

The **CORE**

**THE COLLEGE
MAGAZINE**

Summer 2023 Supplement to
The University of Chicago Magazine



At Alumni Weekend in May, the Core's designer, Laura Lorenz, helped staff the "swag table," where these nifty House buttons were on offer.



INSIDE

From the editor

MAKE WAY FOR DUCKLINGS

With Botany Pond closed for renovations, a neighborhood duck has moved across 57th Street to the Reg. As the *Core* was going to press, she was nesting on a south-facing second-floor wind swill.

Ducks leave the nest for about an hour every five days or so to eat, drink, and wash, according to Jerry Coyne, professor emeritus of ecology and evolution. At his suggestion, library staff supplied a red plastic tub of water, neatly labeled “Property of Amy the Library Duck.”

Once the eggs hatch, Amy will need to get her brood to a body of water. That's when it becomes a *Make Way for Ducklings* situation.

In Robert McCloskey's classic 1941 picture book, a duck family is trying to walk across Boston to the Public Garden. Even 80 years ago, Boston was a tough place for baby ducks, requiring a team of friendly policemen to stop traffic. See in the Public Garden's pond, Mr. and Mrs. Mallard and Jack, Kack, Lack, Mack, Nack, Ouack, Pack, and Quack live happily ever after.

Picture books aside, humans are not great at sharing with other species. In the contiguous United States, 95 percent of the land has been “logged, tilled, drained, grazed, paved, or otherwise developed,” as ecologist Douglas W. Tallamy writes. Even in pockets of “nature”—parks, gardens—most plants are nonnative, unable to sustain local ecosystems.

In “Are We Doomed?” (page 16) and “What Then?” (page 22), UChicago academics weigh in on loss of biodiversity, climate change, and other existential threats. They also think about ways forward. Eduardo Leão, PhD'22, humanities teaching fellow in Romance Languages and Literatures, suggests “moving away from an anthropocentric view of the world.” In other words, make way for ducklings.—*Carrie Golus, AB'91, AM'93*

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EDITOR
Carrie Golus, AB'91, AM'93

ART DIRECTOR
Guido Mendez

DESIGNER
Laura Lorenz

CONTRIBUTING WRITERS
Susie Allen, AB'09
Sean Carr, AB'90
Maureen Searcy

COPY EDITOR
Katie Byrnes

CONTRIBUTING EDITORS
Laura Demanski, AM'94
Mary Ruth Yoe

773.702.2163
uchicago-magazine@uchicago.edu
mag.uchicago.edu/thecore

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Melina Hale, PhD'98, came to UChicago as a graduate student in 1992. She's now an alum, a College parent, a named professor, and, as of July, dean of the College.

College leadership

SCIENTIFIC THINKING

Meet Melina Hale, PhD'98, the College's new dean.

Melina Hale, PhD'98, the William Rainey Harper Professor in the Department of Organismal Biology and Anatomy, became dean of the College on July 1. Hale, who previously served as a vice provost of the University, succeeds **John W. Boyer**, AM'69, PhD'75, the Martin A. Ryerson Distinguished Service Professor of History. The Core spoke with Hale in late June, as she was preparing to step into her new position.

—Carrie Golus, AB'91, AM'93

What was your first impression of UChicago when you came here as a graduate student?

How passionate everyone was about their research—that was both exciting and intimidating. And I loved how we were all appreciated for being our own quirky selves.

What were the first classes you taught?

I had the good fortune of being a teaching assistant for **Lorna Straus** [LAB'49, X'53, SM'60, PhD'62, now professor emerita of organismal biology and anatomy] and **Jim Hopson** [PhD'65, now professor emeritus of organismal biology and anatomy], both such great role models.

At the time, Lorna was the only woman faculty member in my department. She asked me to teach Multicellular Organisms with her but ended up leading a trip to Antarctica during the quarter, leaving me with the class for a while. Being thrown in the deep end was scary, but that happens over and over again in academia. I had to learn quickly and develop my own teaching style and approach. The students were so great and taught me a lot about how to teach that year.

[Hale received the Wayne C. Booth Graduate Student Prize for Excellence in Teaching in 1994.]

In Jim's course, Chordate Biology, my favorite memory is from when we were dissecting sharks. The night before an exam a student wrote a long—very long, and pretty good—"Ode to the Shark" on the chalkboard in the dissection room. Humanities in the anatomy lab is so UChicago. And I was impressed that the student had time for poetry before an exam.

Will you teach as dean?

I hope so. I want to teach something interdisciplinary. My research is on the neurobiology and biomechanics of movement. I was thinking about something bridging science and art, such as dance or animation of movement. Or perhaps an interdisciplinary course related to scientific communications or a Big Problems course. I'd love to coteach with a colleague. I always learn so much when coteaching.

How would you describe your teaching style?

I love engaging with students in the classroom. But I will say,

“It is also important to study the humanities and other Core subjects to foster our own humanity.”

—Dean Melina Hale, PhD’98

some of my favorite teaching moments are from my lab, working with undergrads on research projects. That’s been a very meaningful part of my career.

Working in research labs can be such a wonderful opportunity for the students, because they can be involved in a project from an early stage—developing experiments—through doing the experiments, analyzing them, and, in some cases, writing them up and having them published. Students learn how to think like a scientist, and of course they learn the subject matter deeply.

An important part of the experience is when things don’t go as planned. Maybe the results aren’t as straightforward as hypothesized or the experimental design or methods don’t work as planned. I’m excited that some of the Core Bio sections now incorporate projects with new research.

Do you have a favorite UChicago tradition?

Scav is so great. I am proud to be friends with a Scav cofounder, Diane Kelly [AB’90]. I am curious about Kuvia. We’ll see this winter ...

I’ve really enjoyed going to College games and cheering on the Maroons. When my kids were little, they were so in awe of the players—for them it was better than the Bears or Bulls. Sometimes players would even take a picture with them or give them a high five. Family Weekend and Alumni Weekend are also really fun—I’ve met such interesting fellow alums.

How are you preparing for your new job?

There is a lot to do to prepare! The staff in the college are amazing, and I’ve loved learning about the work of the different offices. One little thing I did was to borrow my son’s Hum books to have as my summer reading. I’ve started out with St. Augustine’s *Confessions*. Wish me luck, because this summer has been pretty busy learning the ropes of the deanship.

You’ve mentioned a couple different Core sequences—a fan?

Absolutely. The Core is foundational to the UChicago experience. We often talk about students not learning “what to think” but “how to think,” and that happens in the Core. The

depth of exposure to ideas across disciplines is important no matter what career path someone ends up taking. I’ve seen that directly with our students going into biosciences.

It is also important to study the humanities and other Core subjects to foster our own humanity. To equip ourselves to live in a community with other human beings, to be citizens.

Besides doing Hum Core readings, do you have any hobbies?

I love bouldering. I like that it combines movement with problem solving. I am always terrified on high falls at the bouldering gym but then can’t wait to climb again.

Are there any lessons from bouldering that might come in useful as dean?

So many. There are different ways to complete a “problem,” or climb a route. Different climbers have different strengths and are successful with different approaches. And rather than just attempting a climb over and over, spending time to think about it—and talk through it with others—is often more effective.

Alumni memories

YOU TALKING TO ME?



Charlie Chaplin in *Modern Times* (1936)

In the Q&A section of the College Review, the Core's email newsletter, we asked alumni to share their memories of Doc Films, which celebrated its 90th anniversary last year.

CAUGHT

One night I was in the balcony of Cobb Hall running the projectors, with a friend keeping me company and a full house below. Because each reel held only 30 minutes of film, the projectionist had to manually switch projectors, starting the second machine before the end of the reel on the first. Ideally, the process would be imperceptible to the audience.

When I leaned over to do the switch, my long red hair got caught in the take-up reel, like

a scene from Charlie Chaplin's *Modern Times*. Luckily, my friend jumped up, turned off the projectors, and turned on the lights. By then my head was craned back towards the take-up reel. He meticulously disentangled the long strands from the reel. It took him about 15 minutes. Then on with the show!—*Abby Freedman, AB'71*

NIGHT DEPOSIT

After the audience went home and we counted our proceeds, one of us had to take the money to the bank for a night deposit. Weekend showings sometimes meant a couple thousand dollars. One Saturday night, it was my turn to take the cash to the bank, riding in the back seat of a campus squad car. You can't

get out unless someone opens the door from the outside. We had just arrived at the bank as an APB came out that someone was slashing tires along the street. Both policemen jumped out. While I sat in the back seat with this bag full of cash, a guy yanked my door open and yelled, "Run!"—*Paul Preston, AB'72, AM'73*

HITMEN

In 2012 at Doc, I saw an action thriller called *Looper* about time-traveling hitmen. The protagonist studies French in hopes of retiring to France, to which his boss says—"I'll never forget this—" "I'm from the future. Go to China." The studio actually subtly developed the film with lines like that to appeal to Chinese officials and audiences. I learned that recently because I happen to work with one of the film's producers (and possibly the most interesting person in the world).—*Michael Sexton, AB'13*

FILM NOIR

I don't remember a single screening that was resplendent among others, but Doc Films was a great education in the history of film. I attended two or three showings a month max, but I always read the short paragraphs about what was showing (how else do you decide what you want to see?) and through this absorbed a lot about directors, genres, periods,



Next question: What was your experience of time in the College? Did you turn in your work months—or years—late? Did you routinely pull all-nighters or rise with the sun? Did College seem to last forever, or was it over in the blink of an eye? Send your theories on the meaning of time to collegereview@uchicago.edu.

and stars. These days I watch a lot of classic films from the 1940s and 1950s, especially film noir, and I find that what I bring to my viewing experience is likely to be something that I learned from Doc Films. So thanks, all these many years later!—*Orin Hargraves, AB'77*

“VALUES”

The first date my wife, **Patricia Schafer**, SB'68, and I had was at Doc Films. After the outer doors were closed, one of the Doc members introduced the film. He said it was unusual, even for Doc, and gave us the opportunity to have our money refunded. No one took him up on the offer, being good, curious U of C students. The film: *Flaming Creatures*, showing various sexual inclinations and activities, with almost amateurish film production “values.” We still occasionally remind each other about the somewhat funny, somewhat embarrassing experience, almost six decades later.

—*Sam C. Masarachia, SB'67*

BURNED

Sean Carr, AB'90, author of “Once Upon a Time at Doc” in the Winter/23 Core, responds:

Flaming Creatures is one of those movies I know of but haven't seen. My last quarter in the College, I took a class on avant-garde film, and I watched Kenneth Anger's *Scorpio Rising*, which features a leatherman orgy set to Elvis's “(You're the) Devil in Disguise.” So that's burned into my memory. Never told my parents part of their tuition payments subsidized that.

WHAT'S NEW IN THE COLLEGE

New Paris Center named for John Boyer

UChicago alumni and parents have contributed \$27 million to rename the University's new Center in Paris and establish a new professorship in honor of **John W. Boyer**, AM'69, PhD'75, senior advisor to the president and the Martin A. Ryerson Distinguished Service Professor of History. Boyer served as dean of the College for 31 years and was instrumental in conceptualizing the first Center in Paris in 2003. The new Center, designed by Jeanne Gang, is scheduled to open in 2024.

2023 Quantrell winners announced

Five faculty members have been recognized with the Llewellyn John and Harriet Manchester Quantrell Award for Excellence in Undergraduate Teaching, which is based on letters of nomination from students. This year's recipients are **Leora Auslander**, the Arthur and Joann Rasmussen Professor of Race, Diaspora, and Indigeneity and History; **Michael Gladders**, professor of astronomy and astrophysics; **Robert L. Kendrick**, the Robert O. Anderson Distinguished Service Professor of Music and Romance Languages and Literatures; **Phoebe Rice**, professor of biochemistry and molecular biology; and **James Sparrow**, associate professor of history. Established in 1938, the Quantrell is believed to be the nation's oldest prize for undergraduate teaching.

Inaugural Sonnenschein award given to Ricky Holder, AB'23

During the Class Day ceremonies (see remarks from Class Day speaker **Bret Stephens**, AB'95, on page 8), **Ricky Holder**, AB'23, was presented with the inaugural Hugo F. Sonnenschein Award of Excellence, the highest honor to be bestowed upon undergraduates in the College. Holder, a Navy veteran who spent nine years in foster care, will be a Marshall Scholar at the University of Oxford next year. He was one of three student speakers at Class Day, along with fellow graduates **Daphne de Beistegui**, AB'23, and **Jeremy Huang**, AB'23.

