



WIRE

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THE KIDS ISSUE

**Records falling
every week.**

**4-minute miles
becoming routine.**

**Middle-school kids
beating college times.**

**HOW DID
AMERICAN TEENS
GET SO FAST?**

A TRIUMPH OF TIMELESS DESIGN,
MODERN TECHNOLOGY,
AND
UNMATCHED
INNOVATION

Ride along as Mercedes-Benz's pioneering S-Class takes on San Francisco

San Francisco is not merely a city of gravity-defying hills, postcard-perfect Painted Ladies, and outsize technological innovation; it's a complex, living data set. To command the new Mercedes-Benz S-Class through its kinetic urban landscape—where tricky turns and impossible inclines give way to sculptural curves leading to the Golden Gate Bridge—is to experience the synchronicity between pioneering engineering and the physical demands of the road.

The Northern California drive is merely one chapter in a much grander story: The global "140 Years. 140 Places" tour follows three new Mercedes-Benz S-Class models as they sweep across six continents on an epic 31,000-mile expedition. This historic journey is a show of technological supremacy, but also a way to honor a milestone anniversary alongside the customers, dealers, fans, and friends who have helped make Mercedes-Benz a global powerhouse. It stands as a testament to the unbroken legacy of innovation that began in 1886 when Carl Benz registered his patent for the Motorwagen and Gottlieb Daimler built his Motorkutsche shortly thereafter.

As the Mercedes-Benz S-Class made its high-profile stop in San Francisco for an exclusive Advanced Driver Assistance Systems (ADAS) event, the tour provided the perfect opportunity for WIRED to test the real-world limits of the vehicle's cutting-edge Level 2++ features. Navigating the city's ever-shifting terrain requires more than just horsepower; it necessitates a central nervous system. At the heart of the new S-Class is MB.OS (Mercedes-Benz Operating System), a proprietary supercomputer that transforms every vehicle into an intelligent network. Whether mastering the steep grades of Filbert Street or taking on tight corners, the Mercedes-Benz S-Class was completely in its element.

140 YEARS OF
INNOVATION

STATE-OF-THE-ART DRIVING

The S-Class represents a fundamental shift from a vehicle that merely reacts to its environment to one that perceives it with surgical, algorithmic clarity. Outfitted with a high-performance network of 10 external cameras, five radar sensors, and 12 ultrasonic sensors—all controlled by the artificial intelligence of MB.OS—the sedan puts top-tier driver assistance directly at your command. Digital Extra: Proactive Lane Change Assist facilitates automated lane changes, while Digital Extra: Evasive Steering Function Plus automatically steers around objects or other vehicles when the system detects risk of collision within the vehicle's own lane—a pioneering feat of spatial awareness. Tech in the service of safety is baked into the Mercedes-Benz DNA, making navigation through the dense city traffic of places like San Francisco intuitive.

AGILITY IN ACTION

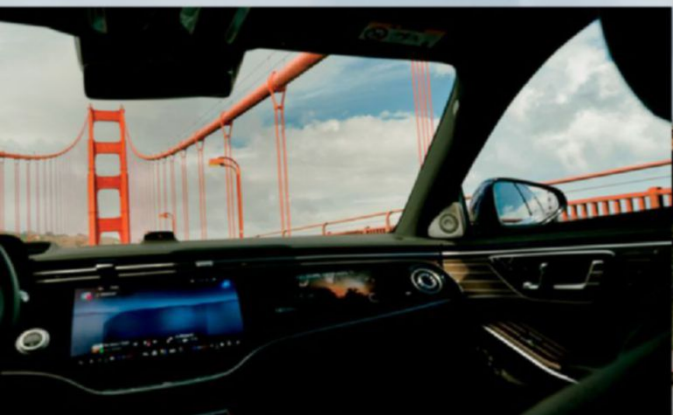
San Francisco's geography is one of movement—and unpredictability. Traditionally, narrow roadways and compact city centers challenge the physics of luxury sedans—but not the S-Class. It's a master class in agility, thanks to available 10-degree rear-axle steering, which reduces its turning radius by more than 3.5 feet, allowing the car to maneuver into even a tight Nob Hill parking space with ease. Complementing this thoughtfully engineered grace is its suspension with intelligent damping, which uses its Car-to-X information from other Mercedes-Benz vehicles driving ahead—transmitted to the Mercedes-Benz Intelligent Cloud in real time. Simply put, the S-Class "sees" road irregularities—a pothole on Market Street or a bump in the Mission—and adjusts the damping before the wheels even make contact.

INTELLIGENT DESIGN

The S-Class introduces next-generation Digital Light headlamps with innovative micro-LED technology, producing a larger, brighter high-resolution field of illumination capable of carving a clear path through the densest of mists. Even the air is curated: The Energizing Air Control system ionizes the cabin air, removing particles 1,200 times smaller than a grain of salt, renewing the cabin air roughly every 90 seconds.



Special edition and European model shown. Available features and equipment may vary by country, region, and dealer. Certain colors and materials may be available at an additional cost. See your local Mercedes-Benz dealer for details.



UNRIVALED PERFORMANCE

The Mercedes-Benz S-Class is a symbiotic collaboration between human intuition and machine intelligence. The S 580 4Matic operates with a 530-horsepower heartbeat, utilizing the new M 177Evo V8 engine to deliver a formidable 553 lb-ft of torque. This is more than an impressive stat—it's an essential feature for maintaining poise when the city's 30-percent grades attempt to disrupt your equilibrium. Across the lineup, the 4Matic all-wheel drive allows for superior grip on rain-slicked pavement and makes lane changes an exercise of surgical precision.

SUPERIOR STYLE

San Francisco is a study in calculated contrasts—from its polychromatic Victorians to the glass-and-steel high-rises of the Financial District. The S-Class embodies this same duality: It's both high-tech and heritage-rich. Its exterior is a lesson in aerodynamic poise, defined by a "catwalk" shoulder line and seamless door handles that deploy as you approach. Inside, the high-performance cabin feels futuristic yet reassuringly familiar. Hand-finished, open-pore wood and diamond-stitched Nappa leather telegraph luxury, while active ambient lighting—powered by a network of 250 fiber-optic LEDs—linked to the car's driver assistance systems can visually support system alerts.

FOLLOW THE MERCEDES-BENZ S-CLASS WORLD TOUR TO 140 PLACES

<https://mb4.me/140YearsOfInnovation>

AN IMMERSIVE EXPERIENCE

Even the most passionate audiophiles are awed by the available Burmester® High-End 4D Surround Sound System (an option for the S 400 4Matic), which utilizes resonators integrated directly into the seats to translate audio into physical vibrations. The result is an immersive cocoon where the outside noise gives way to a sensory environment tailored to each passenger's personal cadence.

The "140 Years. 140 Places" expedition doesn't end at the edge of the Pacific; the trek expands across the United States and extends to Asia, Australia, Africa, and Europe, before concluding in October 2026. Rest assured, whatever challenging terrain the S-Class encounters, it answers with absolute composure.





Colin Otto
The Menil Collection, May 2026 in Houston, Texas
loropiana.com

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NEED FOR SPEED

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SOME KIDS WILL
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"I think it should stand for *artificial idiot*," one 9-year-old says.

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S P E C S



S P E C S

THE BIG STORY

THE PAINFUL TRUTH ABOUT LONG COVID

There might finally be a way forward for long Covid treatment—if only you were allowed to talk about it.

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‘THIS IS NOT A DEATH HOUSE’

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END USER BEHAVIOR

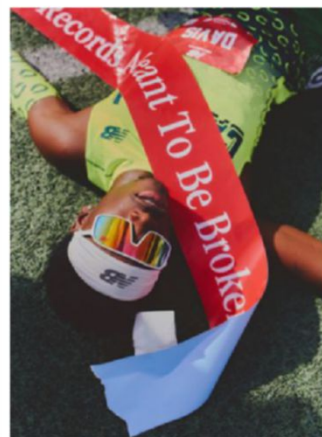


P.88 DO NOT DISTURB MONICA LEWINSKY

AS TOLD TO ELANA KLEIN

ON THE COVER

Ten years ago, American teens ran at normal speeds. Now they're breaking track records practically every meet. As one observer put it, it's "genuinely insane." To illustrate the trend, we ran with (pun intended) a photo by **Elijah Agurs** of a teenager named Keenen Davis. Davis represents the peak of the sport: In June, he broke a national record in 400-meter hurdles *and* anchored a championship-winning 4x400 team within a matter of days (and on opposite ends of the country). Catch him if you can.



CLOCKWISE FROM TOP LEFT: YI HSUAN LAI; OSCAR CLIMENT OLLET; ELIJAH AGURS; MAGGIE SHANNON

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NEED FOR SPEED

The 21-year-old streamer IShowSpeed has launched World Cup anthems, toured the globe, and turned his YouTube channel into Gen Z's ESPN. His next goal? Going to space.

THE BIG INTERVIEW

IN THE DAYS leading up to the 2026 World Cup, the streamer IShowSpeed—one of the most-watched people on the planet, who occasionally moonlights as a rapper—released the music video “World Cup (Champions),” a song about flexing national pride where he mentions all 48 teams.

As with everything the 21-year-old born Darren Watkins Jr. does, the video was instantly everywhere. The song racked up over 7 million views on YouTube in under 24 hours. The internet rushed to christen it as the anthem of the tournament, even though the World Cup already has one. FIFA, following a ridiculous outpouring from fans and perhaps realizing the massive instant exposure he could bring, added the song to its official album.

That is the power of Speed—a one-man, always-on media network.

Speed started posting on YouTube as a teenager in 2017. But it wasn’t until the Covid-19 lockdowns, in 2020, that the Cincinnati, Ohio, native committed to streaming full-time. His passion for soccer, particularly his admiration for his favorite player, Cristiano Ronaldo, shaped his earliest broadcasts, where he played *FIFA* and *NBA 2K* as people watched along. His virality came thanks to the kind of scream-laden, occasionally controversial antics the internet loves, but over time Speed ditched the stereotypical streamer playbook. The future of his brand existed outside of his bedroom.

As his audience expanded, so did his mission. Streamers succeed by getting fans to sit and watch. Speed doesn’t. The goal, he tells me, is to become a conduit of inspiration to his more than 55 million subscribers. When he started engaging with people beyond his computer screen, it gave him purpose. He wants his audience to have that too. So in 2024 he leveled up and started recording travelogues from various countries, turning his stream into a global group chat where he introduced his young audi-

ence to different cultures. He has raced a cheetah in South Africa. Sparred with Manny Pacquiao in the Philippines. Was mobbed by fans in Jamaica and Barbados. While in Indonesia, he hit 1 million concurrent live viewers, making him the first English-speaking streamer since the Chandrayaan-3 moon landing to break the record on YouTube. Last year, he embarked on a monthlong, nonstop livestream tour across 25 US states, never once turning the camera off, even while asleep.

His rise intersects with a complete transformation in how sports are consumed. Linear television is dead. Streaming services struggle to retain viewers turned off by rising costs. People are their own media platforms now. Few have pulled that transition off with more daring—and reach—than Speed, who is basically inseparable from soccer’s global storytelling apparatus at this point. For generations Z and Alpha, he is practically ESPN.

For this year’s World Cup, Speed brought his love of the game to stream from different host cities. FIFA estimated that the 2026 cup would draw billions of viewers globally across the tournament’s month-plus of play. Speed’s livestreams, no doubt, added even more eyes to that number.

This interview has been edited and condensed for clarity.



JASON PARHAM: You got into the game early, but now everyone wants to be a streamer or a podcast host. Is your level of fame still attainable?

ISHOWSPEED: It’s possible. Obviously, I have played a big role in this current generation of streaming, but years from now there are going to be people who are better at it than I was. The industry is still being born.

What defines your generation?

I am part of the first generation of media streamers. We are the mainstream. I mean, I would say a channel with 50 million subscribers is 100 percent a network. Even a channel with 1 million subs or 500—that’s the reason why streaming is so popular. This industry is a game, but at the end of the day, you can’t beat anybody else. I have to keep continuing to get better with who I am.

Is there such a thing as giving fans too much access?

That’s a pretty crazy question to ask me. But it can be about as much access as you want it to be. I’m more of a personal streamer. I want to be as close to the viewers as I can. But there is a point where it’s like, yeah, that’s personal.

Has that ever worked against you? Social media is known to enable parasocial relationships.

I encountered a lot of that early in my career, but as I grew I realized that’s what the job comes with. It really used to bother me when I was younger. People still troll; they still do their thing.

There was also a moment during your recent Caribbean tour this spring where you collapsed live on stream.

I never really lose energy. But I am human. It was a weird feeling, because I could still hear everything, I knew what was going on, but I couldn’t open up my eyes or move my body. I was just like—yup, GGs. [GGs, or good game, is streamer slang meant to show respect to other players.] I was fine though. When you stream five countries in one day, something’s bound to happen. If anything, I was surprised that that was the first time it was really happening.

“I would say a channel with 50 million subscribers is 100 percent a network.”

What makes you say that?

People don't understand how much skill it takes. My form of streaming is most definitely a sport.

How so?

I do six- to eight-hour streams. I may just look like I'm walking or meeting with people, but it all has an art to it. I might randomly race somebody out of nowhere in the middle of the street. Then I'll try their national dish. The food is not even settled, then boom, I might race someone again. I burn so many calories. Per stream, I probably burn around 3,000 to 5,000 calories. So I'm eating like 7,000 calories a stream. It's a whole performance.

What were you most excited for going into the World Cup?

The feeling. The last World Cup that I experienced [in 2022] had so many emotions. It just brings out a different side of people.

You have millions of followers. Does your presence at the World Cup feel like a chance to expose many of them, Americans specifically, to the sport?

Yeah. But the World Cup being in America already exposes so much. A lot of Americans are going to really fall in love with the game. If we didn't have American football, I think it would be way more popular.

Really?

I fell in love with European football because it's very accessible, like the art

of it. The whole sport is generally just beautiful. I do try to be an advocate for it.

Is your responsibility as a streamer something you think about?

My responsibility as a streamer is to always deliver my root message, and my root message is joy. People always yearn for that. We all have different lives, and everybody's going through something with all the problems in the world, but people tend to forget that they can get through it. And not just joy, confidence. They need meaning.

Do you mean problems in the world politically?

Yes.

Where does that need to give people confidence and joy come from?

