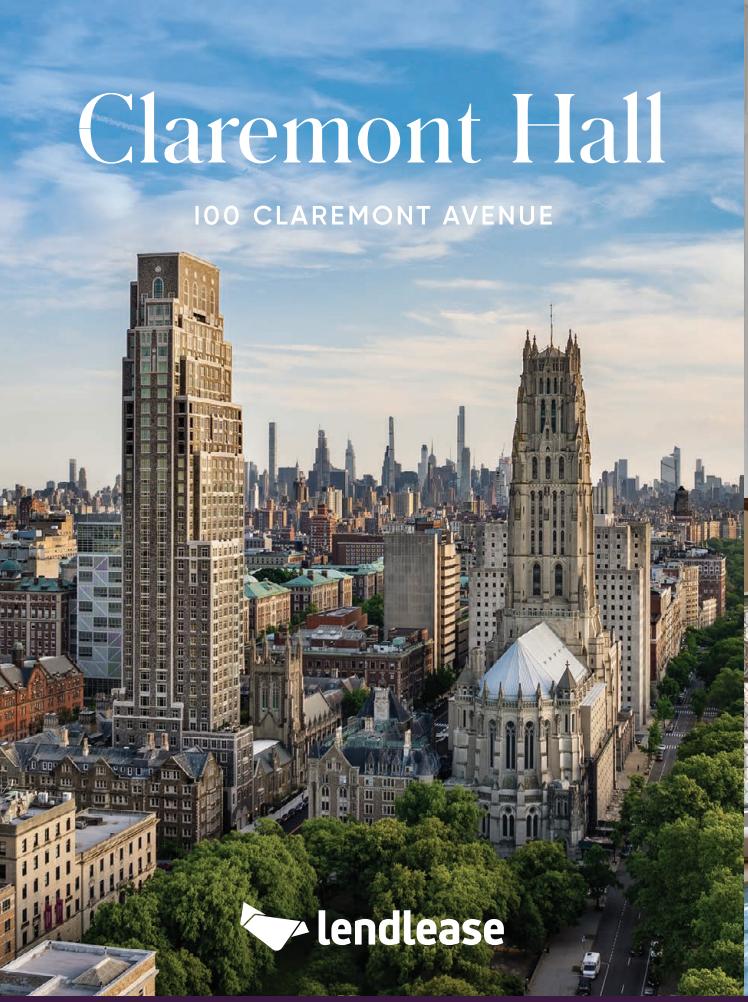
SPRING/SUMMER 2025

COLUMBIA

50TH ANNIVERSARY ISSUE



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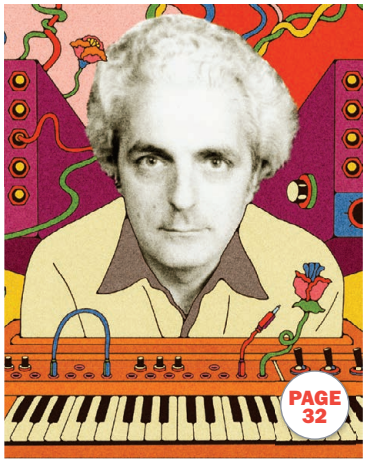

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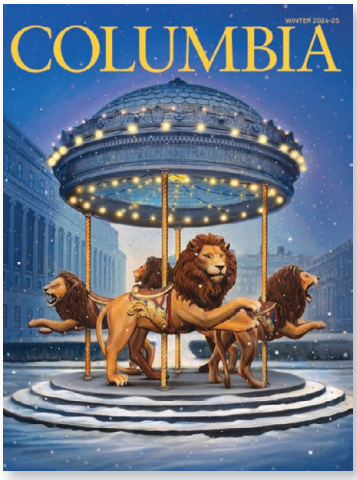


FEEDBACK

PRINT FAN

Just a note to tell you how much I appreciate getting *Columbia Magazine* in the mail. It is a really high-quality publication. I'd be much less likely to read it if I only got it electronically. I enjoy having it on the dining room or bedside table, studying the ads and lingering over the artwork.

Chris Zurawsky '90JRN
Pittsburgh, PA

WINE PAIRING

For the sake of both accuracy and the Columbia Alumni Wine Industry Network, your article "The Myth of Healthy Drinking" (Explorations, Winter 2024–25) could have included the potential benefits of pairing wine and food.

The results of a study published in the August 2024 *Journal of the American Medical Association* generally supported the gist of your article. But it added: "Wine preference and drinking only with meals showed small protective associations with mortality, especially from cancer, among drinkers with health-related and socioeconomic risk factors, and these 2 drinking patterns attenuated the excess mortality associated with high-, moderate-, and even low-risk drinking."

Donald L. Drakeman '79LAW
Hilton Head, SC

PRESS POSTMORTEM

I enjoyed reading Paul Hond's article "Mainstream Media Gets Full-Court Press" (College Walk, Winter 2024–25), but mostly because of the spectacle of how clueless the mainstream media still is, even while licking its wounds and attempting an honest postmortem on its 2024 behavior.

As a pastor, I am sensitive in my counseling to how folks can deceive themselves and only scratch the surface of real-life change, and I try to get into the deeper issues of life and thought. I see the same thing here with the media, as reported by Hond: "[Errin] Haines found that some in the mainstream press brought two preconceived narratives to their reporting; the assumption that abortion would be a decisive boon for the Democratic candidate Kamala Harris and the even bigger assumption that, given all that was known about Trump … the American people couldn't possibly make this choice again."

If this article represents the media overall, it seems it isn't coming close to digging into the decades-long developments that led to its tripping over its own feet this past year.

Mark DuPré '81GS, '84SOA
Brockport, NY

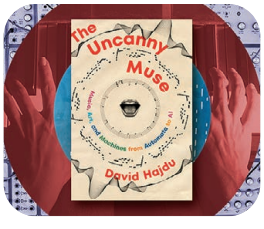
UNDERSTANDING HOMELESSNESS

I was enlightened and heartened by your in-depth article on Rosanne Haggerty's work to solve the problem of homelessness in American communities ("Off the Streets," Winter 2024–25). But one phrase in that otherwise outstanding piece was jarring: the author

3 WEB STORIES YOU MIGHT HAVE MISSED

20 Movie Musicals with Columbia Ties

Bob Dylan 1965: The Columbia Connection



Why Art Will Survive the Age of AI: A Q&A with Journalism Professor David Hajdu

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referred to "idlers, drunks, addicts, and swindlers" when describing a slice of the unhoused people interviewed by Ellen Baxter and Kim Hopper for their 1981 publication *Private Lives / Public Spaces*, contrasting them with the "dishwashers, housekeepers, messengers, and factory workers" who also made up part of this population. This language hearkens back to the rhetoric of reformers of earlier eras, who wrote about the "undeserving" and "deserving" poor. To use it in this article — where the housing-first model and provision of supportive services for people with mental-health and substance-use issues are highlighted as successful strategies — was shocking to me.

Cybele Merrick '89CC, '90GSAS
Lyme, NH

Thank you for your Winter 2024–25 issue of *Columbia Magazine*. As always, it was excellent.

I found the article about Rosanne Haggerty's work amazing. However, I have to question why, in a full seven-page article about homelessness, the impact of the massive wave of immigrants on homelessness was not even mentioned once.

Sal Candido '86BUS
Nauvoo, IL

There is no consensus among economists about the impact of immigration rates on housing availability, in part because newcomers often provide low-cost labor that accelerates construction, helping to offset the demand they create. — Ed.

AGATA NOWICKA

FINE AND DANDY

I was delighted by your Backstory article tracing the origins of the character whose image still graces covers of the *The New Yorker* ("The Alum Who Invented Eustace Tilley," Winter 2024–25). I was particularly taken by the connection of that image to a nineteenth-century French dandy — in fact, the king of the dandies: Alfred, Count D'Orsay. Rea Irvin's illustration closely resembles Daniel Maclise's 1830s portrait of him. The son of one of Napoleon's generals, the count was a great wit and comic, famous for his ultra-modish style of dress and also an artist and portraitist in his own right.

D'Orsay struck up a friendship with his fellow dandy, the equally prodigal Benjamin Disraeli, future prime minister and favorite of Queen Victoria. Most notorious for their prodigious spending and borrowing, they covered each other's debts, which only augmented them and the likelihood of debtor's prison, a prospect that haunted both of them. At the end of D'Orsay's life, his debts caught up with him and he fled to Paris; Napoleon III appointed him director of fine arts, but that career was extinguished by disease and death. This all comes to mind for me from a Jacques Barzun–Lionel Trilling seminar discussing the dandies and dandyism but nothing, as far as I remember, about Eustace Tilley.

Frederick M. Schweitzer '72GSAS
Bronx, NY

QUESTIONS? COMMENTS?

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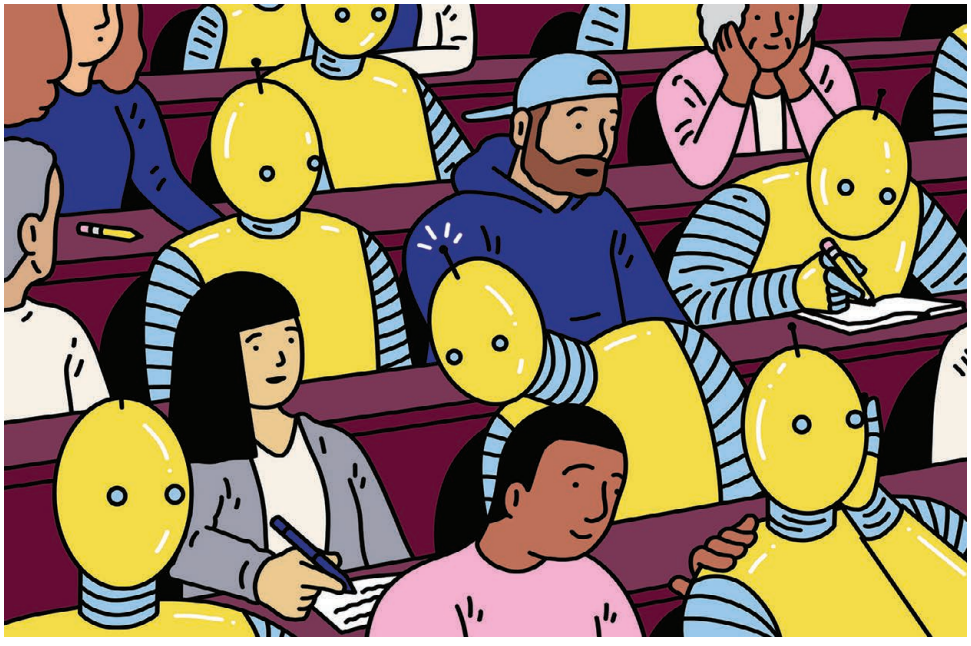
Letters may be edited for brevity and clarity.

COLLEGE WALK

NOTES FROM 116TH STREET AND BEYOND



SAM ISLAND

Hi, Robot

Humanity speaks at Columbia's inaugural AI Summit

Sure, it would have been cute to run the hundred-page transcript of Columbia's recent AI Summit through ChatGPT and receive, in seconds, a concise summary of the day-long event and then publish that as a short article to illustrate the utility and growing influence of artificial intelligence. But such an exercise would miss the point. In fact, the summit, which showcased Columbia's leadership in developing, applying, and understanding this transformative technology, demonstrated that as adept as AI has become, human beings are still firmly in the driver's seat (driverless AI-guided cars notwithstanding).

Organized by Columbia's Data Science Institute and held on the Morningside, Manhattanville, and medical campuses, the AI Summit featured seven panels of Columbia faculty from a range of disciplines, including science, sociology, public health, business, law, architecture, economics, journalism, and the arts. The panelists explained how AI can benefit everything from medical research to sustainable design to workplace safety. GSAPP architecture professor David Benjamin '05GSAPP described using AI-powered generative design to develop energy-efficient structures; behavioral ecologist David Sandalow, the inaugural fellow at SIPA's Center on Global Energy Policy, explained how AI is being used to predict solar and wind patterns to improve green-energy production; and systems biologist Raúl Rabadán discussed his use of AI to reveal hidden molecular interactions within human cells (see page 43).

The panelists theorized about AI's potential, limitations, and social impacts and asserted that while AI surpasses the human brain in computational power, it falls short in emotional, social, creative, and tactile intelligence. AI can do "a lot of things really shallowly," said computer scientist Lydia Chilton, while humans are "better at going deep and being experts." Keynote speaker Sami Haddadin, a roboticist at the Mohamed bin Zayed University of Artificial Intelligence, talked about the progress and difficulty in getting AI robots to move adroitly and interact safely and reasonably with their surroundings. There was general agreement that, as computer scientist Christos Papadimitriou said, "AI is still far behind human brains."

But the biggest questions centered on ethics and the need to regulate AI, which is susceptible to misuse. Garud Iyengar, director of the Data Science Institute and the organizer of the summit, emphasized that Columbia, with its world-renowned faculty across disciplines, was "uniquely positioned" to "ensure AI reflects human values and serves the public good." (To learn more, visit ai.columbia.edu.)

Some panelists saw an uphill battle in taming AI. Joseph Stiglitz, the Nobel-winning economist, said the moneymaking incentives of AI firms are "not aligned with society"; computer scientist Rachel Cummings referred to a "Wild West" where people submit personal information to AI tools without knowing what's happening to the data; law professor Clare Huntington '96LAW pointed out that AI services like talk therapy aren't held to any licensing standards; and visual-arts professor Naeem Mohaiemen '19GSAS said he expected "massive dislocations in the valued, compensated work of creatives" due to AI's ability to generate text, art, and music. Sociologist Gil Eyal, meanwhile, spoke of a societal crisis of trust in experts and of a widespread notion that because human judgment is biased, it should be replaced with the "mechanical objectivity" of AI — a problem in light of computer scientist Elias Bareinboim's remark that AI systems, since they are trained on data from the real world, which is also biased, are "prone to unfair and unethical decision-making."

For all the faculty firepower on display, the biggest star of the AI Summit was embodied AI — better known as robots — which in 2025 are assisting in surgery, laboring in industry and agriculture, and acting as home companions. It's a bright new world, to be sure, though the cultural baggage of movies and books depicting intelligent machines gone rogue still weighs. Law professor Tim Wu, a scholar of technology policy, invoked the First Law of Robotics, as set down by Isaac Asimov '39GS, '48GSAS, '83HON in his 1950 sci-fi collection *I, Robot*: "A robot may not injure a human being or, through inaction, allow a human being to come to harm." Wu warned that we were poised to "blow through that quickly and end up with unmanned, artificially intelligent killing."

The lesson of the day was that AI's future is still up to us. As the panelists made clear, AI promises to affect our health, our work, our environment, and our knowledge and will reshape life as we know it. "We need to start preparing for this new world now," said law professor Huntington. "The bots, they're not just knocking on the door. They are already in the room." — *Paul Hond*

JOSH WANG / COLUMBIA ATHLETICS

LIONS MADNESS

On March 20, the Columbia women's basketball team defeated the Washington Huskies 63–60 in the First Four round of the NCAA tournament — the first March Madness victory in the team's forty-year history. "I don't think there's a limit to what we can do," Columbia women's basketball coach Megan Griffith '07CC told this magazine last fall, before the 2024–25 season. The Lions then rolled to a 23–6 record, including a league-best 13–1 in the Ivies, followed by their ecstatic win over Washington. Though they lost their next game to West Virginia and were eliminated from the tournament, the 2025 Lions went out with a mighty roar.

Printing with the Stars

An exhibit at Butler Library expands the universe of the mind

Above: Jeannie Rhyu. Inset: Rhyu's *Start with a Dream* (detail).

As an artist, Jeannie Rhyu '17CC always aims for the stars. Nothing inspires her more than the glittering vault of the night sky: for her, stars have been the great connectors of humanity across time and space, and she is particularly fascinated by the role these cosmic beacons have played in guiding the migration stories of humankind.

Born in Korea, Rhyu grew up in Canada and has lived in New York since her undergrad days. "I'm an immigrant myself and call many places home," she says. "What I love about the stars is that they have no borders. They are everyone's. They are universal."

When Rhyu returned to campus in 2024 to pursue her MFA, she visited the Rare Book and Manuscript Library (RBML) on the sixth floor of Butler. She often uses historical artifacts as references in her work and wanted to know what sorts of astronomical materials might be hidden in the library. RBML director Courtney Chartier showed her a few of the treasures: centuries-old books by Ptolemy, Galileo, and Chaucer (the poet of *The Canterbury Tales* was also an astronomer); antique star charts and navigational maps; and astrolabes — devices used to calculate the position of the sun and stars — from Persia, Italy, and Japan. Rhyu was over the moon.

Akira Kawahata, from his *Seleno-* series.

The unity of art and science was on full display and inspired Rhyu to broaden her ambitions. "I had wanted to curate a show in the library to showcase my etching," she says. "But when Courtney showed me these objects, I realized I needed to bring people together by including my MFA cohorts."

She sent out an open call for artworks that related to the stars. Sixteen of her fellow students agreed to participate, contributing drawings, etchings, paintings, and photographs that Rhyu juxtaposed with RBML artifacts in an exhibit called *Celestial Navigation*, on view through May 26. (Anyone without a valid Columbia ID can make an appointment to see it by contacting Courtney Chartier at cc4785@columbia.edu.)

The artists' varied interpretations of the exhibit's celestial theme include Rhyu's own etching *Geminid Shower*, showing industrial structures huddled under a night sky streaked and bursting with blazing meteors, or shooting stars. Black-and-white photographs by Akira Kawahata show dramatic arcs of light over Manhattan — long exposures of the moon's movement across the firmament. And Grethell Rasua's *Constellations* incorporates the artist's own sunburnt skin — a few peeling strips, scanned and printed. "Our

TOP LEFT: FRANCISCO JAVIER RAMIREZ

bodies are maps," Rasua says, "and I see this work as a map."

Only at the RBML could you find such creations mingling with a mid-1400s edition of Chaucer's *A Treatise on the Astrolabe* (with drawings explaining the workings of this ingenious instrument), or an original copy of Galileo's 1610 pamphlet *Sidereus nuncius*, or *Starry Messenger* (in which Galileo, using the new technology of the telescope, reports astonishing news of craters on the moon and satellites around Jupiter), or a sixteenth-century copy of *The Book of the Constellations of the Fixed Stars*, by Muslim astronomer Abd al-Rahman ibn Umar ibn Sufi, completed around 964 AD.

"What I found is that as artists, our connections to the stars are all different and unique to ourselves," says Rhyu. "At the same time, we're all tapping into the same energy, the same environment. That's very special to me."

— Paul Hond

Galileo Galilei, sketches from *Sidereus nuncius*, 1610.

When Traffic Takes a Toll

Nobel-winning economist William Vickrey '47GSAS and the birth of congestion pricing

On January 5, 2025, following years of delays and political jockeying, congestion pricing made its debut in New York — a first for a US city. Cars entering Manhattan at 60th Street and below at peak hours are now charged a nine-dollar toll in an effort to alleviate gridlock and raise money for upgrades to mass transit. In February, after six weeks of the experiment, transit officials reported improvements: less traffic, more pedestrians, more commerce, safer streets, and shorter travel times. The city collected nearly $49 million, on target to meet the year-end goal of $500 million.

It's good news for midtown and downtown, but the underlying idea — using pricing levers to reduce congestion and raise revenue for mass transit — came from uptown. Specifically, it flowed from Morningside Heights, where for sixty years Columbia economist William Vickrey '47GSAS hatched theories of taxation and economic behavior, culminating in 1996 with his winning a Nobel Prize, just days before his death at age eighty-two.

On a recent morning, economist Dan O'Flaherty, one of Vickrey's former colleagues, takes a moment in his office in the International Affairs Building to remember "the father of congestion pricing." According to O'Flaherty, Vickrey was thinking about the problems of mass transit in the 1950s while commuting to Columbia from Hastings-on-Hudson. "He would take the Metro-North to East 125th Street," Flaherty says, "and then roller-skate across town to campus." Here was a man who cared about travel time and didn't like being sardined in trains or buses. Vickrey dissected the problem in his 1952 book *The Revision of the Rapid Transit Fare Structure of the City of New York*.

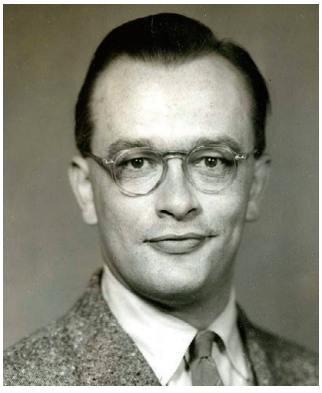
"Vickrey realized that the major burden on the system was the congestion," O'Flaherty says. "If I'm on an empty subway car at 2 a.m., I can read, I'm comfortable, and it doesn't take long for people to get on and off. But if I take the train from 116th Street to Penn Station during rush hour, I've got an elbow in my belly and a briefcase on my nose, and every stop takes a long

TOP: RARE BOOK AND MANUSCRIPT LIBRARY, SMITH COLLECTION; BOTTOM: ROBERT LANDAU

time." Vickrey created a model that considered the discomfort that each individual passenger contributes to a packed subway car and proposed a pricing scale that charged straphangers more for traveling at peak hours in busy areas and less for traveling off-peak or in less crowded zones. "If you're going from Van Cortlandt Park to 181st Street, you're not getting in anybody's way," says O'Flaherty. "But if you're going to Times Square, you are."

In the early 1970s, Vickrey extended this idea to automobiles, designing a computer-based system to monitor traffic as it entered particularly congested areas. Again, the tolls would vary according to the hour and the location, and drivers would be billed each month. This is essentially what congestion pricing looks like in Manhattan in 2025.

But not everyone is along for the ride. Critics allege that congestion pricing hurts working people, and that toll revenue must be used for highways, not mass transit — claims that SIPA professor Steve Cohen, who is director of the Earth Institute's Research Program on Sustainability Policy and Management, calls unfounded. Cohen says most working people from New Jersey and the boroughs take mass transit, while those who drive into the city — and spend money to park — tend to be well-off.



William Vickrey

As for the argument that using roadway tolls for the subway is improper, Cohen notes that Port Authority tolls, for instance, subsidize the airports, and Triborough Bridge and Tunnel Authority tolls subsidize mass transit. "If this toll is illegal," says Cohen, "then all the tolls are illegal."

For Vickrey, tolls were about fairness, and he never stopped thinking about taxation and transit and the social good. He was a Quaker and conscientious objector in World War II — "the most moral person I've ever known," says O'Flaherty. And though Vickrey didn't live to see his pricing ideas implemented in New York (or in London or Stockholm), O'Flaherty reports that he did see them realized in Singapore.

"Vickrey was far ahead of his time," says O'Flaherty, "and his work is as vital as ever." — *Paul Hond*

Up from the Ashes

The restoration of Notre-Dame cathedral

Anyone yearning for a good resurrection metaphor to boost the spirit in troubled times need look no further than across Amsterdam Avenue to the Cathedral of St. John the Divine. On a recent evening, under the vaulted ceiling, Barry Bergdoll '77CC, '86GSAS, the Meyer Schapiro Professor of Art History at Columbia, introduced a talk by Philippe Villeneuve, chief architect of the restoration of Notre-Dame de Paris, the Gothic masterpiece that was ravaged by fire in 2019.

"How moving," Bergdoll said, "to speak in a neo-Gothic building about this miraculous ability to create a space that was so tall and so light-filled that it in fact gave invitation to think about the unthinkable — to think about heaven." Bergdoll recounted the history of Notre-Dame from the start of its construction in 1163 through intervals of disrepair and disrespect ("There were long periods of time when Gothic architecture was considered barbaric") to a popular revival under Napoleon (who had himself coronated at Notre-Dame in 1804) to the massive restoration that began in 1842, led by architect Eugène Viollet-le-Duc.

The 2019 blaze, its cause indeterminate, was devastating. The wooden roof collapsed, and the spire, once the tallest structure in Paris, plunged into the nave. Villeneuve, with the aid of photographs, led the audience through the process of clearing debris, securing the structure, and erecting seventy thousand pieces of scaffolding from which hundreds of restorers hammered, cleaned, and painted. The cathedral's new spire followed Viollet-le-Duc's design, which had replaced the Gothic original, and Villeneuve topped it with a golden, flame-winged rooster to suggest a risen phoenix. Notre-Dame was rededicated in December 2024.

