



SENSE AND PERCEPTIBILITY

Lauren Carlson—a biopsychology, cognition, and neuroscience student—demonstrates an EEG cap in Psych 342. The class is taught by David Brang, associate professor in the Department of Psychology and principal investigator of the department's Multisensory Perception Lab. Researchers in the lab explore the ways our five senses—sight, hearing, taste, smell, and touch—constantly talk to and integrate with each other. “When you’re interacting with the world, it’s very rarely a unisensory experience,” says Brang. The lab examines brain tumor physiology, synesthesia, attention, and more, and its groundbreaking research was recently honored by the U-M Provost’s Neuroscience Scholars Committee for outstanding contributions to the field.

Christina Merrill/Michigan Photography







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Natalie Condon

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A Perennial Educator

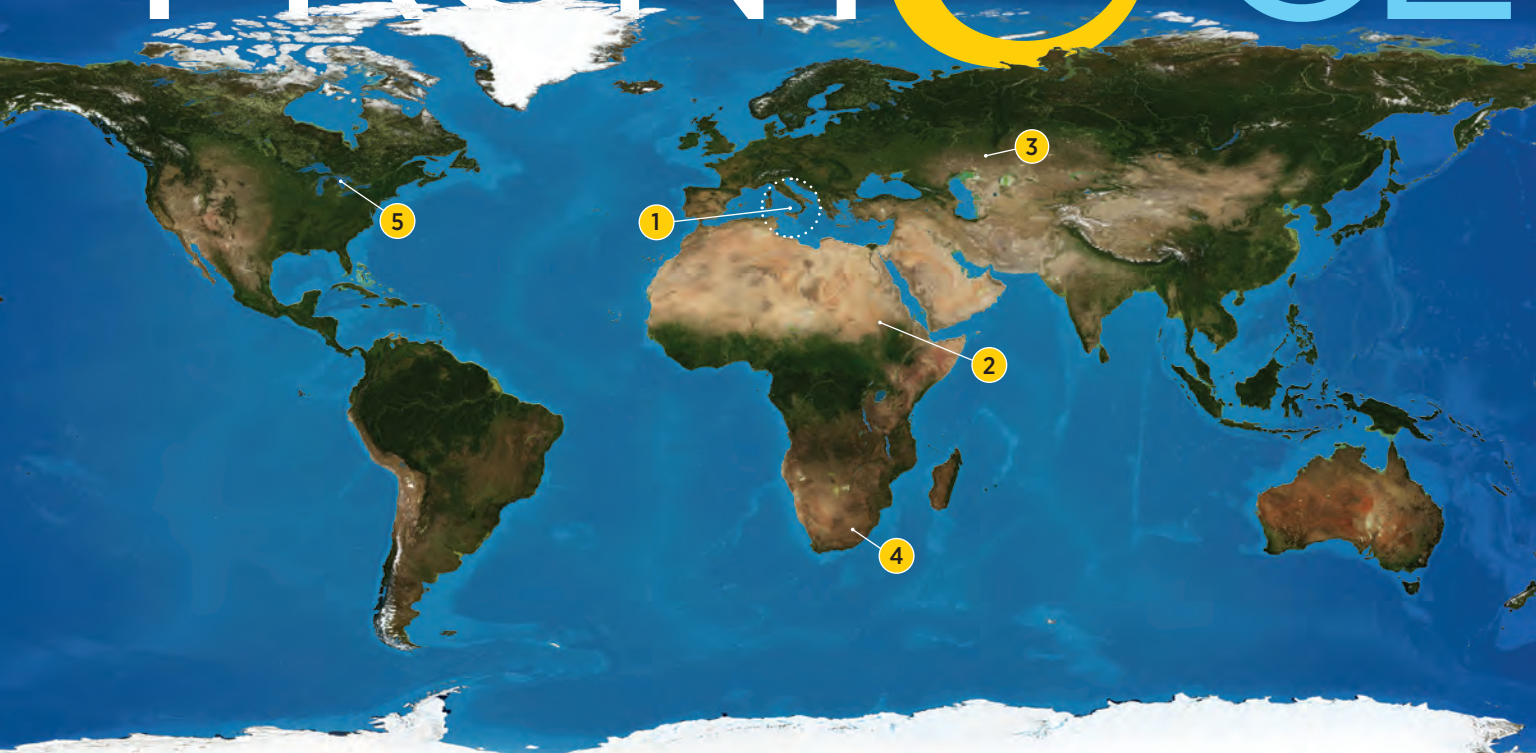
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FRONT & CE



The Gift of Exploration

A \$1.15 million gift from **Steve Klinsky** (B.A. 1976, Economics and Political Philosophy), founder and CEO of New Mountain Capital, has established The Klinsky Expeditions, a series of archaeological digs that will be led by LSA faculty and include U-M students. The gift also funds new educational programming for K-12 students across Michigan.

The first cohort of The Klinsky Expeditions will be led by faculty from the Kelsey Museum of Archaeology and the University of Michigan Museum of Anthropological Archaeology (UMMAA) and will take place around the world (see map for locations).

The five Klinsky Expedition projects are:

- 1 **Battlefields of the Punic Wars**, led by David Stone, lecturer II in the Department of Classical Studies
- 2 **Finding Ancient Napata: Lost City on the Nile**, led by Geoff Emberling, research scientist at the Kelsey Museum
- 3 **The Northern Masters of Eurasia: Nomadic Elites at the Dawn of the Silk Roads**, led by Bryan K. Miller, assistant professor of the history of art and assistant curator at UMMAA, in collaboration with Kazakh archaeologist Arman Bisembayev and Alicia Ventresca-Miller, assistant professor of anthropology and assistant curator at UMMAA
- 4 **Dust, Beads, and Genes: Pinpointing Our African Origins with Ancient DNA**, led by Brian Stewart, associate professor of anthropology and associate curator at UMMAA
- 5 **A Moonshot Under Water: Discovering Ancient Hunting Sites Beneath the Great Lakes**, led by John O'Shea, professor of anthropology and curator of Great Lakes archaeology at UMMAA

ENTER

THE EDUCATION OF James Earl Jones

By Lorena Chambers

James Earl Jones changed his major from pre-med to theater and drama in his second year at U-M. He jumped into learning all facets of stage production and first gained

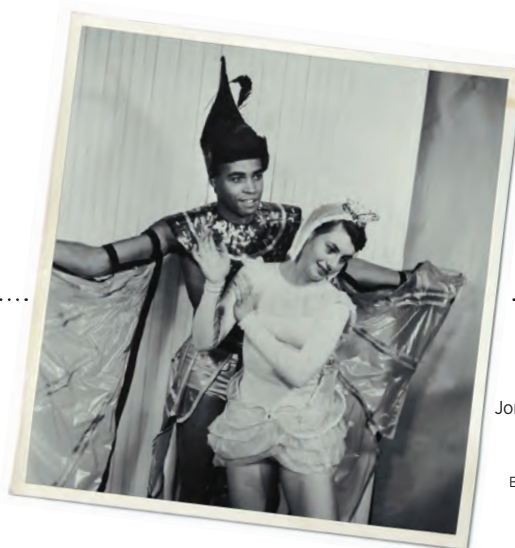


backstage experience such as building sets, sewing costumes, and setting up stage props and decor.

As he began to explore his new major, Jones auditioned for small, supporting roles for productions on and off campus. He auditioned for a minor role in the theater department's

fall 1952 production, but was instead encouraged to try out for a larger, supporting role by his theater professor and mentor, Claribel Baird Halstead (M.A. 1936), which he subsequently won.

Within a few months, in the 1953 spring semester, he played the lead character in *Deep Are the Roots*. The play tells the story of a highly decorated Black veteran who returns home to the South's prevailing racism. The script's realistic take on race wasn't necessarily accepted by all



As a U-M student, James Earl Jones performs in *The Birds*, circa 1954. Bentley Historical Library

audience members; Jones recalled in a 1994 *Michigan Alum* article that "the show went on, despite the interruption during one performance when a graduate student rose and ostentatiously exited to protest a scene between me and the white actress playing opposite me."

As his stage roles grew, Jones's oratory skills led to incandescent performances. Halstead, who would become a lifelong mentor and friend to Jones, noted Jones's raw talent and the cadence of his voice. "He was a very fine actor. He always had a remarkable voice, for which no teacher is responsible," she said in a *Michigan Today* article.

Editor's Note: Lorena Chambers (M.A. 1996, Ph.D. '20), a postdoctoral research fellow in the Department of History and with the Inclusive History Project, has been researching actor James Earl Jones throughout the past year—including his experiences as a student at U-M. An article she wrote about Jones was published in Time magazine last year, and the preceding is an excerpt of a piece she wrote for Michigan Alum magazine. Jones, a 1955 U-M graduate, died in 2024.

SCIENCE AND TECH MEDALISTS

Two LSA alums received medals from the Biden White House in early January: **David Walt** and **David Tilman**.

Walt (B.S. 1974), a chemistry alum, is a core faculty member of the Wyss Institute at Harvard University. He was awarded a National Medal of Technology &

Innovation. Walt pioneered the use of microwell arrays for single-molecule detection and genetic measurements, which has revolutionized the process of genetic and proteomic analysis, enabling the cost of DNA sequencing and genotyping to plummet nearly a million-fold in the last decade. Tilman (B.S. 1971, M.S. '73, Ph.D. '76), who earned de-

grees in zoology and ecology at LSA, is a professor at the University of California, Santa Barbara, and at the University of Minnesota. He has been called "the most cited ecologist in the world" and is a pioneer in biodiversity science. He was awarded the National Medal of Science.





Courtesy of Myra Beaudoin Bertrand

TOP of the World

“[W]hen I got there, **it was so emotional** to just finally make it and remember everything that it took, from a life perspective, to be there. ... And then it’s like—**this is it**. And I kind of fell to my knees.”

—Myra Beaudoin Bertrand (Ph.D. '08), an organic chemistry alum who reached the top of Mt. Everest last year. Her story was featured in *Michigan Alum* magazine.

Detektiv Work

Last fall, the German-speaking literary world erupted in celebration of a rare discovery: Hermann F. Weiss, professor emeritus in the Department of Germanic Languages and Literatures (GLL), found five letters from the renowned German author and playwright Heinrich von Kleist (1777–1811) in the Tyrolean State Museum Ferdinandeum in Innsbruck, Austria.

The letters, which had been unknown until Weiss’s discovery, date from 1809 to

1810 and are addressed to an Austrian diplomat named Joseph von Buol-Berenberg. They reveal Kleist’s account of the Napoleonic Wars, his poetic ambitions, and his malaise—“*I wake up early in the morning without enjoying the sun, spend the day torturing myself with thoughts about how to save things, and am tired in the evening from doing nothing,*” reads one letter, sent from Prague in 1809.

These handwritten letters created quite a stir in the

German-speaking press.

“All major national newspapers and another hundred local newspapers reported about the find, radio features were aired, press conferences held, and readings organized,” says GLL Chair Kerstin Barndt, who describes Weiss’s find as extraordinary “detective work.” The German weekly *Die Zeit* even sent a journalist from Hamburg, Germany, to Weiss’s home in Dexter, Michigan, to capture the story of the letters.

Nick Hagen



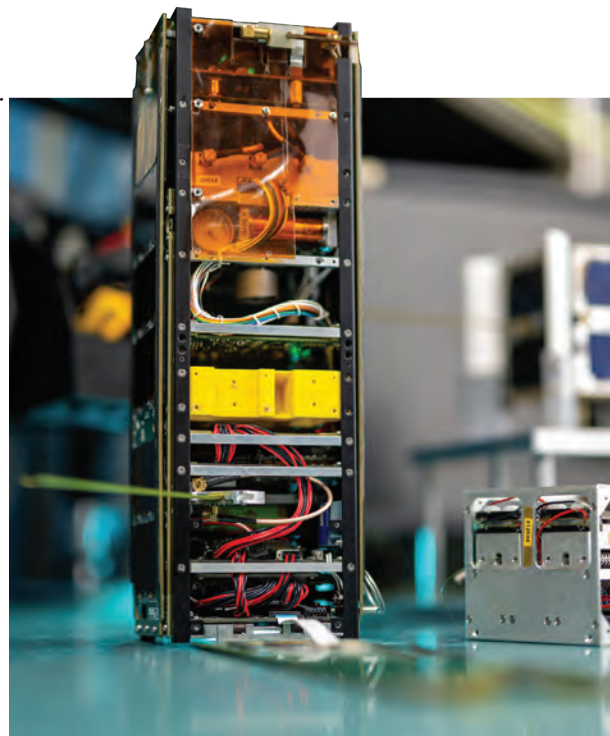
STARI, STARI Flight

The first space mission led by the U-M Department of Astronomy is scheduled to launch in 2029 with the support of a grant worth \$10 million from the Astrophysics Research and Analysis Program of NASA's Astrophysics Division. The crewless mission is called STARI—STarlight Acquisition and Reflection toward Interferometry—and will showcase the viability of a new technique for studying exoplanets, or planets outside of our solar system.

The technique could be used in the future to better

understand whether any of the exoplanets we know about are capable of supporting life as we know it. "We've detected thousands of these planets and most by indirect means—in other words, not directly through the light they emit," says John Monnier, professor of astronomy and leader of the project. "It's time to change that."

STARI itself isn't designed to show us new things about those planets. Rather, it will demonstrate a crucial technology for a powerful technique called interferometry to prove that larger, more expensive future missions can use this approach to look for signs of life on other planets.



James Cutler, a professor of aerospace engineering who also spearheads the CubeSats Working Group in the U-M Space Institute, is a co-investigator, and other collaborators represent NASA and institutions across the country.

The STARI mission will use two CubeSats that are each twice the size of the one shown here.

Eric Bronson/Michigan Photography



COMPUTING ACROSS DISCIPLINES

"The program has opened up a lot of new opportunities for me. It's given me tools that will definitely benefit my future career."

—Emma Moss, an undergraduate psychology major who is pursuing a computing for expression minor through the new Program in Computing for the Arts and Sciences (PCAS) at LSA.



Correction: In the fall 2024 issue of *LSA Magazine*, we omitted the following credit on some images in the story "Shining Light": AND YET YOU SHINE. Copyright © 2024 by Supriya Kelkar. Reproduced by permission of the publisher, Candlewick Press, Somerville, MA.



GO WEST

Students at LSA's Camp Davis Rocky Mountain Field Station in Wyoming measure stream water flow and chemistry during their summer "Ecosystem Science in the Rockies" class. The study helped them understand how hazards such as wildfires influence the water quantity and quality. Camp Davis is located about 20 miles from Jackson Hole, Wyoming, in one of the most geologically and environmentally dynamic regions in the country. Students in this course explore the unique and diverse geological history and climate of the region and develop an understanding of the distribution and function of grasslands, forests, and alpine ecosystems in the Rocky Mountains.



I SPY

1. Letters L, S, and A
2. Bamboo steamer
3. Books in Hatcher Library
4. Classroom-in-the-round
5. Darkroom
6. Datsun 280ZX
7. Dumplings
8. Jar of pickles
9. Jogger
10. Loaf of sourdough bread
11. Magnetometry vehicle (see p. 23)
12. Margot Witte's kitchen (see p. 37)
13. Michigan map
14. Michigan Theater marquee
15. Mobile phone
16. Nanoparticle bulldozer (see p. 46)
17. Paintbrush
18. Poetry placard (see p. 54)
19. Roll of film
20. Spiral copper coil (see p. 39)
21. A squirrel, the unofficial U-M mascot
22. Telescope
23. Three sheep
24. Two conical flasks
25. U-M bus
26. UMMA columns
27. UMMNH mastodon
28. Vase of roses
29. Weather balloon

The theme of this issue of *LSA Magazine* is "A Second Look," and it may take you a second or even third look to find all of the details. Can you spot everything listed at the right?