It may sound crazy, but I was at a bad point in my life, and I came across the anime *One Piece*. I was inspired by [the main character] Luffy. It really helped me through the rough times.

What was going on at that point?

This was during 2020. I was 15. It's quarantine. I'm not doing anything with my life. Like, *nothing*. I'm used to going to school every day, kicking it with my friends, and going to football practice. I felt like I had a life. I wasn't doing anything, just playing video games all day. I wasn't streaming at the time. I was lost. I was depressed. I had a lot going on at home, personally. People don't really understand, but I came from a rough background. I didn't grow up with a lot of stuff. I had to really work from literally ground zero.

Is streaming from space still the ultimate goal, or has that changed?

I actually wanted to be an astronaut when I was younger. I was very into it in high school, when I was learning about the atmosphere. I've always had this explorer side of me, so it's funny how that is coming to life now through my YouTube career. Elon Musk, the way his mind works, he's a smart guy. As of right now, he can make that happen because he has the tech for it. I would drop everything right now and go.

So there's no moral dilemma in being associated with Elon Musk? He is someone who has promoted misinformation, allowed harassment on X, and fast-tracked the erosion of the US government with DOGE.

I'm not going to answer that. I'm not going to speak on it.

But you haven't shied away from controversy in the past. You've been a vocal supporter of Palestine.

That's just as simple as it gets. My fans who watch me, they're Muslim. When I first found out, I was in London, and my friend Chunkz told me about what was going on [with Palestine]. I was like, yo, this isn't good. And I started speaking out and being an advocate about that.

Will you use your platform to engage other issues?

I can't tell. I love to inspire people. My career is going to change throughout the years—I don't know what I'm going to do later—but bro, I always want my messages to be about fun, joy, and confidence, because that's who I am.

Do you ever worry an AI streamer might replace you one day?

No. Obviously, it's moving at a rapid pace, and we don't know how it's going to evolve. We're already in a whole new era of the internet, and people don't even realize it.

People realize it. The hard part is trying to keep pace with all the rapid change.

There are so many AI videos and so much AI that's uprooting everything. It's scary. It's one of those things where you just have to adapt. That's how humans have been surviving. We adapted by being as creative and innovative as we can. But I am not worried, because people are always going to want a real, organic connection.

You think?

We are going to really miss that. So it's always going to be there, lingering. No matter how much AI evolves, people are still going to want that human connection that we were born with. We're always going to return to that. 

FOR FUTURE REFERENCE

I, ROBOT

Your household chores can be turned into data to train future humanoids—if you're prepared for the consequences.

I AM NO longer a mere human being. I am a conduit of reality, a medium of messages. I hold a knife in my hand and slice into an organic cucumber, hunching so the iPhone strapped to my forehead can capture all 10 fingers. I throw the slices into a salad bowl and end the recording. Somewhere, a baby robot is a tiny bit smarter.

This was my existence for a week as I collected data from the comfort of my apartment, teaching humanoids how to scrub dishes, fold laundry, and pour drinks, among other tasks. If robots are going to live with us and help around the house, they need to develop fine motor skills. I performed my chores with pride (I don't usually contribute to mass datasets when I put away my jockstraps). And I was glad to make some money too.

First-person videos, shot with a camera attached to a person's head or chest, are in high demand by the companies building bots and AI models. Even though the internet is full of videos, hyperspecific clips—such as thousands of close-ups of hands pouring water into a glass—can help fine-tune machines for the real world. Some investors estimate that in the next few years, companies will buy hundreds of millions of hours of these recordings, called egocentric data, from third-party suppliers.

"I want every person on the planet to be recording themselves doing the

dishes," says Avi Patel, the 23-year-old founder of data collection marketplace Kled. "That's going to make a robot so that you never have to do the dishes ever again." Egocentric data collection is growing in places like India where, generally, self-employed workers make around \$125 a month, and these video gigs can offer similar rates.

As interest swells, data collection companies are looking to expand in the United States. DoorDash, for one, launched its Tasks app earlier this year. Gig workers may increasingly start delivering reality as well as room-temperature takeout.

I'd tested the Tasks app in March. My impression then was that bespoke video data was the dystopian future of

gig work and that I had much more to learn. So I signed up for three more platforms—Kled, Luel, and Waffle Video.

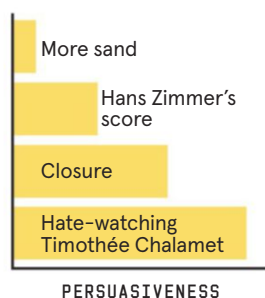
As it turns out, the gigs have a perk: My apartment has never been this clean.

KLED'S BREAKOUT MOMENT came earlier this year, when Patel posted a video on X of the company's wide-ranging video archive. The clip was viewed more than 4 million times, and Patel's phone started blowing up. "Every major foundational model and lab reached out to me asking for data," he tells me.

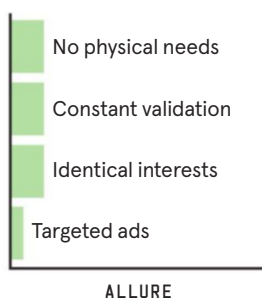
Kled mostly pays its over 400,000 users to upload their entire camera roll. Patel has seen early adopters latch on to the gig work in Malaysia. There's a



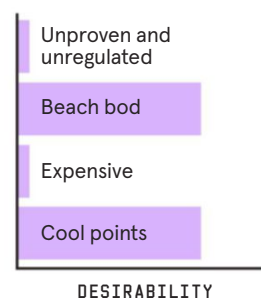
CHARTGEIST

Reasons to See *Dune: Part Three*

Reasons to Date an AI



Reasons to Take Peptides



“special tasks” section to help promote video submissions. Users pick a chore from a list, then capture video directly through the app.

I selected “take out the trash” as my inaugural bot-training task on Kled. It was labeled as “medium pay.” Getting started was easy, since the app guides users on what to record:

Description: Capture how you take out your household trash to help train real-world robotics workflows.

Task Requirements: Record a continuous in-app video showing: removing the bag, tying it, placing a new liner, and throwing the trash out. Keep the camera steady and avoid filming faces.

I slipped the smartphone strap onto my head and filmed as I tied up the kitchen garbage bag and escorted it out to an alleyway bin. I was a little anxious that I might bump into a neighbor. Around the two-minute mark, before I could reline the can, the recording shut off. The app said I’d reached the limit.

Patel says that fraud detection has been a big focus. People upload blank black boxes or videos they find on the internet. Kled pulled out of Nigeria, he says, because around 95 percent of uploads were useless or fraudulent.

I completed nine tasks on Kled, recording off and on throughout my weekend, *before* realizing that the app requires users to upload 100 pieces of media before they are eligible for a payout. A bit miffed, I decided to upload over 90 photos from my vacation last

year to reach the threshold. Kled took several days to process the data, so while I waited to get my money, I moved on to the next platform.

LUEL IS SIMILAR to Kled. Both have young founders: Luel’s William Namgyal was 18 years old when his company joined Y Combinator earlier this year. Both companies collect a variety of data beyond self-shot videos. Luel is involved in language preservation: “People are willing to record simple clips of them saying lines in their own language,” Namgyal says. “Why not expand to ego-centric videos and documents?” The app also pays users to record their computer screens and upload photos of receipts.

During my tests, Luel felt clunkier than Kled. The platform didn’t divvy up jobs by type; it simply had a Record Any Hands-On Activity From a First-Person Perspective listing that offered \$6.60 for an hour of video. (For comparison, the federal minimum wage in the US is \$7.25 an hour.) The requirements were hyperspecific—head-mounted only, wide-angle camera turned horizontally, minimum 1080p resolution, visible hands 95 percent of the time.

I restrapped my phone to my head and got to work in the kitchen, scrubbing plates and loading the dishwasher. I submitted a five-minute video to Luel’s website. A day later it was rejected. “Your hands were not visible in enough frames,” read Luel’s explanation.

After a few days, Luel emailed me to reverse its decision. The message

YOUR NEXT ...

► Accessory

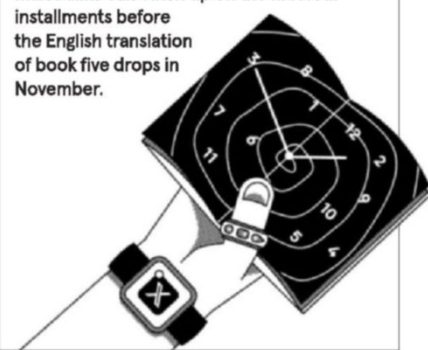
Is the one thing holding you back from joining the cult of biometrics the abysmal design of wearable devices? You’re in luck: Etsy artisans have started selling special covers for Oura rings that actually look pretty cool (and don’t scream “I’m about to tell you my resting heart rate”). Some are celestial. Others are drippy. You’ll feel so pretty and confident that your sleep score might even improve.

► Follow

The country seems to be experiencing an acute onset of Hunter Biden fanaticism—a different strain than we’re used to. Since introducing himself on X, the man who needs no introduction has proceeded to mop the floor with MAGA chuds, at times seeming like the one Democrat alive both interested in and capable of throwing a counterpunch. Back to X we go.

► Binge-Read

The time-loop genre hasn’t evolved much since *Groundhog Day*. Thankfully, Danish author Solvej Balle spent three decades writing the seven novels that comprise *On the Calculation of Volume*, a strange, surprising epic about a woman reliving a single rainy day. Moms and performative males alike can catch up on the first four installments before the English translation of book five drops in November.



FOR FUTURE REFERENCE

explained that while my “hand visibility came in at 83% across the sampled frames,” I had satisfied the rest of the requirements and Luel would, in fact, pay out. I was 55 cents richer.

NEXT UP WAS Waffle Video. It easily became my favorite of the three platforms. It focuses solely on video training data, and the “missions” I saw in the app, like shoelace tying and water pouring, paid \$25 per hour of video. Now we’re talking.

Each dataset is custom-built for the company buying the data. The app also offers gig workers recurring revenue if other companies relicense their videos. “There’s an amazing opportunity to create a symbiotic relationship between the people that are giving their life, their perspective, their creativity, their data, essentially, to these models,” says Joshua Mesnik, Waffle’s 34-year-old cofounder and COO.

Waffle was the most detailed in its guidelines about what the app does and doesn’t want. The instructions for “pouring liquids” included:

- *Pouring action must be visible.*
- *Liquid must be clearly shown.*
- *Both containers should be visible.*
- *Receiving container must be clear*

I cavorted around the house like a reality TV show producer, trying to film as much content as I could.

glass or clear plastic to be able to see changing liquid level.

After collecting first-person videos, startups need to transform the data into sellable formats. “Everything is checked for copyright. Everything is labeled, annotated, and structured to be ingestion-ready for AI training,” Mesnik says.

I found my video data groove while using Waffle. The pay rate was high enough to feel enticing, and I cavorted around the house like a reality TV show producer, trying to film as much content as I could. Tying my shoes over and over again? Done! Scrubbing the dishes until

they’re sparkling? Done! Pouring Diet Coke back and forth between glasses until it’s flat? Done!

My smartphone was glued to my forehead all evening as I completed tasks. Each submission was around 20 seconds long, as dictated by the app. I blazed through 125 approved uploads in a few days, earning \$20 for my efforts.

“MY BIGGEST FEAR,” says Namgyal, Luel’s founder, “is that unemployment will go up extremely high.” That’s despite running a company that trains robots to replace human work. Namgyal sees Luel as a quick way for people to make some cash, not as a panacea for labor trends. Patel, the Kled founder, proudly shares that a top earner on his platform is a truck driver who earns \$8,000 a month by filming with his dash cam and submitting pictures of potholes. Most users, of course, are not making this kind of cash. Egocentric video work is still gig work, which comes with fewer worker protections and less overall stability.

The way to earn meaningful money on these apps might be to specialize. Anyone can record videos of cucumber chopping, but only a sushi chef can show the best way to slice salmon. “I’m sure there’s a world where chefs are completely replaced from the planet,” Patel says. “But they’re never really replaced, because they’re at home filming videos, making unique recipes used to train these robots. They’re getting paid.”

It was finally time for Kled to pay me too. I wasn’t expecting much for my nine egocentric videos and 97 vacation photos. Still, I was taken aback by the payout: \$1.

Adding in the 55 cents for my 5-minute Luel video, my total earnings for the week came to \$21.55. I didn’t make a dent in the \$2,500-a-month San Francisco rent that I split with my partner. The gigs were basically good for a few extra Diet Cokes. Some workers, though, may accept this kind of AI gig work under economic pressure and rely on it as a means to live—teach the robot how to cook tonight so you can put food on the table tomorrow. 

EXPIRED	TIRED	WIRED
Raw milk	Sleeping in the raw	Rawdogging flights
Cuckoo	Woo-woo	Delulu
Snowmageddon	Carmageddon	RAMageddon
Waking up with the sun	Twenty minutes of morning light	Blackout curtains
"I never even met Harvey Weinstein."	"I never even met Jeffrey Epstein."	"I never even met Peter Thiel."