As Bergdoll suggested, historical restorations, which must account for aesthetic, cultural, political, and economic factors, inevitably reflect their own times — and influence the future. "Every act of restoration," he said, "involves a decision about what history is being recovered." — *Paul Hond*

LEFT: ANDREAS BERGERSTEDT / ALAMY

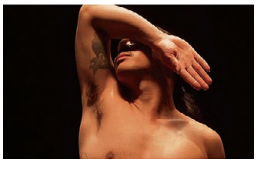
THE SHORT LIST

READ

Columbia Global Reports, an imprint focused on current affairs and underreported topics, recently published *Losing Big: America's Reckless Bet on Sports Gambling*, by historian Jonathan D. Cohen, and will release Jeffrey Wasserstrom's *The Milk Tea Alliance: Inside Asia's Struggle Against Autocracy and Beijing* on June 7. Learn more and order online. *globalreports.columbia.edu*

LISTEN

There's still time to catch a performance at **Miller Theatre** before the end of the 2024–25 season. On May 19, harpist Parker Ramsay and viola da gamba player Arnie Tanimoto take the stage for a free pop-up concert of Baroque works, and on June 7, the theater will host the New York regional competition of the annual Harmony Sweepstakes A Cappella Festival. *millertheatre.com*



SEE

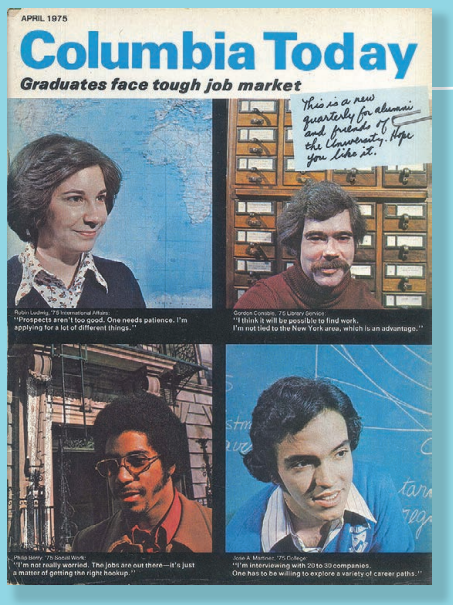
Homage: Queer Lineages on Video, an upcoming exhibition at the Wallach Art Gallery, showcases contemporary video art centered on LGBTQ+ figures and experiences across generations. Curated by art-history PhD recipient Rattanamol Singh Johal '23GSAS and featuring work by Dineo Seshee Bopape '10SOA, the show runs from June 27 to October 19. *wallach.columbia.edu*

LEARN

Lifelong learners from the alumni community and beyond can sign up for a course from **Columbia+**, a series of online classes taught by University experts on subjects ranging from animation to artificial intelligence. *plus.columbia.edu*

50 YEARS OF *COLUMBIA MAGAZINE*

We celebrate this half-century milestone with a look back at some of the memorable and defining moments captured in our pages



1975

THE FIRST ISSUE

Perhaps **1975** was not the most auspicious year to launch a magazine. New York City was on the brink of bankruptcy, University enrollment was only just beginning to recover after the turmoil of 1968, and Columbia's Trustees were entertaining proposals to restructure the University to make it more financially secure. And yet in April, *Columbia Today*, as the magazine was then known, debuted with a mission that seems even more urgent in our current times. "With all the problems that privately supported universities face today — problems that challenge their very existence — and with the uniquely important contributions such institutions make to the welfare of *all* society, it is imperative that alumni and friends be kept aware of these contributions and the struggle to continue them," wrote President William McGill '70HON in the inaugural issue, expressing hope that the new magazine would "provide a glimpse of what we are seeking to preserve and strengthen."

NOTORIOUS RBG

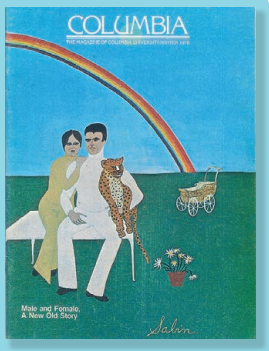
An **APRIL 1975** profile of Ruth Bader Ginsburg ’59LAW, ’94HON, the first woman to become a tenured professor at the law school, lauded her as “Columbia’s leader in the legal battle against sex-based discrimination.”

EQUAL OPPORTUNITY SWIMMING

In **JUNE 1976**, we reported on Annemarie McCoy ’79SEAS, an undergrad who, as a student at Columbia’s School of Engineering and Applied Science, found herself ineligible to join the Barnard swim team — the only women’s team on campus at that time. Thanks to Title IX, the 1972 law guaranteeing equal opportunity for women in sports, McCoy joined the men’s team instead.

“It’s quite likely that the problem of containing local conflicts will be much more difficult as a result of the sophisticated weapons we are now selling or transferring abroad.”

In our **MARCH 1977** issue, Marshall Shulman ’48SIPA, ’59GSAS, ’92HON, a prominent diplomat and longtime director of the Harriman Institute, argued that America’s overseas arms sales would ultimately jeopardize its own security.



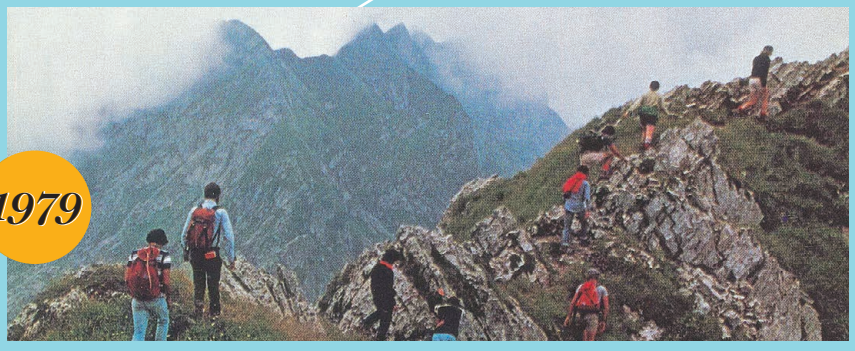
1977

BREAKING BARRIERS

The push for gender equality reshaped higher ed in the 1970s, and we published many stories about efforts to hire and promote women faculty and integrate women thinkers into the curriculum. At the same time, Columbia researchers explored ways to expand opportunities for women in society. In a **JUNE 1977** interview, social scientists Sheila Kamerman ’73SW and Alfred Kahn ’46GSAS, ’52SW proposed a policy later widely endorsed by experts but which the US has yet to enact: mandatory paid maternity leave.

APING LANGUAGE

In one of the most ambitious (and controversial) studies ever on ape language ability, Columbia psychologists nurtured an infant chimp — Nim Chimpsky — like a human child and taught him American Sign Language. In **WINTER 1977**, we described the scientists’ efforts, which, despite high hopes at that time, would ultimately yield disappointing results and turn lead researcher Herbert Terrace into a skeptic of ape language studies. “It was clear that the chimp was very smart and was thinking, but, contrary to Descartes, he was thinking without language,” Terrace told us years later.



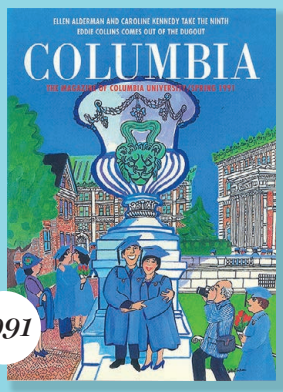
1979

NEW HEIGHTS IN THE STUDY OF GEOLOGY

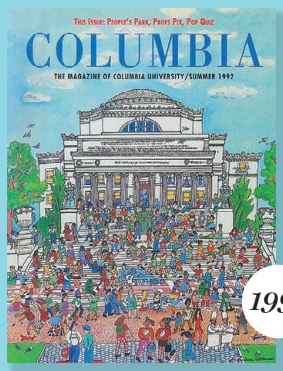
A decade after Columbia scientists led by Marie Tharp and Bruce Heezen ’57GSAS established our modern understanding of plate tectonics, faculty and students traveled to Switzerland to study the slow-motion collisions that created the Alps. “Guided by the geologist’s gift for finding delightful resting spots, we often took our lunches overlooking the vineyards of the upper Rhone Valley or the Mont Blanc massif,” expedition leader Ian Dalziel reflected in **SUMMER 1979.**

SWIMMING: MANNY WARMAN; ROCKETS: ZOONAR GMBH / ALAMY; GEOLOGY: IAN W. D. DALZIEL

THE ILLUSTRATED CAMPUS

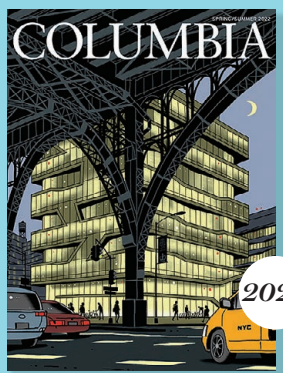


1991



1992

2018



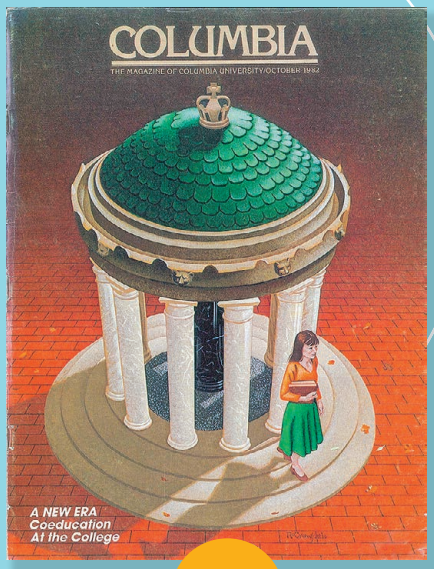
2022

SMART AND STYLISH

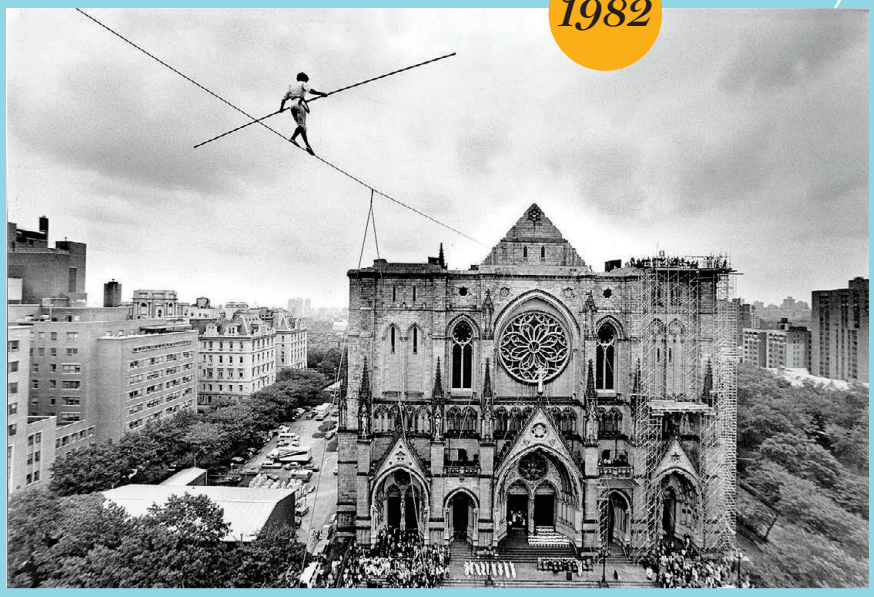
"It's a foregone conclusion that Columbia students are extraordinarily bright, but we consider it newsworthy that many men and women on campus are also attractive and poised," observed an article on student fashion in our **SUMMER 1980** issue.

THE COED DECISION

Columbia entered a new era in 1983, when the College welcomed its first coed class. Our **OCTOBER 1982** issue celebrated the upcoming change with a feature on the "One Hundred Years of Incertitude" leading up to the decision.



1982



A TOWERING FEAT

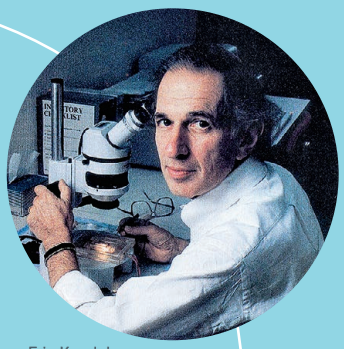
Philippe Petit, best known for his 1974 walk between the Twin Towers, stretched his tightrope over Amsterdam Avenue in 1982 (without a net, as always) to honor the Cathedral of St. John the Divine. "He paused in his graceful walk only to bow to the dignitaries waiting for him on the platform where the south tower will soon rise above Morningside Heights," we reported in our **NOVEMBER 1982** issue.

FASHION: MICHAEL CHARRIER '67GSAPP; PETIT: FRED R. CONRAD / THE NEW YORK TIMES

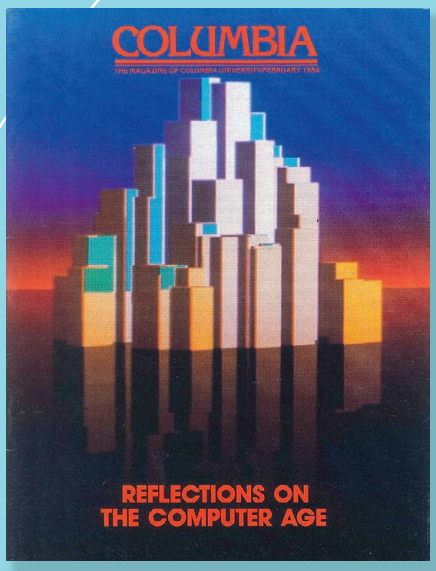
Richard Axel

BRAIN TRUST

Eric Kandel and Richard Axel '67CC are now seminal figures in neuroscience, but their ideas would have astonished many readers when we first wrote about them. Kandel told us in **DECEMBER 1983** that his research on marine snails' synapses might ultimately reveal how humans learn and form memories. Axel, who at the time was developing early gene-splicing techniques, described in our **JANUARY 1983** issue how his innovations were enabling scientists to manipulate genes in individual neurons, paving the way for research and therapeutic breakthroughs.



Eric Kandel



ANTICIPATING AI

The computer boom of the 1980s sparked both excitement and unease on campus, with scholars predicting that advanced technologies might one day solve all manner of social ills but also warning of the potentially corrosive effects of new media on politics and culture. Featured in our **FEBRUARY 1984** issue were computer scientists John R. Kender, Kathleen McKeown, and Salvatore Stolfo, who were already laying the groundwork for modern artificial intelligence. The implications of their work, everyone seemed to agree, were vast. "When a machine can use up all the knowledge we have given it and use it systematically in ways that we cannot, and can make deeper inferences than we can," asked author Pamela McCorduck '70SOA, "then what will happen?"

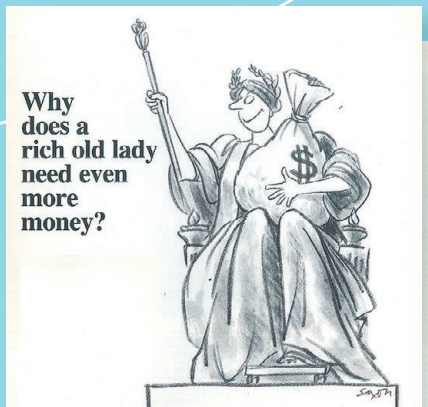
1984

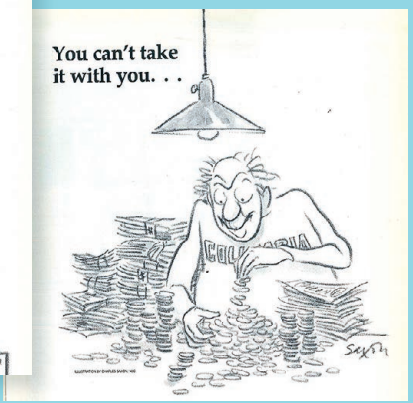
"Just as the wheel expanded our knowledge of the physical world, computers tempt us with adventures in the intelligible world of the mind."

A prescient article in the **FEBRUARY 1984** issue chronicled early breakthroughs in artifical-intelligence research.

FERTILITY FOR ALL

Columbia researchers played a pivotal role in developing in vitro fertilization techniques, and in **OCTOBER 1985** we showcased their efforts to make IVF safer, more effective, and more widely available. The Columbia University Fertility Center has since helped tens of thousands of people have children.



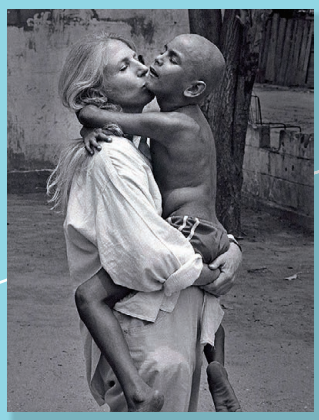


ARTISTIC APPEAL

Two **1987** advertisements from Columbia's Office of Planned Giving featured original cartoons by *The New Yorker*'s Charles Saxon '40CC.

1987

AXEL: JOE PINEIRO; KANDEL: ROSALIE POZNACHOWSKI; BABIES: ADOBE STOCK



GENE HUNTER

Columbia geneticist Nancy Wexler's quest to uncover the roots of Huntington's disease was the subject of our **NOVEMBER 1987** cover story. Later, after years spent studying families in rural Venezuela with high rates of the disease, Wexler would determine that it is caused by a mutation in a single gene called HTT. Her discovery, a landmark in genetics research, revolutionized scientists' understanding of the condition and laid the groundwork for new diagnostics and treatments.

"Preoccupied with basic skills, we have produced a generation untutored in its own culture, reared on boring textbooks and ignorant of a shared heritage of literature and history."

What Do Our 17-Year-Olds Know?, a report by education scholars Diane Ravitch '75GSAS and Chester E. Finn Jr. excerpted in our **DECEMBER 1987** issue, lamented the decline in the study of humanities.

CLIMATE CLUES

1992

One of our first detailed discussions of global warming came in WINTER 1992, when a team of tree-ring scientists led by Edward Cook concluded that the previous two decades had likely been the warmest in at least a millennium. "While the new findings do not prove a recent global warming trend," we wrote, "they support the claim of a greenhouse effect."

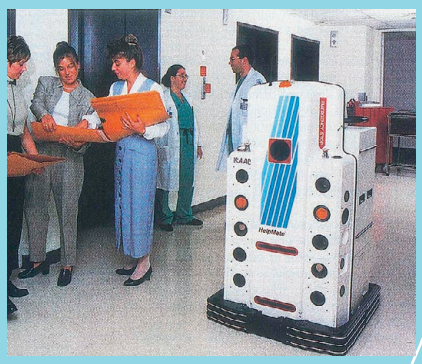
BEFORE HE WAS A STAR

Already an established science columnist, astrophysicist Neil deGrasse Tyson '92GSAS was still a Columbia PhD student when he was profiled in our **SUMMER 1991** issue.

Joe Brennan (center) with Bee Gees Maurice (left) and Barry Gibb.

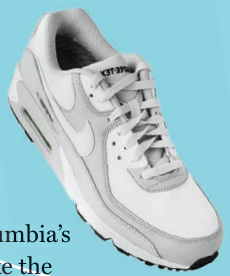
STAYIN' ALIVE ON THE WEB

The Internet revolution was well underway on campus when Columbia IT specialist Joe Brennan '73CC, '82LS created a Web page listing every track by one of his favorite bands: the Bee Gees. In **SUMMER 1996**, we told the story of how band members Barry and Maurice Gibb caught wind of the project and invited Brennan to visit their recording studio.



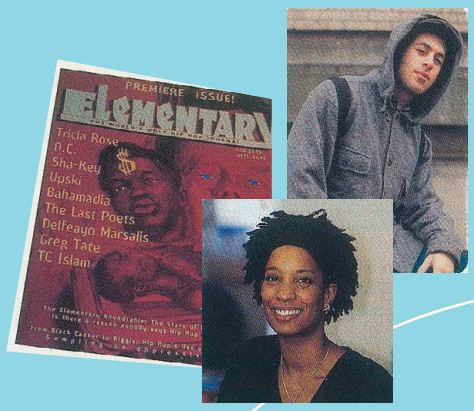
ROBO AT YOUR CALL

Joseph Engelberger '46SEAS, '49SEAS won the 1997 Japan Prize for his robotics inventions, including the HelpMate, designed to transport and deliver medication, meals, and records around hospitals. "The robot moves autonomously, even on and off elevators, and communicates with its own voice," the magazine reported in **FALL 1997.**



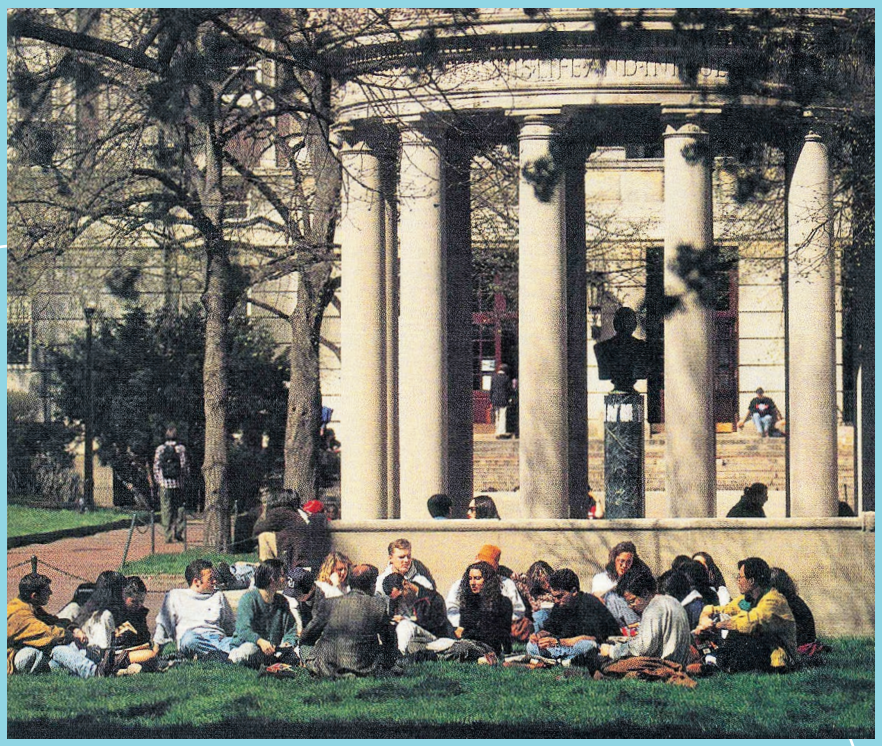
DON'T GET OUT OF DODGE

The **WINTER 1996** issue covered a series of campus renewal projects, including a major renovation of the Dodge Fitness Center. An accompanying feature on Columbia's increased community outreach highlighted programs like the Double Discovery Center, which continues to help local underserved high-school students prepare for college.



HIP-HOP HAPPENINGS

While hip-hop was experiencing its golden age in the '90s, Columbians were taking notice. A story in the **WINTER 1997** issue reported on Adam Mansbach '98CC, '00SOA, a student who launched a magazine, called *Elementary*, to offer a "decidedly intellectual and critical look at the hip-hop cultural phenomenon." The article also featured the work of ethnomusicologist Dawn Norfleet '97GSAS, who was completing her PhD dissertation on New York City's vibrant hip-hop scene. "Like a great jazz saxophonist," she told us, "a great rapper never misses a beat."



IN THE (SAFER) CITY OF NEW YORK

As Columbia's reputation grew in the 1990s, the College began receiving record numbers of applications. "No doubt this growing popularity reflects a sea change in prevailing national attitudes about New York City, which is not the place it was even five years ago," reported the magazine in a **SPRING 1998** article on the reinvigoration of undergraduate life.

"To reach out and to work together to build communities that bridge divisions in our pluralistic world is a challenge worthy of the core values that Columbians over generations share."

The magazine's **FALL 2001** issue, published shortly after the September 11 attacks, included a hopeful letter from outgoing University president George Rupp '93HON.

2001

A GLOBAL OUTLOOK

The **WINTER 2004–05** issue, published during the escalation of the Iraq War, focused on world affairs at Columbia. An interview with former secretary of state Madeleine Albright '76GSAS, '95HON, a profile of Georgian president Mikheil Saakashvili '94LAW, and coverage of the second annual World Leaders Forum signaled a growing international engagement that would lead to the establishment of eleven Global Centers in cities from Athens to Mumbai starting in 2009. Columbia World Projects, an initiative focused on combating poverty, climate change, and other world challenges, would be introduced in 2017.

DIGITAL DIVE

At a time when research, course materials, and other university resources were going online, *Columbia Magazine* introduced its own Web-based edition in **2001**.

SAFER NYC: PAUL TALLEY; GLOBE: ADOBE STOCK

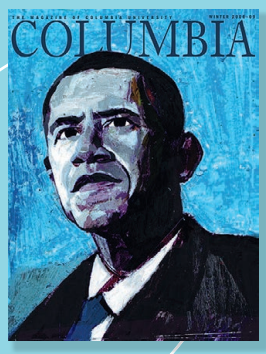
2008

VAMPIRE DIARY

After playing its first show at the Battle of the Bands in Lerner Hall, Vampire Weekend exploded onto the indie-rock scene. In **SPRING 2008**, the magazine caught up with the alumni musicians — Ezra Koenig '06CC, Rostam Batmanglij '06CC, Chris Baio '07CC, and Chris Tomson '06CC — shortly after the release of their knock-out debut album.