BONUS: How many pairs of eyeglasses do you see? Email your answer to lsamagazine@umich.edu to be entered into a drawing for a prize.

Maize & Brine



Busy college students know that it's a race against the clock to eat your fresh

produce before it has to be thrown away. This wasteful problem was the inspiration behind Maize & Brine, an educational program in which students learn the sustainable skill of preservation by pickling at hands-on workshops, says founder Samantha Barnes, a 2024 Program in the Environment graduate. The pickles are made with student-grown produce from Campus Farm and are sold by students for students at the U-M Farm Stand. Maize & Brine is run by the U-M Sustainable Food Program.



James Mangold



HANDLED WITH *Care*

“My view about being a non-writing producer is that you’re basically like a fireman. I show up with my hose, ax, and oxygen. To any project I bring all my previous experience.”

—English and communications alum **Peter Jaysen** (A.B. '89), a lead producer of *A Complete Unknown*, the Bob Dylan biopic released late last year.



Adam Jaysen

Top: A still from *A Complete Unknown*. Above: Star Timothée Chalamet and Jaysen celebrate three Golden Globe nominations for *A Complete Unknown*. It was also nominated for eight Academy Awards.

YOU SAY
MICHIGANIAN,

I SAY
MICHIGANDER

A column in the online news organization *The Conversation*, written by linguistics faculty member Robin Queen, says the debate about which term residents of Michigan use when referring to themselves is settled. It's Michigander. Mostly.

Queen, the Sarah G. Thomason Collegiate Professor of Linguistics and an Arthur F. Thurnau Professor, points out that:

- Both Michiganian and Michigander are recognized terms.

- Abraham Lincoln coined “Michigander” in 1848 to insult Michigan Gov. Lewis Cass, implying he was silly, weak, and unserious.
- Govs. James Blanchard, John Engler, and Jennifer Granholm used “Michiganian,” while Govs. Rick Snyder and Gretchen Whitmer prefer “Michigander.”
- Michiganian appears in style guides, while Michigander is the term most frequently used by people from Michigan.



What Can the Dumpling Tell Us About the History of the World?

Professor Miranda Brown takes her “Asian Foodways” students on a journey through the past and present of popular dishes, from boba tea to vindaloo curry.

By Gina Balibrera

Illustrations by Becky Sehenuk Waite



“Here’s a fun fact: Every single person’s dumpling-prints are distinct,” Professor Miranda Brown says, her hands working golden dough. “The marks left by pinching the edge of the dumpling into place—they’re like handwriting.” Some people can look at a plate of handmade dumplings and know, by the imprints left on the dough, exactly how many people folded them.

As she speaks, there are five people folding dumplings: three students, an alum, and Brown, the Yi-tsi Mei Feuerwerker Collegiate Professor of Chinese Studies, Arthur F. Thurnau Professor, and director of LSA’s Honors Program. Brown is standing in a kitchen near campus, rolling out tiny wheat circles that will be shaped into plump bundles of lamb seasoned with cumin, and explaining why she’s using that particular meat in the recipe today.

“About 100 years ago,” Brown says, spooning lamb into the circle of dough in her palm, “Chinese people ate more lamb than pork, but then various ethnic policies standardized lamb and beef diets for Muslim Chinese, and pork for Han Chinese. And a lot of Han Chinese people in the north now don’t even realize that their ancestors 100 years ago were big lamb eaters.”

There’s more to say on the provenance of this batch of dumplings’ ingredients, and many stories about the variety of dumplings found across

Top: Professor Miranda Brown makes dumplings using wheat wrappers and a filling of spiced lamb and gives a lesson on the past and present of the dumpling, versions of which can be found the world over.

Photography by Leisa Thompson/
Michigan Photography unless otherwise noted.



HOT TO GO

This page: Professor Miranda Brown guides a kimbap-making lab, sharing the history of Spam and the medicinal properties of burdock root, while her students Evan Gebo and Gary Huang load nori with rice, cucumber, imitation crab stick, and pickled daikon.

Scott Soderberg/Michigan Photography

Opposite page: Professor Brown enjoys dumplings with students Sydney Gong and Steven Crechiolo. Crechiolo regularly replicates the recipes he learns in Brown's course at home.

regions and centuries—stories she shares in lectures on ocean trade routes, religious conversions, imperialist conquest, cultural meeting points, and nomadic civilizations—but now it's time to place the dumplings she and her students have assembled in a bamboo steamer and cook them for about eight minutes, until their skins are enticingly translucent.

After the dumplings cool down, it's feasting time. Students and professor briefly admire each other's crimping signatures before digging in. One of them gasps: "Oh my god, they're so juicy!"

Mapping the Dumpling

Brown's wildly popular "Asian Foodways" course examines the past and present of Asian food and drink and regularly boasts over 200 students. During the course Brown leads students in an exploration of the histories, roots, and controversies surrounding popular Asian foods like dumplings, kimbap, boba, and pad thai, and offers a series of hands-on "food labs" in which students learn how to make these dishes.

Brown finds that when we look closely at the historic foodways that brought us popular dishes, we are "forced to consider that cuisines and cultures can't be reduced to a single ethnic group." Dumplings, for example, can be mapped all over the world, and she believes the first dumplings were likely made in Central Asia, or somewhere along the Silk Road, and not in the Chinese heartland.

"Dumplings are particularly interesting because they are a staple of the northern Chinese diet, but likely originated in Central Asia," Brown says in her Honors Program office. "Northern China is a borderland, a meeting point of different cultures."

When Brown teaches the history of dumplings and other foods, she's also delving into over 2,000 years of trade and commerce, religious conversion and conflict, disease, migration, agricultural practices, cultural adaptations, and the development of national identities. The foods from this region are a nexus for approaching these complex connections.

"Northern nomadic cultures were interested in wheat," she says, "and the Chinese heartland has always had a strong steaming and boiling culture. That interaction, at this artery of multiple civilizations, is what probably gave birth to the dumpling."

"And now we see dumpling-like foods in Japan with gyoza, in Korea with mandu, and other varieties all over the Central Asian world, in Eastern Europe, in Italy. But the earliest word for steamed dumplings—'mantou'—comes from a Central Asian, or Turkic, language."

Brown mentions a tell from an ancient Chinese poem called "The Ode to Bing." In 300 AD, the poet Shu spilled the tea on dumpling origin with the word "mantou" and a description of "methods for making wheat products [that] come from alien lands."

"Mantou" is what linguists call a "loan word," which, Brown explains, is a word borrowed from one language into another that signals the introduction of a new product, food, or concept to a culture. "Sushi" is an example of a food-related loan word in English.

Brown, who is Chinese American, says she initially had a personal attachment to dumplings being a Chinese invention. But the field of food studies, which draws on disciplines as diverse as linguistics, history, medicine, and environmental studies, reveals a richness of cultural exchange behind many of the foods that are dear to her.

"As an aside: Southern Chinese people, like my mother, don't really know how to make dumplings," Brown says. "I had rice for almost every single meal as a kid. The Cantonese are rice people."

Food that Travels

In her class, Brown introduces concepts like loan words, "cultural matrix" (the social contexts of eating, religious norms, utensil usage, etc.), and "local adaptations" (an example Brown gives is how American Chinese restaurants devised the much-maligned crab rangoon from the pork wonton) instead of focusing on "authenticity." Authenticity is a word that comes up a lot in discussions of food and culture. But Brown says it's fairly empty as a concept.

"This is a word with no real definition. We hear it everywhere—it's used to certify culinary excellence—but its meaning is largely ambiguous."



Brown is more interested in digging into the stories behind what's on our plates and the journeys our cuisines have taken. Many popular Asian foods have traveled far and wide.

Take spring rolls, for example. The hot, delightful appetizers defined by a delicate skin that “shatters in your mouth,” Brown says, are a perfect example of a food that has traveled. They're versatile, traceable, and tell a story of migration and cultural exchange.

Spring rolls first appeared between the 11th and the 14th centuries during the Mongol era, as “a cigar börek, or Muslim roll” in coastal China's large Muslim community. Back then they were made with a sticky dough and cooked on a hot iron that now only survives in North African food. In the 1600s, with Muslim migration, these rolls rolled from coastal China, and from there, ethnic Chinese people brought them to regions now called Taiwan, India, and the Philippines. “In the Philippines, you see these as lumpia,” Brown says. Tracing Cantonese migration in the 18th and 19th centuries, she describes the adapted rolls of Vietnam, Senegal, the Netherlands, and even a 19th century Mexican version with chiles.

In a lecture on boba, the ubiquitous milky tea with bouncy tapioca pearls, Brown takes her students on

a journey from the tea-eating Palung community near the Burmese border in 800 BC to a recent episode *Dragons' Den*, the Canadian equivalent of *Shark Tank*, in which celebrity judge Simu Liu inflamed the internet masses by rejecting a canned boba startup because the founders did not give proper credit to the Taiwanese influence of the drink.

“It's not a coincidence that boba as we know it today really happened in Taiwan,” Brown says, “but boba is part of a much longer tea-eating tradition, one that spans the Himalayas and goes right into Orange County, California, in the 1980s.”

Brown explains how tea leaves evolved from a food to a drink. It's a labyrinthine tale that can't be adequately summarized on a can's label.

She invokes “the god of tea,” a historical character named Lu Yu, who was abandoned beside a lake swimming with ducks as a baby and taken in by monks. After running off to become a professional clown, he rode the wave of a sobriety movement, transforming into “an eighth century influencer,” and brought the drinking of tea to Buddhist monasteries.

“[Authenticity] is a word with no real definition. We hear it everywhere—it's used to certify culinary excellence—but its meaning is largely ambiguous.”

—Professor Miranda Brown

But that's not all. Milk tea (or butter tea, often made with ghee) exploded in popularity in 800s China, during the Song and Tang dynasties. Clotted cream in tea came into vogue in the 16th century. When the Dutch came to Canton in 1655 they took their milk tea with salt, and brought this version back to Europe. And in the 19th century, when the British colonized Hong Kong, milk tea returned, this time with condensed milk.

LAYERED FLAVORS

Of her “Asian Foodways” research, Brown says: “In a world of layered influence, movement, mixing, and culinary fusion, does it even make sense to think of a particular culture owning a food item?”







**“I think of heritage as
a living thing rather
than as an heirloom.”**

—Professor Miranda Brown

DELICIOUS RESEARCH

This page: “Asian Foodways” students Sara Stawarz and Sydney Gong and alum Thomas Sophocles dig in.

Opposite page: In Brown’s food labs, students like Alisha Razi, pictured here, learn history and culture in addition to culinary skills.

Scott Soderberg/Michigan Photography

As for how tapioca pearls were introduced to milk tea, well, that's another long story, which might be explained by the 17th century migration of Hakka Chinese settlers across the Straits to Taiwan, who brought with them the tapioca they had cultivated in the hills of their origins, where the soil is too thin to grow rice.

Brown serves a question back to the lecture hall: "Who owns boba?" Most of her students aren't sure, so she invites them to consider a larger question: "In a world of layered influence, movement, mixing, and culinary fusion, does it even make sense to think of a particular culture owning a food item?"

Heritage and Home Cooking

Brown says that her personal memories are an entry point for thinking about questions on the topic of food.

"Growing up in San Francisco's Chinatown, I lived in a food-obsessed culture. So many families in Chinatown got their start in the food industry, so the stakes of this work for me are deeply personal."

Brown remembers a childhood of moo shu pork, scallion pancakes, sweet hoisin sauce, dim sum at the legendary Yank Sing restaurant, and banquet halls on Clement Street, as well as the Cantonese food served at home by her mother. Now, Brown enjoys cooking at home for her own

daughter, who she says is a demanding consumer. She craves pan-fried buns, lamb, xiao long bao soup dumplings, tofu, anything with red bean, and steamed fish. She has that "mild southern Chinese palate," she says.

Brown is currently writing a book of essays called *Dumpling Therapy* for St. Martin's Press. The book will retell the story of Chinese food in America for a general audience, and Brown will pair her research with memoir pieces that draw on her own family stories.

"I come from a mixed-race Chinese American family, and early on, I think I glommed onto food authenticity as a way of defining myself. As a mixed race person, sometimes I felt that my claim to that culture was tenuous," Brown says.

But her understanding of authenticity, and of herself in relation to this work, has evolved.

"Doing this research helps me work through identity and heritage. And it helps me become less concerned with authenticity. I think of heritage as a living thing rather than

as an heirloom. There have been mixed race families since the beginning of time, and historical research has allowed me to better contextualize myself, and honor my heritage. You know, do we do things the same way it was done in the past, or do we do things differently?" ■

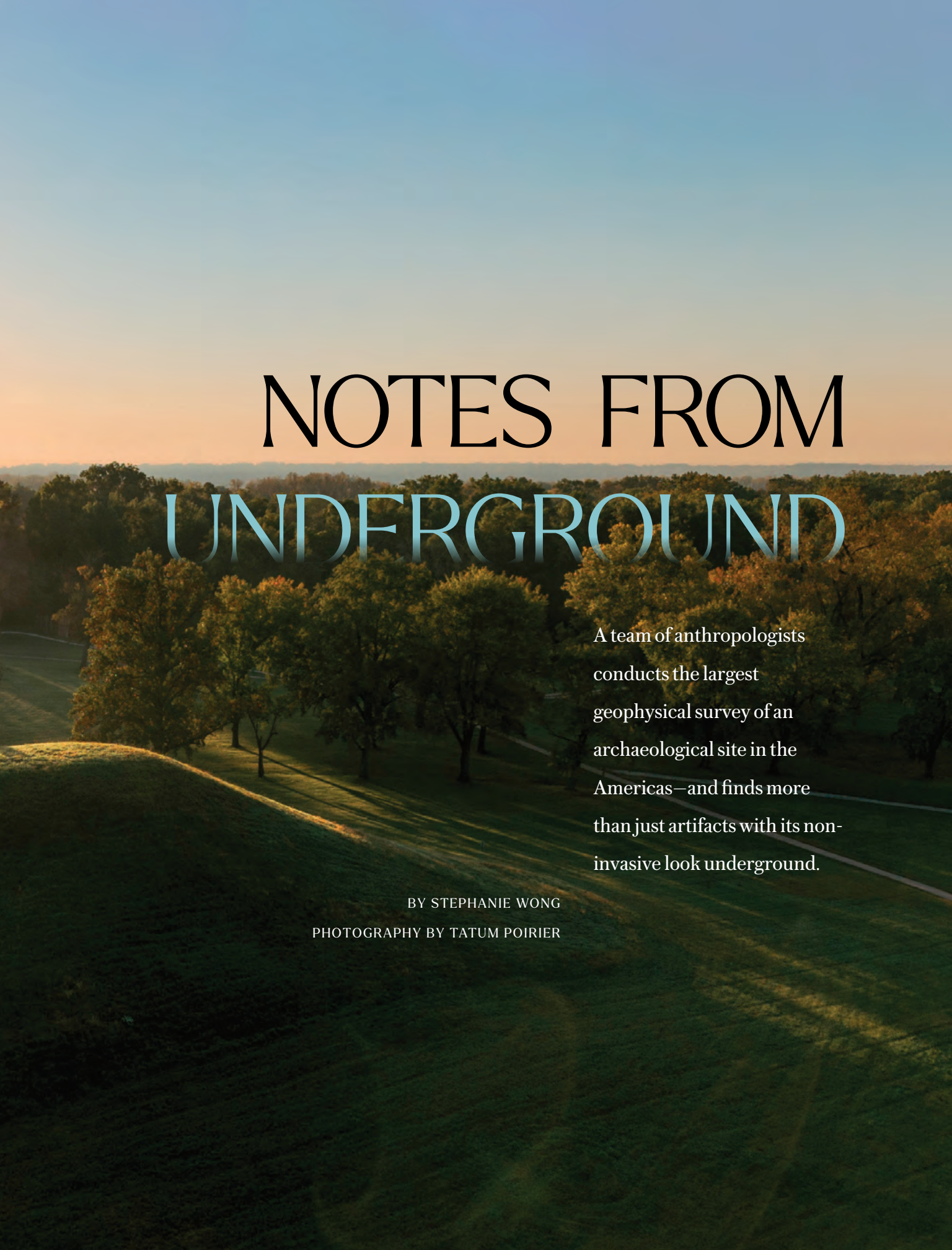
Editor's Note: With colleagues in the Departments of Asian Languages and Cultures, American Culture, and Afroamerican and African Studies, Brown is part of an emerging interdisciplinary effort to bring food studies to more students. A dedicated food studies kitchen will be ready to meet student appetites in fall 2025.