Read more at mag.uchicago.edu/holder.

ABDUCTIONS

A common misconception is that UFOs are flying saucers that come in the middle of the night to abduct living things, from humans to cows! There is absolutely no evidence that this has ever happened. But the stories make good movies!



Books

SPACE AGE WHIZ KID

Meet *Joalda Morancy, AB'22*, children's author and aerospace engineer.

The summer before **Joalda Morancy**, AB'22, started high school, they were clicking around on YouTube when a cooking video caught their attention. It explained how to make a peanut butter and honey sandwich ... on the International Space Station.

"I remember being super confused yet very intrigued," Morancy says. "The next thing I knew, I was falling down a spiral of research and discovery in the

topic that would become my lifelong passion."

During the pandemic Morancy had more free time than usual, so they started sharing their obsessive research about various scientific topics on Twitter, with obvious enthusiasm and plentiful exclamation points. There were threads about space elevators: "Many of us have been on a regular elevator, but imagine one that takes you from the surface of the Earth to the cosmos above. Cool, right?"

About time travel: "Every moment of our lives we are traveling through time, but how do we go about controlling where in the future or past we want to go?"

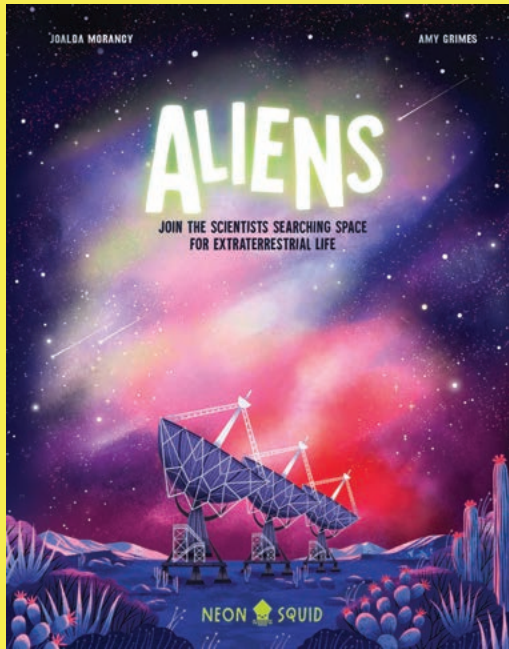
About wormholes: "One of the coolest concepts when

it comes to high energy astrophysics, and I am here to tell you exactly why that is."

And for fun, something "that absolutely no one asked for," a thread on actor Donald Glover "as different planets in our solar system" (wearing a blue-and-green patterned shirt for Earth, a bright orange suit for Mars, etc.).

Their most popular thread was about terraforming Mars: "You may have heard about this in movies, but how would we really do it?"

A few months after Morancy began tweeting, an editor from Neon Squid, an imprint of Macmillan, asked if they would be interested in writing a children's book. Morancy drafted the book in about eight months—much of it during the



Opposite: Several of the book's illustrations, including this one of aliens abducting a cow, were based on Morancy's ideas.

This page: The book's cover and its author.

academic year. "It was stressful," they say, "but I still enjoyed it."

The book, called simply *Aliens*, was published in the fall of 2022, when Morancy was a fourth-year. Aimed at readers ages 8 to 10, *Aliens* is "a well-constructed, fact-filled look at the ongoing search for outer-space life," according to *Kirkus Reviews*.

The writing in *Aliens* is as concise and engaging as Morancy's tweets: "How did our home planet transform from a hot ball of rock to the blue marble we know and love today?" reads the spread about Earth. "Let's rewind to 4.5 billion years ago." Morancy also contributed ideas for the illustrations, such as the dairy cow being abducted by aliens while the

rest of the herd looks on in puzzlement (opposite page).

Morancy, who graduated with a degree in astronomy and astrophysics, now works at Blue Origin, the aerospace company founded by Jeff Bezos. An aerospace engineer, they test avionics for Blue Origin's lunar lander program.

In their spare time they are working on two science fiction projects. One, with the working title "Nordström's Descendants," is a dark academia novel about a struggling grad student forced to study with a professor who "may or may not be a little bit evil," they say. In the book, Morancy hopes to "make theoretical astrophysics accessible to the average reader," which means "I have to understand all the different theories and the math involved."

A second project, nameless as yet, is a historical fantasy set toward the end of the Scientific Revolution, on the cusp of the Enlightenment. Morancy's inspiration is the "women and people of color within and outside the sphere of the Western world," they say, whose contributions to the Scientific Revolution have been overlooked.

Morancy still posts prolifically on Twitter to more than 13,000 followers. "I'm about to start doing deep dives into quantum field theory, general relativity, and the Scientific Revolution," they wrote at the beginning of June, "so consider my account insufferable for the next 6 months-1 year."

—Jessica Guo, AB'23, and Carrie Golus, AB'91, AM'93

Student life

“THE JOY OF ARGUMENT”

An excerpt from the 2023 Class Day speech by Bret Stephens, AB'95.

This is a speech about speaking your mind when other people don't want you to.

To those who just walked out, I thank them for not seriously disrupting my speech. And while I'm sorry they won't hear me out, I completely respect their right to protest any speaker they dislike, including me, so long as they honor the Chicago Principles. It is one of the core liberties that all of us have a responsibility to uphold, protect, and honor.

TO THOSE OF YOU who have chosen to stay, I thank you for honoring another Chicago principle, one that was dear to my dear friend, Bob Zimmer: Namely, that a serious education is impossible except in an environment of unfettered intellectual challenge—an environment that, in turn, isn't possible without the opportunity to encounter people and entertain views with whom and with which you might profoundly disagree.

DECADES AGO, the art critic Harold Rosenberg coined the phrase “the herd of independent minds.” It's a line I think about often.



Bret Stephens, AB'95, a *New York Times* columnist, received the UChicago Alumni Association's Professional Achievement Award in 2014.


The herd of independent minds are the people who say they make up their own minds when it comes to politics, and yet somehow, and generally without exception, arrive at precisely the same long list of political conclusions as millions of others.

The point is: There are very few people who *don't* see themselves as independent thinkers. There are even fewer people who *are*.

This is true wherever you go, in most walks of life. But it seems to be especially true in places and institutions heavily populated by people with elite educations—the kinds of places and institutions that many

of you will soon be a part of. Groupthink is the affliction those who ought to be—and often think of themselves as—the least vulnerable to it.

Some people are inveterate truth-seekers. They are almost congenitally willing to risk rejection, ostracism, even hatred for the sake of being right. But most people just want to belong, and the most essential elements of belonging are agreeing and conforming. They engage in what's known as “preference falsification,” pretending to enjoy things they don't, or subscribe to ideas they secretly reject. They go along to get along, because the usual emotional companion



“The joy of argument ... should be about opposition and mutuality, friction and delight ... ”

to intellectual independence isn't pride or self-confidence. It's loneliness and sometimes crippling self-doubt.

Is that a price you are willing to pay?

INSTITUTIONS and their leaders invariably say they support independent thinking and free speech—but only when that support is easy and costs them nothing, not when it's hard and requires them to take a stand. They want provocative thinking—provided it isn't too pointed and only offends the people who don't count in their social network. They want to foster a culture of argument and intellectual challenge—so long

as nobody ever says the wrong thing and feelings don't get hurt.

But this doesn't always have to be the case. Institutions *can*, in fact, practice what they preach.

It's called leadership. You have one magnificent example of it right on this stage, in the person of **John Boyer** [AM'69, PhD'75]. And you have had a historic example of it in the person of Bob Zimmer.

In its obituary for President Zimmer, the *New York Times* mentioned that, in his career as a distinguished mathematician, his main interests lay in “ergodic theory” and something called “Lie groups.” I don't know what those are, either.

But I think it's notable that a man whose academic career was probably the most insulated from any kind of political pressure so profoundly and intuitively understood the importance of protecting intellectual freedom throughout the whole academy. To adapt Martin Luther King Jr.'s line about injustice, Bob knew that a threat to independent thinking anywhere was a threat to independent thinking everywhere, including in abstruse mathematics and the hard sciences.

IN SHORT, Bob created an institutional culture that, as Salman Rushdie once said, serves as a safe space *for* thought, not a safe space *from* thought. And my question to you, both in the audience and on this stage, is whether you will take inspiration from it in your own lives and careers.

I hope you do, whether you choose to lead a private or a public life. And I hope you do so by writing your own version of the Joy of Argument—which is like a similarly titled book from 50 years ago, updated for an era that has become curiously and depressingly afraid of both. The joy of argument is not about “owning” or “destroying” or otherwise trying to disparage, caricature, or humiliate your opponent. On the contrary, it should be about opposition and mutuality, friction and delight, the loosening of inhibitions and the heightening of concentration, playfulness and seriousness, and sometimes even a truly generative act.

Yes: I am comparing great arguments to great sex.

These things you've all been doing at the University of Chicago for the past few years—discussing and debating and interrogating and doubting and laughing and thinking harder and better than you ever did before—isn't the antithesis of fun. It's the essence of it. It's the uniquely joyful experience of being authentically and expressively and unashamedly yourself and, at the same time, having a form of honest and intimate contact with others who, in their own ways, are being authentically and expressively and unashamedly themselves.

Watch the video of Stephens's Class Day speech at mag.uchicago.edu/stephens-classday.

“What is this virtue? How do we understand it?”

Sports

THE GOOD LIFE AND THE GRIDIRON

Maroons of Character teaches football players how to live virtuously.

Some collegiate football programs encourage players to watch game film on their own time. Most require players to lift weights. But at UChicago, players grapple together with a different challenge: how to grow in personal virtue and live a fulfilled life.

That is the mission of Maroons of Character, a yearlong program offered to UChicago football players by the Hyde Park Institute. (Although not formally affiliated with the University, the institute counts a number of faculty members among its collaborators, including **Agnes Callard**, associate professor in philosophy; **Daniel Morgan**, cinema and media studies chair; and **Tahera Qutbuddin**, professor of Arabic literature.)

Twice a quarter, the participants, all football players, gather to discuss a virtue—such as gratitude, humility, or temperance—that’s been chosen in consultation with Coach **Todd Gilcrist Jr.** and his staff. The goal, says **Zack Loveless**, AM’14, PhD’18, the institute’s

director of programming and operations, is to get student-athletes to look beyond their day-to-day classwork and take the long view: “Your time here isn’t just about football and school—it’s about the rest of your life.”

The program’s roots lie in pre-pandemic 2020. The Hyde Park Institute already offered a yearlong program on medical ethics and character, codirected by **Michael Hawking**, affiliate faculty at the MacLean Center for Clinical Medical Ethics at UChicago Medicine, which aimed to help students cultivate the virtues necessary to navigate the stresses of a career in medicine. **Gus Springmann**, AB’13, now the volunteer director of Maroons of Character, imagined a similar program to help football players deal with the pressures of school and competition.

“Being a football player myself,” Springmann says—he was an offensive lineman for the Maroons from 2009 to 2012 and twice named to the University Athletic Association’s All-Academic Team—“I thought some of those same characteristics really resonated.” The Hyde Park Institute got the football coaches’ blessing, as well as their input on which virtues would be most useful for their players. It’s a bit of a return to the Maroons’ golden age, too: Loveless roots the discussion of virtues such as temperance in the writings of Aristotle, but moral character was also an



At the 2022 Homecoming game, the Maroons defeated Cornell College 47-6. But Maroons of Character teaches players that their time at UChicago “isn’t just about football and school.”

important emphasis for the team under Amos Alonzo Stagg. Since the NCAA limits the number of hours athletes can be required to spend on their sport, participation in Maroons of Character is entirely optional.

