

FALL 2023

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COLUMBIA MAGAZINE

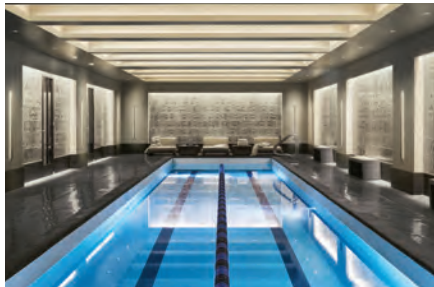


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ALLISON MICHAEL ORENSTEIN

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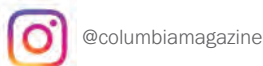
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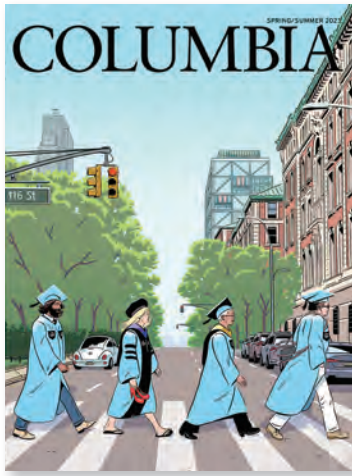
Bryan Bodner
Senior Associate

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BOOTS TO BOOKS

As a College alum, former Columbia administrator, and Vietnam combat veteran, I was pleased to read about the increase of student veterans under President Lee C. Bollinger (“Soldier, Sailor, Scholar, Grad,” Spring/Summer 2023). But the University’s engagement with veterans began, albeit in a modest way, some years earlier.

In the 1990s, I was one of several deputy vice presidents for student affairs and frequently met with students to address their concerns. Those from General Studies were particularly outspoken about issues with student services. At one meeting, I learned that two GS students were Army veterans and had also been, like me, paratroopers. We bonded immediately. One of them suggested that we organize a Veterans Day reception for all the veterans who, we felt, must be sprinkled throughout the University. It was my task to gain approval from Low Library, which had been disinclined

toward such matters since 1968. But the dean’s office at GS granted permission to use the school’s student lounge, and on Veterans Day 1993 we held a small reception attended by about a dozen students.

The following year, the reception was well attended, not only by students but by others throughout the University, including (as we called them) the two Jacks: Jack Wagner, from Facilities Management, and Jack Greenberg, dean of Columbia College. Both had served in the Pacific in World War II. I think of the two Jacks and my paratrooper friends a lot and hope that such connections continue to be made.

Fred Catapano ’71CC
Hastings-on-Hudson, NY

It was nice to read about the healing taking place with regard to veterans and active-duty military personnel. Shortly after Commencement in 1970, I enlisted in the Navy Reserve for two years of

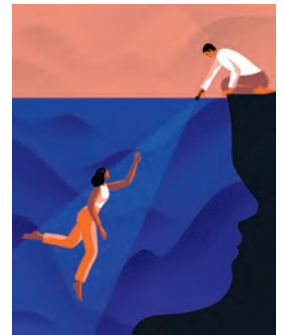
active duty but ended up staying in for twenty years. My Columbia mentor, Seymour Melman, was disappointed with my path but understood my decision. So did my roommate, Peter Joseph, who I still keep up with today. As a veteran and still active academic, I am pleased that Columbia seems to be open to all varieties of service, including the defense of our freedoms.

James C. Haug ’70SEAS
Chesterfield, VA

Supporting veterans is unquestionably warranted, and Paul Hond’s article was a thoughtful roundup of Columbia’s progress in this effort. But it muddled another proud history at Columbia — that of antiwar activism, especially during the Vietnam War. Most starkly, the article suggested that Columbia’s “cultural climate” had “tipped from antiwar to pro-veteran.”

But these sentiments are not on the same continuum. Most of the vets I have known are at least as antiwar as the general population.

AWARD-WINNING ILLUSTRATION



Columbia Magazine has won two 2023 Circle of Excellence Awards from the Council for Advancement and Support of Education: a gold award for an illustration (above) by Monica Garwood representing suicide prevention and a silver award for another by Wendy MacNaughton ’05SW.



FEEDBACK

And they deny neither the need for an adequate US military nor the wisdom of sidestepping military misadventures. Drafted out of grad school, I am one of the few members of my College class who served in the active military and one of an even smaller number who served with an infantry division in Vietnam. I applaud my fellow students who saw the light before many others. Columbia's antiwar activists of the '60s and '70s should be as respected by the Columbia community for their contributions to the country as those who served.

Michael Lent '67CC
Washington, DC

I enlisted in the Navy in 1957, a year after graduating high school in Syracuse, New York. I was trained to be a medical corpsman and a pharmacy technician.

When I got out in 1961, I knew I wanted to go to the same pharmacy college, Columbia, that my father graduated from in 1933. I applied while still in the Navy and was accepted. The college was in an old building on West 67th Street off Broadway. The GI Bill paid most of my tuition. We took some liberal-arts courses "uptown," and some of the Columbia professors came down to 67th Street to teach. I was sort of a celebrity among

my forty-two classmates: a real military veteran who was four or five years older. With the draft for Vietnam looming, I was the go-to guy for anything military.

When we graduated in 1966, my classmates were facing the real possibility of being drafted, so most went on to graduate school or got married or both. Not me — I was already married. My five years at the pharmacy college were wonderful. Many of my classmates are still friends or acquaintances, and I still can impress people when they ask where I went to school and I say, very proudly, Columbia.

Jeff Burger '66PHRM
Pearl River, NY

I read with considerable interest about the return of the NROTC program to campus, along with impressive opportunities for veterans at the University. These changes are significant, even if almost fifty years late. I commend President Lee Bollinger for much of this progress.

I was the beneficiary of an NROTC scholarship at Columbia from 1952 to 1956. The four-year benefit at that time (including tuition, room, board, and a monthly allowance) exceeded \$80,000. During these years there were some one hundred NROTC scholars on campus. When the Navy program was summarily tossed out in 1969, several

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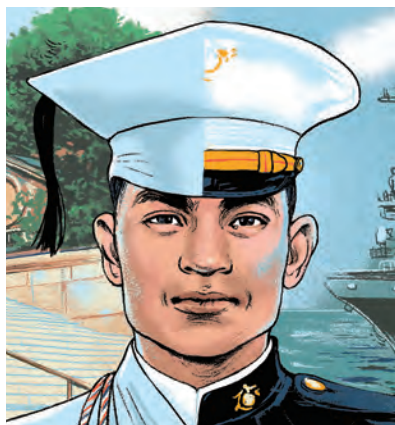

305 WEST END
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thousand students were denied a Columbia education over the ensuing forty-plus years. This is an important part of the history and should have been included in the article.

Dick Capen '56CC
La Jolla, CA

The writer was a US assistant secretary of defense from 1968 to 1971 and the US ambassador to Spain from 1992 to 1993.



I am one of the veteran graduates of the School of General Studies. I loved Dean Peter Awn and admired his indefatigable efforts to establish GS as an equal college within the University. But GS dean Ward H. Dennis also deserves his share of the credit. During my last one and a half years at GS, I and other veterans had multiple meetings with Dean Dennis to discuss how to attract veterans to GS specifically and Columbia in general. This was 1989–90. Dean Awn clearly got the ball into the end zone.

Carlos Medina '90GS
Stamford, CT

On a noisy troop ship returning from the Korean War, my company commander, Captain Bar, asked what I planned to do when I was discharged from the Army. When I said I would look for a job, he suggested I apply to Columbia instead. He had earned his BA at the College after serving in World War II. I told him I didn't have

the grades or money to attend any school, let alone Columbia. He persisted, saying veterans were going to be eligible for the GI Bill. He added that he would write a letter recommending me to the office of admissions.

Still in uniform, I met for an interview with admissions officers, who invited me to take the SATs that same afternoon. Ten days later, my mother handed me a blue envelope she said came from "something called Columbia." It notified me I had been admitted to the School of General Studies.

How fortunate I was that very different people in very different places shared the same purpose: to help a young veteran fulfill his potential, his dreams.

Robert W. Goldfarb '54GS
Boca Raton, FL

FOOD AND REMEMBRANCE

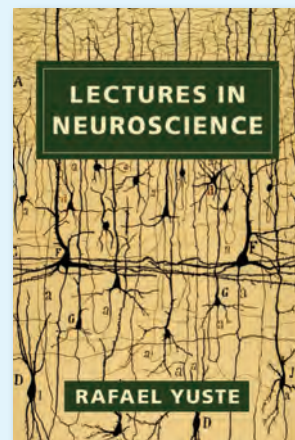
Mariah Gladstone, in her revival of Native American recipes, reminds us that all vibrant cultures are based on traditional foods — in their remembrance, preparation, and sharing with others ("Gifts from the Earth," Spring/Summer 2023). Think Jewish noodle kugel, Lebanese muhammara, Vietnamese pho, and endless others.

Here in Minneapolis, a "full-service Indigenous restaurant," Owamni, is located at the Mississippi River's St. Anthony Falls, a site sacred to Dakota and Anishinaabe people. The owner and chef is Oglala Lakota. The restaurant uses many ingredients from traditional sources.

"You want to attack a people and wipe them out? Attack their food," says the White Mountain Apache chef Nephi Craig in the film *Gather*. That's what white settlers and the US government did for nearly two hundred years.

Norbert Hirschhorn '58CC,
'62VPS
Minneapolis, MN

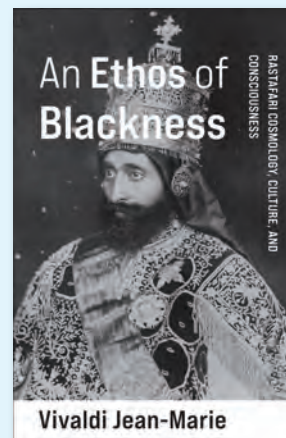
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"[The book] aptly conveys the excitement of a field of research that's continually opening up new vistas. Yuste's style is easygoing, conversational, and often witty."

—Ralph Greenspan, associate director, Kavli Institute for Brain and Mind, UC San Diego

Rafael Yuste is professor of biological sciences and director of the NeuroTechnology Center at Columbia University.



"Vivaldi Jean-Marie's extraordinary study of Rastafari has the virtues of historically situating the movement while articulating its philosophical dimensions without fetish but with the virtue and respect of critique."

—Lewis R. Gordon, author of *Fear of Black Consciousness*

Vivaldi Jean-Marie teaches in the African American and African Diaspora Studies Department at Columbia University and is a professor of philosophy at the City University of New York.



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FEEDBACK

HIDDEN TREASURE

The transcripts of the Nuremberg trials were not always hidden away in the law library’s “treasure room” (“Secrets of the Treasure Room,” College Walk, Spring/Summer 2023).

I came across them one day while browsing the law-library shelves during a break from studying.

Even though I knew that my criminal-law professor, Telford Taylor, had been the lead prosecutor at the trials, I had no idea that the trial transcripts were just a few feet away.

Curiosity got the better of me, and I began to read details of Nazi atrocities, including unspeakable medical experiments on human beings, that were revealed during the trials. It is only by reading the testimonial truth of the legally sanctioned horrors of the Holocaust and other genocides that law students can understand the fragility of freedom and their role in preserving the rule of law.

Irwin Pronin ’67LAW
New York, NY



Matthew DeSantis

BETTER TOURISTS

I led the first United Nations mission to Bhutan, in 1977 (“Great Explorations,” Network, Spring/Summer 2023). We spent six unforgettable weeks elaborating development projects for a place that can only be called magical, a land where humans and nature are in perfect harmony. At the end of the mission, I was called for an audience with the king. During our engaging conversation, the king made one point very clear: he wanted to open up his country to the outside world, but gradually and carefully. He did not want Bhutan to become overridden by hedonistic drug-infused tourists as had

occurred in a nearby South Asian country. Rather, the king said, the visitors to Bhutan should respect the cultural integrity of the land. I am sure this must be a constant challenge to Matthew DeSantis as he manages his impressive work in this unique place.

Lawrence F. Salmen ’66BUS, ’71SIPA, ’71GSAPP
Chevy Chase, MD

BOTTOMS UP

Thank you for your Ask an Alum interview with Heather Radke about her book *Butts* (“A Serious Look at a Cheeky Topic,” Network, Spring/Summer 2023). I identified not only with the author’s story but with her look at how the

subject of butts, big and small, has been treated throughout history and how it has evolved in recent years. It seems like a silly subject at the outset, but looking at the historical and societal constructs really helps to combat any negativity people might feel toward their own (or other people’s!) bodies.

Marie Metz ’10SIPA
Miami, FL

RIGHT ON TRACK

I extend my deep gratitude for the excellent article “Learning to Live with the Voices in Your Head” (Winter 2022–23). It is so perfectly written and packed with information. I recently published a book on hearing voices (my daughter does), and I was delighted to read the article, which highlights OnTrackNY, a program that is the gold standard for the treatment of psychotic disorders. Thank you to the Columbia staff who spearheaded this initiative. Having navigated the mental-health system for many years, I can confidently say that OnTrackNY is the revolutionary progress we’ve been hoping for.

Tricia Stafford
Hatboro, PA

KEY TO ABBREVIATIONS

CODE	SCHOOL	CODE	SCHOOL
BC	Barnard College	LS	School of Library Service
BUS	Graduate School of Business	NRS	School of Nursing
CC	Columbia College	OPT	School of Optometry
CS	Climate School	PH	Mailman School of Public Health
DM	College of Dental Medicine	PHRM	College of Pharmaceutical Sciences
GS	School of General Studies	SEAS	Fu Foundation School of Engineering and Applied Science
GSAPP	Graduate School of Architecture, Planning, and Preservation	SIPA	School of International and Public Affairs
GSAS	Graduate School of Arts and Sciences	SOA	School of the Arts
HON	(Honorary degree)	SPS	School of Professional Studies
JRN	Graduate School of Journalism	SW	School of Social Work
JTS	Jewish Theological Seminary	TC	Teachers College
KC	King’s College	UTS	Union Theological Seminary
LAW	School of Law	VPS	Vagelos College of Physicians and Surgeons

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COLLEGE WALK

NOTES FROM
116TH STREET
AND BEYOND



All the Columbia presidents, from 1754 to today.

The Power and the Duty

Defining the role of the Columbia presidency

President Minouche Shafik, Columbia's twentieth president, is the first new leader of the University since 2002, when Lee C. Bollinger '71LAW, '02HON succeeded George Rupp '93HON. Back then, Barack Obama '83CC was a state senator in Illinois, the Dow was under 11,000, and YouTube did not exist. As the years passed and the world saw vast social, technological, and political changes, Bollinger, the second-longest-serving president in Columbia history (Nicholas Murray Butler 1882CC, 1884GSAS led the University for forty-four years), was a constant; he is the only president that many Columbians have ever known. And so it's natural that, with the arrival of President Shafik, Columbians should reflect on questions so basic that they are often taken for granted: What *is* the presidency? What are the president's official powers and duties, and how are they to be carried out?

The answers lie in a 180-page document titled Charters and Statutes, which is Columbia's primary administrative code. The charters, which established the institution and defined its rights, date to 1754,

when King George II of Great Britain authorized the creation of King's College in the New York colony. In 1784, after the American Revolution, a new charter from the New York State legislature renamed the school Columbia College, ended the requirement that the president be Anglican, and made Columbia a public, state-administered institution. But three years later, through the efforts of former King's College student Alexander Hamilton 1788HON (a Columbia regent and one of New York's representatives to the Constitutional Convention that year), the charter was amended, transferring all grants and property from the Governors of King's College to a private board that called itself the Trustees of Columbia College in the City of New York.

The statutes, first set down by the Board of Governors in 1755, have grown in number and been amended frequently over the past 268 years (all amendments and new statutes require Trustee approval). They lay out the functions of the president, the Trustees, and the University Senate, which was formed in 1969 in the wake of the previous year's campus upheaval. The official definition of the

presidency can be found in the latest edition of the Charters and Statutes: “The President shall be the chief officer of the University and, subject to the Trustees, shall have general charge of the affairs of the University,” the document reads. “The President shall be the presiding officer of the University Senate and the chair of every Faculty and Administrative Board established by the Trustees. His or her concurrence shall be necessary to every act of a Faculty or of an Administrative Board, unless after his or her nonconcurrence, the act or resolution shall be again passed by a vote of two-thirds of the entire body at the same or at the next succeeding meeting thereof.”

As for presidential duties, four are noted explicitly: “(a) to exercise jurisdiction over all the affairs of the University; (b) to call special meetings of the University Senate and meetings of the several Faculties and Administrative Boards and to give such directions and to perform such acts as shall in his or her judgment promote the interests of the University, so that they do not contravene the Charter, the Statutes or the resolutions of the Trustees, or of the University Senate, or Faculties or Administrative Boards; (c) to report to the Trustees annually, and as occasion shall require, the condition and needs of the University; (d) to administer discipline in accordance with the Statutes of the University and the rules promulgated pursuant thereto.” (In practice, the Trustees

— who, among many duties, select the president, oversee faculty and senior-administrative appointments, and manage the budget and the endowment — meet with the president multiple times per year.)

The Charters and Statutes are maintained by the Office of the Secretary, which was created in 1895 under President Seth Low 1870CC, 1914HON to support the work of the Trustees and facilitate governance of the University. Of course, no one back then, let alone in 1754, could have foreseen just how complex the institution would become. When King’s College first opened at the Trinity Church schoolhouse on Rector Street, there were eight students and one professor, the Anglican minister and philosopher Samuel Johnson, who was also president. Today, President Shafik, a prominent economist, leads a University covering four campuses (Morningside, Manhattanville, the Columbia University Irving Medical Center, and the Lamont-Doherty Earth Observatory) and seventeen schools (as well as four affiliate schools), with some 4,600 full-time faculty, 37,000 students, and 18,000 full-time staff.

For a job and an institution that expansive, an official set of regulations is indispensable. And while few Columbians have a copy on their nightstand, the Charters and Statutes are available to all on the Office of the Secretary website — a living document that has endured and evolved like the University it upholds. — *Paul Hond*

Columbia’s presidents, in chronological order. Top row, from left: Samuel Johnson, Myles Cooper, William Samuel Johnson, Charles H. Wharton, Benjamin Moore. Second row: William Harris, William Alexander Duer, Nathaniel Fish Moore, Charles King, Frederick A. P. Barnard. Third row: Seth Low, Nicholas Murray Butler, Dwight D. Eisenhower, Grayson Kirk, Andrew W. Cordier. Fourth row: William J. McGill, Michael I. Sovern, George Rupp, Lee C. Bollinger, Minouche Shafik.