DYNAMIC DUO

Among the most iconic earthen structures at Cahokia Mounds State Historic Site, the Twin Mounds may have served as a mortuary complex a thousand years ago.

An aerial photograph of a grassy hill with several trees, taken during sunset or sunrise. The sky is a gradient of blue and orange, and the trees are silhouetted against the bright horizon. The title 'NOTES FROM UNDERGROUND' is overlaid on the image.

NOTES FROM UNDERGROUND

A team of anthropologists conducts the largest geophysical survey of an archaeological site in the Americas—and finds more than just artifacts with its non-invasive look underground.

BY STEPHANIE WONG

PHOTOGRAPHY BY TATUM POIRIER

THE SUN RISES over the mounds

at Cahokia, a state historic site in Collinsville, Illinois, just across the river from St. Louis. LSA archaeologist Robin Beck is here today, looking toward the future but also remembering a moment from the recent past.

A couple of years ago, Beck and his team held a workshop at Cahokia, the largest precolonial settlement in what is now the United States. They invited representatives from tribal nations that have strong historical and contemporary ties to this land.

Beck and his team were excited about a recent National Science Foundation (NSF) grant to survey the land. But the tenor of the conversation quickly grew tense.

One of the tribal representatives, Dr. Andrea Hunter, serves as the tribal historic preservation officer of the Osage Nation. Hunter—who holds a doctorate in archaeology—had some misgivings about the archaeologists' goals. While the project was touted as non-invasive, there were still some concerns about the way in which the researchers would share their findings with the public. Hunter, like many other Indigenous people, had observed in their histories a tendency to exploit the knowledge of sacred sites without giving back to the people who called them home.

Hunter looked Beck and the other visiting archaeologists in the eye and asked: "If we don't want this, will you leave?"

"HOW WE CAN DO IT TOGETHER"

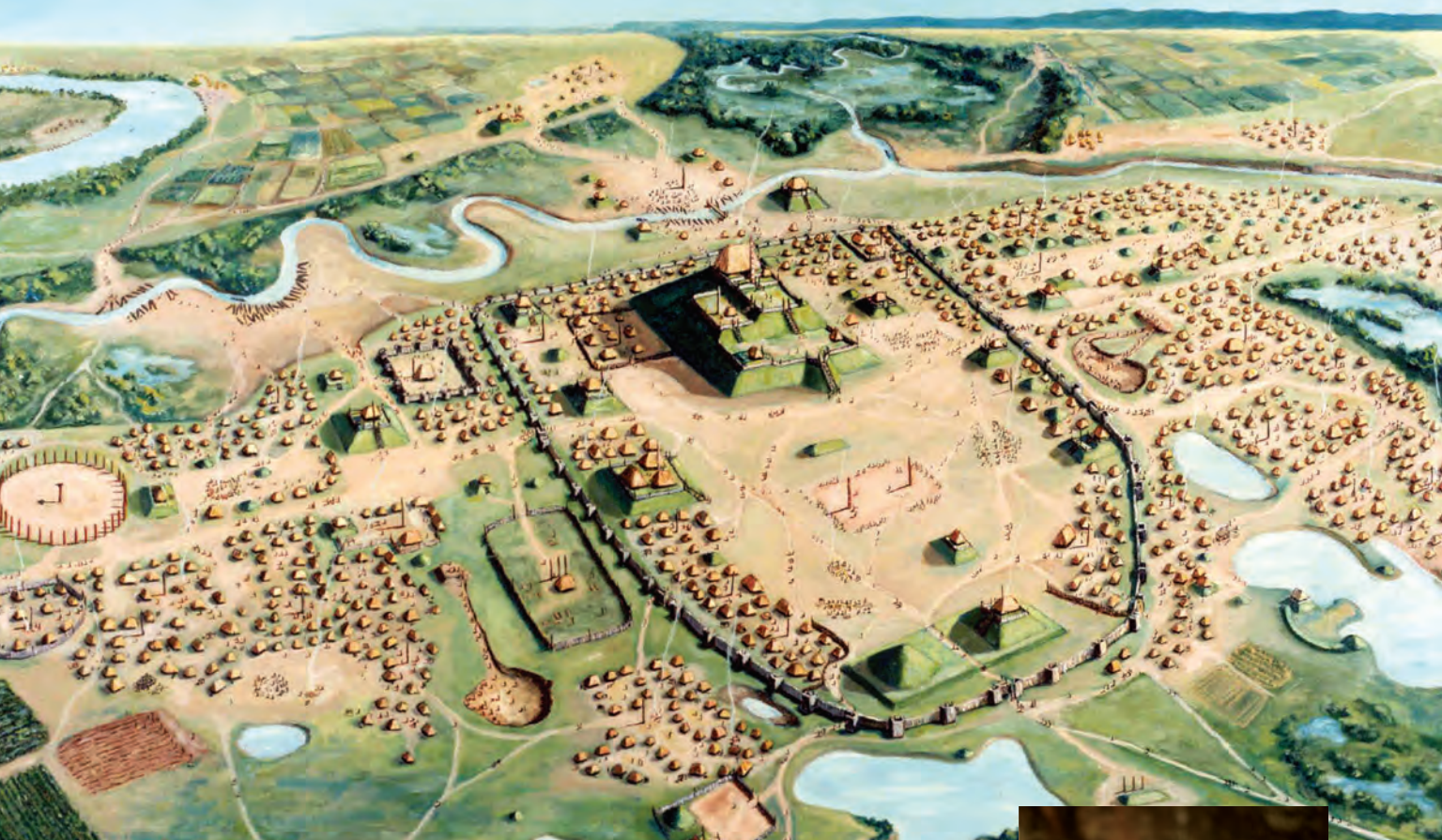
Beck and the rest of the team sat silently for a moment. "It brought us down to Earth pretty quickly," recalls Beck, LSA professor of anthropology, and associate director and curator of Eastern North American archaeology at the U-M Museum of Anthropological Archaeology (UMMAA).

Gaining a better understanding of Cahokia had long been a dream for Beck and his former grad student Casey Barrier (Ph.D. '14), associate professor of anthropology at Bryn Mawr College, who had completed his dissertation work at a Mississippian site several miles south of Cahokia.

ARCHAEOLOGY OR ASTRONOMY?

Since the 1960s, archaeologists have speculated that Cahokia's Woodhenge is a solar calendar made from evenly spaced timber posts.





Long since abandoned after its inhabitants mysteriously left during the 14th century CE, Cahokia—often called Native North America’s first city—has served as a focal point for archaeologists and living descendants alike. What remains of Cahokia lies under a sprawling state park, and one of the problems that archaeologists face is how to effectively

study a site so large—around 2,200 acres.

Cahokia Mounds is the largest precolonial settlement north of Tenochtitlan (Mexico City). The site was home to up to 20,000 people at its peak while it was in use during the Mississippian Period (circa 1000–1350 CE). At various points in its development, the inhabitants of Cahokia built 120 enormous earthen mounds,

around 80 of which still survive. The largest of these, called Monks Mound, has similar base dimensions to the largest of the Great Pyramids of Giza in Egypt, and required a whopping 22 million cubic feet of dirt and clay to build.

Excavation as a practice is both expensive and destructive, and many Indigenous communities have voiced their discomfort with the



Louise Red Corn/Osage News

The team stressed that they would **involve the tribes** as collaborators and consultants.



Left: Cahokia is located on the border between Illinois and Missouri, right across the Mississippi River from St. Louis.

Top: At its peak, up to 20,000 inhabitants lived, worked, and gathered at Cahokia.

Illustration by William Iseminger/Cahokia Mounds State Historic Site

Right: Dr. Andrea Hunter serves as the tribal historic preservation officer of the Osage Nation. She has collaborated with the team to publish and present anthropological research of Cahokia.



Casey Barrier, Ph.D. '14 (left) and Robin Beck (right) have spent their professional careers as archaeologists investigating Indigenous sites in the Americas.

irreparable damage it can cause to sites with sacred and historical significance to them. Beck and his colleagues developed an archaeological project that would use new technologies to help them understand Cahokia at a very large scale without the costs and harms of excavation. They also needed to hear what these tribal nations in question had to say.

Beck and Barrier teamed up with Ed Henry, associate professor of anthropology at Colorado State University, and archaeologist Tim Horsley in 2016. Because excavation necessarily destroys the archaeological record, they wanted to use geophysics to think about

an entirely different dataset. Henry and Horsley could use a magnetometer to scan the entirety of Cahokia, allowing the researchers to answer questions about population density, architectural layout, and urbanization. “Employing the technologies of geophysics opens up a whole realm of anthropological research questions that were previously impossible for archaeologists to do,” Barrier explains.

At the LSA-funded workshop at Cahokia in October 2023, Beck and his teammates met with representatives from many tribes: the Osage, Quapaw, Chickasaw, Shawnee, Ponca, Gun Lake Tribe of the Potawatomi,

THEY SEE ME ROLLING

Geoarchaeologist Ed Henry drives a special rig of magnetometers across the site, gathering hundreds of thousands of data points that allow the team to “read” what is underground.



“Given its scale, how can any of us understand a place like Cahokia through an excavation area? It tells us only a small part of the story.”

—Anthropology Professor [Robin Beck](#)

the Pokagon Band of Potawatomi, Miami, and Peoria.

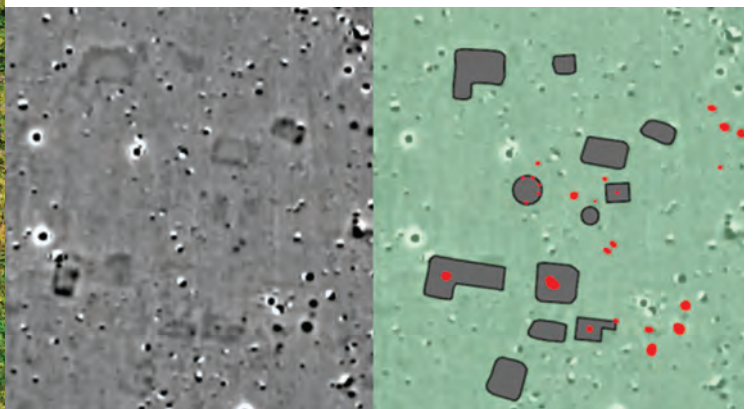
They paused for a beat after Dr. Hunter raised her question, then asked whether they could confer privately in the hall. They talked about the importance of doing this work the right way. When they returned to the room, Beck recalls, “we said, ‘If you think our work is a sacrilege to the site, then we will end it, effective immediately.’”

That avowal allowed the conversation to continue. The archaeologists and tribal representatives went on to talk about the kind of data the tribal nations might

be interested in. The team stressed that they would involve the tribes as consultants and collaborators, sharing biannual reports with them and incorporating their knowledge in academic papers.

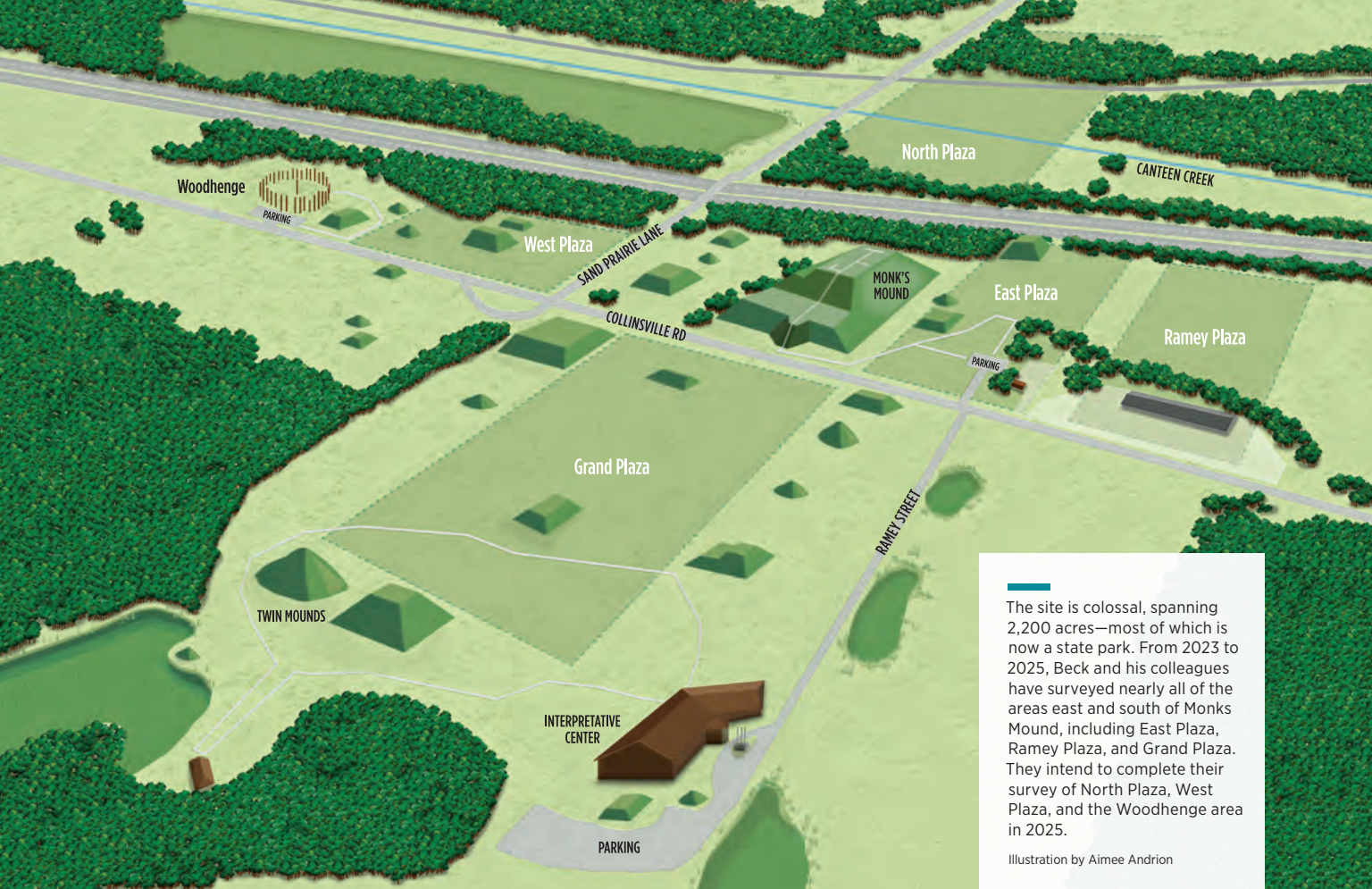
Reflecting upon the roundtable now, Beck says he has tremendous respect for Dr. Hunter and her question. “I told her that I can’t go home and explain to my kids what I’m doing if I know I’m doing it against your wishes,” he says.

