. No one intervened.

Sidra turned, slipping through the stalls. She had to find the Grey Wardens.

She moved through the remains of the city, her path winding through abandoned subway tunnels and collapsing bridges. The Grey Wardens, if they were still alive, were the last scientists who dared to challenge Stratus. Their headquarters was hidden deep within what had once been one of the EPA's research facilities, now a mockery of what it once was. When

she finally reached the underground compound, she was met by the cold barrel of a gun. A man in patched combat gear aimed at her head, his oxygen mask concealing his face.

"State your business," he spat out.

"I'm here for air," Sidra said, giving the secret code entrusted to her by a friend in the underground. "I know what you're trying to do, and I want in."

A pause. Then, the man lowered his weapon. "You better be sure about that."

Inside, Dr. Toma, one of the last living ex-EPA scientists, stood over a bank of monitors. Maps of Stratus' air hubs glowed in dim light.

"You found us," Dr. Toma said. "That means you know what's coming."

Sidra nodded.

"Stratus isn't going to let people breathe for free," she said, exhausted.

Dr. Toma exhaled.

"Then we have to stop them before they stop us."

The time for planning was over. It was now time to fight.

Sidra and the rest of the Grey Wardens gathered and started to move through the underground tunnels, their gear strapped tight, as all their oxygen meters blinked in the dim light. The air was thick with dampness and the faint stench of decay. They had studied the layout for weeks, looking for every possible entry point and every weakness in the Stratus security team system. If they failed, there would never be a second chance.

Sidra checked the pistol holster on her side. She wasn't a soldier; none of them were. But the need for survival forced them to be.

Dr. Toma led the way to the last underground checkpoint. "The perimeter sensors run on an automated cycle," she told the group. "If we can time it right, we'll have precisely seventy-five seconds to get through before they reset. If you're still in the open when that happens, then you're dead."

Above them the Stratus Air Hub loomed, a seemingly indestructible building of glass and steel, its walls bursting with sickening yellow artificial light. The surveillance drones hovered near the upper levels, their red scanners sweeping the area. This was how and where Stratus regulated the entire region's oxygen supply. If they succeeded in infiltrating the building and shutting it down, they could release oxygen into the city.

Dr. Toma signaled to a technician, named Miller, who knelt beside the control panel embedded in the tunnel wall. His fingers flew over the keypad, bypassing the outdated security codes, hacking into the mainframe. The screen flickered, and a countdown appeared.

"Seventy-five seconds," he hissed. "Move!"

The team climbed the rusted maintenance ladder leading to the surface. One by one, they emerged into the cold air, the acid wind stung against Sidra's exposed skin, but she ignored it. She had much bigger problems.
Two Stratus enforcers stood near the side entrance, armored suits gleaming under the bright lights. They carried plasma rifles–lethal and military grades. If they raised any alarms, they would be done before they could even start.

Sidra took a deep breath. Then she moved.

As they reached the server room, Miller got to work on the mainframe, connecting Dr. Toma's virus to the system. The screen flickered as a line of codes scrolled down.

"Uploading program. Forty-five seconds."

Sidra turned to the door, heart pounding.

Then an alarm blared.

"Security breach detected. Lockdown initiated."

An EPA inspector checking pesticides at the Port of Newark wears a face mask to protect himself in 1974.

Photograph by Dan McCoy / Documerica.

Red lights flashed. As the automated defense sprang to life. Bars shot down from the ceilings, and footsteps pounded toward them.

Miller!" Sidra shouted.

"Thirty seconds!" he yelled back, fingers flying across the keyboard.

Sidra yanked the detonator from her pocket and slammed it against the control panel. A loud hiss filled the air as the oxygen levels plummeted. The

enforcers gasped as they scrambled to adjust their masks, giving them only seconds to act.

"Upload complete!"

Miller yanked the drive from the console. The purification system shuddered, releasing a wave of clean oxygen into the city. The air was free. The people could breathe.

But Stratus didn't let it last.

The plan had been simple: Upload the EPA's override virus into the Air Hub's mainframe, forcing the system to flood the city with free oxygen before Status could stop it. The virus had been their last weapon, their last line of defiance. But Stratus had anticipated them.

Not minutes after they had released clean air, as the team tried to leave, the enforcers had been waiting. They had cut every escape route, jammed every signal, activated every failsafe, and rebooted its system.

Dr. Toma had been the first to die, shot mid-transmission as she tried to buy them time.

Miller had fallen next, bleeding out beside the console, as he was the last one to attempt to leave from the group.

Sidra was the last one left, and she wasn't going to make it.

She went to the server room once again, to reattempt inserting the virus to free the air once again. Smoke curled from the flickering terminals, and sparks flew from exposed wiring. The mainframe still hummed, as if it was still waiting for her to do her job.

Sidra forced her shaking fingers to work. She plugged in the drive, her vision blurring. The override program flickered on the screen. It needed one final confirmation.

As he reached for the keyboard, a cold voice stopped her.

"Step away from the console."

She turned slowly.

Marcus Cain stood in the doorway, his enforcers beside him, weapons at the ready and raised. He looked pristine, untouched by the battle raging outside, his expensive suit unwrinkled, his oxygen mask gleaming. He looked at her the way someone might look at an ant, small, insignificant.

Sidra's hands hovered over the keyboard. The cursor blinked on the screen.

UPLOAD PENDING.

Her oxygen meter flashed. Two minutes of air left.

Cain took a slow step forward.

"You really thought you could change anything?" he asked, almost amused.

Sidra didn't answer. She pressed the Enter key. The screen flickered.

UPLOAD - 5%.

Cain sighed.

One of the enforcers fired.

The bullet tore through her side, sending her to the ground. She gasped, blood pooling beneath her, her breath coming faster, shallower. Her vision swarmed, and through the haze, she saw the progress bar.

UPLOAD - 12%.

Cain stepped forward, crouching beside her, his expression almost sympathetic.

"You never had a chance," he murmured.

He yanked the hard drive from the console. The screen went dark. The upload stopped.

And just like that, it was over.

Sidra's body felt heavy. Her limbs refused to move. Her lungs burned. The air in her mask was gone. The toxic atmosphere clawed its way into her lungs, each breath poisoning her from the inside out. She felt her heartbeat slow. She had fought so hard. For nothing.

Cain turned away as his enforcers secured the room. "Clean this up," he ordered. "And burn the rest of the bodies. Make sure there's nothing left of them."

The enforcers nodded.

Sidra tried to move, but her body refused. She tried to speak, but the words wouldn't come out. She tried to breathe, but there was nothing left to inhale. Her vision darkened. And she never inhaled again.

The riots that broke out were crushed within the hour. The shadow market was set ablaze, and the rebels suffocated before they could fight back. Stratus declared the attack a failed terrorist act, broadcasting images of the Wardens' bodies as a warning to any who would try again.

Cain addressed the nation that night:

"A coordinated attack of our oxygen infrastructure has been neutralized. Stratus Industries remains committed to your safety. Remember I'm a giver - without us, you would not breathe at all."