AN ALUM BECOMES PRESIDENT

In 2008, Barack Obama '83CC became the first African-American — and the first Columbia graduate — to win the White House, a milestone reflected on our **WINTER 2008–09** cover.



"It wasn't radical by any means, but it was different from most campaigns in that it was very emotive and driven by ideas like hope as opposed to issues."

In our **WINTER 2008–09** issue, University provost Alan Brinkley commented on Barack Obama's presidential run.

JOB-HUNT BLUES

The magazine covered the ongoing recession with a **SUMMER 2009** feature on five alumni navigating a sluggish job market and drawing on their Columbia contacts to find work.

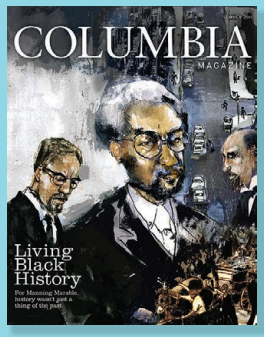
HURT SO GOOD

Our **WINTER 2009–10** story on Kathryn Bigelow '81SOA, director of the Iraq War drama *The Hurt Locker*, was published shortly before Bigelow became the first woman to win an Oscar for best director. *The Hurt Locker* also won best picture.

VAMPIRE WEEKEND: PIETER M. VAN HATTEM / CONTOUR BY GETTY IMAGES; BIGELOW: MICHAEL CAULFIELD / WIREIMAGE; DELUGE: KATIE ORLINSKY '12JRN

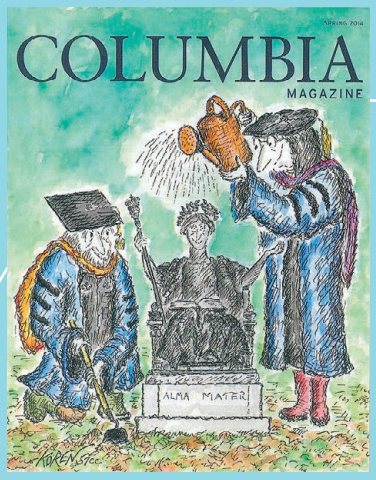
MARABLE'S MESSAGE

Manning Marable, the pioneering scholar of Black studies at Columbia, died in April 2011, just days before his biography of Malcolm X was published. Our **SUMMER 2011** cover story honored his legacy and chronicled the strong reactions to his book, which won the Pulitzer Prize in history.



AFTER THE DELUGE

When the going gets tough, Columbians show up. A feature from the **WINTER 2012–13** issue followed a group of Columbia faculty around the city in the wake of Superstorm Sandy as they assessed the damage, discussed the role of climate change, and proposed solutions.



HAIR YE, HAIR YE!

An original cartoon by *The New Yorker*'s Ed Koren '57CC in our **SPRING 2014** issue honored the Columbia Campaign and featured Koren's signature frizzy characters.

COLUMBIA MEANS BUSINESS

We highlighted the business school's growing investment in entrepreneurship with a **FALL 2014** cover story on the Columbia Startup Lab, the newly formed incubator for students and alumni in SoHo. Featured startups like deCervo (formerly Neuroscout), cofounded by Jordan Muraskin '07SEAS, '14SEAS, and Sailo, cofounded by Delphine Braas '14BUS and Adrian Gradinaru '14BUS, are still going strong today.

OLD FRIENDS

When college pals Sanford Greenberg '62CC, '67BUS and Art Garfunkel '65CC met again on campus in 2016, the magazine was there to capture them seated on Low Plaza, like bookends. We told the poignant, surprising story of their long friendship in our **SUMMER 2016** issue.

RESPONDING TO EBOLA

A feature in the **WINTER 2014–15** issue followed Columbians racing to stem the Ebola crisis in West Africa, including a Columbia doctor and an alum who were stricken during the outbreak.

STARTUP LAB: JÖRG MEYER; OLD FRIENDS: JEFFREY SAKS; EBOLA: MICHAEL MORGENSTERN

WE GET LETTERS

Over the past fifty years, we have published hundreds of letters from some of the most interesting readers on the planet.

In 1989, for instance, in response to an article on baseball legend Lou Gehrig, some older Columbians shared recollections of "Columbia Lou," including one from an alumnus who guarded Gehrig in a pickup basketball game in which the future Yankee great threatened to punch him in the nose. In another issue from that year, science-fiction author Isaac Asimov '39GS, '48GSAS, '83HON wrote to praise a short story he'd read in the magazine. "I know that it is very unintellectual to expect a writer to turn out a piece of fiction that actually tells an interesting story, but what can I do — I am a simple man with simple tastes."

The magazine hears from people in every field, from around the globe. Famed translator Gregory Rabassa '54GSAS chimed in on our piece on the Deepwater Horizon spill in the Gulf of Mexico: "For some reason, the well that exploded was named Macondo, from the misbegotten village in García Márquez's novel *One Hundred Years of Solitude*, while its gooey detritus washed ashore on Barataria, named for Sancho Panza's fanciful 'insula' in *Don Quixote*. Life, it seems, has never ceased to imitate art."

And in 2012, Estonian president Toomas Hendrik Ilves '76CC corrected our article on the Euro, which claimed that Estonia had not adopted the currency. "First," Ilves wrote, "Estonia is a member of the Eurozone."

Sometimes our readers are the ultimate fact-checkers.

2016

2017

MANHATTANVILLE MOVES

First announced in 2003, Columbia's new Manhattanville campus finally opened in **SPRING 2017** with the Jerome L. Greene Science Center and Lenfest Center for the Arts. "How do you create a campus that projects a sense of dignity and trustworthiness without being guarded?" architect Renzo Piano '14HON pondered in an essay on the open nature of the new campus.

GRAPHIC ADVENTURES

A **SUMMER 2017** profile of Columbia comics curator Karen Green '97GSAS, presented in the style of a graphic novel and illustrated by Nick Sousanis '14TC, won the Will Eisner Comic Industry Award for best short story.

FROM DINER TO DONOR

Our **FALL 2018** profile of P. Roy Vagelos '54VPS, '90HON told the story of his humble beginnings in Rahway, New Jersey. As a kid in the 1940s, Vagelos worked at his immigrant parents' diner, in the shadow of the nearby Merck plant. Years later, he became CEO of Merck and, later still, one of Columbia's greatest benefactors. In 2017, Vagelos and his wife Diana '55BC gave $250 million to Columbia to make the Vagelos College of Physicians and Surgeons the first medical school in the nation to offer debt-free tuition. Last year, the couple gave $400 million for biomedical-science research and education.

ONLINE UPGRADES

A redesigned website in **2018**, followed by the introduction of a monthly e-mail newsletter, carried the magazine further into the digital age. Exclusive online-only stories about the rise of Ozempic, the health effects of cannabis, and alumni celebrities, as well as a Q&A with an alumna member of the Church of Satan, have been huge hits.

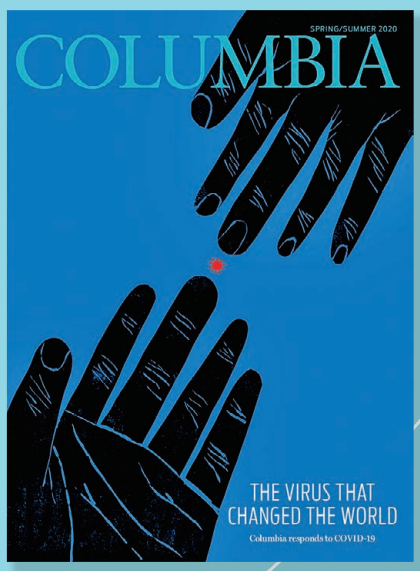
MANHATTANVILLE: FRANK OUDEMAN; GREEN: NICK SOUSANIS '14TC; VAGELOS: NATHAN PERKEL; THINKER: TIM O'BRIEN

LIONS AND LIONS AND LIONS, OH MY!

There are enthusiasts, and there are obsessives. The **FALL 2018** issue introduced readers to Michael Garrett ’66CC, ’69LAW, ’70BUS, a triple Columbia graduate who lives among some four thousand pieces of lion memorabilia — neckties, trinkets, and even a lion toilet — in his Brooklyn townhouse.

AN EARLY GUIDE TO THE COVID PANDEMIC

In March 2020, just weeks before the **SPRING/SUMMER 2020** issue went to press, the World Health Organization officially declared COVID-19 a pandemic. Columbia classes were canceled, nonessential staffers (including the magazine’s editors) were sent home, and New York City fast became a ghost town. But at the University, experts from virologists to gerontologists were working overtime on the front lines of the crisis. After talking with dozens of these researchers, we published “What We Have Learned from the Pandemic (So Far),” an early acknowledgment of the huge role Columbia was to play in helping the world understand the scope of the coronavirus epidemic.



2020

“By some measures, Americans are more deeply divided, politically and culturally, than we have ever been before in our history.”

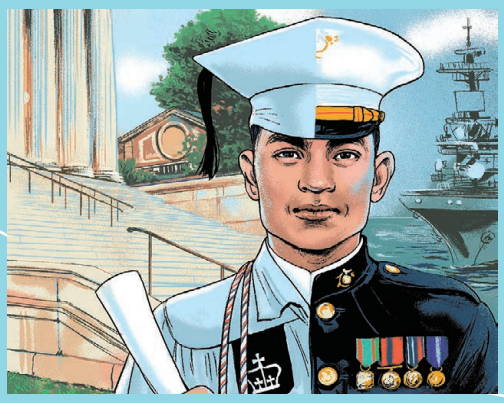
The **FALL 2020** issue featured a Q&A with conflict-resolution expert Peter T. Coleman ’97TC, founding director of Columbia’s Difficult Conversations Lab.

IN SEARCH OF SAFER GROUND

Our **FALL 2024** cover feature explored how worsening floods, wildfires, and hurricanes are reshaping the US real-estate market and dictating where Americans can safely live. It described how climate disasters may eventually force millions of people to relocate and highlighted the efforts of Columbia faculty and students, especially those at the new Columbia Climate School, to help communities at risk create strategies for a more resilient future.

TRANSLATION EXPLORATION

Columbia has been home to some of the world’s greatest translators, but the act of literary translation has always been a mystery: what — and who — are we really reading when we read a translated work? Guided by accomplished Columbia translators present and past, we took a deep dive into this largely misunderstood and overlooked process in our **WINTER 2021–22** issue.



FROM BOOTS TO BOOKS

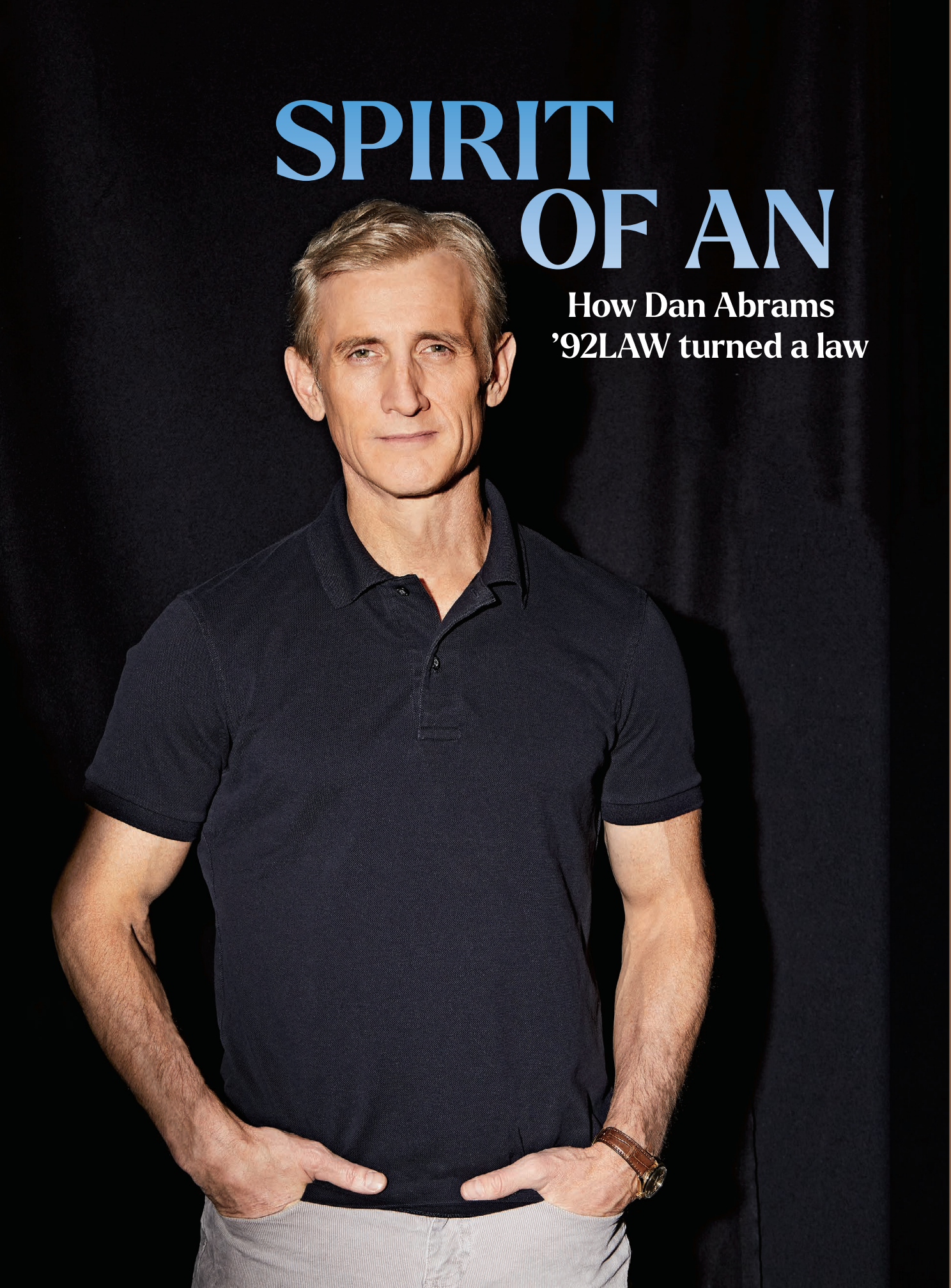
Fun fact: Columbia has more military veterans in its student body than all the other Ivies combined. We told the stories behind the numbers in a **SPRING/SUMMER 2023** feature.

2025

LIONS: JULIA ROTHMAN; VETERANS: AGATA NOWICKA; CLIMATE: NATHAN KENSINGER

SPIRIT OF AN

How Dan Abrams '92LAW turned a law



ENTREPRENEUR

degree into a media empire — *with a twist*

By Rebecca Shapiro

"I think the key to success is knowing your strengths," says Dan Abrams '92LAW. "I was a decent law student. I would have been decent at practicing law. But I realized early on, that's not what I'm great at. What I *am* great at is explaining the law in a way that anyone can understand."

Abrams knows something about success. As a court reporter and legal analyst for Court TV, NBC, and ABC, he's covered some of the most important trials of the last three decades. He's hosted his own cable-news shows on MSNBC and NewsNation. He has a podcast on SiriusXM radio and is the author of five best-selling books. And he's the founder and owner of Abrams Media, a group of websites focused on topics ranging from politics and the media to fine alcoholic spirits.

While Abrams's career has been vast and varied, there is a through line to it. Nearly all of his jobs and ventures have relied on this singular ability to translate difficult concepts — especially those relating to the law — into common terms. "I approach my job the same way I would approach explaining a complicated Supreme Court case to my twelve-year-old son," Abrams says. "It's something I learned from my own dad."

Abrams's father, Floyd Abrams, who taught for many years at both Columbia Law School and Columbia Journalism School, is not just a lawyer but a legendary First Amendment litigator known for his high-profile cases. In 1971 he served as co-counsel to *The New York Times* on the Pentagon Papers case. Later he would go on to argue thirteen cases in front of the Supreme Court and to represent notable clients such as then *New York Times* reporter Judith Miller '69BC during the grand-jury investigation of the 2003 Valerie Plame affair and Mitch McConnell in the *Citizens United* case.

The younger Abrams, who was a small child during the Pentagon Papers trial, remembers sharing the palpable excitement that his father brought home from the office. Instead of fairy tales, he and his sister Ronnie would get courtroom stories at bedtime. As they grew older, their father would use them to hone his oral arguments over the dinner table.

"Honestly, we loved it," Abrams says. "We always tried to get him to stay longer, to tell us more. When you have a parent who is passionate about what they do, I think it inevitably rubs off on you."

Abrams says that it was always clear that his sister, now a judge on the US District Court for the Southern District of New York, would go to law school and follow in her father's footsteps. But his own path was not as obvious. "For me, the early legal education was more like a stepping stone," Abrams says. "I didn't know exactly where it was going to take me."

Initially it took him to Duke University, where he earned his bachelor's degree. "After spending my whole childhood in Manhattan, I think I was just looking for something different," he says. He studied political science and was a news anchor for the campus television station, where he says his most notable assignment was covering a visit by then president Ronald Reagan. "I was really into it," he says. "I wasn't 100 percent sure about going to law school, and I think that even then there was a nagging feeling that I wanted to go into broadcast journalism."

After graduating, Abrams took a year off to travel and surf with friends. Despite his initial hesitation, he also used the time to apply to law school. He ended up at Columbia, where he says he was particularly influenced by Henry Monaghan's constitutional-law class,

MELANIE DUNEA

Jane Ginsburg's copyright-law class, and, fittingly, Vince Blasi's course on media and the law.

When Abrams was in his second year at Columbia, the cable-news station Court TV launched, with live coverage of trials interspersed with analysis from legal experts. "I thought, wow, that's the perfect combination of things that I'm interested in," he says. Abrams was on his way to a conventional legal career: he was a summer associate at the New York law firm Willkie Farr & Gallagher, and they offered him a full-time job. But he couldn't shake the idea of working for Court TV. He approached Willkie about his predicament, and they agreed to hold his offer for a year.

"It was a critical backstop," Abrams says. "Without that safety net, I'm not sure I would have jumped."

Abrams started at Court TV as a production assistant in 1992 — "and yes, that meant giving up big-law money to make almost no money at all." Because the station was so new, the staff was small, which meant that Abrams had a lot of opportunities to get his hands dirty. "I would go in to the office in the middle of the night and practice reading the teleprompter."

After a year and a half, Abrams was promoted to reporter. Just a few months later, O. J. Simpson was arrested for the murder of his ex-wife Nicole Brown Simpson and her friend Ron Goldman, and Abrams — the most junior of the three reporters at Court TV — was asked to cover the trial. "The other two reporters were already on assignment, so they sent me," Abrams says. "And suddenly I was in the middle of the most important news story in America."

Abrams stayed in Los Angeles for nine months, reporting on one of the twentieth century's most sensational trials. It was one of the first trials in which cameras were allowed in the courtroom, so it was a novelty to be able to watch the event live, and CNN and Court TV were the only two stations carrying the proceedings from beginning to end.

"I was in over my head," Abrams says. "People were coming to me to make sense of the legal issues, and I was two years out of law school. I had never been in a courtroom before."

"I wanted to create something from scratch. I wanted to be able to make changes, to be nimble, to pivot without checking with a ton of people."

But while Abrams didn't know all the answers himself, he knew the right questions to ask, and he knew where to get the answers. Those skills became the building blocks of his career. When the Simpson trial ended, more high-profile assignments followed — from the trial of Oklahoma City bomber Timothy McVeigh to that of assisted-suicide doctor Jack Kevorkian. In 1997, Abrams was approached by NBC News. The network was looking for someone with courtroom experience to join the *Today* show as a legal analyst. Abrams did that for two years, then moved to general-assignment reporting.

"I was covering plane crashes, hurricanes, all kinds of stories," Abrams says. "It was exciting, but it also made me realize that my real passion wasn't reporting but analysis."

In 2001, Abrams moved within the NBC family to MSNBC for what he calls his dream job: hosting his own legal-affairs show. *The Abrams Report* ran nightly for nearly five years, focusing on news stories with a legal bent. Though Abrams says he loved every minute of it, by the end he was itching for another challenge. He wanted to manage the business.

He created a ten-page presentation on what he saw as the future of MSNBC and why he should run the channel. Eventually, he was given the chance, taking over as MSNBC's general manager in 2006. While he enjoyed being able to make decisions and execute his vision for a major organization, Abrams felt hampered by the large corporate structure. "MSNBC reports to NBC, so I had no real autonomy," he says. "I was effectively an HR manager."

Abrams left the managerial role the following year and went back on the air, hosting *Verdict with Dan Abrams* until 2008. But ironically, decisions he had made as manager came back to bite him. With the rise of right-wing media in the early aughts, Abrams had begun pushing MSNBC to move further to the left to provide cable-news viewers with an alternative perspective. But while he says that was the right move for MSNBC, his own personal analysis was much more politically moderate.

"My show was no longer the right fit for the station," he says.

MSNBC gave his nightly 9 p.m. slot to Rachel Maddow. And while they offered him a daytime slot, he felt that it was time to start something of his own. Abrams stayed on with NBC as a legal analyst. But in 2009 he started gearing up to launch Abrams Media, a group of websites covering a range of topics.

"I wanted to create something from scratch," Abrams says. "I wanted to be able to make changes, to be nimble, to pivot without checking with a ton of people."

During his tenure as a cable-news host, Abrams had started to realize how interested viewers were in the world of media itself, and how influential media personalities had become — "in many cases, more influential than the politicians themselves." With that in mind, he launched Mediaite, a website that uses media as a prism through which to understand politics. Or, as he calls it, a blog "for the media, about the media, and part of the new media."

With the success of Mediaite, which took off during the first Trump administration and eventually peaked at eighty-four million monthly visitors during the 2024 election, Abrams

began to create other Web properties. Over the last fifteen years, he has launched more than a dozen sites, four of which he has since sold. Some, like *Law&Crime* — a legal-news site that livestreams interesting trials — are clearly in Abrams's wheelhouse. But he has also taken the opportunity to explore new topics, like sports, women in gaming, and celebrity gossip.

"I did things on the cheap so I'd be able to test ideas out and see what had legs," he says.

In 2020, Abrams, a bourbon drinker, noticed that there was no reliable site or app that aggregated reviews of spirits. So he launched Whiskey Raiders, a website and companion app that use a proprietary algorithm to rate whiskeys based on credible sources across the Internet. Users can scan a bottle and pull up ratings and reviews, as well as read original content about spirits. Two years later, he added Gin Raiders, Tequila Raiders, and Rum Raiders, uniting them under the umbrella company Bottle Raiders. Using his news site *Law&Crime* — which he sold in 2023 in what he calls a "monster deal" — as a model, Abrams plans for Bottle Raiders to be a multi-platform business with a major YouTube and social-media presence.

"The businesses that have done best have tended to be the ones where I'm personally passionate about the subject matter," Abrams says. "That's certainly true of Bottle Raiders."

As he's built his media company, Abrams has kept busy — *very* busy — with a host of other professional commitments. In 2017, the writer David Fisher approached Abrams with an idea for a book. He had recently learned about a transcript of Abraham Lincoln's last murder trial, which took place nine months before Lincoln accepted the nomination for president. The transcript had been discovered in 1989, and miraculously no one had written a book about it. Fisher and Abrams published *Lincoln's Last Trial: The Murder Case That Propelled Him to the Presidency* in 2018. It became a *New York Times* bestseller.

Since their first book, the pair has released three more bestsellers, all focusing on forgotten trials in history. *Theodore Roosevelt for the Defense*, published in 2019, follows the libel suit that could have forever marred the former president's legacy. *John Adams Under Fire*, which came out the following year, tracks the Founding Father's role in the Boston Massacre murder trial. And finally, *Kennedy's Avenger* tells the story of Jack Ruby, who shot and killed Kennedy assassin Lee Harvey Oswald.

Dan Abrams at Ev&Em Vineyards.

"I think the thing that makes our books distinct is the reliance on the trial transcripts," Abrams says. "People might know the outlines of the stories, but reading the actual words spoken in court makes that history come alive."

In addition to his writing career, Abrams has stayed active as a broadcast journalist. In 2011, he left his freelance gig at NBC for ABC, where he has spent the last fourteen years as chief legal analyst. He hosts *The Dan Abrams Show*, a weekly podcast on SiriusXM's POTUS Politics channel. On Friday and Saturday nights, he hosts *On Patrol: Live*, a TV docuseries on Reelz that follows camera crews on ride-alongs with various law-enforcement agencies across the country. And from 2021 through February of this year, Abrams hosted *Dan Abrams Live*, a nightly news show on the cable network NewsNation.

Giving up that show was a difficult professional and personal decision. "No one willingly gives up a prime-time cable-news show," Abrams says. "It's the best job in the world."