The conversation highlights the team’s approach to this project, as well as a sea change in the field of archaeology. Their



By meticulously scanning the site, the team can reconstruct minute architectural details of Cahokia without breaking ground.

Stauffer, J. Grant, Seth B. Grooms, Lorraine W. Hu, Joy Mersmann, Tristram R. Kidder, and Edward R. Henry. 2023 Reimagining the Development of Downtown Cahokia Using Remote Sensing Visualizations from the Western Edge of the Grand Plaza. *Land* 12(2):342.



The site is colossal, spanning 2,200 acres—most of which is now a state park. From 2023 to 2025, Beck and his colleagues have surveyed nearly all of the areas east and south of Monks Mound, including East Plaza, Ramey Plaza, and Grand Plaza. They intend to complete their survey of North Plaza, West Plaza, and the Woodhenge area in 2025.

Illustration by Aimee Andrian

approaches marked major shifts in technology and human relationships alike. “If we were doing this project 15 years ago, we wouldn’t have had this discussion,” Barrier says. “But it does feel like we’re entering a different moment. It’s not just a matter of informing people about what we’re going to do—it’s a matter of figuring out how we can do it together.”

FIRST, DO NO HARM

In the early days of archaeology, and extending through the 19th and into the 20th centuries, archaeologists had a standard approach to excavation: demolition. One blew

up nine layers of archaeological data with dynamite at ancient Troy, while another stripped the Parthenon of its ancient Greek sculptures. They then took the choicest artifacts back to their home countries to display in museums—including at U-M.

The field took a particularly heinous turn in the United States. Federal and state governments forcibly removed Native Americans from their lands before the Civil War and then, a century later, turned the sites into attractions for automobile tourists. “You could drive from Illinois to North Carolina to Florida to Wisconsin and see close to two dozen archaeological sites where Native American

graves had been opened and exposed,” Beck says. “All that clout—the political, cultural, and the economic clout—was on the side of the archaeologists.”

Jean Dennison, professor of American Indian studies at the University of Washington and a citizen of the Osage Nation, researches the ways in which Indigenous peoples negotiate and contest the ongoing settler colonial process. She recognizes “a long, devastating history of researchers answering questions for themselves, even when they think they’re answering benign questions that aren’t political.” She points out that “they’re not asking the questions that [Indigenous] communities care about.

They’re doing deeply, deeply colonial work.”

So what could the Cahokia archaeologists do in the face of the legacy they had inherited and did not want to perpetuate? By the time the team began studying the site, researchers at Cahokia were expanding beyond conventional archaeological methods to include new, non-invasive techniques such as magnetometry and radar, just not to the extent that Beck and his teammates envisioned.

Methodologically, they had a few questions. “Given its scale, how can any of us understand a place like Cahokia through an excavation area?” Beck wondered. “It tells us only a small part

of the story.” Besides, traditional excavation required an immense number of resources, particularly for a site so large.

In 2022, the team put together an application for a five-year, \$312,000 grant from the NSF—resources that they needed to conduct the largest archaeo-geophysical survey in the Americas. The goal was nothing short of astounding: to create a map of the entire underground complex that was accurate within a half-centimeter, using essentially what was a giant metal detector. When they received the grant, they immediately began reaching out to tribal representatives before jumping into data collection. It would take more than a year to plan and organize the workshop and roundtable at Cahokia, but in the meantime they began the long process of fieldwork, meticulously towing 16 magnetometers strung together behind an all-terrain vehicle.

By the time they complete the survey, they will have collected a staggering 1.5 billion data points. Cahokia might reveal its secrets, at long last—and all without damaging the site.

A POWERFUL SPACE

During a sunny week in October 2024, this magazine’s photographer flew

a drone around the site, capturing the mounds’ shadows at sundown. On Monks Mound, people of all stripes, some wearing headphones, some chatting with companions and walking dogs, strolled the site at dusk. From the top of the mound, one could see country roads abutting fallow fields, the backlit Gateway Arch, and the massive floodplain stretching to the horizon, flocks of birds rising in the distance.

A visitor could easily imagine a tropey History Channel special set to swelling orchestral music, with a booming narrator’s voice describing *the grand enigma of a vanishing civilization! Who were the mysterious inhabitants of Cahokia? Why did they disappear?*

But for the Osage, Cahokia represents something different. For one thing, the Cahokians did not disappear; they simply picked up and moved on. “Observing the world around us—and making changes based on that—has been a fundamental part of who we’ve always been,” Dennison explains. “Cahokia was one of those steps.”

She understands the pull of the site, the sense of awe it evokes. “It is a powerful space, not just because the earth was changed,” Dennison says. “There’s power there, and it’s important to name that.”

Beck, his teammates, and



Along with her students, anthropologist Jean Dennison considers the ways Indigenous peoples will continue to thrive in the modern era.

Jeff Ritter

“It is a powerful space, not just because the earth was changed.”

—Jean Dennison,
anthropologist and
citizen of the
Osage Nation

many of their colleagues recognize that consultation and collaboration are the future of American archaeology. “If undergraduates think that the field of archaeology is opposed to or antithetical to Indigenous peoples and communities anywhere in the world, they’re not going to take our classes,” he says. “Why would they? We’re relics at that point.” He stresses that Indigenous people’s roles in academic archaeology are and must be not just matters of consent, but of active participation.

The work of Dennison and Hunter, the Osage

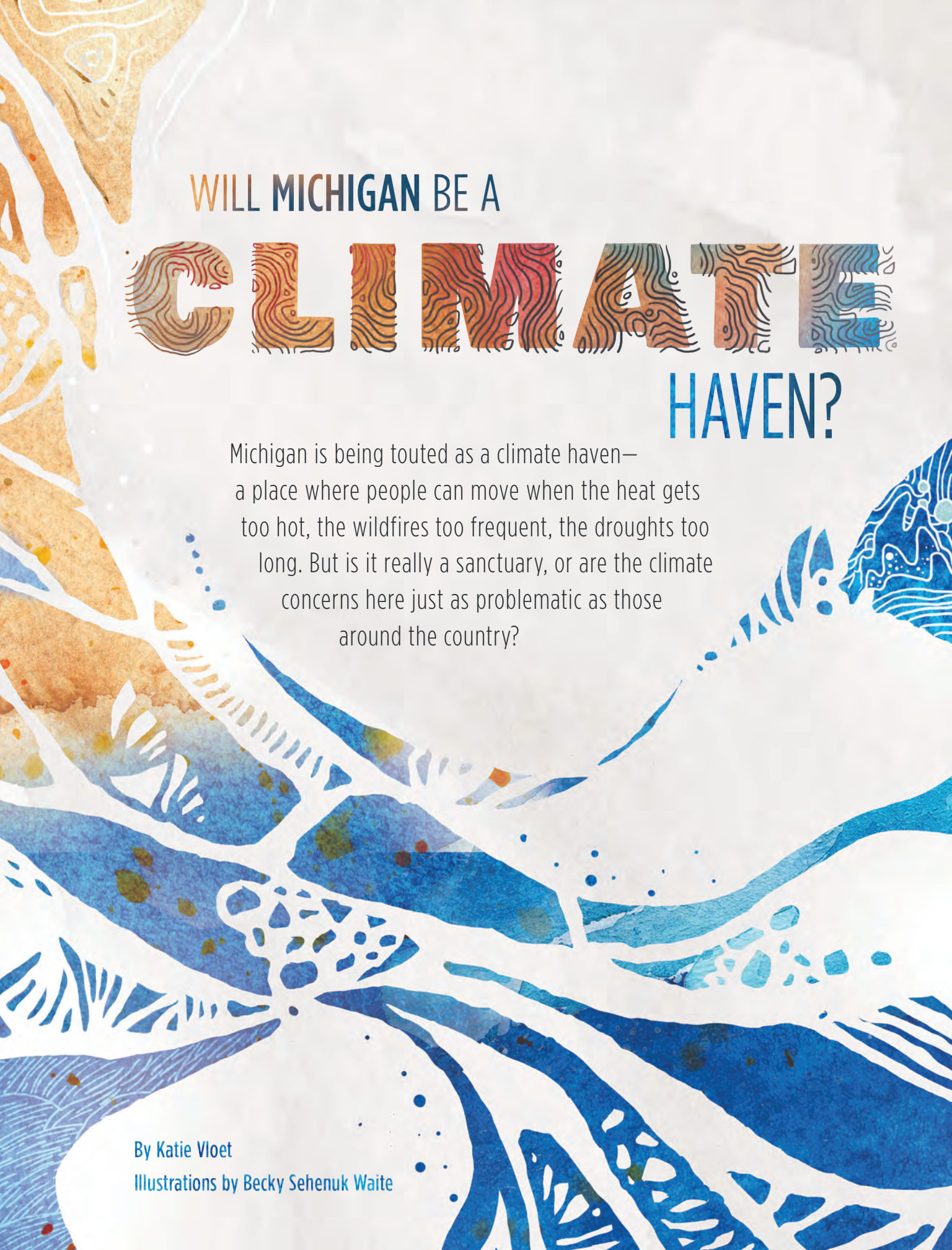
tribal historic preservation officer, moves both parallel to and in tandem with traditional academic research.

These days, Dennison and her students are thinking about how their research will ensure that the Osage can continue to be Osage for generations to come. While academia often focuses on questions of objectivity and taxonomy, Dennison’s questions are about thriving in the future: for example, how the Osage can learn and advance study of their language.

Now three years into their five-year NSF grant, the archaeological team has scanned more than four square kilometers of the site. They are identifying dense clusters of houses, temples, and mounds, which define a different kind of city: a Native American one. Beck and his teammates are also trying to change the traditional narrative, attempting to understand the site in its own right and not according to old models better suited to Babylon or the Acropolis. “Cahokia is something that is *sui generis*,” Beck says.

But will the story change? Dennison looks forward to the future: “I don’t think we can tell different stories until we have different storytellers.” ■





WILL MICHIGAN BE A

CLIMATE HAVEN?

Michigan is being touted as a climate haven—a place where people can move when the heat gets too hot, the wildfires too frequent, the droughts too long. But is it really a sanctuary, or are the climate concerns here just as problematic as those around the country?

By Katie Vloet

Illustrations by Becky Sehenuk Waite



Sydney Glide and Andrew Hedgcock knew what weather to expect when they moved to Los Angeles after graduating from LSA. It was legendary, after all; the film industry first moved there from the East Coast in large part because of the consistent sunshine and mild temperatures. A well-known 1970s-era song pays tribute to the belief that “it never rains in southern California,” and everyone from the Beach Boys to Kendrick Lamar has sung about the virtues of its Mediterranean climate, endless sunshine, and all things tanned and radiant.

“After growing up in Michigan,” says Glide, “I’m thinking, no snow—this is going to be awesome.” And some of the

time, it *was* awesome. Often, though, “the weather just had different unpredictabilities that I wasn’t expecting, to put it mildly,” she says.

Glide and Hedgcock—who graduated with bachelor’s degrees in 2016 in screen arts and cultures, and history; and in 2015 in history and museum studies—have since married. They quickly learned all about the new weather phenomena in Los Angeles, including several that are so ingrained in the minds of residents that they’ve earned rhyming nicknames: Gray May. June Gloom. No Sky July.

The couple started talking about returning to metro Detroit, where their families lived. “In the last year, we kept saying, man, the weather is kind of not great, or that we couldn’t even enjoy the beach even though we lived close to it because the rise in oppressive heat and heavy rainfall

causes an unsafe rise in bacteria,” says Glide. Ash from nearby wildfires rained down on them. Droughts were followed by floods and mudslides.

“The hurricane [in fall 2023] was one moment when we were weighing the pros and cons” and realizing the weather may not be in the pro column, she says. “Then, the moment that my phone went off for an earthquake alert during a hurricane, I was like, *come on.*”

This past fall, they made the move to a northern suburb of Detroit. “The heaviest coat I had in L.A. was a fur-lined raincoat. So I did have to buy a new parka,” Glide said shortly after the move. “But I’m beginning to feel at ease knowing I’m surrounded by family and fresh water.”

CLIMATE REFUGEES

As was the case for Glide and Hedgcock, people move for a lot of reasons: jobs, proximity to family, affordability, climate. A recent survey by *Forbes Home* found that almost a third of respondents cited worsening weather conditions as a reason to move, and over half of those who had moved within the last few years reported that their move was unexpected. The cost, intensity,



and frequency of natural disasters is increasing due to rising global temperatures, according to considerable data analyzed by federal agencies, university researchers, and nongovernmental organizations.

Nowhere in the United States is immune, but some places have suffered more significant effects than other parts of the country. More Americans die from heat exposure than any other weather-related event, according to the Environmental Protection Agency, with the Southwest accounting for a disproportionate amount of those deaths. Unprecedented heat waves are striking in surprising places as well, such as the record-breaking temperatures in the Pacific Northwest in the summer of 2021.

Coastal cities are sustaining the effects of sea-level rises, as well as more intense and costlier hurricanes. The National Oceanic and Atmospheric Administration (NOAA) predicts that up to \$106 billion worth of coastal property will likely be below sea level by 2050 if climate change continues at its current rate.

Two of the hottest days on Earth ever recorded occurred last July. Extreme heat in places like

“Michigan is hardly immune to the effects of climate change.”

—Earth and Environmental Sciences Chair Julia Cole

Phoenix—with the past two summers breaking records as the hottest ever—is scalding and often deadly. And the rising temperatures are leading to other dangerous conditions. Increased evaporation and droughts, for instance, make places like California, Texas, and Colorado—and even surprising places like Hawaii—ripe for wicked wildfires.

Parts of the country that are experiencing fewer natural disasters and more moderate temperatures have started marketing themselves as climate havens. “How Buffalo’s Weather Is Going From Punchline to Lifeline,” touts a talent acquisition organization in the western New York city. “Climate Haven Cities: How Madison Is Making a Mark (Without Leaving One),” proclaims an article on visitmadison.com.

Ann Arbor and many other cities in Michigan and nearby states are being discussed by others as potential

climate havens as well. It’s easy to see why Michigan might appeal to people as a refuge; the high temperatures are nowhere near Phoenix levels, the state is hurricane-free, and the cost of living is lower than in many coastal areas. Perhaps the biggest draw: seemingly endless supplies of fresh water.