And just like that, the world continued. People paid for their air. People died when they couldn't afford it. And no one did anything.

The names of the Wardens were forgotten. Their mission became a rumor, a conspiracy, a story that no one dared to believe in.

Haneen Alatiyat is a senior majoring in English.

“I DON’T THINK AI GIVES YOU IDEAS. I THINK AI REPURPOSES IDEAS THAT ALREADY EXIST AND PRESENTS THEM TO YOU AS THOUGH YOU THOUGHT THEM.”

– **Bob Ryan,** English lecturer

English lecturer Bob Ryan abstains from AI.

TO AI OR NOT TO AI

Students accept AI as a way of life; faculty and administrators respond to rising use

By Shengying Sun

Two years ago, Associate Professor Camil Golub, who teaches philosophy, found himself facing a growing number of students using Artificial Intelligence (AI), even in his advanced courses. "It just seems very hard to prevent," he reflected.

So he decided that he had to change the way that he taught. He banned the use of any electronic devices, allowing only pen and paper in the classroom. And he stopped giving homework, instead using class time for assignments.

Photographs by Shengying Sun.

The rise of AI has changed the way that students learn and the way that professors teach at Rutgers-Newark. It has raised questions about academic integrity, forcing the university to respond.

In several candid interviews with Scarlet, students described accepting or giving in to AI as a way of life, while professors and administrators insist that it violates core values in education, such as original thinking and academic honesty.

Joi Xu, a senior computer science major, has been using AI regularly for two years.

"I can't imagine what I would do without AI," she said.

Xu was first inspired to use AI by a friend. Until she saw her friend writing code using AI, she didn't think it was capable of producing logical content. Her view of AI changed completely, and she began to try to use AI to write essays.

"AI always gives me more perfect answers," she said. "Even if I can only come up with four answers after racking my brain, AI can give me eight comprehensive answers in a second." So, slowly, she began to rely on AI. Her first step in writing an article now is to have AI help her create the structure and framework of the article. After that, she adds her own ideas to that foundation. She said that she feels that with AI she is able to write more easily and get better grades than before. Also, the fact that other students use it throws off the curve, forcing her to do what everyone else does, she said.

"Since AI has been around, everyone is using it, and then the (grading) standards of professors have gone up," she explained. "If everyone is a 60, then that 70 is the best. But after using AI, someone can deliver a 95. Then you can't even pass with a 60."

Yue Shen, a junior philosophy major at Rutgers-Newark, uses AI to help him interpret articles, translate them, and summarize them. "I prefer to use AI to learn than the boring and long lectures of professors," he said. "It always makes me learn quickly and accurately."

Shen, a student whose first language is not English, said that he believes that with his English level, there is absolutely no way for him to read dozens of pages of literature and extract the key content by himself. That would take too long, and he could use that time to do other more meaningful things, he said. In his mind, AI saves him from pointless work. Shen even uses it outside the classroom.

"I think AI is like a friend of mine," he said. "I talk to it a lot and I find that it remembers what I said to it and gives me better advice next time."

When Shen started working at a used car dealership last October, he was confused about how to get customers, how to give them better service, and how to sell more cars. He chose to get answers from AI, and with AI's advice, he said, he successfully sold a number of cars in December and earned $10,000.

When Rui Ma, another philosophy major, first came to Rutgers-Newark (after transferring from community college in 2022) he was learning without using any AI tools at all. He said that he studied almost every day for more than 12 hours. He spent a lot of time reading the assigned literature. But even though he did the reading, he couldn't remember everything. Although he put in the time to do the work, his grades were still unsatisfactory. And he found that he was studying more than his body could handle; he was always tired and anxious.

In his second year, Ma started using AI to study. He insisted on it even though a professor had reported him for academic dishonesty for using the translator DeepL, powered by AI. "Why put so much pressure on myself?" Ma said he wondered. "This thing was created for people to use, so why not?"

Now, Ma reports having much less academic stress. And he thinks that's why human beings created AI. In addition to using AI to take notes, summarize articles and translate, Ma prefers to get ideas from AI than coming up with his own.

> "No one is omnipotent, but AI can be," he said. "So why not take what AI gives you and turn it into your own?"

Dean Katherine Perez, the director of the community standards office at Rutgers-Newark, said that when ChatGPT does work that students should, it's an example of cheating. "It's one of the now more prominent reported violations," she said.

The School of Arts and Sciences has among the highest number of cases, with more than 200 for each of the last three academic years, beginning in 2021, with many originating in English Composition courses.

Perez said that Rutgers-Newark has responded to the rise in the use of AI with several measures. It hired a new assistant dean, Madlen Rizkalla, to handle faculty concerns about academic integrity. Since she started her work in January, 90 % of the cases she has handled have been allegations of plagiarism or cheating due to the use of generative AI, greatly increasing the office's workload, she said.

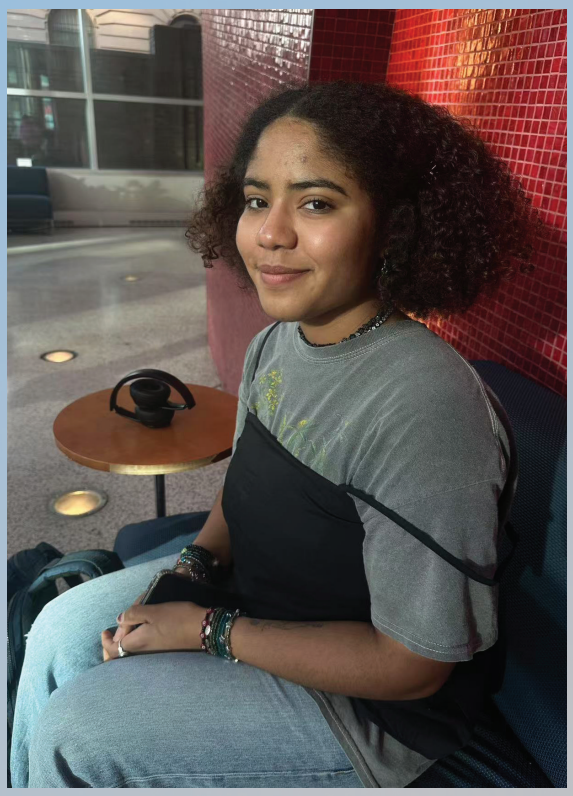
"It certainly has kept us busy," Rizkalla said. "Some cases are clear cut, and others are not so easy to determine."

To minimize cheating and help students and teachers figure out what's okay and what isn't, the university has held many workshops. Most recently, in mid-April, the campus' teaching lab, the P3 Collaboratory, hosted a workshop by an AI innovator to help faculty decide when and how to use AI in the classroom. The flyer for the event, called "Neither Magic Wand Nor Enemy," promised to "demystify AI tools and differentiate between the illusion of learning and true AI literacy" and to consider ethics. The school has also held seminars on AI and academic integrity for students to ensure that they don't use AI improperly.