THE SHORT LIST



RIDE Cycle for a cause with **Velocity: Columbia’s Ride to End Cancer**, an annual fundraiser for the Herbert Irving Comprehensive Cancer Center. Take the fifteen-, fifty-, or hundred-kilometer route on October 8 in New York’s Hudson Valley or participate remotely. velocityride.org

LISTEN Miller Theatre presents the world premiere of *The Hunt*, a chamber opera by **Kate Soper ’11GSAS**, on October 12 and 14. Other fall highlights include a three-part series dedicated to avant-garde composer **John Zorn**, starting September 21, and the contemporary improvised music of the **Dezron Douglas Quartet** on December 2. millertheatre.com



DISCOVER

At the **Lamont-Doherty Earth Observatory open house**, visitors can tour labs, hear from world-class scientists, and participate in hands-on activities. Free and open to the public on October 14 in Palisades, New York. openhouse.ideo.columbia.edu

CHEER Bring your Columbia pride to **Homecoming 2023**, a weekend of festivities including a Saturday football game against Penn. From October 13 to 15 on the Morningside campus and at the Baker Athletics Complex. college.columbia.edu/alumni/events/homecoming-2023

SEE The Wallach Art Gallery unveils **Partisans of the Nude**, a show exploring nude figures in Arab art from the late-colonial period of 1920–60. Curated by Kirsten Scheid ’92CC, an anthropology professor at the American University of Beirut, the exhibition runs from October 6 through January 14. wallach.columbia.edu



Beverly Gage

Spying on the Past

Historians, high spirits, and J. Edgar Hoover at the Forum

Beverly Gage '04GSAS first got to know J. Edgar Hoover at Columbia. She was researching her PhD dissertation, “The Wall Street Explosion: Capitalism, Terrorism, and the 1920 Bombing of New York,” when she discovered that Hoover had been a young federal agent at the Bureau of Investigation (as the FBI was then called) charged with monitoring domestic radicals. That’s when the idea of a biography flashed across her mind: here was the inchoate bureaucrat, already building his arsenal of tactics and ideologies — political surveillance and anti-communism among them — that he would greatly expand as head of the FBI from 1924 until his death in 1972.

Gage, a professor of history at Yale, recently shared this story onstage at the Forum, on Columbia’s Manhattanville campus, where she and two other historians were awarded the annual Bancroft Prize in American History and Diplomacy. Gage’s *G-Man: J. Edgar Hoover and the Making of the American Century* — along with Kelly Lytle Hernández’s *Bad Mexicans: Race, Empire, and Revolution in the Borderlands* and John Wood Sweet’s *The Sewing Girl’s Tale: A Story of Crime and Consequences in Revolutionary America* — was honored by an audience of fellow historians, book editors, students, past Bancroft recipients, and the public.

The Bancroft Prize is one of the oldest, most prestigious awards for books

on American history and diplomacy. Each year, a jury of three historians — including one from Columbia or Barnard — reads more than two hundred submissions and selects the winners. Administered by University librarian and vice provost Ann Thornton, the prize was established in 1948 through a bequest from the historian Frederic Bancroft 1885GSAS in honor of himself and his brother Edgar Bancroft 1880LAW. As Thai Jones '02JRN, '12GSAS, curator of American history at Columbia University Libraries, explains, the prize “best celebrates the type of work that historians cherish most: exciting new arguments, forgotten histories, dramatic reinterpretations. The Bancroft is really considered to be the historians’ prize.”

During the ceremony, Gage recalled the “reinvention” of political history that was happening during her time at Columbia — new ways of thinking about the history of sexuality, of conservatism — and how Hoover, long caricatured as a villain, struck her as a fascinating subject, even if she did not admire him. “Hoover was too important and too complicated,” Gage said, “to just leave as a one-dimensional figure.” Instead, she left him as an eight-hundred-page book.

Until last year, the Bancroft Prizes were bestowed in the Faculty Room in Low Library, with an invitation-only formal dinner, but the event is now open to all, with author talks, a “winners’ circle” of past recipients, and, afterward, in the Forum’s airy, glass-enclosed atrium, a spread of food, drinks, and mingling historians.

At this year’s reception you could hardly drop an hors d’oeuvre without hitting the shoe of a giant. Two-time Bancroft awardee David Blight was there. So were past winners Alice Kessler-Harris and Jean Strouse. By the book table, Eric Foner '63CC, '69GSAS, another two-time recipient, chatted with his former student Anne Kornhauser '04GSAS, who is now chair of the history department at City College. People kept stopping by to greet Foner and convey their gratitude for his work. Foner was visibly moved. “It never gets old,” he said.

The Bancroft Prizes also honor Columbia PhD dissertations, and this year’s

CLOCKWISE, FROM TOP LEFT: EILEEN BARROSO; TALIA CARIO; BRUCE GILBERT; COLUMBIA UNIVERSITY ATHLETICS / MIKE McLAUGHLIN; ECE BEZER; '23GSAPP; JORGE MARQUEZ; GASPAR '21SIPA

winners — Yoav Hamdani '22GSAS and Justine Meberg '22GSAS — stood within a knot of well-wishers. Nearby, Columbia historian George Chauncey, who chaired last year's jury, hinted at the sacrifices that come with having to read dozens of books over winter break. "It was not our best Christmas vacation," he said with a laugh. Foner, meanwhile, was in lively dialogue with Blight. Seeing this, John Fabian Witt, a Yale law professor who won the Bancroft in 2013 for *Lincoln's Code: The Laws of War in American History*, approached them, hoping to absorb the rarefied discourse of two major US historians. What he got was a discussion of the Yankees' bullpen.

Finally, Gage made her way over to Foner, who had been one of her mentors. They spoke of Gage's adviser, Alan Brinkley, who had died in 2019. Then Gage brought out a fact that surprised and delighted her listeners: in 2004, Gage's study of the 1920 Wall Street bombing had won the Bancroft dissertation prize. Gage is the second person — the other is the social historian Thomas Dublin '75GSAS — to have won both awards.

A few weeks after the Bancroft Prizes, another Columbia-based awards committee announced its winners, and Gage and her book were again among them. The author of *G-Man* will return to the University this October, where, at a ceremony in the Low Rotunda, she will accept the 2023 Pulitzer Prize in biography.

— Paul Hond

Aim, Click, Post! ❤️

Feast your eyes on some of our favorite images from Columbia's Instagram feed this past year



A young Lion cools down outside Kravis Hall in Manhattanville.



Somewhere over the rainbow, skies are light blue.



So Low it's upside-down.



Raptor's delight? A red-tailed hawk perches atop a flagpole outside Low Library.



Who wouldn't fall for these colors?



There's no better reception than at Homecoming. (This year's big game is on October 14, against Penn.)

Cosmic Heights

Columbia astronomers bring star power to Morningside



Stargazing with Columbia Astronomy Public Outreach.

The universe is bigger than ever. You could even say it's blowing up. Certainly it is expanding — and so, too, is the age-old human fascination: *What's out there? Who's out there? How did it all begin?* This boom in interest, reflected in the dramatic spike in telescope sales during the pandemic, has been fueled by recent headlines: the exploits of the Mars rover *Curiosity* (which has discovered, among other things, traces of organic compounds in Martian rock); NASA's plan to return astronauts to the lunar surface; and the celestial fireworks captured by the James Webb Space Telescope (JWST), which was launched in December 2021 and has since detected light from thousands of previously unknown galaxies containing mil-

lions of billions of stars, the baby pictures of a universe thought to be 13.7 billion years old.

If the mysteries of space stretch the limits of human comprehension, there is, in the constellation of upper Broadway, a beacon for those in search of answers: Columbia Astronomy Public Outreach, a student-run program that offers free lectures and events to the community.

Overseen for the past decade by professor Marcel Agüeros '96CC, the group includes PhD candidate Ryan Golant and undergrads Selina Yang, Aiden Cloud, Albert Zhang, and Matthew Werneken, who organize space-based events drawing hundreds of people. Earlier this year, in Pupin Hall, Amanda Quirk '17CC, a Columbia Science Fellow, lectured on the Triangulum Galaxy, one of

the so-called Local Group of more than thirty galaxies that includes our Milky Way; PhD student Shifra Mandel '19GS spoke on the death of stars; and professor David Helfand, who has taught at Columbia for more than forty years, interpreted the far-out findings of the JWST. The talks are typically followed by a stargazing session, either in the Rutherford Observatory on the Pupin roof or with smaller telescopes on College Walk.

For Selina Yang, an astrophysics major, the lure of space is inescapably romantic. "That's what got me into astronomy: this idea that we come from the dust of the stars," Yang says. "For me, astronomers are the people who take the biggest existential questions in their lives — beautiful, romantic, philosophical questions — and answer them in the hardest way possible."

Such starry enchantment can be contagious, and Golant plans to spread the magic dust by sending grad students to speak at local schools and by restoring the pre-COVID-19 public stargazing program, founded in 2006 by Cameron Hummels '12GSAS, in which Columbia students set up telescopes on 125th Street and Adam Clayton Powell Jr. Boulevard, affording passersby close-ups of the planets and the moon. "As astronomers, it's our responsibility to talk to the public," says Kathryn Johnston, a professor of astronomy at Columbia and the program's faculty adviser this year. "We see this as part of our students' training."

There are many pathways to the stars. Johnston was captivated as a teen by *The Collapsing Universe: The Story of Black Holes*, by Isaac Asimov '39GS, '41GSAS, '83HON, which explained how concentrations of matter in space exert such powerful gravity that light cannot escape them. For Hummels, now a research scientist and director of astrophysics outreach at Caltech, the hook was

his early exposure to telescopes through a local amateur astronomy group. “That’s part of why I’m passionate about public education,” he says. “I think our society would be improved if everyone had a basic understanding of science, a healthy skepticism when faced with new claims, and the tools to test and verify things methodically.”

At David Helfand’s talk on the JWST — the largest, most powerful telescope ever hurled into the void — attendees heard the musings of a master. Noting that human vision is sensitive only to “a tiny fraction of the entire electromagnetic spectrum” and that “we are observing the universe effectively blind,” Helfand explained that the Hubble Space Telescope — JWST’s famed predecessor — was designed to study stars mainly in the *visible* spectrum. “However,” Helfand said, “the universe has been expanding for a long time, and as light travels through it, this great space through which it’s traveling is stretching, so its wavelength is stretching, and as a consequence it’s being shifted out of the range that our eyes can see.” The JWST, more than a million miles from Earth, is observing the non-visible infrared part of the spectrum, Helfand said, with the data translated via image processing into the human register.

Throughout history, notes Golant, people have contemplated the heavens, and the most learned among them have stepped forth to share the secrets of the cosmos. So it goes today in Pupin Hall. “All people can relate to astronomy,” Golant says. “Studying what’s out there and communicating it to the public — I think that’s a great, powerful thing that unites us as human beings.”

— Paul Hond



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Meet President Shafik

She's a top economist, an expert on international development, a baroness, and a global citizen. How will she lead Columbia?

On July 1, Minouche Shafik '23HON became Columbia University's twentieth president, succeeding Lee C. Bollinger '71LAW, '02HON.

President Shafik, an Egyptian-born British-American economist who previously led the London School of Economics and Political Science (LSE), was raised in Florida, Georgia, and North Carolina and has earned degrees from the University of Massachusetts Amherst, LSE, and the University of Oxford. An expert on international development, Shafik began her career at the World Bank. She later served as permanent secretary of the UK's Department for International Development, as deputy managing director of the International Monetary Fund, and as deputy governor of the Bank of England. She was appointed president of LSE in 2017.

This summer, just a month into her new position at Columbia, we spoke with President Shafik about her goals for the University and about how her background in global development might inform her leadership.



You've been at Columbia for just a few weeks. What are your impressions so far?

I've received an incredibly warm welcome on campus and an outpouring of lovely messages from alumni. Many of them

have described how meaningful and transformative their time at Columbia was, and they've shared their hopes for its future. People have very strong feelings about this University. That's one of my big takeaways. There's something about this place that gets into people's hearts as well as their brains.

What made you decide to accept the presidency of Columbia? Was there anything specific that drew you here?

It was the combination of Columbia being an extraordinary institution — a place of enormous intellect, creativity, and achievement — and the fact that it's located in New York City. In part because of its location, Columbia is the most cosmopolitan, outward-looking, and global of the Ivies. And at a time when universities have a crucial role to play in addressing societal problems, I think that Columbia is positioned to be a tremendous force for positive change, in New York City and around the world.

The previous institution you led, LSE, is also among the world's most prestigious research universities. But it focuses mainly on the social sciences. What is it like for you to take the reins at a university whose programs span the full range of academic inquiry?

I'm really enjoying the transition, because I'm the type of person who

gets a buzz out of learning new things. Columbia has science laboratories, medical clinics, art and architecture studios, engineering workshops, maker spaces, and startup facilities right in the middle of the city. I find that incredibly interesting and exciting.

You spent more than two decades managing international-development programs for some of the world's biggest financial institutions. What motivated you to do that work?

I've always been interested in why people become rich or poor, how social forces determine our chances of success in life, and how societies can be made fairer so that everybody has the same opportunities. I trace this back to my roots in Alexandria, Egypt, where I was born into a comfortable family in a society marked by severe inequality. I have vivid memories of being a young girl and visiting a rural village where my mother had relatives and noticing other children toiling in the fields rather than attending school. Seeing kids whose lives were so different from mine confused me. Then my own family's prospects changed dramatically in the mid-1960s, when most of our land and property was seized by the Egyptian state as part of Nasser's nationalization program. We fled to the US — where my father had studied —

with little money and few possessions. Suddenly I was an immigrant growing up in the American South during the desegregation era, amid explosive racial tensions. Those experiences had a profound effect on me, making me acutely aware of how our paths in life are influenced by where and when we're born and to what family.

Did this inspire you to study economics?

Yes. And it made me determined to put my knowledge to use in the field. I found the tangibility of international-development work extremely rewarding. Whether I was overseeing teams that were building schools in Africa, responding to floods in Southeast Asia, or helping Eastern European countries reform their economies after the fall of communism, I felt an emotional connection to the people whose lives were hanging in the balance. Economic and social policies never felt abstract to me. I knew that they could determine if children like those in my mother's village went to school, if families had enough food to eat, and if vulnerable people gained a sense of physical security, opportunity, freedom, and dignity.

So what made you decide to return to academia?

Throughout my career, I've straddled the fence between the world of ideas and the world of policy. For a long time, I was primarily a practitioner of economic policy, but I would regularly teach college courses, conduct research, and write books and papers. I always felt that the two endeavors were enriched by each other. Over time, though, I became convinced that the problems the world is facing today are so complex, and so pressing, that new ideas are needed to address them. Great universities like Columbia excel at generating new ideas.

In your 2021 book *What We Owe Each Other*, you turn your attention to wealthy nations, arguing that they must fundamentally rethink how they provide childcare, education, and retirement benefits, among other social services. Can you explain the problem as you see it and the solutions that you envision?

The problem is that our current arrangements are no longer meeting people's needs, because they were designed nearly a century ago, when our lives looked very different. Until the late twentieth

century, most women stayed at home to care for the young and the old, and men could expect to hold the same job for decades and then live only a few years after retiring. Now the majority of women in advanced economies are working outside the home, even as they continue to carry the bulk of their families' childcare responsibilities, which is constraining their efforts in both areas. Workers in many industries must continually learn new skills as a result of rapid technological advances. And many people are spending a third or more of their lives in retirement, which is threatening the solvency of our pension systems, especially as birthrates decline and worker-to-retiree ratios drop. I argue that a whole host of new social policies and initiatives are needed to help families adjust to these changes and thrive.

Your book expresses a deep optimism about the power of ideas to shape the world. Yet putting academic ideas into practice is often difficult. Do you have a vision for promoting deeper connections between scholars and outside partners?

This is actually one of my primary goals at Columbia. I want to make it easier for academics to contribute to the public good. In my experience, most scholars, if given the opportunity to have an impact on the world, are eager to do so. But sometimes it's difficult to know who you should be dealing with outside the University, where to find the resources to support external collaborations, or how to carve out the time. I want to make all of that easier. I know that Columbia faculty and students are already doing an extraordinary amount of research that has the potential to improve the world. If the University can help them bring that knowledge into the public realm, the results will be transformative.

What else can you tell us about your goals as president?

I want to encourage fresh thinking about how Columbia University can contribute to the world at a moment when nationalism is on the rise in many countries,



President Shafik (right) with Sasha Wells '18TC, executive director of the Roger Lehecka Double Discovery Center.

PREVIOUS SPREAD: ALLISON MICHAEL ORENSTEIN; DIANE DONDAREFF

when the belief in science and other forms of expertise is being questioned by many people, and when social divisions between members of different income groups, races, and nationalities seem to be deepening. Supporting faculty and students who want to get their ideas out into the world will help, but there's more to it. I'd also like to see academics push back against the anti-intellectualism that has become pervasive in our culture and fight harder to restore public confidence in science, scholarship, and other forms of expertise. I think we can do this by improving the way we communicate about our work: emphasizing its public impact, speaking in simpler and clearer language, and educating people about the rigors of our scholarly methods while simultaneously being honest about the limits of our knowledge.

Just a few days before you arrived at Columbia, the US Supreme Court ruled that colleges can no longer make admissions decisions based on race.

What is your response to the ruling, and how might the University promote student diversity moving forward?

Clearly, we will comply with the law. But we'll also hold true to our values and find ways to ensure that students at Columbia continue to benefit from all the richness that human diversity brings. It's well-documented that diverse settings are optimal for learning and professional success, and that when we're in the company of people from different backgrounds we generate the most creative ideas, the greatest innovations, and the best outcomes for humanity. At Columbia, we recently convened a special group, led by the interim provost and including deans, that is using this as an opportunity not only to consider how to respond to the court's decision on affirmative action but to reassess all aspects of our admissions processes in a holistic way.

You're the first woman to lead Columbia, which is a point that many media outlets highlighted when your appointment was announced. Does that fact hold any significance for you?

I understand that my appointment was perceived as a milestone. But of course I don't wake up in the morning and think, "I'm the first woman to lead Columbia!" Rather, I'm focused on the work I have to do. I suppose my feeling is this: it was time.

Do you have a personal leadership style or philosophy?

I subscribe to Nelson Mandela's philosophy that you should lead from behind when you can, and as part of the team as often as possible. Occasionally, you need to step out in front and point

“I want to encourage fresh thinking about how Columbia University can contribute to the world.”

an institution in a different direction. But most of the time, if you're working with great people, you can allow your colleagues to flourish and take things where they need to go. I find that this works well at universities, where you've got immensely talented individuals all around you. The sixth-century BC Chinese philosopher Lao-tzu put it this way: "A leader is best when people barely know they exist ... When the leader's work is done, the people will say, 'We did it ourselves.'"

In 2020, you were appointed to the UK's House of Lords. What is your role as a baroness?

I was appointed as a "crossbench peer," which means that I'm a politically neutral member who is situated in the chamber between the Conservative Party members on one side and the Liberal Democrats and Labour Party members on the other. Crossbench peers are chosen for certain expertise they bring to the legislative process. Like all members of the House of Lords, you're appointed for life but are expected to attend parliamentary sessions, so I've taken a leave of absence while I lead Columbia.

Your husband, Raffael Jovine, is a molecular biologist, author, and entrepreneur. What is your intellectual partnership like?

Raffael is a fascinating person. He founded a company that uses algae to capture CO₂ from the atmosphere. His passion is photosynthesis, and as a result we have many, many plants in our home. I like that he's in a completely different field from me. I think we're complementary — although he might say that he sometimes finds attending dinner parties with lots of economists a bit boring. *[Laughs]*

We learn a lot from each other. We're always forwarding reading suggestions and sharing ideas. And we're extremely supportive of one another's interests. I think that's the key to a good relationship.

How are you and your family enjoying New York City so far?

There are so many things we like about New York. We're big theatergoers, and we love museums. The Morningside Heights neighborhood has been fun for us to explore — we've discovered Absolute Bagels, the Hungarian Pastry Shop, Tom's Diner. People at Columbia have been incredibly generous in providing tips about places to see. I must say that a big plus for Raffael and me is that we're now closer to our children. We have five grown children, four of whom are living in the US. This includes our oldest, Olivia Jovine, who is an alumna of Columbia's Graduate School of Architecture, Planning, and Preservation. I'm excited to be residing in the world's most vibrant city, leading a premier institution of higher learning. What more could you want in life?