“There are certainly some things that make Michigan look like a climate haven. Water is a huge challenge for much of the country, so in that sense you can see why the Great Lakes are very appealing,” says Julia Cole, chair of the Department of Earth and Environmental Sciences in LSA. After all, the Great Lakes span 4,530 miles of coast and account for 21 percent of the world’s freshwater.

After a long period of slow population growth, surely it’s great news that people are giving Michigan a second look, right?

If only it were that simple.

SEASONS CHANGE

Sydney Glide (A.B. ’16) and Andrew Hedgcock (A.B. ’15) moved back to Michigan after several years in Los Angeles. “The heaviest coat I had in L.A. was a fur-lined raincoat. So I did have to buy a new parka,” Glide says. “But I’m beginning to feel at ease knowing I’m surrounded by family and fresh water.”

Photography by Doug Coombe

A PROBLEMATIC HAVEN

As Cole points out, “Michigan is hardly immune to the effects of climate change.”

The average temperature in Detroit in 1920 was 48.4; by 2020, it had risen to 51.9. The rising temperatures have innumerable effects. “A warmer world is a sicker world,” Cole says. She lists just a few of the impacts: an increasing risk to natural and ecological systems, damage from bugs and microbes that thrive in the warmth, algal blooms in the Great Lakes. Extreme changes in precipitation patterns and temperatures, as well as pests and diseases, caused such a rocky cherry season in 2024 that Governor Gretchen Whitmer requested and received federal natural disaster funding for growers.

Other industries have suffered as well. “Climate change is erasing Michigan winters, taking our heritage with them,” proclaimed a headline in the publication *Bridge Michigan*. Mild temperatures led to the early closure of several of the state’s ski slopes in the past few years, and shorter winters have shrunk the number of the state’s lakes that are safe for ice fishing.

Meanwhile, Michigan and other northern states are warming faster, particularly in winter and spring, driving larger annual temperature changes than in the already-hot South, say Julie Arbit and Brad Bottoms of the LSA Center for Social Solutions (CSS).

“Maybe the question is better reframed as, ‘are there places that are better?’ Yes, but better than what?”

—Brad Bottoms, data scientist with the LSA Center for Social Solutions

In addition, “Michigan has one of the least reliable electric grids in the country. That doesn’t exactly scream climate haven,” says Bottoms, a data scientist. “We’re not prepared for what we’re dealing with in the past decade, let alone what’s coming.”

Arbit, a research specialist, and Bottoms have conducted extensive research into a variety of environmental and climate-centric issues. Their examination of natural disasters in the state serves as a reminder of the impact of the natural disasters Michigan has faced in recent years and has shone a spotlight on what’s to come.

“Detroit had the costliest natural disaster in the country in 2014,” when historic rainfall led to widespread power outages and floods, Arbit says. “Some people still have mold in their basements.” Add in drought, contamination, and volatile air from Canadian wildfires, and Michigan sounds less and less like a refuge.

The Great Lakes State is not alone. “There is no climate haven left on the planet,” says Arbit.

Duluth, Minnesota—one of the original cities touted as a climate haven—has had flooding emergencies for three consecutive years. Burlington,

Vermont, and areas that surround it have faced catastrophic flooding two summers in a row, Arbit says.

“Maybe the question is better reframed as, ‘are there places that are better?’ Yes, but better than what?” says Bottoms. “We’re protected from sea-level rise. But we are going to see much more common and violent storms. It won’t be as hot here as some other places, but the rate of increase in the temperature will be more dramatic.”

Another risk is that people moving to supposed havens might become complacent. “If they think, ‘I live in Michigan, and climate change isn’t really that big of an issue; maybe I don’t really need to do anything,’ that’s not great,” says Sierra Petersen, associate professor of Earth and environmental sciences at LSA and a member of Science Moms, a nonprofit organization that promotes climate action at all levels. “We don’t want people to be unmotivated to mitigate the effects of climate change.”

All hope is not lost for areas that want to become more haven-like. With lots of planning—starting, oh, right about now—some cities in Michigan and elsewhere could still become more livable than other parts



of the country. Just don't use the words "haven" or "refuge," says Arbit, as those imply a level of protection that no place can offer. "I love the idea of the Great Lakes region as a climate destination, though," she says.

OK, THEN; MICHIGAN AS A CLIMATE DESTINATION

Glide enjoyed her first fall back in Michigan, and she and Hedgcock have bought a house. She has worked on writing a novel, and he has continued to work remotely for Universal Music Group. When they aren't renovating or working, they've gone to cider mills, had Thanksgiving with family members, and attended a game at the Big House for the first time in many years.

"There's nothing quite like fall in Ann Arbor, especially on a football Saturday," she says.

Glide has also been paying attention to what's happening in California.

"As I'm sure you've seen in the news, wildfires are raging in Malibu," she wrote in December. "In past years, December would be spent feeling worried about whether or not I'm going to be in an evacuation zone, and if I'm all set to travel for Christmas."

With the shorter-than-usual span of time between Thanksgiving and Christmas at the end of 2024, she was grateful she had made the move back to Michigan. There was still a lot to get done, especially factoring in the renovation of a new home. "But without air travel and major looming climate threats," she said, "it's far more smooth."



Preparing for the

FUTURE

What can cities and individuals do to prepare for and adapt to the effects of climate change and population growth?

If Julie Arbit were creating a place to live in the video game SimCity, she'd look at fresh water and drainage. "Drainage, drainage, drainage," says Arbit, a research specialist at the LSA Center for Social Solutions (CSS). "My little SimCity parcel would look at where the water is, look at where it wants to go, and then build smarter—working with the watershed, not against it, and keeping forests intact to help manage temperatures and water flow."

Alas, it's more complicated in the real world than in a simulation—but there are still things that municipalities and individuals can do to adapt to the effects of climate change and prepare for what's coming next.

"There's no magic wand," says Brad Bottoms, a data scientist at CSS. "It's a combination of what works at the local level, based on the topography of the area, the hydrology, the cultural institutions, whether people will resist certain changes. It's a very complex answer."



What individuals can do:

- Plant rain gardens and add water-conscious landscaping.
- Plant trees in your back yard that slow the movement of water.
- Install solar panels.
- Add a blue roof or a green roof—technology that helps manage stormwater.
- Work with others to have a greater impact: “Collective action is hugely powerful,” Arbit says.

And more of the burden should fall on governments and industry than on individuals “since they are building the things that are causing the problems in the first place,” Bottoms says. Cole agrees: “Individual action to protect your home is wise, but only collective action to change policy can effectively tackle climate change,” she says.

Bottoms and Arbit recently wrote an article about this topic for the online publication *The Conversation*, along with CSS founder and director Earl Lewis, who is also the Thomas C. Holt Distinguished University Professor of History, Afroamerican and African Studies, and Public Policy.

“Decision-makers can hope for the best, but must plan for the worst,” they wrote. “That means working to reduce greenhouse gas emissions that are driving climate change, but also assessing the community’s physical infrastructure and social safety nets for vulnerabilities that become more likely in a warming climate.”

They wrote that “collaborating across sectors is also essential. For example, a community may rely on the same water resources for energy, drinking water, and recreation. Climate change can affect all three. Working across sectors and including community input in planning for climate change can help highlight concerns early.” Public-private partnerships can support innovative infrastructure projects.

All of this must be done with an eye toward the most vulnerable people in society, they wrote: “Pay attention to systemic inequalities in vulnerability that often fall along lines of race, wealth, and mobility.

“Urban heat island effects, energy insecurity, and heightened flood risk are just a few of the issues intensified by climate change that tend to hit poor residents harder.” ■



HAVE YOU ANY WOOL?

Microbiologist Melissa Duhaime shares a special moment with one of her ewes on her farm in Webster Township, Michigan.



BACK TO BASICS

In a world full of screens, a search for connection leads to acts of creation that are inspired by the artisans' academic work—from growing one's own fiber for knitting to creating a helium-inspired beer.

BY STEPHANIE WONG

In the spring of 2020, I was mired in my own home. Like millions of others, I watched the seconds tick by while my work—which depended on travel to global archives—foundered and atrophied. I wondered how to find purpose and meaning in this new world.



I found myself returning to a more primal version of me, someone who reveled in the visual and the tactile. As a lifelong fiber artist, I sought comfort from the whirl of a spinning wheel, the pungent smell of an indigo dyebath, and the double thump of a beater on cloth. Other folks I knew turned away from blinking cursors and infinite scrolling on their screens in favor of quilting, cooking, and gardening—and sharing all about our newfound hobbies. The act of creating, it seemed, built a real community, no matter how alone we all felt.

While craftspeople have existed and worked since time immemorial, artisans—including Professor Melissa Duhaime, pictured at left—came alive during the COVID-19 pandemic—and continued even as the pandemic waned. Many did so by integrating the skills and knowledge they gained through their academic pursuits. Some discovered material interests as a result of more idle time; others, like me, reawakened old instincts to make sense of the world. Yes, the world was new. And we made it so.

BREW MASTER

The spark for Ekaloka Fermentory, run by alum Shobhana Panuganti and her partner, Ben Oxley, came to life as a result of her passion for chemistry, nature, and community.



NURTURE AND NOURISH To understand this new world, let's go back in time. In 2015, chemistry major Shobhana Panuganti (B.S. '18) walked into Professor Bart Bartlett's classroom in the Chemistry Building. Panuganti had spent high school cultivating interests in fine arts, science, and environmentalism, and discovered at LSA's Residential College that she could combine many of her interests and seek answers to big, existential questions: *How do chemistry and the Earth play together? How do I make the planet a better place through chemistry?*

What Bartlett taught her resynthesized her life's ambitions. His solar-focused research inspired her to attend Northwestern University to pursue a Ph.D. in chemistry, where she concentrated on the ways light and electrons interact. But there was a latent itch that just needed to be scratched: an academic career would have led her to more computer screens and fewer face-to-face interactions, but she wanted to work with her hands. She wanted to bring science, art, and nature together.

So she bought some hops and began to brew.



Trusting and enjoying the process of baking sourdough became a metaphor for the humility of everyday life.

FINE-TUNING FREEDOM

In 2019, other seeds began to sprout. Margot Witte, now a Ph.D. candidate in philosophy at U-M, had just moved to Savannah, Georgia, with their partner. While applying for doctoral programs, they took a job as a bread assistant at a local bakery. They had no professional experience. As a kid in the San Francisco Bay Area, they had learned to make bagels; in college, they had lived in a co-op and baked friends' birthday cakes. That was it.

At the bakery, bread became a minor obsession while they were meticulously submitting applications to graduate schools. Witte spent hours fine-tuning their techniques and the instincts required for working with bread, particularly sourdough. They set their own benchmarks:

*I can do this 15 seconds faster today.
I can do it one percent better.*

Elbow-deep in flour and butter, Witte frequently experienced self-induced moments of suspense. "You're putting yourself in a really vulnerable position," they say. "You have this huge emotional investment of time, energy, and material." Trusting and enjoying the process of baking sourdough became a metaphor for the humility of everyday life, a feeling that continued as a graduate student. Now, as a Ph.D. candidate, they feel that the disposition of a baker and an academic are closely linked.

"You have to be willing to put in a lot of effort and time to make differences that very few people care about or will notice," Witte explains. "I'm not trying to make any creative decisions. I'm just trying to execute these skills as well as I can." Their desire for dexterity and control—echoed in their pursuit of a doctorate in philosophy—is satisfied by the extremely technical demands of baking. They, like many other makers, are gaining much more than the final product: the empowering sense of providing for oneself and others.



DAILY BREAD

In their home kitchen, Margot Witte shows off their expertise by forming a sourdough loaf, and then scoring it with a blade called a lame.

Doug Coombe





Duhaime's fiber practice is all-inclusive: Here, she winds handspun linen yarn on an umbrella swift and displays a fleece of one of her sheep, which she shears annually.



MANY HANDS

In the early 2010s, microbiologist Melissa Duhaime was hard at work. Her lab's research centered on microbes that had the ability to digest discarded plastics in the world's waterways. As a scientist, Duhaime loved solving ecological puzzles, and this one was particularly critical: How could redesigning human systems help to reverse greenhouse gas imbalances in our atmosphere?

Despite the efforts of scientists like Duhaime—associate professor of ecology and evolutionary biology—the planet continued getting sicker. Soon enough, she began to feel deeply dissatisfied with the time scale of her research impacts. She made a commitment to doing research that would find more direct alternatives to petroleum-based plastics, especially textiles. “There’s a bathtub overflowing,” Duhaime

says, “and are you going to spend your time mopping up the water on the floor or shutting off the tap?”

So she turned to the land. As a natural dyer, fiber artist, spinner, shepherdess, and sheep shearer, she had always felt a “tactile draw” to the material world and its plenitude. She became involved with Michigan Fibershed, an offshoot of the organization Fibershed.org, which aims to develop regional, self-sustaining natural fiber and textile systems that enable a natural fiber “soil-to-soil” cycle. In the state of Michigan, Duhaime sought to engage with and support the full process: growing one’s own fiber, finishing a garment, and finally composting it at the end of its wearability so that it can regenerate nutrients and grow the next batch of fiber. “By learning through my hands,” she says, “that’s how I innovate. That’s how I become creative.”

Michigan Fibershed's work now continues with the support of natural fiber farmers, millers, designers, and makers across the state, including those eager to innovate with materials like flax that are less common in Michigan today. Duhaime is eager to collaborate with, and support through her research and teaching, the craftspeople who fundamentally know the language of the land and its resources through their bodies. "What I do know as an ecologist is the power of studying systems and interconnected webs," she says.

"OF ONE REALM"

Back in Chicago, chemist-brewer Panuganti teamed up with her partner Ben Oxley to found their business

Ekaloka, which means "of one realm." With their backgrounds as chemistry Ph.D.s, they brew alcoholic and non-alcoholic beverages, and they prepare fermented and pickled foods. "It's a rebellion disguised as a fermentory," Panuganti says. "Ekaloka is about getting people to connect with where science and nature are already present in their life."

Panuganti deeply felt the need for connection through food. Growing up in a South Indian immigrant family, she had been around fermentation her entire life, even if she had never named it as such. "Idli and dosa batter is a fermented mixture of rice and hulled black gram," she says. "And the two of those together make this incredibly nutrient-dense, low-fat food that is a staple of the South Indian diet."



"Ekaloka is about getting people to connect with where science and nature are already present in their life."

—SHOBHANA PANUGANTI, B.S. '18



Panuganti incorporates chemistry in every aspect of her craft brewing practice, experimenting with each brew's chemical makeup by manipulating factors like heat and composition.

Applying her experience as a chemist, she quickly saw that this was the same process as making pickles, sauerkraut, and beer—ancient fermenting practices that are shared across the world. Idli batter features heavily in Ekaloka's menu, innovatively transformed into fries and waffles.

Public education has become a fundamental part of Ekaloka's mission. As academics, Panuganti and Oxley found very few opportunities to practice rigorous scientific research while upholding sustainable, eco-friendly practices. So they have brought their teachers'

Glenn Carpenter

minds to the brewhouse, basing the fermentory's menu on the periodic table. "Chemists get a sense of the personality of an element," Panuganti explains. "I wanted to capture the essence of that personality in a fermented product."