But with his very full plate, he felt that it was time to focus more of his attention on Abrams Media and on other passion projects — particularly ones that allow him to spend more time at home, like the vineyard he recently bought on the North Fork of Long Island, named Ev&Em after his two children, Everett and Emilia.

Over twenty years ago, when Abrams was in his late thirties, he survived a bout with testicular cancer. He was in the prime of his career, and he initially told almost no one, determined not to let it — or anything — slow him down: "I just wanted to deal with it and move on." Abrams did eventually go public with his diagnosis, in the hopes of helping to spread awareness about the disease.

While Abrams says he never wanted the cancer diagnosis to define him, and it hasn't, it has helped to make him more mindful of keeping his priorities in check — both professionally and personally.

"I was recently talking to a friend in his eighties, someone very wealthy and successful. He told me that the one regret he had was that he was so focused on success, he didn't enjoy his life more," Abrams says. "I'm committed to not regretting anything."

MILES ANTHONY BOUCKOMS

Why are so many younger adults getting cancer?

Columbia researchers are investigating ultra-processed foods, sedentary lifestyles, and other possible explanations

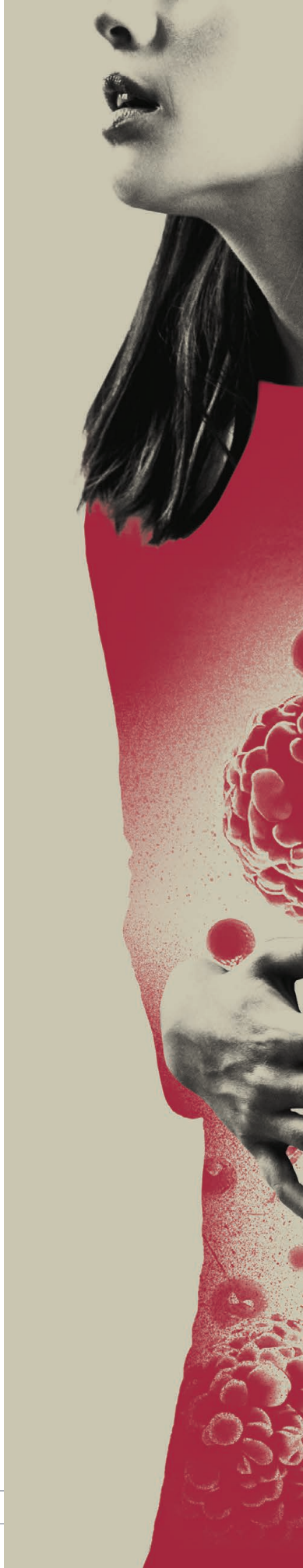
By David J. Craig

When Beatrice Dionigi was in medical school fifteen years ago, she was taught that colon cancer — long known as a "silent killer" for its ability to advance undetected — was a disease of old age, striking people mainly in their seventies and beyond. But since embarking on her career as a colon and rectal surgeon, she has found herself operating on patients far younger than she expected.

"I'm now routinely seeing people in their thirties and forties, many of whom have advanced disease," says Dionigi, an assistant professor of surgery at Columbia's Vagelos College of Physicians and Surgeons. "Every year, the patients are younger and younger."

Dionigi's experience reflects a worrisome global trend: research shows that growing numbers of people are getting cancer in early adulthood and middle age, with sharp rises seen especially in gastrointestinal cancers — including those of the colon, stomach, and pancreas — and breast and uterine cancers. One recent study found that cases of gastrointestinal cancer in Americans under the age of fifty increased by 15 percent between 2010 and 2019, while cases of breast cancer in women under fifty increased by 8 percent. The patterns are perplexing, experts say, given that cancer rates among older adults have declined in recent years.

"Something different is clearly happening, making younger people vulnerable in ways that past generations weren't," says Rebecca Kehm, a cancer epidemiologist at Columbia's Mailman School of Public Health. The rise in so-called early-onset cancers cannot be explained by improved access to screening, Kehm says, as the increases are occurring even in people too young to qualify for routine mammograms or colonoscopies. Nor can genetics explain the rise. Inherited mutations such as the BRCA variations for breast and ovarian cancer and a handful associated with colorectal and endometrial cancer are well-documented risk factors, but their prevalence in the population has remained stable over time. "If genetic changes were driving this trend, we would expect a gradual rise over multiple generations, not the sharp increases we're seeing within a few decades," Kehm says.



JOAN WONG

So what is driving the surge in early-onset cancers? Experts have several theories. Some assert that rising obesity rates among young people are to blame, since excess fat tissue can fuel chronic inflammation and tumor growth. Large population studies have generally supported this idea, linking obesity to increased risk for several cancers, including those of the breast and colon. Yet other scientists argue that obesity may be a proxy for underlying risk factors, such as poor diets and sedentary lifestyles.

A forthcoming study led by Columbia gastroenterologist Joel T. Gabre, medical oncologist Yoanna S. Pumpalova, and Dionigi builds on previous research linking ultra-processed foods to colon cancer, providing the first molecular evidence that diet may play a pivotal role in early-onset cases. Gabre's team finds indications that excessive consumption of certain fatty acids found in highly processed foods — including soybean, corn, and sunflower oil — can disrupt the gut microbiome and ignite chronic inflammation, damaging DNA and triggering malignant changes. "Excessive fat in the body may amplify these processes, but obesity itself doesn't appear to be necessary for early-onset colon cancer to develop — or even to be a primary driver of the disease," says Gabre, whose team compared tissue samples from dozens of early-onset and late-onset cancer patients.

Gabre cautions that additional research, including experiments using mouse models, will be needed to confirm his findings. Still, he believes his data supports a hypothesis that has been gaining traction of late in public-health circles: that the epidemic of early-onset colon cancer is the consequence of a fundamental shift in human nutrition. "Beginning in the 1960s and '70s, people in the US and other industrialized nations started eating radically different diets, full of fast food and ultra-processed ingredients," he says. "We may now be seeing what happens when entire generations grow up consuming these foods."

This theory, if true, could help explain why many young and otherwise healthy colon-cancer patients do not fit the expected profile. "Often they're not overweight or showing any other obvious risk factors for cancer," says Dionigi. "I've operated on marathon runners, ballet dancers, and people who don't drink, smoke, or eat red meat." This leads Gabre to think that harmful dietary patterns in early childhood may inflict lasting damage, even on those who later adopt healthier habits. "It suggests that we need to do more long-term studies on the impacts of childhood nutrition," he says, "and that we ought to think twice about what we feed our kids."

New research by Kehm indicates that early lifestyle choices can have an enduring impact on breast-cancer risk as well. In a study published this year in the journal *Cancer Epidemiology, Biomarkers & Prevention*, she and several colleagues find evidence that declining levels of physical activity among adolescents and younger adults could be driving the surge in early-onset breast cancer. Kehm's team analyzed self-reported behavioral and medical data from twenty-six thousand women in the US, Canada, Australia, and New Zealand and concluded that women who are highly active between the ages of twelve and thirty-four have a 20 percent lower risk of developing breast cancer before they hit forty compared to those who get little exercise.

Past studies have shown that physical activity can protect against breast cancer by regulating estrogen levels, reducing chronic inflammation, and limiting oxidative stress — biological processes that, when unchecked, can fuel tumor growth. But Kehm's new paper is the first to show that the amount of exercise a woman gets is important beginning as early as adolescence, and that staying active may offer protection specifically against early-onset breast cancer. She suspects this is because puberty is a critical window for breast-cancer risk, a time when estrogen levels fluctuate dramatically. "Regulating estrogen levels during this period appears to be especially important," says Kehm, who is also investigating the biological mechanisms by which physical activity can prevent the formation of breast tumors. Notably, her team finds that physical exercise helps to protect against early-onset breast cancer regardless of a person's body-mass index. "The message to adolescent girls should be to maintain a healthy lifestyle overall, with physical activity as a key component, rather than to fixate on your body weight," she says.

For women who may already be on the path to developing early-onset breast cancer, researchers are developing new methods to identify those most at risk and to help them while there's still time. Columbia cancer researcher Lauren Houghton is investigating using women's hormone levels as a way to

> "Something different is clearly happening, making younger people vulnerable in ways that past generations weren't."

identify those who are most vulnerable to the disease. She says that such methods could one day open the door for targeted prevention strategies — whether through exercise, lifestyle changes, or earlier screening. "If we can determine who is at greatest risk while they're still young," says Houghton, "we might be able to stop the disease before it starts."

One major question that remains is how these newly identified risk factors compare to well-established cancer risks like smoking and high consumption of alcohol and red meat. To find the answer, researchers will need to track people from childhood onward.

"Most studies on cancer risk have focused on exposures that accumulate across adulthood," says Kehm. "We're only beginning to uncover how lifestyle and environmental factors may affect people much earlier. We'll need larger studies of children, teenagers, and young adults to determine how various risk factors interact over time — and when interventions can be most effective."

Cancer remains, first and foremost, a disease of aging, with nearly 90 percent of US diagnoses occurring in people over fifty. But a shift is clearly underway. In younger adults, rates are climbing for more than a dozen different cancers, including those of the gut, skin, blood, and reproductive and endocrine systems. Women's rates are outpacing men's in this age group, largely because early-onset breast cancer is so common; today, nearly 6 percent of women will receive a cancer diagnosis before they turn fifty, compared to 3 percent of men.

For those in the prime of life, the diagnosis is shattering. "Nobody is ever fully prepared to hear they have cancer," says Pumpalova, who specializes in treating cancers of the gastrointestinal tract. "But we're talking about people in their thirties and forties who are often raising children, working long hours to support their families, and feeling healthy overall. It's the last thing they're expecting."

Undergoing cancer treatment at this earlier stage of life comes with distinct challenges too. In part because younger people don't qualify for routine screenings like mammograms or colonoscopies, their tumors tend to be more advanced by the time they're detected, requiring aggressive combinations of surgery, radiation, and chemotherapy. The financial strain can be crushing, especially for those balancing medical bills with mortgages and childcare. And the emotional toll is immense, since they face grueling treatments while juggling careers and family responsibilities.

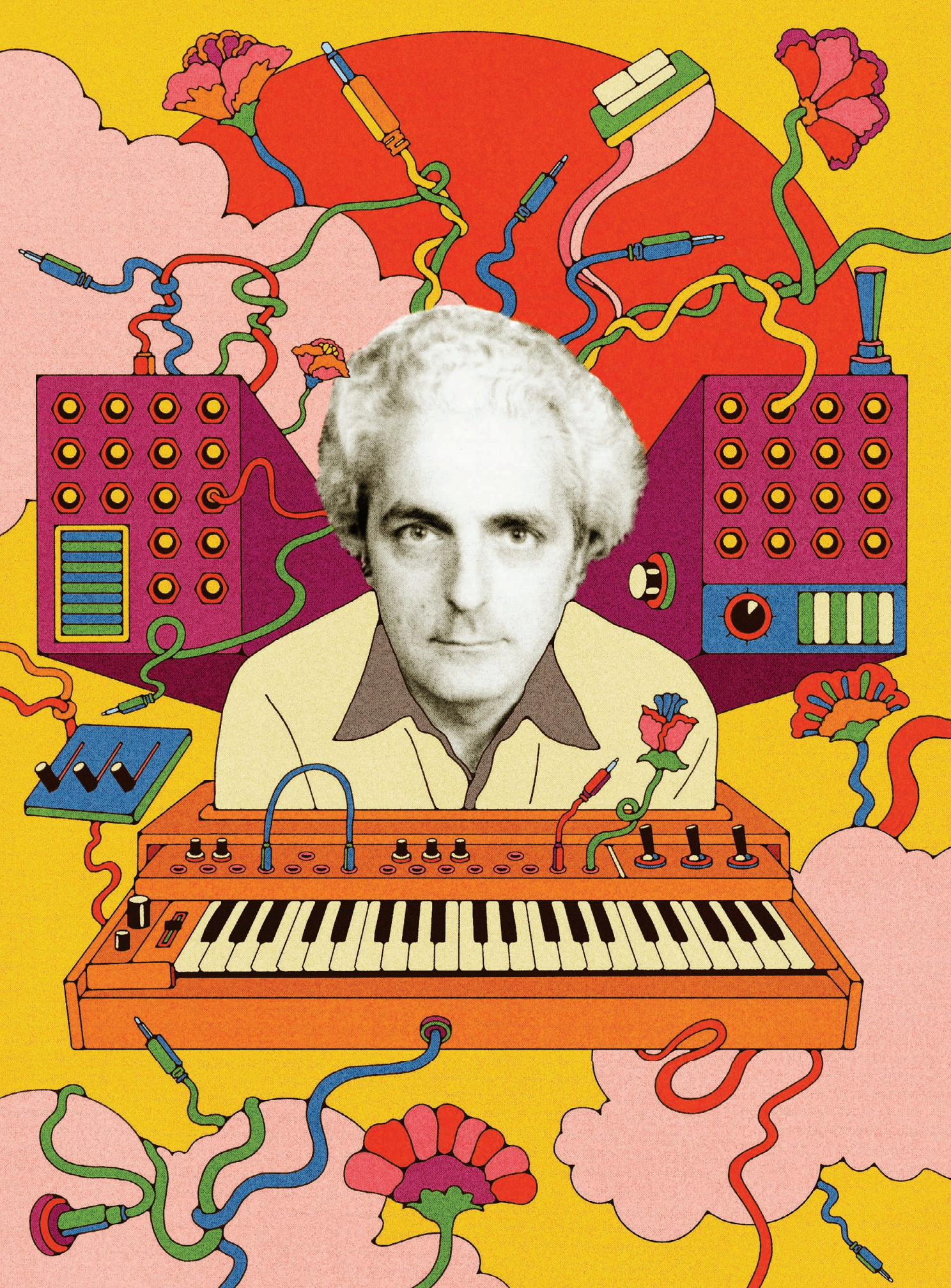
At CUIMC, doctors are adapting their care to meet the needs of these younger adult patients. For example, Dionigi, Gabre, and Pumpalova have launched a new clinical program specifically for early-onset colorectal cancer; the program, one of the first of its kind, provides advanced surgical procedures and other treatments tailored to younger patients, including immunotherapies. Patients also have access to mental-health support, financial counseling, and side-effect-management strategies designed to safeguard their quality of life for decades to come. "For people who are hoping to have children one day but who need radiation treatment in the pelvic area, which can affect fertility, there are options available," says Dionigi. This can include freezing eggs or sperm, or even a surgical procedure to permanently relocate the ovaries higher in the abdomen, out of the field of radiation. "We have multidisciplinary teams of physicians who guide patients through these types of interventions, from diagnosis to recovery," she says.

Columbia's medical center has long been a leader in treating early-onset breast cancer, the most prevalent cancer among younger adults. It tends to spread more quickly than the breast cancers that emerge in older people; its virulence, combined with the fact that it is often diagnosed at a later stage, makes it one of the hardest cancers to treat. Survival rates are improving, though, due not only to advances in treatment but also to innovative strategies for reducing these treatments' side effects, which can help patients adhere to their regimens. "Some women require years of hormonal therapy to prevent recurrence of breast cancer, which can be extremely disruptive, causing everything from joint pain and heart problems to cognitive problems and depression," says Dawn Hershman '01PH, a Columbia oncologist and breast-cancer specialist. She notes that large numbers of women may cease treatment early or reduce their dosages as a result. But Hershman and her colleagues have found creative ways of easing side effects, boosting adherence and improving patients' chances of recovery. "This can involve something as simple as acupuncture, exercise, or dietary adjustments," she says.

For younger adults concerned about their cancer risk, experts recommend paying close attention to changes in their body — like unexplained lumps, pain, bleeding, or fatigue — and visiting a physician if these symptoms persist. "It's also important to know your family history of cancer, as this can indicate whether you should start cancer screenings earlier than most people," says Hershman, who is also the chief of the division of hematology and oncology at Columbia's medical school.

Of course, it is important to maintain perspective. Not every ache or pain signals a malignancy. And while cancer rates among younger adults are rising, they still remain quite low. "The vast majority of younger people who develop gastrointestinal issues don't have colorectal cancer," says Pumpalova.

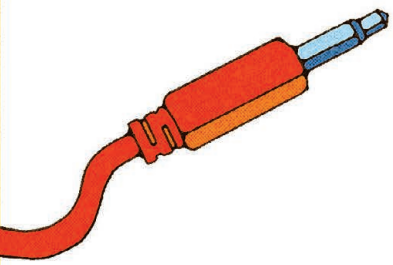
At the same time, she says, people need to talk openly with their physicians about any symptoms they are experiencing, even if it feels awkward or embarrassing at first. "One of the big obstacles in diagnosing colorectal cancer is that people are often reluctant to tell their doctors about digestive or intestinal issues," says Pumpalova. "So they convince themselves that what they're experiencing is no big deal. But it may or may not be. You have to come forward and talk about your symptoms, because an earlier diagnosis could save your life."

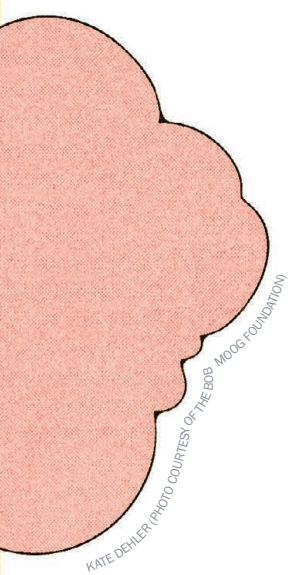


What's That Sound?

Sixty years ago, Robert Moog '57SEAS introduced the world's first commercial synthesizer. Music would never be the same.

By Paul Hond





KATE DEHLER (PHOTO COURTESY OF THE BOB MOOG FOUNDATION)

In October 1964, the month that the Soviet Union launched three cosmonauts into space and the Beatles played on ABC's *Shindig!*, the Audio Engineering Society (AES) held its annual convention at New York's Barbizon-Plaza Hotel. Anyone strolling the exhibits then would have noticed, among the latest microphones and tape-recording equipment from manufacturers like Ampex and Scully, a small booth displaying a curious-looking homemade contraption: a forty-four-key musical keyboard and four metal-paneled boxes, each about the size of a Whitman's Sampler. The boxes had knobs and jacks and were connected to the keyboard and to each other with cables. A sign above the booth read: R. A. MOOG CO.

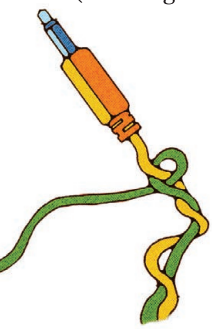
Behind the table stood Robert Moog '57SEAS, a humble, good-humored, thirty-year-old electronics guru dressed in a white shirt and dark jacket. When the convention-goers — musicians, audiophiles, sound designers, retailers — stopped by, Moog (rhymes with rogue) invited them to put on a pair of headphones. Then, fiddling with a few knobs and pressing a few keys, he dialed up a series of idiosyncratic electronic sounds.

"People were fascinated," says biographer Albert Glinsky, author of *Switched On: Bob Moog and the Synthesizer Revolution*. "At the time, the idea that you could take these little boxes, or modules, and make everything from static to siren sounds to musical tones to percussion sounds — it was a revelation."

The term "synthesizer" first gained public attention in 1955, when the Radio Corporation of America unveiled the RCA Mark I Sound Synthesizer, which weighed more than an automobile. The Mark I used electronic circuits to generate sounds that could then be modified, and so did Moog's prototype, which he

jokingly called the Abominatron. But that's where the similarities ended. "Bob's synthesizer had a musical keyboard and was a much smaller, much more efficient instrument," Glinsky says. While the Mark I and its successor, the Mark II, required hundreds of bulky vacuum tubes to control the flow of electrical current, Moog utilized the newer technology of transistors — tiny semiconductors that enabled smaller and lighter TVs, radios, and computers. Moog could fit the Abominatron in the trunk of his car.

At the AES convention, Moog explained his basic setup to visitors. His four modules housed two oscillators (vibrating components that produce basic sound waves), an amplifier (a device that boosts the audio signal, making the sound louder), and an envelope generator (a component that controls the timbre of the sound). "The genius of what Bob came up with," says Glinsky, "is that the individual modules could be connected to each other with patch cords. That meant you could get one module to act upon another, to alter the shape and color of a sound in endless ways."



"For Bob, understanding what the musician needed out of the equipment was a crucial part of the process."

As Moog once observed, "That's the way a musician thinks of a synthesizer: this part changes the tone color, this part changes the pitches, this part changes the articulation. So when a musician works with patch cords and sets the knobs, he is *synthesizing* a sound."

But in 1964, no one was synthesizing anything, at least not outside the world of avant-garde music. Indeed, Moog had conceived of his invention as a tool for experimental composers. That summer, he worked with composer Herbert Deutsch to come up with new sounds that Deutsch could use in his compositions. Deutsch would use his voice to approximate what he wanted, and Moog would then translate these utterances into the language of electronics. "For Bob, understanding what the musician needed out of the equipment was a crucial part of the process," Glinsky says.

In the course of developing the instrument, Moog hacked the keyboard off an electronic organ and hooked it up to his modules, engineering things so that each key, when pressed, caused the oscillator to vibrate at the proper pitch. This allowed the Abominatron to play notes and melodies, but Moog wasn't so interested in that. For him, the keyboard's primary purpose was to trigger the sorts of new noises that Deutsch was after — blips and beeps and alien cries.

"At the time," Deutsch later recalled, "I was actually still thinking primarily as a composer, and at first we were probably more interested in the potential expansion of the musical aural universe than we were in its effect upon the broader musical community."

For that reason, Moog was reluctant to include the keyboard in his prototype. There was some debate. On the one hand, a keyboard would turn off experimental composers — Moog's natural constituency — who were trying to escape the conventions of twelve-tone musicality that a keyboard implied. On the other hand, a keyboard-driven instrument would appeal to everyday musicians, making it far more feasible commercially. The second argument won out.

Still, Moog could hardly have imagined that his little synthesizer would transform the music industry. He was leading a quiet life in Trumansburg, New York, near Ithaca, with his wife and two daughters. By day he ran a small factory on Main Street, the R. A. Moog Company, which made kits for an electronic instrument called the theremin. Patented in 1928 by Russian inventor Leon Theremin, the device used two antennae to create electromagnetic fields that, at the wave of a hand, produced a high, quivery, voice-like tone, a sound popularized by 1950s sci-fi movies. Moog loved the simplicity and elegance of the theremin — he assembled his first one at age fourteen — and could have happily built them for the rest of his life.

Moog had always been a tinkerer. He grew up in Flushing, Queens, an only child whose mother wanted him to become a concert pianist. He took piano lessons but preferred fooling around with resistors and capacitors in his father's basement workshop. It was the era of the electronics hobbyist — parts were plentiful and cheap following World War II — and while other kids played baseball, Moog was inside, downstairs, soldering circuits.

He graduated from the Bronx High School of Science and was accepted to Columbia to study electrical engineering. Going to Columbia meant he could commute from Queens, and it also deepened his connection with his favorite relative, the biologist Florence Moog '44GSAS, his father's sister, who'd earned her PhD in Morningside Heights.

"My dad and Aunt Florence were kindred spirits," says Moog's daughter Michelle Moog-Koussa. "They shared the same sensibilities and were both science-minded. Florence was as big an influence on my dad as Leon Theremin." In one letter to his aunt, who taught for more than forty years at Washington University in St. Louis, Moog wrote, "The subways bother me less than I thought they would. I have developed the skill of using a slide-rule in the train, and therefore am able to solve problems while traveling."

He also developed the engineering skills that would drive the design of his synthesizer. Moog graduated from the School of Engineering and Applied

Science the same year the Soviet Union launched Sputnik, the first artificial satellite, into Earth's orbit. The space race was on, technology became a geopolitical and cultural battlefront, and machines began merging with art in new ways: animator John Whitney made the first computer-animated film, *Catalog*, in 1961; artist Robert Rauschenberg worked with Bell Laboratories engineer Billy Klüver on the sound sculpture *Oracle* (1962–65); and at the Columbia-Princeton Electronic Music Center (now Columbia's Computer Music Center), composers Vladimir Ussachevsky and Otto Luening were exploring new galaxies of sound with the RCA Mark II, a seven-foot-high, twenty-foot-long, three-ton behemoth residing in Columbia's Prentis Hall (see sidebar on p. 36).

It was in this tech-centric atmosphere that Moog stood behind his table at the AES convention. The Abominatron drew a lot of oohs and ahhs, and Moog returned to the convention the following year. He met a number of tech-curious artists during this period, but there was one who took a particularly vivid interest in Moog's display. This was Wendy Carlos '65GSAS. The meeting between Moog and Carlos would trigger the synthesizer revolution.

Robert Moog in 1975.

COURTESY OF THE BOB MOOG FOUNDATION

Carlos is eighty-five and no longer speaks to the press. An award-winning composer who scored the films *A Clockwork Orange* and *The Shining*, Carlos has left a gold mine of writings on her website. In her telling, it was Professor Ussachevsky who, aware of Carlos's technical acumen (Carlos had worked with the Mark II at Columbia), urged her to check out the AES convention.