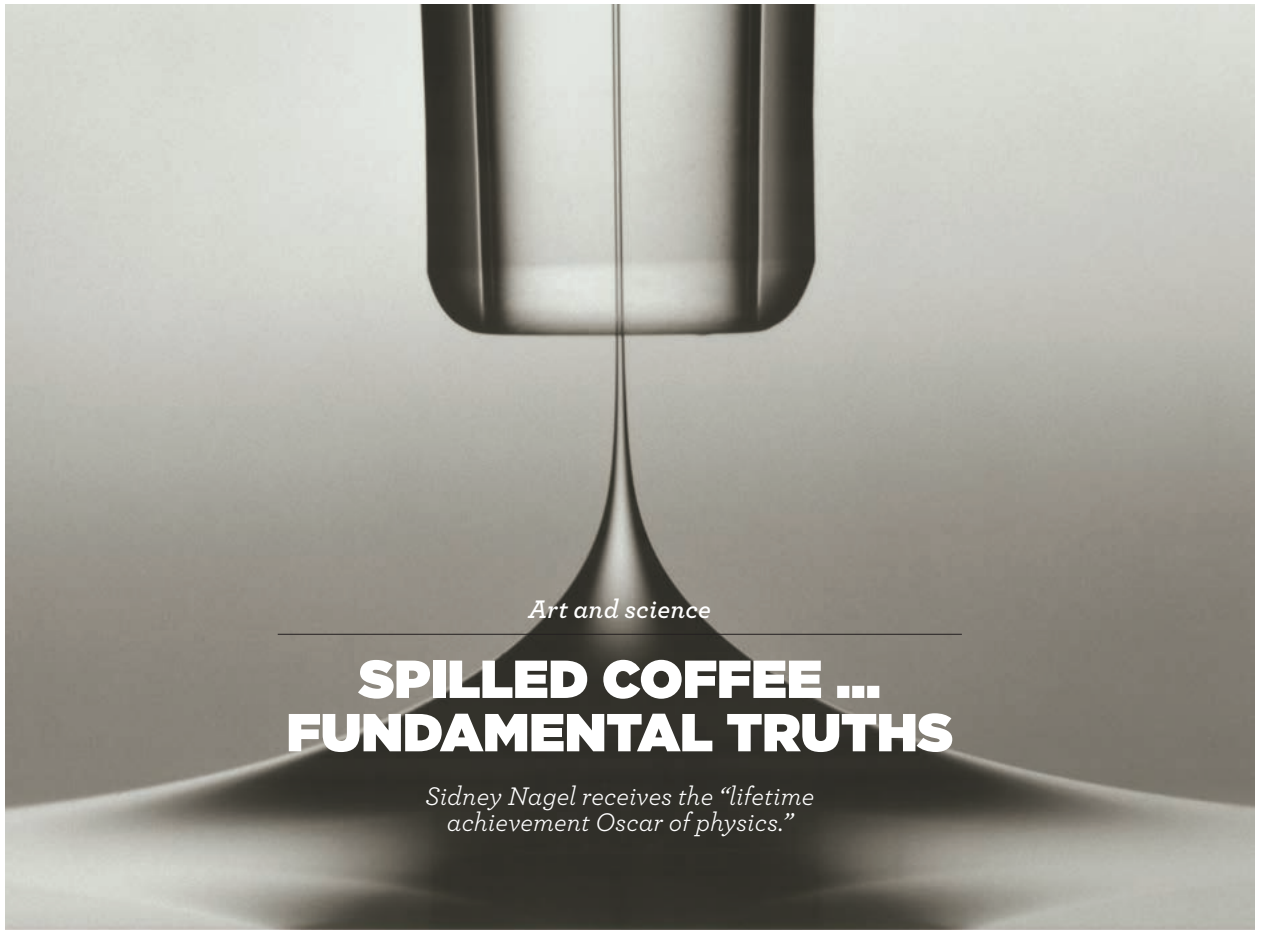
“We start with some reading and reflection questions to get them thinking,” says Loveless. (The session on humility, for example, featured selections from an academic publication on psychology, the *Harvard Business Review*, and the *Tao Te Ching*). “What is this virtue? How do we understand it?” asks Loveless, whose degrees are in philosophy. “What are the contexts in which it applies? How is it important?”

After the discussion, a featured alumnus speaker talks about how that virtue impacted his own life. The students also spend time with an alumnus mentor who’s chosen on the basis of some alignment with his

mentee, whether it be hometown or position played. They’re generally three to 12 years out of the College—old enough to have some perspective, but young enough to have experiences in common with the students.

At a panel discussion with alumnus mentors, students asked how to build a new routine to replace the cycle of classes-practice-homework they’d followed continuously since their freshman year of high school; how to stay connected with friends when they move away; and whether they’d grow out of emotional ups and downs post-college. (“That doesn’t end,” said one of the alums. “You get better at handling it,” reassured another.) It’s Springmann’s hope that after a few years, the young men in the audience will swap places with the panelists, coming back to campus to mentor a new crop of football players in living virtuously.

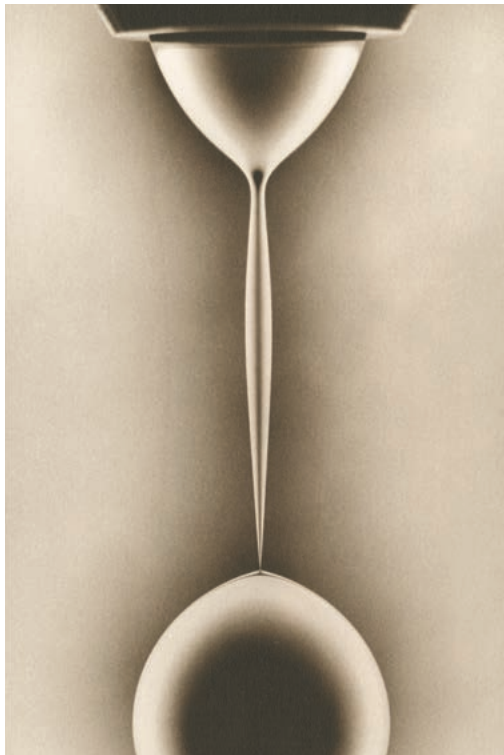
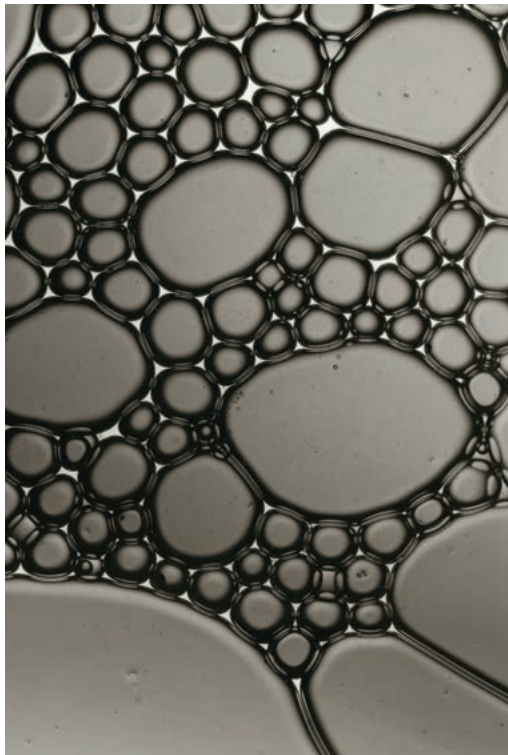
—Benjamin Recchie, AB’03



Art and science

SPILLED COFFEE ... FUNDAMENTAL TRUTHS

*Sidney Nagel receives the "lifetime
achievement Oscar of physics."*



A few examples of Nagel's high-speed physics photography. *Selective Withdrawal* (top) and *Breaking Away: Glycerol in Oil* (near right) are in the Smart Museum of Art's permanent collection.

Physicists have a reputation for caring about the grandest questions: the formation of the universe, the collisions of black holes, the nature of time and space.

But **Sidney Nagel** was also curious about modest things. Why a spill from a coffee cup forms a ring instead of a spot. How a raindrop stretches and falls from an overhang. The shifting of grains of sand. He's spent nearly 50 years looking into these everyday phenomena.

In January Nagel, the Stein-Freiler Distinguished Service Professor of Physics, accepted the 2023 American Physical Society Medal for Exceptional Achievement in Research. The award, sometimes called the lifetime achievement Oscar of physics, recognizes "contributions of the highest level that advance our knowledge and understanding of the physical universe in all its facets."

Nagel is the second recipient of the award from UChicago. His longtime colleague Eugene Parker (1927–2022) was recognized in 2018 for contributions to space physics.

Nagel was one of the first to do research in the field of physics known as soft matter. Decades ago soft matter was not only little known, but disdained; today it is a primary focus in physics. "The thing that makes you a candidate for a prize like this is that you change a field" says **Thomas Witten**, professor emeritus of physics. "Sidney changed many things."

Nagel and his collaborators ran endless experiments to figure out why spilled coffee forms a ring and why grains of rice or coffee in a container pack more tightly when shaken. They took high-speed photographs of droplets separating and discovered a hitherto unseen world of physics. They developed the mathematics to explain how the breakup of ordinary liquids mimics features found not only in other materials but (at the largest scale) in black holes as well.

They also introduced the importance of "jamming," the phenomenon that turns loose grains into a rigid solid when

squeezed together—opening up a new line of intensive research across several fields

Through it all, a theme emerged: "The idea that disorder and inequilibrium are crucial," Nagel says.

The classic approach to physics is to envision the simplest system to find fundamental truths. For example, physicists often cool down their experiments to near absolute zero to remove confounding variables like temperature and the disorder that comes with it.

"But the thing is, most systems are not actually in equilibrium," Nagel says. "The atmosphere is not. People are not. In fact, if you think about it, biology is set up to *keep* us from reaching equilibrium."

Nagel wondered, "Is there an epitome of *disorder*, and if so, what are the principles that govern it?"

Nagel's findings have laid the foundation for a deeper understanding of our world, as well as for applications in biology, materials science, and robotics. "The impact of Sid's work goes far beyond any one particular phenomenon or any particular subfield of science, because the basic principles he uncovered are so widely applicable," says **Heinrich Jaeger**, the Sewell Avery Distinguished Service Professor of Physics, and a longtime friend and collaborator. (At an annual event for the public called Physics with a Bang!, Nagel and Jaeger explode balloons, launch bottles across the room with gas, and blow smoke rings with garbage cans.)

Nagel's approach is also known for another characteristic: an appreciation of beauty in the world. His office is lined with images taken of experiments, often in black and white, that showcase the perfect curve of a droplet about to fall or the sly lines of water and oil sliding past each other. Several of these are part of the Smart Museum of Art's permanent collection. "The phenomena themselves have an aesthetic quality," Nagel says, "that I don't think of as separate from physics."

—Louise Lerner, AB'09



UChicago women helped the war effort by selling bonds.

Marjorie Sullivan Lee, AB'43 (seated, fourth from left), and friend Mary Hammel, AB'41 (seated, third from left), pose with the 1941 Ida Noyes Council. Hammel's war contribution was training Army pilots.



UChicago history

“OH, IT WAS A LOVELY PLACE”

Marjorie Sullivan Lee, AB'43, lived in Foster Hall, roller skated in Ida Noyes, and watched Robert Maynard Hutchins go to work.

Early this year the University of Chicago Magazine received a rare bit of snail mail—a little green note card with a bird wreathed in flowers. In elegant cursive, Marjorie Sullivan Lee, AB'43, updated us on her lifetime of activism for people with Down syndrome. She also encouraged other graduates from the 1940s to send in their news.

The Core spoke with Lee, now 101 years old, about her memories of the College, her work at the Federal Reserve, and her activism. This interview has been edited and condensed.

—Chandler A. Calderon

Did you live on campus?

In Foster Hall. It had a beautiful tower. The tower room was very expensive, but there were two little rooms adjoining it, and they were less expensive. I had one and oh, it was a lovely place.

They locked the front doors of the building at ten or eleven o'clock at night. If we were out on a date, we had to come through a back doorway that served the four women's dormitories—Foster, Green, Kelly, and Beecher. An older lady was in charge of this entrance overnight. We had to sign in, then we walked underground to our own dormitory. So we were protected, I guess you might say.

Foster Hall was about a block away from Rockefeller Chapel and right across the street from the home of the president, Robert Maynard Hutchins. I used to watch him walk out his front door.

What activities were you involved in?

One of the things I remember most is we had a big gym in Ida

Noyes with a wooden floor that we could roller skate on.

We didn't have sororities; we had clubs. I was president of a women's club called Wyvern. My senior year I was in the senior women's honor society, Nu Pi Sigma, which was linked to the men's honor society, Owl and Serpent.