— David J. Craig



Self-portrait at the MTA's 207th Street Overhaul Shop, where New York City's subway cars are maintained.

FACTORY FRAMES

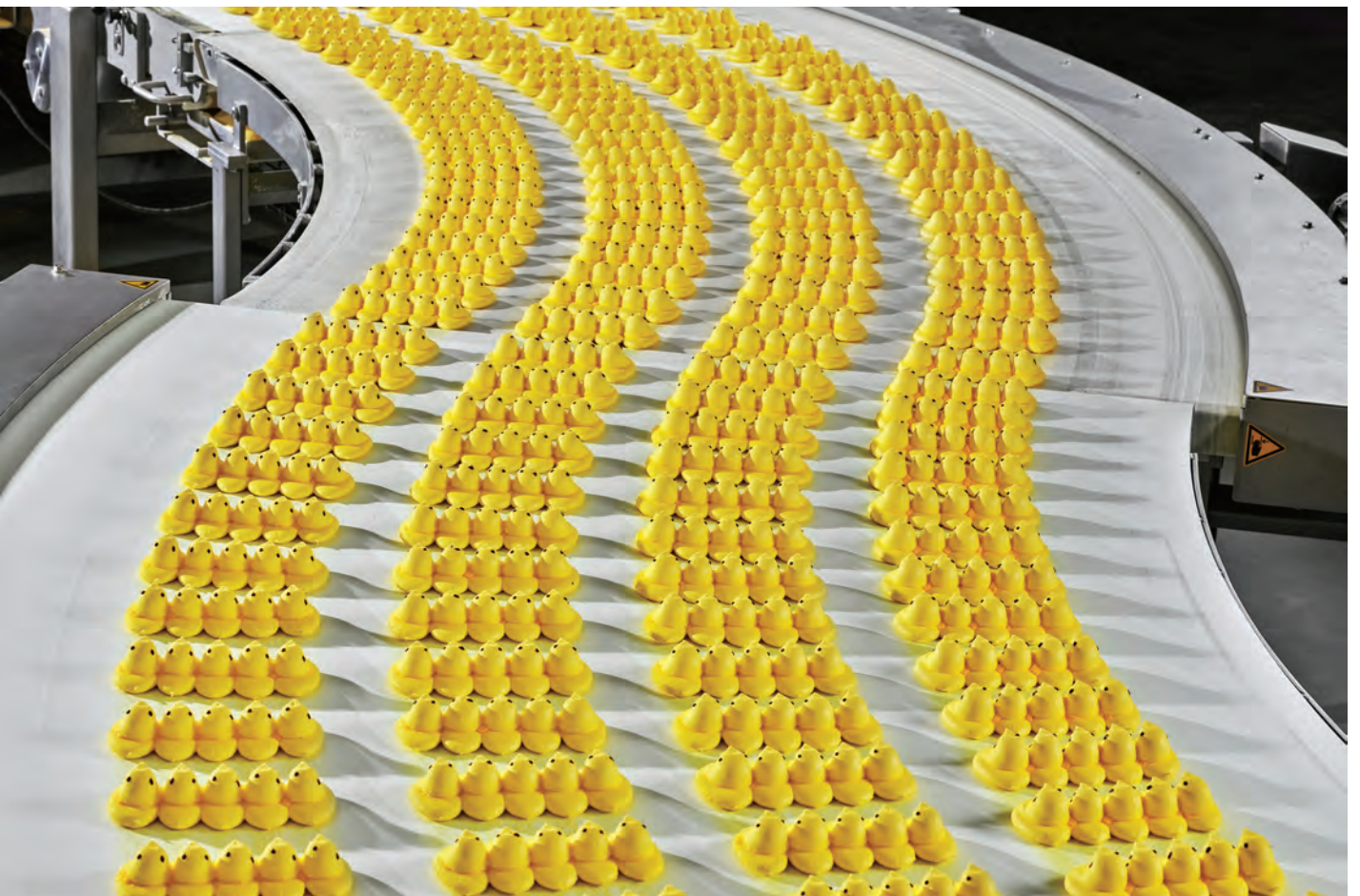
Photographer Christopher Payne '90CC captures the rich history and unexpected promise of American industry



Workers assemble Boeing 737 Max fuselage sections at Spirit AeroSystems, Wichita, Kansas.

“Most people I know have never set foot in a factory,” says photographer Christopher Payne '90CC. “Today we have little idea where or how the shirt on our back was made.”

Payne has spent a decade traveling the country, documenting the manufacturing industry, and his new book, *Made in America*, celebrates both its storied past and what he sees as its hopeful future. In vibrant, intricately detailed images, he captures the making of everything from Peeps marshmallow chicks to forty-ton subway cars. He showcases the traditional craftsmanship and vintage machinery of boat building and textile weaving, while embracing the new technologies needed to make high-voltage undersea power cables and commercial aircraft.



Peeps marshmallow chicks cool on a conveyor belt at Just Born Quality Confections, Bethlehem, Pennsylvania.

Payne, who studied architecture at Columbia, says a class with history professor James P. Shenton '49CC, '54GSAS "lit a fire" in him to explore the industrial remnants of New York City, and after graduating, he began photographing the city's electric substations, then the Steinway piano factory. He worked as an architect for twelve years, but he realized that he preferred chronicling existing spaces to designing new ones, and he turned to photography full-time.

The images in Payne's book, many of which were originally commissioned by the *New York Times*, are visually arresting, but they also tell a bigger story about our cultural and economic climate. With environmental crises and political instability threatening the global supply chain, American manufacturing is making a comeback, and Payne is excited about the shift. "There is, for sure, a certain romance in the idea of making our own goods here in the US," he says. "But it is no longer entirely nostalgia: it is also opportunity and necessity." 📷



Piano rims sit in the rim-conditioning room at Steinway & Sons, Queens, New York.



Spools of yarn, which designers use to create custom carpet-tile prototypes and samples, at Interface, LaGrange, Georgia.



A hydrogen-cooled generator at GE Gas Power, Schenectady, New York.



Ribbon ceramics at Corning Inc., Corning, New York.



Pencils are sharpened on a high-speed sanding belt at General Pencil Company, Jersey City, New Jersey.

A LAB IN





THE WOODS

At Black Rock Forest, conserving the natural world begins with knowing it, right down to the roots

By Paul Hond

Somewhere in a hilly, deep-green wilderness fifty-five miles north of Morningside Heights, where the New York–New Jersey Highlands meet the Hudson River basin, a turtle climbs onto a rock to bask in the sun. All around, yellow light filters through the canopy of red oaks, down through maples and mountain laurel, pink and white wildflowers, huckleberry and blueberry bushes, to the decomposing leaf litter of the forest floor. Hidden amid the wooded slopes are white-tailed deer, red foxes, coyotes, bobcats, black bears, gray tree frogs, barred owls, and hairy woodpeckers. In the forest's five lakes, there are mallards and Canada geese, water scorpions and dragonflies. The woods host 160 species of birds, 279 species of spiders, and sixty-five species of trees — mostly oak, but also maple, beech, black birch, black gum, sweetgum, and eastern hemlock.

This is Black Rock Forest, a 3,920-acre privately owned nature preserve in Cornwall, New York, named for the black magnetite that colors the forest's mountainous gneiss bedrock. Here on the ridges and hills, in the valleys and ponds, you can also find another interesting species: Columbia Lions. These are the students, faculty, and alumni — most of them connected to Columbia's Department of Ecology, Evolution, and

Environmental Biology (E3B) — who for the last thirty years have made this forest one of the most productive biological field stations in the country.

“We do long-term science — that’s our business,” says Isabel Ashton ’98CC, who is the executive director of the nonprofit consortium Black Rock Forest (BRF), which manages the field station. Ashton, a plant ecologist with twenty years of experience in land management, education, and research, became director last year, presiding over an organization whose constituents have produced hundreds of scientific papers and dozens of master’s and PhD theses on such topics as the impacts of potential oak-tree loss; the effects of mercury on red-winged blackbirds; and seasonal and topographic variation in water supply. Researchers benefit not just from the laboratories, classrooms, and dormitories of the two-building BRF campus but also from nearly a century’s worth of detailed records of the forest’s flora and fauna, which allow them to trace changes in the forest over time. And through its grade-school and college programming and graduate-study grants, BRF has brought thousands of students into direct contact with the wonders of the woods. As Ashton says, “Everyone learns better outside.”

JOSH BLANK

The importance of healthy forests can hardly be overstated: trees provide oxygen, cool the air, filter pollutants from groundwater, foster biodiversity, and, not least, absorb carbon dioxide through photosynthesis and store it in their tissues. In a world struggling with the buildup of CO₂ in the atmosphere, intact forests are a key carbon “sink,” or repository: plants and soil absorb an estimated 30 percent of human-made carbon emissions.

But even well-kept forests like BRF face serious threats. “There are so many extremes with climate change: storms, droughts, and pathogens,” Ashton says. This past July, the forest was hit with an unprecedented rainstorm that caused flash flooding and destroyed an out-building on the property, but “the biggest challenge is to understand how these changes are affecting forests and to keep the forest healthy.” In 2020, Black Rock lost almost all its native ash trees to an

invasive insect, the emerald ash borer. This year, a pathogen is menacing beech trees. “Life as a tree is getting more and more stressful,” says Ashton. “And like people, stressed trees are more susceptible to sickness.”

Ashton, who majored in biology at Columbia, notes that the forest was cleared for charcoal in the nineteenth century (with the arrival of European immigrants, nearly all old-growth forests in the eastern US were cut down, mainly for agriculture), and that most trees at Black Rock are between eighty and 120 years old. To the untrained eye, the landscape seems primeval, ageless. As Ashton says, “Trees grow fast around here.”

The green-gold forest has a light-blue pedigree. In 1929, Ernest Stillman 1913VPS, whose father, a railroad magnate and bank president, was one of the richest men in America, established Black Rock Forest on his vast property,

endowed it as a research facility, and bequeathed it to Harvard upon his death in 1949. But the location, two hundred miles from Cambridge, proved inconvenient, and in 1989, Harvard sold the forest to William Golden ’79GSAS. An investment banker, philanthropist, and nature lover, Golden had counseled President Truman on science policy, helped create the National Science Foundation, and earned his master’s in biology from Columbia at age seventy.

It was Golden’s idea to form a dues-paying consortium of universities, schools, and science centers that would support the forest as a living laboratory while preserving its infinitely complex web of life. Today there are nineteen institutions in the consortium, including NYU, CUNY, the American Museum of Natural History, and many K–12 schools. Columbia is the most active user.

“If a grad student or prof comes in, they know they can tag trees that have been around for decades, which helps when you’re trying to understand the natural world,” Ashton says. “If you did the same study in Central Park, you couldn’t be sure that next year your tree or marker or equipment would still be there. We provide a safe, stable place for researchers to do their work.”

“It’s funny,” says Claire Levesque as she steps over a moss-coated log at the edge of a lush green marsh, where frogs and turtles swim among sun-splashed lily pads and grasses. “I came to New York City to study wildlife.”

Levesque, who grew up in Tulsa and whose parents are wildlife biologists, is a Columbia senior in E3B. She has been living at the forest for five weeks, part of a group of researchers led by Matt Palmer, who is Levesque’s thesis adviser, and Suzanne Macey, a biodiversity scientist from the American Museum of Natural History. The group, styling itself Team Turtle, is on a mission to track three kinds of turtles: the spotted turtle, the box turtle, and the painted turtle. Levesque is working on the spotted turtle, the smallest of the five turtle species



Claire Levesque tracks the spotted turtle (inset).

INSET: JAY ONDRECKA / SHUTTERSTOCK; BOTTOM: KRISTEN KALLON

found here (there are also wood turtles and snapping turtles). Spotted turtles have black shells speckled with yellow dots and grow to three and a half to five inches long. Once common in New York State, their numbers have dwindled due to habitat loss, pollution, road fatalities, and poaching. And because they, like all reptiles, are ectotherms — meaning their body temperature is dependent on the temperature outside — they might be more sensitive to climate change.

Levesque's work will allow forest managers and biologists to track the distribution of spotted turtles. "And that makes it easier to advocate for conservation," she says. "The more you know about the turtles, the better you know how to protect them."

But tracking a turtle, especially an aquatic one, is not easy — or cheap. Commercial trackers can cost \$1,500, making the study of multiple animals

ten minutes for a year, we can create an incredibly detailed model."

On the communications side, Team Turtle is testing wireless technology that can communicate with Black Rock's network of towers and access points throughout the forest. This would allow researchers to log in from anywhere in the world and pinpoint the location of animals practically in real time. But before Team Turtle can fasten backpacks on a rare species like the spotted or box turtle, it must first demonstrate to the state wildlife authorities that the technology works on the more common painted turtle — another milestone in their multiyear project.

In the meantime, Levesque pursues the spotted to perform a more traditional sort of tracking. So far, she has captured six spotted turtles from this marsh — a decent sample size, but she really wants seven. One problem with

"Black Rock is a hot spot for wildlife. We get a wide array of friends."

prohibitively expensive for many organizations. Team Turtle's main goal is to develop affordable tracking tools that can be built from off-the-shelf components. The idea, says Palmer, is "to democratize the technology" so that any nature center with the proper permits can study the movements of animals. With help from IT experts including Jeremy Hise '17GS, Team Turtle is testing small, lightweight attachments they call backpacks, which can be customized to hold devices that take such measurements as an animal's location, speed, or body temperature.

"We know turtles move across the forest to get from pond to pond," Palmer says. "But we don't know much about how often or how far they move across the landscape. The backpacks will allow us to track individuals at a much greater spatial and temporal resolution and start to fill in the gaps: we'll know a turtle's route and how long it took. With a device that can register its location every

aquatic turtles is that they spend a lot of time underwater, where GPS and wireless can't penetrate. And so Levesque is using VHF (very high frequency) radio telemetry, since the signals can be transmitted through water. Ultimately, Team Turtle wants to put both an old-school VHF transmitter and a high-tech backpack on the turtles to get the fullest picture of their movements.

Levesque, in a pair of brown waders, approaches the marsh's muddy brim. She points out the felled logs and gnawed, hourglass-shaped tree trunks that mark the presence of beavers. "Black Rock is a hot spot for wildlife," she says. "I like to record what I see. We get a wide array of friends." She plunges into the tea-colored water to check on the small cylindrical net just offshore. "You never know what you might find. I've gotten bullfrogs. Once I got a snapping turtle the size of a housecat."

Levesque wants to know which habitats the spotted turtle is select-



Professor Duncan Menge measures a black locust tree.

ing around the forest. Her plan is to capture more spotted turtles from other ponds nearby and compare the data. "Spotted turtles are picky about their microhabitats," she says, "so it'd be interesting to see if their preferences vary within the different populations in the forest, or if they are similar."

Now she wades knee-deep to the net, which contains *something*. She looks. Might it be? — *yes!* — a spotted turtle.

Levesque carries the net to the dirt road twenty yards away, where Palmer and Macey are waiting with gear. Levesque pulls the turtle out, holding it by its shell and apologizing to the delicate creature as it works its legs and twists its neck. (All animal-handling protocols have been approved by the American Museum of Natural History and New York State.) The researchers measure the palm-sized specimen and determine its sex (male). Then Levesque swabs the shell with alcohol and makes tiny V-shaped notches at three different points on the edge of the carapace. "The outer part of the shell is kind of like a fingernail," Palmer puts in. "It doesn't have nerves." The locations of the notches correspond to a mapped lettering system, so that any future researcher who recaptures this turtle can identify it and compare data.

With help from Palmer and Macey, Levesque glues a VHF transmitter with a tiny antenna to the shell. "One big

concern about putting a tracking device on an animal is that it might change its behavior,” Palmer says. “You don’t want the device to make the animal more susceptible to injury or more likely to be killed by a predator or less attractive to a mate. So it’s an open question: what does it mean to put it on?” For Palmer, it’s a worthwhile tradeoff. “A slight inconvenience to the animal,” he says, “means we can learn an awful lot about its movements, its habitats, and its behavior, which in turn can allow us to better manage and conserve the populations.”

Levesque takes the outfitted turtle back to the water and releases it, and the creature quickly disappears into the placid pool of the quiet marsh in the wooded highlands.

“This forest is an incredible resource,” says Kevin Griffin, a professor in E3B and former president of the consortium. “It’s hard trying to teach ecology in an urban setting. If you want people to appreciate how the natural world works, there’s nothing better than to stand in the middle of it. BRF gives us the ability to take students to the woods and say, ‘This is what we’ve been thinking about, this is what we know, and this is what we don’t know. And just

use your eyes, your senses. Take it in and ask yourself: *How does that work?*”

Griffin, a plant physiologist who studies the role of trees in the carbon cycle, has lately been attaching dendrometers — devices that measure infinitesimal fluctuations in tree-trunk diameter — to dozens of trees in the forest, monitoring how they grow and change, minute to minute and day to day. He started teaching at Columbia in 1997, and for his first class he took students to the forest. His first graduate students did their dissertations here, and he and his students continue to study how the forest absorbs and stores carbon. Black Rock is considered a “mature” forest, meaning that it is in its period of peak carbon accumulation (according to Griffin, the forest is still storing carbon at about the same rate as it did in the 1930s). “We think one reason why North America absorbs a lot of carbon is because young forests remove more CO₂ than older ones,” Griffin says.



The Black Rock Forest Lodge can sleep up to sixty people. Inset: Isabel Ashton.

While Griffin looks at CO₂, Duncan Menge, an associate professor at E3B, is focused on the nitrogen cycle. Nitrogen accounts for 78 percent of the atmosphere and is vital to all life, including plants, which require it in other forms such as ammonia. But plants can’t transform nitrogen themselves — they need other organisms to do it for them. “There are unicellular organisms called nitrogen-fixing bacteria that can take nitrogen from the air and convert it into ammonia,” explains Menge. “Some of those bacteria live inside root structures called nodules, forming a symbiosis: they help nourish the plants, and in exchange, the plants give the bacteria a place to live and feed them sugar made from photosynthesis. Both get what they need, and for a long time, researchers thought this process, known as symbiotic nitrogen fixation, kept the nitrogen cycle at a balanced level.”

However, from 2015 to 2020, Menge studied the black locust tree, *Robinia pseudoacacia*, and found that 60 to 90 percent of the nitrogen in *Robinia* came from its symbiotic bacteria, even when there was more than enough usable nitrogen already in the soil. This was unexpected. “It’s strange: the trees have access to usable nitrogen, yet they still pay the bacteria a lot of energy to fix *more* nitrogen, which they don’t need.” This seeming inefficiency has consequences: when there’s too much fixed nitrogen, says Menge, other bacteria in the soil release it in the form of nitrous oxide, a greenhouse gas. “Why would these trees fix so much nitrogen? That’s the next question.”

Symbiotic relationships are the rule of the plant world. One of Menge’s PhD students, Aria Carreras Pereira, is working on another type of symbiosis, called a mycorrhizal association, which exists between most land plants and the fungi that colonize their roots. It’s a sweet deal: the plant provides the fungi with sugars through photosynthesis, while the fungi, with their branching, thread-like white filaments, help the plant absorb essential nutrients like nitrogen and phosphorous.