Inside the Barbizon-Plaza, Carlos spotted Moog's booth and went over to have a look at the modules. She lit up at the sight. "There they were," she writes. "Voltage-controlled oscillators, filters, envelopers, controllers — things the still primitive world of electroacoustic music long needed!" Carlos and Moog connected instantly. As Carlos recalls, "It was a perfect fit: he was a creative engineer who spoke music; I was a musician who spoke science. It felt like a meeting of simpatico minds."

Carlos became one of Moog's earliest customers, and by the time the first generation of Moog synthesizers hit the market in 1967, Carlos and Moog were collaborating. Carlos's graduate work with the Mark II had been modern and experimental, but she had a whole other concept for the Moog synthesizer: she wanted to use it to play the music of Johann Sebastian Bach.

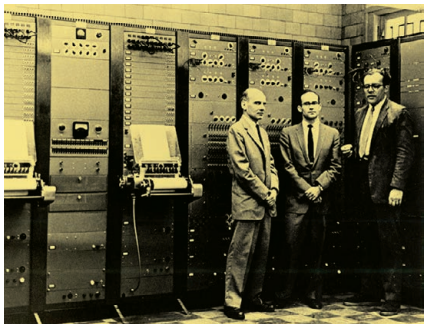
Classical-music purists would surely cry blasphemy, but Carlos and Moog were on a mission. Carlos asked for modifications to some of the modules, and, to Moog's amazement, she quickly mastered the controls. "I'd only seen a very few people who took so naturally to an instrument as she did to the synthesizer," Moog later said. "It was just a God-given gift."

"Bob always deferred on musical matters to those of us who came from that side of the art/tech equation," writes Carlos. "We, on the other hand, deferred to Bob on all engineering decisions and designs. From the beginning it was a balanced yin/yang relationship between a maker of musical tools and the artists who used those tools."

Carlos made a tape of Bach pieces that she played on her custom-built Moog system and gave it to her friend Rachel Elkind, who was the assistant to the president of Columbia Records. The tape was sonic dynamite, and Elkind sold the idea of an electronic Bach album to her colleagues and produced the album.

"Up until that time, to the average person, electronic music was associated with bleeps and noise and sound effects," says Glinsky. "Nobody thought it would be playing Bach. The idea that electronic musical instruments could generate sounds that were slightly familiar, like strings and winds and brass, with entirely new timbres, was astonishing. It was a year before the moon landing, the drug culture was big, and so the idea

The Synth That Ate Manhattan



The RCA Mark II synthesizer in Prentis Hall, 1959. From left: Milton Babbitt, Peter Mauzey, and Vladimir Ussachevsky.

IN 1957, RCA INTRODUCED the Mark II Sound Synthesizer. Like a player piano, the machine read hole-punched paper rolls to produce all manner of sounds. RCA's hope was that the Mark II could replace live musicians in its radio stations' unionized orchestras.

But the three-ton instrument, housed at the RCA Laboratories in New Jersey, proved too big and complicated for commercial use. Meanwhile, in 1958, a clique of avant-garde composers — Vladimir Ussachevsky and Otto Luening at Columbia and Milton Babbitt and Roger Sessions at Princeton — formed the Columbia-Princeton Electronic Music Center. One of their first moves was to acquire the Mark II, which was installed in Prentis Hall on W. 125th Street in 1959.

Babbitt was its most frequent operator. Wendy Carlos used it, and in 1970, Charles Wuorinen '61CC, '63GSAS received the Pulitzer Prize for *Time's Encomium*, created entirely on the Mark II — the first fully electronic composition to win the award. But the giant device was not long for a fast-changing world. The Mark II beeped its last beeps in 1997 and remains in Prentis Hall to this day.

Bob Moog, for one, never believed that his synths would replace musicians. "To me," he once said, "the synthesizer was always a source of new sounds that musicians could use to expand the range of possibilities for making music." The old Mark II composers might agree.

of this sort of psychedelic Bach being played electronically really captured people's imaginations."

Carlos's 1968 album *Switched-On Bach*, created entirely with the Moog, became the first million-selling classical album in history and won three Grammy Awards. "Bob had no idea that it was going to sell the way it did," says Glinsky. Carlos called it "something that happens every so often in history … a magical moment when the timing is right."

Switched-On Bach launched the Moog sound into the cultural consciousness. In July 1969, CBS News used composer Mort Garson's Moog-generated textures to accompany its coverage of the Apollo 11 moon landing, and in August, at EMI Studios in London, the Beatles absorbed the instrument into their last-recorded album, *Abbey Road*.

Then, in 1970, Moog introduced the Minimoog, a forty-four-key monophonic instrument (meaning it can play just one note at a time) in which the modules were connected under a single panel. Designed for performance, the Minimoog could produce a plethora of sounds, including the bright, bulbous, buzzy tone that became the Moog signature. It had switches instead of patch cords and a pitch wheel that allowed you to bend notes, guitar-like. This created a new hero, the *keyboardist*, who possessed a magical musical weapon and was emboldened to play epic solos. Rick Wakeman, keyboardist for Yes, told Moog that the Minimoog "changed the face of music, and I bow to you forever for that." And synth-pop pioneer Gary Numan, who used Moog synths for his entire minimalist, futuristic sound, once recalled the room-shaking sensation he felt the first time he touched the Minimoog: "That's like ten guitar players at full power — on *one finger!*"

Through the 1970s, Moog synthesizers would shape progressive rock (Emerson, Lake & Palmer), electronica (Tangerine Dream, Kraftwerk), jazz fusion (Chick Corea, Herbie Hancock), funk (think Bernie Worrell's fat Moog bass line on Parliament's "Flash Light"), techno, disco, new wave (Numan's "Cars"), commercial jingles, TV-show themes (*The Price Is Right* and *ABC World News Tonight*, by Edd Kalehoff), movie soundtracks (*Apocalypse Now*), and more.

None of this changed Bob Moog. Even when his name became synonymous with the synthesizer, he was still the same guy, the unassuming circuitry nerd with his pocket protectors and pens, in tune with the forces that he harnessed in his work. "I can *feel* what's going on inside a piece of electronic equipment," Moog once said. "I have this sense that I know, and to some extent I have control over, what's going on inside the transistors."

For Moog, electricity — the flow of electrons from one atom to another — had a spiritual power. "My father was just connected to the universe in a different way than anyone else," says Moog-Koussa. "He was on another plane."

Yet for all his brilliance, Moog always saw himself as nothing more, and nothing less, than a toolmaker to musicians — to him, the most honorable of callings and a testament to his grounded sense of self. "Bob was one of the most real, down-to-earth, genuine people I've ever met," says Glinsky. "He had a wonderful sense of humor, and he didn't put on airs. Even though he became quite famous, he still treated you like he was your best friend."

Though his synthesizers were soon everywhere, Moog struggled financially. His genial nature and idealism were often at odds with the bottom line. "He was always just one step away from bankruptcy, and sometimes even *in* bankruptcy," Glinsky says. "He was a great inventor, but he was not a good businessman — and who would expect him to be?"

Things got so bad that Moog had to sell the business in 1971, even as the Minimoog boomed. He stayed with the company — called Moog Music — as a designer and in 1978, after his contract was up, moved to rural North Carolina, where he started another

COLUMBIA UNIVERSITY COMPUTER MUSIC CENTER ARCHIVES

company called Big Briar (he couldn't use his own name, which had been bought along with the business). His property covered nearly a hundred acres of wood, field, and stream outside Asheville. Moog built a metal shed for a workshop and continued to manufacture his gadgets, including a new generation of theremins. "He loved it," says Glinsky. "Going to work just meant walking across his driveway into the shed."

Meanwhile, the synth industry was undergoing a sea change. Digital technology, cheaper and more versatile, was replacing the analog technology of Moog's synthesizers. Whereas Moog's equipment used electronic circuitry and oscillators to create a continuous sound wave, the digital synthesizers created sound waves from binary code. The difference this made in sound quality is roughly comparable to the difference between film photography and digital photography: the former is thought to be "warmer," the latter, more precise and consistent. With the sleek new digital synthesizers taking over, Moog Music — Moog's old company — filed for bankruptcy in 1987.

But given the fluidity of fashion and taste, it was only a matter of time before digital musicians started getting nostalgic for the authentic imperfections, character, and hands-on control of analog synthesizers. The inevitable digital backlash of the 1990s and early 2000s accrued favorably to Moog. In 2002, the Moog name reverted back to him: he rebranded Big Briar as Moog Music, then entered into a partnership with entrepreneur Mike Adams.

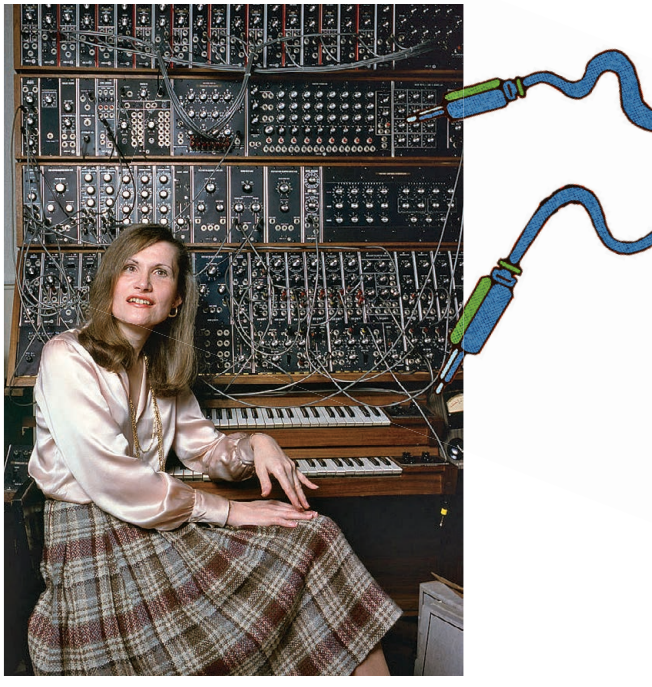
"Mike tidied up the business and started to turn a real profit," Glinsky says. "And Bob was very moved by that. In the last three years of his life he was able to see that his products were still viable and could make money. That was a wonderful thing for him."

So was living in the country: Moog became an avid gardener and devotee of nature. He designed and built instruments and grew organic vegetables. "I loved the perfectly apt image he took on during his last ten years, sort of a benevolent, wise old Swiss Watchmaker," writes Carlos. "Those knowing hands of his were always a pleasure to see in action."

There was, and still is, a misconception that Moog invented the synthesizer. "He invented the *Moog* synthesizer," says Moog-Koussa. "That's a very different thing." In the "Moogseum" in downtown Asheville, an interactive museum run by the Bob Moog Foundation, a "timeline of synthesis" honors thirty-four different developments over a hundred-year period, starting with Thaddeus Cahill's telharmonium in 1897. Three of Moog's instruments fall in the middle. "He saw himself as part of a continuum," Moog-Koussa says.

Moog died of brain cancer in 2005 at age seventy-one. Carlos went down to Asheville to speak at his memorial, where she honored him as "an intelligent, modest, and lovable man, who helped us define a new medium."

That new medium reached listeners in all sorts of ways. Maybe you first noticed it in that storm of white noise at the end of the Beatles' "I Want You (She's So Heavy)," or in the baroque carnival of *Switched-On Bach*, or in the electric dance-floor pulse of Donna Summer's "I Feel Love." Or maybe you were cruising the FM dial in the car one day when the 1970 ballad "Lucky Man" by Emerson, Lake & Palmer came on: you listened to the lull and lilt of the strumming acoustic guitar, when suddenly, toward the end, a deep vibration began buzzing beneath the nylon-string fabric and burst forth, bright and bold. That classic Moog sound, electricity's raw voice, soaring above the song and bending in space, announced to all that the future had arrived.



From left: Rick Wakeman of Yes, 1978; the Grammy-winning album *Switched-On Bach*; Wendy Carlos in her studio, 1979.

LEFT: FIN COSTELLO / REDFERNS; CENTER: COLUMBIA RECORDS; RIGHT: LEONARD M. DELESSIO / CORBIS VIA GETTY IMAGES

What Your Digital Footprint Says About You

Computer algorithms are becoming more adept at using our data to penetrate the deepest levels of our psyches

Sandra Matz, a computational social scientist at Columbia Business School and the author of *Mindmasters: The Data-Driven Science of Predicting and Changing Human Behavior*, discusses the complex relationships between our digital lives, our data, and our self-determination.

Q You argue that a person's digital footprint offers a window into every aspect of their life. What do you mean by that, and how are these footprints created?

Digital footprints are the traces we leave as we interact with technology. We generate millions of them every day. These include the traces that we intentionally put out there: things we post on social media, people we follow on LinkedIn, our Spotify playlists, and our Pinterest pages. Such interactions announce who we are, and social scientists call these "identity claims."

But there are other digital footprints too: they're the traces we leave without really thinking about it. These are called "behavioral residue." They're created as we interact with technology — when we swipe our credit cards, search on Google, shop online, accept cookies, or use smartphone apps that generate GPS data. Our phones can collect data on our location pretty much 24/7 because we take them with us everywhere we go. Each of those data points represents a little puzzle piece of who we are, and once you put the pieces together, they provide intimate insight into our lives.

You say that all these data traces make us vulnerable to psychological targeting. What does that mean, and how can it happen?

On a basic level, the way I think about psychological targeting is that it describes the ability that algorithms have to decode our minds. The data in our digital footprints can be used to make inferences about who we are and how we feel, think, and behave. This includes not only inferences about where we shop or eat or travel but also inferences about deeper psychological dispositions: our personality, our values, our political ideology, our sexual orientation.

We can use an AI-powered predictive model to take individual pieces of raw data about us and put them all together to create a picture of a person — our desires, needs, preferences, motivations, dreams, hopes, and fears.

But the second stage of psychological targeting — which to me is the more interesting part — is that once I understand who you are, I can use that data to potentially change the course of your life. I can try to influence you and decide what information I want to give you. That might be a particular type of news or particular products and services.

It's easy to see why advertising agencies might be interested in psychological targeting — for example, a mortgage company might want to show its ads to someone who spends a lot of time looking at real-estate listings. That seems relatively benign, but you argue that psychological targeting can be a powerful weapon. How so?

If someone's personal data gets into the wrong hands, it can open the door to a whole new level of discrimination.

In some countries, information about your spending habits, your mental health, your sexual orientation, or your political affiliations can determine whether you're able to get a loan or a particular job. Psychological targeting can also be used against you in other ways. It can be used in an attempt to influence critical choices such as who you vote for. It can be used to fuel hatred or fear. Once I understand what terrifies you, I can play into that — even without your being aware of it.

You've demonstrated through your research that psychological targeting can increase polarization and create and fortify echo chambers.

Echo chambers are part of human nature. We all surround ourselves with people who are somewhat similar to us, and it's comforting when our worldview is reflected in another person. Having our beliefs affirmed and our identity affirmed is something that humans crave, and technology amplifies these natural tendencies. So if you have an algorithm that knows exactly what you believe in, what your past preferences have been, and what your past behaviors have been, then that technology can reinforce all of those preferences. It can understand something about your past and project that into the future.

I think there are two reasons why this is potentially dangerous. First, if my reality is completely different from yours, there's no way for us to come together and talk about our shared experience of the news, for example. If I don't even see what you see, then we won't have a shared political context and we won't have a shared cultural context.

AI has become so good at personalizing content. I could, for example, ask it to create a James Bond movie that's customized perfectly to my interests. Maybe it features the actors I love, maybe it has a storyline I find compelling, and maybe watching that movie feels great. But when we watch movies, we often want to discuss them with someone else. It's a shared reference point. But if my movie is totally different from yours, we lose that ability to create a cultural moment and have interesting conversations about it. So on an individual level, I'm worried that it might make us totally boring. What's

Each of those data points represents a little puzzle piece of who we are, and once you put the pieces together, they provide intimate insight into our lives.

ARD SU

more, if we're in our own echo chambers and the only thing that we see is what we believe in anyway, we are going to become more and more narrow-minded, and that's going to affect how we show up in the world. We don't talk about this enough, and it's not just a hypothetical. It's something that's already happening.

Sandra Matz

Are there also ways psychological targeting can be used for good?
Yes. It could help make us more open-minded by giving us access to other points of view. Let's go back to the echo-chamber example. Because of the algorithms that understand who we are, there are many entities — Google and Facebook, for example — that can conjure up the realities of many different people across the US and across the world.

My favorite example is that of a fifty-year-old Republican farmer in Ohio. I have no idea what that farmer's day-to-day experience looks like. And I also don't fully understand how he forms his opinions on immigration, for example, or on abortion. I've never seen his daily reality play out. But the same algorithm that Facebook uses to keep me in my own echo chamber could potentially allow me to hop into someone else's echo chamber. Facebook knows what the fifty-year-old Republican farmer in Ohio sees, so Facebook could theoretically give me the option of going into explorer mode and seeing that reality too.

We could also use psychological targeting to help people reach their goals, to be healthier, even to save money. We see a lot in the news about how psychological targeting is being used in marketing to sell people more of what companies want them to buy. But we've done research on flipping that concept on its head, and it turns out that if we understand what motivates people to buy, we can also understand what motivates them to do the opposite: to not buy.

The idea of echo-chamber hopping is compelling, but how feasible is it? It's a big ask to convince someone to put themselves in a situation that might be uncomfortable or even confrontational.
You're right. My intuition is that people would not use it very often, because it's more comfortable and convenient to see what we like to see, but I like the idea of having the option. Right now there's no way for me to see what might have made someone support reversing the *Roe v. Wade* Supreme Court decision, for example. There's no way for me to understand or explore their point of view. So for me, it's not necessarily a question of whether many people will actually use it, it's more that I want to have the option.

Of course, there is a world in which this idea backfires. If I hop into someone else's echo chamber and what I see just really appalls me, it might make me dig in my heels even deeper. Instead of creating empathy, it might create disgust. So I've been thinking a lot about how you might be able to design the feature to make it about the person and not about the specific topic; how might you be able to create a deeper level of empathy. The idea of letting people walk a mile in someone else's shoes, if you will.

In your new book, *Mindmasters*, you give many examples of how access to information can be extremely dangerous, including the Nazi Party's use of certain records to identify Jews during the Holocaust. One way of preventing history from repeating itself might be to strengthen legal protections for such records. How might this be done?
This question is certainly on people's minds, since we give so much personal information to governments and corporations every day, and data on religious or political affiliations, income, health, sexuality, or other demographics could potentially be used against you.

When I think of potential regulation against this backdrop, I think a lot about the concept of privacy by design. In other words, how do you create processes that make it easier for people to not have their data out

there? The way it currently works is that even if you wanted to protect your data, it's an impossible job. In the terms and conditions of all the services and products we're using, the default is usually that we have to actively opt out if we don't want our data used. And in some cases it's not even a choice: you either agree to all of the tracking or you can't use that product or service at all. If that's the choice we have to make, we're probably going to go with convenience and personalization and the ability to use a particular product. Therefore, one potential idea for regulation would be to require changing that default.

To my mind, mandating this sort of model is a much more promising solution, because it doesn't require the individual to trust a company to not collect data in the first place. Because even if you trust a company today, who knows what might happen tomorrow.

You say that a lack of tech literacy is one reason so many of us are sharing our personal data without fully appreciating the repercussions. What can we do to enhance this sort of literacy?
I think we absolutely do need tech literacy, and we're starting to see an acknowledgment of this in schools. Even just a basic understanding of data and coding and an understanding of why data is intimate and the risks of sharing your personal information is very important.

Data on religious or political affiliations, income, health, sexuality, or other demographics could potentially be used against you.

The more interesting solution for me, though, is a technical one called "federated learning," which is a collaborative way for companies to train AI models without having unfettered access to a person's raw data. It lets you keep your data on a personal device like a smartphone and makes use of the fact that your phone is effectively an extremely powerful computer in your pocket. If you take Apple, for example, when the company trains Siri, it doesn't collect all your speech data and send it to a central server. Instead, it sends the intelligence to your phone, which allows the model to work locally to learn and get better. And then anonymized information can still be sent back to Apple so that everyone can benefit from the improvements, but personal data is also somewhat protected.

But recently I've become a lot less optimistic when it comes to our ability to use data literacy to solve problems. Even if you keep up with technology, even if you fully understand the potential for abuse, it's a full-time job.

If you had to go through all the terms and conditions of every app and scrutinize your every digital interaction and consider exactly what data might be collected, you would have to say goodbye to all your free time, because that's a full-time job.

So putting this burden on the user and saying that they can manage it by themselves — that's an illusion. Do we need data literacy? Yes. It's absolutely necessary. But it's not sufficient.

You suggest that breaking up large tech companies and enforcing stricter antitrust laws would be one way to stop companies from amassing too much power and abusing it. How optimistic are you that this could happen?
I've become more optimistic over the last couple of years. People like Columbia law professor Tim Wu and NYU marketing professor and podcast host Scott Galloway have been advocating for antitrust legislation for a long time, but now policymakers are also waking up to the reality of how important this might be.

In the past, the argument has been that if you break up big tech companies, they won't be able to do what they're good at, because they won't have all the data they need to be able to do it. The argument is that they'll lose their ability to innovate. But we just don't know if that's true. One of the things we've seen is that placing constraints on companies just encourages them to innovate in a different way.

How do you personally protect your online privacy?
I get asked this question a lot! Obviously, I care about this topic. I think about it constantly. I have a fairly good understanding of where data gets collected, but even I don't manage it properly. I try to be a bit more mindful than the average person about managing cookies. But there are still so many times when, say, my baby is crying and I need to quickly find something online, so I just hit "accept all."

I might be a little more mindful with my phone, because I think the phone is so intrusive. When I download an app, I do go through the permissions, because I don't necessarily want my weather app to tap into my picture gallery and my microphone. But other than that, I think my own experience and my own failures to protect my privacy are a really good example of why we need something that protects access to our data in a more systemic way. We can't just place the burden on the individual.

— Josie Cox '22BUS

FRONTIERS OF RESEARCH AND DISCOVERY

Women and their children at a health clinic in Gitega, Tanzania.

ARTUR FRANCISCO / ICAP

Stopping HIV before it starts

One of the greatest achievements in global health over the past decade has been the sharp decline in the number of babies born with HIV, which has dropped by about two-thirds to approximately 120,000 per year. A major driver of this progress has been the work of researchers and practitioners at Columbia's ICAP, a global health organization that, since its founding in 2002, has provided HIV testing or treatment to more than twelve million pregnant women across twenty-six of the world's most vulnerable countries.

"We now know that a woman with HIV who takes antiretroviral drugs consistently during pregnancy and breastfeeding can virtually eliminate the risk of her baby acquiring the virus," says Elaine Abrams '82VPS, a Columbia professor of pediatrics and epidemiology and an ICAP cofounder. "But in countries with under-resourced health systems, it can be challenging to ensure that these women are reached, tested, and treated in the first place."

Now ICAP is undertaking an ambitious new effort to further drive down mother-to-child HIV transmission rates in six nations — Kenya, Mozambique, Nigeria, South Africa, Tanzania, and Zambia — where, despite progress, transmission rates remain stubbornly high. In partnership with the Cape Town–based nonprofit Paediatric-Adolescent-Treatment Africa and with funding from the Gates Foundation, Columbia's ICAP staff will collaborate with national health ministries to strengthen their maternal health-care systems and increase HIV testing and care for pregnant women and infants. As with most ICAP projects, Abrams says, Columbia personnel will focus on providing technical assistance to in-country health-care professionals and policymakers who will identify gaps in their health-care systems and find innovative ways to address them. Local stakeholders will then share insights with one another through a new information-exchange program called the HIV Impact Network for Vertical Transmission Elimination, or HIVE; Columbia researchers and local academics will study the results with an eye toward informing global-health-policy guidelines.

"The challenge now is scaling up HIV-prevention efforts across diverse international contexts — that's where the learning happens, where the research is," Abrams says.

Biology by the byte

Gone are the days when biomedical researchers spent all their time scrutinizing test tubes, culturing microorganisms, and counting cells by hand. Today they're as likely to be poring over computer spreadsheets as peering into microscopes.