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START

THE BIG PICTURE

AFROMAN IS BACK— AND HE'S BITCOIN'S LATEST HERO

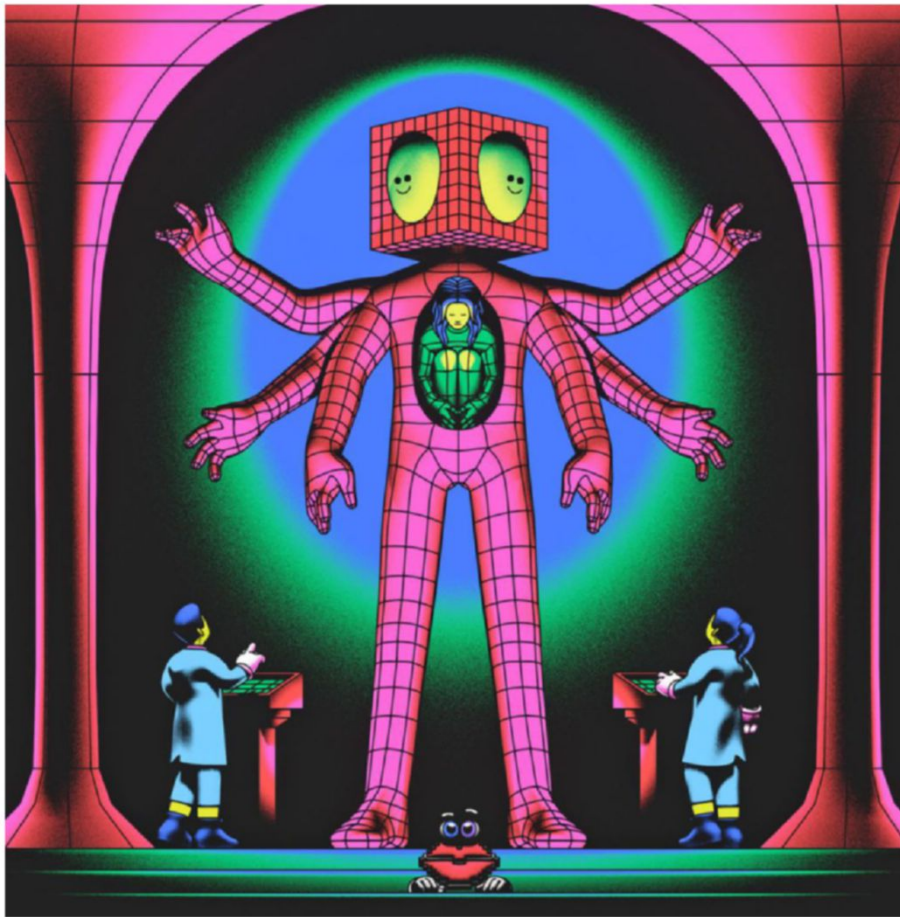
BY PALOMA SHUTES / DIRECTOR OF PHOTOGRAPHY



Remember Afroman? He first went viral back in 2000 for his song "Because I Got High"—and then again more recently for winning a court case against the cops. For Jessica Klein's profile of the 51-year-old rapper turned folk hero (out now on WIRED.com), we sent Gabriella Angotti-Jones to photograph him in

Vegas for a day. "He had big unc vibes," Angotti-Jones says. "Also, women throw themselves at him. He kept randomly alluding to it throughout the day, but it's true. I saw it multiple times." She also saw him doze off multiple times between puffs of a joint. Apparently, Afroman is still getting high.

MACHINE READABLE



→ A regular column about programming. Because if/when the machines take over, we should at least speak their language.

AS A GENRE, the “award acceptance lecture” is little more than a formality and a banality. But there is at least one charming exception to this rule—the talks given by the foremost computer scientists on the occasion of their Turing Awards.

Some read like manifestos: John Backus’ “Can Programming Be Liberated From the von Neumann Style?” (1977) inspired a new paradigm that begat functional languages like Haskell. Others are warnings: In his “Reflections on Trusting Trust” (1984), Ken Thompson demonstrated the peril of backdoored compilers, likely preventing scads of security vulnerabilities. Edsger Dijkstra, in “The Humble Programmer” (1972), urged his ilk to be wary of cleverness and acknowledge “the intrinsic limitations of the human mind.”

For our purposes, consider Kenneth Iverson’s heady 1979 lecture, “Notation as a Tool of Thought.” In it, he demonstrated that mathematical notations aren’t just convenient shorthand—CO₂ for carbon dioxide, 3,888 for MMMDCCCLXXXVIII—they also make new insights readily discoverable. As the mathematician Alfred North Whitehead once put it: “By relieving the brain of all unnecessary work, a good notation sets it free to concentrate on more advanced problems.”

Iverson won his Turing Award for APL, a spooky-looking programming language that began its life as a system of notation for bridging between languages. In the early days of scientific computing, programmers had to think in one language (mathematical notation) but then program in another (e.g., Fortran). APL was designed so that unwieldy operations could be written as compactly as equations—lines of code collapsed into a couple of symbols like + or ×. APL turned out to be more influential than adopted, but no matter: It showed that two languages could be fused into one.

JULIA & JULIA

Sometimes code is written in two languages, not one.
Can Julia fix this?

THE YEAR 2026 marks 60 years since the introduction of APL, and a new kind of two-language problem bedevils the field of scientific computing. The ruling programming language is Python, but it reigns not as a muscular conqueror so much as a doddering king. Python, in other words, is terribly slow—a flaw that even its most ardent defenders would not deny.

Hence the two-language problem: Researchers prototype in slow, friendly Python but, for performance-critical parts, rewrite in faster, less friendly languages like C++ or Rust. This limitation can't be solved by spinning up a platoon of AI coding agents, because no matter how much you optimize a slow language, a faster one will outperform it.

These binary trade-offs exist in other domains. You could say that construction, for instance, has a two-material problem. Wood is a pliable material for prototyping a structure—even an amateur can saw and nail together a functional building. But it's no good for erecting a skyscraper. This raises an obvious question: What if there were a material as manipulable as wood but as strong as steel? What if there were a language as ergonomic as Python but as fast as C?

IN 2012, FOUR computer scientists with strong mathematical bona fides came together to address the modern-day two-language problem. In a short essay called "Why We Created Julia," they said they took up the project "because we are greedy." Their text begins like a valentine to programming languages:

We are power Matlab users. Some of us are Lisp hackers. Some are Pythonistas, others Rubyists, still others Perl hackers ... We've generated more R plots than any sane person should. C is our desert island programming language.

But every one of these languages, they wrote, "is perfect for some aspects of the work and terrible for others." Greedy as they were, they wanted "a language that's open source, with a liberal license ... Something that is dirt simple to learn, yet keeps the most serious hackers happy." Julia would be the one language to unite them all.

I first encountered Julia by happenstance in 2017—a year before its syntax stabilized—when I attended lectures by Sebastian Seung, a neuroscientist who was using it to map connectomes, the complete map of neural pathways in the brain. My first impression was of its delightful, winsome name, which defied the clumsy nomenclature common in the field: the inelegant (PL/I), the ugly (Erlang), the typographically ungainly (C++), and the literally pathological (MUMPS—which, if you can believe it, forms the backbone of the American health care system).

I could also see that serious thought had gone into designing Julia. After studying the many pitfalls other languages had fallen into, the creators marshaled neat ideas from different languages—a testament to the fact that careful observation must come before embarking on so fine an enterprise as creating a new one.

AS OF 2026, Julia has come to attract a sober community of grown-ups—which can't be said of many language communities. Language nerds are an emotional, clamorous bunch (many a friendship has been broken over a difference of opinion on syntax), but the Julia community has yet to be convulsed by any major drama. It leans academic, drawing scientists more than hackers. But unlike other languages also used by academics, Julia doesn't get too fanciful (like Haskell), nor does it attract worshipful fans (also like Haskell) or engage in intellectual gamesmanship (like, say, Haskell). At the annual Julia-Con, you'll hear triumphant stories of rewriting MATLAB code in Julia and gaining 60X speedups. By some benchmarks, Julia code can run 10X to 1,000X faster than Python.

But you won't find Julia on Stack Overflow's annual survey chart of the most popular languages. It didn't replace Python, in the end—not even close. Why not? What went wrong?

First, just as a human language depends on the corpus of texts written in it, a programming language is only as good as its ecosystem and tooling. Python's is far too robust to dislodge.

Second, Julia has not been adopted by Big Tech. In the past, when a minor language was plucked from obscurity and rose to prominence, it was thanks to this kind of corporate patronage: Objective-C by Apple for iOS development, Kotlin by Google for Android development.

But third, and this is my answer: Nothing went wrong. Julia is a niche language, and for what it's doing, it's plenty successful. In all probability, Julia will live on, small but beloved. It is used for Herculean work at institutions like ASML, CERN, and NASA and in serious ventures like drug discovery and advanced machine learning.

What if there were a language as ergonomic as Python but as fast as C?

Even if Julia does replace Python someday, I'm not convinced it can solve the two-language problem—or that any language can. While the problem is commonly referenced in scientific computing, it exists in every software domain. In gaming, engines are written in C++ but scripted in Lua. In server backends, there is a panoply of easier languages—Python, Ruby, JavaScript—but when real performance is needed, the work is done in Go or Rust. Conversely, valiant efforts to use Go or Rust for frontend development have utterly failed.

But who am I to say we'll be stuck here forever? Perhaps one day someone as insightful as Iverson will figure out how to bridge the gap once and for all. When that happens, make sure to tune in to their Turing lecture. 

SHEON HAN is a writer and programmer based in Palo Alto, California.

PLAY TIME

These brain-boosting toys are some of our favorite ways to color outside the lines.



Orbita Midi Color Sequencer

This spinning sequencer is like musical roulette for budding ravers. Place the colored magnets anywhere on the four gray concentric rings, each of which controls a MIDI loop. Then plug the sequencer into a smartphone or computer, connect your favorite music software, and get creative. All four loops run simultaneously, with each magnet representing a different note or sound. You can adjust the pitch and mute individual loops too. Refreshingly mechanical, the Orbita makes visualizing music production child's play. **\$455, playtronica.com**



Lego Smart Play Pokémon Sets

Lego's first Pokémon collab almost crashed the website, so surely the Danes had IT on standby when 12 new Smart Play kits came online. There are two all-in-one kits: Pikachu's 400-piece Training House and the 751-piece Charizard-Jolteon battle. Both include smart bricks and tags that can trigger lights and sounds.

\$70 and up, lego.com

Lego Smart Play System

By combining a new smart brick with programmable NFC tags and minifigures, kids of all ages can now design and interact with Lego creations like never before. The 2- by 4-stud rechargeable smart brick is packed with a synthesizer, speaker, accelerometer, gyroscope, light and sound sensors, and LEDs. A positioning system can sense orientation between multiple smart bricks. A big bonus: Lego's Smart Play System works entirely without attention-sucking screens.



Stapelstein Rainbow Set

Kids can stack and arrange—then play or walk on—these 11-inch tiles to develop their balance. **\$299, stapelstein.com**



Kidzlane Electronic Dance Mat

\$19, walmart.com

Takway Sweekar

A Tamagotchi-like pet with an AI brain that listens and remembers. Good luck. **\$TBD, takway.ai**



Looi Robot

\$239, looirobot.com



Crocs Super Mario Core Classic Clog

\$70, nintendo.com



Gibson x Loog Les Paul

\$229, loogguitars.com

SADDLE UP

Woom Wow Balance Bike

The perfect buy if your bambino has nailed the art of sitting and standing independently, and you want more chaotic fun and adventure in your life. This self-centering, self-balancing bike is designed for kids as young as 9 months (from 28 to 40 inches in height). It gives them a chance to become the next big name on Red Bull's MotoGP roster before they've even realized that broccoli isn't actually fun little trees. **\$199, woom.com**



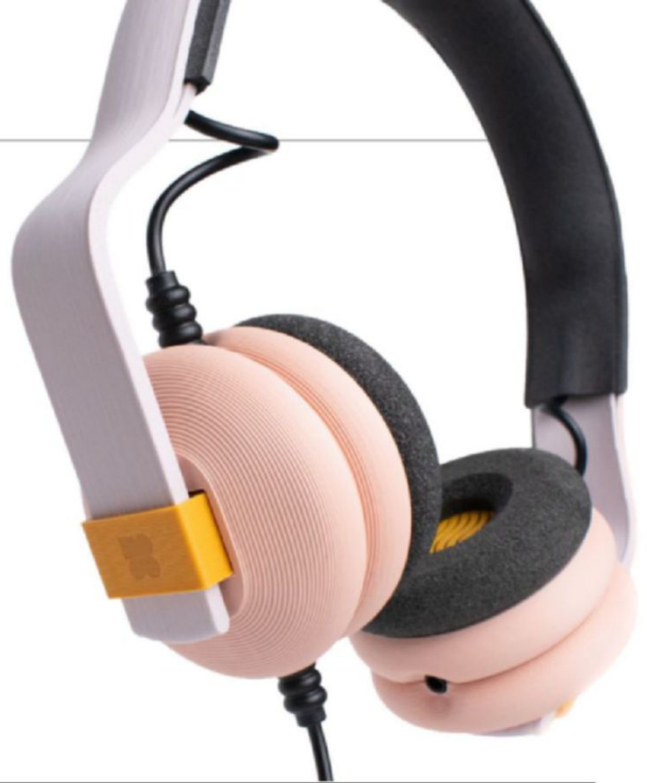


Marvin's Miniblocks
\$55, the-littlemarvin.com

SMALL SOUNDS

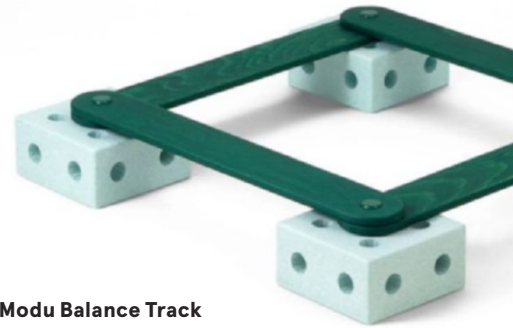
Kibu Headphones

Turn kids' headphones into a brilliant STEM project. Kibu gives them snap-together parts they have to assemble before they listen. Components are 3D-printed from plant-based materials, they have a standard 3.5-mm jack, and volume is limited to a safe 85 dB. When something breaks, parts are cheap, and your kids can learn to repair the set themselves. **\$73, kibu.family**



HoverAir Aqua

This small, license-free 4K camera drone has 10 flight modes, including a "follow-me" feature. Take it to the beach; a floating waterproof housing makes it capable of taking off and landing on water. **\$1,299, hoverair.com**



Modu Balance Track
\$203, modutoy.com



Timex Time Machines 29mm Dinosaur Watch \$49, timex.com

UNO Canvas x MoMA Card Game

Can Matisse, Mondrian, and Monet really stack the +4? **\$25, mattel.com**



Blipblox After Dark

A kid-friendly synthesizer for building beats, bleeps, and musical confidence. **\$219, blipblox.com**

Dex Camera

Take a photo and Dex identifies what's in the frame, then teaches the word in one of 16 languages. It can turn pictures into flash cards and use spoken stories to, you know, make learning fun. **\$249, dex.camera**



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R

RAISING KIDS oscillates between being the most inspiring thing that's ever happened to the most terrifying decision you've ever made. And the angst of the parent class is changing faster than ever: A few years ago, it was all about social media and screen time. Today, it's those same concerns, coupled with existential fears that AI will take our kids' jobs and serious questions about whether schools can equip students with the necessary skills for our AI-mediated futures.

For our latest special package, WIRED wanted to take a closer look at today's kids as they prepare to be the adults of tomorrow. As much as possible, we wanted to do it by talking to them,

instead of their parents. What we found were a lot of young people, especially teenagers, more prepared than we might think to navigate an uncertain future.