“Mycorrhizal fungi not only bring resources and water to the host plant, but they also connect with other mycorrhizal fungal tissue in the soil — and by extension connect different plants together,” Carreras Pereira says. “That’s called the common mycorrhizal network, and its existence is well established.” But whether it has additional functions is a point of debate: books like *The Hidden Life of Trees*, by the German forest scientist Peter Wohlleben, and *Finding the Mother Tree*, by the Canadian forest scientist Suzanne Simard, suggest that these networks transport not just nutrients but also electrical and chemical signals that enable a tree, for instance, to warn other trees of danger. “Some in the media have extrapolated to say that trees are communicating via these common mycorrhizal networks,” Carreras Pereira says. “But there are lots of unknowns.”

Mycorrhizal fungi come in two main types: one is dominant in tropical forests; the other prevails in boreal and Arctic ecosystems. But in temperate forests, like Black Rock, the two types coexist — sometimes within the same tree species, such as red oak. Carreras Pereira wants to know how a red oak seedling’s neighbors influence what type of fungi the seedling acquires. That matters, she says, because “the two mycorrhizae have different strategies for nutrient acquisition. That affects the forest biogeochemistry and could also impact the climate, due to differences in carbon storage.”

Her work also raises questions about tree agency: can the tree switch between the two types — implying something like an active role in the decision — or is it simply colonized? Or put another way: which organism is in control, the fungus or the tree?

To find out, Carreras Pereira has planted two batches of seedlings: one in the forest and the other in the Arthur Ross Greenhouse at Barnard, where she can manipulate the connections between trees to see how they transfer resources. “As tree species with one mycorrhizal type migrate northward into forest areas that have primarily the other mycorrhizal type, we want to know what will happen

to the plants that are already there.”

It’s yet another elegant example of the first tenet of ecology, attributed to the biologist Barry Commoner ’37CC, one of the architects of the modern ecological movement: *Everything is connected to everything else*.

No one knows this better than William Schuster ’78CC. As Black Rock’s first executive director (from 1992 to 2022), Schuster oversaw the construction of the BRF campus as well as the educational programs, and created paths for disabled people among the forest’s twenty-six miles of public hiking trails. In 2008, he produced a landmark survey of the

“As the climate changes, so will the range of many animals. It’s critical that they have passageways.”

forest’s trees and found that northern species like black spruce and paper birch, which were present in 1930, had disappeared and that more than half a dozen southern-range species had moved in.

But Schuster, who is now staff ecologist, says his greatest passion is for a very literal connectivity: wildlife corridors that would offer animals safe passage across a landscape tangled with highways and subdivisions. To that end, he hired wildlife biologist Scott LaPoint, a former Columbia postdoc who tracks bobcats and fishers (a carnivore in the weasel family) using radio collars. “Bobcats can’t cross major freeways,” says LaPoint. “So we’re asking animals: Where do you go? How do you get there? Where do you try to go and can’t?”

“These animals need large areas, or at least connected areas,” Schuster says. “Otherwise, they are not going to survive.” BRF has been acquiring parcels around the perimeter of the forest necessary for passage, and Schuster and LaPoint are working with the New York State Thruway Authority on a proposal for a wildlife overpass. (There are an estimated sixty to seventy thousand collisions between deer and vehicles each year in the state, which helps make the case.)

“As the climate changes, so will the range of many animals,” says Schuster. “It’s critical that they have passageways. My hope is that we will see a network of corridors as well as larger-scale models for connectivity across North America.”

Three days after capturing her seventh spotted turtle, Claire Levesque, equipped with a VHF receiver and antenna, returns to the marsh. She enters the still waters in a kayak and, following the receiver’s pings, homes in on the turtle’s location and marks it on a map. (It hasn’t gone far.) Through the trees, in a plot between the lyrically named elevations of Honey Hill and Hill of Pines, Aria

Carreras Pereira’s seedlings extend their roots into the fungi-rich soil. At a nearby pond, Matt Palmer helps Kristen Kallok, a Barnard sophomore, retrieve the contents of a funnel-net trap: it’s a painted turtle, with brilliant red and yellow stripes and orange belly, recruited in the name of science and conservation to wear a Team Turtle backpack.

And up in her office in the BRF Science Center, Isabel Ashton conducts the daily business of long-term research — managing the consortium and meeting members’ needs. She still recalls the day in college when her professor H. James Simpson ’70GSAS, a biochemist who pioneered studies of water pollution, asked her if she’d like to work on a project involving tree rings and the effects of acid rain at a place called Black Rock Forest. Ashton was all in. She went up to the forest. “I thought it beautiful,” she says.

Today, she lives near the forest with her family. Black Rock is her second home, and it’s also the home of a great panoply of life. Decoding the mysteries of that life is an endless task, requiring day-to-day, year-to-year study among the oaks. As Ashton says, “If you really want to protect something, you’ve got to know what’s there.” 🐢

THE PRODUCERS

FROM *HAMILTON* TO *A STRANGE LOOP* TO *KINKY BOOTS*, THESE THREE ALUMS HAVE BROUGHT SOME OF BROADWAY'S BIGGEST HITS TO LIFE BY REBECCA SHAPIRO



BARBARA WHITMAN

CURRENT PRODUCTION

Good Night, Oscar

PAST PRODUCTIONS INCLUDE

A Strange Loop

Angels in America

Fun Home

Next to Normal

A Raisin in the Sun

“I think everyone working in theater has that one show,” says Tony Award-winning producer Barbara Whitman ’05SOA. “The one that made them think, ‘I can’t do anything else with my life.’”

For Whitman, the show was *Pippin*, the 1972 Broadway coming-of-age musical about a prince trying to figure out his purpose. As a teenager growing up in New York City, Whitman saw *Pippin* as often as she could, sneaking off to the theater after school and for weekend matinees.

“It was surreal and over-the-top but also relatable,” says Whitman. “There was no intermission, so it really felt like you were whisked off, uninterrupted, to another world. And of course Bob Fosse’s choreography was pure magic.”

Eventually, Whitman became such a regular at the theater that she was given a part-time job in the coat check, which she says offered her a window into the complexities of a theatrical production. “When you see a live show once, it feels like that’s the only time it will ever be

JORG MEYER



A *Strange Loop* won the 2020 Pulitzer Prize and the 2023 Tony Award for best musical.

performed,” she says. “But of course it’s a business. That same show happens eight times every week. Seeing it day in and day out helped me understand what makes a production work.”

While Whitman would end up working behind the scenes, she started her theatrical career onstage. After dropping out of Bennington College (she would later earn a degree from NYU’s Gallatin School of Individualized Study), she toured as an actress with several national productions, including *Annie*. But Whitman knew that she wanted to have a family, which at that time felt incongruous with a career as a touring actress. She retired from the stage, married, and raised two sons. When her younger son was in kindergarten, Whitman decided to go back to work — this time in her father’s investment firm.

After working in finance for several years, Whitman realized that producing could be an ideal way to combine her two skill sets. “Production is kind of the crossroads of commerce and creativity,” she says. She quit her job and earned an MFA in theater management from Columbia’s School of the Arts, an experience she says was instrumental in shaping her career.

“You don’t need a degree to be a producer,” she says. “But I learned so much — everything from accounting and press management to how the seating

is arranged at the Tony Awards. And the Columbia faculty are all people who have been in the business for years. They became my initial professional network.”

During Whitman’s second year in the program, she produced her first Broadway show, a revival of *A Raisin in the Sun*, starring Sean Combs. When she

graduated the following year, in 2005, she had two shows on Broadway: *The 25th Annual Putnam County Spelling Bee* and *Dirty Rotten Scoundrels*. She went on to produce some of the biggest hits of the 2000s and 2010s: *Fun Home*, *Next to Normal*, and *If/Then*, to name just a few. In 2016, she saw a reading of a new musical by Michael R. Jackson about what it feels like “to travel the world in a fat, Black, queer body.” The show — *A Strange Loop* — was unconventional, and Whitman never imagined that it would make it to Broadway. But, she says, “it felt like an important story to tell, especially

for that time.” The show won the Pulitzer Prize in 2020. Two years later, it opened on the Great White Way.

As she has built her career, Whitman has looked for ways to give back. She established a scholarship in the theater management and producing program at Columbia’s School of the Arts a decade ago, and in 2021 she endowed the Barbara Whitman Award, a \$10,000 annual unrestricted gift given to a mid-career woman, trans, or nonbinary theater director, administered by the Stage Directors and Choreographers Foundation.

“During the pandemic, we all had a little more time to think about the future of the industry,” she says. “This is a small way for me to support the new talent that will be ushering it in.”

But Whitman is hardly ready to hang up her hat. She recently produced the London debut of *A Strange Loop*, as well as *Good Night, Oscar*, a new play starring actor and comedian Sean Hayes. She’s also developing a musical with two young Scottish composers centered on the idea of the ceilidh — a traditional community dance.

“THERE HAS TO BE SOMETHING UNIQUE ABOUT THE LIVE EXPERIENCE THAT CAN’T BE REPLICATED ON FILM OR TELEVISION.”

Whitman says that she looks for three things when she’s deciding whether to produce a show. First, of course, it has to be marketable. She knows that a marquee name like Hayes, for example, will bring in audiences. There has to be something unique about the live experience that can’t be replicated on film or television — in *Ceilidh*, the audience will actually learn the dance. But most of all, she says, there has to be a human connection.

“For all the razzle-dazzle of *Pippin*, I think I just saw something in the character,” she says. “And that made me want to keep coming back.”



HAL LUFTIG

CURRENT PRODUCTIONS

Here Lies Love
Life of Pi

PAST PRODUCTIONS INCLUDE

Children of a Lesser God
Kinky Boots
West Side Story
Legally Blonde
Thoroughly Modern Millie

When Hal Luftig '84SOA was five years old, his parents took him to his first Broadway show, driving into the city from their home on Long Island to see Luther Adler in *Fiddler on the Roof*. Luftig remembers his mother telling him on the way to the theater that he would have to sit still and be quiet during the show. But she needn't have worried: from the moment the curtain rose, Luftig was spellbound.

"It was at the Imperial Theatre. The second-to-last row in the rear mezzanine. I can tell you exactly how many seats over from the aisle," he says. "Whenever I'm there, I sneak over to that seat for a minute and think, Wow. I can't believe I'm a part of all of this."

Luftig is now a four-time Tony Award-winning producer, with a storied career that includes hits like *Thoroughly Modern Millie*, *Legally Blonde*,

and *Kinky Boots*. He says producing is all he's ever wanted to do.

"I was never going to be a performer. Trust me, you don't want to hear me sing," he says. "But I figured out pretty quickly that there were a lot of parts to making a musical happen. There were costumes and sets and lights and people down in the pit. I knew instinctively that someone had to pull all of that together."

Luftig's parents were supportive of his burgeoning "theater obsession" until it came time for him to apply to college. "They wanted me to get a real degree," he says. He went to SUNY Oneonta, where he studied psychology and journalism, and then came back to Long Island and got a reporting job at *Newsday*.

"I was miserable," he says. "But I didn't know how to break into the theater business."

At the time, the American Theatre Wing, the nonprofit organization that

created the Tony Awards, sponsored public seminars called Working in the Theatre four times a year. Luftig would call in sick to work and attend every one. After a while, the president of the American Theatre Wing, Isabelle Stevenson,

cheerleader, muse, and friend,” Luftig says. “After we got that bad review in the *Times*, I had to go to the company and tell them that I believed in them. I believed we had a hit. We went on to win six Tony Awards, including best musical.”



“THE LIGHTS, THE SETS, THE SMELL WHEN YOU WALK IN THE DOOR – IT’S INTOXICATING.”

approached him and encouraged him to apply to Columbia’s newly formed MFA program in theater management. Luftig submitted an application and was called in to interview with Schuyler Chapin, a legendary arts administrator then serving as the dean of the School of the Arts.

“He looked at my résumé with no theater experience whatsoever and said, ‘Why should I admit you?’” Luftig recalls. “And I just said, ‘No one wants this more than I do, and no one will work harder.’”

Luftig got in, and that mantra guided him not only during the program but also after he graduated, through internships in just about every backstage job he could find. “I made coffee, I found props,” he says. “If they needed pantyhose in a certain color, I made that my life’s purpose. I was just so thrilled to be there.”

That experience led to several associate-producing jobs both off and on Broadway, and in 2000, Luftig got the opportunity to be lead producer for the first time, for the musical *Thoroughly Modern Millie*. Based on the 1967 film of the same name, it first opened at the La Jolla Playhouse in San Diego and moved to Broadway two years later. While the show was largely a critical success, an early pan from the *New York Times* made Luftig realize that producing was about more than just finding investors.

“I realized that the producer really is the emotional support for the whole company: you have to be therapist,

More hits followed, from revivals of classic Broadway shows like *West Side Story* and *Children of a Lesser God* to original musicals like *Legally Blonde* and the megahit *Kinky Boots*. Luftig says he is particularly fond of stories

tiger, and *Here Lies Love*, a musical extravaganza by David Byrne and Fatboy Slim about the rise and fall of former first lady of the Philippines Imelda Marcos. Luftig says that he feels particularly emotional about the opening of *Here Lies Love*, which he has been trying for a decade to bring to Broadway. The show first opened Off Broadway, at the Public Theater in Lower Manhattan, in 2013, but a variety of delays — including the COVID-19 pandemic — prevented it from moving uptown. In the meantime, the political situation in the Philippines changed: the Marcos family returned to power when Imelda’s son assumed the presidency in 2022.

“So what started out as this wild fun disco-pop musical in 2013 now means something different,” Luftig says. “We wanted to make sure that Filipino voices were involved on every level — from the cast to the costume designers.”



Life of Pi won three Tony Awards in 2023.

with a strong message, even if wrapped in a fun package. “*Legally Blonde* seems like cotton candy, pure silly fun,” he says. “But there’s something important at the core: women should never feel like they need to dumb themselves down.”

Luftig has two shows currently on Broadway: *Life of Pi*, based on the best-selling novel about a boy stranded on a boat with a 450-pound Bengal

Luftig says that after all these years, he still finds theater thrilling: “The lights, the sets, the smell when you walk in the door — it’s intoxicating.” The best part of his job, he says, is working with so many brilliant creative minds.

“These are people that spend their whole lives creating something beautiful,” he says. “And I’m the one that gets to make their dreams come true.”

JILL FURMAN

UPCOMING PRODUCTION

Wonder

PAST PRODUCTIONS INCLUDE

Freestyle Love Supreme

Hamilton

Rodgers & Hammerstein's

Cinderella

In the Heights

The Drowsy Chaperone



In 2003, Jill Furman '97BUS was in the early stages of a film-production career when a friend invited her to the basement of a Midtown bookstore, where a young hip-hop artist was performing a piece from a musical he was writing about his neighborhood.

"It was described to me as a Latino version of *Rent*," Furman says. "But immediately I knew that this was something different. He had this infectious charm, this monumentally new way of telling a story. There was something about him that made me sit up and take notice."

That young artist was Lin-Manuel Miranda. The piece was a very early

version of *In the Heights*. And the performance was enough to change the trajectory of Furman's career.

Furman was no stranger to the theater. She grew up in New York City in an "arts-obsessed family," seeing everything that came to Broadway. "*A Chorus Line* and *Grease* were particular favorites," she says. "I could probably still sing you every line from both." As an undergraduate at Brown, Furman studied art history, though an internship at a gallery made it clear that becoming a curator was not the right path for her. So after leaving college, she got a job with the talent agency ICM, and later she moved to Los Angeles to work in

ERIC GODEN / TRUNK ARCHIVE



In 2016 *Hamilton* was nominated for a record-breaking 16 Tony Awards and won 11, as well as the Pulitzer Prize

film development, reading scripts and providing critiques.

“I wanted to start my own production company,” Furman says. “But I’d always been very right-brained. I was scared of numbers.”

Furman decided that the best way to bolster her business acumen was to go back to school, and she enrolled at Columbia. “An MBA isn’t the most direct path to a career in production,” Furman says. “But I learned about marketing, about fundraising, about how to read a spreadsheet. Columbia gave me the skills and confidence I needed when I started talking to investors.”

Furman’s father, Roy, an investment banker with a specialty in media and entertainment, had begun to dabble in theater production as well (he would go on to a very successful second career, with Tony Award-winning hits like *Spamalot* and *The Book of Mormon*). When Furman graduated from Columbia, she started working with him, serving as an associate producer on his first two shows.

“That was how I dipped my toe into the water. But I was still pretty focused on film. I definitely didn’t know that I wanted to be in theater, or stay in theater,” she says. “Until I met Lin.”

Furman says she was compelled to work with Miranda from that very

first reading in 2003. “I had never heard anything like that onstage,” she says. “I knew that I needed to be involved in it, to be in this person’s life.” It would take five years for *In the Heights* to reach Broadway. And while Miranda was completing the musical — he taught high school and worked as a bar mitzvah dancer to make ends

working on about Founding Father Alexander Hamilton 1788HON.

“People were absolutely losing their minds,” Furman says. “And I was one of them. It just blew me away.”

Furman began working with Miranda on *Hamilton* immediately, even as her home life grew busier. In December 2014, she became the single mother of a baby boy. Just weeks later, *Hamilton* opened in previews at the Public Theater. “I like to say that those were the two greatest productions of my life,” she says. A year later, *Hamilton* moved to Broadway, sweeping the Tony Awards and becoming a cultural juggernaut.

Furman says that *Hamilton* wasn’t a hard sell — “Investors were just throwing money at us” — but she was still unprepared for the phenomenon it would become. “I think I knew right away that it somehow spoke to everyone in the room, no matter what room we were in,” she says. “But it became a part of the cultural conversation. It transcended the theater. I honestly don’t think we’ll ever see anything like it again.”



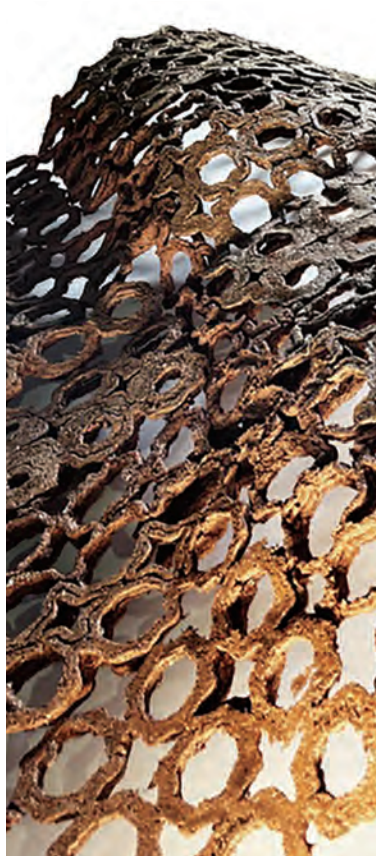
“I THINK I KNEW RIGHT AWAY THAT IT SOMEHOW SPOKE TO EVERYONE IN THE ROOM, NO MATTER WHAT ROOM WE WERE IN.”

meet — Furman built up her theater bona fides. In 2006, she produced the Broadway debut of *The Drowsy Chaperone* — a parody of 1920s musical comedy — which went on to win five Tony Awards that year.

She followed it up with *In the Heights*, which won best musical in 2008 and cemented in Furman’s mind that Miranda was a genius with limitless potential. Still, she was awestruck when, in 2012 at Lincoln Center, she saw him perform a selection of songs from a hip-hop concept album he was

Furman continues to look for shows that tell important stories in unique ways. She’s currently working on bringing the historical musical *Suffs*, about the US women’s suffrage movement, to Broadway after a successful run at the Public. And she is developing a musical based on the best-selling young-adult book *Wonder*, about a boy with a facial difference looking to make friends.