Computer science major Joi Xu became a convert to AI after she saw her friend using it to write code.

Perez explained that whether using AI is improper or not depends on what it's used to do and what individual professors permit.

"ChatGPT, Grammarly, all of these are tools," she said. "And so when we think about a math class and a calculator, a calculator is a tool, right? It doesn't necessarily mean that you're cheating if you're using one, but not every math course is going to allow you to use a calculator, right?"



Marketing major Nina Lamb said that many of her professors encourage the use of AI.

"It's hard to say 'ChatGPT, ... that's a violation.' It wouldn't be fair to say that because, again, it's a tool," she said. "It's important that ... expectations are outlined right at the beginning of the class, so that (students) know whether or not (they) can or cannot. Every course is so different. Every assignment is so different, and so it really goes back to the instructor to say whether or not it's allowed in the course."

Many of marketing major Nina Lamb's professors encourage the use of AI, unlike other professors, she said. For example, in her market research class, students were required to do a survey. The professor required them to do it using ChatGPT to help them ask questions and suggest improvements, she said.

But Lamb still wanted to think for herself first. Eventually, she started to doubt her own answers and began to ask AI to check it. Even though she didn't want to rely on AI, she ecame more and more dependent on it.

And she concluded that her ability to think was weakened by the constant use of AI.

"I feel like now when I'm trying to do my assignments, the ideas of doing it, it's not as fast anymore," she said. "I take a long time trying to think of it."

She knows in her heart that she shouldn't rely on AI, but to finish her homework for all of her courses on time, she said, with a lot of regret, that she can't help but use AI.

"I need to avoid this at all costs, to do it on my own," she said. "But I'm not sure when that will be."

Even students who, like Lamb, feel doubt and guilt about using AI have surrendered to it to varying degrees. Of 10 students interviewed for this story, only one said he did not use AI to help do his academic work.

Kiroloss Attia, a biology major at Rutgers-Newark, uses AI, but only to help him check for grammatical errors, take quick notes or answer questions of fact, like a search engine would.

"There's no real way to (argue) against it unless you're making an original thought," he said.

He said that he believes that if he ever describes a true idea or an opinion about something again, he must explain it himself—because AI is not logical enough.

The professors interviewed by *Scarlet* said they don't make exceptions for the use of AI.

Take Bob Ryan, a lecturer in the English Department at Rutgers-Newark. Not only does he forbid his students to use AI in his courses, he never uses it in his own life. He said that he believes that the process of thinking is itself the whole point of education.

"Having ideas is hard. It always has been," he said. "I don't think AI gives you ideas. I think AI repurposes ideas that already exist and presents them to you as though you thought them. But as far as what we know about AI, it's not capable of original thought. It's capable of recombining what already exists into something that looks new."

That's why he thinks AI spells disaster for education. Since the creation of AI, he has found that teaching has become more difficult. Students have shorter attention spans. There's also less active critical reading and thinking and more laziness.

Golub, the philosophy professor, agrees.

"I think AI is kind of a more advanced Google search," he explained. "When you present thoughts and text generated by AI as your own, that's just the definition of plagiarism. It's not something that you write. I really care about students doing their own thinking in my classes, because if we don't do that in a philosophy course, I don't know what is the purpose of a philosophy course anymore."

Golub said that the danger posed by AI might not stop there. He said that he worries that some universities may start using AI to replace teachers.

"When you don't have someone with their own mind, their own emotions, their own experiences, communicating with you in a meaningful way, but rather a very advanced, sophisticated AI tutor communicating with you, it's dangerous for students, for education and for development," he said.

While he acknowledged that AI can be handy for research, he insisted, the "concerns, I think, significantly outweigh the benefits."

Shenying Sun is a senior majoring in Journalism.

Whose Song Matters?

What "sonic culture," birdsong and animal studies can teach us

By Nakara Johnson

Photographs Courtesy of Rachel Mundy.

We think that making music is part of what makes us human. But how does our music compare to the sounds of birds? Do sparrows sound like Beethoven? What do the comparisons say about how we evolved? Scientists in the 19th and 20th centuries tried to find the answers by collecting and classifying animal sounds.

Associate Professor Rachel Mundy, who teaches music at Rutgers-Newark, wrote about their research in her 2018 book *Animal Musicalities: Birds, Beasts and Evolutionary Listening*. The book explores how the study of birds has shaped our understanding of sound, music and identity. In the book, Mundy asks an important question of her own: If birds also make music, are human beings more like other animals than we think?

Her work contributes to a new and growing understanding of non-human animals as our equals, not inferiors. The book also brings together the study of the arts and the sciences in an original way, in a field she calls the animanities (animals + humanities).

The book has won attention far from our campus. A music lecturer at the University of Aberdeen in Scotland wrote in a review that Mundy's work made him rethink the power relationships between humans and other animals. In another review, an ethnomusicologist in New York praised Mundy for seeing "that these voices are just as valuable as human voices, or even, more-than-human." In a podcast, a research fellow at Trinity College in Ireland interviewed her about what her work tells us about racism. Mundy also spoke to *Scarlet* Magazine.

NJ: What inspired you to explore the relationships between animals and music?

RM: When I was a student, I was interested in birdsong. I listened to a lot of it. I was a music student, (and) I was reading science articles.

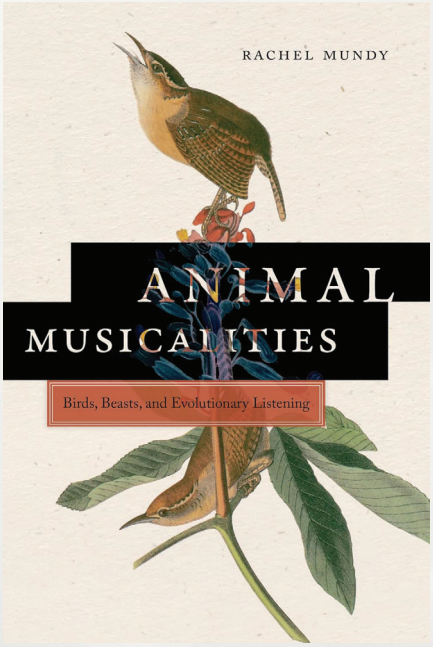
I had assumed that music and science had always had these different methods. But when you look at older experiments in music, from before World War II, a lot of those experiments (also) used very scientific language. They used words like dissection and vivisection, and they made a lot of comparisons between the sounds of animals and the sounds of people.

These were all experiments by white, Western, often colonial researchers, and they often made (racialized) comparisons between the animals they were studying and peoples that lived in colonial or marginalized contexts. So, in the United States, a lot of scientists would compare, for example, talented birds to African American folk song or Native American tunes. So, in Germany, sometimes they would compare certain bird songs to the sounds of musicians from Indonesia or the sounds of musicians from Thailand. To me, this was very clearly the beginning of a one-to-one relationship between asking about how we listen to animals and how we listen to each other.