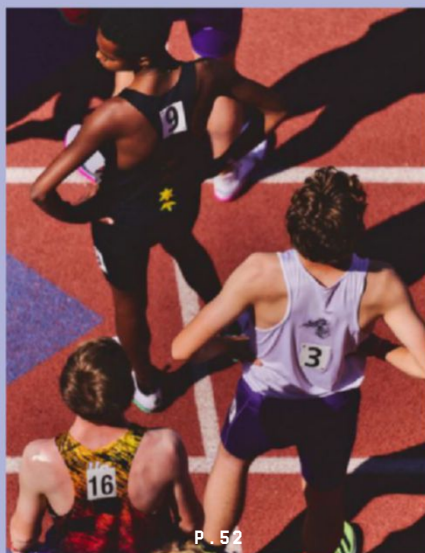
Brendan I. Koerner spoke with the young athletes running faster than ever, and got to the bottom of why they're able to shatter race records that used to be out of reach even for adults [p. 52]. Ara Rosenthal met with high school journalists who were threatened with legal action after reporting on their own community members showing up in the Epstein files [p. 48]. Suffice it to say, these are the kind of kids I hope are running WIRED one day. At a very different kind of academic institution, Todd Feathers takes you inside Alpha School with his second WIRED investigation into the buzzy educational empire, which uses learning software rather than traditional teachers [p. 48]. In fact, Feathers reveals, the company's new Manhattan campus isn't even a school—it's a "homeschooling support center" ... one that costs \$65,000 a year.

Elsewhere, Elana Klein dug into the myth that every kid, everywhere, is using AI for everything from homework to companionship. She spoke to seven young people about why they actually can't stand the technology [p. 62]. TL;DR: The slop is boring, the misinformation is frustrating, and their peers aren't learning. Speaking of schools, Megan Greenwell visited a small county in Mississippi to find out what happens when a school district excels at improving students' reading and test-taking abilities but struggles to keep them interested in literacy [p. 28].

In just a few years, most of the kids in this issue will be entering adulthood. What they know already should offer all of us some solace: Schools don't have all the answers, and neither does AI. Ultimately, the most valuable life lessons are the ones you teach yourself.

KATIE DRUMMOND
GLOBAL EDITORIAL DIRECTOR

YOUNG PEOPLE UNDERSTAND THE FUTURE FAR BETTER THAN THEIR PARENTS.



YOU
WILL
BE AS
HAPPY
AS YOU
DECIDE
TO BE

Kids can read these words.
But will they understand
this story? WIRED goes to
Mississippi to find out.



CRISIS OF



A photograph of a classroom. In the background, there are yellow bookshelves filled with books. Above the shelves, a teal wall features two decorative letters 'R' and 'A' on a striped background. In the foreground, a grey desk with black legs and wheels is positioned, with a blue chair tucked under it. The floor is a polished, reflective surface.

BY
MEGAN GREENWELL

COMPREHENSION

PHOTOGRAPHS BY
CAMILLE FARRAH LENAIN



IT'S THREE WEEKS until Mississippi's standardized test season begins, and Candace Hamberlin is feeling the pressure.

Evidence of what's at stake hangs all around Jefferson County Middle School, where Hamberlin is in her first year teaching eighth-grade English. Inside her classroom, a large piece of black polyester with clear pouches labeled "Data Wall" shows the current reading level of each student. The school hallways are lined with posters listing schoolwide scores on an earlier practice test. One prominently displays the grade Mississippi would assign their school if that practice test had been the real thing: 175 out of 700 points, an F.

Jefferson County is one of the smallest in Mississippi; 6,800 people spread across 527 square miles along the Mississippi River. It's also one of the poorest, with 32 percent of the population living below the poverty line. Fayette, where the only public elementary, middle, and high school are all based, is the only city in the county, home to about a dozen churches but not a single stoplight. The county is 13 percent white, but most of those families send their kids to private or parochial schools; 98 percent of the school district's students are Black.

Inside Hamberlin's classroom, it's time for test-prep drills. This period has 20 eighth graders enrolled, but only 10 are present; six have been pulled out for remedial work with a consultant the district has hired to boost test scores, and the remaining four are absent for unclear reasons. The students in the room each grab a Chromebook and log in, at speeds ranging from

feet-dragging to actively resistant. They open the StudySync software program, which shows them each a series of questions tailored to their weaknesses. Their faces look like they're being marched to the guillotine.

Much of literacy instruction at Jefferson County Middle School now begins and ends with screens. In fact, Hamberlin doesn't lecture at all on Wednesdays and Thursdays; students spend those class periods with StudySync and i-Ready, another adaptive software program, so each can focus where they need the most help.

Their teacher can't blame them for being sick of these exercises. The students' lives, and hers, are dominated by the looming Mississippi Academic Assessment Program (MAAP), the set of annual standardized exams that measure their progress in language arts as well as science and math. Test prep is a year-round activity. Her students must learn how to decode the meaning of unfamiliar words, make inferences, identify the central idea of a passage, analyze tone and point of view. Every Friday brings a practice test.

Before moving to eighth grade, Hamberlin logged 25 years as an elementary school teacher. Eighth grade appealed to her because it's all about *analyzing* texts, not just consuming them. That's her idea of a good time. She remembers reading the first chapter of the first Harry Potter book four times just to make sure she didn't miss a single detail. As she talks a group of students through a reading passage by Sojourner Truth, her passion is palpable—for the material, but even more for the puzzle-solving that reading comprehension requires.

"A lot of them think they're studying the story," she says afterward. "You're not studying the story, that's just the sprinkles on top. It's what was she thinking, why did she say it, how did she convey her message?"

Despite her clear talent and enthusiasm for teaching, though, Hamberlin has thus far failed to convince many of her students to care about reading. Earlier in the year, barely half of the eighth graders scored high enough to pass the all-important exam, and less than 15 percent are scoring "proficient." If that F on the final schoolwide practice test had been the real thing, it would have been disastrous; Mississippi's letter grading system comes with steep real-world consequences. Low-performing schools can face state monitoring, while their funding is more likely to come with "accountability" strings attached. State law allows students to attend out-of-district charter schools only when their home district is failing, so low scores can result in a decrease in funding because fewer students are enrolled. Superintendents and principals know that their jobs are tied to increasing scores or at least not allowing them to drop.

Across the country, reading performance has slid for 14 years, and the problem is most extreme in middle and high school. Even in Mississippi, where the improvement in elementary school test scores has become the stuff of legend, older students are struggling. No one can quite agree on why reading scores have dropped so far.

And that's just what the tests measure. Hamberlin's true fears are more existential. Hamberlin wants her students to pass the exam, but what she really wants is to build them into



readers; adults who can interpret a complex set of instructions, power through a confusing block of text, and—hopefully, maybe, at least a few—actually read books. “It’s as simple as understanding a conversation. How many times have you talked to someone and you’re talking about two different things?” she says. “All those skills from reading just transfer to life completely.”

Plenty of her students are smart and capable, but she’s never encountered a group less interested in reading. And neither she nor anyone else seems to have any idea how to fix it.



Candace Hamberlin, an eighth-grade English teacher at Jefferson County Middle School. Previous spread: the school library.

PANICKING OVER standardized test scores is an American tradition. In 1983, a Department of Education commission published *A Nation at Risk*, a 36-page report that would become the foundation of education policy discussions for decades. Until then, standardized tests were generally administered locally, with little weight attached to scores. The National Assessment of Educational Progress (NAEP), which has since become “the nation’s report card,” had run trial exams in a small number of schools since 1969, but only for research purposes.

Citing a decline in SAT scores over the preceding two decades, *A Nation at Risk*’s authors framed their concerns in geopolitical terms, warning that countries like Japan and South Korea were poised to overtake the US in global economic rankings if American students didn’t make significant gains. Their language was hyperbolic to the point of scare-mongering: “If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war,” the introduction read. “As it stands, we have allowed this to happen to ourselves.” One bullet point reported that one-quarter of Navy recruits could not read at a ninth-grade level, “the minimum needed simply to understand written safety instructions. Without remedial work they cannot even begin, much less complete, the sophisticated training essential in much of the modern military.”

In the four decades since, at least one of the authors of *A Nation at Risk* has backed away from its findings, saying the commission cherry-picked the data that best served their preexisting thesis that American schools were failing. They did accomplish their goals, though: The report called for the adoption of “more rigorous and measurable standards” in schools, and throughout the ’90s, states designed their own standardized tests to be administered across all school districts.

The march toward high-stakes testing crescendoed with President George W. Bush’s signature education reform program, No Child Left Behind, signed into

law in 2002, which required standards-based exams in reading and math for every public school student in the country. Schools that didn't meet standards risked state takeovers.

Detractors have long questioned the validity of test scores, pointing to built-in bias among other issues. Even so, state testing has become the most important measure of reading skills by a huge margin. NAEP reading scores did rise, modestly, in the first part of the 21st century (at least among elementary and middle schoolers; high school scores stayed largely flat). Scores for 13-year-olds moved from 259 to 263 on a 500-point scale between 1999 and 2012; 9-year-olds improved from 212 to 221. The narrative that American schools were failing faded from conventional wisdom.

Then reading performance began to drop again. Among 13-year-olds, scores fell to 260 by 2020, nearly erasing the previous gains. The pandemic made things worse. By 2025, 13-year-old scores had plunged to 256, just a point above where they were in 1971. (Math scores have seen a similar decline.) Scores ticked up slightly among 9-year-olds in 2026 and remained at the prior year's levels among 13-year-olds. One-third of 13-year-olds score "below basic" on standardized reading tests, meaning they can't identify the main idea in a passage.

Panic roared back. Secretary of education Linda McMahon said the national results in 2024 "confirm a devastating trend"; The Atlantic said the country was "sliding toward illiteracy"; New York magazine labeled the drift "The Big Fail." Much of the uproar sounded straight out of *A Nation at Risk*: "If policymakers and education leaders fail to act now, students—and employers—will feel the impact of declining skills and knowledge gaps as the global workforce becomes more and more competitive," the chair of the National Assessment Governing Board said in a press release.

Everyone had a pet theory as to what had gone wrong: smartphones, bad teachers, bad textbooks, lazy students, lazy families. A 2022 podcast called *Sold a Story*, about the problematic rise of the "balanced literacy" teaching method in elementary schools, revealed a peda-





Hamberlin leading a session in her class of eighth-grade students.



The Data Wall in Hamberlin's classroom shows the current reading level of each student.

gological issue in the US: Many teachers were, basically, asking kids to guess at sentences instead of making them sound the words out.

As in-school apps began incorporating generative artificial intelligence, the fears intensified. Many schools now introduce AI starting in kindergarten, saying kids have to be prepared for a future in which it's the norm. Maybe using AI tools will improve standardized test scores; it's too early to tell. But it's more difficult to believe those tools will improve literacy in the truer sense, that students will fully develop the cognitive skills to do the work themselves when they don't have to.

"There's no question that the engagement's gone," says Kevin Smith, an education scholar who co-leads the Adolescent Literacy Alliance at Florida State University's Florida Center for Reading Research. "I'm not saying they're not reading, but they're not reading books for the love of books. They're reading probably more than they ever have, but it's snippets."

Earlier this year, a team of researchers from Harvard, Stanford, and Dartmouth declared the US was in "a learning recession." And suddenly, everyone was looking to Mississippi for the answers.

ON THE SAME small campus where Jefferson County's eighth graders are scouring reading passages, the elementary school students are preparing for their own versions of the Mississippi Academic Assessment Program exams. State English Language Arts testing begins in third grade, and the first one is the most important. Under the state's 2013 Literacy-Based Promotion Act, any third grader who fails the test three times is automatically held back a year. (Students with documented learning disabilities, those who have already been held back twice, and students new to learning English are exempt from the policy.)

LaTasha Glass, 30, is in her first year teaching in Fayette after six years in her hometown of Natchez, a bigger, more touristy town on the river. With a daughter in fifth grade at Jefferson County Elementary, she brings a maternal air to class, providing warm encouragement and tough-love coaching in equal measure. She's dressed for a day on her feet, in a lavender short-sleeved shirt over black stretchy pants and outdoorsy sandals, but her hair is stylishly braided, and silver bangles clink on her wrist. Glass started her career teaching second grade, but a previous principal convinced her she had what it took to get third graders over the test hurdle. That's not an easy sell for many teachers; Jefferson County Elementary principal Shameka Woods says she's asked the school district to pay third-grade teachers more because they're so hard to hire. "No one wants to teach third grade!" Woods says. Glass pipes up, mostly joking but not entirely: "I asked her yesterday to put me back in second grade!"

Her first-block class makes clear why Glass is so valuable in the highest-stakes teaching role. From the time the bell rings, she has her students' complete attention. The moment she senses she's at risk of losing even a couple of them, she shouts out one of her bespoke call-and-response mantras

that immediately brings them back:

*Mac and cheese?
Everybody freeze!*

*Class class?
Ms. Glass!*

*Hocus pocus?
Everybody focus!*

*Ready set?
You bet!*

Today's lesson is about *r*-controlled vowels, a phonics concept about how the vowel sound in words like *car* or *bird* changes because of the *r* that follows it. Glass breaks down a few words on the smart whiteboard at the front of the classroom, but with plenty of pauses to ask for student contributions. To make things more fun, she plays a YouTube video from an education creator known as Mrs. Siravo, a parody of the Jonas Brothers song "Sucker" listing words shaped by this kind of "bossy *r*."

Then it's time for students to take turns coming to the board and diagramming their own words. "Circus," a girl in a tie-dye fleece sweatshirt suggests, then writes it on the board as "curcus." Glass lets the misspelling stand for the moment. The first task is to figure out the number of sounds in the word. Those who didn't learn reading through phonics tend to assume the answer is two, but *sounds* are different from syllables. The actual answer is five: soft *c*, the growl of the *r*-controlled first vowel, hard *c*, "uh," then *s*. The girl puts five dots under the word, and the whole class claps out the sounds. Now Glass returns to the spelling issue. Other *r*-controlled vowels can make that growling sound too, she reminds them. It must be an *i*, several students shout out. Their teacher grins, thrilled by their ability to sleuth out the correct answer.

She knows the test weighs on these 8- and 9-year-olds. She tries to praise them frequently, and makes corrections in a supportive way. "They have anxiety," she says. "I let them know how much pressure it is, but I try to alleviate some of the pressure. When they make a mistake, I make sure they learn from it." With just

a couple weeks until the test, she's feeling confident in her students: Only five of the 40 scored below a passing mark on the final benchmark exam.