“I’m notoriously picky,” Furman says. “I say no to almost everything. But when I believe in something, I put my whole self behind it.”





NATURAL MATERIALS LAB / GSAPP

BUILDING FROM THE

GROUND UP

Researchers are listening to sand, printing with dung, and sculpting banana fiber in the hopes of finding alternatives to conventional construction

By Justin Davidson
'90GSAS, '94SOA

Top left and bottom left: A raw-earth installation at Columbia's Institute for Ideas and Imagination, in Paris. Top right: A rammed-earth wall at the Lamont-Doherty Earth Observatory. Bottom right: 3D-printed natural fiber.

The frontier of contemporary building technology runs through a narrow basement room where Lola Ben-Alon sloshes water into a tray of dirt and plunges her fingers into the muck.

She smears it between her hands to see if it cakes on her skin, then mashes it into a sticky lump. “You need to know how much clay is in the soil,” she says. “That’s the first criterion for determining if it’s suitable for construction.”

Ben-Alon, an assistant professor at Columbia’s Graduate School of Architecture, Planning, and Preservation, hopes to revolutionize the way we build, and her plan starts with a fistful of wet earth. Her various callings — as an engineer, curator, scientist, and hard-charging optimist — come together in the school’s Natural Materials Lab, which she directs. The research that she

and her team conduct there is based on a straightforward premise: constructing with earth, plant matter, and even living organisms can go a long way toward healing the environmental damage wrought by concrete and steel.

As Ben-Alon works the brown goo between her hands, she treats this elemental clod of dirt as a portal into a vast field. “In the lab we look deeply at earth-based and natural fibers, and at their performance, material science, fabrication possibilities, politics, policy, and geographies.” She has one eye on the microscope to learn how the earth behaves, the other on the future, hop-

ing to shape how society makes use of that expertise.

She’s just getting started. The lab, which took up residence in Schermerhorn Extension barely a year ago, looks more like an art room than the cradle of innovation. A 3D printer and an eleven-foot crane stand along one wall. Vats of soil, piles of brownish baskets, and plastic bags filled with stringy plant stems, husks, and straw occupy every surface. “We have dung!” she says, opening a sack. She gestures to another: “This is banana fiber.” At times, her analytical techniques can seem intuitive. “I listen to sand,” she says. “It’s a very deep conversation.” An angular, faceted grain works best for construction because it binds well. “So you crunch sand in your ear, and if it makes that *chtkr chtkr* sound, that’s good. Round sand, on the other hand, is better for finishes, because it makes a smooth, workable mixture. Totally different sound.”

That sensory approach is an essential part of the toolkit that Ben-Alon teaches her students, but it’s only step one. Each day at the lab is part of a multi-phase movement that requires patience, rigor, and realism. It begins with stirring together experimental blends of sand, soil, clay, water, and fibers, then turns to analyzing how well different variables affect their plasticity, strength, and resilience. “We’re swimming in a pool of endless possibilities,” she says.

Maximizing options has always been part of Ben-Alon’s strategy. She was born and grew up in Israel — “in a small southern town near the Negev



Lola Ben-Alon

LEN SMALL



Top left: 3D-printed earth weaves. Top right: A garment made with mud. Bottom left: A biodegradable, low-carbon chair. Bottom right: Creating soil blends in the lab.

where you're expected to have kids when you're twenty and not do much more than that," she says. "But I was hungry." She got herself into a selective school and quickly developed what would become a characteristic mixture of ambition and flexibility. "It was a dance school, so I danced," she says with a shrug. She aspired to be an architect but instead was offered a scholarship to study engineering at the Technion, Israel's prestigious technical institute, so she grabbed it. "I remember telling myself, architecture will come someday. It will come." (She also merged her scientific training with her art-school sensibility and earned a diploma in critical and curatorial studies.) Ben-Alon had just gotten married when she was accepted into a Carnegie Mellon PhD program that

could have been designed specifically for her: architecture, engineering, and construction management. "I said to my husband, 'OK, you're coming with me to Pittsburgh.'"

That series of hairpin turns in her trajectory has made her comfortable with the notion of trying something first and only afterward tallying up the reasons. "Ours is a *doing* practice," she says of the Natural Materials Lab. "My collaborators and I seek to understand the mineralogy of the material, then do a little microscopy to see the interaction. But mostly we try to work with something, and if it goes well, we try to figure out why."

For Ben-Alon, the ideal result of all this trial and error would be a catalog of standardized low-carbon products like prefabricated rammed-earth wall

panels, natural-fiber insulation batts, and clay-rich finishes, all of them cheap, reliable, and abundant enough to replace today's fiberglass, metal façade assemblies, oil paint, and synthetic foam. At the current, artisanal stage, she and her team are feeding each amalgam into a 3D printer. "It should look more like cookie dough than pancake batter," Ben-Alon says. "As you push material through a nozzle, the fibers will align in a certain way, and once I know the direction of its structural integrity, I can create more complex geometries." The often frustrated hope is that these concoctions will yield elaborate tiles, weaves, vessels, and textiles.

She makes a thirty-step tour of the lab, pointing out perforated tiles, scraps of imitation leather, rolls of

mesh, garlands of rope, and a structure that looks like a scale model of three intertwined skyscrapers. All are made of fiber and earth. Ben-Alon is far from alone in pursuing her dream. She and Penmai Chongtoua '22CS, an associate researcher, have created clothing made from their own "BioEarth fabric," which is composed of at least 60 percent soil. Another colleague, Harris Wang, an associate professor in the Department of Systems Biology and the Department of Pathology and Cell Biology at Columbia University Irving Medical Center, has created living bacterial bricks made from mycelium, the branching roots of common fungi. Farther afield, venture capital is financing startups like Biomason, which produces cement grown by

was no permitting process, so people used it either illegally or for tiny structures, less than 120 square feet. Now there's an approved construction method and safety standards, so it can be used much more broadly."

Well, it *could* be, anyway. Maybe that one chapter in the code will indeed unleash a cascade of new cob construction, but that will depend on the willingness of investors, lenders, insurers, and contractors to take risks on a new-old practice. "There's no way to reduce carbon without providing financial incentives," Ben-Alon acknowledges. "That's way beyond the scope of what I'm doing — I'm still looking at the microstructure of the soil!"

And yet codifying the use of natural materials will help with the biggest,

of boots and an umbrella." Rain is far from the only environmental threat, of course, but the elasticity of mud-and-fiber construction also holds up well to earthquakes. And anyone who fears that such buildings will simply crumble away without steel or concrete backbones need only take a look at the city of Sana'a in Yemen, where rammed-earth apartment buildings have been standing for centuries.

Cities have always been made from stuff that springs from the ground beneath our feet — granite, marble, wood, concrete, and glass. And until a few decades ago, the connection between source and building site was clear. "How this city marches northward!" the New York diarist George Templeton Strong 1838CC enthused in 1850. "Streets are



Left: Replastering the Great Mosque of Djenné, in Mali. Right: Rammed-earth buildings in Sana'a, Yemen.

microorganisms rather than ground from fired limestone.

With so many startups, designers, and researchers drawn to the field, there is an urgent need to develop testable standards for the manufacture of these materials and their use in construction. Ben-Alon already has extensive experience on that front, since she wrote an official addendum to the International Building Code that covers cob, a hand-moldable mixture of soil and fiber that is energy-efficient and durable. "Cob has been used everywhere, including in the US, but there

most amorphous challenge: overcoming suspicion and disdain. The first thing everyone wants to know about earthen construction is whether it falls apart in the rain. A few thousand years of experience would suggest it doesn't. "The thing about earth-and-fiber material is that if it gets wet and then the water evaporates, that's fine," Ben-Alon says. Adobe blocks can be weatherproofed with clay plaster or lime, though she does advise raising the structure on a stone base and protecting it with a three-foot roof overhang — what she calls "a good pair

springing up, whole strata of sandstone have transferred themselves from their ancient resting-places to look down on bustling thoroughfares for long years to come." That image of the mountain coming to Manhattan embodied the optimistic nineteenth-century vision of nature as an infinite resource, the raw stuff of prosperity.

Today, the relationship between natural and built environments looks far more perilous. Climate change menaces cities in ever more ferocious ways, giving architects and engineers new threats to resist and to mitigate: storm

LEFT: OUSMANE MANKIÉL / GETTY; RIGHT: GONZALO AZUIMENDI / GETTY

surges, flooding rivers, heavy rains, rising sea levels, wildfires, and heat waves. Some solutions exacerbate the problem. Sultry weather demands more air conditioning, which pumps out more heat. Buildings are responsible for 40 percent of the world's carbon emissions, a melancholy contribution divided between the energy it takes to keep the lights on and the temperature stable and the gases produced in erecting new construction. A contemporary office tower, for



Ben-Alon adds decorative elements to an installation.

instance, is an agglomeration of highly processed components manufactured in specialized facilities all over the world and hauled across oceans at immense environmental cost — concrete structure, façade panels, drywall, insulation, ducts, wires, motors, hardware, finishes, and so on. And when that whole assemblage has outlived its usefulness, it often gets thrown away. That's because industrially produced buildings are cumbersome and expensive to preserve. Once-standard pieces of hardware become impossible to find, computer-controlled systems can't be tweaked, factories that supplied elaborate window assemblages go out of business. In 2000, when the Manhattan midcentury office landmark Lever House had grown shabby, architects reskinned the entire building in a new curtain wall — preservation by replacement. That's rarely possible with contemporary buildings, which is why financial models often figure a new commercial building's lifespan at around twenty-five years, and the

more sophisticated the technology, the more quickly it ages. The real-estate business's term of art for areas with an oversupply of older buildings is "under-demolished."

Ben-Alon hopes to reduce all that waste by applying today's technology to prehistoric techniques, using materials that are ubiquitous, non-polluting, widely available, and highly versatile. She's fighting a battle on multiple fronts, from the microscopic to the cultural, trying to overcome the perception that her grass and dirt stews are precious and impractical.

Even something as basic as soil is infinitely various and irreducibly local. Techniques for using it are usually learned by imitation.

That movement is spreading perhaps because it combines idealism with hard-headed pragmatism. Structures that are erected by hand using local knowledge and materials are designed for easy upkeep. Perhaps the most spectacular example is the Great Mosque of Djenné, in Mali, built in 1907. Every year, men, women, and children turn out by the thousands for a joyous festival to reslather its earthen parapets and turrets with a mixture of soil and water called banco. "I'm not saying that everyone should build houses out of mud and replaster every year, as they do in West Africa," Ben-Alon laughs. Rather, she believes that the wisdom of vernacular construction can be imported to Western cities. "In Europe, we're starting to see new three- and four-story multifamily structures made of mass timber, infilled with straw panels, and plastered with lime and clay. In Paris, there are three manufacturers of compressed-earth block."

Translating ancient practices that are scattered worldwide into a manual of instructions or a universal product is

a daunting quest. For one thing, each material maker will be working with different raw ingredients. Even something as basic as soil is infinitely various and irreducibly local. Techniques for using it are usually learned by imitation. The architect Juan José Santibañez, for instance, has devoted a lifetime to studying and designing earthen structures in the Mexican state of Oaxaca. "I learned to pay attention to what the old people do — tradition, not science," he says. Santibañez, like Ben-Alon, likes to plunge his arms into wheelbarrows full of mud, mixing it around to get a

feel for its properties. But it's Oaxacan mud, a substance he knows by touch.

Ben-Alon understands the challenges of standardizing such experience-based design, but she still hopes to smuggle her grimy-paw ethos into the capitalist system. Doing so need not involve a complete rejection of building-as-usual. "We shouldn't fall into the trap of thinking we need to replace concrete and steel. It will not happen. Concrete and steel are not the enemy." The enemy is the habit of using them by default.

She has scant interest in persuading institutional clients and glamorous architects to erect all-adobe museums. A deluxe organic one-off won't make much of an impact, no matter how green it claims to be. She'd rather take a quieter, more promising route, developing affordable off-the-shelf organic components. The future, Ben-Alon insists, lies in the aisles of home-improvement stores. That may seem an unlikely front for radical change, but she has confidence in the combination of growing urgency and rigorous innovation. "Once these products show up at Home Depot," she says, "I'm retiring." 🏠

EXPLORATIONS

FRONTIERS OF
RESEARCH AND
DISCOVERY



Major study shows multivitamins help prevent memory loss

Multivitamins have come under a lot of scrutiny in recent years, as numerous studies have failed to confirm that they protect against cancer, heart disease, diabetes, or other common ailments. Indeed, the medical community is split on whether we should bother taking them at all. Some physicians say that healthy adults who follow a relatively well-balanced diet do not need supplements. Others continue to recommend them in the belief that larger, more rigorous trials may still reveal that multivitamins provide significant health benefits.

Now a new study by scientists at Columbia and Harvard lends credence to the idea that multivitamins have hidden value, finding evidence that they can slow the pace of age-related memory loss. The study, led by Columbia neuropsychologist Adam Brickman, is considered consequential because it was a randomized controlled trial — the gold standard of health and medical research. More than 3,500 people age sixty and over were randomly assigned to take either a standard multivitamin or a placebo every day for three years and were given memory tests annually. Those who took the daily multivitamin performed much better on the tests at the end of the first

year and by the end of the study had been spared the equivalent of three years' worth of expected age-related memory decline.

“The benefits we observed would seem subtle to someone experiencing them, but from a statistical standpoint, the effect was very clear, very powerful,” says Brickman, whose paper appears in the *American Journal of Clinical Nutrition*.

Importantly, the Columbia study replicates the findings of another large clinical trial on the memory-enhancing potential of multivitamins in older adults, completed last year by scientists at Harvard and Wake Forest. Despite using different methods, the two studies produced remarkably similar results, with both finding that people with a history of cardiovascular disease experienced the most pronounced cognitive benefits from taking a multivitamin — a discovery that the researchers say could be a sign that these individuals were eating less-healthy food or absorbing fewer nutrients and therefore had more nutritional gaps to fill. Both studies used a popular multivitamin, Centrum Silver, although the researchers say that any high-quality multivitamin is likely to produce the same results. (The study was supported by grants from Mars Edge, a segment of the Mars food

company that focuses on nutrition products, and the National Institutes of Health, with multivitamins supplied by Pfizer.)

Further research will be needed to identify the specific nutrients that boosted people's memory, but Brickman says that previous laboratory experiments point to vitamin B, vitamin D, zinc, and magnesium as likely candidates. "It may be that there isn't a single magic bullet but that these nutrients and others are working together to maintain brain function as we age," he says.

Should doctors now recommend multivitamins to all their patients? Not just yet. "We don't know how long the benefits that we observed will endure or if they'll have any bearing on whether someone develops dementia, Alzheimer's disease, or other serious memory problems," says Brickman. "These are vital questions."

Nevertheless, his team's latest discovery is a rare piece of encouraging news for millions of people who are already taking multivitamins, including some 40 percent of all Americans over sixty. Until now, multivitamins had only been shown to help prevent a small number of medical conditions, including cataracts and macular degeneration. Brickman, who is forty-nine, says that the prospect of staving off memory loss by a few years was enough to inspire him to start taking a daily multivitamin. "I hadn't taken one since I was a kid," he says. "But as soon as I saw our data, I started up again."

To others considering a similar course of action, he offers a few notes of caution. First, it is important to consult a physician before taking any dietary supplements, including daily multivitamins, in part to make sure that they won't interact with any medications you're taking, such as certain blood thinners, antibiotics, and cancer drugs. And be careful about consuming more than the recommended daily amounts of any essential nutrients. "A common mistake that people make is they assume that if it's good to get 100 milligrams of a particular vitamin daily, it's even better to get ten or twenty times that amount. But it's not. It can actually be dangerous." Furthermore, it is better to get your essential nutrients from food rather than from dietary supplements whenever possible. "The body is most adept at processing micronutrients in the same forms and combinations as they're found in nature," he says. "Supplements can provide a level of protection against certain deficiencies, but they're no substitute for a healthy diet."

And the brain, it seems, requires an unusually robust nutrient supply. "Perhaps this is the most important lesson to draw from our new research: that the brain is even more sensitive to nutrition than we previously realized," says Brickman, who is an expert on the neuronal and vascular structure of the organ. "It may need elevated levels of various vitamins as it ages in order to continue working properly."

Survey: 3 out of 4 Chinese-Americans experience racism

A surge of anti-Chinese racism that emerged in the US during the COVID-19 pandemic does not seem to be abating, according to a new nationwide survey of 6,500 Chinese-Americans conducted by researchers at Columbia's School of Social Work and the New York-based nonprofit Committee of 100.

The survey and research project, which provides one of the most comprehensive snapshots of Chinese-Americans' viewpoints and life experiences ever conducted, finds that nearly 10 percent of respondents were physically assaulted or threatened with violence in the past year; 20 percent were called a racial slur or verbally harassed; and 74 percent experienced some form of racial discrimination. The racial hostility appears to be taking a toll on Chinese-Americans' mental health, with nearly one in four participants reporting levels of emotional distress that put them at risk for psychiatric problems.



Families celebrate the Chinese New Year in Manhattan.

The Columbia researchers, led by professor Qin Gao '05SW and graduate students Jennifer So and Stacie Tao, together with Committee of 100 staffer Samuel Collitt, say they made special efforts to study Chinese-Americans not typically represented in large-scale US population surveys, including those who speak little or no English and live in rural areas. Their report, published on the Committee of 100 website, provides an unusually detailed portrait of one of America's fastest-growing demographic groups (there are now 5.5 million people of Chinese ethnic origin in the US) and includes recommendations for combating anti-Chinese racism and improving social services for the approximately one-quarter of Chinese-Americans who are poor.



Left: A community of superb starlings in Kenya's Mpala Research Centre. Right: Shailee Shah.

Lessons in survival from the birds

For superb starlings — small, brightly colored songbirds found on the East African savanna — life is hard. Snakes, hawks, and other carnivores lurk around their nests, and droughts frequently wipe out their food supply of berries, seeds, and insects. Raising chicks in this environment is particularly difficult, and each breeding season nearly three-quarters of all procreating adults lose their entire clutch to predators or starvation — a dismal result that threatens the survival of many starling populations.

But new research shows that superb starlings have evolved a remarkable strategy to enhance their stability and odds of survival: they welcome into their colonies wandering “immigrant” starlings, who, in exchange for enjoying the safety of an adoptive community and the possibility of finding a mate,

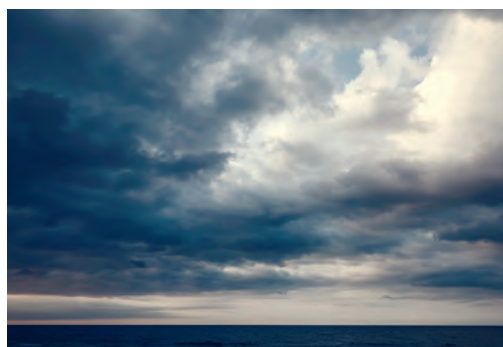
help to feed, protect, and nurture other birds’ young.

The study, by Columbia ecologist Dustin Rubenstein and research associate Shailee Shah ’22GSAS, is based on detailed field observations that they and other Columbia researchers have made in Kenya over the past two decades. Previous research by Rubenstein’s team has shown that superb starlings are among the most socially complex of all birds, living in large colonies and practicing “cooperative breeding,” in which all members of a community help to raise new chicks. Roughly 10 percent of avian species are cooperative breeders, but these birds take communal parenting to another level. While many cooperative breeders live in groups of extended relatives, superb starlings routinely welcome nonrelatives in search of better weather, food, and mating opportunities. The influx of newcomers,

Rubenstein and his colleagues have found, especially benefits starling colonies in dry years, when their combined efforts as foragers can help to prevent babies from going hungry.