NJ: Could you elaborate on the methods used to study the influence of animal sounds on human music?

RM: I don't really study the way animal sounds influence human music. I study the way that humans listen to those that we consider radically different from ourselves.

If there's a recording involved, I listen to the recording and then look at the way that the scholar or scientist described that recording. I look at how people describe how they listen. I look at how they describe the things they're listening to. So, for example, I did a study of the first research into humpback whale song, in 1969, and I'm fortunate that the recording that those scientists used is very available. So, I listened to the recording they listened to.



Mundy's book *Animal Musicalities*, published by Wesleyan University Press in 2018, has won praise and attention worldwide.

NJ: How has combining animal studies with musicology opened up new avenues for understanding human identity and cultural evolution?

RM: We can't successfully talk about non-human animals unless we acknowledge that the language we have to talk about them comes from white Western scientists in the 19th and early 20th century. It was language developed to talk about not just animals, but every living thing that seemed different from them, including women.

There is a long tradition of talking about voices as if they represent your inner soul, as if having a voice, having a song especially, tells us something about your invisible interior world. It implies that you have rights. It implies that you have sentience. It implies that you have interiority.

One of the arguments that was made about colonial subjects, that was made about Black people, that was made about women also, in the early 20th and late 19th century, was that they did make something that sounded like music, but … it was just this sort of biological production, produced by hormones, and that the only people who made real music were people who had a certain social status.

I feel like turning to sound has been really powerful because it immediately opens up this box of arguments about, literally, who has a soul, arguments about who has civil rights and all of these things.

NJ: Where do you see your research going next?

RM: It's been almost cataclysmic, the way that we've imagined other species, which is as resources. You can trace it pretty directly to models from colonial exploration. Where do I see this work going? I hope that it is part of a broader conversation with other people about how we develop better ways of sharing a more-than-human world.

In my own work, I'm looking at case studies from the 1970s and 80s in conservation, particularly involving women who helped create projects that were massive success stories. Yet those success stories still did not translate into fixing the problem, so to speak.

One example is the discovery of humpback whale song. It was this major discovery. It helped launch the Save the Whales Movement. This discovery was made largely through the work of a woman musician, rather than a scientist. But when they made that discovery public, there were, like, 3000 or 4000 humpback whales in the world, and today there are almost 100,000. So that looks like a success, right? But as you know, the ocean in which those animals live is in crisis. The idea that this success is really going to help, it still doesn't work. Because we live together. Just focusing on this one species wasn't enough.

Another example: an interesting story about a woman who was the oldest daughter of one of Florida's wealthiest Black families, MaVynee Betsch. She trained as an opera singer, had this incredibly successful career in Europe, and was asked after 10 years in Europe to come home and care for her mom and grandfather. They were terminally ill, so she leaves her career behind, comes back home to Florida, takes care of them until they die, inherits a million dollars.

She gives every single penny away to environmental and conservation groups. A lot of it is to support the movement that was developed to save the monarch butterfly. She gave all her money away and ended up living on the beach that she grew up on. She became homeless on the beach and continued from that position to advocate for local environmental causes.

She did a stellar job of trying to conserve the beach she lived on, where she was looking at the interconnection between the community that lived there and the plants and animals that were part of that community, and effectively, through community activism, was able to preserve certain parts of that habitat very successfully.

It's part of a much larger set of questions and projects that many people are working on.

This interview has been edited for brevity and clarity.

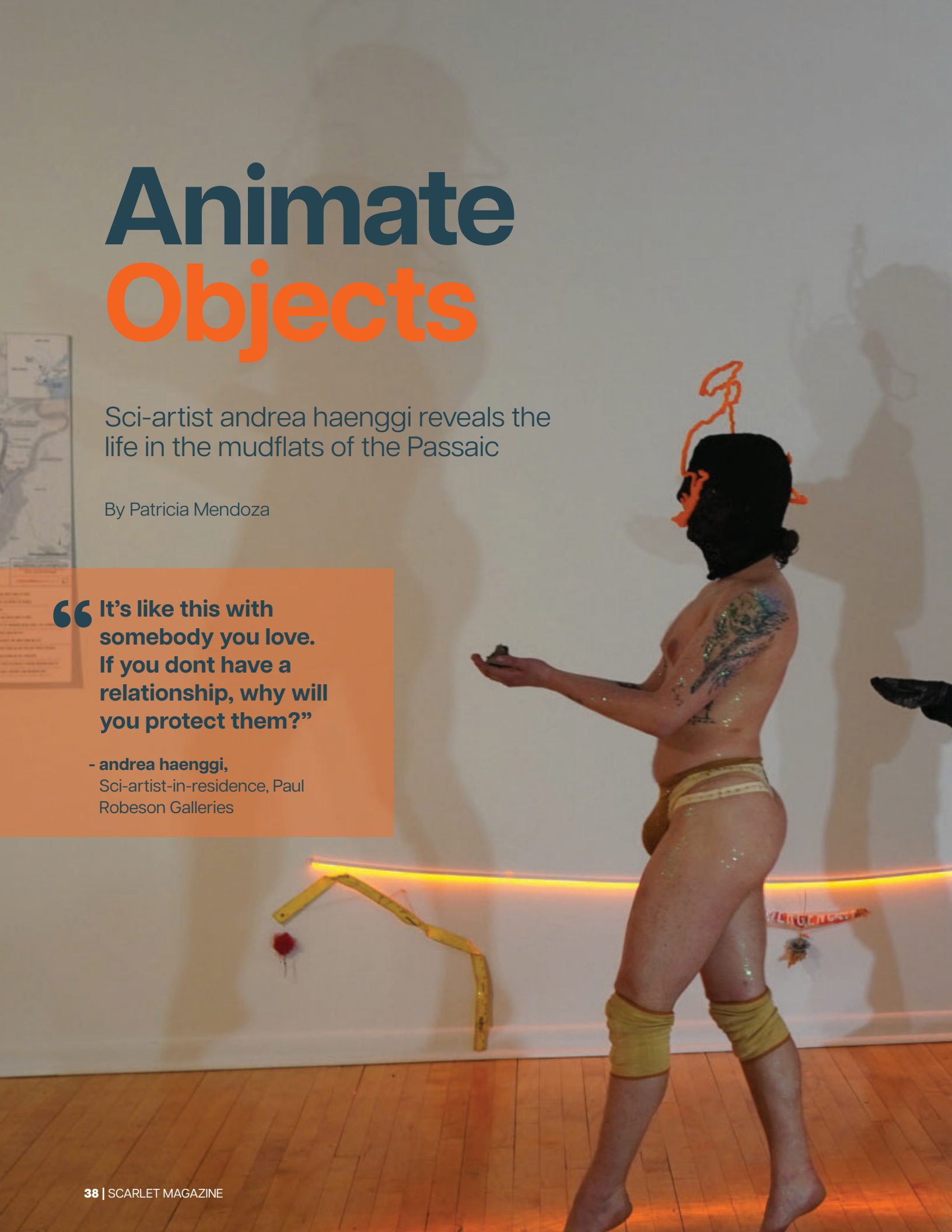
Nakara Johnson is a junior majoring in Journalism and minoring in Marketing.