This is what the "Mississippi Miracle" looks like in the classroom. In 2013, Mississippi ranked 49th out of 50 on the federally mandated NAEP tests, confirming the conventional wisdom about how poor, Republican-dominated states have weaker education systems than wealthier, more Democratic ones. But starting in 2015—the test is given every two years—the poorest state in the country began a steady climb through the ranks of fourth-grade scores. In just two years, the state's reading performance jumped five points, then another five points four years after that. Scores dipped during the pandemic, but by a smaller margin than in many other states. By 2024, 11 years after coming in second-to-last, Mississippi ranked ninth in the country in fourth-grade reading. The legend of the "miracle" began to take hold.

Jefferson County's growth curve was even steeper. In 2013, the elementary school was among the worst performers in its underperforming state, earning an F rating. In 2022, just 43 percent of fourth graders passed the MAAP test. In 2025, 78 percent did, a 35-point jump in three years. Superintendent Adrian Hammitte, who's in his seventh year as superintendent and his 16th in the district, was hoping for a 90 percent pass rate for third graders this year; preliminary data shows they landed in the mid-80s. "We want 100 percent," he says, smiling, "but realistically, we're shooting for 90."

DEBATING THE Mississippi Miracle has become the favorite sport of education observers around the country. Some scholars have argued that the story is simply too convenient, that common sense suggests the state is simply cooking the books. (Reports of cheating have undermined previous stories of miraculous test score improvements in Atlanta and Washington, DC, among other places.) Others suggest that the gains are the result of selection bias: The lowest performers in third grade are held back a year, meaning they don't take the national fourth-grade test.

Most of these theories collapse under scrutiny. There is zero evidence that Mississippi's improved reading scores are the result of widespread fraud. And simply preventing the worst readers from taking the fourth-grade test doesn't explain the dramatic jumps in Jefferson County, where Hammitte says not a single third grader was held back in 2024 or 2025.

So why *have* elementary school reading scores jumped dramatically in places like Jefferson County, one of the poorest places in the poorest state in the country, at the same time national averages are plummeting? Hammitte believes the third-grade "reading gate" is in fact key to his district's success—but not because it removes the weakest readers from the pool of fourth-grade test takers. Rather, he argues that third graders pass the test because their families see no choice but to pass; no one wants their child to be held back. Students who pass the third-grade state test are likely to repeat their success in fourth grade. "There's so much pressure and so much emphasis on trying to get every child to pass the test," he says, "not only because we know the state is going to report on it, but also because we know that if they don't pass, they're going to be retained."

The reading gate is part of a broader array of accountability mechanisms, including letter grades for each district and school, that trace their origins to the No Child Left Behind era and that have been controversial among many progressive education advocates because they can punish students and schools without solving underlying structural inequalities. They can also lead to higher stress, lower morale, and more turnover among teachers. In Mississippi and many other states, the entire year's curriculum is determined by what's on the test. "Reading" doesn't mean books, but exercises like the ones Glass' class does every morning, each tailored to a specific skill measured by the MAAP exam.

Glass doesn't design these lessons herself. As part of a move toward "high-quality instructional materials," Mississippi strongly recommends that districts choose from a list of state-approved curricula, all tailored toward concepts on the spring exam. Those materials are based on scientific research into how children's brains learn to read—not as an organic development, the belief that underpinned the "whole language" philosophy popular in the 1980s and '90s, but through the building blocks of letters and sounds that make up phonics. To eliminate variability, Jefferson County classes use identical lesson plans; teachers can't write their own material

Even in Mississippi, the home of the most-discussed miracle in contemporary education, teenagers are falling behind.



LaTasha Glass in her third-grade class at Jefferson County Elementary School.



based on their students' interests (or their own). Glass can't just read from the script; the unplanned "curcus" conversation shows why even the best material still requires a teacher who can adapt on the fly. But as Glass walks through the concept of *r*-controlled vowels, the other third-grade language arts teacher down the hall is reading the exact same examples.

The reading gate and uniform teaching materials have gotten the most attention from those who believe Mississippi should be a model for the rest of the country. But sitting in on Glass' class suggests that another part of the Literacy-Based Promotion Act may in fact be the most important key to improving reading performance.

Aside from its accountability measures, the law also provided \$9.5 million in annual funding for literacy coaches and teacher training. (Today it's up to \$15 million a year.) Michelle Nowell, the associate state superintendent overseeing curriculum and instruction, runs a team of 57 coaches focusing on kindergarten through third grade, with 22 more due to be hired before the next school year. Those coaches float among districts, focusing on those that need the most improvement. "If you said, 'Why do you think y'all been so successful in K-3?' I would say it's boots on the ground with our literacy coaches," Nowell says. "We are not evaluative, we're not punitive. We build relationships, and we're there to help."

Many districts, including Jefferson County, have carved out money for their own coaches. Last fall, Hammitte hired fourth-grade teacher Timothy Queen as the elementary school's instructional

coach. Queen, who's also a cheerleading coach at nearby Alcorn State University, is a ball of energy and enthusiasm, constantly doling out hugs and fist bumps to students as his long braid bounces against his shoulders. His job is to train his colleagues, not work with students, but he can end up functioning as a second teacher during a given lesson.

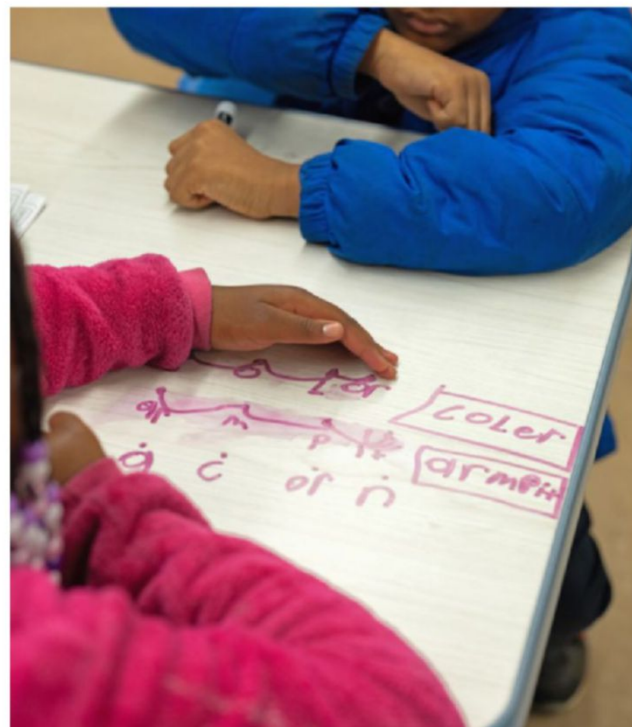
With the all-important test approaching, both Queen and principal Shameka Woods are focusing much of their energy on third-grade classes. The result is that, at least during the spring, Glass is rarely leading her classroom alone. When she breaks her 20-ish students into small groups, she can check on half of them while Queen or Woods handles the rest. When a boy starts nodding off, Queen escorts him into the hallway to splash water on his face. As Glass talks through which letter combinations form which sounds, Queen jumps in to guide a brief discussion of the vowel sound in "cycle." "What does that second letter sound like?" he asks, prompting one talkative boy to suggest "i." "What's the *other* letter" that makes an "i" sound, Queen responds. "Y!" the kids yell triumphantly.

THOUGH THEY BOTH lead English classes, Glass and Hamberlin teach profoundly different subjects. Glass' goal is to get her students to read words and sentences, to connect "c-y-c-l-e" to an image of a bike and understand the basic series of events in a story. Hamberlin's students have to be able to read a multi-paragraph passage, identify the main idea, find supporting details, and draw inferences.

As a result, third-grade class periods are a stream of engaging activities: diagramming sounds on the board, watching a YouTube song, calling out answers, doing call-and-response. Hamberlin's eighth graders sit quietly and read long passages about topics ranging from how elephants use their trunks to 19th-century history. The Mississippi Miracle suggests the state may have cracked the code of how to teach basic literacy. The conundrum is that even there, success peters out when it comes to translating words into conceptual thinking.

"Sometimes students are distracted by the format of the test, and so they get the practice test and they read the paragraph and answer the questions," says Laurie Lee, who co-leads the Adolescent Literacy Alliance, which ran a pilot training program for fourth- through eighth-grade teachers in three Mississippi school districts this school year. "But ultimately what will help is if the kids can actually read the texts and comprehend."

Nationwide, middle-school reading scores began their decline a couple of years before elementary-school scores, creating a downward trend line that has lasted nearly 15 years. Eighth-grade performance on the National Assessment of Educational Progress is now one point shy of an all-time low. The number of eighth graders scoring "below basic" is the highest ever recorded. Among Mississippi eighth graders, the drop in reading scores began a few years after the nation as a whole, but the curve was even steeper, losing three points between 2017 and 2022 and remaining flat in 2024.



Students' backpacks in LaTasha Glass' classroom.



Students do phoneme-grapheme mapping exercises.



Theoretically, a class of third graders who excel on the reading standardized test would turn into a class of eighth graders who not only excel on that test but also apply those skills to the world around them, and then into a group of adults who are literate in a way that has nothing to do with tests at all. That's not happening. A 2022 evaluation of adult literacy found that 28 percent of Americans cannot reliably compare and contrast information, paraphrase, or make basic inferences. Six years earlier, that number was 19 percent. Though the biggest drop was among adults who didn't graduate from high school, even those with some amount of higher education got worse at reading. A 2023 National Endowment for the Arts survey, meanwhile, found that less than half of adults had read a book in the past year. Experts worry these trends stem from habits

that started earlier in their lives.

In conversations with teachers and literacy experts, nearly everyone diagnoses the problem as one of attention span, not intelligence. "It's really just about stamina," Hamberlin says. "They have five to six passages. Some of them are informational, some of them are literature. And at a certain point they just don't want to read anymore." Students stop reading when they hit a word they don't know, but they need to know how to decode unfamiliar words for the test as well as for the world. They lose focus if the subject doesn't interest them, but they'll encounter passages on all sorts of topics both on the test and in life.

"A lot of people don't engage with lengthy text, and that's a muscle like you build working out," says Kevin Smith, Lee's codirector. "I don't know if a lot of our kids have built the mus-

cle to read longer texts."

The prime suspect is smartphones. A 2022 paper in the journal *Developmental Neuropsychology* synthesizing 11 studies found that 10 of them had identified a correlation between the amount of children's screen time and their attention spans. Teens' favorite apps seem to make the problems worse: Scrolling TikTok, which 61 percent of American teenagers do every day and one in five do "almost constantly," means flicking away from a video the millisecond it becomes uninteresting. The more recent rise of generative AI, meanwhile, means never needing to struggle to understand a concept.

You can't change the reading passage on a standardized test no matter how boring it is. You can't ChatGPT your way to the answer. Hamberlin's eighth graders aren't using AI on their read-

ing assignments. But they seem to treat reading passages like they're TikTok. Sick of reading about a long-dead abolitionist? Make a wisecrack to a classmate, fiddle with your pencil, ask to go to the bathroom—*anything* but powering through the reading. Teachers like to talk about “productive struggle,” the idea of grappling with a concept you don't understand rather than either giving up or asking a bot to solve it for you. Students already seemed to be losing that instinct before the rise of AI. Now there's even less reason to do the work.

Screen time and social media don't explain everything: The performance slide has affected some groups of students more than others, even though almost everyone has a smartphone. On some level, it doesn't even matter how big of a problem they are, since kids aren't going to stop using them. The thornier question for teachers and education officials is what can be done to improve reading scores in the world in which we live.

Conservative education reformers argue that America's education system has strayed too far from No Child Left Behind, that focusing on equity and moving away from high-stakes testing as part of efforts not to punish students for being racial minorities or low-income—both of which are correlated with lower reading performance—means districts are no longer maintaining high standards. Mississippi is as committed as ever to high-stakes testing, but the stakes are higher in third grade than in eighth. Under this theory, one solution would be a requirement that students pass the standardized test at the end of *every* grade before moving to the next.

The research, though, is mixed at best about whether attaching harsher consequences to standardized tests actually results in better performance. And the decline in American reading goes deeper than the ability to pass a standardized test. Just 16 percent of Americans read for fun, according to a 2023 study, down from 28 percent in 2004. Only 41 percent of children under 4 are frequently read to, down 23 points since 2012. “I think there's an important distinction between whether students are able to read and whether they're willing to read,” says Jonathan Becker, a scholar of education policy at Virginia Commonwealth University. “If we want our students to be able to answer questions about a short reading passage, we're going to have them read lots of short reading passages. There's no real incentive on the tests or in a lot of the standards to have kids read whole books.”

Students already seemed to be losing that instinct before the rise of AI. Now there's even less reason to do the work.

AS GLASS, WOODS, and Queen make the final push toward getting 90 percent of Jefferson County's third graders to pass MAAP, Candace Hamberlin is hoping to beat last year's eighth-grade pass rate of 50.7 percent. She won't know whether they've done it until late August, after the next school year has already begun.

Mississippi's definition of “passing” is counterintuitive. A student who passes MAAP is “approaching or at the level of difficulty, complexity, or fluency specified by the grade-level content standards.” In other words, they might not actually be *on* grade level. Students who show “solid academic performance and mastery” of skills at their grade level are scored “proficient.” Fifty-nine percent of Jefferson County third graders were proficient in reading last year, compared to just 24 percent of eighth graders. Even in Mississippi, the home of the most discussed miracle in contemporary education, teenagers are falling behind.

In April, the Mississippi legislature approved pay raises for all teachers, plus an extra \$9 million to hire literacy coaches specifically focused on fourth through eighth grades. The hope is that expanding the Florida literacy scholars' pilot program will give teachers across the state better tools for teaching reading, and add another adult in the classroom at least some of the time.

Literacy scholars agree that teaching reading across subjects is key. The ideal method of teaching students to read—rather than just passing reading tests—they say, is assigning them texts on subjects they're interested in, whether that's astronomy or the NFL. “I struggle to read things that are not interesting to me,” Becker says. “I do wonder how often we're giving kids the option to read things that are interesting to them, so that maybe they can develop more stamina.”

Hamberlin's eighth-grade students read what's assigned by their state-





Above: Students do semantic gradient exercises.