After our meetings we would all go to the C Bench and sing. We sang something called the Maroon songs. But I guess we sang just about anything.

What was campus like during World War II?

There was a minimum of men on campus. The ones who were there were part of a meteorology group. They marched in uniform from their living quarters to their classes every day.

Many of us women considered going into the service—with the WAC [Women's Army Corps] or the Red Cross. I considered both. I was talked out of it by my family. They were hoping that I



UChicago in the 1940s: (above) Army cadets march past International House; (center) students get ready to roller skate in Ida Noyes; (right) fashions included “Christopher Robin” boots and saddle shoes; (below) Lee’s 1941 yearbook photo.

would graduate and get myself married and have a family.

One of my friends, Mary Hammel [AB’41], became very much involved. She had a pilot’s license and spent almost every weekend practicing at an airport nearby. During the war she became an instructor for Army pilots.

What made you choose economics as a major?

As a student I had a job in the economics department doing secretarial work. I just kind of flo ted into it.

Right out of college I got a job at the Federal Reserve Bank of Chicago. They had this good economics department. Not all banks had such a department. I started out as a secretary. It was hard to jump over the typewriter—it took a while to get respect for my abilities in economic research.

They began little by little to let me do some independent work, like looking up statistics on a certain topic. I have always felt I do some rather good

writing and so I pushed for the opportunity on that. I was very pleased when I finally ha one of my articles in the bank’s magazine. I enjoyed it for fi e years. The only reason I left was I got married and I wanted to have children.

How have you kept in touch with other alumni?

We developed a round-robin letter system. There were seven of us from Wyvern club. I’d write my letter, send it to number two on the list, then she’d write her letter and send both to number three. When it came back to me, I’d take out my old letter and attach a new one. It kept going for about 50 years. How about that?

You received a UChicago Alumni Association Public Service Award in 1993 for your Down syndrome activism. How did you get involved?

My son Kevin was born with Down syndrome. There were a lot of difficulties in fightin or inclusion. I got very busy.

Among other things, I developed a parents’ alliance for special education while our kids were in school, fighting or the chance for them to be in regular school classrooms. And then we developed the Parents Alliance Employment Project, where we helped these young folks fin jobs. I never insulted anybody who didn’t agree with me, but I always tried to share my views.

What are you most proud of?

I’m proudest of my son Kevin.

From left: UChicago Photographic Archive, apf3-02878; University of Chicago Library; UChicago Cap and Gown, 1940; UChicago Photographic Archive, apf4-01366; UChicago Cap and Gown, 1941



ARE WE DOOMED?

UChicago scholars contemplate the end of the world.



By Maureen Searcy



It's reasonable to assume that a class called *Are We Doomed? Confronting the End of the World*, taught virtually in Spring 2021, might have been motivated by COVID-19.

Yet astrophysicist **Daniel Holz**, SM'94, PhD'98, and sociologist **James Evans** had to scramble to add material on the pandemic. Presciently, they had developed the course (part of the College and the Franke Institute's Big Problems program on matters of global or universal concern) before the emergence of SARS-CoV-2. More than 75 College students, just as presciently, had enrolled.

Evans, the director of UChicago's Knowledge Lab, and Holz, the science and security board cochair of the Bulletin of the Atomic Scientists, didn't plan the course with an answer in mind. Nor was the goal "to give the complete accounting of every way that civilization can end," says Holz. "The main task of the class is not so much in the details as to build awareness that there *are* existential threats. We should not take the existence of civilization for granted."

Informed by Holz's work with the Bulletin, the course covered "headline threats" of nuclear war, climate change, and, increasingly, disinformation. "Then there are a bunch of others that are waiting in the wings," Holz says, like the rise of artificial intelligence and pandemics, which ended up taking center stage.

Each class featured a guest speaker (scholars from UChicago and beyond) and assignments including articles; movies such as *Dr. Strangelove* (1964); and novels, including Albert Camus's *The Plague* (1947). For the final project, students, alone or in groups, created "one modest object that belongs to this future world."

The course served as a sort of proving ground for what Holz calls the Existential Risk Laboratory. Still in the planning stages, XLab would help students learn about the risks covered in *Are We Doomed?* and how they might mitigate these risks—regardless of their career paths.

Viewing the future through the lens of existential risk could empower them, but "one of the big challenges in this is to inform people without leaving them despondent," says Holz. Based on their final projects—including the "recipe" for clean water (page 36)—many students seem to have emerged from the class with hope.

Holz and Evans aren't the only UChicago scholars whose work leads them to think and teach about existential threats. Throughout the University, academics in a range of disciplines are confronting the possibility of the end of the world: how we define it, how we can stave it off, and how we might rebuild after catastrophe.

BUT FIRST, WHAT MIGHT DOOMSDAY LOOK LIKE?



HUMANITY IS NO MORE

The Cretaceous-Tertiary Mass Extinction event that wiped out the dinosaurs and half of all species 65 million years ago was probably caused by an asteroid or comet hitting Earth. A sensational—and highly marketable—prediction is that the human species might meet the same fate.

Planetary scientist **Fred Ciesla** isn't worried; scientists continuously monitor for approaching space rocks and have practical solutions. Last fall NASA scientists intentionally slammed the Double Asteroid Redirection Test (DART) spacecraft into a nonthreatening asteroid moonlet and changed its orbit by 33 minutes. "That's all it would take," says Ciesla. If we saw an asteroid that posed a threat in a century, "a little nudge now would, over the course of a hundred years, lead to it being no more than a distant passerby."

In his role at the Bulletin of the Atomic Scientists—the independent organization founded in 1945 by UChicago scientists that sets the hands of the Doomsday Clock—astrophysicist Daniel Holz is more concerned that nuclear war is humanity's ultimate threat. This year the Doomsday Clock was set to 90 seconds to midnight, ten seconds closer than last year—the closest it has ever been. Concerns about the war in Ukraine dominated the decision, says astrophysicist and former Bulletin science and security board chair **Robert Rosner**.

Those old enough to remember the Cold War were steeped in the consciousness of a looming World War III. In the 1950s Americans built backyard bomb shelters, and into the 1980s movies like *The Day After* or *WarGames*, both released in 1983, shaped perceptions of an imminent nuclear threat. Holz would sometimes start public lectures by asking who was worried about nuclear Armageddon: "The only people who ever raised their hands were people who had been alive during the Cuban Missile Crisis."

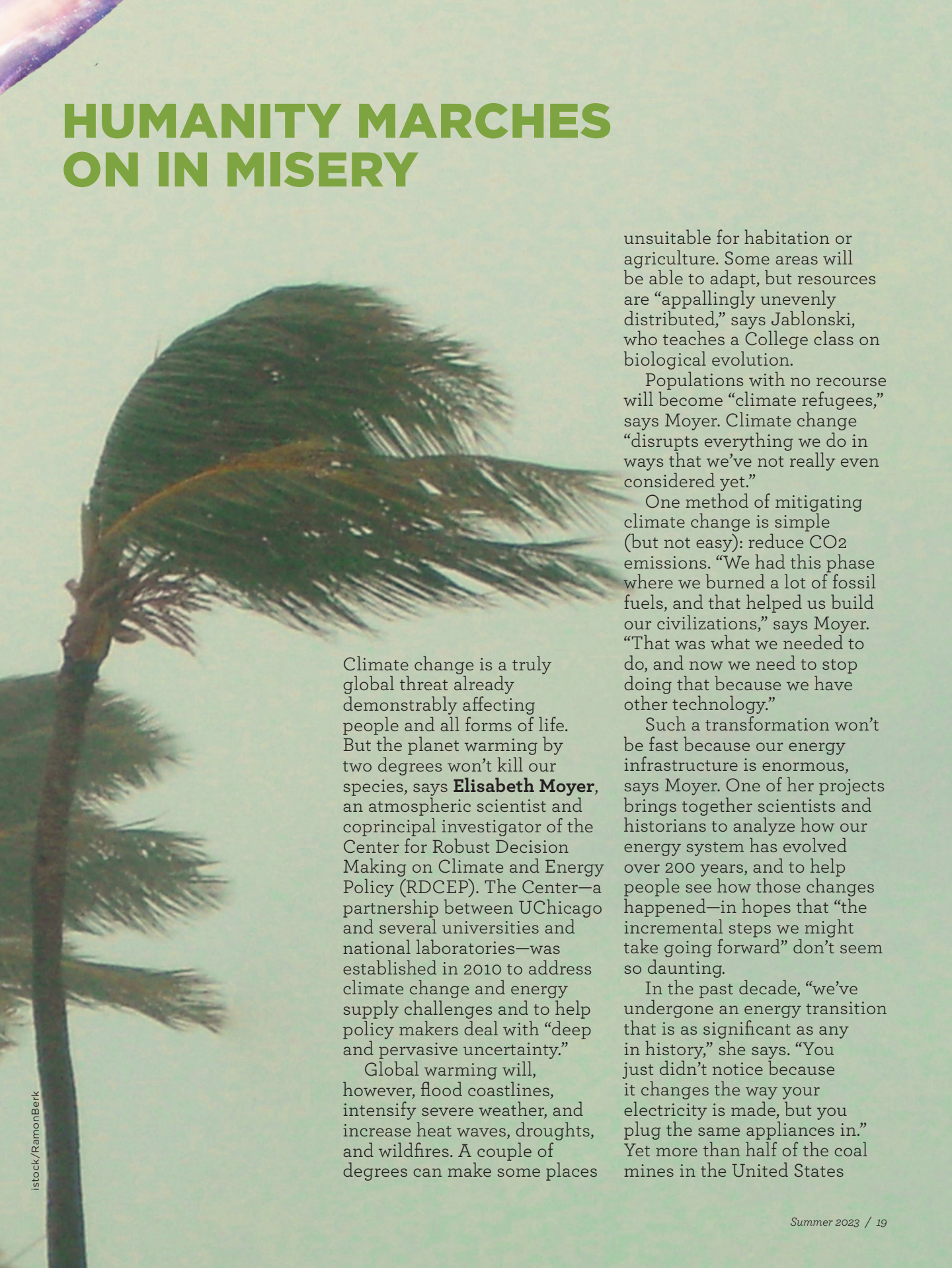
The danger of nuclear war, beyond the immediate destruction from bomb blasts, is twofold, says Rosner. Radioactive materials would contaminate agricultural land and, even more perilously, a war could trigger a nuclear winter and mass famine. "If you generate huge fires, especially in urban settings, and you put enough soot in the atmosphere to block sunlight sufficiently, you kill agriculture all over the entire world," he explains.

"We're arguably at a unique time in history," says Holz. The ability for global destruction via nuclear war or rapid climate change is an extremely recent development in the time frame of human civilization. A thousand years ago, a hundred years ago, he says, we couldn't have wiped out all of humanity through our own actions.

But would a third world war extinguish every human life? "That would require a truly concerted, conscious effort," says evolutionary biologist and paleontologist **David Jablonski**. "As a biological species, we're hard to kill. We see from past extinction events in the fossil record that one of the factors that most promotes survival in the face of perturbations is broad geographic range, and we have people living from McMurdo Sound in Antarctica to high up in the Himalayas."

A genetically engineered superbug could lead to extinction, but human immunological variability makes that chance slim. What we can do—with great competence—is destroy our own quality of life. That's what he's most concerned about: "not the extinction of the species but the misery." That requires its own set of countermeasures.

HUMANITY MARCHES ON IN MISERY



Climate change is a truly global threat already demonstrably affecting people and all forms of life. But the planet warming by two degrees won't kill our species, says **Elisabeth Moyer**, an atmospheric scientist and coprincipal investigator of the Center for Robust Decision Making on Climate and Energy Policy (RDCEP). The Center—a partnership between UChicago and several universities and national laboratories—was established in 2010 to address climate change and energy supply challenges and to help policy makers deal with “deep and pervasive uncertainty.”

Global warming will, however, flood coastlines, intensify severe weather, and increase heat waves, droughts, and wildfires. A couple of degrees can make some places

unsuitable for habitation or agriculture. Some areas will be able to adapt, but resources are “appallingly unevenly distributed,” says Jablonski, who teaches a College class on biological evolution.

Populations with no recourse will become “climate refugees,” says Moyer. Climate change “disrupts everything we do in ways that we’ve not really even considered yet.”