Rachel Mundy, shown here collecting birdsong, studies 20th century sonic culture.

Animate Objects

Sci-artist andrea haenggi reveals the life in the mudflats of the Passaic

By Patricia Mendoza



> **“It’s like this with somebody you love. If you dont have a relationship, why will you protect them?”**
>
> **- andrea haenggi,**
> Sci-artist-in-residence, Paul Robeson Galleries

From left to right, dancer Theo Armstrong, also known as Luxury Bones, and artist andrea haenggi perform at the Paul Robeson Galleries on April 3 to mark the closing of haenggi's exhibition. The orange headpiece shows the outline of the Passaic now, and the silver one shows the river's shape in 1905.

Photographs by Naim Ali-Pacheco.

Can we truly reinvent ourselves without acknowledging all that came and endured before us? How do we progress without forgetting? Does nature know boundaries? Interdisciplinary artist and choreographer andrea haenggi wants visitors to contemplate these questions as they walk through her immersive exhibit *Marismas de Mareas Olvidadas (Forgotten Tidal Mudflats)*, which was on view at the Paul Robeson Galleries at Express Newark through April.

Upon entering the exhibit, something immediately caught the eye—a baby doll with black skin, its eyes an unnatural shade of aquamarine, mounted on the wall next to a tattered tennis racket. The doll's blue-eyed gaze was vacant and clouded with dirt. Against a stark white wall, a discarded toy gun hung at knee level, its once shiny surface matted through time. On the neighboring wall hung a branch, ribbons of plastic and other detritus, both earthy and fabricated, illuminated by a strip of neon orange light. Assorted stones lay on the ground. So did sheets of paper, heavy with cracked sediments, each swatch of mud creating different patterns. In the middle of all this, a flat-screen TV flashed footage of muddy surfaces, both wet and dry.

These objects, both bright and earth-toned, natural and unnatural, were all carefully collected and displayed across the gallery by haenggi. She gathered them from the mudflats of the lower Passaic River, the areas along the Newark Bay frequently submerged and exposed by tides.

The multifaceted Swiss artist creates physical pieces through sculptures and incorporates performances into her art that showcase her background in dance and choreography. haenggi herself is an agent and co-founder of the Environmental Performance Agency, an artist collective formed in 2017 whose purpose is to shift the ways of thinking around the environment. The artist collective appropriated the acronym (EPA) from the U.S. Environmental Protection Agency in response to rollbacks on environmental regulations at the time. She advocates for the protection of all living things, including those deemed less valuable by society, such as weeds.

Her work is an example of sci-art, an old form at the intersection of creative expression and the scientific world, in current vogue. The Paul Robeson Galleries chose her as its sci-artist in residence this academic year.

"One of the beauties of the residency program is the lack of predictability," said Anonda Bell, the chief curator of the Paul Robeson Galleries. "Hers is very unique, installation-based and engages people in a different way, physically."

Throughout her career, haenggi has questioned hierarchies, those vertical lines separating humans and nonhumans that suggest that we are superior. Instead, she sees herself as creating art with collaborators that aren't human. Her name reflects that philosophy. She writes it in all lowercase letters, giving each letter equal importance. She has said this mimics the shape of the rhizomatic roots of Mugwort (*Artemisia vulgaris*), which spread horizontally.

After haenggi was selected as the gallery's sci-artist, she was exploring the potential existence of the indigenous seaweed bladderwrack in the lower Passaic when she came across the muddy area between land and sea. Realizing there was no bladderwrack to be found, she instead fixated on the mudflats. They spoke to her.

"For this piece it came all out of listening," haenggi said. "I don't come in with an idea or something big. I was just like, 'I'm coming here to listen,' and then the mudflats invited themselves in and I'm like, 'Okay, I need to pay attention now.'"

Washed into this space, the Black baby doll symbolized to haenggi the city's failure to provide details on the area's toxicity to the communities of color

living nearby. The area has suffered years of neglect from the city, leaving it rife with pollution and sewage overflow. The accumulation of waste over time has become so severe that the mudflats are now considered designated Superfund sites, locations polluted with hazardous materials.

haenggi juxtaposes the remains of manufactured objects, such as the baby doll, with the textures of nature, such as swatches made from mud. In doing so, she exposes how human and non-human connections are intertwined in this complex environment. haenggi refers to each of the scavenged items as performers, abundant with life and showing their vulnerability to the audience.

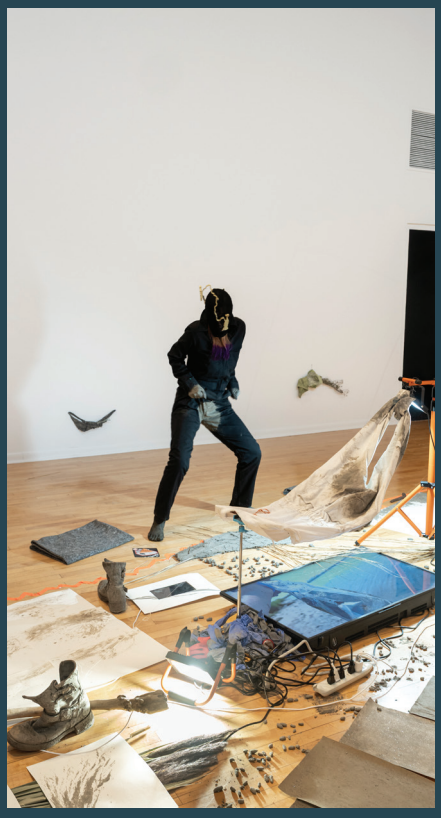
"It's all alive. It's not something that's dead, so how can we give it that rest and balance and listen to it?" haenggi said.

In attempting to answer the question, she brings awareness to the state of jeopardy that the mudflats—and the ecosystem alive in the water and the communities of color alive outside it—all exist in. At the same time, she celebrates the unique makeup of the landscape and our human efforts that can make or break it.

Despite the constant degradation of the area and its toxic legacy, haenggi's exhibition suggested that our participation can heal this area so damaged through time, by people.

The exhibit exposed the chemical abuse of the Newark Bay over time through two 3-D printed outlines contrasting the bay's shapes in 1905 and its current form. Performing as part of the exhibit, haenggi wore the structures as headband-like headpieces, emphasizing the change in their shape across a century. These structures were co-created with Keary Rosen, an assistant teaching professor of Arts, Culture and Media and director of the Form Design Studio and Lab at Express Newark, who collaborated with haenggi to create the silhouettes of the bay.

The two worked together to make the silhouettes into something wearable. They started by taking images from the maps, then turning them into 2-D figures before twisting them into their 3-D forms to fit haenggi's head. Rosen and Emmanuele Cacciatore, a long-time lecturer in the Department of Arts, Culture and Media, both incorporate elements of bio-art into their curriculum. The two use materials such as mycelium, a white, hairlike fungi, to create structures from 3-D printed molds in the classroom. The mycelium transforms into a material resembling styrofoam. Unlike styrofoam, however, this new structure is completely biodegradable.