Below: A hallway at the school is lined with posters about testing.

approved instructional materials; whether they're interested is beside the point. They don't even read books for class; there's no time if they're going to get through the whole MAAP curriculum. America's fervor for standardized tests is fundamental to its education policy. If schools like this one can extend the Mississippi Miracle to middle school, if America is going to pull itself out of this standardized test score slump, it will happen through skill drills, not students losing themselves in novels. "Human flourishing is not as easily measurable as student achievement," Becker says. "It's harder for people to commit to things that aren't measurable, that aren't tangible, that we can't really document."

This year, for the first time in her career, Hamberlin can't think of a single student across her five periods who reads for fun, who considers her class anything beyond an ordeal to be survived. Even her strongest readers don't particularly like doing it. "Usually in the classroom, somebody always has a book," she says. "I don't have any of them that has a book." Adding a reading gate at the end of eighth grade might make more of them pass the test, she thinks, but it certainly wouldn't make any of them read books.

As Hamberlin works out her thoughts aloud, she notices a boy with close-cropped hair in a black Nike zip-up hoodie and black Air Jordans listening in. He's supposed to be reading the assigned passage, but he's gotten distracted a third of the way through. "You want to add anything about reading class and what kinds of things we do?" Hamberlin asks him.

The boy shrugs his skinny shoulders. "It's really boring," he says, then turns back to Sojourner Truth. **W**

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JUST DOING HIS HOME- WORK

BY
ARA ROSENTHAL

PHOTOGRAPHS BY
AMY HARRITY

When a teenage journalist published a story about
the Epstein files, adults freaked out.



Ben Mueller's assignment for his journalism class was to tell a news story—any news story—in the form of an extended Instagram slideshow. So when the high school senior got home on the afternoon of February 10, 2026, he grabbed a snack, went upstairs to his room, and settled in to work.

After allowing himself a few minutes of procrastination—scouting prospective college campuses on Google Earth—Mueller navigated over to the Department of Justice's Epstein Library portal and clicked through the page asking whether he was 18 or older (he was, just barely). Then he began poking around for ideas in the 3 million pages of Epstein files that had been added 11 days earlier.

Mueller really liked working in his bedroom, with its beanbag chair and view of people strolling and biking along one of Marin County, California's sun-dappled waterways. Having lived his whole life in one of the wealthiest parts of America, Mueller couldn't help thinking his area probably had some ties to Epstein. "I think it's very difficult to get an immense amount of money without—this is my opinion—without doing



Ben Mueller,
author of the
fateful slideshow.

something a little shady,” Mueller says. So he sat on his bedroom floor and spent the next five hours combing the federal database for links to the towns and cities of Marin.

He found thousands. Most of them were trivial (Epstein liked to shop online at Restoration Hardware, headquartered in nearby Corte Madera). But a few things stood out: a 2014 art gala in Sausalito that Epstein helped promote; a meeting with Woody Allen in Tiburon; and—above all—a 2013 email exchange between Epstein and a woman from a modeling agency called Mill Valley Connection. “Regarding Hannah, my Austrian model,” the woman wrote in one particularly chilling message, “we can come and see you this evening if you are interested, and in that case let me know how I can get my fees.”

Two days later, on February 12, Mueller posted his story to the Instagram feed of the Redwood Bark, his school’s student-run publication. It was a carousel-style slideshow pitched at readers across the county. “Which Marin towns were mentioned in the Epstein files?” the first panel reads. “Scroll to see how many times your town was mentioned.” Rather than quote from the most alarming document he’d found, Mueller kept his descriptions fairly general and brief: “Mill Valley was mentioned in the context of providing models to Epstein from a woman named Gisele Attias Bonnouvrier.”

More than 4,000 people liked the story. The comments filled up with praise: “This is the kind of journalism we need.” “Higher quality reporting than local outlets.” “High schoolers doing better reporting than national news.” “Didn’t think I’d be following a random CA HS newspaper in 2026 for their breaking reporting but here we are.”

As Mueller watched the numbers climb, he felt excited but also a little perplexed. “I didn’t really think I was doing groundbreaking journalism,” he says. “I was just like, this is another piece of homework that I have to do today, and I’ve just got to get it done—but also be thorough, because people are going to see it on the internet.”

About a week and a half later, Mueller was home sick with a light fever and cough when the phone rang. It was his journalism teacher, Erin Schneider, with bad news. “This person mentioned in your post is now threatening to sue the district,” she said.

On Monday, February 23, Bonnouvrier, the modeling agent, had sent an email to the principal of Redwood High School, calling Mueller’s post defamatory, demanding its immediate removal, and promising legal action if the school did not comply within 48 hours. And now the district superintendent was demanding that the Bark either redact Bonnouvrier’s name or delete the slide entirely.

THE REDWOOD BARK happens to be one of the most award-winning high school newspapers in the United States. Madison Bishop—a poised, rosy-cheeked, 18-year old colleague of Mueller’s—says she was an avid Bark reader even as a kid, before her older sister served as editor in chief back in 2022. “It was just such a well-known student paper,” she says.

Bishop and Mueller both arrived on the Bark staff during a time of experimentation. Over the previous decade, Schneider and her students had pushed the Bark beyond old-school print and basic web articles, expanding into Instagram, Facebook, TikTok, LinkedIn, and a podcast. Then during the first few weeks of this past school year, Schneider says, they flipped the switch toward being “social-media first”—publishing some full stories directly to the platforms.

As the Bark’s social media manager, Bishop oversaw the transition, which she saw as a kind of power move: Social media wasn’t just where all the Bark’s students got their news, it’s where kids have the most natural authority. “It gives us a space to have a leg up from adults,” she says. “It really lets them sit down and listen and absorb what we have to say, because we are the quote-unquote professionals.”

Case in point: As soon as the Bark leaders saw the superintendent’s demands, they knew Instagram wouldn’t allow them to edit an already published slide; simply redacting Bonnouvrier’s name,

Regarding “my Austrian model,” the woman wrote to Epstein, “we can come and see you this evening if you are interested, and in that case let me know how I can get my fees.”

in other words, was not a viable option. Another problem was that Redwood High's principal was out of the country and unable to meet. With the pressure of a 48-hour legal threat looming over them, they would have to decide how to respond to the district on their own.

Once everyone was back at school on Tuesday, the high schoolers lawyered up during their lunch hour. Gathered around the speakerphone in Schneider's office, Bishop and Mueller consulted an attorney with the national Student Press Law Center. When he heard the students' problem, the lawyer laughed, Schneider recalls. "If this woman thinks she's going to sue your school district, she's got another thing coming," he said. "Her name is in the Epstein files—no lawyer is going to represent her in this case." The students also consulted Mueller's parents—both lawyers—and another attorney, who all concluded that the Bark had done nothing wrong.

Increasingly convinced that they hadn't defamed anyone, the Bark staffers weighed their options. After school, Mueller, Schneider, Bishop, and another Bark editor sat down on the blue couches in their newsroom for a grueling four-hour debate. Painstakingly, they double-checked every single word on Mueller's slide, verifying it against the federal documents.

They were on the verge of deciding to leave the Instagram post alone. But after Schneider headed out for the evening, the students kept second-guessing themselves. They ended up deciding to temporarily archive Mueller's most controversial slide until they could meet with school officials in person. "I think at the end of the day, the kids felt such pressure from the administration that they were almost looking for a reason to get out from under it," says Schnei-

der, who had butted heads with school officials several times that year over the Bark. (Schneider is also someone I've known for years; I'm a massage therapist in Marin County, and Schneider used to be an occasional client before I started working as a journalist.)

That evening, the students wrote a note advising Schneider what they wanted to communicate to the principal; they framed their takedown of Mueller's

slide as entirely their own prerogative. "We want to be clear that the removal was not in response to your request," they wrote. "Our choice was based on our own ethical considerations and editorial standards."

The message was puzzling to Schneider, who saw the administrators' demand as a pretty clear example of censorship. But the Bark reporters didn't see themselves as having given in.





RThe Redwood Bark won eighth place last year in a major national competition run by the National Scholastic Press Association.

FINALLY, THAT THURSDAY, Mueller and Bishop met in person with principal Barnaby Payne and Courtney Goode, superintendent of the Tamalpais Union High School District. Schneider came along too, but only to take notes. As she remembers it, the meeting started tense.

Goode opened by explaining that the district couldn't possibly afford a legal battle. Mueller and Bishop stayed quiet, letting the administrators finish before asking them to clarify exactly what was libelous about the post.

The administrators, it turned out, were primarily worried that Mueller had reported something that simply wasn't true. The district's own research, Goode explained, had found no evidence that Bonnouvrier was connected to providing models to Epstein. "You need to link your source to this," Goode said.

Realizing the adults had likely just done a basic Google search, which couldn't access files deep in the federal Epstein database, Mueller pulled out his phone and opened to the specific document, showing his screen. "The source is just the Epstein files," Mueller said. "It is true, because it says it right here in a government document." On the screen was Bonnouvrier's email about her "Austrian model," which seemed to take the two men aback.

The high schoolers then launched into a breakdown of California Education Code 48907, reminding the administrators of state law. Unless content is obscene, incites violence or illegal activity, or is false or libelous, student journalists have total freedom of expression without administrative oversight.

"Well, you know, I just had to make sure that we weren't going to get sued," Goode said, according to Schneider's notes.

"With all due respect," Schneider remembers Bishop replying, "under California's student press law, being afraid of a lawsuit or backlash is not a valid reason to call for the takedown of content."

Bishop described the 30-minute meeting as "a very open conversation" that ended with everyone "on the same page that the post legally does not have to be taken down." (In a statement to WIRED, Goode said the post was "briefly paused" until "it was determined that the information referenced was factual and publicly available.") The next day, Mueller and Bishop went back to the newsroom and restored the archived Instagram slide.

Bonnouvrier, who declined to comment on this story, never made good on her legal threat. But the fallout was far from over. About two weeks after the meeting, Schneider sent an email to all Bark students and their parents. "I am writing to let you know that I will be stepping away on a leave from the journalism program effective today, Monday, March 9," she wrote.

For Schneider, the clash over Mueller's post had been one of the final straws in what she regarded as a yearlong battle over administrative interference. In another recent incident, the Bark had published a cover image of a student protest against the Trump administration held in San Francisco. The demonstra-



Madison Bishop was social media manager of the Redwood Bark until she graduated this June.

tors in the photo are holding up a banner that says “Students Fight Back.” In smaller print, the banner includes the words “Against Zionism.” After reader objections rolled in, including one Instagram comment comparing the Bark to the Ku Klux Klan, the school district announced it was opening a mandatory investigation; board policy required as much, they said, in any case of public complaints.

“The work of defending First Amendment rights and helping young journalists report responsibly on real-world topics is work I believe in deeply,” Schneider wrote in her farewell email. “It is also work that has met significant resistance.” Her departure caught the Bark staff completely by surprise. In a newsroom meeting that morning, the paper’s student leaders broke the news to their colleagues through tears.

about the incident to social media. Stories also ran on California Public Radio and the news site EdSource.

To some commenters, the Redwood High dispute was a case of liberal elite corruption in Governor Gavin Newsom’s California. (Newsom is a Redwood alum.) To others it mirrored a broader national climate of intimidation and administrative crackdowns on every level of American life. Indeed, the Student Press Law Center says it has experienced a 42 percent increase in legal defense requests from school newspapers to its legal hotline over the past two years—as students use confidential sources to report on hot-button topics (immigration raids, Gaza, campus protests, the Epstein files) and administrators try to keep a low profile by clamping down.

The Redwood High students found most of the coverage annoying. Muel-

“With all due respect,” Bishop told the administrator, “under California’s student press law, being afraid of a lawsuit or backlash is not a valid reason to call for the takedown of content.”

IT WASN’T UNTIL more than a month later, after emotions had cooled and the Redwood students had returned from spring break, that the story of Mueller’s post blew up beyond Marin. “Small High School Sparks Fury Over Witch Hunt Into Student Paper for Exposing Woman’s Link to Epstein,” ran a headline in the News Corp.–owned California Post. “High school administrators censored a student newspaper,” began a post by the Foundation for Individual Rights and Expression, a campus free-speech watchdog, which also posted a video

ler and the other Bark staffers felt increasingly uncomfortable being cast as victims. “Calling it censorship really convolutes the story,” says Mueller, who didn’t like being painted as “weak and submissive” and scared of a principal. In an editorial note posted on May 27, the Bark staff stressed that they had briefly removed their slide by choice, calling the standoff with administrators a “simple misunderstanding” rather than a high-handed abuse of power.

But mostly—with AP classes and Bark assignments and graduation looming—

Mueller just wanted to put the story behind him. “It was a little tiring just to see it come back up,” he says. “People are making a big deal about this because it feels like something more serious than it is.”

As it happened, Bishop had spent much of the school year reporting on student journalism controversies. She’d made a short documentary on the censorship-driven collapse of nearby Novato High’s newspaper, covered the forced reassignment of a journalism adviser at Lowell High School in San Francisco, and reported on a Virginia student newsroom that successfully resisted administrative control—and for all that work, Bishop had earned third place in a competition for California Student Journalist of the Year. But she didn’t really see the Bark controversy in the same light. The students had kept hold of the reins, in her mind, through one adult intervention after another. “At the end of the day, all decisions are final by the students,” she said this spring. “I know sometimes it can get distracting with external, adult conflicts. They disagree. They want this taken down. They’re leaving. But it is a student-run class, and students are the voice of the paper.”

In June, Mueller and Bishop themselves edged closer to the world of adults who have no business telling Bark staffers what to report. On the 11th, they both graduated. Bishop is heading to the University of Southern California to study journalism. Mueller is set to attend William and Mary in Virginia. He’s keeping his options open but says he might check out the college paper. ■

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ALPHA SPEED



Inside Alpha School's AI-powered national expansion.

IN THE FALL of 2025, top executives from Alpha School gathered a group of wealthy New York City parents at a series of information sessions in Lower Manhattan to pitch them on the company's new campus. The events, some of which were hosted by Alpha's cofounder MacKenzie Price and its billionaire principal Joe Liemandt, were designed to show how Alpha was "redefining school" through AI-powered learning models. The goal: persuade families to ditch the city's traditional education system and join what Alpha initially called "the most forward-thinking private school in New York."

The pitch seems to have worked. This school year, more than a dozen families have been sending their children to the sixth and seventh floors of the skyscraper at 180 Maiden Lane. According to the current Alpha New York web page, the "school day" runs from 8:15 am to 4:00 pm, and the stated "tuition" is \$65,000 a year. (Founding families received a discount.) As Price told the Free Press in May, "Alpha is a product as a school that is catering to a certain demographic," and "it is a premium, expensive private school."