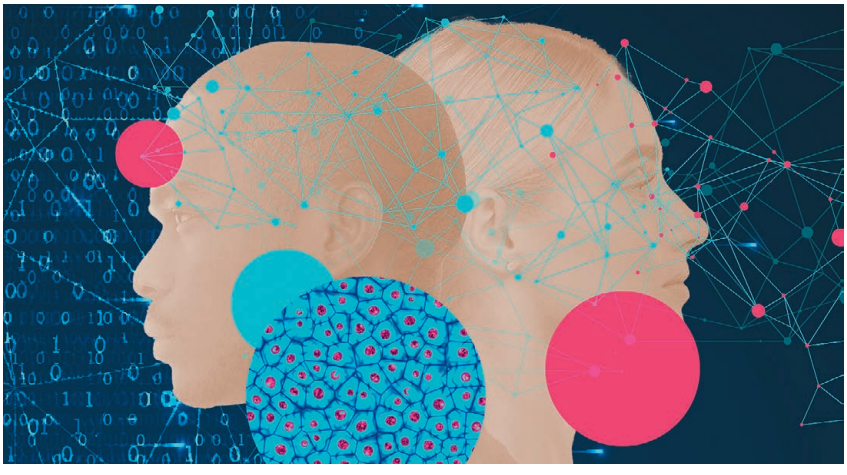
Why? Consider this: We now know that the human body is made up of thirty-seven trillion cells, all with distinct roles, patterns of genetic activity, and physical characteristics. Inside every cell, roughly twenty thousand genes and up to ten thousand proteins collectively engage in millions of interactions per second. And no cell operates in isolation: each is constantly chatting with its neighbors and adapting to its environment.

"To make sense of this complexity requires collecting large amounts of data and identifying patterns within it," says Raúl Rabadán, a Columbia professor of systems biology and director of the department's program for mathematical genomics. "Biology is increasingly becoming a quantitative field."

A key driver of this shift is the rapid evolution of artificial intelligence, which is allowing scientists to make use of a flood of biological data that has been generated since the early 2000s. As AI and technologies like genetic and proteomic sequencing continue to advance, biomedical research is entering a new era — one in which the body can be viewed as a vast, interconnected system of data waiting to be interpreted.

At Columbia, large multidisciplinary teams of biologists, physicians, computer scientists, and mathematicians are now collaborating on data-driven projects that could transform our understanding of human health and disease. Some are working to improve treatments for diseases like cancer or Alzheimer's; others are building AI-powered tools that could enable researchers without expertise in data science to gain deeper insight into everything from prenatal development and aging to diet and nutrition.

ONE OF BIOLOGY'S BIGGEST mysteries is how cells — despite carrying identical DNA — take on different roles in the body and adapt to changes in their surroundings over time. For example, immune cells alter their shape to engulf pathogens, while other cells adjust their rate of duplication based on environmental cues. Scientists have long understood that this versatility comes from cells' ability to switch genes on and off, thereby altering protein production and shaping their identity and function. Yet the internal mechanisms that drive these shifts — and the factors that determine whether they proceed smoothly or go awry — remain elusive.



Rabadán's team recently developed technology that could help illuminate these processes. They created an AI program to sift through data from millions of human cells and predict how genes, proteins, and other molecules in any given cell are likely to interact based on how they've interacted in other cells in the past. "In the same way that ChatGPT learns how words should fit together in a sentence, our model learns how cellular components tend to behave and respond to one another," says Rabadán.

Using the new tool, Rabadán says, scientists can dramatically increase the efficiency with which they study molecular networks. Called GET (short for "general expression transformer"), the open-source computer model enables scientists to test large numbers of hypotheses before committing to time-intensive lab experiments. "You can use the model to simulate lots of molecular interactions and identify the most promising possibilities to study with traditional methods," he says. One potential application is for investigating how cells regulate gene expression. "It provides a powerful new method for studying the most fundamental questions in epigenetics," says Rabadán. "How do stem cells transform into specialized cells? How do immune cells know when it's time to attack? How do healthy cells turn cancerous?"

While other research groups have created AI tools to model activity within specific types of cells before, the new Columbia tool is the first to identify overarching patterns of molecular activity across all major cell types. Xi Fu, a PhD student in Rabadán's lab who led the creation of GET and is now working to improve its predictions, says the team's ultimate goal is to uncover universal principles that govern cellular behavior — something akin to Newton's laws of biology.

PHOTO ILLUSTRATION BY LEN SMALL (ADOBE STOCK)

The potential medical applications of GET are already coming into focus. In a January 8 paper in the journal *Nature*, Rabadán, Xi, and several colleagues announced that they had used the tool to expose previously unknown regulatory mechanisms behind an inherited form of pediatric leukemia. "These kids inherit genes that are mutated, but until now nobody knew what they did," says Rabadán, who also co-leads the cancer genomics and epigenomics research program at Columbia's Herbert Irving Comprehensive Cancer Center. His team mapped how the mutations disrupt normal protein interactions and contribute to the disease, a discovery that could help scientists in their search for new treatments.

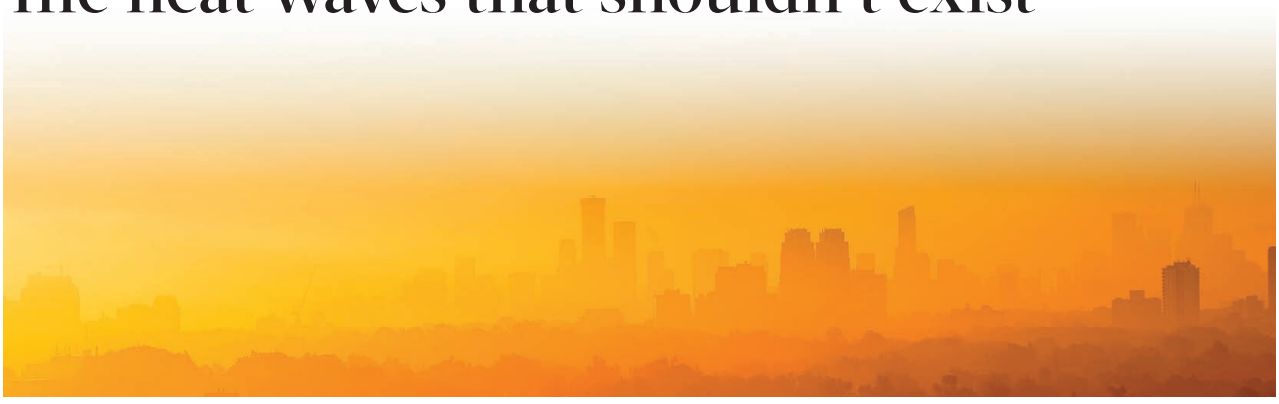
In recent months, several other Columbia medical research teams have unveiled new computer-based tools, although most still need refinement before they can be broadly applied in clinical research. Computational biologist Elham Azizi and her team, for example, have developed a machine-learning program that describes how immune cells and cancer cells adapt to each other in their struggle for survival. The researchers say the tool, called DIISCO (for Dynamic Intercellular Interactions in Single Cell transcriptOmics), could eventually be used both to advance research into the human immune system's capacity for fighting cancer and to guide treatment strategies for individual patients. "Right now, we don't have any reliable methods of tracking how cells evolve in response to each other over time, but that will be essential for developing better immunotherapies," says Cameron Young Park, a PhD student in biomedical engineering who is helping to lead the project.

Meanwhile, a team led by Columbia biostatistician Zhonghua Liu has built an AI model to identify the key genetic drivers of diseases with complex genetic profiles. In a recent paper in *Cell Genomics*, he and his colleagues reported that they have used the tool to pinpoint seven genetic mutations that may contribute to Alzheimer's disease more significantly than previously known. Notably, several of the mutations appear to trigger molecular damage that might be mitigated by drugs already approved by the FDA for other conditions.

According to Rabadán, these breakthroughs are only the beginning. As AI grows more sophisticated, he says, the next major milestone will be predicting cellular changes before they occur — a shift that could propel personalized medicine further into the realm of prevention.

"We are entering an exciting new era," he says. "Biology is being transformed into a predictive science."

The heat waves that shouldn't exist



You might expect that as global temperatures inch upward each year, heat waves would intensify at a similarly steady pace. Yet research reveals a more alarming trend: the temperatures reached in many heat waves are so extreme that they far outpace the results of climate models, defying all predictions and explanations.

A recent study by Columbia scientists, which appears in the *Proceedings of the National Academy of Sciences*, looks at heat waves over the past sixty-five years, identifying regions where their severity has increased more dramatically than would have been expected, given the rise in average local temperatures. In these areas, which are situated on every continent except Antarctica, heat waves have killed tens of thousands of people, withered crops and forests, and sparked devastating wildfires.

"This is about extreme trends that are the outcome of physical interactions we might not completely understand," says lead author Kai Kornhuber, a climate physicist at the Columbia Climate School's Lamont-Doherty Earth Observatory. His coauthors on the report are Columbia climate scientists Richard Seager '90GSAS and Mingfang Ting, graduate student Samuel Bartusek, and climatologist Hans Joachim Schellnhuber of the International Institute for Applied Systems Analysis in Austria.

Their study provides the first worldwide map of regions in which maximum temperatures have been broken by outsize, sometimes astonishing amounts. For example, a nine-day wave that hammered the US Pacific Northwest and southwestern Canada in June 2021 exceeded daily records in some places by more than 50°F. This included the highest temperature ever recorded in Canada: 121°F, in Lytton, British Columbia. The town burned to the ground the next day in a wildfire driven by the drying of vegetation.

Kornhuber and his colleagues found that the most hard-hit regions include populous central China, Japan, Korea, the Arabian Peninsula, eastern Australia, and parts of Africa. Others include Canada's Northwest Territories and the southern end of South America. Parts of Texas and New Mexico appear on the map, though they are not among the worst afflicted.

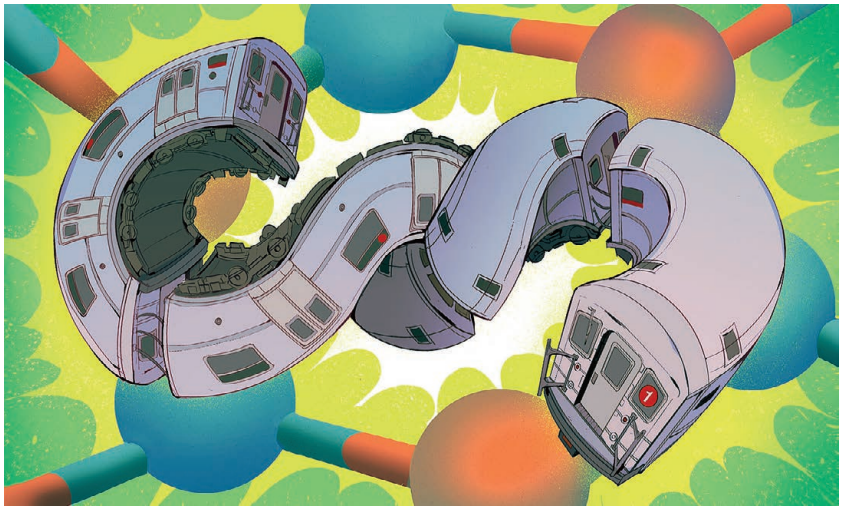
According to the study, the strongest and most persistent hotspot is in northwestern Europe, where sequences of heat waves contributed to an estimated 60,000 deaths in 2022 and 47,000 in 2023. These disasters affected Germany, France, the United Kingdom, and the Netherlands, where the hottest days of the year have been warming at twice the rate of average summer temperatures. As in the Pacific Northwest and Canada, air conditioning in the region remains uncommon, since such extreme heat waves were once unheard of. Experts say this likely compounded the death toll.

The newly identified hotspots are not the only places where extreme heat is proving deadly, of course. Across the world, heat waves are becoming more frequent and severe. In the US, which has largely been spared the most shocking temperature spikes, excessive heat nevertheless kills more people than all other weather-related causes combined, including hurricanes, tornadoes, and floods. One recent study found that the US annual death toll from heat-related events has sharply increased in recent years, with 2,325 deaths in 2023. This has recently led to calls for heat waves to be named, as hurricanes are, to heighten public awareness and motivate governments to prepare.

"These heat waves are usually linked to very severe health impacts and can be disastrous for agriculture, vegetation, and infrastructure," said Kornhuber, who, along with several Columbia colleagues, is also investigating the atmospheric and climatic forces driving these extremes. "We're not built for them, and we might not be able to adapt fast enough."

— Kevin Krajick '76GS, '77JRN

ROLAND SHAINIDZE / SHUTTERSTOCK



Could our electric world get a quantum upgrade?

Imagine a world in which free-floating electric vehicles charge wirelessly as they glide down highways, laptops are hundreds of times more powerful, and clean energy flows in limitless supply.

Such a future, experts say, hinges on the development of new superconductors, or materials capable of transmitting electricity with near-perfect efficiency. The problem? All known superconductors — from pure elements like lead, tin, and aluminum to exotic compounds like niobium-titanium — must be subjected to extreme cold or pressure to function, making them impractical for widespread use. More problematic still, scientists don't fully understand how these materials work, making it difficult to engineer better versions.

Superconductors have already made their way into MRI machines, particle accelerators, and electromagnetic levitating trains, but they are extraordinarily expensive and finicky. The real game changer, experts say, will be figuring out how to custom-design superconductors that are cheaper and more versatile.

Now a multidisciplinary team of Columbia researchers led by physicist Cory R. Dean is bringing the scientific community closer to that goal. In a recent study in *Nature*, the scientists demonstrated that a compound called tungsten diselenide, which has a crystalline structure, can be made to exhibit superconductivity when sliced into sheets just one or two atoms thick and then manipulated in precise ways. The discovery marks one of the first times that scientists have induced superconductivity in a material by modifying its structure at the nanoscale, thus offering new clues about how to create the next generation of superconductors.

Dean and his colleagues, who include fellow Columbia physicists Andrew Millis and Abhay Pasupathy, along with mechanical engineer Jim Hone and materials scientist Katayun Barmak, have been experimenting with tungsten diselenide since 2020. Their interest was sparked by a previous discovery by MIT physicist and former Columbia research fellow Pablo Jarillo-Herrera, who found that graphene — a novel material that consists of a single layer of carbon atoms — becomes superconductive when stacked and twisted at particular angles. Inspired by Jarillo-Herrera's finding, Dean and his colleagues set out to see if a similar approach could work for other ultra-thin, so-called "two-dimensional" materials.

"An important question was whether superconductivity arises from unique properties of graphene or rather could be induced by twisting any combination of two-dimensional materials," says Dean.

The Columbia researchers, after wrestling with tungsten diselenide for years, recently found a winning formula: place two sheets next to each other, rotate one of them five degrees, and cool them to -272.7°C, or about half a degree above absolute zero. When the researchers finally applied a charge, electrons surged through the material at lightning speed — orders of magnitude faster than they'd move through ordinary metals.

The discovery of superconductivity in tungsten diselenide, like that in graphene before it, is just one step toward the larger goal of designing more versatile superconductors. Both of these exotic materials must still be cooled to extraordinarily low temperatures before electricity will flow unimpeded through them, meaning that they are not yet viable alternatives to superconductors currently found in medical-imaging equipment and a handful of other advanced technologies. But Dean's breakthrough is regarded as one of the most significant advances in materials science in years, providing crucial new insights into the mechanism of superconductivity and fueling optimism that scientists might one day engineer superconductors that can operate under more practical conditions.

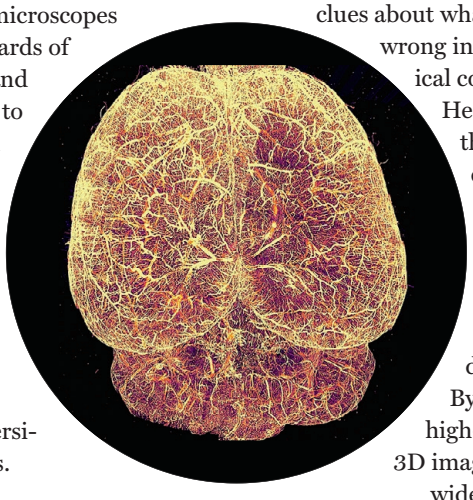
"To develop a superconductor that works at room temperature is really the dream," says Dean, adding that such a material would revolutionize nearly all industries that rely on electronics, from computing and medicine to power generation and transportation. "Our discovery could very well be the key that makes this dream a reality."

ANDY KIM

3D imaging for all

A team of researchers led by Columbia biologist Raju Tomer has developed a powerful, affordable, and user-friendly microscope that could dramatically increase the number of scientists around the world who are able to conduct cutting-edge biomedical research. The new technology, a type of light-sheet fluorescence microscope (LSFM), produces highly detailed three-dimensional images of living tissue. It is much cheaper and easier to use than existing LSFM tools, Tomer says, which could expand access to 3D imaging.

"Similar microscopes sell for upwards of $700,000 and are difficult to operate and maintain, so they tend to be available only in advanced imaging facilities at major universities," he says. "Ours costs one-tenth as much and is largely automated."



The blood vessels of a mouse brain, captured with a new 3D microscope designed by Raju Tomer.

Tomer and his colleagues, who describe their invention in a recent issue of the journal *Nature Biomedical Engineering*, lowered costs by swapping out ultra-expensive components typically found in light-sheet microscopes for off-the-shelf alternatives. "For our light source, instead of a $40,000 laser apparatus, we used a $300 version found in ordinary video projectors," Tomer says. "We also incorporated simpler optics and electronics, and the finished product is even more robust."

The Columbia team has partnered with the Vermont-based technology company MBF Bioscience to bring their microscope to market, while also sharing the design details online, allowing scientific institutions to build the tool themselves.

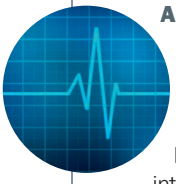
Tomer says the new tool could be used for any number of research applications, from observing the impact of novel drugs on human organoids in petri dishes to mapping the interactions of brain cells for clues about what goes wrong in neurological conditions. He notes that the tool could also accelerate the development of new medical diagnostics. By making high-quality 3D imaging more widely accessible, especially in middle- and low-income countries where advanced microscopes are in short supply, he says, the technology could help scientists process the huge numbers of tissue samples that are needed to train AI models to detect diseases like cancer.

"And if AI models are trained on samples from all over the world, they will be less biased, and more accurate, for everyone," he says.

LEFT: COURTESY OF RAJU TOMER; TOP RIGHT: SHUTTERTOCK; BOTTOM RIGHT: ADOBE STOCK

STUDY HALL
RESEARCH BRIEFS

Progress toward lifesaving vaccine Columbia biologist Peter Kwong '95GSAS has successfully trained the immune systems of animals to generate HIV-neutralizing antibodies, a major breakthrough in the quest to develop an HIV vaccine.



AI reads the room An AI-based system developed by Columbia nursing professor Sarah Rossetti '09NRS and data scientist Kenrick Cato can predict which hospital patients will require urgent intervention in the coming days simply by monitoring the numbers of times nurses attend to them. A study recently conducted in the intensive-care units of two major medical centers found that the system increased patients' chances of survival by 35 percent.

Cancer's electric lifeline A team of medical researchers led by Timothy Wang '83VPS has observed stomach-cancer cells forming electrical connections with nearby sensory nerves in order to stimulate their own growth. The discovery, which marks one of the first times tumors outside the brain have been found to hijack neural pathways, could open new avenues for treatment.

Start talking politics Contrary to popular belief, Americans who engage in political debates with friends and family often come away from the discussions feeling more positive and hopeful, finds Modupe Akinola of Columbia Business School. She says that face-to-face conversations, rather than online debates, lead to better outcomes.

Sound unbound Columbia biomedical engineers led by Elizabeth Olson '81BC have developed a tiny implantable microphone that could lead to the first fully internal cochlear implants for people with hearing loss. The researchers say that the innovation could provide improved sound quality and convenience, allowing users to bathe, sleep, and play sports without the need to remove their device.

A starry newborn Columbia astrophysicist Kartheik Iyer has discovered a new galaxy that formed in the early years of the universe and resembles an infant Milky Way. He and his colleagues have named it "Firefly Sparkle" for its clusters of flickering newborn stars.

Mariana van Zeller interviews the cofounder of an outlaw militia group.

Criminal Conversations

Investigative journalist Mariana van Zeller ’02JRN shines a light on the world’s darkest black markets

She’s met with crypto scammers, drug dealers, assassins, and human traffickers, taking viewers everywhere from meth labs in Sinaloa to gang dens in South Africa, but investigative journalist Mariana van Zeller ’02JRN, host of the National Geographic series *Trafficked*, still insists she has one of the best jobs in the world. “I have the privilege of experiencing situations that very few people will experience in their lives,” she says. “And no matter how far to the edges of society I travel, I can still find people who are relatable and redeemable.”

Trafficked, whose fifth season premieres in July on the National Geographic channel and Hulu, takes viewers deep into the underbelly of the world’s notorious black markets, offering a rare and intimate look at the people who drive them. In each episode, van Zeller sets out to untangle the complexities of a criminal enterprise, sitting down with the masked masterminds — dealers in drugs, guns, exotic animals, and often humans — who are willing to share the details about their nefarious networks. “About 38 percent of the global economy consists of black and gray markets,” says van Zeller. “Yet we know very little about them.”

Van Zeller and her team secure such an incredible degree of access to criminals who, with their faces covered and voices distorted, are willing to speak on international TV that she is often asked if the show is fake. “It would be much easier if it were fake, but it’s not,” she says. Indeed, each forty-five-minute episode requires months, even years of research. “I’ve taken trips halfway around the world to meet with people who then turn me down,” adds van Zeller, who is also an executive producer. “I’ve gotten used to being rejected, but it’s all about persistence.”

It was van Zeller’s unwavering persistence that kick-started her career. Growing up in Portugal, “I used to watch the nightly news with my family, and I thought the anchors were the most intelligent, fascinating people,” she says. She applied to Columbia Journalism School — “the most famous, best journalism school in the world” — and got rejected (twice) but refused to give up. “I decided to get on a plane, fly to New York, and knock on the dean’s door.” She ended up speaking with associate dean David Klatell for an hour. Later that year, she received an acceptance letter. “It was a day that changed my life,” says van Zeller, who not only got an education but also met her husband and collaborator, Darren Foster ’02JRN, at Columbia.

NATIONAL GEOGRAPHIC

The success of *Trafficked*, the winner of five 2024 News and Documentary Emmys, is built on the premise that "people want to be understood, and they want to talk about what they do," says van Zeller. "Sometimes their own families don't even know. They see themselves as the best at their jobs, whether as counterfeiters or chemists, and they have no one to boast to." Many also feel immune

The *Trafficked* crew visited the Congo for an episode on ape smuggling.

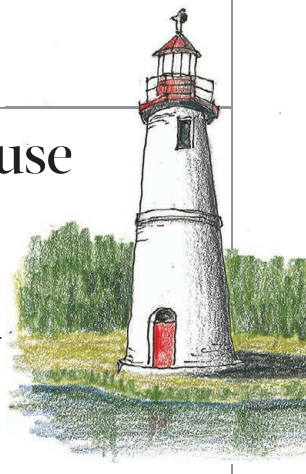
to consequences. While van Zeller approaches interviews with empathy and an open mind, some sources are less relatable than others. "The episode we did about assassins was hard," she says.

Van Zeller can appear shockingly fearless on camera. But a few situations have been legitimately terrifying. For the final episode of season four, the *Trafficked* team was in Niger to investigate the links between gold mining and terrorism when a military coup broke out. "The airspace closed, the borders closed, and we had no way out," recalls van Zeller. "This is one of the most dangerous places on earth, with kidnapping squads and groups like ISIS, al-Qaeda, and Boko Haram, and we were a possible target. I felt enormous responsibility for my team." After several days holed up in a remote desert hotel, van Zeller and her crew boarded an emergency flight, making an escape that capped off one of the show's most gripping episodes.

Even after that close call, van Zeller isn't backing down from exposing global trafficking networks and the conditions that enable them. "A lot of black markets occur as a result of governments failing us," she says. "We did an episode on how millions of Americans resort to counterfeit pills because they can't afford to fill their prescriptions, even though they have insurance. I think that says more about systemic failures in the United States than about the black-market operators finding opportunity in those failures."

Despite the dangers of her work and the frequent interactions with scammers, smugglers, and murderers, van Zeller maintains a positive outlook. "Nobody is born wanting to be a criminal. It's a lack of opportunity and jobs that leads most people into lives of crime," she says. "I truly believe that trying to understand why people do what they do is more important than judging them."

Lighthouse Seeker



As an architect, Jim Lammers '70GSAPP specialized in building medical facilities. Now the Minnesota resident uses the freehand drawing skills he honed at Columbia to capture whimsical views of interesting structures from his travels. Lammers's recent book *Lighthouses of the Great Lakes* features original renderings of that endlessly romanticized maritime beacon. "Lighthouses are just fascinating to me," says Lammers, who visited and sketched 130 of them on the Great Lakes, including the Thames River Rear Range Lighthouse (above). "They have similarities from place to place, but each has its own character."

"The 1818 **Presque Isle Lighthouse** in Erie, Pennsylvania, was the first American lighthouse on the Great Lakes. It was replaced by the present structure in 1873. I like how the rectangular shapes of the tower and dwellings create a Mondrian-like composition."