One method of mitigating climate change is simple (but not easy): reduce CO₂ emissions. “We had this phase where we burned a lot of fossil fuels, and that helped us build our civilizations,” says Moyer. “That was what we needed to do, and now we need to stop doing that because we have other technology.”

Such a transformation won't be fast because our energy infrastructure is enormous, says Moyer. One of her projects brings together scientists and historians to analyze how our energy system has evolved over 200 years, and to help people see how those changes happened—in hopes that “the incremental steps we might take going forward” don't seem so daunting.

In the past decade, “we've undergone an energy transition that is as significant as any in history,” she says. “You just didn't notice because it changes the way your electricity is made, but you plug the same appliances in.” Yet more than half of the coal mines in the United States

have closed, their fuel replaced by gas, wind, and solar power.

Historical context can help us “not just wring our hands about existential threats,” says Moyer, or fixate on an imaginary impossible solution, but instead treat “supposedly distant, complicated, and large-scale problems realistically and practically.”

Looking to the past offers perspective on the threat of disease, as well—particularly when we are still in the midst of a global pandemic. People living through the Black Death during the mid-1300s truly believed it was the end of the world, says **Michael Rossi**, a historian of medicine. They “would write things like, ‘if there’s anyone even left to read this, this is my account.’”

Plague is accompanied by radical social breakdown, says Rossi. “You almost always get accounts of people being unable to maintain social ties, whether it’s not enough healthy people to bury the dead or perform death

rituals.” The instability leads to further hardship, such as starvation.

“We saw mild—and less mild—forms of this during COVID,” he says. In the United States, some communities have continued to experience higher rates of morbidity and mortality, the “disease exposing existent cracks in our social structures that we knew were there.”

Rossi teaches a course on ancient medicine. He hopes his students learn that “the world in the past was very much a matter of rich decision-making rather than just bumping around in the dark,” he says. “Or conversely, that we’re also bumping around in the dark. We just don’t know it.” He also hopes students gain a sense of optimism, with a tinge of humility, learning that they can bend history through vigilance and action.

While Rossi looks back, Holz looks forward: “COVID was just a baby practice pandemic compared to what might be in store” and the misery it could bring. And Jablonski adds, “Clearly, we’ve had rubbed in our face how badly we handle emerging diseases.” America’s—and the world’s—response to COVID was influenced by scientific, cultural, social, and emotional factors, but it was also complicated in a new way: by misinformation and disinformation spread by the internet.



“There’s an epidemic of skepticism of expertise and science,” and it infects everything, Rosner says.

HUMANITY ON HARD MODE

The path from nuclear war to nuclear Armageddon is clear, but it’s not as easy to extrapolate the danger of inaccurate misinformation and intentionally misleading disinformation. Holz calls disinformation a “threat multiplier”—an added dimension of difficulty for a society trying to save itself.

“It undermines rational discourse,” says Holz. “We have to agree on facts, on basic aspects of the world around us” to have any hope of making progress. We must agree that the earth is round, climate change is happening, and COVID exists before we can even consider addressing more nuanced threats.

Moyer has worked in climate science for two decades, so she’s no stranger to disinformation. Climate change denial makes sense to her: the forces driving it can be traced back to the industries and people whose profits suffer from energy transformation efforts. But the goals of those who deny COVID, for instance, are broader—harder to pinpoint and thus harder to combat. “That to me is the scariest thing right now in our society.”

“It gets fundamentally in the way of fixing anything,” says astrophysicist Rosner, who cites disinformation as his topmost concern. “There’s an epidemic of skepticism of expertise and science,” and it infects everything, Rosner says. “The internet has really made it worse, and we don’t know how to regulate the internet.” He is

particularly worried about a pending lawsuit in federal court that attempts to classify mis- and disinformation as political speech protected by the First Amendment.

A 2019 article in the *Bulletin of the Atomic Scientists* called misinformation and disinformation “cyber-enabled information warfare”—both a multiplier of existential threats and a threat in its own right. “Corruption of the information ecosystem,” it reads, poses “the possibility of a global information dystopia, in which the pillars of modern democratic self-government—logic, truth, and reality—are shattered, and anti-Enlightenment values undermine civilization as we know it.”

Ciesla, who teaches the College class *Earth as a Planet: Exploring Our Place in the Universe*, says that his job has changed over the years to include confronting mis- and disinformation.

In addition to teaching planetary science, he also focuses on information literacy: the ability to seek, evaluate, use, and create information effectively—a skillset immeasurably complicated by the ease with which anyone can post anything on the internet. His message goes beyond literacy to understanding how our decisions based on information can affect other people, and how other people’s decisions affect us, he says: “It’s not just us working, living in isolation.” ❁

WHAT THEN?

Maybe the end of the world isn't the end of the world.

Not long ago, I listened to a lecture on climate change. The lecture went as one might expect. There was a warning of impending ecological catastrophe and talk of the “Anthropocene,” suggesting that our age—the age in which humans dominate the Earth—is coming to an end. At the end of the talk, there was a discussion period. At one point, a young academic stood up and said simply, “Let me tell you something: We will not be missed!”

—from *Imagining the End: Mourning and Ethical Life* (Harvard University Press, 2022), by Jonathan Lear, the John U. Nef Distinguished Service Professor on the Committee on Social Thought and the Department of Philosophy

So it happened. An apocalyptic event wiped out 95 percent of the population and all the cultural, political, and social knowledge they carried. The survivors are scared, in some cases weak, and at a loss for what to do next.

A look into the future? Nope. It's 500 years ago, in what is now Latin America, when a combination of disease, war, and forced religious conversions destroyed much of what people understood as their world. But the creation stories of that time don't reflect defeat, says **Edgar Garcia**, an associate professor in English—and the fact that “there are still creation stories being written at that time itself says something.”

In the spring of 2020, Garcia had just finished teaching a course on the Popol Vuh, the K'iche' Mayan creation story. Trapped at home at the start of the pandemic with the reading he had on hand, he wrote *Emergency: Reading the Popol Vuh in a Time of Crisis* (University of Chicago Press, 2022).

“Apocalypse is a very Christian concept,” he says: “the idea that the world might end once and forever.” In Christian writing, this is sometimes called *novissimi*, or newness after which there will be no more new things—a term used “alongside doomsday and revelation.” But not all cultures see the world through that lens. In the Popol Vuh, Garcia says, “There is no *novissimi*. There is a persistent *quomodo*. In what way will people now remake it all.”

So it happened. What then? *Quomodo*?

In conversations with faculty in the humanities and social sciences about the possibility of apocalypse, two themes came up again and again: the need for radical imagination and, above all, the need for hope.—*Ed.*

THE APOCALYPSE IS ALREADY HERE

When Eduardo Leão, PhD'22, a humanities teaching fellow in Romance Languages and Literatures, was growing up in Brazil in the 1990s and 2000s, "I felt like everything was possible, and Brazil was the country of the future," he says. That changed with the political and economic crises of the 2010s and then the pandemic.

Leão wrote his dissertation on Latin American science fiction. In the eight dystopian novels he analyzed, "I saw that there were glimpses of possible answers" to the environmental and other crises that the world is facing.



What kind of answers?

For example, moving away from an anthropocentric view of the world. An openness to a society where we're not at the center, where we have a deeper notion that we're more interconnected with the nonhuman world. Indigenous groups throughout the Americas, for instance, have known this for ages.

We've become very cynical—how can a book change the world? But literature and art in general help us imagine possibilities. Ursula K. Le Guin once said there was a time when people couldn't imagine a world where the king wasn't in power, and yet here we are. Much in the same way we can't imagine a world where we don't live in a capitalist society.

Wouldn't utopian novels be more helpful?

The 20th century gave us a lot of important dystopias: *1984*, *Fahrenheit 451*, and so on. We know how to imagine the worst. So a time has come to imagine the best, or at least the better.

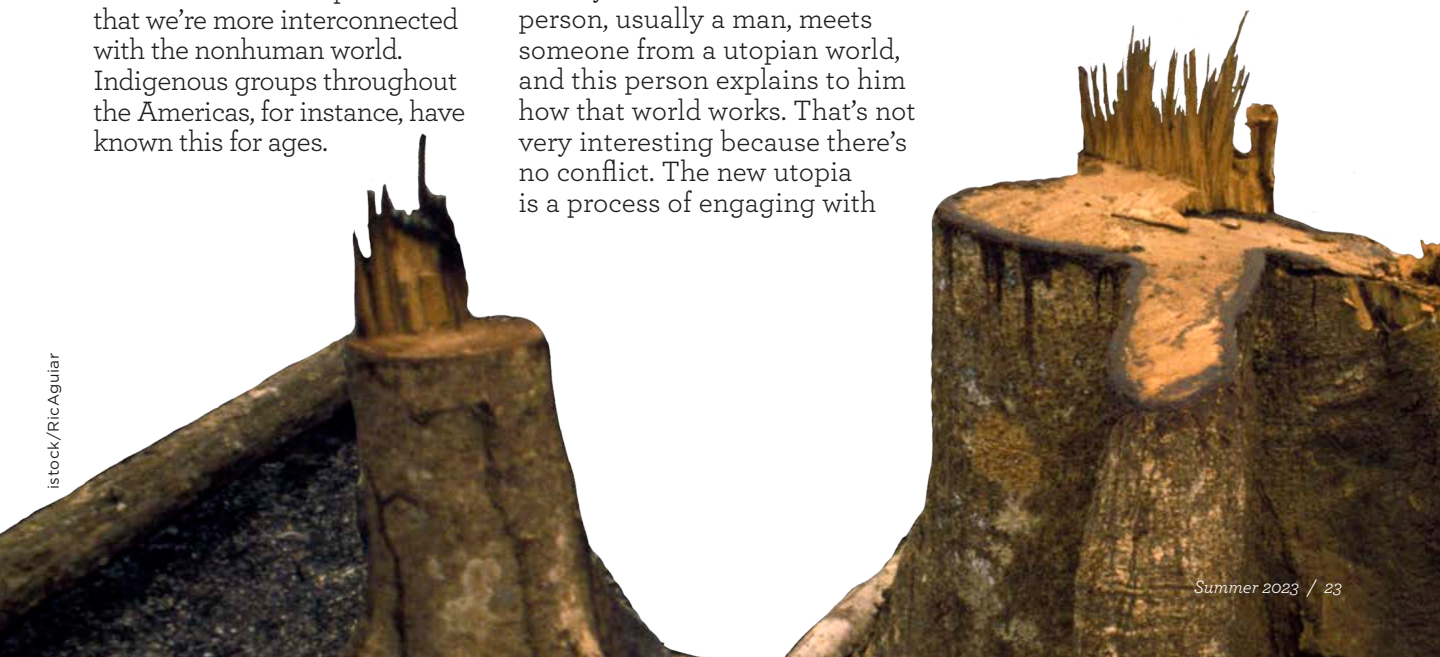
There's an underlying trend in the eight novels I wrote about—a shift from dystopia to a more critical utopia. Utopia fell out of fashion because it was really prescriptive. It was usually a narrative where a person, usually a man, meets someone from a utopian world, and this person explains to him how that world works. That's not very interesting because there's no conflict. The new utopia is a process of engaging with

existing problems: coming up with hypotheses and proving or disproving them. Artists are coming to the conclusion that just being pessimistic will not cut it anymore.

How do cultures that have already experienced crisis understand the apocalypse?

In Brazil, Indigenous and Afro-Brazilian leaders say, we've already been living the apocalypse for 500 years.

The Western world is finally thinking, hmmm. Maybe the things we've been doing were not quite right. Maybe the way we've been exploiting nature and the way we've built our economy is not the best solution for the world. In a sense, the Indigenous communities and Afro communities are saying: Yeah. We've been trying to tell you this for a couple of centuries.



Victoria Saramago, an associate professor in Romance Languages and Literatures, specializes in the environmental humanities. In 2022 she spent a lot of time thinking about the end of the world while coediting a special issue of the Journal of Lusophone Studies called "Narratives of the Apocalypse."

Do you talk with undergraduates about the end of the world?

I teach a course on the Amazon. When we think about what has been going on in the Amazon, for centuries actually, unfortunately, until the present—genocide, loss of biodiversity, all that—it is really heartbreaking. I had students who were just in shock.