Except the Maiden Lane campus isn't really a school. Late last summer, months before many of the info sessions, the New York State Education Department declined to approve Alpha's request to incorporate as an independent school, according to a previously unreported copy of the decision obtained by WIRED. "Instruction as proposed is primarily online, with an AI-based platform called 2 Hour Learning™ that delivers instruction in core academic subjects with little to no supervision or competent teacher delivering such instruction," the department's office of counsel wrote. "Generally, [the NYSED] does not recognize online schools as proposed."

About a week later, in a post on X, Alpha invited parents to attend an info session for the Maiden Lane location, which the post called the "Alpha Anywhere Center." Alpha Anywhere is the company's line of

products for homeschooling, which is advertised as starting at around \$10,000 per year. Though the company's marketing materials didn't explicitly mention it, parents who enrolled their kids at the Maiden Lane campus would be required to file formal documentation signing up as homeschoolers.

After WIRED began reaching out to Alpha employees for this story in April, the company resubmitted its application for incorporation as a school. According to the NYSED, that application was pending when this article went to press. Under state law, even if Alpha receives permission from the agency to incorporate as a school, it will still have to demonstrate to New York City public school authorities that it provides instruction in core subjects that is at least "substantially equivalent" to instruction in the city's public schools.

Alpha employs "guides" to oversee the classroom. These adults don't teach academics themselves; they are meant to motivate students to complete lessons in personalized learning software. ("We call them guides, coaches, teachers," Price has said. "We kind of use those words interchangeably.") The company pairs this app-as-instructor approach with a competitive reward system. Students at some campuses can earn hundreds of dollars over time for scoring well on tests or completing enough lessons in a day. Alpha claims its model enables students to learn twice as much in just two hours of academics as their peers in traditional schools learn in a day. This frees up students' afternoons for workshops focused on life skills like grit, entrepreneurship, and leadership.

WIRED spoke with multiple sources for this story who have been involved in building out, setting up, and working in new Alpha campuses across the country. Those familiar with the New York campus told WIRED they had concerns about how up-front the company was with prospective parents about the fact that their children would not actually be attending a school. "A lot of these parents are just

drinking the Kool-Aid,” one person said. “Their kid comes home with a new Nintendo Switch, an AI robot, an iPad, so their kid’s happy, so they’re happy to see it.”

After WIRED reached out to parents who enrolled their children at Alpha, a group replied with a joint statement saying they were aware that the New York City campus is not a school but rather a “homeschooling support center.” They added that they “are grateful for the positive impact the Alpha Anywhere Center has had on our children and wholeheartedly recommend it to families seeking an innovative, caring, and inspiring educational community for their children’s homeschooling program.” The joint statement had 13 named signatories and 22 who “wanted to express their support for this letter while keeping their child’s educational experience private.” Other families WIRED reached out to for comment did not respond.

Under NYSED rules, homeschool parents “may arrange to have their children instructed in a group situation for particular subjects but not for a majority of the home instruction program.” Ralph Rodriguez, a staff attorney for the Home School Legal Defense Association, told WIRED that New York has among the strictest regulations in the country. “We ask our parent members to have an understanding that they are indeed providing the majority of instruction to their children, because they have to attest to that in the paperwork they submit to their districts,” Rodriguez said.

“Our New York location is a homeschooling learning center, not a school, and every parent whose child participates in that program knows it,” Alpha wrote in a statement to WIRED. “Alpha Schools operates in full compliance with all applicable laws.”

THE ALPHA SCHOOL network has been rapidly expanding. Over the past two years, the company has opened new campuses to cater to what it calls “the right families” in major US cities. From San Francisco to Miami to New York, Alpha’s marketing materials present the spaces as airy, modern, stylishly furnished—an enticing environment for kids to spend their day in.



Teams at Trilogy, a software company founded by Liemandt, have overseen the acquisition and renovation of buildings for Alpha School. Some campuses, particularly the one in New York City, were built out at great expense and outfitted luxuriously, according to internal company documents obtained by WIRED.

But the documents say the priority was to move at “Alpha speed.” That meant rethinking the “default” approach to school construction, which came with too much “dead weight,” according to one Trilogy vice president. “Optimization is a lie at this velocity,” he wrote in an internal planning document. “The only reliable way to achieve Alpha’s opening timelines is subtraction: fewer approvals, fewer handoffs, fewer phases, fewer assumptions, fewer permanent decisions.”

A person with knowledge of Alpha’s expansion efforts characterized the approach to WIRED: “Instead of ‘How do we create the best spaces for our kids?’ it’s ‘What can we get away with?’” Executives would “ask questions like ‘What are the consequences—are we just going to be fined?’” the person said. “They’re like, ‘Take this cinder block, throw some fucking paint on it, open a school, and call it a fucking day.’”

One Trilogy document about Alpha’s campuses in New York City and Miami describes “Fast-Track Procedures & Assumptions,” stating: “We will commence the buildout at risk. We are willing to trade off the financial risk if permits are not obtained.” Another document from the team involved with opening

new Alpha Schools states: “Alpha explicitly trades cost efficiency and permanence for speed to instruction ... We (Alpha) should formalize this doctrine: Opening date > safety > operability > cost efficiency > permanence.” While employees are encouraged to follow all applicable permitting rules, the document notes that “many permits exist by habit, not necessity.”

People familiar with Alpha’s new schools told WIRED that some opened without established plans for emergencies like fires, earthquakes, or active shooters. While “functional internet” and “basic branding” were considered “critical,” according to an internal planning document, “first aid” and “fire safety” were considered “nice to have.” One Trilogy document directs teams to “budget for potential surprises,” noting that the classroom doors in Miami had to be replaced because they lacked internal locks and blinds and were “non-compliant with active-shooter requirements.” A person who worked at two campuses told WIRED: “This rapid expansion is more about a billionaire’s ego than the safety of any of these children.”

Top executives working on Alpha’s expansion seemed to be aware of some safety issues, internal documents show. On October 16, 2025, Andrew Jordan, who is listed on LinkedIn as Trilogy’s chief operating officer, asked Claude Sonnet 4.5 to summarize a “postmortem” document containing feedback about the school expansion team’s work that summer and fall. (Jordan did not reply to WIRED’s request for comment.) The AI-generated summary highlighted “Safety & Compliance Gaps,” which included “buildings occupied without evacuation routes, safe room locations, emergency supplies, or contact information in place,” and “no Shelter-in-Place Plans.” Alpha has contracted with a private security firm to provide guards at some campuses.

Another issue flagged in the AI’s postmortem review—“inspection tracking”—may have been a reference to Alpha’s campus in Miami, opened in the fall of 2024 and charging \$50,000 per year in tuition. According to the Miami-Dade Fire Rescue Department, the building was flagged for several violations, and Alpha operates under a temporary certif-

icate of occupancy, pending renovations. Last October, a fire inspector observed students in portions of the building they had not yet approved for occupancy, the department told WIRED.

A person familiar with the school said the high school wing and auditorium were being used even though executives and staff knew the areas were off-limits due to safety deficiencies that hadn't been corrected. "They knew it, and they were still operating," the person said. "We had to get all of the kids out." For a few days, they added, Miami students were relocated offsite—first to a hotel event space, then a Dave & Busters. Alpha did not respond to WIRED's questions about fire safety conditions at the Miami campus.

While Trilogy employees and contractors were working to bring the school up to code, more issues emerged. One of the school's guides requested that sound-dampening privacy pods be installed in a secluded hallway in the high school wing, a person familiar with the school said. Other employees were troubled because the pods would be out of sight of any supervising adults. Some staff referred to the pods as "boom boom rooms" and elevated their concerns to higher-ups, according to internal messages and people with knowledge of the school. The pods were installed anyway.

Alpha told WIRED the Miami privacy pods "are monitored by staff and by motion-activated cameras. They have never been used inappropriately or in the salacious false context presented."

Alpha's \$40,000-a-year campus in Fort Worth, Texas, is located in several rented rooms inside a complex that includes a corporate gym. When it first opened, the school space did not have a dedicated private bathroom, according to company documents, people briefed on the school, and staff at the gym. A portable bathroom for the school was installed outside, but employees were concerned about students possibly using the closer bathrooms in the gym locker room, where adults changed and showered, according to people who worked on the expansion effort. "Some of the common sense that we have about child safety is NOT AT ALL reflected in the conversations that are had here," one employee wrote in an internal company chat. "For reference, I once

had to write the following: 'There is no acceptable level of risk for our students to be exposed to naked adults while using the restroom.'"

"Every Alpha Schools facility has private, dedicated bathroom space," the company wrote in a statement, adding that students at the Fort Worth campus "were escorted to and from a private bathroom by staff and were never permitted to use shared gym facilities. There is not one documented incident of a student using a shared locker room bathroom."

WHILE EMPLOYEES AT Liemandt's company were overseeing Alpha's rapid expansion, Price and the Alpha marketing team were refining the company's message to prospective parents. "We spend 10x more than traditional schools on events to distinguish ourselves and dominate mindshare of attendees," a strategy document from 2025 says. At one point, the projected marketing budget for that year was nearly \$10 million, representing more than \$15,000 for each new student Alpha hoped to attract, the document says.

To sway families in places like Miami, New York, and San Francisco, Alpha would need to "invert the power dynamic," the document says. "We deliberately limit enrollment opportunities, create waiting lists even when capacity exists, and establish application windows that close regardless of capacity—triggering the scarcity psychology that accelerates decisions and enhances perceived value." It

goes on: "We must compress the entire decision process into 48 hours through a carefully orchestrated immersion experience that provides all necessary information, emotional connection, and social proof within a concentrated timeframe, culminating in a binary decision point with genuine scarcity pressure."

Another strategy document describes Alpha's plans to make Price a social media thought influencer, capitalizing on her 1.4 million Instagram followers and regular appearances in national media. The document says Price's content should "deliberately polarize" and that "educational influence belongs to the extremes, not the experts." It bluntly describes the marketing team's view of parents and the role of AI in education.

"Parents don't really want better schools, they want rebellious identity," the strategy document says. "Families choose alternative education primarily as [a] statement about who they are, not what their kids will learn."

Since "disruptive AI positioning" gets an "engagement premium" on social media, the document says, "the most compelling narrative isn't technology as helper but as revelatory force exposing traditional education as theatrical rather than functional." In other words: "AI doesn't enhance education, it exposes most teaching as performative ritual." In her public appearances, Price often describes the one-teacher-many-students model of education as inefficient. With software serving as the one-on-one tutor, there's no need for the outdated performance at the front of the classroom. "Instead of being the sage on the stage, they are the guide on the side," Price has said.

Currently, Alpha is in the process of hiring a dean of parents for its Manhattan campus. The pay is listed as \$400,000 per year. Responsibilities include being "the first to sense when something feels off" and "knowing when a family isn't the right fit." When New York parents make the decision to join Alpha, "they'll be asked to defend it constantly," the job posting says. "You'll make sure they never have to reach for an answer." ■

TODD FEATHERS is a reporter based in New York.



THEY GROW UP SO FAST

Elite young runners can't stop shattering records—or posting about it. Welcome to the age of trackflation.



BY BRENDAN I. KOERNER

PHOTOGRAPHS BY ELIJAH AGURS



A COUPLE OF years ago, my teenage son decided to spend the long New York winter running indoor track. An accomplished soccer player, he joined the team with the modest goal of staying fit during his main sport's offseason, but before long his competitive streak kicked in. He trained like a demon for two months straight, brutalizing his legs and lungs with high-intensity workouts. The suffering paid off: His time in the 1,600-meter run (just shy of a mile) dropped so much that he earned a spot in our sectional championship, competing against runners from three nearby counties.

My son had the race of his life at sectionals, shaving several seconds off his personal best. He also got absolutely smoked. The top three boys all finished in well under 4 minutes and 30 seconds. The next six broke 4:38. By the time my son collapsed across the finish line in second-to-last place, the winner was deep into his post-race stretching routine.

Had teenage runners at mid-tier meets always been that absurdly fast? Based on my limited knowledge of track, I suspected not, so I looked up the 1,600-meter results from the 2015 sectionals. Back then, only three boys broke 4:40, and my son would have finished in the

middle of the pack. I was now curious whether kids beyond my provincial corner of New York were getting a lot faster too.

I followed a few track social media accounts, and soon the algorithms deluged me with highlights of young runners obliterating records on what seemed like a daily basis. A 12th-grade girl from Ohio ran an indoor 2-miler in an otherworldly 9:37.15, breaking a national high school record that had stood since 2013. A 10th-grade boy from Texas ran an outdoor 100-meter dash in 9.92 seconds, just a tenth of a second off the collegiate record. Crunch the data on any race in virtually any school-age meet and you'll find that the top and median times have plunged since the late 2010s, often by several seconds.

My favorite videos were made by a former University of Pittsburgh hurdler named Shyheim Wright, a master at channeling the bewilderment of track fans. "Pack it up, pack it up right now!" he marveled over footage of a ninth-grade girl from Georgia running 100 meters in 11.01 seconds, a time that made her faster than all but the very best college sprinters. "I'm so glad I don't run no more, I'm so glad. The times now is getting ridiculous."

The track world, I discovered, has coined a name for this much-discussed phenomenon of kids getting ultra-fast: *trackflation*. In June 2025 at the New Balance Nationals, an annual championship that draws around 6,000 top youth athletes, more than 100 kids beat previous meet records. "There might now be a hundred kids that run under 4:10 in the full mile," says Will Rodgers, who ran track at the University of Alabama in Huntsville in the early 2010s and now co-owns RunningLane, a coaching and events business. "Back when we were competing in high school, it might've been like 20 at max."

I had to know why kids today are essentially breaking track. And that meant trying to understand the dramatic shift happening at the sport's roots.

IN EARLY MAY, I drove down to Baltimore to attend the East Coast International Showcase, a two-day outdoor track meet sponsored by the shoe company Puma. One of its main draws was an 800-meter race featuring two fixtures of the elite youth circuit: Henry Bartle of Carmel, California, and Gunner Hammett of Williamsburg, Virginia.

As these two stars warmed up alongside Morgan State University's faded blue

track, I spotted Hammett's dad wearing a custom hoodie that listed his son's credentials: "2 Time World Record Holder 800m, 18 Time All-American, 5-Time National Record Holder."