"The 1870 **Cana Island Lighthouse** in Wisconsin has an awesomely tall tower — eighty-nine feet. I was so impressed that I exaggerated the height a bit."

"Ontario's **Burlington Canal Main Lighthouse** was built in 1857 using dolomite limestone after the original structure burned down. It was the first Canadian lighthouse to burn coal oil instead of whale oil."

LEFT: NATIONAL GEOGRAPHIC; RIGHT: JIM LAMMERS

ASK AN ALUM: THE SCIENCE OF SKIN CARE

Lian Mack '99CC, a board-certified dermatologist and founder of the New York practice GlamDerm, helps patients enhance their natural features.

What are your areas of focus?
I specialize in cosmetic, medical, and surgical dermatology. The skin is the biggest organ in the body, and I see a potpourri of patients for everything from the diagnosis and removal of skin cancer to cosmetic procedures like Botox, fillers, laser treatments, and chemical peels.

Injectables like Botox and filler have soared in popularity. Who are the best candidates for these treatments?
Generally, people age thirty and above. After thirty, we stop making collagen — the protein that gives skin a plump, youthful look — and start losing it. Neurotoxins like Botox work by temporarily paralyzing muscles in the forehead, in the neck, and around the eyes, preventing wrinkles from forming or smoothing out existing lines. Fillers such as Juvéderm and Restylane, which are made of hyaluronic acid, can compensate for lost volume in places like the lips, cheeks, and under-eyes. Individuals in their twenties who already have etched-in lines due to strong facial movement or who have volume loss below their eyes due to genetics may be candidates as well.

Overall, people across age groups and genders are looking to maintain their youthful appearance for longer, and they're looking for noninvasive procedures that don't require a lot of downtime. There's less stigma around cosmetic work than there was in the past, largely thanks to social media and pop culture. People are more comfortable admitting to it and talking about it. That said, some people are getting too much filler. Sometimes I will say no to a patient, because the goal of cosmetic enhancements, in my opinion, is not to

make you look different. It's to make you look like a better version of yourself.

What are the best alternatives to injectables?
You should seek out products and treatments that drive collagen production. Microneedling, which uses small needles to create tiny punctures in the skin, increases collagen by forcing the skin to heal itself. Laser treatments help drive collagen by creating areas of minor thermal injury. Lasers also correct hyperpigmentation, or discoloration, which is one of the earliest signs of aging. Keeping your skin tone even for longer will make you look more youthful.

It's important for everyone to have a solid skin-care regimen. During the day, you should protect your skin with an antioxidant serum and a sunscreen of SPF 30 or higher, and at night, repair it using a retinoid or retinol coupled with moisturizer.

What is the difference between retinoids and retinols?
Both are vitamin A derivatives that increase collagen production. Retinoids are what we dermatologists prescribe for acne and are off-label for anti-aging, while retinols are available over the counter in numerous cosmetic products. A retinoid is more powerful because it's in its active form when applied to the skin; a retinol takes longer to work.

Given the importance of sunscreen for cancer prevention and anti-aging, do higher SPF levels make much of a difference?
Studies show that the benefit tends to flatten out after SPF 30. An SPF of 50 does offer a little bit more protection, but after that, you're getting the same results.

Which products and procedures do you think are a waste of money?
Moisturizers are something that you don't need to break the bank on — drugstore versions are usually fine. There are a lot of cellulite treatments out there, like Emtone, that I don't think work. I also don't see any utility in products containing snail mucin, which is popular in Korean skin care.

What are some of the biggest skin-care mistakes you see people make?
People overdo it and end up drying out or irritating their skin. You don't need a twelve-step skin-care routine. It's really about choosing the right products with the best active ingredients. Social media has the tendency to make people think they need everything.

I often see people doing at-home procedures, like over-exfoliating or making DIY masks they see on TikTok or Instagram, that do more harm than good. I once had a patient tell me she had done a lemon mask, but citrus fruits applied to the skin and combined with sun exposure can create a toxic reaction, causing blisters and hyperpigmentation. As a doctor, it's frustrating to have patients say they learned something from TikTok, because there's a lot of misinformation out there! Even after thirteen years of education, it's hard to compete with an algorithm. — *Julia Joy*

JAMI SAUNDERS PHOTOGRAPHY

Go Exploring with the Lions

Alumni tourism experts can guide your next adventure

BIKE Former Lions basketball player Kevin Bulger ’10CC cofounded iRideArusha, a motorcycle rental and tour business, after moving with his family to Arusha, Tanzania, last year. The company allows visitors to rent bikes by the day or join guided motorcycle trips to Zanzibar, Mkomazi National Park, and other East African destinations.

DRIVE For sports-car enthusiasts looking for a luxury adventure, Fast Lane Travel, founded by Austrian entrepreneur Peter Sontag ’71BUS, specializes in Porsche tours of Europe. Travelers can take a customized road trip in the Alps, join a guided tour on the no-speed-limit Autobahn, or drive laps at the Nürburgring, Germany’s famously difficult racetrack.

WALK Started by lawyer Gene Hurley ’75CC, Best Paris Strolls is a free guide to navigating Europe’s most romantic city. Boasting “no boring streets,” the collection of routes is specially designed for mobile phones. It includes thirty strolls — each with a detailed list of attractions and recommended restaurants — through popular areas such as Montmartre and the Marais as well as offbeat quarters like Batignolles.

TREK Michelle Haruvi ’01CC is the cofounder of Rare Earth Adventures, a wilderness-tourism company based in Oregon and serving the Pacific Northwest. Guided by seasoned outdoor specialists, adventure seekers can mountaineer in the Cascades, backpack the Pacific Crest Trail, or ski around Mount St. Helens, with the option of joining an expedition exclusively for women or for LGBTQ+ people.

Bongos over Broadway

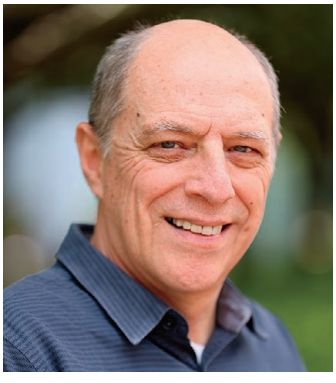
After an acclaimed Off Broadway run in 2023, *Buena Vista Social Club*, a musical developed and directed by Saheem Ali ’07SOA, opened on Broadway at the Gerald Schoenfeld Theatre on March 19. Set in Havana before and during the Castro era, the play tells the story behind the legendary Cuban ensemble of the same name and features songs from the group’s Grammy-winning self-titled 1997 album. Ali, who serves as the associate artistic director of the Public Theater, previously directed the 2022 Pulitzer Prize–winning play *Fat Ham*.

TOP: IRIDE ARUSHA; DAVID NADER / FAST LANE TRAVEL; RARE EARTH ADVENTURES; BEST PARIS STROLLS; BOTTOM LEFT: MATTHEW MURPHY; BOTTOM RIGHT: ANDY HENDERSON

Frisbee's Highflier

Mauricio Matiz makes the Ultimate Hall of Fame

In the fall of 1977, Mauricio Matiz '79SEAS, '84SEAS, a third-year computer-science major, was lounging on the Low Library steps when he noticed some guys on South Field throwing around a Frisbee. Matiz, who was born in Colombia and raised in Astoria, Queens, had tossed a Frisbee on the beach a few times and generally associated the game with picnic blankets and bare feet. But these guys weren't picnicking. They seemed like athletes.



The Discman Cometh: Mauricio Matiz in 1985 (left) and today.

Matiz was an athlete too: he ran track and played intramural football, volleyball, and soccer. Curious, he walked down to the field and asked to join in. One of the players, a guy named John, whizzed the disc at him — *hard*. Matiz, surprised, caught it and floated it back. John grabbed it and flicked another mean heater. Matiz caught it, almost in self-defense, thinking, *Man, that's so unfriendly*.

But once Matiz learned that the guys were part of a student club devoted to Ultimate Frisbee — a noncontact sport in which teams try to pass the Frisbee down the field to score a goal — it made sense: the idea is to keep the disc away from the opposing team, so your throws have to be hard and tight. "It reminded me of basketball and soccer: you have six other people running around, so you have to have a sense of the movement of the field," Matiz says. He joined the club, practiced his throws — forehand, backhand, and hammer (an overhead toss) — and began competing against teams from Princeton, Rutgers, and Cornell.

Though Matiz was just five feet nine, his ability to leap great heights allowed him to snag those whistling projectiles in midair, beyond the reach of taller opponents. He was a force on both sides of the disc and became the team's emotional leader. "I was a very aggressive player, very competitive," says Matiz. "I hated to lose."

After graduating, Matiz began working with other sorts of disks — floppies and hard drives — at the Columbia University Center for Computing Activities (later called Academic Information Services), which he joined in 1982. By then, he and Ultimate player Ken Gary '81SEAS had formed a New York City team, the Heifers, part of the new Ultimate Players Association (now called USA Ultimate), the sport's official governing body. Later, Matiz would form another team, Kaboom!, which went to the national championships four years in a row, reaching the finals in 1985, where they lost to the Berkeley Flying Circus.

Matiz played for twelve years, and last November he was elected to the Ultimate Hall of Fame. Only 132 people have received this honor since 2004, in a sport with millions of players.

Impressive, yes, but Matiz ascended to similar heights at Columbia. In 1998, he and Frank Moretti '76GSAS, '83TC of Teachers College, tasked with bringing technology into the classroom, started what is now the Columbia Center for Teaching and Learning. They oversaw hundreds of projects, creating multimedia learning tools for *The Autobiography of Malcolm X*, Salman Rushdie's *Midnight's Children*, and many other works. Matiz retired in 2023 after forty-two years, and at his send-off at Faculty House, colleagues praised him as "our tech captain."

Matiz, who lives on the Upper East Side, continues to build his legacy. He is married to a former Ultimate player and has two grown children. He is on the executive committee of the Columbia Fiction Foundry, a workshop for alumni writers that also hosts literary and networking events. And until recently — before the US government paused the refugee resettlement program — he volunteered at the Migrant Center of New York, where he helped people fleeing from Venezuela and Ecuador fill out their asylum applications. As an immigrant himself, he wanted to do something to "counter the callousness that had arisen" against those who were "trying to find a better way."

Whether it's Frisbee, computing, writing, or lending a hand to others, Matiz pursues all his interests with the same sense of purpose and dedication. "When you start doing something and realize you could be good at it, it just feels right," he says. "And I've always found that the better you get at something, the more you want to do it."

— Paul Hond

LEFT: KARL COOK; RIGHT: VIN ALIBERTO

NEWSMAKERS

● In January, **Camden Pulkinen '24GS** scored his second consecutive bronze medal at the US Figure Skating Championships in Wichita, Kansas. A recent Columbia graduate, Pulkinen balances a full-time finance job with training and competitions.

● **James Tejani '09GSAS**, a historian at California Polytechnic State University, won Columbia's coveted Bancroft Prize for *A Machine to Move Ocean and Earth*, which tells the story behind the Port of Los Angeles and the development of Southern California.

● Before the end of his term, President Joe Biden honored **Ken Podziba '91GSAPP** with the President's Lifetime Achievement Award. Podziba is the president and CEO of Bike New York, a nonprofit that promotes cycling in New York City through bike education and safety programs, the annual TD Five Boro Bike Tour, and other initiatives.

● **Jelena Diakonikolas '16SEAS**, a faculty member in the Department of Computer Sciences at the University of Wisconsin–Madison, received a National Science Foundation Career Award. The honor, which comes with a $700,000 grant, will support Diakonikolas's ongoing research into optimization algorithms in machine learning.

● Filmmaker and musician **Jim Jarmusch '75CC**, best known for making understated indie flicks, including *Stranger Than Paradise* and *Coffee and Cigarettes*, is also an accomplished collage artist. *Some More Collages*, Jarmusch's first solo exhibition in Los Angeles, opened at the James Fuentes Gallery in March.

● **Karim Chaiblaine '13BUS**, CEO of the Saudi sustainable-energy company Nesma Mobility, was named a knight in the National Order of the Legion of Honor, the most prestigious order of merit granted by the French government.

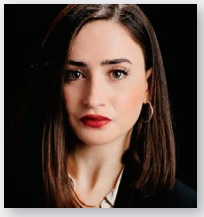
● UC Irvine bioengineer **Kyriacos A. Athanasiou '89SEAS** was elected to the National Academy of Engineering along with Columbia faculty members Michal Lipson and Venkat Venkatasubramanian.

● Chef and TV personality **Judy Joo '97SEAS** released her third cookbook, *K-Quick*, a guide to Korean dishes that can be prepared in thirty minutes or less.

● Two alumnae received literature fellowships from the National Endowment for the Arts this year: **Madeleine Cravens '22SOA**, author of the 2024 poetry collection *Pleasure Principle*, and **Elina Alter '16SOA**, in support of her forthcoming translation of the Russian novel *Steppe* by Oksana Vasyakina.

● Screenwriter **Nimisha Misra '24SOA** won a Filmfare Award — India's equivalent of an Oscar — as well as a Screenwriters Association of India award for her work on *Kaala Paani*, a Netflix survival-drama series about a tropical-disease outbreak.

● **Bao Ong '10JRN**, a food writer who has contributed to publications like *Bon Appétit* and *Time Out New York*, was recently named the restaurant critic for the *Houston Chronicle*.



● Journalist **Lee Yaron '24SIPA** won the Jewish Book of the Year award from the Jewish Book Council for *10/7: 100 Human Stories*, an in-depth investigation of Hamas's October 7, 2023, attack on Israel.

● **Sharon Collins '99SEAS**, a math teacher at the New Heights Academy Charter School in Harlem, received a Presidential Award for Excellence in Mathematics and Science Teaching, the highest honor for K–12 teachers of STEM subjects in the United States.

● The 2025 Venice Architecture Biennale, on view from May 10 to November 23, showcases the work of multiple alumni architects: **Charles Renfro '94GSAPP** and the late **Ricardo Scofidio '60GSAPP** of the firm Diller, Scofidio + Renfro; **Nile Greenberg '16GSAPP**, a founding partner of ANY; **Farzin Lotfi-Jam '12GSAPP**, an architecture professor at Cornell; **Jen Wood '12GSAPP** and **Emanuel Admassu '12GSAPP**, founding partners of AD–WO; **Virginia Zangs '24GSAPP**, a computational designer; **Lluís Ortega '98GSAPP**, an architectural researcher; and **Fabrizio Furiassi '19GSAPP**, an architectural historian. Alumni faculty members **Marina Otero Verzier '13GSAPP**, **Adam Lubinsky '01GSAPP**, **Adeline Chum '22GSAPP**, **Madeeha Merchant '14GSAPP**, **Adam Vosburgh '22GSAPP**, and **Lindsey Wikstrom '16GSAPP**, as well as current student **Judd Smith**, also contributed to the exhibition.

LEFT: RANIERO CORBELLETTI / AFLO / ALAMY LIVE NEWS; CENTER: EMILI BENDIXEN; RIGHT: URI BAREKET

BULLETIN

UNIVERSITY NEWS AND VIEWS

CLAIRE SHIPMAN NAMED ACTING PRESIDENT

Claire Shipman '86CC, '94SIPA, a prominent journalist and co-chair of Columbia's Board of Trustees, was named acting president of the University on March 28.

Her appointment was announced alongside news that Katrina Armstrong, who had served as interim president since last August, was stepping down.

Board chair David J. Greenwald '83LAW, in announcing the leadership change on behalf of the Trustees, stressed that Shipman will lead Columbia in a temporary capacity until a search for the University's next president is complete. "That search process will be run by a search committee including trustees and faculty, will be thorough, and will include input from all parts of the Columbia community," Greenwald wrote in an e-mail.

Shipman, a former CNN, NBC, and ABC news correspondent and best-selling author who has served as a Trustee since 2013, takes the helm at a challenging time for the University. In early March, the federal government announced the cancellation of $400 million in research grants and contracts to Columbia, asserting that the University had not done enough to combat antisemitism on campus. Under Armstrong's leadership, Columbia responded by pledging to take further steps, such as tightening rules on student protests and agreeing to closer oversight of its programs in Middle Eastern studies. Those commitments sparked backlash on multiple fronts, with some critics suggesting the measures didn't go far enough and many faculty and students decrying them as excessive.

Shipman, in accepting her new position, acknowledged the gravity of the moment. "I assume this role with a clear understanding of the serious challenges before us and a steadfast commitment to act with urgency and integrity, and to work with our faculty to advance our mission, implement needed reforms, protect our students, and uphold academic freedom and open inquiry," she said. To read more, visit president.columbia.edu.

THREE PROFS ELECTED TO NATIONAL ACADEMY OF INVENTORS

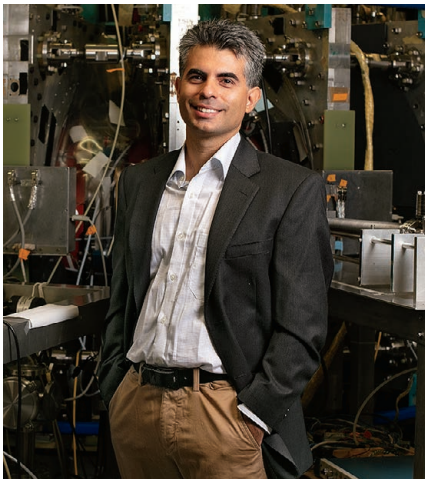
This summer, three Columbia professors will be inducted into the National Academy of Inventors, the highest professional distinction for innovative builders and makers. Columbia's newest academy fellows are Ioannis (John) Kymissis, a professor of electrical engineering whose advances in thin-film electronics have led to the creation of more efficient LED screens, microphones, pressure sensors, and radiation-detection devices; W. Ian Lipkin, a virologist and epidemiologist who has spearheaded the development of new technologies for diagnosing and tracking infectious diseases; and Konstantin Petrukhin, a professor of ophthalmic sciences who invented Tinlarebant, a drug designed to slow or prevent vision loss in patients with conditions like age-related macular degeneration and Stargardt disease. Kymissis, Lipkin, and Petrukhin will be honored at the National Academy of Inventors' annual conference, to be held from June 23 to 26, in Atlanta.

EILEEN BARROSO

ENGINEERING SCHOOL IGNITES FUSION PUSH

The school of engineering has launched the Columbia Fusion Research Center, an initiative aimed at speeding up the development of fusion energy — a clean, safe, and potentially limitless power source. Led by applied physicist Carlos Paz-Soldan, the center will tackle some of the most complex challenges in nuclear fusion by bringing together experts in mechanical engineering, astrophysics, materials science, and energy policy to collaborate with industry partners.

Fusion power, or the process of capturing energy released when atoms fuse together, has been a scientific goal for nearly a century. It is considered far safer than current nuclear energy, which works by splitting atoms, but it has proven difficult to scale for commercial use. Researchers are making progress, though, and in recent years a number of startups have formed with the goal of generating and selling fusion energy for the first time. Columbia's new center will team up with these companies, several of which already sponsor research at the engineering school, to help them overcome the scientific and technological hurdles that remain.



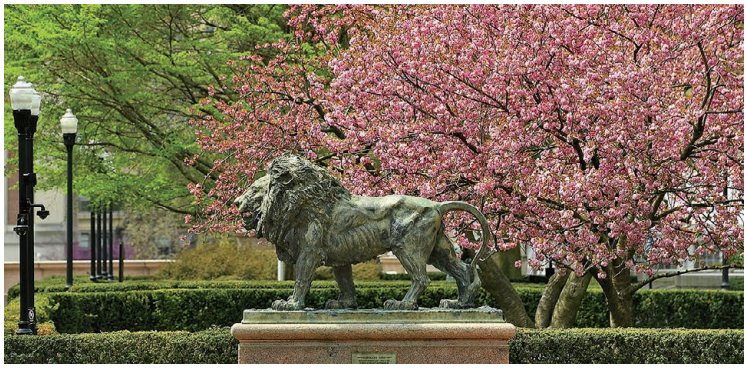
Carlos Paz-Soldan

MAILMAN SCHOOL OPENS POPULATION MENTAL-HEALTH CENTER

The Mailman School of Public Health has opened the new Susan Lasker Brody Center for Population Mental Health, a hub for research, education, policy analysis, and advocacy that will focus on preventing mental illness and promoting resilience and well-being.

Made possible by a $15 million bequest from Susan Lasker Brody '97PH, one of the largest gifts in the school's history, the center will be codirected by Kathleen Sikkema, chair of the school's sociomedical sciences department, and Michael Sparer, chair of its health policy and management department.

Brody, the granddaughter of pioneering public-health advocate Mary Lasker, who cofounded the American Cancer Society and led the Birth Control Federation of America (now Planned Parenthood), helped to conceive the center before her passing in 2022. Her bequest will support a robust research program, fund an endowed chair to lead the center, and provide scholarships for master's and doctoral students.



CLIMATE SCHOOL LAUNCHES NEW DEGREE PROGRAMS IN FINANCE, ENGINEERING

The Columbia Climate School has announced the launch of two new interdisciplinary degree programs that will blend climate science with training in finance and engineering, respectively.

The first, a one-year master's program in climate finance offered in partnership with Columbia Business School, combines coursework in climate science, international finance, capital markets, and energy and infrastructure financing. Designed to meet the growing demand for professionals who can assess financial risks posed by climate change and develop strategic responses, the program prepares graduates for roles in both the private and public sectors.

The second offering, a dual-degree program with Columbia Engineering, will equip students with the expertise to develop and implement innovative carbon-management solutions. The two-year program covers carbon capture, utilization, and storage (CCUS) technologies and prepares graduates for careers as climate-policy analysts, carbon-market specialists, climate-risk managers, and renewable-energy consultants.

Both programs will welcome their first cohorts this fall.

TOP: JÖRG MEYER; BOTTOM: EILEEN BARROSO

The Reggio School in El Encinar de los Reyes, Madrid.

ANDRÉS JAQUE'S WORK DISPLAYED AT MOMA

The work of Columbia architecture dean Andrés Jaque is now a part of the permanent collection of the Museum of Modern Art in New York City. Specifically, his design for the pre-K–12 Reggio School in Madrid, which in 2022 he and colleagues at his firm Office for Political Innovation turned into an ecological wonderland, complete with its own rainforest and wildlife. The project, represented at MoMA through photographs, digital drawings, handmade sketches, and a large model, is part of a long-term exhibition of radical eco-architecture called *Down to Earth*. "This building is more than sustainable; its design enhances the biodiversity of ecosystems," says Jaque, whose work was a finalist for the prestigious EU Mies Award and won the Spanish FAD Award.

COLUMBIA RECOGNIZED FOR COMMITMENT TO MILITARY VETS

The nonprofit Student Veterans of America (SVA) has recognized Columbia's Center for Veteran Transition and Integration (CVTI) with its William Pearson Tolley Champion for Veterans in Higher Education Award.

Presented at SVA's national conference in Colorado Springs earlier this year, the award is given to institutions that demonstrate exceptional support for US military veterans in their pursuit of higher education and career advancement.

"This honor from SVA reinforces Columbia University's place as a top choice for veterans looking to pursue a world-class education," says Curtis Rodgers, vice dean of Columbia's School of General Studies and the founder of CVTI.

Approximately seven hundred veterans are currently enrolled at Columbia, more than at all the other Ivy League universities combined. Established in 2017, CVTI provides comprehensive support services for veterans studying at Columbia and trains staff at other colleges and universities on how to assist veterans transitioning into academic and professional life.

JENNIFER POSEY NAMED CUIMC'S FIRST CHIEF GENOMICS OFFICER

Jennifer Posey, an influential medical geneticist and physician-scientist, has been named chief of the Division of Clinical Genetics in the Department of Pediatrics and the inaugural chief genomics officer at Columbia University Irving Medical Center (CUIMC).

An expert in deciphering the genetic basis of complex human diseases, including rare pediatric conditions, Posey will expand the reach of CUIMC's pediatric clinical-genetics division by establishing new connections with the Department of Medicine. She will also lead efforts to advance medical genetics and genomics at CUIMC, coordinating these efforts with Columbia's Precision Medicine Initiative and with the medical center's electronic health record system, clinical genomics laboratories, and genomic data infrastructure.

Posey joins Columbia from Baylor College of Medicine, where she was a faculty member and attending physician since 2014. The author of more than 250 scientific papers, she earned her undergraduate degree from the University of Texas at Austin and her MD and PhD from Baylor College of Medicine. She then completed her medical residency at Columbia before launching her career as a physician and researcher.

LEFT: JOSÉ HEVIA / ANDRÉS JAQUE / OFFICE FOR POLITICAL INNOVATION; RIGHT: CUIMC

COLUMBIA | Office of Gift Planning

Plan Beyond

Design the Future You Envision

A Lamont-Doherty Earth Observatory professor and a PhD student work together to map the fracture systems of a fault zone in Palisades, New York. Photo Credit: Sirin Samman

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How can I benefit from gift planning?

You can increase your impact and create a lasting legacy in a way that works for you.