It is a very big crisis, the one we are facing, and unfortunately the politics of our time is definitely not catching up with the scale. We need to face the facts and develop our ability to empathize with people around the world who are already suffering the effects of ecological crisis. But just having a catastrophist attitude is not going to solve anything. In order to live, we need hope.

My parents' generation used to say, "This is a problem that our children and our grandchildren are going to face." In the current generation of College students, there is a much stronger awareness that the climate crisis is a reality. This is our problem. Now.

What did you learn from editing "Narratives of the Apocalypse"?

How diverse the thinking about the apocalypse is. We have articles on Brazil and Portugal, on Angola, on Mozambique. Different parts of the Portuguese-speaking world.

Apocalypse means so many different things. From more traditional thinking about the end of the world, the physical world, the end of humanity, to the epistemological—the extinction of ways of thinking and of living.

A CRISIS, A BETTER WORLD

In 2022 Adom Getachew, a Neubauer Family Assistant Professor of Political Science, edited an issue of the Boston Review called "Imagining Global Futures." The issue began with a bleak editors' note: "The global present is wracked by crisis. War in Ukraine and Ethiopia draws on. Climate change becomes ever more dire. Public health remains fragile, and the toll of human displacement continues to rise." Yet the focus of the issue was to discover "how crises can generate new possibilities," she says.

Were there any good ideas?

Yes. One of the authors wrote about the Rojava, a Kurdish experiment in self-government. In the midst of this horrific civil war in Syria, here is a community that has innovated and thought about how we might govern collectively. It's incredibly egalitarian. It's a sort of model. I'm very interested in the ways that experimentation at the local level might generate new kinds of possibilities for the global or the national.

We take the experiences and practices of places like the United States and Europe as a kind of economic and political model for the rest of the world. One would not think that the state of Rojava would be the site to rejuvenate our ideas. Yet here is this exciting, profound experiment in thinking about self-rule—council systems, direct democracy.

Are you hopeful for the future?

That's a hard question. The challenges we face in the world are big, difficult, existential questions: climate change, etc. But I feel inspired by the ways that this moment has generated new ideas, approaches, and political and social movements.

Do your College students seem hopeful?

The worldliness of my students is inspiring. They're really alive to the crises and dilemmas of the present. That also makes them incredibly impatient.

Asked to imagine an economic apocalypse, economist Damon Jones, an associate professor in the Harris School of Public Policy, suggests several possible scenarios: the collapse of financial markets, inequality becoming so stark that it leads to societal unrest. “The climate is another example of scarce resources—like if water becomes scarce.”

The more you think about the end of the world, he says, “the more discouraged you are from trying to do things that can stop it.” But he thinks maybe—to circle back to creation myths and critical utopias—society could look to writers and artists to radically reenvision the world in a time of crisis.

Would economic apocalypse be sudden?

A thing that is scary to think about is a slow death of civilization. For example, in the places where some of the wealthiest people live, it’s now very common to see people who are homeless. Even in Washington, DC, in front of the White House.

A version of a slow death of society might be where people with wealth and resources become really good at just making poverty invisible. I feel like that is a type of collapse of civilization—that we have basically become completely numb to suffering.

In *The Matrix*, there are these people in bubbles. They think they’re in the real world. It’s not the actual world they’re experiencing, but they’re happy in the simulation. How different is that from building a bubble around yourself and ignoring a growing group of people who are suffering?

Why can’t economists come up with solutions?

You need a good idea, and you need a society that people feel part of, where they are invested in a general public well-being. I don’t know if economists have the answer.

Economists think about what is needed for people to trust each other enough to have transactions. We focus on making sure that if I sell you something and you give me money that it’s not fake money. We focus on making sure that if I buy something from you, I get to keep it. There’s a lot of attention to protecting my private benefits. A much more difficult problem is ensuring a general public orientation.

So where could solutions come from?

A lot of wealth is being concentrated in STEM, but some of this visionary skill is not on that side of the brain. We have to keep pouring resources into our creative institutions, our creative tools, our creative people—even when we don’t fully understand what they see. Higher education is thought of as a place where that type of investment is, but it’s not automatic. It’s not guaranteed.

If we are going to rely on people who have been very comfortable for a very long time to get us out of a crisis, we might be in trouble. Hopefully we can right the ship.

SO IT’S HAPPENING.

WHAT’S NEXT?

QUOMODO? 🌸

Read additional faculty interviews at mag.uchicago.edu/doomed.



MAKING AN EXAMPLE

An ambitious public art project. Five overstretched interns. What could go wrong?

By Carrie Golus, AB'91, AM'93



On January 27, it seems like everything is going according to plan.

The five interns working on the *Exemplary* public art project—**Juan Cardenas, William Hu, Suttyn Simon, Xueqi Sun, and Miki Yang**, all Class of 2025—spent Autumn Quarter interviewing professors, polling students, and thinking deeply about what it means to be an exemplary UChicagoan. (Read part one of “Making an Example” in the Winter/23 issue of the *Core* at mag.uchicago.edu/example1.)

Now they’re ready to *do* something. And they have a generous budget—\$40,000 from the College’s Curricular Innovation Fund—to do it with.

When **Laura Steward**, the University’s curator of public art, originally envisioned *Exemplary*, she thought the project would focus on writer Susan Sontag, AB’51. The students blew up that simple idea last quarter.

Instead, they want to honor three alumni: Sontag; dancer-anthropologist Katherine Dunham, PhB’36; and astronomer Carl Sagan, AB’54, SB’55, SM’56, PhD’60.

But also—a faculty member: meteorologist Tetsuya “Ted” Fujita, aka “Mr. Tornado,” who taught at UChicago from 1953 to 1990.

And also—a group of staff members: contracted workers, specifically dining services workers.

Not one project, but five.

It’s a daunting task to accomplish in just two nine-week quarters. But Steward and the interns seem entirely undaunted, and at the January 27 meeting—almost halfway through Winter Quarter—it seems difficult, but doable.

The Sontag project is well underway. Quotations from Sontag’s writings will be printed on large adhesive labels and installed among the portraits in Hutchinson Commons. This was Steward’s idea. She’s been plotting for years.

The interns have chosen the quotes. They have measured and remeasured the wall panels—which look identical but actually are all different sizes. Now they need to collaborate with a designer to make it happen.

Sitting under one of the few women’s portraits (Marion Talbot, dean of women in the early University), the group is going over the designer’s proposed budget. “He went big,” Steward says: \$40,000 just for Sontag. But that amount has to cover all of their big ideas.

FOR SAGAN, a “*Cosmos* watch-a-thon,” a mini-festival of his groundbreaking television show. Also origami star-crafting.

FOR DUNHAM, a dance performance. Suttyn has suggested working with the Ruth Page Civic Ballet Training Company, where she was a trainee dancer last year; she abandoned professional ballet to study at the College.

FOR THE WORKERS, a collection of short video interviews screened on monitors: “a Nam June Paik kind of vibe,” Steward says.

FOR FUJITA ... something. To be determined.

Steward walks the students through the line items of the Sontag bid, including “a contingency of \$2,000,” she says.

“What’s a contingency?” Juan wants to know.

“A contingency is for things that happen that you didn’t plan for. The less you know, the more *contingent* the project is—the more ‘unknown unknowns,’” she says. “It’s just good to have a little padding in the budget.”

In case something should go wrong.



Pop-up dance performance honors dancer-anthropologist Katherine Dunham, PhD'36.

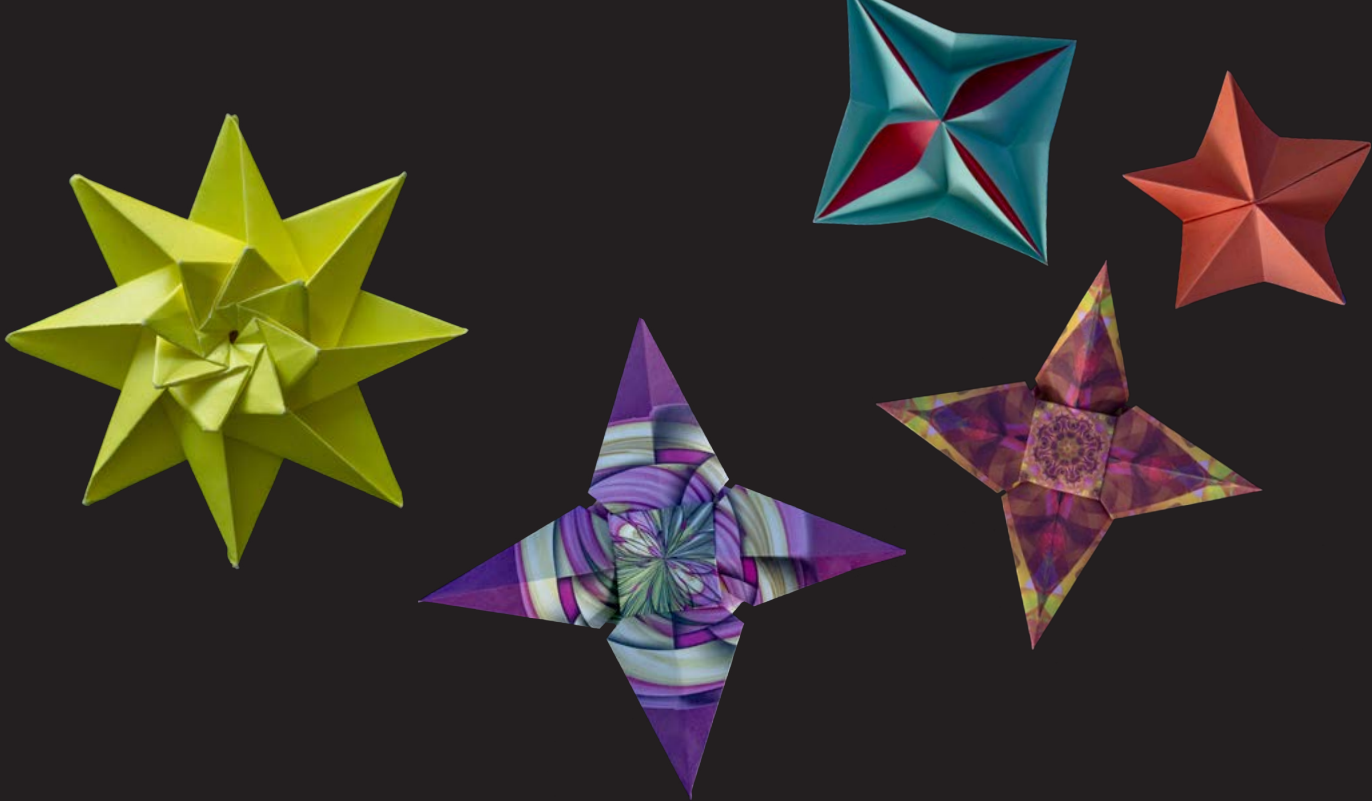
Hutchinson Commons

The interns wanted to honor Dunham during Black History Month, and they just make it. They meet with Victor Alexander of the Ruth Page Civic Ballet Training Company on February 3. His three-minute piece is staged February 28.

At 11:30 a.m., 12:30 p.m., and 2 p.m., with no warning, drummer Victoria Boateng bursts loudly into rhythm. Six trainee dancers, dressed in street clothes, emerge from

the lunchtime crowd and move among the tables, making their way to the platform at the west end of the room.

Alexander's original choreography called for dancing on the tables as well as the floor, but the tables were too wobbly—something he discovered the day before. There are a few minor technical glitches, but the audience is too astonished to notice. They are not too astonished to applaud.



Left to right: Exemplary interns Suttyn, Xueqi, and Miki fold stars at an origami event honoring astronomer Carl Sagan, AB'54, SB'55, SM'56, PhD'60.

Smart Museum Lobby

The Sagan event, for complicated reasons, takes place over two days in two venues. On Saturday, April 8, there's a full-day *Cosmos* watch-a-thon at the Logan Center. On Sunday, April 9, members of CHAOS, the Chicago Area Origami Society, lead

a two-hour workshop on folding origami stars in the lobby at the Smart. Attendance is small but enthusiastic: "This is a wonderful event," second-year Sylvie Badur gushes. "You guys have done an amazing job."

The Tuesday after the Sagan festival, the temperature is 78 degrees—a welcome treat in mid-April. The interns have gathered on the patio outside the Logan Center’s café: a calm, relaxing space for an anxiety-provoking conversation. The Sontag installation is not going well.