"It's another way of thinking about art making. Potentially I'm making something that has a finite existence, something that will go back to the environment," Rosen explained.

The 3-D print of the bay's current shape is orange, the same orange seen throughout the exhibit. It is wider in its form to emphasize the area's decline, while the 1905 silhouette, which looks like a golden filament, maintains the original shape with its unique curves still largely untouched.

During her performance with silhouettes on her head, haenggi, who is a dance educator, moved in ways that suggest the body of water.

"I would say all my work is strong movements," haenggi said. "I believe that movement is ephemeral. In the movement is the change, and it's the connection."

The actual Environmental Protection Agency (EPA) prevented haenggi from accessing the mudflats while she was exploring the ecosystem. The agency deemed them too hazardous, because its contaminants cause cancer and other illnesses. As part of her practice, she typically navigates the area through 'desire lines,' or unofficial paths carved by animals and people as they move through spaces. However, haenggi received pushback from officials. Undaunted, she entered these areas in disguise, by wearing a jumpsuit that resembled those worn by EPA scientists.

In the art, she incorporated emails from three officials who denied her access, their redacted names printed onto two 18-by-72-inch long, silk banners hanging side-by-side. Each signed off as "Assistant Regional Counsel," warning her of the dangers in obtaining these samples. She also incorporated a manifesto on the banners in a section of the exhibit entitled, "*How do we clean without erasure, heal without forgetting?*" In the manifesto, adapted from one by American artist and choreographer Yvonne Rainer, haenggi urges visitors to say "no" to practices that harm the mudflats. Below a list of calls to action, the phrase "We who believe in freedom cannot rest until it comes" reminds us that this battle for the mudflats, like any environmental journey, is ongoing and cannot be solved overnight.

This requires us to look within ourselves and assess our impact on the natural world around us, and the things we cannot control. Furthermore, it compels us to reflect on the human tendency to build borders that separate us from forms of life that existed long before us.

"Nature does not work in these borders that we think of," haenggi reflected.

In an interview with Scarlet, she also challenged the loaded concept of 'protecting' a natural space; she finds it necessary to build connections with nature before attempting to alter it. The lower Passaic's reputation of carrying toxic waste creates a fear of interacting with the water in any way, and haenggi urges people to break free from this aversion by looking at it from a new perspective.

"Well, first you need to make a relationship. It's like this with somebody you love. If you don't have a relationship, why will you protect them?," haenngi explained. "Maybe a baby cannot walk, so we protect them naturally. We take them by hand. We pull them in close. Where is the line with that one thing we want to protect and the one thing we think is dangerous?"

haenggi hopes that *Marismas De Mareas Olvidadas (Forgotten Tidal Mudflats)* inspired change and that the conversation on reclaiming land without erasing its troubled past will continue beyond the gallery. This exhibit is just one part of the haenggi's journey with the mudflats as she moves forward to better acknowledge and connect with nature while amplifying the voices of communities dealing with changes beyond their jurisdiction.

"As a community, we can already do things. We don't need to wait," haenggi said.

Patricia Mendoza is a senior majoring in Journalism.

LEFT PAGE:
andrea haenggi danced beside her installation, *Marismas de Mareas Olvidadas (Forgotten Tidal Mudflats).*

From left to right, Theo Armstong and andrea haenggi performed in the middle haenggi's art installation. On Armstrong's chest are bandages that read "MUD FLATS."

RIGHT PAGE:
From left to right, Theo Armstrong, singer Muyassar Kurdi and andrea haenggi posed next to a Black baby doll salvaged from the mudflats of the Passaic River after performing at the exhibition's closing event.

What We Owe Water

A personal essay

By Cass Guinto

"Water returns everything to where it belongs."

Denyce giggles underwater in a pool during a family vacation.

Photograph by Khloe Rodriguez.

The three of us have been friends for years, but it was our first time hanging out in Alex's room. We sat in a spacious nook with a window—Denyce on a pillow against the wall facing me, Alex cross-legged to my right, and I lay on my stomach between them. As we settled into our respective positions, Denyce started laughing and gesturing at us.

"This is the most beautiful sight," they said. It was because they could see both me and Alex from where they sat.

For as long as I've known Denyce, they've had a thing for water. Specifically natural bodies of water like rivers, lakes, oceans. Never swimming pools. And even though we've been friends since we were fourteen, we have trouble saying we love each other sometimes. So instead, when I find bodies of water as I'm out and about, I shoot them a text:

"i gotta take you here. there's water."

And they go:

"WATER!!!"

We were gathered in the nook so that I could interview them for Quilting Water, a collaborative public arts project exploring the intersection of ecological and racial justice, sponsored by the Institute for the Study of Global Racial Justice at Rutgers. I was among a cohort of students selected from across all three of our campuses to gather interviews for the project's oral history archive. I chose to interview two of my best friends—who, like me, are island-descended queer people of color.

The first interview started with Denyce recounting a memory of water.

"It was an outdoor concert by the beach in Asbury Park, New Jersey in the summertime," they started. "It wasn't supposed to rain that day, but it did."

Water is one element tying Alex, Cass and Denyce together as friends.

Photograph by Justin Liriano.

I remember laughing and reaching out to shove them. This was the concert we went to together.

"We wore our bathing suits to the concert. It was raining on everyone, but we were still watching. Me and Cass were living our best lives—I don't like summertime, but it was cloudy and I was getting free water, so it was the best day ever."

The part I remember most is when the main act, Pierce the Veil, took the stage. As is the case with most concerts, the crowd started pushing forward to get closer to the front. I was zoning out a little from the chaos, until I suddenly felt Denyce clasp my wrist. When I looked up, they were smiling back at me as they moved up with the other concertgoers, their grip tight so they wouldn't lose me. We stood side-by-side linking arms for the rest of the show, our shoes sloshing around in the puddles below, screaming our lungs out to the music. I concur with Denyce that it was one of the best days ever. It was among the many instances that I decided the two of us would be friends for life.

"Water," they said, "returns everything to where it belongs."

Years later, I now wonder how many places we can still "belong" to in the face of the unpredictable.

Alex was my second Quilting Water interviewee. Both of our families are from the Philippines, so I like to think that we share a pretty similar relationship to water. With our motherland being an island nation, and one often talked about in the larger context of the climate crisis, I feel like it's near impossible for us to not care about water in some way. As we dug into Alex's memories in both the Philippines and the United States, she said something that really struck me: "It doesn't seem like water loves me back, but I know it does, and I will never stop loving it."

Looking back at the transcript, I wondered what it meant for water to love us. Did it mean expecting this force of nature to be merciful to us? To Alex, it was something more radical than that. Something symbiotic, even. Water nourishes us and our land, and so we are obligated to nourish it in return. To ensure that it is unpolluted, inhabitable, able to contain and give life, and in Alex's words, "unmonetized." For those of us whose homelands are ravaged by the effects of climate change and injustice, what we owe to water can feel like an insurmountable debt. One that we aren't sure we could ever repay in this lifetime.