Why share my future plans?

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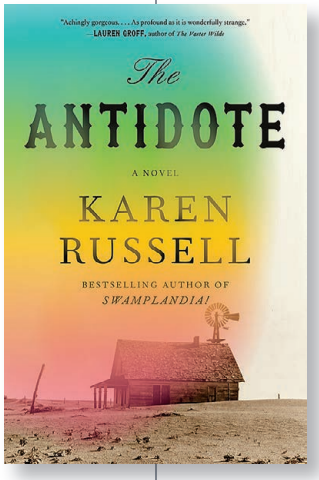
The Antidote

By Karen Russell '06SOA (Alfred A. Knopf)

A "prairie witch" uses an emerald-colored ear trumpet to collect deposits of memories from settlers on the Great Plains, promising relief from guilt and shame. A sentient scarecrow inexplicably survives a severe dust storm and seems to be filled with more than straw. A New Deal photographer's magical camera offers startling visions of a Nebraska town's inescapable past and its potential futures.

These strange occurrences feel right at home in the alternative dust-bowl-era Nebraska dreamed up by Karen Russell '06SOA for *The Antidote*, her first novel since the 2012 Pulitzer Prize finalist *Swamplandia!* Since the release of her debut 2006 story collection *St. Lucy's Home for Girls Raised by Wolves*, Russell has garnered accolades for her spellbinding fiction that injects fantastical elements into life as we know it, illuminating profound human truths. With *The Antidote*, an ambitious, deeply researched epic, Russell builds on this foundation, refracting American history through the lens of the surreal — to eye-opening effect.



Set in the fictional town of Uz — a name borrowed from the book of Job by devout Polish farmers who founded the settlement — the novel opens with a true historical catastrophe. On Black Sunday, April 14, 1935, a dust storm pummels the Great Plains as "the soil rose in mutiny against the farmer," as Russell puts it.

In Russell's invention, the storm also bankrupts Uz's prairie witch, one of the novel's four narrators. The witch, known as the Antidote, gained the power to enter a trance and absorb others' memories when her baby was stolen from her at a state-run maternity home — the real Milford Industrial Home — when she was fifteen. The shock left her with an open wound that could be filled with customers' secrets in a "painless exchange," leaving her with no conscious understanding of what they whispered into her ear horn. But the Antidote wakes amid the storm to find that the whirling dust cloud has siphoned fifteen years of memory deposits.

While the Antidote grapples with her sudden loss, wheat farmer Harp Oletsky finds his land curiously untouched. The sole survivor of one of Uz's founding families, the forty-five-year-old bachelor has held on through four years of drought and crop failure that have left him deeply in debt. But after the storm, the air above his farm is fresh, his scarecrow stands tall, and stalks of green wheat stud his fields. To Harp, an earnest man who has "witnessed the extraordinary sorrows that ordinary people must bear," from the suicide of his shell-shocked veteran brother to the recent murder of his estranged sister, this miracle is not solely joyous. He is terrified about what it portends — especially since he's the only farmer whose land was spared.

Russell interweaves the alternating stories of the Antidote's loss and Harp's luck with those of two other narrators — Harp's orphaned teenage niece Asphodel, who sublimates her grief for her mother by dedicating herself wholly to basketball, and Cleo Allfrey, a Black photographer who has been hired by the Resettlement Administration to document rural poverty à la Dorothea Lange.

While Russell takes her time connecting the dots between these characters, what unites their perspectives is a preoccupation with the slippery nature of memory. Allfrey is conscious that her photographs "substitute for memories" but also that "a memory is never the fullness of what happened." Asphodel feels her murdered mother is "dying a second time" as memories are "fraying and fading" inside her, and Harp refuses to visit a prairie witch to unburden himself of painful memories of his siblings. The Antidote holds tight to her weakening memory of her stolen son and gradually comes to terms with her complicity in excising Uzians' secrets. "There is no safe

way to remove chapters from the book of one's life," she explains.

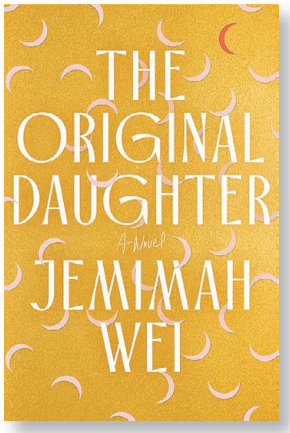
When Russell finally brings all four narrators together, they reassemble a collectively suppressed memory about the greatest betrayal of their country. What the Antidote and other prairie witches have helped willfully conceal from settlers like the Oletskys — and what Allfrey's magical camera reveals — is the complicity of their ancestors in stealing Native territory. The land in Nebraska and other Great Plains states that the government advertised as free to homesteaders was the homeland of Indian tribes. In uprooting centuries of Indigenous wisdom about tending the prairies, the government and settlers laid the groundwork for the soil erosion that would lead to the dust bowl.

The myths of *terra nullius* and manifest destiny depend on collusion and collective amnesia. In *The Antidote*, Russell reveals the great cost of buying into those myths by spinning an enchanted story of her own. It is a rare work of fantastical historical fiction that demystifies rather than repeats the distortions of the past. "Shame is a guide, if you can direct its burning light to the next right action," Russell writes. *The Antidote* illuminates paths toward possible restoration.

— Kristen Martin '16SOA

The Original Daughter

By Jemimah Wei '22SOA (Doubleday)



In her rich, expansive, much-anticipated debut novel, *The Original Daughter*, Jemimah Wei '22SOA examines the relationship between two sisters, asking aching questions about the bonds that tie us to our loved ones — how they form, what causes them to shatter, and how they can be repaired.

At the start of the novel, those familial bonds seem to be irreparably broken. Genevieve Yang is biding her time at a dead-end job in Singapore, where she lives with her ailing mother. When her mother is diagnosed with a terminal illness and the family can't pay for treatment, Genevieve is asked to call her estranged sister, Arin, a world-famous movie star. It's the ultimate test, and Genevieve falters.

To get to the root of the rift, Wei takes us back to an early betrayal that altered the Yang family forever. Until she was eight, Genevieve was an only child who believed her grandfather had died when her father was young. Then the family receives startling news: Genevieve's grandfather has only recently passed away and has left behind a second family in Malaysia. That family, now destitute, is sending their youngest, a seven-year-old girl named Arin, to live with the Yangs as their adopted daughter.

At first, Genevieve and Arin circle each other cautiously. Arin refuses to speak, but Genevieve helps her feel at home — ironically, by hatching a plan for Arin to return to Malaysia. But when their mother foils the scheme, Genevieve starts to see value in the sister she hadn't known she needed. "I knew I had a sister, I could not unknow it," she says, watching Arin and her mother hug. "Who else could I confide in, who else in this stupid, sad world would understand perfectly the perverted jealousy of standing to the side, mesmerized by the sight of their embrace?"

Genevieve struggles to untangle her feelings, and Wei excels at laying bare her character's complex, shifting emotions. Both thoughtful and petty, she is a deeply human narrator who luminously straddles the shifting tides of allegiance and jealousy between her and Arin, a dynamic that influences the course of these lives lived in tandem. As they grow together, their bond strengthens, but so do their conflicting feelings.

Until secondary school, Genevieve excels academically, sacrificing her social life. She makes it to the top of her class amid Singapore's competitive academic culture, whose intense pressures Wei documents deftly. But inevitably, she buckles. At the same time, Arin comes into her own, especially after booking a job as a host of a YouTube show. Almost immediately, people are taken by Arin's telegenic appeal. Genevieve looks on with fear and admiration: "I saw that Arin, who wore her childlike shyness like a lampshade, had not truly understood what it meant to voluntarily present herself to the world to be perceived until that very moment. And now it could not be contained."

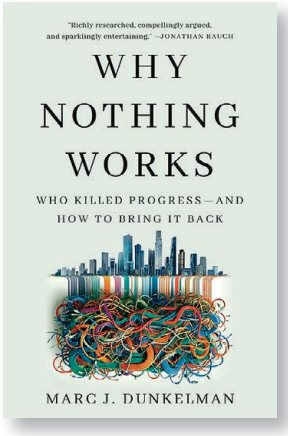
Wei — who worked as an on-screen host in Singapore for eight years before moving to New York for Columbia's MFA program — uses Arin's ascent to explore what it means to live in the public eye. Meanwhile, Genevieve's life grows quieter as Arin's grows brighter, and the consequences are devastating.

An epic story that takes us from Singapore in the '90s to the 2011 earthquake in Christchurch, New Zealand, *The Original Daughter* also reveals the intimate cartography of a deeply complex family. Through supple prose, Wei offers a tender look at sisterhood, combined with an examination of the distortions of modern celebrity and their repercussions.

— Michael Colbert

Why Nothing Works

By Marc J. Dunkelman '01CC (PublicAffairs)



The blunt title of Marc J. Dunkelman's new book, *Why Nothing Works*, is that political rarity: a statement that finds consensus among all Americans, left, right, and center. Somewhere along the way, we agree, our government became incompetent, unable even to tackle, let alone solve, the nation's greatest material challenges.

In examining how we got here, Dunkelman '01CC, a political historian, takes us back to a United States that once moved fast and didn't break but *built* things — big things, like public works (dams, reservoirs, and electrification projects that, in the case of the New Deal–era Tennessee Valley Authority, brought electric power to an undeveloped forty-thousand-square-mile swath of the rural South in just over a decade), public spaces (parks, forests, nature trails), and public transportation (tunnels, bridges, railroads, and highways that spanned a continent). How did a public sector capable of such accomplishments devolve into one that, to invoke a widely publicized recent boondoggle, was prepared to spend $1.7 million and ten years to install a single public toilet in San Francisco? Back in the 1930s, '40s, and '50s, Robert Moses 1914GSAS, '52HON, an unelected bureaucrat, all but singlehandedly transformed New York City and its environs, demolishing whole neighborhoods to realize his idiosyncratic vision of modern urbanism. Was everybody suddenly allergic to progress? Where had all the Robert Moseses gone?

Therein lies the rub, because the dilemma raised in Dunkelman's subtitle ("Who killed progress?") can in large part be laid at the feet of overreachers and power abusers such as Moses, whose high-handed takeover of New York was charted in the best-selling book *The Power Broker*, by Robert Caro '68JRN, released in 1974 as the nation was reeling from the fallout of the Watergate scandal. By then, Americans had already weathered decades of deceit by both government and private industry — about dubious US military interventions, about harmful pesticides and other toxins, about the automobile industry's disregard for passenger safety. Distrust of powerful institutions, known collectively as "the establishment," was rampant, and a new generation no longer accepted the truism that, in Dunkelman's words, "government would fund great endeavors, and those endeavors would be run centrally by great men."

Enter an era of "guardrails"—important checks on power that were designed to curtail such abuses and restore accountability to the citizens whom government was supposed to serve. The downside? Limitations on power generate so much fine print and so many hoops for planners to jump through that even the worthiest projects often fail to come to fruition.

Dunkelman sets out to untangle this conundrum. He traces modern progressivism, a movement that originated around the turn of the last century, to two distinct strains of American thought — one rooted in the ideas of Alexander Hamilton, who believed that effective governance required power to be consolidated into centralized institutions with strong leaders, and the other in those of Thomas Jefferson, a fervent anti-monarchist who valued the freedom and autonomy of individuals above all. For government to succeed, Dunkelman posits, the two strains must be in balance; when one side veers off-kilter and disturbs the equilibrium, government fails. The two models have moved in and out of dominance, depending on the historical era, and the golden mean Dunkelman envisions has probably never been perfectly struck. In reality, it turns out that breaking things is an inevitable stage in the process of building things. The dams that brought electricity to the impoverished masses of the Tennessee River Valley also flooded thousands of farms and homes, dislocating families who'd lived there for generations. Progress, however defined, always leaves casualties in its wake.

Dunkelman's tour through this push-pull history is chock-full of revelations and fascinating tidbits. For readers steeped in recency bias, these historical elements provide much-needed perspective. Meanwhile, Dunkelman's accounts of stymied-at-every-turn present-day projects highlight the headshaking absurdity of a system that he believes has tipped too far in the Jeffersonian direction. Its aversion to power and unwillingness to tolerate any preference for one party's interests over another's, Dunkelman argues, have resulted in civic gridlock.

His proposed fix is perhaps the book's shakiest element. He urges his compatriots to set aside their reluctance to "pull power up" and allow leaders and institutions to exercise more unilateral decision-making power. The fact that this book is dropping at a historical moment when its readers will likely be horrified by the idea of *increasing* the unilateral power of governmental leaders in no way diminishes Dunkelman's achievement here. Read the book, ponder its arguments, and let the discussions commence. — *Lorraine Glennon*

READING LIST

New and noteworthy releases

LIQUID: A LOVE STORY

By Mariam Rahmani '21SOA

Two years after finishing her PhD at UCLA, the unnamed Iranian-American narrator of Mariam Rahmani's hilarious debut novel feels no closer to achieving the kind of success she thought her fancy degree would provide. So she takes a glib comment from a friend seriously and decides instead to marry rich. Putting her education to some use (her dissertation was on the depiction of marriage in Eastern and Western culture), she devises a plan to go on a hundred dates over the course of the summer. The result? A wry rom-com with plenty of biting satire about the state of academia.

JOY GODDESS

By A'Lelia Bundles '76JRN

Journalist, television producer, and Columbia Trustee emerita A'Lelia Bundles is perhaps best known for her work promoting and preserving the legacy of her great-great-grandmother, Madam C. J. Walker, America's first female self-made millionaire. Bundles's biography of Walker was adapted into a Netflix miniseries in 2020. Now Bundles turns her attention to her grandmother and namesake, A'Lelia Walker, a businesswoman and patron of the arts who became a central figure of the Harlem Renaissance. Through extensive research and access to Walker's personal correspondence, Bundles paints a vivid portrait of the woman Langston Hughes called the "joy goddess of Harlem's 1920s."

STUCK

By Yoni Appelbaum '03CC

A surprising hallmark of American upward mobility is the mobility itself — the ability to move to follow economic opportunities. So argues *Atlantic* writer Yoni Appelbaum in his compelling new book. But according to Appelbaum, the mobility that once made this country more open, prosperous, and unique has declined rapidly over the course of the last few decades. In the 1960s, one in every five Americans moved in a given year; now that figure is one in thirteen. The result is that there are abundant jobs in some parts of the country but no affordable housing, while in other parts the opposite is true. Appelbaum explains the reasons for this important social change while laying out the steps necessary to reverse it.

THE TROUBLE OF COLOR

By Martha S. Jones '01GSAS

Martha S. Jones, a venerated professor at Johns Hopkins, is known for her works of African-American history, such as 2020's *Vanguard*, which chronicles how Black women have defied racism and sexism to pursue political power. Her latest work is her most personal — blending history and memoir, she examines her own family's history, looking back across six generations to grapple with fundamental issues of identity and belonging. Jones has plenty of material to work with — her grandfather was president of Bennett College, a prominent all-women HBCU — and here she showcases her impeccable research skills and elegant prose, as well as an admirable amount of true introspection.

PRONOUN TROUBLE

By John McWhorter

Pronouns have become a controversial topic over the last few years, but in his delightful new book, Columbia linguist John McWhorter puts politics aside and gets into the grammatical nitty-gritty of these pesky little words. McWhorter weighs in on whether it's correct to use *they* to refer to a singular person (he's a fan), introduces us to some excellent pronouns of yore (e.g., the Old English *uncer*, meaning *belonging to us two*), and pokes holes in some of the arbitrary rules that we adhere to (e.g., when to use *I* vs. *me*).

CELLAR RAT

By Hannah Selinger '02CC

Hannah Selinger spent much of the aughts working in the restaurant industry, as a sommelier and beverage director for celebrity chefs like Bobby Flay and David Chang. It's an enviable-sounding career, but in her debut memoir, Selinger — now a Massachusetts-based food writer — lays bare the toxic culture of some of these glamorous hot spots. The book is often funny, with plenty of juicy gossip, but Selinger is dead serious about the trauma that she endured in an industry rife with hazing, verbal abuse, and sexual harassment.

The Good-Sleep Diet

In *Eat Better, Sleep Better*, Columbia nutrition scientist Marie-Pierre St-Onge teams up with *Saveur* editor in chief Kat Craddock to create a meal plan scientifically designed to unlock the health benefits of good sleep

Columbia Magazine: Nutrition and sleep are both hot topics, but would you say most people don't know how closely they're linked?
Marie-Pierre St-Onge: I think that's true. In fact, even as a scientist who studies sleep and nutrition, I was focused for a long time only on the ways that insufficient sleep can impact nutrition, and therefore lead to weight gain and increased risk factors for disease. I didn't think about the inverse — how nutrition can impact sleep. After conducting extensive studies, I came to the clear conclusion that what we eat plays a major role in how we sleep, and that making some easy changes can have a big impact. An article in *The New York Times* for which I was interviewed caught the attention of a literary agent, and it occurred to me that the best way to help people implement these changes would be a meal plan, with delicious sleep-friendly recipes that fit into a busy lifestyle.

CM: What foods are most beneficial for sleep?
MS: Generally, I promote a diet low in saturated fat, sugar, and sodium and high in fiber, micronutrients, and phytochemicals. But to specifically boost your body's sleep mechanisms, prioritize tryptophan-rich protein sources like turkey, clams, and tofu; foods with omega-3 fatty acids such as salmon and chia seeds; complex carbohydrates provided in oats and buckwheat; and a variety of spices, like ginger and turmeric.

CM: What is tryptophan?
MS: Tryptophan is an essential amino acid, which means that the body does not produce it on its own and we must get it from foods. Most people only think about tryptophan at Thanksgiving, when we joke about the turkey putting us to sleep. Tryptophan is not actually a sedative, but it is vital to healthy sleep. About 90 percent of tryptophan is absorbed into the bloodstream, but 10 percent goes to the brain and is converted into melatonin and serotonin, which are hormones that regulate sleep and wakefulness.

CM: Melatonin is readily available at the pharmacy. Will taking a supplement have the same effect as getting it through diet?
MS: Melatonin supplements have gotten very popular. But over-the-counter products are not required to go through rigorous testing or regulation. There's also user error — people don't know how much to take or when to take it, and taking the wrong amount can result in side effects like headaches and drowsiness the next morning. While they generally won't hurt you, you can produce the adequate amount of melatonin, and secrete it at the right time, with a balanced diet.

CM: You tout the benefits of eating tryptophan throughout the day. Won't that make you sleepy?
MS: It's not only OK to eat tryptophan-rich foods throughout the day; it's necessary. Nutrients from food are not available to your body immediately: it takes hours for food to break down and move through the digestive tract — particularly proteins, which are absorbed from the lower part of the small intestine. And while tryptophan produces melatonin, it can't do so on demand. Melatonin production is regulated by the body's circadian rhythms. When it gets dark, a few hours before bedtime, melatonin levels rise, signaling to the body that it's time to sleep.

CM: Is it helpful to stop eating at a certain time before bed?
MS: Digestion, especially after a heavy meal, can impact sleep quality. I generally recommend finishing meals about three hours before bed. Of course, it's a bit of a catch-22, because going to bed hungry can also make it difficult to sleep. Having a light snack, around 150 calories, thirty to sixty minutes before bedtime can be a good solution if you find yourself famished.

CM: Is there room for alcohol in a sleep-healthy diet? What about caffeine?
MS: Alcohol is a sedative, which can help you fall asleep, but it can also disrupt sleep cycles and cause you to wake up throughout the night. Drinking too much alcohol as a pattern can eventually lead to decreased melatonin production, as well as other conditions that inhibit good sleep, like sleep apnea. There's better news for coffee lovers. You don't have to give up caffeine — foods like coffee, tea, and chocolate actually all contain important nutrients. You just have to keep an eye on when you drink it. It takes between four and six hours for the body to metabolize half your uptake of caffeine, so for most people it's a good rule of thumb to stick to decaffeinated options after lunchtime. — *Rebecca Shapiro*

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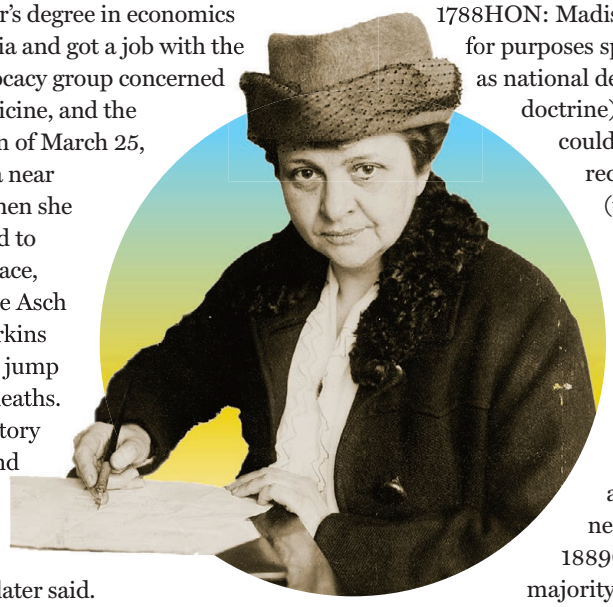
The Architect of Social Security

America's most popular social program is turning 90. Thank Frances Perkins 1910GSAS.

Perhaps no Columbian has affected daily American life more than Frances Perkins 1910GSAS. As secretary of labor from 1933 to 1945 under President Franklin D. Roosevelt '08HON, Perkins — the first woman to hold a cabinet position — responded to the Great Depression by proposing far-reaching economic protections for American workers and retirees. These radical plans included a minimum wage, a forty-hour workweek, universal health insurance, unemployment insurance, workers' compensation, and Social Security.

Perkins was born in 1880 in Boston, but her road to Washington really started in New York, where she arrived in 1909. She earned her master's degree in economics and sociology from Columbia and got a job with the Consumers League, an advocacy group concerned with the safety of food, medicine, and the workplace. On the afternoon of March 25, 1911, Perkins was having tea near Washington Square Park when she heard fire trucks. She rushed to the scene on Washington Place, where the upper floors of the Asch Building were in flames. Perkins saw young women and girls jump from the windows to their deaths. The Triangle Shirtwaist Factory disaster claimed 146 lives and drew attention to dangerous and exploitative labor conditions. "The New Deal was born that day," Perkins later said.



After the fire, New York established a citizens' safety committee, with Perkins appointed executive secretary. Her investigations of factories statewide led to wide-ranging reforms. In 1919, Governor Al Smith '26HON appointed Perkins to the New York State Industrial Commission to enforce the reforms, and ten years later, Roosevelt — then New York's governor — named Perkins industrial commissioner. After FDR won the 1932 presidential election, he asked Perkins to be his secretary of labor.

Perkins agreed, on the condition that the president support her priorities. FDR promised he would, and Perkins, confirmed by the Senate, got to work. Her Committee on Economic Security, which focused on creating a social safety net for Americans, presented its final report to Roosevelt on January 15, 1935. Two days later, FDR sent the report to Congress, asking for "Social Security" legislation. Not everyone was onboard. Some lawmakers judged the idea unconstitutional and communist. But Congress passed a bill that summer, and on August 14, Roosevelt signed the Social Security Act — "An act to provide for the general welfare by establishing a system of Federal old-age benefits" — into law.

Opponents sued, seizing on an ambiguity in the Constitution's taxing and spending clause: *The Congress shall have Power to lay and collect Taxes, Duties, Imposts and Excises, to pay the Debts and provide for the common Defence and general Welfare of the United States.* What, exactly, was the "general welfare"? The debate went back to Federalist thinkers James Madison and Alexander Hamilton 1788HON: Madison felt taxes could be raised only for purposes spelled out in the Constitution, such as national defense (the "strict construction" doctrine), while Hamilton felt that Congress could decide what the general welfare required and levy taxes accordingly (the "implied powers" doctrine).

On May 24, 1937, the court ruled 7–2 in *Helvering v. Davis* that Social Security did *not* violate the Constitution. "The hope behind this statute is to save men and women from the rigors of the poor house as well as from the haunting fear that such a lot awaits them when journey's end is near," wrote Justice Benjamin Cardozo 1889CC, 1890GSAS, 1915HON for the majority. Cardozo affirmed that Social Security addressed the "general welfare," and that Congress could spend money in pursuit of it.

Perkins served as labor secretary for all twelve years of FDR's presidency. She died in 1965, and last year President Joe Biden designated Perkins's family homestead in Newcastle, Maine, a national monument.

As for her greatest legacy, Perkins was sanguine about its future. In 1962, twenty-five years after the Supreme Court upheld the program, Perkins spoke at Social Security Administration headquarters outside Baltimore. "One thing I know: Social Security is so firmly embedded in the American psychology today that no politician, no political party, no political group could possibly destroy this Act and still maintain our democratic system," she said. "It is safe. It is safe forever, and for the everlasting benefit of the people of the United States."

— Paul Hond

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