For the element of helium, for example, they crafted a nonalcoholic brew called Rose-Colored Gases. "Helium is such a friendly element to work with," Panuganti says. "It's inert and nonreactive. And most importantly, when helium is an ionized gas, it's this beautiful rose color. So, the personality of the drink—the way it looks and makes you feel—are all reminiscent of the traits of the element helium."

Craft brewing, especially in the 21st century, has been dominated by white male brewers from the United States and Western Europe. Panuganti sees a different future. "From my research, I know that, historically, women were the primary brewers in their communities," she says. "They still are in a lot of places, where the women do so much fermentation and brewing in order to support the health of their community." She wants to run children's classes and community fermentation sessions. She envisions open mic science nights, where scientists can share their knowledge with a public, local audience.



At Ekaloka, art and chemistry synthesize into a compound greater than the sum of its parts. Panuganti designs and relief-prints her own labels.

Glenn Carpenter



WHAT IT MEANS TO LIVE ON PLANET EARTH

Like Panuganti, microbiologist-natural fiber champion Duhaime takes issue with the distance between academic research and what it means to live on planet Earth. "A lot of the problems getting solved are pretty disconnected from the real experiences of humans, and that's not satisfying for me," she says. "I definitely need to be solving problems and working with material that is relevant on a human timescale." Showing, rather than telling, remains

“I want to be a link to our future needs for survival.”

—PROFESSOR MELISSA DUHAIME

Duhaime demonstrates the loft of linen fibers, which resemble fine strands of hair.

Leisa Thompson/Michigan Photography



a hallmark of Duhaime’s personal and professional work.

Humans and many other species are feeling the turbulence of global supply chains, and Duhaime urges her students and others to think of what is to come. She believes that current economic structures will not survive indefinitely, and that “preserving her-itage skills now” across all cultures is essential. These days, Duhaime brings her children along on her shearing jobs to introduce them to working with their hands and to teach them the ethos of sustainability. “I want to be a

link to our future needs for survival,” she says.

For philosopher-baker Witte, baking bread is a simple way to create their own self-sustaining system. “There’s an incredibly rich looping effect,” Witte says. Their baking practice harmonizes with the process of writing their dissertation, forming a kind of fulfilling synergy that makers know well.

Panuganti faces the future while practicing what she preaches. Part of what she has done for Ekaloka is research the history of communal

fermentation practices to find out how our global ancestors used fermentation to create a sense of unity.

Being in touch with nature and the beings on this Earth, she argues, is the best thing for a person’s mental, physical, and emotional health. “Community isn’t a commodity,” she says. “Community is a right.” ■

Fresh out of the oven, Witte’s sourdough loaf could win a baking contest: the crust crackles, the crumb opens, and the smell can best be described as heavenly.

Doug Coombe



Student Shereen Shahid purchased the body of her 1983 Datsun 280ZX Turbo on Facebook Marketplace. It was love at first sight.

Photography by Josh Scott Photo
Illustrations by Matt Vierling

Too Fast, Too Furious

We hitch a ride with an LSA student who is restoring her own car.

LIKE MANY CHILDREN, young Shereen Shahid looked forward to the winter holiday season when the air turned crisp and frost hardened the ground. Lights went up, and school let out. In the suburbs of Detroit, Shahid and her cousins would crowd around the television, eager for hours of screen time uninterrupted by schoolwork. Their indulgence of choice: the *Fast and Furious* films.

Though sensationalized, the knavish lifestyle of the racers appealed to five-year-old Shahid. The street-racing cars took on identities of their own, distinct personalities that fit into the real-life community that she saw around her. With the seed of passion planted, Shahid grew up and slowly became part of the Motor City herself.

"A lot of people come from generations of car people," she says. "But my story is a little different."

Detroit's century-old car culture welcomed her with open arms. "It felt like the safest place for me to learn and grow," Shahid says. She went to events as official as car shows and conferences, and as casual as festivals and garage visits. Every summer, she attended the Woodward Dream Cruise, a massive parade of classic cars north of Detroit.

"My jaw would drop to the ground every time," she reminisces. "Despite growing up in this culture, I still held onto it as if I had never seen a car before." Her interest blossomed in young adulthood, and she began looking for a project car to tinker with in her spare time while enrolled at U-M, majoring in organizational studies and minoring in writing.



“It fits perfectly with
organizational studies.”

—SHEREEN SHAHID

Shahid tinkers with her beloved car in a garage in Ypsilanti, sometimes with the help of the Datsun’s seller.

In August 2023, Shahid spotted a listing on Facebook Marketplace: a 1983 Datsun 280ZX Turbo. It had been sitting in somebody’s back yard since its original owner had passed away, its guts corroded by harsh Michigan winters. As a result of its damage, the seller had listed it for a low price. *This cannot be true*, Shahid thought. *This is such a rare car. You would never see it on the street.* She made an appointment to see it, and it was love at first sight.

She made a deal with the seller: If she could keep the car at his garage in Ypsilanti, use his tools and expertise to fix it up, she would pay the asking price without negotiating. And \$5,000 later, the car was hers.

There was just one small hitch: Her father, an authorized signer on her bank account, received a notification about a large transaction. Her parents, both immigrants to the United

States, were at best ambivalent about her hobby. Her mother had owned her 2006 Toyota Camry for at least a decade. Her father, though he worked in the automotive industry, considered cars to be a part of his job, but nothing more. Shahid knew she had some explaining to do.

As it turned out, though, her parents came to understand how the old Datsun harmonized with other parts of Shahid’s life. “It fits perfectly with organizational studies,” she says, since the field makes ample room for guided creativity. “You take your own path to figuring out solutions,” she

notes, pointing to the automotive industry as a stage for technological change. “We can see how cars progress over time, while thinking about ways to innovate.” Her goal is to leverage her academic background for more professional experience in the industry—which is, in turn, related to her personal passion.

Often, Shahid finds herself in the position of a cultural translator. When speaking with car enthusiasts, she has to change her frame of mind to get the answers she needs. “This group of people doesn’t usually talk about their feelings and how much they love the car community,” she says. “I have to be able to understand their different motivations and their past experiences, and how they are going to affect the way that we’re interacting in that moment.” The principle of team building comes naturally to the car community, and her experiences have shown her that their relationships are built on trust and togetherness, cemented by the automotive industry’s importance to the region.

As she looks to the future, Shahid worries about how electric vehicles will impact her beloved Motor City.

“What I’m seeing now is

how owners are being pushed away from the cars themselves,” she says.

Shahid argues that EVs prioritize function and affordability over driver experience. “You don’t feel like your car reflects you anymore,” she says.

Shahid relishes opportunities to tell her parents about her progress on the car and to learn from older car enthusiasts who are eager to help the new generation. She strives to work toward innovation and creativity in the auto industry rather than away from it. Working on her car has changed the way she thinks about everything—not only because of the unique expertise required to troubleshoot the nuts-and-bolts issues of the day, but also because of the curiosity and playfulness that the community celebrates.

The dynamism of the Motor City never fails to stun her. “People share joy in their common passion, and it feels native in Detroit because of the history of the industry,” she says. “The giants of the American automotive industry have stayed here for over a century because the people keep feeding into the culture.” Her dream? Working at the forefront of product management while staying true to her roots. Hop in—it’s bound to be an adventure. ■

The horizon is boundless for Shahid, who, with her hands-on knowledge of working with cars, hopes to stand at the forefront of automotive development.



5 Questions ...

... with Bryan Ramson, LSA alum and physicist at Fermilab, about neutrinos—the most elusive particle in the universe.

LSA MAGAZINE spoke with Bryan Ramson (M.S. '13, Ph.D. '18) about neutrinos, which play a fundamental role in unlocking the mysteries of the universe. Ramson is an associate scientist at Fermilab, the U.S. Department of Energy's national laboratory specializing in high-energy particle physics.

LSA: First things first: What is a neutrino?

Bryan Ramson: Neutrinos are the most abundant particles in the universe. They are produced in nuclear reactions. Trillions pass through every square centimeter of your body every second. They also encode secrets about the universe that are otherwise very hard to measure. Neutrinos provide a window into new sectors of physics

that may give us a way to understand why matter exists over antimatter in the universe.

LSA: I understand that you mine for neutrinos. What does that mean, exactly?

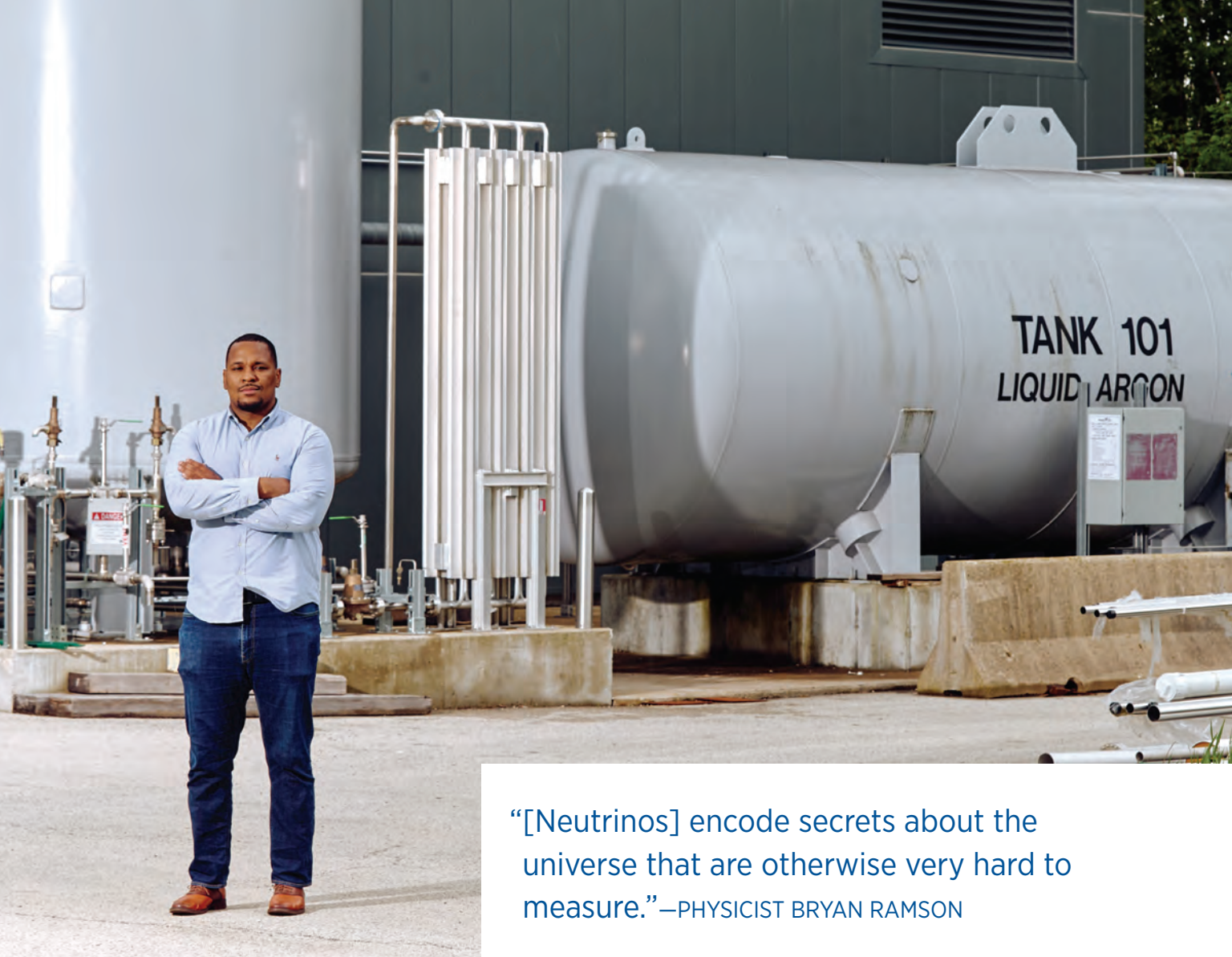
BR: We're not actually mining for neutrinos under the crust of the Earth. We are going underground, but we're not exploiting natural deposits of neutrinos (neutrinos do not really exist in that way). Instead, at Fermilab we're producing a neutrino beam to make significantly more neutrinos than would otherwise normally occur in nature. We're aiming those neutrinos underground to observe them after traveling some distance in the hope that they spontaneously transmute as they travel.

This 90-foot-high cavern is one of three that will house particle detector modules and other equipment for the Deep Underground Neutrino Experiment.



Matthew Kapust, Sanford Underground Research Facility





“[Neutrinos] encode secrets about the universe that are otherwise very hard to measure.”—PHYSICIST BRYAN RAMSON

LSA: What makes neutrinos so elusive?

BR: There are four known fundamental forces in the universe: electromagnetism, gravity, the strong nuclear force, and the weak nuclear force. Neutrinos are the only particle in the standard model that interacts using only the weak nuclear force, making them extremely hard to detect. This, combined with their very small mass or weight, makes neutrinos extremely difficult to measure. There are some estimates that say neutrinos can travel through light years of lead, never interacting with any other matter.

LSA: If you could solve one mystery related to neutrinos, what would that be?

BR: I want to understand the mass of the neutrino and if there are more than three types of neutrinos. Currently, we know of three, but we haven't yet finished the story

about whether there could be more. I'd also like to understand if neutrinos offer hints towards the discovery of new physics or an explanation of dark matter.

LSA: What is it about neutrinos that intrigues you?

SB: In earlier eras of particle physics, neutrinos were used a lot like proton or electron beams such as those produced at CERN in the Large Hadron Collider or like those produced in the accelerator at Jefferson Laboratory. But as time went on, we stopped using neutrinos for those types of experiments because they're so difficult to measure. I'm very interested in discovering what neutrinos can say about physics beyond what we already understand, and I am very interested in measuring things with neutrinos to improve our understanding of nuclear physics. ■

Neutrinos “may give us a way to understand why matter exists over antimatter in the universe,” Ramson says.

A Dating App for Science, Not for Profit

A new dating app, developed by two LSA professors, brings together sociology, psychology, and maybe—just maybe—love.

FOR MANY, COLLEGE is a time for figuring out who you want to be, as well as who you want to be *with*. But finding a romantic partner while juggling coursework, new friends, and extracurriculars may be a struggle for many students at U-M and other universities. Traditional dating apps flood users with matches, inducing mindless swiping and decision fatigue.

Enter Revel, a U-M-specific dating app developed by Elizabeth Bruch, an associate professor of sociology, and Amie Gordon, assistant professor of psychology. It's rooted in their scholarship. The app, they point out, is for science—not for profit.

Gordon's research concentrates on romantic relationships and the reasons why some succeed and some fail. In 2022, she came across a press release about Bruch, whose research is on dating markets and the strategies people use to find partners online. The two met in person and discussed the possibility of developing an interdisciplinary research study that featured a dating app specifically for college students and oriented around discovery—both scientific discovery about compatibility and chemistry and personal discovery for students who are

learning what they want out of their relationships and how to get it. And Revel was born.

They hope to use the app to solve some of the enduring mysteries of relationship science. Despite decades of research, relationship scientists still don't really know why some people “click” while others don't or why some relationships endure while others end.

Importantly, the app is designed to offer insights to users and scientists alike. “Why can't we have a Fitbit for our dating life?” Bruch jokes. “There's a need for greater connectivity and ways to more effectively cut through the opacity of dating.” The two social scientists aim to learn from anonymized users' experiences and use that knowledge to develop new app features. Ultimately, the goal is to help students demystify the frequently frustrating world of college dating by giving them tools to understand their own experiences.