The Columbia researchers, who previously documented the superb starlings’ unusual social organization using DNA analysis, say their new study is the first to provide solid evidence of the evolutionary forces driving the birds’ behavior. Using computer models to analyze their long-term data set, they demonstrated that if starling colonies did not recruit outsiders, they would be susceptible to collapse.

“Theoretical work to date has suggested that these starlings gain a distinct advantage from recruiting birds to their groups, but it’s only now that we can definitively say why they do so,” Shah says. “Without these outsiders, they could not survive.”



Clearer skies ahead

Columbia climate scientists led by Pierre Gentine have found a way to incorporate information about the structure and density of cloud formations into climate models, a challenge that has long confounded experts. The breakthrough, achieved with artificial intelligence, is expected to improve predictions of extreme-weather events. “For many years, the scientific community has debated whether to include cloud organization in climate models,” says Gentine. “Our work provides a novel solution, showing that including this information can significantly improve our prediction of precipitation intensity and variability.”

TOP LEFT: SHAILÉE SHAH; TOP RIGHT: SHAMA CAHO; BOTTOM: EVANNONOSTRO / SHUTTERSTOCK

Is America in moral decline? The data may surprise you

One thing that many Americans can agree on, even in an era of deep political polarization, is that our country is in a moral free fall. In survey after survey, US adults of all ages, education levels, political affiliations, and religious backgrounds say that people are less kind, honest, generous, and respectful than they used to be.

So is our nation's moral fabric unraveling and our social order in disarray?

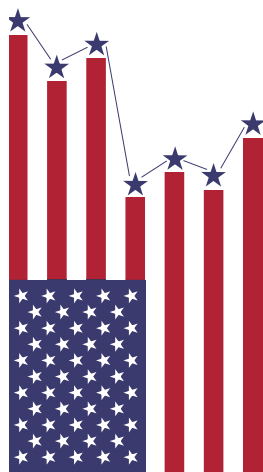
Not necessarily. In fact, two psychologists, Columbia's Adam Mastroianni and Harvard's Daniel Gilbert, say that the widespread perception of moral decline is an illusion. They recently conducted a meta-analysis of all the major surveys that asked Americans about the state of moral values in this country — a total of some two hundred conducted over the past seven decades — and they found that US residents have been griping about one another's flagging sense of decency for as long as researchers have been soliciting their opinions on the matter. And yet when individual respondents are asked multiple times, over the span of a decade or more, to describe the level of civility and kindness they observe in their fellow citizens, their descriptions of other people's attitudes and behaviors do not actually worsen at all.

Mastroianni and Gilbert, whose paper appears in the journal *Nature*, say the results of similar surveys conducted in dozens of other countries over the decades suggest that people all over the world are susceptible to the illusion that their contemporaries are less moral than they once were. They say that this misconception is likely explained by two well-established psychological phenomena acting in tandem: that we tend to pay closer attention to negative rather than positive information about people's actions in the present day; and that we tend to selectively forget such negative impres-

sions as the years roll on, leaving us with nostalgia for the past.

The authors say that their discovery has important societal and political implications, especially given that, as one 2015 survey found, three-quarters of all Americans believe that “addressing the moral breakdown

of the country” should be a high priority for the government. Write Mastroianni and Gilbert: “The United States faces many well-documented problems, from climate change and terrorism to racial injustice and economic inequality — and yet, most US Americans believe their government should devote scarce resources to reversing an imaginary trend.”



STUDY HALL RESEARCH BRIEFS

Too hot for shuteye

Rising nighttime temperatures caused by climate change are impairing the quality and duration of

people's sleep around the world, posing a significant threat to global health, according to a new study coauthored by Columbia data scientist and postdoctoral researcher Kelton Minor. The elderly, women, and residents of low-income countries are most affected.

Pot use linked to depression

Teens who smoke pot recreationally are two to four times as likely to develop psychiatric problems, including depression and suicidal thinking, according to new research by Columbia psychiatrist Ryan Sultan.



The key to a long life?

Columbia medical researchers led by geneticist Vijay Yadav have found evidence that taurine, a nutrient commonly added to energy drinks and found in many foods including shellfish and turkey, can slow the pace of aging. Human trials have yet to be conducted, but Yadav and his colleagues report that animals given supplements of taurine show improved strength and longevity.

How water holds us together

An interdisciplinary team of researchers led by Columbia biophysicist Ozgur Sahin has discovered that many biological materials that contain water — including wood, pine cones, pollen, and hair, skin, and nails — are given structural integrity by the outward pressure that water molecules exert on the physical matter that surrounds them. The researchers say that these materials represent a distinct new category of matter, which they call “hydration solids.”

A poor education may lead to cognitive decline in later life

Americans who attend low-performing high schools are more likely to suffer cognitive impairment in old age, according to a study by neuropsychology professor Jennifer Manly and postdoctoral researcher Dominika Šeblová.

Seeking autism's signature

Researchers at the Mailman School of Public Health have identified molecular abnormalities in the blood of pregnant women and newborns that may indicate a child is at risk of developing autism. They say the discovery could open the door to early diagnosis.

NETWORK

YOUR ALUMNI CONNECTION



Scott Ginsberg and Joshua Siegel

Death and the Salesmen

Titan Casket eases the burden of burial costs

The products come in different shapes and sizes, with a choice of more than twenty colors. Interiors are cushioned and inviting. You can even customize your model by adding special designs or head panels. At Titan Casket, shopping online for an urn or casket is like choosing the car that you will drive forever.

“Our core belief is that a family should plan a funeral at their kitchen table and not with salespeople in a funeral parlor,” says Joshua Siegel ’08BUS, who with Scott Ginsberg ’95BUS cofounded the company to bring the direct-to-consumer shopping experience to casket sales, complete with free shipping. “Having this option gives people some control during a difficult process — and we can help them save a ton of money.”

Many people assume that their casket choices are limited to what a funeral home offers to sell them. But in fact, the Federal Trade Commission gives families the right to buy caskets outside the funeral home and have them sent there. Ginsberg, who had already been in the business for twenty

years before cofounding Titan Casket, recalls watching grieving families struggle to afford a burial. “The average casket can cost a family more than \$3,000, which is outrageous,” Ginsberg says. “I wanted to provide a less expensive option and a less stressful experience.”

Ginsberg, Titan Casket’s CEO, started the company in 2016 and soon began looking for a partner with expertise in digital commerce. Through the Columbia B-school alumni database, he connected with Siegel, who’d worked in e-commerce for a decade at Amazon. Siegel and his wife, Liz, joined Ginsberg in 2020 as cofounders.

Titan sells caskets (rectangular), coffins (hexagonal, “like what Dracula uses,” says Ginsberg), cremation urns, and related accoutrements on its website and through Sam’s Club, Costco, and Amazon.

For a casket, “our average selling price is around \$1,300,” Ginsberg says, which is about the price of a midrange mattress. Most shoppers buy caskets for deceased loved ones, but more and more are ordering for themselves (in advance, of course). You can choose a simple pine box (Eco I

or Eco II, both \$999) or something as luxe as gold-colored stainless steel (Majesty Gold, \$2,999). You can also make your final journey in cardboard (Titan Virtue, \$499) or handcrafted wicker (Titan Seagrass, \$2,049). And to offset the 250 pounds of carbon that Ginsberg says the average burial puts into the atmosphere over time, Titan Casket plants ten mangrove trees in East Africa for each casket sold. “Ten trees take 250 pounds of carbon out of the atmosphere each year, which is many times the impact of that burial,” Ginsberg says. With their baked-in social concern and rainbow selection, Scott and Josh are pretty much the Ben and Jerry of the casket world.



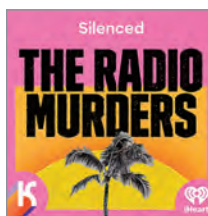
Pop goes the casket: Taylor Swift in a Titan.

And it’s an ossified world, Ginsberg says — ripe for a shakeup but hard to break into. Marketing is tricky, because caskets are not something most people want to think about. Still, when Ginsberg and Siegel learned last year that a pop megastar had used a Titan casket (Orion Series, copper, \$1,299) in the video for her song “Anti-Hero” (the star, encased, lifts the lid to spy on her own funeral), Siegel e-mailed the media with an irresistible subject line: “Taylor Swift used my casket in her funeral-themed music video.” Titan Casket got a lot of press, though this did not immediately translate into sales, given the demographic of Swift’s audience — what Siegel calls “a very long purchase cycle.”

In the meantime, the orders keep coming, and Titan must deliver — quickly. “The funeral might be next Monday and I need to get that casket there,” Siegel says. “It must get there in a timely fashion. It cannot be late. Many things can be late and it won’t make a difference. But with this, you don’t get a second chance.” — *Paul Hond*

5 Podcasts Worth Bingeing

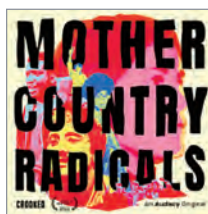
These true-crime and investigative series will keep you hitting the play button



Silenced: The Radio Murders In the early 1990s, journalist Ana Arana ’81JRN began reporting on a string of assassinations in Miami’s Little Haiti neighborhood. The killers were never found. Now Arana and cohost Oz Woloshyn revisit this chilling cold case and attempt to untangle a complicated web of conspiracy, cocaine trafficking, and political upheaval.



Welcome to Your Fantasy The male dance troupe Chippendales is best known for its iconic stripteases and for hosting raunchy girls’ nights out. Historian Natalia Mehlman Petrzela ’00CC joins Nicole Hemmer ’10GSAS and Neil J. Young ’08GSAS to look beyond the franchise’s muscle and mullets and expose a shocking tale of fraud, murder, and American hustle culture.



Mother Country Radicals In the 1970s, the Weather Underground, a far-left militant group spearheaded by Bernardine Dohrn and Bill Ayers, shocked the public by inciting riots, committing arson, and bombing public buildings. The activists’ son, Zayd Ayers Dohrn ’06GSAS, tells the complicated story of their radicalization through personal memories and interviews.



Drunk Women Solving Crime Taylor Glenn ’01SW cohosts this British comedy series advertised as a “true-crime podcast with a twist ... of lime.” Glenn and her cohosts invite their myriad guests to share encounters with minor “crimes” — everything from personal slights to awkward situations — and also discuss more serious cases from the headlines.



Wind of Change Did the 1991 single “Wind of Change,” by West German rock band the Scorpions, help take down the Soviet Union? Over eight episodes, *New Yorker* journalist Patrick Radden Keefe ’99CC travels the world to investigate a strange rumor that the power ballad was written by the CIA.



Car Safety for Dummies

Maria Weston Kuhn '23CC wants everyone to know that crash testing discriminates — often fatally — against women

Maria Weston Kuhn '23CC had a truly terrifying experience on what should have been a perfect family getaway. While traveling in Ireland in December 2019, she survived a head-on collision when a distracted driver veered into the wrong lane on a country road. Her father and brother, sitting in the front of the rental car, were unharmed, while Kuhn and her mother, sitting in the back, suffered severe injuries. “My small intestine was ruptured by my seatbelt, and I required emergency surgery,” says Kuhn, who, after returning home to Maine, was forced to miss a semester of college. “I found out

later that our injuries were not unique. Crashes affect women differently because car safety standards are tailored to men. It’s a form of gender discrimination that injures and kills thousands of women each year.”

Since her recovery, Kuhn has become a bold advocate for women’s safety in automobile regulation. As a student studying political science and psychology, she spent numerous hours writing op-eds and lobbying public officials for updated crash-test standards. Now, as the founder and president of Drive US Forward, a newly formed nonprofit, she is steering a spirited awareness campaign about this little-known but alarming gender disparity.

“Women are 73 percent more likely to be injured and 17 percent more likely to be killed in frontal collisions than men,” explains Kuhn. This is inevitable, she argues, since the crash-test dummies used



Maria Weston Kuhn

in the US Department of Transportation’s New Car Assessment Program, which tests and rates vehicles for safety, are modeled after the average male in the 1970s. The standard dummy is a man of five foot nine and 171 pounds, while its female counterpart is a scaled-down replica that “doesn’t account for different proportions, musculature, and bone mass,” Kuhn says. Despite the fact that women make up over half of American motorists, the female dummy never sits in the driver’s seat during frontal crash tests.

A more anatomically accurate female dummy was approved by the Department of Transportation in late 2022, but budget constraints are delaying its rollout, explains Kuhn. The device, called the THOR-5F, contains additional sensors in the abdomen, pelvis, and other areas where women are particularly vulnerable. “We’re advocating for the New Car Assessment Program to test the THOR-5F equally with the male dummy and to get it in the driver’s seat,” she says.

Since launching this past March, Drive US Forward has set out to educate the public through social media and by collaborating with other grassroots organizations like Gen-Z for Change, with the goal of influencing lawmakers. “Once you tell somebody about the issue, you don’t need to persuade them,” asserts Kuhn, who during college learned the ropes

TOP: SIMOUL ALVA; BOTTOM: COURTESY OF MARIA WESTON KUHN

of the political system as a policy intern for the US Senate. “Transportation policy can be very mundane and hidden from public view,” adds Marco Balestri ’22CC, Kuhn’s friend and a legal advocate who serves on Drive US Forward’s executive board. “This is a problem that can be fixed so easily. But there isn’t enough awareness.”

Hana Schank ’04SOA, a writer and expert in public-interest technology, has partnered with Kuhn for several years and now acts as an adviser to Drive US Forward. “The car industry did not fight for seat belts; consumer advocate Ralph Nader did,” says Schank, who survived a head-on collision and traumatic brain injury just five months before Kuhn’s accident. “The US is now lagging behind other countries in this effort.”

Kuhn, inspired by youth-focused movements like March for Our Lives for gun reform, is eager to mobilize members of her generation. “We’re trying to pull the curtain back and give young people a voice in transportation policy,” she says. “Road injuries are a leading cause of death across the country, and it’s time to address the fatal inequities in crash-safety testing.” — *Julia Joy*



The THOR-5F dummy.

9 Neat Products from Alumni Entrepreneurs

Innovative items you never knew you needed



Spice kits for Southeast Asian cooking from **Homiah**, founded by Michelle Tew ’15CC



Custom-color lipstick from **Shespoke**, cofounded by Kelsey Groome ’19BUS



Combo wine preserver and pourer from **Coravin**, cofounded by Josh Makower ’93BUS



Custom fragrances from **Olfactory NYC**, founded by Joseph Vittoria ’21BUS



Face moisturizer made with cruelty-free snail mucin from **Peach & Lily**, founded by Alicia Yoon ’04CC



Biodegradable “never soggy” drinking straws from **Omao**, founded by Alex Zhang ’22BUS



Handcrafted, gondolier-inspired Venetian slippers from **SantM**, founded by Min Santandrea ’06BUS



Bubble-tea kits from **Bobagreen**, cofounded by Mandy Yeung ’18BUS



Touch-free toilet freshener with essential oils from **LooLoo**, cofounded by Bryce Johnson ’05BUS



ASK AN ALUM: HOW TO FIGHT SELF-IMPOSED AGEISM AND ENERGIZE YOUR RETIREMENT

Michael Clinton '21SPS — author, adventurer, pilot, photographer, and philanthropist — has made it his mission to challenge cultural and self-imposed ageism. In his book *ROAR*, and on his ROAR Forward website, he invites us to think about midlife as a time not of crisis but of new opportunities and personal growth.

You want to banish the word “retire” and change it to “refire.”

The word has to be challenged because it’s obsolete. Retirement is a construct. It was created in the 1930s along with the Social Security Act to move older people out of the workforce. Over the years, media and culture — and even the establishment of Medicare in the 1960s — has pretty much reinforced the idea that it’s all downhill from sixty-five. But we’ve added decades to our life expectancy since the 1930s. Today, if you’re fifty and healthy, there’s a real possibility that you will live to be ninety or older. It’s time for a new

script for those extra decades. I want to encourage people to reimagine their “favorite future” and move toward it with purpose.

But what if you’re approaching midlife and feeling stuck?

It’s a common problem, because we’ve been wired to think of these first years of the second half of our lives as the beginning of the end rather than as the start of an exciting new chapter. It’s time to confront these self-limiting beliefs. Our increased life expectancy is a gift, and this is the time to redefine who you are and how you live. Perhaps you want to launch a second career, become an entrepreneur, go back to school, get into better shape, or make some major changes in your relationships. It’s totally possible to do all those things if you’re prepared to reimagine and redesign the second half of your life. My ROAR manifesto helps you do just that: it asks you to Reimagine yourself, Own who you

are, Act on what’s next for you, and Reassess your relationships.

You are the former president and publishing director of Hearst Magazines. You’ve traveled to 126 countries, founded a nonprofit, written eleven books, earned two master’s degrees, and at sixty-nine are about to trek to Everest base camp. You seem determined to prove that we can achieve any goal at any time.

I want to show people what is possible and to underscore the need for new role models for people in their sixties, seventies, eighties, and beyond. For *ROAR*, I interviewed forty men and women who refused to let age stop them from pursuing their goals. Stephanie Young decided to become a doctor at fifty-three; McGarvey Black published her first novel at sixty-two; Alan Webber, the mayor of Santa Fe, became an elected official for the first time at sixty-nine. These “Re-Imagineers,” as I call them, are all curious, engaged, and growing. They are redefining what it means to live longer.

Your Columbia degree is in nonprofit management. How important is philanthropy and service to a long and meaningful life?

It’s essential. We all have a fundamental responsibility to be of service. It takes us out of our egocentric lives, brings fulfillment, and helps us better understand and appreciate others. I serve on multiple nonprofit boards and started a foundation in 2010 to aid individuals and families in need. My Columbia degree was a way to gain more insight into how I could better contribute to the world. It also helped reignite my love of lifelong learning, which contributes to healthy aging.

The Butler Columbia Aging Center offers a course through the Mailman School of Public Health that asks undergraduates to imagine living to be one hundred years old. If you were

SUSANNE WALSTROM / GETTY IMAGES

NEWSMAKERS

a guest speaker in that classroom, what would you want students to know?

I'd want them to know that age is a diversity, equity, and inclusion issue, and in the midst of all the important DEI efforts that are underway, ageism — which affects everyone, regardless of race, gender, or ethnicity — is too often ignored. I would also want them to know that change is coming.



Michael Clinton

The baby boomers, a huge demographic cohort that accounts for trillions of dollars in spending power, are leading the charge. They're tired of being ignored by the government and corporate America and are challenging the way they're portrayed in marketing and in the media. As they continue to vote at the polls and with their dollars, they are going to support candidates and brands that speak to the huge wave of older Americans who remain fit, tech-savvy, vital, and involved. The baby boomers are famously activist. They embraced civil rights, the women's movement, Earth Day, and more. Now they are taking up their next cause and challenging our notions of aging, not just for themselves but for future generations. — *Sally Lee*



● **Ben Vinson '98GSAS**, an eminent historian known for his studies of the African diaspora in Latin America, was named president of Howard University after serving as provost and executive vice president at Case Western Reserve University since 2018.

● New York City mayor Eric Adams appointed **Ana Almanzar '07GS, '09SIPA**, a longtime nonprofit and community-relations professional, as deputy mayor for strategic initiatives. She takes over the role from **Sheena Wright '90CC, '94LAW**, a former Columbia Trustee who is now the city's first deputy mayor.