The original designer had to drop out for health reasons. Steward scrambled to find a replacement. Now there’s an issue with the adhesive: it pulls the varnish off the walls. “What’s a little varnish between friends?” Steward quips. The facilities department did not see it that way.

The stickers could be installed with tiny pins, which would leave just a pinhole behind. Facilities was not thrilled by that. Their suggestion: varnish the walls before applying the labels. The printer nixed that idea, since the varnish would need at least a week to dry.

Just five and a half weeks remain in the academic year. The workers have not been interviewed yet; the project on Fujita has not even been *decided*. The interns need to move on. But Steward’s contact in Facilities is being slow to respond.

“You could send one of us,” Juan says.

“I can cry on command,” Suttyn offers.

“We can’t change the site,” Juan says.

“We already did the measurements,” Miki says.

“This Spring Quarter has been so incredibly cursed,” Suttyn says.

Steward is remarkably sanguine—probably because she’s pulled off much riskier projects. In 2017, for the 75th anniversary of the first self-sustaining nuclear reaction, she commissioned a pyrotechnic piece by artist Cai Guo-Qiang, who detonated 500 pounds of explosives on the roof of Regenstein Library. “We had to stop helicopter traffic,” Steward says. “Everyone involved, up to [then University president Robert J.] Zimmer, was a little nervous.”

Time is running short in the meeting, too, so they turn to other projects. For the workers, Chartwells, the University’s catering contractor,

has stepped in to help. Chartwells’ videographer will shoot and edit the videos for free. The interns just need to book a campus space and ask the questions.

That leaves Fujita, the tornado expert: how to celebrate him? At a previous meeting, the students had discussed doing something with cloudlike cotton candy.

“Hear me out,” says Suttyn. “I found a company that can make logos into clouds.” They could rent the company’s machine and make clouds on the Main Quad.

“During Summer Breeze,” Miki suggests.

Stress and exhaustion are making everyone a little punchy. “No one wants to wear a tornado costume? Tornado dress? Tornado cape?” Steward asks. She looks pointedly at William, the fashionista of the group. He shakes his head.

Suttyn is assigned to look into the cloud machine; Miki into a supplier of cotton candy.

THE SONTAG EXHIBITION is finally up. The Sontag quotes have been printed on heavy blue card stock, rather than stickers, and installed with 22-gauge pins, “about half the size of a thumbtack,” explains Steward. She confirmed with her father, a retired second-generation hardware store owner in rural Arkansas, that the pins would hold.

There are some thought-provoking juxtapositions.

Under Hanna Holborn Gray, the first, and only, woman president of the University (1978–93): “A woman’s face is potentially separate from her body ... They establish her status as an ‘object.’”

Under Robert Maynard Hutchins, University president and then chancellor (1929–51), who was famous for his quips and bon mots: “To be a poet requires a mythology of the self ... When the poet self dies, the person dies.”

But there’s no time to revel in the success of Sontag. There are video interviews with dining services workers to be done.



“Cloud festival” honoring meteorologist Tetsuya “Ted” Fujita

Outside Regenstein Library

Foamy, cartoon-like clouds float through the air on Saturday, May 13 (the event had been planned for the day before, but had to be postponed due to rain). The clouds, made of “Flogo juice,” as Miki calls it, were “essentially baby shampoo.” Clockwise from left: Xueqi and Steward

react to the first cloud; clouds float past the Reg; Miki and Xueqi show off the cotton candy and informational flyers on Fujita. “It may have been the most successful project of all,” Steward says later. The students who stopped by “will never forget who Fujita is.”



Sontag quotations juxtaposed with portraits in Hutchinson Commons. The exhibition was on display from late April to late May.

On a sunny morning in late April, the group has set up in the Reynolds Club South Lounge. Juan is interviewing **Ana Valencia** in Spanish while Suttyn looks on: “I’m not conversational enough to ask a question.”

Next up is **Joanne Henderson**, who has dressed for the occasion in a black blazer, black pearl-studded beret, leopard-print scarf, and chunky rhinestone earrings. “I love the entire ‘fit,” says Suttyn. She explains the project as Henderson gets settled in front of the camera: “We want to highlight the exemplary parts of the University.”

“If you come from a working-class background,” Juan adds, “you know that without the workers, nothing gets done.”

“Wow,” Henderson says. “That’s awesome.” Steward fusses with the microphone pinned to Henderson’s scarf. “You guys make me feel so special.”

In the interview, Henderson explains she was born in Mobile, Alabama: “I’m a Southern belle.” She came to Chicago with her parents in 1968, at age 6, and “was raised in the projects.” She attended Reavis Elementary and King High School, has worked as a nurse and a school bus

driver, and raised three children. “I love food and I love fashion,” she says. At the University, she enjoys setting up the tables, arranging the fruit: “I make it look beautiful for y’all.”

BY MAY 23, the interns’ final meeting, the video project is still not done. Unhappy with the quality of the interviews, the videographer wants to scrap them and do them over. “He may be imagining this project to be a marketing piece,” Steward says, rather than what the interns were aiming for: artsy videos focusing on the workers as individuals. “I have a feeling he has a very different end product in mind.”

“I’m willing to do it next fall,” Juan says. The *Exemplary* internship was paid, but he offers to work for free: “I want to see it finished.”

For last year’s pilot public art project, *100 Views of Lake Michigan*, Steward held a capstone event where the interns spoke about what they had learned. But this year’s group, having created five separate projects of their own design—one of which remains incomplete—is bled dry.

So instead they’re informally hashing over *Exemplary* while enjoying a celebratory dinner at

Nella on 55th Street. (Except for Xueqi, who has not been lured out even by the promise of carb-heavy Italian food. “She locks herself in her room when she’s studying,” Miki explains.)

Which project did they feel most invested in?

“Obvious answer for me,” says Suttyn: Katherine Dunham. She would have loved performing in a piece like that. Not just because of the “cool new choreography,” but because it was a learning experience for both dancers and audience.

“The Sontag project,” says Miki. She had read Sontag’s essay “Against Interpretation” before the internship, but “I wasn’t thinking ‘Oh, she’s such a snake.’ Laura was like, ‘She’s a snake.’” In watching interviews with Sontag, Miki enjoyed the way she would flip questions back on the interviewer: Why are you asking this question? What’s the point?

“In freshman year, I remember the first time I was in Hutch, I saw all the portraits up there, all male,” Miki says. She liked the decision to represent Sontag not with a generic portrait—like all the men in suits—but with her words, interrogating them.

“The problem with the Sagan day is that nobody came,” Steward says. (The date had to be changed and there wasn’t much time for promotion.) “Other than that, it was perfect. The man is exemplary—the physicist who writes poetry. And the series is amazing. His groovy three-piece suits, his hair, the sideburns.

“I just wish—you know, it was ten hours,” she says. “Ten hours of public television from the early 1970s.” The interns and a few other attendees were in and out. But Steward, like a captain whose honor requires going down with the ship, spent the entire day at Logan watching *Cosmos*—along with one other young man.

“That dude will do great things,” says Miki.

“In the movie version of this, he’ll rise up and lead the people,” says Steward.

“He was fasting as well,” Juan observes.

William chooses Sontag: “It had the most problems to solve, and I like solving problems.” After all the difficulty with the installation, on a “random Wednesday morning” the exhibition was up. “It was like a slap in the face,” he says. “A good slap in the face.”

Juan was most invested in the workers project, an idea he proposed and fought hard

for, “but I really enjoyed the Katherine Dunham performance,” he says, especially the element of surprise. “We’re not asking for permission. She’s coming in whether you like it or not.”

“Xueqi would say it wasn’t a particular project,” Steward says. “She was most engaged by the research phase. Talking to professors, trying to understand what it was to be exemplary.”

By email from China after the quarter ends, Xueqi casts a third vote for Sontag. Although she was the main organizer of the Sagan festival, she felt more creatively invested in Sontag: she had compiled the quotes, assigned them to their panel positions, and written the exhibition description. “I saw people taking photos of the panels, sharing their personal thoughts on the quotes, or even just asking others what’s going on in Hutch.”

William had noticed that too: “I saw people post on Sidechat.”

“Making fun of it,” Suttyn points out.

“Doesn’t matter,” says Juan. “They’re paying attention.”

“As far as what I learned,” says Steward, “I think I did you a disservice in letting this thing be such a big, sprawling, all-singing, all-dancing project.” Next year, she could define the scope more narrowly. But should she? “You would lose the open thinking section. I also wanted you to have the opportunity to fail,” she says: learning how to fail, and get back up, is an important life skill. “You want dessert, right?”

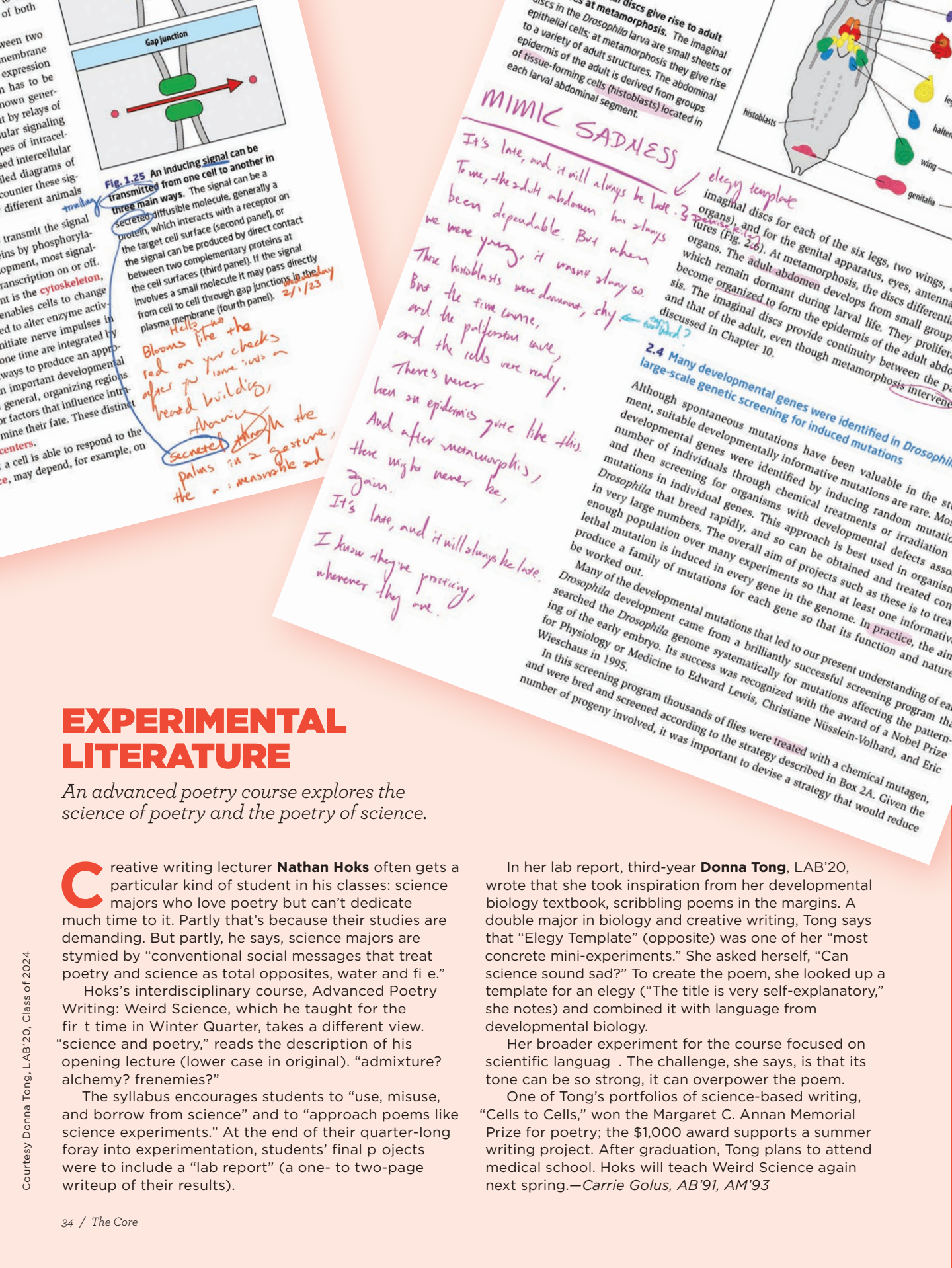
They all do. William orders two—one for now and one for later, while studying. “I will have a spoon,” Steward tells the waiter.