Revel, which is available only to active students at Michigan, began beta testing with students in December 2024. Gordon and Bruch were excited to see that, after less than two months, their small pool of testers had swiped over 8,000 times and

made more than 150 matches—with some even meeting in person. The Revel app has a few unique features, including surveys that give users the opportunity to share their experiences directly with the research team, the ability to block someone by their U-M nickname, and a “show me again later” function that allows users to revisit potential matches.

Having worked with other scientists throughout their academic careers, Bruch and Gordon are eager to embark on a new sort of collaboration with their student users, whose data is fully scrubbed before it is analyzed. “The students are sharing their perspectives and experiences,” Bruch says, “and we want to use that knowledge to give them a dating app tailored to their needs and goals.” In the next few years, they hope to use what they learn to develop a separate app for U-M alums to connect with one another. They are exploring funding opportunities to continue and expand their project.

The name for the app came from thinking about innovation with a sense of festivity and positivity toward the future. “That's what we want to capture,” Gordon says. “Where dating meets discovery.” ■

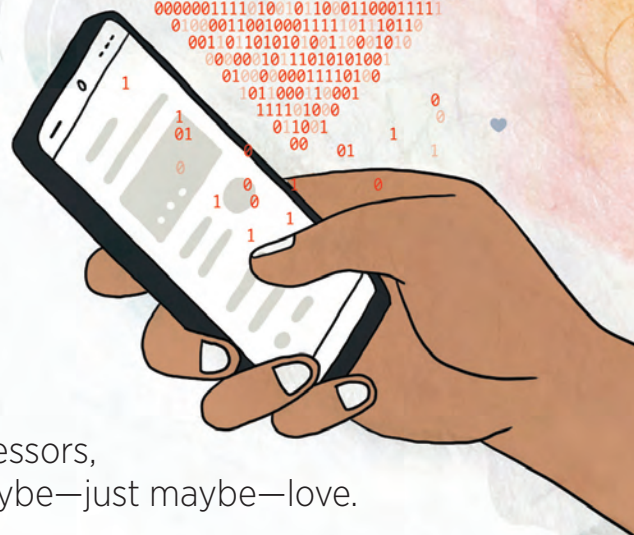


Illustration by Becky Sahenuk Waite



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STUDENTS BY GINA BALIBRERA

The Last Darkroom

In LSA's Residential College photography program, students develop new perspectives, different approaches to academic inquiry, problem-solving skills—and, of course, powerful images.



Student Maya Gratch develops a print in the darkroom.

Right: In a Photography 2 critique, Wingfield asks, “What are you showing me that I don’t already know?”

Scott Soderberg/Michigan Photography

IN ISAAC WINGFIELD’S classroom in the Residential College, the words “Why should I care?” are scrawled at the top of the whiteboard, unerased throughout the semester.

The question isn’t flippant; it’s a serious call to make meaningful work. For students who might enroll in photography because they think they can coast through an easy credit, the question on the whiteboard serves as a reminder that they will be challenged in the courses Photography 1, 2, and 3. They’ll build an array of technical skills using analog cameras and working long hours in a darkroom, and in the images they create, they will practice rigorous inquiry and academic exploration. They’ll also, of course, develop photographs worth caring about.

“When the RC was founded in late 1960s, it was actually a top priority to have students working creatively in some way, even if they didn’t plan to become professional artists,” says Wingfield, who directs the Visual Arts program at the RC and teaches a series of three photography courses. But, at the time, the fine arts units—like the Stamps School of Art & Design and the School of Music, Theatre, and Dance—didn’t have room for non-majors from the RC to access their instructors and studio spaces. “That’s where the Visual Arts program came from,” Wingfield says, “wanting to supply RC students with art courses.”





Left: Student Ally Choi accessed a new mode of memoir by combining text and image in her final Photography 2 project. This image is taken from a triptych, which reads: "In his childhood during the Korean War, my grandpa ate the inner flesh of pine trees. He peeled back the bark with 8-year-old hands, setting the strips to boil as rice grew scarce. Now, nearly 90, he rolls rice into gim, handing me hundreds of grains bundled into bites, tucked tight beneath his hands, that have grown old, but not weary of doing good."

Ally Choi

LUCKY COINCIDENCE OR PERSISTENCE?

Wingfield's students "bring their interests into the darkroom in their approach and design of projects," he says.

For creative writing major Ally Choi, photography allows her "to work a different creative muscle than writing." And it's not always easy. "My brainstorming is written," she says. "I struggle to translate my ideas from words into photos." The darkroom process is time-consuming, and with only 36 shots on a roll of film, Choi appreciates "lucky coincidences." But those challenges have inspired breakthroughs in her creative practice, and she's visualizing her writing in new ways now too. "It really taught me the preciousness of limitations," she says. "And also to release my perfectionism or else I'd be in the darkroom forever."

Recent RC alum Katie LeClaire (A.B. '24) values the problem-solving skills she acquired in the darkroom. "I remember so many instances

of trying things over and over again in the darkroom until it worked out—a lot of persistence, frustration, and recruiting the expertise of Isaac and the more advanced students."

Now, the experience has paid off in her work as a teaching artist with the Ypsilanti-based Youth Arts Alliance, where she recently taught a pinhole camera workshop with youth in a detention and treatment facility in Jackson. LeClaire worked with poets and songwriters to create a month-long workshop that involved building a darkroom inside of a cell and making cameras out of paint cans. Initially, her students were skeptical about paint can cameras, and found parts of the process frustrating. "But later," she says, "they were so proud of the work they created."

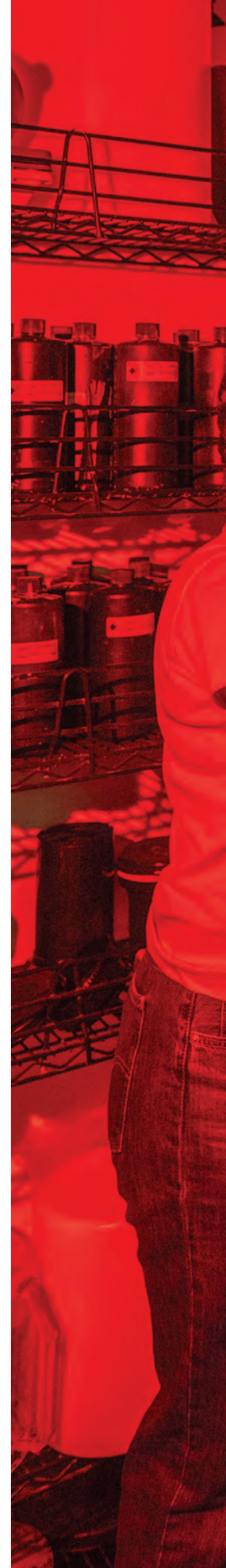
THE FUNCTION OF BEAUTY

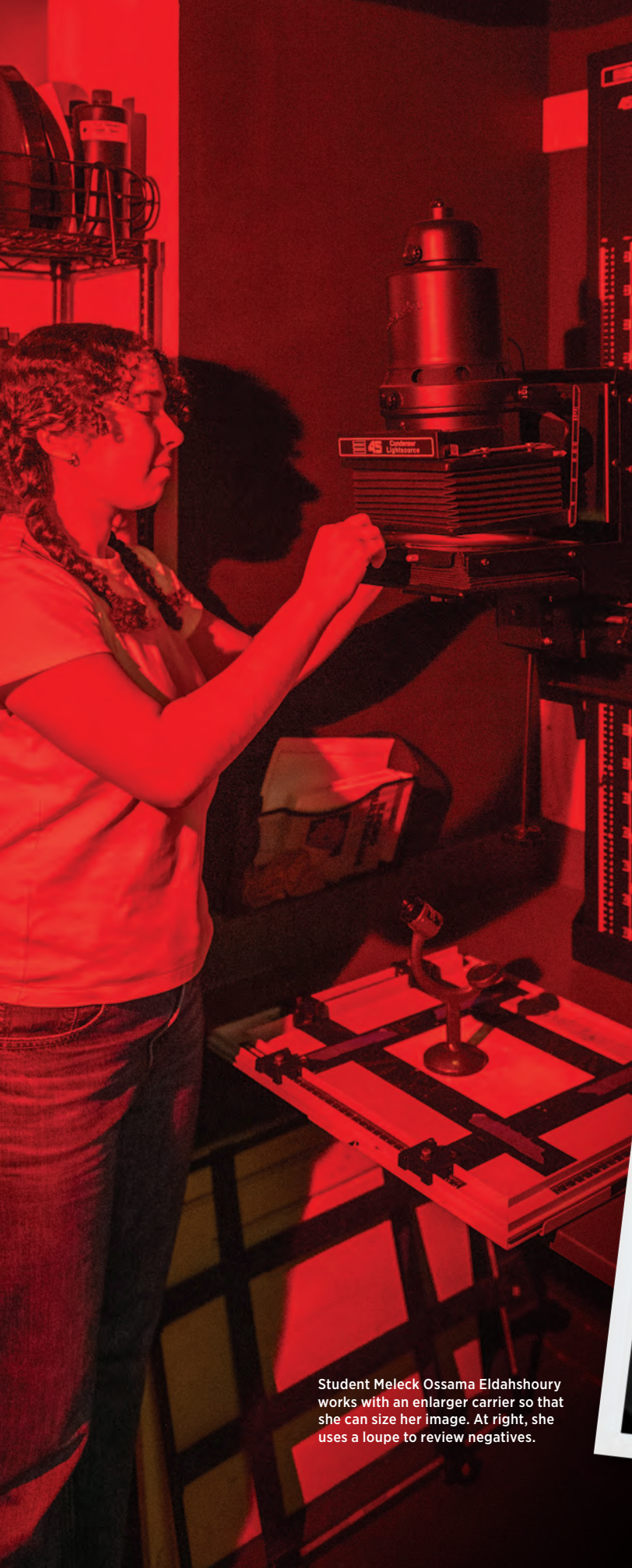
There's a special value to this kind of hands-on creative work, Wingfield says, that extends beyond learning new skills. "In the university today it's very easy to be word- and language-focused, and making visual art is a way to think differently about how we communicate and how we understand and make sense of the world. Visual art forces us to think differently and think critically about the world.

"Most of these students won't go on to be professional photographers, but all of them will encounter millions of images in their lives," Wingfield says. "We look at images all the time and get meaning from them. We understand things by looking at these images, but we don't always break down the thinking about how ideas are being communicated in those images."

"Most of these students won't go on to be professional photographers, but all of them will encounter millions of images in their lives."

—LECTURER ISAAC WINGFIELD





Student Meleck Ossama Eldahshoury works with an enlarger carrier so that she can size her image. At right, she uses a loupe to review negatives.

Maya Gratch, a social theory and practice major with a focus on urban development, says the photographic process has taught her to look at her surroundings differently, enabling her to see and frame beauty. “It was a great thing to learn how to find beauty,” Gratch says. “And functional things are beautiful.

“With each photo, I asked: *What is the function?* In urban development I look at what’s already there. Now I can ask what I can do to make things more functional, and meet people’s needs in urban development.”

These kinds of rich student experiences demonstrate the value of the visual arts within a liberal arts curriculum, and why the last darkroom on campus is worth preserving, Wingfield says.

“This process allows students to communicate and understand what they see,” Wingfield says. “It’s different from sitting and reading and thinking; it’s active. They learn by doing—manipulating controls, trying something different, and seeing how that changes things.” ■

Scott Soderberg/Michigan Photography



There Is Joy in the Woods

Students transform the Arb into an art exhibit, guiding visitors with poetry and connection, and reminding us that “the earth is a living thing.”



THE MESSAGE on a wooden placard at the U-M Nichols Arboretum instructed visitors to “Walk/through the garden’s dormant splendor./ Say only, thank you.”

On a golden fall day in the Arb, visitors could do just that: walk a trail near dormant peony beds, guided not by map or botanical information, but by poetry—a different kind of navigation system.

Eleven poems lined this path through the Arb from fall to early winter—part of a student project and open-air exhibition called



Earth Song, which signaled a network of historic relationships between Black people and the natural world. With QR codes at the bottom of each sign, visitors could connect to a student's voice reciting the poem inscribed on the wood: Carl Phillips's "White Dog," or two of Richard Wright's nature haikus, or Lucille Clifton's "the earth is a living thing," or Ross Gay's "Thank You," quoted above.

The placards and their poetry invited trailwalkers to pause, to read, to contemplate—and, as Gay wrote, to say "thank you."

ALWAYS PART OF THE NATURAL WORLD

Earth Song was born of the initiative of students of Professor Bénédicte Boisseron's "Black Ecologies" course in the Department of Afroamerican and African Studies. Black people have always been a part of the natural world, Boisseron says, though the legacy of slavery, segregation, and racism often erases Black presence from nature histories, and makes Black people feel unwelcome in the great outdoors today.

"For a Black birdwatcher, gardener, or dog walker," Boisseron asks, "is

there such a thing as 'being in nature while Black?'" She references the infamous 2020 incident of Christian Cooper, who was falsely accused of threatening a white woman while he was birdwatching in Central Park. One of Boisseron's goals in teaching the course is to reframe preconceived ideas about Black people's relationship with nature.

Above: Student Shao-Chi Ou guides a group of visitors along the *Earth Song* exhibit trail through the Arb.

Left: Ross Gay's poem "Thank You" is part of the *Earth Song* exhibit.

Photography by Doug Coombe

Right: Student Chidimma Udegbumam leads visitors to the *Earth Song* exhibit through a close reading of Carl Phillips's poem "White Dog."

Below: Professor Bénédicte Boisseron shares a lesser-known fragment of Black history entwined with the creation of the Arb, found in a letter from a former Arb director: a mention of 34 unnamed Black workers who dug Arb trails in the early 1930s. Boisseron and her students began working with archives in Lansing and Washington, D.C. to uncover the workers' names.



“Why not start ... an earthly movement, from one end of the country to the other, from east to west, north to south, within the country and beyond, in a Black diasporic chain?”

—PROFESSOR BÉNÉDICTE BOISSERON

Through an exploration of literature, podcasts, visual art, and experiential learning, Boisseron encourages her students to get outside and explore.

STUDENTS LEAD THE WAY

Boisseron’s students were inspired to create *Earth Song* after she introduced them to a 2022 exhibit called *The Bond of Living Things Everywhere*, curated by poet and scholar Joshua Bennett, an immersive exhibit that introduced the work of Black poets and writers into the New York Botanical Garden grounds. Boisseron and her students agreed: This kind of exhibit needed to travel.

Boisseron’s students led the charge to introduce the work of Black poets into their local environment. They chose the Arb as their installation site.

Together the group read an anthology edited by poet Camille Dungy called *Black Nature: Four Centuries of African American Nature Poetry*, and selected 10 poems to introduce into the Arb. The name of their installation is a nod to the Langston Hughes poem “An Earth Song.”

“Reading this poetry has been really good for me as a Black person,” says student Chidimma Udegbumam. “There’s this idea that Black people really aren’t outside, but for me these poems are a way to reenter nature, and to reclaim nature.”

WE HAVE TO TALK ABOUT JOY

Selecting the poems as a group was a process of balancing sadness with joy, says student Shao-Chi Ou. “We need both; it’s important to enjoy things,” he says.