● The American Academy in Rome granted five Columbians 2023–24 Rome Prizes, which support artists and humanities scholars as they conduct work in Italy. Composer **Kate Soper '11GSAS** was honored in the musical-composition category and multimedia artist **Kamrooz Aram '03SOA** for visual arts. Classics scholars **Kate Meng Brassel '06CC, '18GSAS**, **Mary C. Danisi '17BC**, and **Mary-Evelyn Farrior**, a PhD student, were awarded for ancient studies.

● Archivist **Kenneth Cobb '78GSAS** was honored with a Sloan Public Service Award for his decades-long career at the New York City Department of Records and Information Services. The award, which is often called the “Nobel Prize for New York City public servants,” was given to seven employees out of more than 310,000.

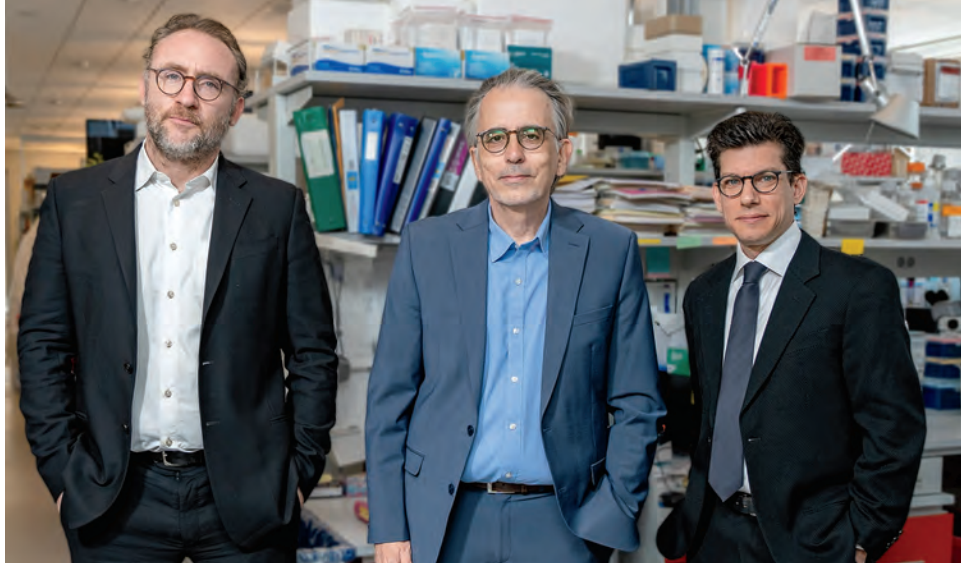
● **Erika Byers '12TC, '16GSAS** was named a 2023 beneficiary of the Google for Startups Black Founders Fund, which provides up to \$150,000 grants to Black entrepreneurs and offers mentorship, training, and other resources. Byers's company, Teamwork Healthcare, connects families of autistic children with clinical therapists as well as personalized and community-based care.

● President Biden appointed **Jonathan Lavine '88CC**, chair of Columbia's Board of Trustees and a co-managing partner at Bain Capital, to the United States Holocaust Memorial Council, which oversees the US Holocaust Memorial Museum in Washington.

● **R. J. Jenkins '03CC**, director of education at Columbia's Center for Veteran Transition and Integration, received the 2023 HigherEdMilitary Spotlight Award, which honors professionals who support veterans and active service members on US campuses.



● *It Ain't Over*, a documentary about baseball legend Yogi Berra written and directed by **Sean Mullin '06SOA**, had its theatrical release in May. Mullin, a graduate of West Point and Columbia's School of the Arts, is an Army veteran and the president of Five by Eight Productions in Los Angeles.



Sander Markx, Joseph Gogos, and Steven A. Kushner

CENTER FOR PRECISION PSYCHIATRY LAUNCHED WITH \$75M GRANT FROM THE STAVROS NIARCHOS FOUNDATION

Columbia University recently announced the establishment of the Stavros Niarchos Foundation (SNF) Center for Precision Psychiatry and Mental Health, which will support research into the causes of mental illness and catalyze the development of more precise methods of diagnosing, treating, and preventing conditions like schizophrenia and bipolar disorder.

The SNF Center was created with a \$75 million grant from the Stavros Niarchos Foundation, an international philanthropic organization based in Greece. It is a joint effort of Columbia's psychiatry department, based at the Vagelos College of Physicians and Surgeons, and the University's Zuckerman Mind Brain Behavior Institute. The New York State Office of Mental Health and the Columbia-affiliated New York Genome Center are also key partners in the initiative.

The new center will be led by three Columbia professors who have already made major contributions to our understanding of mental illness: the psychiatrist Sander Markx, who has shown that schizophrenia and other forms of psychosis can be caused by hard-to-detect yet treatable autoimmune conditions; the psychiatrist Steven A. Kushner, who has discovered that postpartum psychosis can be prevented in

women with a history of mental illness if the mood-stabilizing drug lithium is given soon after childbirth; and the neuroscientist Joseph Gogos, who has done pioneering research on the genetic architecture and neurophysiology of schizophrenia.

The Columbia professors, who are serving as codirectors, say that the SNF Center will bring together scientists from across the University to conduct interdisciplinary studies into the root causes of mental illnesses. Participating scientists will then work with Columbia clinicians to develop diagnostic tools and treatments tailored to patients' unique genetic profiles, metabolic characteristics, and neurobiology. "With this extraordinary support from SNF, we are poised to build on the accelerating progress in psychiatric genomics, neuroscience, artificial intelligence, and stem cell biology to revolutionize the treatment of mental illness," wrote Markx, Kushner, and Gogos in a joint statement.

The codirectors say that improving psychiatric care for members of underserved groups is among the center's top priorities. "We are fundamentally committed to helping combat stigma and discrimination against people living with mental illness and realizing improved mental-health care for all," they wrote.

OBAMA ORAL-HISTORY PROJECT RELEASES FIRST INTERVIEWS

A group of Columbia sociologists and oral historians who were chosen by President Barack Obama '83CC to document his time in the Oval Office have published their first batch of interviews, a series of in-depth conversations with former White House officials, staffers, and others about the Obama administration's efforts to address climate change.

The interview transcripts, along with accompanying audio and video, are available on the website of the Obama Presidency

Oral History project, which is a collaboration between Columbia University's Incite, a multidisciplinary social-science research institute, and the Columbia Center for Oral History Research.

To date, Columbia researchers have conducted interviews with 470 people who worked closely with Obama and his administration, producing roughly 1,100 hours of recordings. They plan to release additional interviews about Obama's work on health care, civil rights, energy, and other issues in the coming months.



Obama with farmer Joe Del Bosque, who was interviewed for the oral-history project.

Peter Bearman, a Columbia sociologist and the project's principal investigator, says that his team's work differs from past oral histories of US presidencies in that it incorporates the views not only of high-ranking officials but also those of many ordinary Americans who

interacted with Obama and his team on policy issues.

"The theory that guided us reflected what we believe was a key aspiration of the Obama presidency, which was to connect with, and be informed by, the experiences of everyday people," Bearman says.

COLUMBIA TO DEVELOP AI, NEUROSCIENCE INSTITUTE

The National Science Foundation has awarded a \$20 million grant to Columbia University to establish a research institute that will support collaborations between neuroscientists and artificial-intelligence experts.

The AI Institute for Artificial and Natural Intelligence (ARNI) will involve research partnerships between academics at Columbia University, Baylor College of Medicine, the City University of New York, Harvard, Princeton, the Howard Hughes Medical Institute, Mila-Quebec AI Institute, Tuskegee University, the University of Pennsylvania, and the University of Texas Health Science Center at Houston. Industry partners include Amazon, DeepMind, Google, IBM, and Meta.

ARNI will be directed by Columbia computer scientist Richard Zemel, who has made important contributions to the field of AI.

Among the institute's priorities is ushering in the development of AI programs informed by the latest neuroscientific discoveries, such as deciphering how the brain makes inferences about incomplete data, learns continually, and uses reasoning to understand causality and embrace uncertainty.



DAPHNA SHOHAMY NAMED DIRECTOR AND CEO OF ZUCKERMAN INSTITUTE

Daphna Shohamy, a prominent Columbia neuroscientist and a longtime faculty member, has been appointed director and CEO of the University's Zuckerman Mind Brain Behavior Institute. She now leads the institute alongside founding codirector Richard Axel '67CC, a Nobel Prize-winning neuroscientist.

The Zuckerman Institute, based at the Jerome L. Greene

Science Center in Manhattanville, is an interdisciplinary research hub where neuroscientists, engineers, statisticians, and other scholars come together to unlock the deepest mysteries of the brain.

Shohamy, who has taught at Columbia since 2007 and also codirects the University's Kavli Institute for Brain Science, is an expert on learning, memory, and decision-making. She previously served as associate director of the Zuckerman Institute and founded its Alan Kanzer Writer-in-Residence Program.

"Discovering how the brain works is among the most fascinating and consequential mandates of our time," says Shohamy, a professor of psychology and the Kavli Professor of Brain Science. "We are excited to engage the institute to connect research in the lab with the pressing problems we face as a society."

BULLETIN



DAVID GREENWALD AND CLAIRE SHIPMAN TO LEAD TRUSTEES

David Greenwald '83LAW and Claire Shipman '86CC, '94SIPA, University Trustees since 2018 and 2013, respectively, have been elected co-chairs of the board. They assumed their new leadership roles on September 1, when Jonathan Lavine '88CC, '23HON stepped down at the end of his five-year term

as chair and retired from the board after twelve years of service.

Greenwald, a corporate attorney who is chairman of the law firm Fried Frank, and Shipman, a television journalist and author of best-selling books on women's leadership, were previously vice chairs of the board.

CAA NAMES NEW CHAIR AND BOARD MEMBERS

The Columbia Alumni Association (CAA), a global network that links 360,000 alumni in more than one hundred countries, has chosen a new chair, Lisa Carnoy '89CC.

Carnoy, a financial executive who is chair emerita of the University Trustees, recently led the search committee that nominated Minouche Shafik to be Columbia's twentieth president. She has a long history of service to the University and currently serves on Columbia's Athletics Leadership Council.

The CAA has also elected five new board members: Roger Baumann '85SIPA; Lanny A. Breuer '80CC, '84SIPA; Carlos Cuevas '05CC, '12SIPA, '12PH; Peter Mach '95CC, '96SIPA; and Jonathan Susman '87CC.

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Algae in Morningside Park Pond.

COLUMBIA AND NYC PARKS TEAM UP TO TACKLE TOXIC ALGAE BLOOMS

Scientists at the Columbia Climate School and the New York City Parks Department have joined forces to address a growing environmental problem: toxic algae blooms that are covering local ponds and lakes each summer, disturbing ecosystems and posing a public-health threat.

On July 15, elected officials, community activists, and Columbia faculty and administrators including President Minouche Shafik attended a public event at the site of one of the city's affected waterbodies — a pond in Morningside Park, just east of campus — to mark the launch of the project. Lead researcher Joaquim Goes, a Columbia marine biologist, said that he and his colleagues plan to study the pond to better understand the causes of algae outbreaks

and to devise new prevention strategies. “Insights we gather here could be applicable to combating harmful algae blooms in other water bodies in the city and around the world,” said Goes, who noted that students from local schools will have the opportunity to contribute to the research.

The event was held on City of Water Day, an annual celebration of water-cleanup efforts in the region. “One of Columbia’s missions is to apply academic expertise to real-world problems and build partnerships with individuals, our community, and organizations beyond the academy,” said President Shafik. “There is hardly a better example of this than the work we will do in our neighboring Morningside Park.”

STUDENTS TO HELP ASYLUM SEEKERS IN NYC

Columbia’s schools of social work and law have joined a consortium of local colleges that are providing support to migrants arriving in New York City. Graduate students at the schools will volunteer at the city’s newly launched asylum-application help center, assisting people with paperwork that is necessary for them to stay and work in the US. “This is an all-hands-on-deck issue, and we are doing what no one else has done: coming together from all corners of our city to help our newest New Yorkers get their applications in,” said Mayor Eric Adams in announcing the effort.

CHRISTINE KIM GARCIA NAMED DIRECTOR OF COLUMBIA PRECISION MEDICINE INITIATIVE

Christine Kim Garcia, a pulmonologist, medical researcher, and academic administrator, has been appointed director of the Columbia Precision Medicine Initiative (CPMI), a University-wide effort to develop and implement more personalized medical treatments.

Garcia, whose own research focuses on the genetic underpinnings of lung diseases such as pulmonary fibrosis, has served as chief of the Division of Pulmonary, Allergy, and Critical Care Medicine at Columbia’s Vagelos College of Physicians and Surgeons since 2020. She also holds appointments at Columbia’s Institute for Genomic Medicine and its Center for Precision Medicine and Genomics.



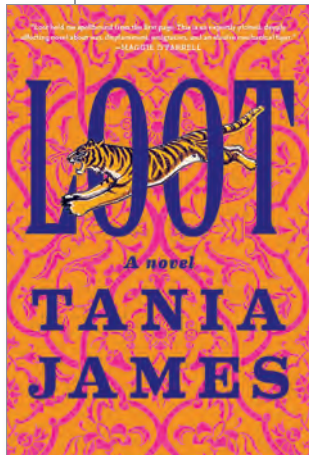
CPMI, since its creation in 2014, has promoted collaboration between Columbia scientists and physicians to improve clinical care in nearly all areas of medicine, including oncology, cardiology, reproductive medicine, and neurology. This has led to the development of new genomic-screening and diagnostic techniques, which enable doctors to spot distinct aspects of a patient’s physiology and customize treatments accordingly.

In leading CPMI, Garcia succeeds the initiative’s founding director, the molecular biologist Tom Maniatis.

Loot

By Tania James '06SOA (Knopf)

Loot, the ambitious third novel from Tania James '06SOA, charts the sprawling fictional journey of an actual historical artifact across two centuries (eighteenth and nineteenth), eight different narrative perspectives (from an Indian sultan to a British seaman), and four geographic backdrops (India, the open seas, France, and England). These elements keep *Loot* amply supplied with colorful characters and elaborate, page-turner plots (translation: this novel is fun to read), but they also enable James to accomplish



something much rarer: a fresh, genuinely inclusive look at the myriad ways that European colonialism affected people from all walks of life.

The action begins in 1794 in India's Mysore kingdom, where the sovereignty of its ruler, Tipu Sultan, has been rattled by recent skirmishes with the English. As

part of the peace treaty brokered with the British commander Lord Cornwallis, two of Tipu's sons have been held hostage, as collateral against the possibility that Tipu will renege on the treaty's terms. Now, thanks to the sultan's vigilance, his sons are being returned, and he wants to bestow on them a "gift of such grandeur and ferocity that it will silence all memory of the boys' exile."

Abbas, a local Muslim boy of seventeen, is a talented wood carver who has made elaborate toys for one of the sultan's consorts. But he is shocked to learn that the sultan has chosen him to work with Lucien Du Leze, an exiled French clockmaker in the sultan's court, to build a life-size wooden version of a bronze rifle ornament depicting a tiger devouring a European ("I want the teeth *planted* in the neck of

the infidel," Tipu commands). This creation will be a "great moving toy" — an automaton that also plays music. Abbas and Du Leze have exactly six weeks to make it.

The sultan is so pleased by the finished product that he flashes a rare grin at the public unveiling (though his newly freed sons seem more interested in securing the British sweets they enjoyed in captivity than in the wondrous toy). But inevitably, another war with England breaks out, and this time Tipu goes into battle and is killed on the field. Abbas also joins the fight but survives by feigning death atop a corpse. The automaton, "Tipu's Tiger," becomes a spoil of war, seized by the victors and destined for their homeland.

From this point on, the fate of Tipu's Tiger becomes the driving force of James's increasingly picaresque narrative. Abbas is obsessed with finding the automaton, his finest achievement. He sets sail for France, first aboard an East India Company cargo ship — a riveting, heartbreaking interlude conveyed through the diary of a soulful English seaman who befriends Abbas — then as a captive on a French pirate ship. Arriving finally at Du Leze's clock shop in Rouen, Abbas discovers that his mentor has died and the shop is now being run by Jehanne, an Indian-French girl he knew in Mysore.

Jehanne joins Abbas's quest to find and reclaim the automaton, and the two hatch a scheme that takes them to Cloverpoint Castle, one of England's grand country houses, occupied by two of the novel's most vibrant characters — Lady Selwyn, a spirited English widow whose titled husband has died of dysentery in India, and Rum, the lord's former aide-de-camp who is now Lady Selwyn's land agent and secret on-call lover. (Rum's rhapsodic appreciation of his seventy-two-year-old paramour's sexiness is one of the novel's great treats.)

After some plot twists that are as unpredictable as they are compelling, Rum finds himself on his way to Rouen, alone. Stop-

ping at an inn in Canterbury, he is asked by an Englishman where he is from. When Rum says India, the man asks, “So what brings you to England from all the way over there?” Rum is tempted to respond with a phrase that, in an introductory note, James attributes to the British–Sri Lankan activist and writer Ambalavaner Sivanandan: “*I am here because you were there.*” Rum holds his tongue and settles for a simple description of his job at Cloverpoint Castle, but that powerfully eloquent unspoken answer reverberates through every page of this endlessly inventive novel. Indeed, it could be voiced most aptly by Tipu’s Tiger itself, currently on display in London’s Victoria and Albert Museum.

The painful paradox of the automaton’s real-life fate is at the heart of James’s achievement here. While she never breaches the temporal bounds she has set for her story, it is nonetheless infused with a twenty-first-century acuity, particularly in relation to such themes as the evils of colonialism, the dilemma of whether to return plundered cultural treasures, the irrationality of class systems and racial and religious animus, and the tragedy of entrenched homophobia and misogyny across cultures. Amid this banquet of food for thought, *Loot* delivers a good old-fashioned yarn full of intrigue, adventure, romance, and surprises.

— Lorraine Glennon



Clockwise from top left: Edna Lewis, Yewande Komolafe, Klancy Miller, and Carla Hall.

Celebrating Black Chefs

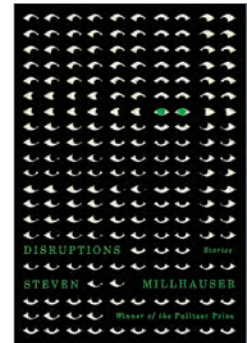
As a pastry chef and recipe developer, **Klancy Miller '96CC** often felt she didn’t have many role models in her chosen profession. Hoping to learn from and celebrate other Black women working in food and wine, Miller founded a print magazine called *For the Culture*. Now she has turned that material into a book of the same title — a gorgeously illustrated collection of interviews, profiles, and recipes from some of the leading ladies of the industry.

Disruptions

By **Steven Millhauser '65CC** (Knopf)

In “The Little People,” a fable-like story in *Disruptions*, the latest collection by Steven Millhauser '65CC, the narrator describes what so enchants a town’s regular-size inhabitants about their two-inch-tall counterparts: “What fascinates us is the sense of an invisible world perpetually on the verge of becoming visible.” The same might be said about the experience of reading a Millhauser short story. In the author’s hands, the familiar — the dawn of summer in an American suburb, a high-school English lesson, a late-night walk — transmutes, unmasking the surreal lurking under a placid surface.