“Also, we are undergrads,” says Suttyn. “As wonderful as giving us leeway is, all of us here are like, 20.”

“I wanted to give you permission, or to show you that you don’t need permission,” says Steward. “You give you permission.”

It’s been a warm, festive, somewhat nostalgic meal, despite the looming pressure of finals. As the discussion wraps up, Steward pays with a University credit card. A few minutes later, the waiter returns apologetically. There’s a glitch with the card. It’s been declined.

Steward doesn’t even blink, just whips out her own. 🌸



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Fig. 1.25 An inducing signal can be transmitted from one cell to another in three main ways. The signal can be a secreted diffusible molecule, generally a protein, which interacts with a receptor on the target cell surface (second panel), or the signal can be produced by direct contact between two complementary proteins at the cell surfaces (third panel). If the signal involves a small molecule it may pass directly from cell to cell through gap junctions in the plasma membrane (fourth panel). 2/1/23

Help me
Blooms like the
red on your cheeks
after you have used a
beard building,
Abhinav
secreted through the
palms in a gesture,
the a measurable and

discs give rise to adult
epithelial cells; at metamorphosis they give rise to a variety of adult structures. The abdominal epidermis of the adult is derived from groups of tissue-forming cells (**histoblasts**) located in each larval abdominal segment.

histoblasts
genitalia

MIMIC SADNESS

It's late, and it will always be late. 3
To me, the adult abdomen has always
been dependable. But when
we were young, it wasn't strong so
These histoblasts were dormant, shy
But the time came,
and the pollen started waving,
and the cells were ready.
There's never
been an epidermis gone like this.
And after metamorphosis,
there might never be,
again.
It's late, and it will always be late.
I know they're prancing,
whenever they are.

2.4 Many developmental genes were identified in *Drosophila*
large-scale genetic screening for induced mutations

Although spontaneous mutations have been valuable in the study of development, suitable developmentally informative mutations are rare. Most developmental genes were identified by inducing random mutational mutations in individual organisms with developmental defects associated with very large numbers. The overall aim of projects such as these is to treat a lethal mutation over many experiments so that at least one informative mutation is induced in every gene in the genome. In practice, the aim was to produce a family of mutations for each gene so that its function and nature be worked out.

Many of the developmental mutations that led to our present understanding of *Drosophila* development came from a brilliantly successful screening program that searched the *Drosophila* genome systematically for mutations affecting the patterning of the early embryo. Its success was recognized with the award of a Nobel Prize for Physiology or Medicine in 1995.

In this screening program thousands of flies were treated with a chemical mutagen, and were bred and screened according to the strategy described in Box 2A. Given the number of progeny involved, it was important to devise a strategy that would reduce

EXPERIMENTAL LITERATURE

An advanced poetry course explores the science of poetry and the poetry of science.

Creative writing lecturer **Nathan Hoks** often gets a particular kind of student in his classes: science majors who love poetry but can't dedicate much time to it. Partly that's because their studies are demanding. But partly, he says, science majors are stymied by "conventional social messages that treat poetry and science as total opposites, water and fire."

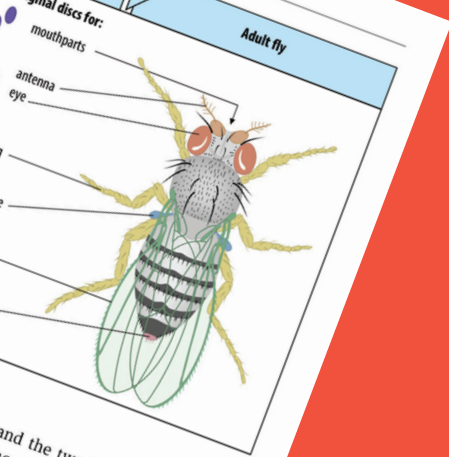
Hoks's interdisciplinary course, Advanced Poetry Writing: Weird Science, which he taught for the first time in Winter Quarter, takes a different view. "science and poetry," reads the description of his opening lecture (lower case in original). "admixture? alchemy? frenemies?"

The syllabus encourages students to "use, misuse, and borrow from science" and to "approach poems like science experiments." At the end of their quarter-long foray into experimentation, students' final projects were to include a "lab report" (a one- to two-page writeup of their results).

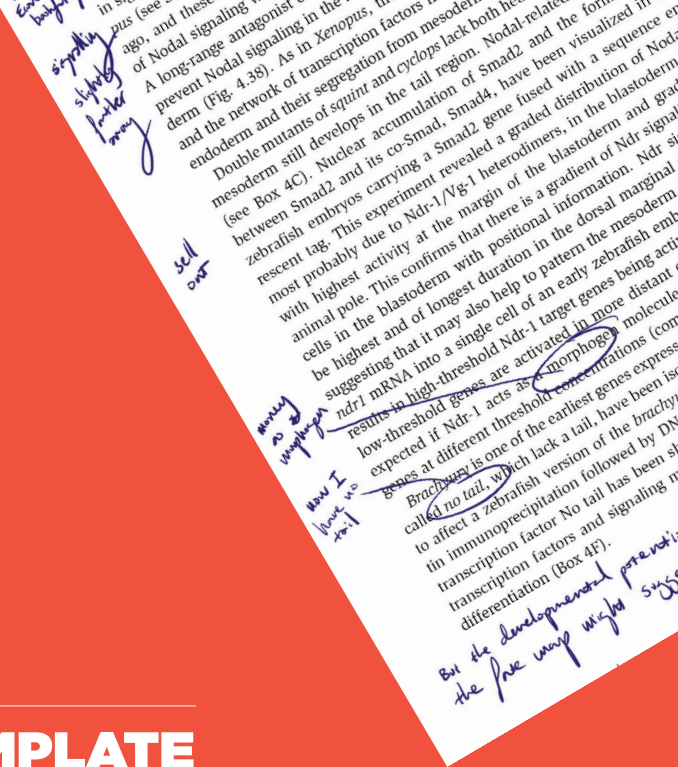
In her lab report, third-year **Donna Tong**, LAB'20, wrote that she took inspiration from her developmental biology textbook, scribbling poems in the margins. A double major in biology and creative writing, Tong says that "Elegy Template" (opposite) was one of her "most concrete mini-experiments." She asked herself, "Can science sound sad?" To create the poem, she looked up a template for an elegy ("The title is very self-explanatory," she notes) and combined it with language from developmental biology.

Her broader experiment for the course focused on scientific language. The challenge, she says, is that its tone can be so strong, it can overpower the poem.

One of Tong's portfolios of science-based writing, "Cells to Cells," won the Margaret C. Annan Memorial Prize for poetry; the \$1,000 award supports a summer writing project. After graduation, Tong plans to attend medical school. Hoks will teach Weird Science again next spring.—*Carrie Golus, AB'91, AM'93*



Third-year Donna Tong, LAB'20, scribbled ideas for poems in the margins of her biology textbook, including an early draft of "Elegy Template."



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Poem

ELEGY TEMPLATE

By Donna Tong, LAB'20, Class of 2024

It's late, and it will always be late.

To me, the adult thoracic cavity has always been dependable. But when we were

young, it wasn't always so. The histoblasts were dormant until the time came, riding

the wave of mighty proliferation. Those cells weren't ready, but it doesn't matter because

there's never been an epidermis quite like this. After metamorphosis, there might never be

again. Again, it's late, and it will always be late. That's how I know they're practicing. There

are no beeping timers or alarms. They just always are.

CLEAN WATER

How to kill pathogenic bacteria, viruses, and protozoa in four easy steps.

A class called Are We Doomed? Confronting the End of the World, taught virtually in Spring 2021 by astrophysicist **Daniel Holz**, SM'94, PhD'98, and sociologist **James Evans**, asked College students in the midst of “unprecedented times” to consider existential threats (see page 16). Topics included nuclear war, climate change, disinformation, and—of course—pandemics.

For the final project, students were asked to create an object that might exist 30 years in the future. “Recipes for Disaster,” by **Fatou Dioum**, AB'23; **Tim Granzow**, SB'22; **Shane Kim**, AB'23; and **Grace Wagner**, AB'23, SB'23, is a “beginner’s survival guide to coping with the end of the world” and includes instructions for obtaining the most vital resource for life: clean water.

YOU WILL NEED

- A clean cloth or coffee filter
- Salt
- Water
- Containers with covers
- A pot
- Solar cooker or fire or stove

HOW TO PURIFY WATER

STEP 1

If water is cloudy, let it settle. Then filter it through a clean cloth or coffee filter.

STEP 2

Bring water to a rolling boil for at least one minute in a pot.

STEP 3

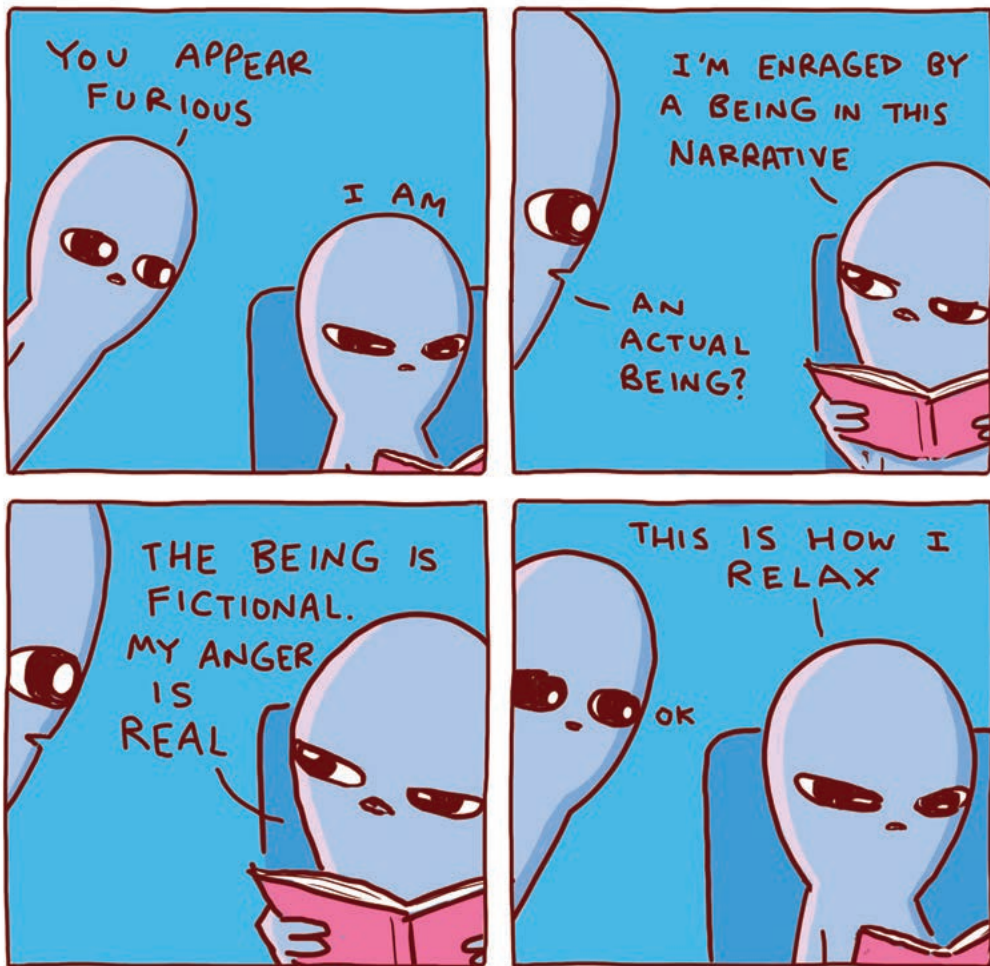
To improve the filter taste, add a pinch of salt for each quart or liter of water.

STEP 4

Let water cool naturally. Store in clean containers with covers.

Strange Planet

By Nathan W. Pyle



NATHANWPYLE

Ibidem

**BONFIRE BEFORE A UCHICAGO-PURDUE
FOOTBALL GAME, 1935**



*We used to say if we got beat 33-0,
it was a moral victory.*

—Offensive end Frank W. Thomson, PhB'33