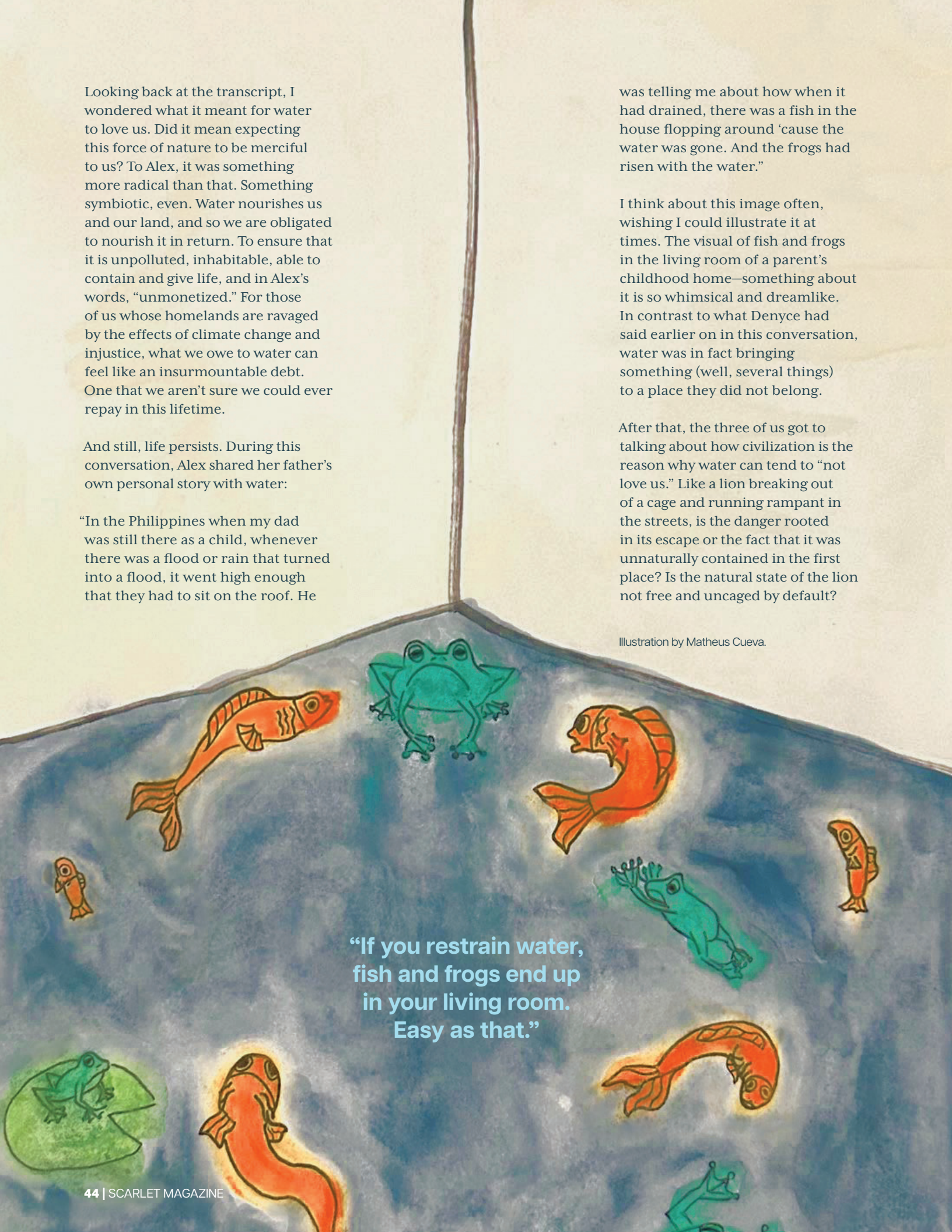
And still, life persists. During this conversation, Alex shared her father's own personal story with water:

"In the Philippines when my dad was still there as a child, whenever there was a flood or rain that turned into a flood, it went high enough that they had to sit on the roof. He was telling me about how when it had drained, there was a fish in the house flopping around 'cause the water was gone. And the frogs had risen with the water."

I think about this image often, wishing I could illustrate it at times. The visual of fish and frogs in the living room of a parent's childhood home—something about it is so whimsical and dreamlike. In contrast to what Denyce had said earlier on in this conversation, water was in fact bringing something (well, several things) to a place they did not belong.

After that, the three of us got to talking about how civilization is the reason why water can tend to "not love us." Like a lion breaking out of a cage and running rampant in the streets, is the danger rooted in its escape or the fact that it was unnaturally contained in the first place? Is the natural state of the lion not free and uncaged by default?

Illustration by Matheus Cueva.



"If you restrain water, fish and frogs end up in your living room. Easy as that."

Alex Calpo photographed a beach sunset in Cancun.

Denyce and Alex talked about the idea of water itself being free. Our idea of a 'flood' is really water infiltrating our buildings, but since when were we ever entitled to deciding where water does and does not belong? Put simply, if you restrain water, fish and frogs end up in your living room. Easy as that.

Regardless, Alex's reverence for water was hard to miss during this interview. As she spoke, her words swirled with a sense of unconditional love for the element in all its sublime glory and chaos.

"Water has taken away bad thoughts and bad memories. I am so in love with it."

Our conversation ended around that point—Alex and Denyce both gushing about their love for water. We were at Alex's house 'til almost five in the morning, just gravitating toward each other like we had always belonged there.

Recently, I dug into my poetry archive and found something I'd written about my friends over a year ago:

all this affection
in my outstretched hands
offered not to you
but to the prehistoric disasters
which catalyzed human evolution

to the gatherer
who gave the hunter a chance
and began the lineage that led to you