Millhauser may be best known for his novel *Martin Dressler*, which won the Pulitzer Prize for fiction in 1997, but to avid fans, he is an underappreciated master of the short story, earning comparisons to the likes of John Cheever and Jorge Luis Borges. The author has characterized the form as “unassuming in manner,” concealing a secret ambition: to contain a



world in a Blakean grain of sand. Across nine previous collections, Millhauser has proven his skill at crafting meticulously detailed worlds in miniature — uncanny microcosms that expose the faults of the American way of life. *Disruptions*, which brings together eighteen stories, demonstrates that the master’s gifts have only sharpened with time.

Many of the stories in *Disruptions* take place in the suburbs — specifically, in virtually identical small towns in the author’s home state of Connecticut. These quiet suburbs, the kinds of places with “tree-lined streets and green lawns,” seem the embodiment of the American dream, until some oddity punctures the perfection.

BOOKS

In “The Little People,” the disruption comes from a clash between the two groups within the town. What begins as a humorous series of encyclopedia-like entries on this tiny race develops into a meditation on the difficulties of connecting across difference. In this town, the risks of integration are tangible: Little People may be gravely harmed by “our monstrous children, our cats and dogs the size of buffalos, our sneezes like windstorms.” Among the bigger people, the presence of the Little People triggers philosophical turmoil: “They are like us in every way, except one. It is this difference that creates unease and fascination in equal measure. If, by some miracle of science, they could suddenly grow to our size, we would experience a terrible sense of loss, though exactly what would be lost is difficult to say.”

This experience of an overwhelming feeling or urge that transforms the local order permeates a handful of

other stories. In these, the disruption comes when a suburb is taken over by groupthink, in some cases more seemingly benign than others. “Theater of Shadows” sees the town suddenly enamored with “those creatures born of the sun, but rebelling against the light” — shadows — in a sort of reversal of Plato’s allegory of the cave. In “The Summer of Ladders,” a fad spreads of erecting and climbing taller and taller ladders in the town’s meticulous yards. In “Green,” the townspeople tear up those yards, replacing them with elaborately patterned stones or tiles. In each story, new businesses and products spring up to capitalize on — and spur — the frenzy; in each story, consumption fails to satisfy, even as it reaches new extremes. If the structure and conceit repeat, the revelations don’t diminish.

At other times, Millhauser zooms in on individual members of the commu-

nity, studying moments that change their lives irreparably. The most fantastical is in “Kafka in High School, 1959,” a tour de force that imagines the novelist as an American teenager, his famous anxieties centering on a blond girl in his AP English class. Quieter but no less ambitious is “The Change,” a pitch-perfect inhabitation of the mind of an adolescent girl walking home alone at one in the morning, each long sentence capturing the simultaneous freedom and unease she feels. We await a predictable horror, but this is a Millhauser story — even if nothing bad happens, strangeness lingers.

With each story in *Disruptions*, Millhauser trains the reader to brace for some bizarre intrusion into our reality. The pleasure comes from seeing how far he can stretch boundaries before they ricochet back into place.

— Kristen Martin '16SOA

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Eve

By Cat Bohannon '09SOA, '22GSAS (Knopf)

There's a concept in biology called "the male norm," which means that scientists investigating fundamental questions about living organisms use predominantly cis-male subjects. "The male body from mouse to human is what gets studied in the lab," writes Cat Bohannon '09SOA, '22GSAS in her book *Eve: How the Female Body Drove 200 Million Years of Human Evolution*. "Unless we're specifically researching ovaries, uteri, estrogens, or breasts, the girls aren't there." So, yes, if you are a woman, medical science has not been focused on you and often has a rather vague idea of how your body metabolizes drugs, responds to pain, and fights off disease, especially when pregnant.

Bohannon, an essayist, poet, journalist, and researcher with a Columbia PhD, argues that this paradigm must change and lays the groundwork in her compelling first book. Starting with the first "Eve" of 205 million years ago — a lactating creature that looked like "a cross between a weasel and a mouse" — she proceeds through the milestones of female development to modern times. Each chapter walks us through a step in this important journey — the first placental Eve, the first tool-using Eve, the first upright-walking Eve, and finally the first large-brained, speaking femme of our own species, *Homo sapiens*. Along the way, we learn that mother's milk is full of "prebiotics" that feed the nascent bacteria in babies' guts; that ladies beat gents at detecting the faintest smells; and that women's brains go through massive fluxes, shrinking during pregnancy and expanding afterward.

Bohannon pays special attention to that so-called "female brain," as well as myths and misconceptions surrounding it. Girls outperform boys in every school subject before puberty, but

then their grades tank. Until they're about fifteen years old, boys and girls have similar IQ scores; then the girls start lagging. And while girls still tend to test better in language, boys outdo them in math. Does this mean that adult men are smarter than adult women? It might well depend on the test's design, the author argues, since "certain IQ test questions seem to reward male brains."

With grit and wit, Bohannon marvels at the blunders and wonders of evolution. If mallards can discard sperm after unwanted intercourse, why haven't our bodies "evolved internal mechanisms to support female reproductive choice?" she asks. And our reproductive system has become increasingly dangerous:



walking upright made pelvises and birth canals smaller, while having larger brains made babies bigger. "It's hard to fit a watermelon through a lemon-size hole," notes Bohannon, echoing the woes and fears of every mother.

Menopause might be a blessing of sorts, especially when viewed in its larger context. Most species die once they stop procreating, but human females "keep living past our predicted — and biologically tuned — expiration date." Bohannon posits that human society needs grandmothers because, having lived long enough, they know



what to do in times of crisis. A post-menopausal woman can't birth new babies, but she can prevent other people's kids from dying — and adults, too. A society's chances of survival increase when someone remembers prior floods, famines, wars, or pandemics.

While women live longer than men on average, their general health needs aren't well met. Women get fewer heart attacks than men, but more die from them, because their symptoms are different and often overlooked. Women are less susceptible to lung disease, but if they get it, they are treated less aggressively than men. Women are more likely to be prescribed pain medications but often require higher doses to feel the same level of relief as men, which can lead to undertreatment or overtreatment.

There are reasons for this oversight, Bohannon explains. For decades, experiments on women of childbearing age were deemed inhumane and dangerous for them and their future children. But the resulting dearth of data is detrimental to women worldwide. We now understand that female bodies can't be treated according to "the male norm," and policymakers must urgently take note. *Eve* brings this overdue revelation to the forefront of medicine — and society, too. Readers, regardless of their gender, are in for an eye-opening journey with a growing appreciation for the Eves who brought them into this world.

— Lina Zeldovich '12JRN



Students in the CSSW Cinema School program engaging in thoughtful discussion.
Photo credit: Dorothy Robinson



Carrying on the Tradition

As a young student, Gilda Serrano '72SW could not have imagined the trajectory her life would take. With the encouragement of two counselors, she found herself on a path to attending Columbia. A full scholarship gave Gilda the opportunity to earn her Master of Science in Social Work and led to a fulfilling career in counseling—the gift of her early mentorship coming full circle.

Now retired, she continues to pursue her passion for helping others through a gift in her retirement plan to be used to endow the Gilda L. Serrano Santiago Scholarship Fund and give future Columbia School of Social Work students their own opportunity to follow in her footsteps.

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READING LIST

New and noteworthy releases

FOREIGN BODIES

By Simon Schama

In March 2020, as the COVID-19 virus spread, the world shut down in a way that felt unprecedented. In fact, that was far from the case. In his gripping new book, Columbia history and art-history professor Simon Schama chronicles some of the infectious diseases — from smallpox to cholera to the bubonic plague — that have crippled societies and the scientific advances that saved them. It's an inspiring collection, full of human ingenuity and courage, and a welcome reminder of the power of vaccines and of collective action.

THE GUEST

By Emma Cline '13SOA

We meet Alex — the protagonist of Emma Cline's new novel — as her latest boyfriend, Simon, is kicking her out of his prize Hamptons house, five days before his annual Labor Day party. Alex has nowhere to go — she's on the run from something or someone, relying on her youth, charm, and looks to get by. She thinks she can win Simon back at the party, but she has to make it until then, navigating the playground of the rich with nothing more than a backpack and the ability to con her way into food, shelter, and entertainment. It's a deceptively simple story, with not many people to worry for, but the delicious tension that Cline is able to craft makes it a real page-turner.

DIRECTIONS TO MYSELF

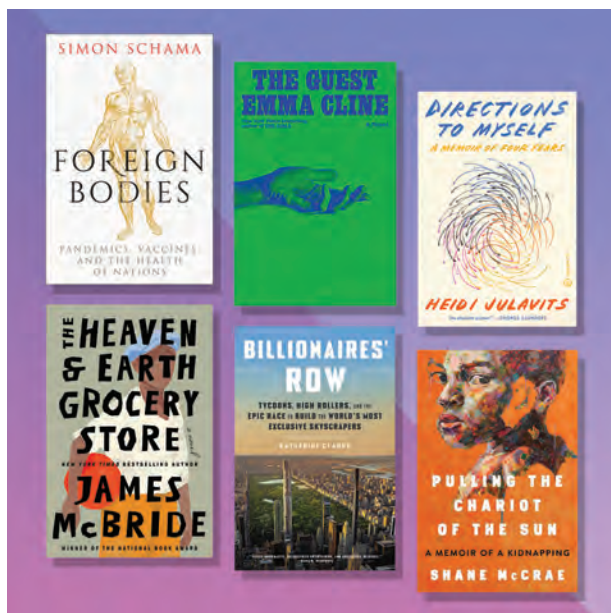
By Heidi Julavits '96SOA

When Heidi Julavits was growing up, in rural Maine, her family often consulted an outdated nautical guide full of "cautious wisdom transferable to people, lost or not, without plans to ever leave land." It would come in handy again in 2014, when Julavits was in need of some direction. Campus sexual assault was at the forefront of the national conversation, and Julavits, a Columbia professor of writing, found herself thinking about her young son and how to responsibly steer him through "the end times of childhood." Toggling between her daily life in Manhattan and summers in Maine, she captures the ordinary, usually forgotten moments that make up a particular season of life.

THE HEAVEN & EARTH GROCERY STORE

By James McBride '80JRN

In the Chicken Hill neighborhood of Pottstown, Pennsylvania, Jews and African-Americans lived side by side for decades, working together to survive a world that was unkind to them. At the heart of James McBride's latest novel are Moshe and Chona Ludlow, an Orthodox couple who run, respectively, the All-American Dance Hall and the Heaven & Earth Grocery Store, both havens for Blacks and Jews alike. But in June 1972, workers redeveloping the area find a skeleton at the bottom of a well,



unearthing secrets long buried and providing the perfect setup for McBride's rollicking, fast-paced, and sharp-as-ever storytelling.

BILLIONAIRES' ROW

By Katherine Clarke '10JRN

Over the course of the last decade, the area just south of Central Park has transformed profoundly, with tourist-trap restaurants and schlocky souvenir shops giving way to a series of sleek, ultra-luxury high-rise condominium towers, built to "serve the richest people on earth." In her fascinating new book, *Wall Street Journal* reporter Katherine Clarke tells the story behind these \$100 million condos and the people who buy them. While it's a small stretch of real estate, Clarke makes a compelling argument that Billionaires' Row — erected in the wake of the Great Recession — illuminates the staggering wealth disparity now prev-

alent not just in New York City but in the country as a whole.

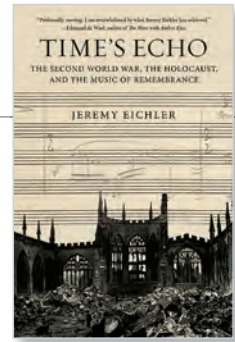
PULLING THE CHARIOT OF THE SUN

By Shane McCrae

When Columbia writing professor Shane McCrae was three years old, his white-supremacist maternal grandparents kidnapped him from his Black father and took him to suburban Texas, where they raised him. It took years for McCrae to unravel the mystery of his upbringing and to understand his own Blackness, which his grandparents denied him. McCrae, a Guggenheim fellow, is the author of several poetry collections, one of which was a finalist for the National Book Award. This memoir, about the traumas of his childhood, is his first narrative work — and its powerful lyrical prose underscores McCrae's poetic soul.

Music as Time Travel

In *Time's Echo*, *Boston Globe* classical-music critic Jeremy Eichler '15GSAS highlights compositions by Strauss, Schoenberg, Britten, and Shostakovich to show the myriad ways music connects us to the past



Columbia Magazine: Why, among all the arts, is music so connected to memory?

Jeremy Eichler: First, of course, music triggers what Proust called “involuntary memory” — a song pops up on the car radio and we’re instantly transported back to high school. But with classical music there is also a creator putting notes on paper and an interpreter pulling those notes off the page. A composer can distill worlds of thought and experience, and then two hundred years later someone standing twenty feet away turns that score into music that resonates in our bodies, and the past is quite literally speaking in the present.

CM: Your book focuses on artistic responses to the Second World War and the Holocaust. Why explore music from nearly eighty years ago?

JE: Sadly, we will soon no longer have a living link to that time through the generation that endured those horrors and can tell their own stories. I wanted to explore how music might provide other routes to know the past — not just intellectually but also viscerally.

Music can bring the past out of what one writer called “the cold storage of

history.” It’s true more information about the past is easily available now. We can sit in our pajamas on the sofa and surf the contents of the Cairo Genizah or tour the ruins of Pompeii. But that yields information, not knowledge.

CM: You advocate for what you call “deep listening.” When is listening deep?

JE: When a listener brings an active sense of music as an echo of past time, as culture’s memory. When a listener acts not as a passive receptacle for sounds to wash over but as someone ready to receive messages from the past that might otherwise be whispered into the void. The book explores the reciprocal enchantment of music and history.

CM: The history here includes the tragic collapse of the hopes of the German Enlightenment, which was in many ways a German–Jewish co-creation. How do you help the reader feel the severity of this rupture?

JE: Unlike an academic monograph, a work of nonfiction for the general public can move the argument forward through the prism of true stories. So I tell of an oak tree thought to be beloved to the poet Goethe as he wrote and thought. A century later, in the Nazi era, that oak stood within the walls of Buchenwald concentration camp. Ironically, in the same camp, prisoners were made to replicate the writing desk of Friedrich Schiller, author of the “Ode to Joy,” the quintessential humanist paean set to music by Beethoven. And then when Allied bombs destroyed Goethe’s oak, a prisoner smuggled a fragment back to the barracks and carved a sculp-

ture resembling a death mask, titled *The Last Face*, considered one of the first Holocaust memorials. Those are details I hope a reader can latch on to.

CM: That story shows the resilience of the humanistic ideas that the Nazis tried to crush.

JE: Absolutely. The critic Walter Benjamin spoke of “fanning the spark of hope in the past,” in ideas that are no less valid for not having succeeded. And so the book also looks at the embodiment in music of ideals that got buried in the rubble of history.

A prime example is the German concept of *Bildung*, roughly translated as “personal ennoblement through humanistic education.” In this worldview, the arts were seen not as merely decorative (today, classical music is often presented for “relaxation”) but as forces that can work a change in us, creating a different kind of awareness, a life of aesthetic grace, a sense of empathy.

CM: What change would you like *Time's Echo* to achieve?

JE: I hope it opens up avenues for readers to arrive at a more textured, richly felt connection to the past so that they can see how music helps us feel that worlds that came before are organically connected to us and have led to the world we live in today. I want readers to understand that we can respond not only to the immense tragedies of the era but also to the incredible idealism in the preceding world that those tragedies destroyed. Through these travels in history we can access moments of hope that might just give us tools for thinking about our future.

— Jerry Kisslinger '79CC, '82GSAS

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The Maps That Shook the World

To become a top cartographer, Marie Tharp had to hit rock bottom

Marie Tharp blew in to New York from the Midwest in 1948, looking for work. Twenty-nine years old and armed with degrees in geology and math, Tharp inquired at Columbia, where she was told to contact Maurice Ewing, director of the new Lamont Geological Observatory, now the Lamont-Doherty Earth Observatory (LDEO). Not known for his high regard for women scientists, Ewing wasn't sure what to do with Tharp. Finally he said, "Can you draft?"

Tharp had sketched maps in grad school, and her father had made soil-survey maps for the government. Mapmaking was in her DNA. Ewing hired her, and she became the assistant to a grad student, Bruce Heezen '57GSAS. Over the next decade, the three scientists collaborated and collided, jolting the field of geophysics and reshaping our understanding of the mechanics of the planet.

Heezen worked on research vessels in the North Atlantic, taking soundings of the sea floor with sonar. At the time, women weren't welcomed on these ships, so Tharp stood over drafting tables in Lamont Hall and plotted the data, using tens of thousands of soundings made by Heezen and others to discern the subtle features of the ocean floor. She completed six west-east elevation profiles of the North Atlantic sea floor at different latitudes. All the profiles accounted for the Mid-Atlantic Ridge, a north-south undersea mountain range first detected by oceanographer Matthew Fontaine Maury in 1853.

Tharp then noticed something odd: while each profile had its own distinct topography, all six bore the same V-shaped indentation running down the middle of the mountain chain. Tharp thought it might be a rift valley — formed where magma had erupted, splitting the ridge in two and pushing it apart.

This was a potential bombshell. A rift valley would support the theory of continental drift, which held that all the continents were once a single land mass and have been separating ever since. The idea, advanced by German geophysicist Alfred Wegener in 1912, was widely scorned by scientists; Ewing was fiercely anti-drift. "If you brought it up, people looked at you funny," says LDEO researcher Bill Ryan '71GSAS, who had an office next to Tharp's. "Marie Tharp was much more open to continental drift." At the time, Heezen sided with Ewing, actually dismissing the rift valley as "girl talk." But Tharp was undeterred.

Meanwhile, Heezen had taken on a project for Bell Laboratories, plotting the epicenters of marine earthquakes. He found that these epicenters were located not just along the Mid-Atlantic Ridge but within Tharp's speculative valley. By 1953, Heezen was convinced that a continuous underwater mountain range wound around the planet like a baseball seam — and that a central valley ran through it. Heezen had come around to the idea of the rift valley.

For Ewing, any such claim was sacrilege. But in 1959, Jacques Cousteau, a rift-valley skeptic, crossed the Atlantic towing a submerged movie camera that, astonishingly, revealed the cliffs that framed Tharp's valley. That same year, Tharp, Heezen, and Ewing published the first map of the

North Atlantic sea floor: a bird's-eye view of the terrain as it would look without water.

In its varied topography of mountains, ridges, and canyons, the map was revelatory: many had presumed the sea floor to generally be flat. But despite the map's success, a long-simmering academic feud between Ewing and Heezen intensified in the 1960s, threatening future mapping projects. Ewing couldn't fire Heezen, who was tenured, so he fired Tharp instead. But Heezen, funded by the Navy, continued his research while Tharp worked from home, supported by Heezen's grant.

Tharp and Heezen produced other maps, culminating in their 1977 panorama of the entire ocean floor, painted by the artist Heinrich Berann. Heezen died that year at fifty-three.

Tharp died in 2006 at eighty-six. Her accomplishments run deep: her maps became classics, and her rift valley gave rise to the theory of plate tectonics, which holds that the earth's crust and mantle are fractured into sections that fit together like puzzle pieces. She reconciled with Columbia after Ewing left in 1970 and later stated that she had no regrets. "I was lucky to have a job that was so interesting," she once said. "Establishing the rift valley and the mid-ocean ridge that went all the way around the world for forty thousand miles — that was something important."

The US Navy agrees. Earlier this year, Navy secretary Carlos Del Toro announced that the name of the survey ship *Maury* had been changed to *Marie Tharp*. History notes that Tharp didn't board a research vessel until 1968. Now, finally, her ship has come in. — *Paul Hond*



Marie Tharp and Bruce Heezen

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