“We have to talk about joy,” Boisseron adds. “Racism is not individual; it is systemic. But the tension between racist systems and individuals is very important in this class, because there’s something intimate about the joy we experience in nature.”

Many of the poems that students selected hold painful histories and resound with joy at once—such as this exultant stanza from Lucille Clifton’s “the earth is a living thing”:

*is a black and living thing
is a favorite child
of the universe
feel her rolling her hand
in its kinky hair
feel her brushing it clean*

Student Diya Mitchell says of the poem, “[It] immediately spoke to me

because of the way Clifton described the beauty of nature [in terms of] the experiences of Black women. She is celebrated, yet picked away at. She is both loved and exploited.”

The final poem on the path was not selected from the *Black Nature* anthology like the others. It was written by Marcellus Williams, an incarcerated poet whose controversial execution, in September, took place shortly before the exhibit in the Arb opened.

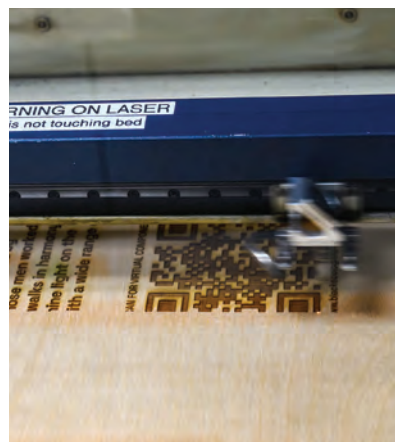
In the lines of Williams’s poem “At Last ... Another Heartbeat,” student Sophia Lane observes, is “a communion with the environment that affirms the universal connection of live beings everywhere, a unified heartbeat.”

In mid-October, students gathered in the Arb with Boisseron and community members for the opening of *Earth Song*. Students led a procession

through the woods, stopping at each placard to introduce and recite the inscribed poem for attendees. Poetry and footsteps echoed in soft beats along the path, similar to that “unified heartbeat” that Lane hears in Williams’s lines.

As they proceeded, the atmosphere shifted. The students’ words seemed to alter the autumn light on the Arb’s magnificent pines, meadows, and switchback paths, imbuing the Arb with a reverent song for the lives and stories held here. Claude McKay’s lines, written on a nearby placard framed by a golden maple, seemed especially resonant: “There is joy in the woods just now/ The leaves are whispers of song.” ■

Read more about *Earth Song*, and  listen to the students of “Black Ecologies” reciting the project’s poems here.



Above: The 11 poems students chose for *Earth Song* were inscribed by laser onto wooden placards and placed on the posts along the trail.

Below: DAAS program coordinator Elizabeth James shares Black and Indigenous nature stories at the Arb’s stone amphitheater at the end of the poetry trail, at the opening ceremony of the *Earth Song* exhibit.



A Perennial Educator

June Rose Colby, the first woman to earn a doctorate at U-M, learned and later taught with a singular zeal.

AT THE AGE OF 83, June Rose Colby opened her home to a local newspaper reporter.

Colby (B.A. 1878, A.M. '85, Ph.D. '86) was well known in her city of Normal, Illinois, having taught literature for nearly 40 years at the state university across the street from her house.

She was a slip of a woman, standing five feet tall and weighing, on a good day, all of 100 pounds. A childhood illness had left her physically frail, but her intellect was fierce. She lived amidst the written word, from novels and poetry to atlases, travelogues, German verse, and literary magazines.

While thousands of students at Illinois State Normal University (ISNU) had known her as Miss Colby, she was always Rose to friends and family. She kept a porcelain jar in her living room that she filled with flower petals to mark the happy moments of her life.

She turned to the reporter.

"What would you like to ask me?"

"A NEVER-CEASING HUNGER"

There was much to reflect upon.

She was born in 1856 to parents who prized education; her mother, Celestia, was a teacher and essayist who struggled to balance the demands of childrearing and the solitude of writing. When the University of Michigan announced in 1870 that it would begin admitting women—

29 years after the first male students enrolled—the Colby family moved from northern Illinois to Ann Arbor so that Rose's older sister, Vine, could attend. Brother Branch (yes, there was a botanical theme) followed in 1873. After graduating from Ann Arbor High School in 1874, Rose enrolled at U-M.

She loved the place.

"From the time it opened to women when I was 14 and knew I was to go to Michigan, it gave a settled purpose & wider outlook," she wrote years later. "The work in the University was sound, hard, enlightening, creating or feeding a never-ceasing hunger for things of the mind."

Consumed by learning, she studied English, French, German, and Latin toward a bachelor's degree. Next came a master's degree and a thesis about poet Matthew Arnold. In 1886, after successfully defending her dissertation ("Some Ethical Aspects of Later Elizabethan Tragedy") before four faculty members, Colby was awarded a Ph.D. Her dissertation committee noted: "Miss Colby has done herself great credit, both in her thesis and on examination, and ... she has shown herself a person eminently fit to receive the degree of Doctor of Philosophy."

The university had never granted a doctorate to a woman. And this woman believed in the power of literature and learning to unleash the potential of others.

"REMARKABLE VITALITY"

Just as Colby had loved being a student, students loved her.

After six years of teaching literature to high school students in Peoria, Illinois—her Ph.D. had not led directly to a college position—Colby joined the faculty at nearby ISNU (today Illinois State University) in early 1892 as professor of literature and preceptress, or dean of women.

Almost immediately, she set out to engage young women in intellectual conversations rather than what one called "hen socials." Colby did this as advisor to the Sapphonian Society, a five-year-old women's club, encouraging students to be serious and confident.

Women students gathered regularly—often at Colby's home—to discuss current events, history, books, and sports ("the girls are being initiated into the mysteries of baseball"). "Sappho's chief aim is not to please and entertain," the group said in 1897, "but to improve and help."

Her longtime commitment to Sapphonians led Illinois State

June Rose Colby in the 1870s, standing at the center and toward the back, as the faculty advisor to the Sapphonian Society at Illinois State Normal University in 1897. A portrait of Colby from the 1870s. University Hall, one of the U-M buildings where Colby took classes (drawing at right).

Bentley Historical Library and the Index class annual, Dr. Jo Ann Rayfield Archives, Illinois State University.



"From the time it opened to women when I was 14 and knew I was to go to Michigan, it gave a settled purpose and wider outlook."—June Rose Colby

yearbook editors to dedicate their 1914 edition to Colby while praising her workload of teaching all literature and composition courses and leadership as dean of women. “Only those who know of Miss Colby’s work in this school can appreciate fully the remarkable vitality which is particularly hers.”

“A YOUTHFULNESS OF MIND”

Colby was never known for being loud or overly outspoken. She let her teaching and writing convey lessons beyond the novels and poems she adored.

From left: June Rose Colby and U-M friends crewing on the Huron River in about 1878; she is second from the right. Colby in her Normal, Illinois, home in 1940. Colby and fellow graduates of Ann Arbor High School in 1874; she is to the upper left of the lectern.

Bentley Historical Library (left and right) and McLean County Museum of History; Pantagraph Negative Collection, 1940-1945, Illinois Digital Archives

She wrote about the value of making friends of all ages (“The strange vitality of spirit makes the spectacle of the oncoming lives, the young generations, of absorbing interest”) and the futility of libraries designating books for girls and boys (“We read both sorts”).

Colby also supported the women’s suffrage movement through her teaching; she saw teaching literature as a way of infusing students—boys as well as girls—with the “rights and wrongs and duties” of women. She lamented the decline of teaching classical languages. “The way the English language is slaughtered now is a tragedy. They are killing it with inane, empty, vulgar slang.”

Addressing a campus gathering during the first year of the Great War, Colby said literature could build bridges across cultures, because poetry and novels opened readers

to the experiences and emotions of people worldwide.

“And when we have wept and laughed and loved and wrought with men and women, their very homes are dear to us, the very earth their feet have trod must feel friendly to our feet,” she said. “To lay waste their land becomes sacrilege.”

When Colby retired in 1931, student newspaper editors observed that her 40 years of service spanned more than half the lifetime of Illinois State itself. But she was timeless. “Dr. Colby has a youthfulness of mind that outstrips youth itself ...”

Yet time eventually prevailed.

Fourteen months after her newspaper interview, in the spring of 1941,

Rose Colby died in her home, surrounded by books. She was 84, and her memory jar of flower petals was said to be full. ■





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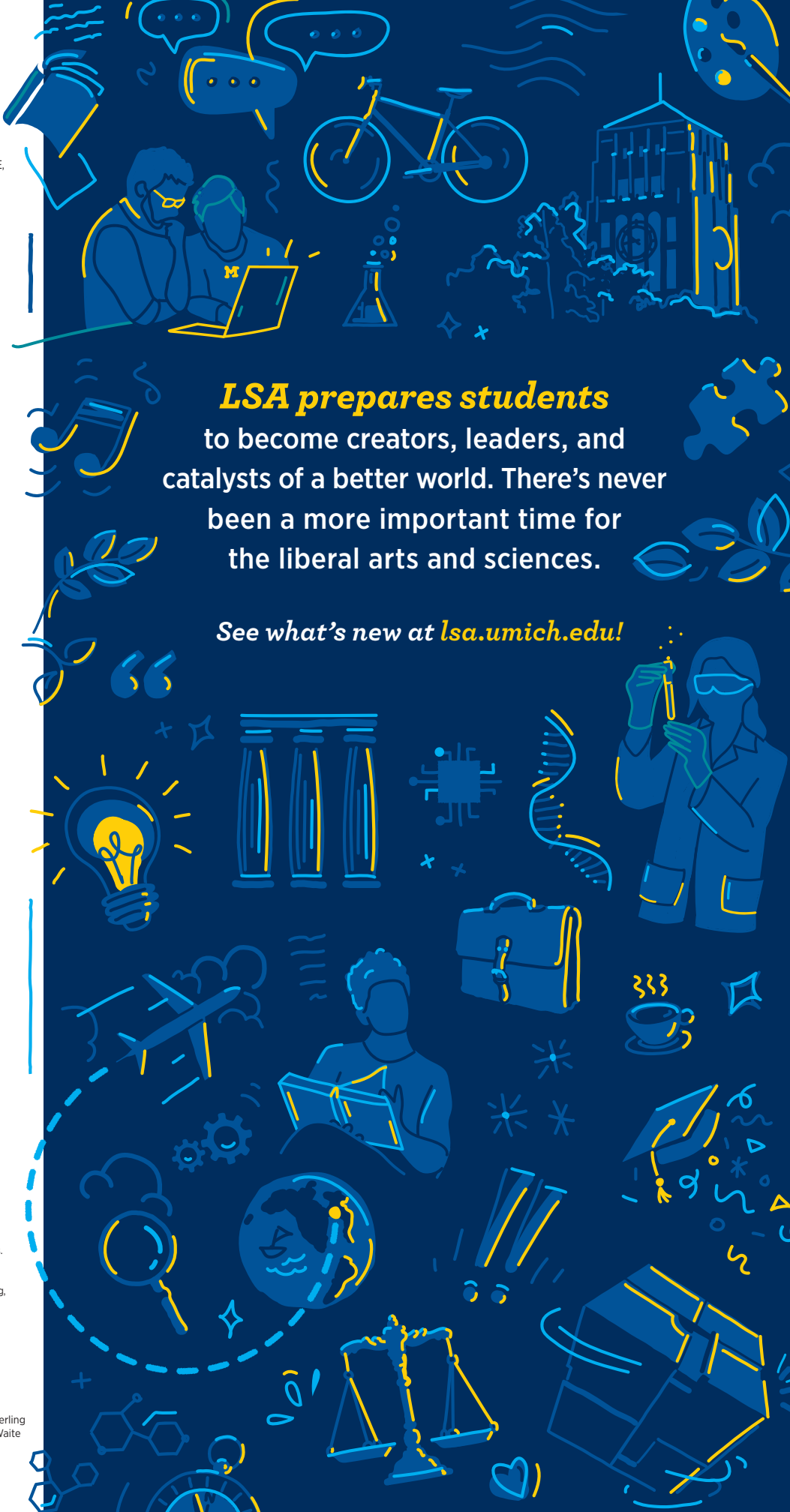
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Illustration by Matt Vierling
and Becky Sehenuk Waite

A vibrant, stylized illustration in shades of blue and yellow. It features various academic and creative symbols: a bicycle, a building, a person at a laptop, musical notes, a lightbulb, a DNA helix, a person in a lab coat, a graduation cap, a globe, a scale of justice, a clock, and various geometric shapes and patterns.

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FROM THE DEAN ROSARIO CEBALLOS

Solving Real-World Problems in Real Time

The LSA way: bringing together brilliant minds and new approaches to research

IN THE COLLEGE OF LSA, we believe in the important role that research and science play in improving our world and building a better future. The toughest challenges we face today are not solved by one-dimensional thinking. Instead, they're solved by brilliant minds and new approaches, by scholarly colleagues and classmates challenging each other to find a new way forward, and by the dogged pursuit of new knowledge in our research endeavors.

The toughest challenges we face today are not solved by one-dimensional thinking.

To give one example, one might ask: can planets outside of our solar system—also known as exoplanets—support life? This is an age-old question, and just a few months ago we announced that LSA faculty are leading a new project that will shed light on this question, in coordination with other researchers from U-M and around the country. Their work will culminate with the first space mission led by our Department of Astronomy: the crewless STARI mission. It's just one example of the vital work happening around LSA every day, resulting in insights in places as far away as multiple light years and as near as your own backyard.

As a college of liberal arts and sciences, we are uniquely positioned to approach problems from an interdisciplinary perspective, bridging the expertise that exists across a breadth of scholarly disciplines. To name just a few examples, our

Levi Stroud

The knowledge that comes from new discoveries,
pursued by our scholars and students, will benefit all of us.

faculty, research staff, and students are studying brain tumors, exploring ways to protect endangered species and resources, deciphering ancient scrolls found in the wreckage of Mount Vesuvius with sophisticated AI technology, examining the future of work as AI replaces traditional jobs, and investigating whether Michigan can be considered a “climate haven” (see related story, p. 26).

Moreover, LSA faculty and students do this work in collaborative teams. Our nationally recognized scholars work alongside expert staff and smart, dedicated undergraduates and graduate

students. Taken together, the research that happens across LSA is improving people’s lives and enriching our understanding of past societies and our future world.

I am tremendously proud of the enormous volume and exceedingly high quality of research endeavors undertaken in the College of LSA. The knowledge that comes from new discoveries, pursued by our scholars and students, will benefit all of us, the world we live in, and future generations for years to come. ■



U-M researchers John Monnier (left), Shivani Sunil (center) and James Cutler (right) examine a CubeSat in the Michigan Exploration Laboratory. The team’s STARI space mission will use two CubeSats. Learn more about STARI on pages 7 and 62.



YEAR OF THE SNAKE

A juvenile North Philippine temple pit viper (*Tropidolaemus subannulatus*) greeted Tristan Schramer, a Ph.D. candidate in the Department of Ecology and Evolutionary Biology (EEB) and an NSF graduate research fellow, during a recent trip to the Borneo Lowland Rainforest. Schramer was there for the 10th World Congress of Herpetology to present research last year. The photo won this year's EEB photo contest. The snake "is what I perceive to be yawning or readjusting its jaw," says Schramer, who studies snakes and other reptiles.

Tristan Schramer



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