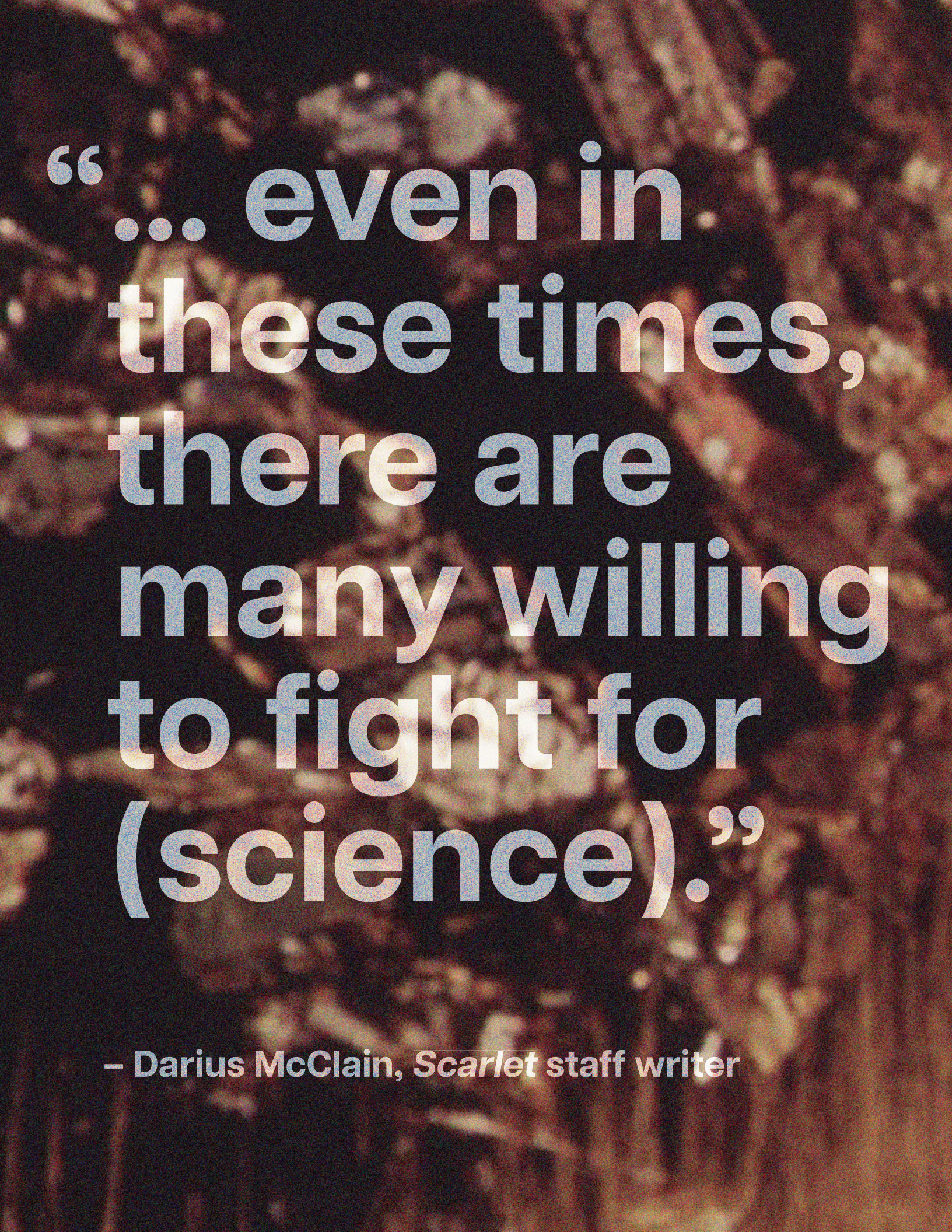
to the waning and waxing moon
that shifted the tides
harboring us to each other

It surprised me that it also had to do with water. It was as if the element were some kind of invisible string tying us all together.

Alex Calpo took this selfie in a canoe in Cancun.

Cass Guinto is a senior majoring in English.

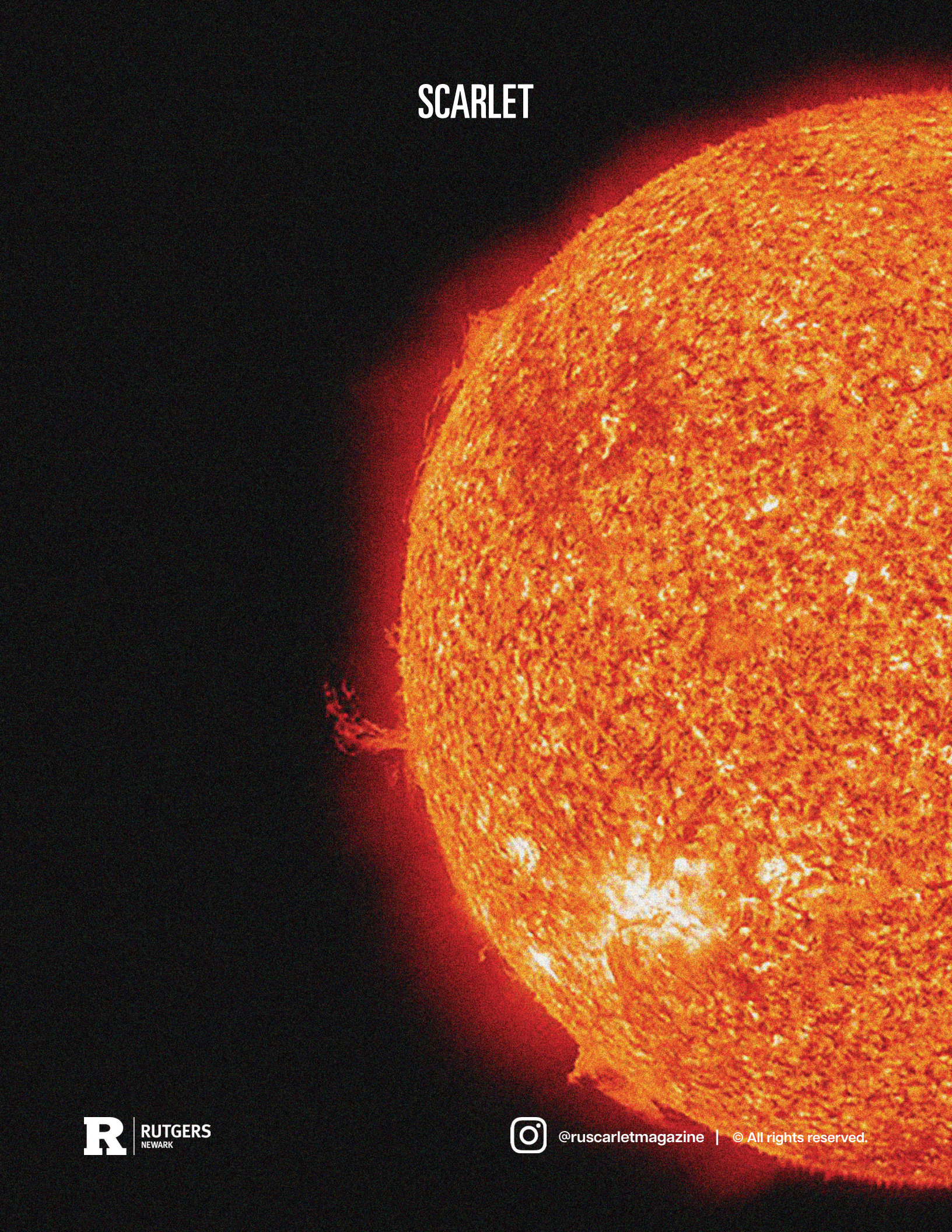
Photographs by Alex Calpo.


“... even in these times, there are many willing to fight for (science).”
– Darius McClain, *Scarlet* staff writer

In 1973, in the shadow of the Statue of Liberty, the land that would become Liberty State Park was an illegal dump site.

Photograph by Gary Miller / Documerica.

SCARLET



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