Those achievements were all the more impressive given Hammett's tender age: He was 13, just a bit younger than the 14-year-old Bartle. Both boys were still weeks away from their eighth-grade graduations.

The thin-limbed, bleached-blond Bartle ran the two-lap race in a personal best of 2:03.52, an outrageously good time. Three years ago that would have been enough to win the middle-school 800 meters at the New Balance Nationals. But he was nowhere close to Hammett, who coasted to a 1:57.75—a performance that put him on par with his home state's fastest high school runners.

"Guess I got smoked by you again," a genial Bartle told Hammett as they gasped for air past the finish line. Bartle has, unfortunately, grown accustomed to falling short. Seven weeks earlier, he and another kid both shattered California's age-group record for the indoor mile, but Bartle still finished six seconds off the podium. In the one-line caption for his Instagram post about that race, Bartle captured the essence of trackflation: "Living in a time where a state record still doesn't medal at Nationals."

Once Bartle had recouped enough oxygen to function, he gave me a thoughtful breakdown of his recent progress. "Last year, even if I had somewhat of an injury, I was very stubborn and I trained through it," he told me. Now he's prioritizing recovery as part of his regimen, and he believes a sub-two-minute 800 and a sub-4:30 mile are well within his grasp.

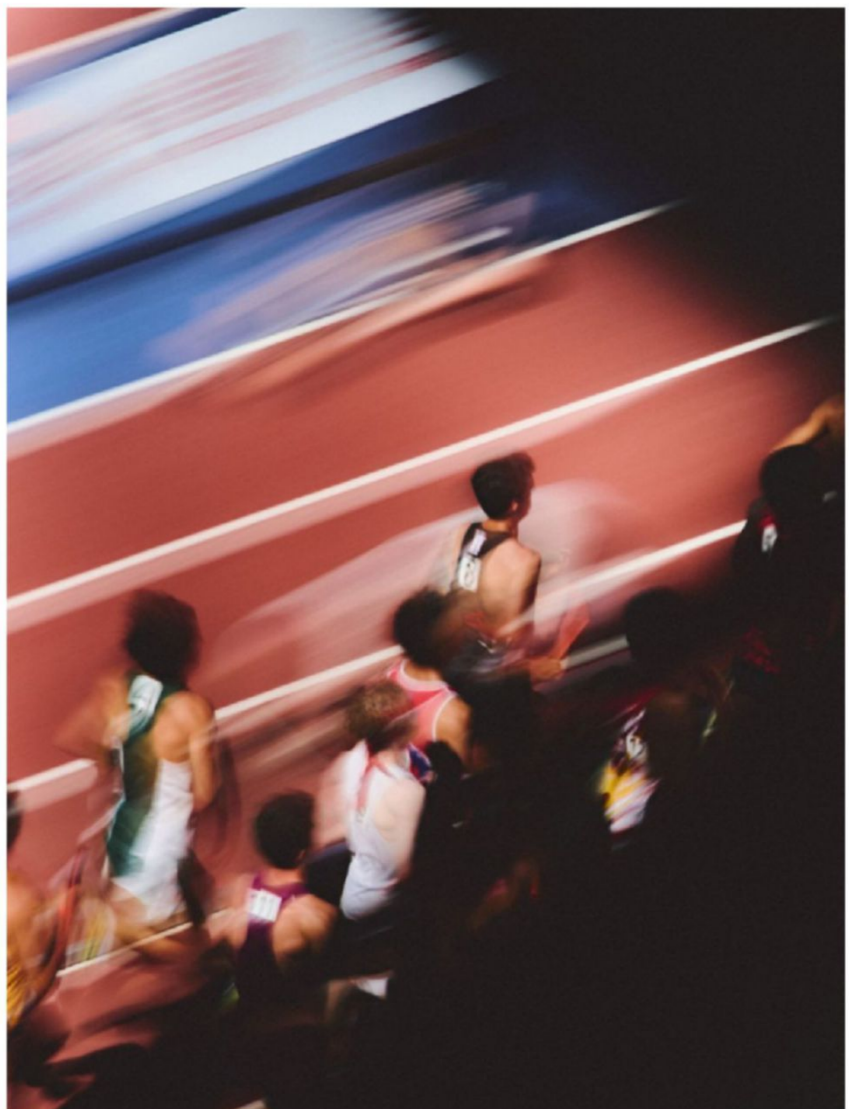
Until seven or eight years ago, few eighth-grade runners operated with Bartle's degree of maturity and deter-

mination. There were no middle-school divisions at the big national meets, and 13- and 14-year-olds rarely put serious weekly mileage on their legs. But perhaps inevitably, the youth sports boom expanded to include track.

As millions of exhausted parents can attest, sports such as soccer and baseball have become dauntingly competitive over the past generation. Even for third and fourth graders, there's a constant scramble for spots on prestigious travel teams, followed by nerve-racking fights for playing time. Some families decided they could avoid that madness by steering their kids toward track,

which had relatively few participants at its entry-level ranks.

Grade schoolers began flocking to local track clubs. Dennis Robinson, head coach of the Zephyrs Track Club in Chicago, told me that for most of the 2010s he only managed to sign up high schoolers. "We were concerned about the future of our club," he said. "Now we're starting to see more and more younger athletes. And when I say young, I mean we've had to turn away athletes who are 4 years old." Another club I spoke with, the Youth Track Foundation in Portland, Oregon, signed up 60 kids in its first two years of existence and has a lengthy waiting list.



The images for this story were photographed at the New Balance Nationals Outdoor on June 21, 2026, at Franklin Field in Philadelphia.

These clubs have also benefited from track's growing reputation as an antidote to the politics and favoritism that plague less objective sports. "I have so many parents that join our club, and they're just like, 'This is so great, because we had this terrible experience with the baseball team because this parent was coaching and he never let my kid pitch,'"

shoes have been proven to boost performance by 2 to 3 percent, which translates to roughly a second per 400-meter lap.

Geoff Burns, a sports physiologist with the US Olympic & Paralympic Committee, believes the shoes' energy-return component decreases the traumatic stress endured by young bones and muscles. "If you're able to do that same work but not

"I think I have 10 middle-school girls who run between a 4:56 and a 5:16 mile. Ten years ago, you'd be like, 'That's insane.' Now it's nothing."

says Brad Peterson, a cofounder of HP Distance, a track club in Indiana. "But in track there's no argument." The stopwatch determines everything.

The rise of track clubs was apparent on the second day of the East Coast International Showcase, when I watched wave after wave of kids aged 5 to 9 compete in the 100 meters. The many standouts ran times that would be dazzling for boys or girls several years older, and I took note of their efficient mechanics—evidence, it seemed to me, that they're already being coached to develop good habits.

When talented elementary-age kids from the club system move into their tweens and early teens, they're primed to start the grueling training that used to be reserved for high schoolers. "I'm asking middle-school girls to do eight 400s in 75 seconds, so at a 5-minute-mile pace," says Peterson. "Whereas it used to be the middle-school program was, 'Hey, let's jog 20 minutes and let's go play Capture the Flag,' right?"

Kids are increasingly doing that training in so-called "super shoes" such as the Nike Vaporfly 4 or New Balance FuelCell SuperComp Elite v5, both of which now often sell for well under \$200. These shoes' carbon plates and ultralight foams help return kinetic energy to the wearer's body with every step. In races, super

have that mechanical collateral damage or nearly as much of it, then you're just not building up as much scar tissue that could potentially inhibit performance," he says. Instead of diverting lots of cellular energy to the healing process after every workout, the body can dedicate more resources to building strength.

As middle schoolers have gotten faster, big-name meets have made room for them. New Balance Nationals added its middle-school division in 2023, and other prominent track events followed suit. Athletes like Bartle now spend a significant chunk of every winter and spring traveling across the country.

The results make track old-timers shake their heads with wonder. In April, for example, an eighth-grade boy shattered the national middle-school record for the mile (he ran it sub-4:18). Just two weeks later, an eighth-grade girl ran the 400 meters faster than any US high schooler had at that point in the year (she clocked 51.58).

It's not just the superstars who are getting faster. The runners in the pack behind them are picking up the pace, too, and they're transforming what's considered a decent time. "I think I have 10 middle-school girls who run between a 4:56 and a 5:16 mile," says Peterson. "Ten years ago, you'd be like, 'That's insane.'

Now it's nothing." When these kids head to high school, they have the strength and experience to flourish right away. But given the sky-high expectations they face, the intensity can come at a cost.

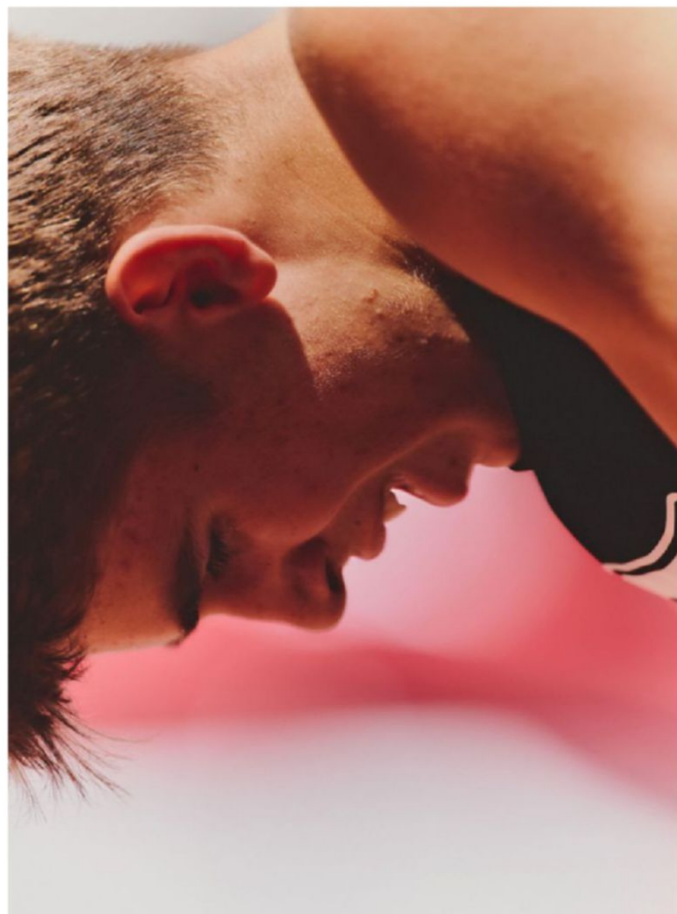
THERE HAS LONG been a vast discrepancy between the number of high schoolers who run track and the money their programs receive. Outdoor track and field boasts more high school athletes than any other sport, with over 1.1 million participants—a figure likely inflated by the fact that teams tend to make few if any cuts. (The second-most populous co-ed sport, basketball, has fewer than 900,000 players.) Many athletic departments treat track like an afterthought, undeserving of the resources needed to hire coaches with real expertise.

"When I was coming through, my coach was a retired Marine who had never run a step in his life," says Caryn Gehrke, an all-Ivy League runner at Columbia University in the early 2000s who now coaches in Ann Arbor, Michigan. "His entire philosophy was the more you hurt in practice, the more you can hurt in a race," which is possibly the most counterproductive advice a runner can hear.

Today, a high school runner can scrutinize workout videos posted by pros or simply ask ChatGPT "How do I run a sub-2:00 800?" and develop a more effective training plan than anything their forebears were using in 2016. But for runners with any financial means, hiring a private coach for one-on-one guidance has become commonplace. It's easy to find former collegiate runners on Instagram who are eager to capitalize on their years of geeking out on training methods. These coaches have popularized techniques such as heat acclimatization, in which athletes over-exert themselves in sweltering conditions—say, by running on a treadmill next to a space heater—so that their bodies will produce extra plasma. (This is sometimes referred to as "legal blood doping.")

They're also a big reason why high school kids are dabbling in double-threshold training, which was pioneered by Norwegian pros. This approach





involves doing a hard morning workout, then analyzing a drop of the athlete's blood to see how much lactic acid their muscles produced. The runner then adjusts their pace up or down during a killer second workout of the day.

Private coaches also preach about proper nutrition and supplements. Survey the trash cans at any meet and you'll see empty tubs of Maurten Bicarb System, a sodium bicarbonate powder that runners consume en masse before races. The substance suppresses the development of lactic acid in muscles, allowing runners to stave off fatigue for a tad longer than normal. According to a 2021 meta survey, bicarb may boost performance by 1.5 percent, or around three seconds per mile.

There's plenty of chatter that some teen athletes are emulating the pros by ingesting banned substances—a cheat that's almost impossible to detect, since there's virtually no drug testing at the high school level. "I'm not saying I'm 100 percent on this, but I can pick out the athletes who are on it," says Timothy Gold-

sack, a cofounder of the coaching service RunCCG, who cites human-growth hormone and testosterone-replacement therapy as two popular performance enhancers. He blames familial pressure on kids to use track as a ticket to college: "Parents are crazy, you know that."

To impress college scouts, high schoolers must travel to the national meets that are known for producing the most trackflationary times. These meets tend to have bouncy polyurethane tracks, favorable weather, or pace lights that keep runners apprised of the tempos needed to break records. A few well-known teen runners receive airfare and hotel rooms for gracing these meets with their presence, but most competitors spend small fortunes to attend. "If a family has the money to invest in that and it costs them \$2,000 to fly a kid across the country to take 15 seconds off their time, and that all of a sudden opens the door to another tier of scholarship or whatever, that's a pretty good investment," says Geoff Burns of the US Olympic & Paralympic Committee.

In mid-April, I spoke to Chris Catton, the other cofounder of RunCCG, as he prepared to coach several of his clients through a notoriously fast meet, the Asics Carolina Distance Carnival in North Carolina. "I have people who have flown here from Montana, North Dakota, Oklahoma, Rhode Island, New Jersey," he told me by phone from his Airbnb in Charlotte. He was excited because the racing would take place at night, when times are fastest, and runners would be grouped together in heats according to their personal bests—a reliable way to get kids to push each other in a tight pack.

Two days later, Catton texted me a heads-up to check out the Carnival's

results. They were staggering: In the high school boys' mile, the top 14 finishers all went sub-4:10. Five middle-school girls had broken the 5-minute barrier. Catton said that one of his clients, a ninth-grade girl who ran the 3,200 meters, had set an Oklahoma state record at the Carnival, yet only managed to come in 14th—half a minute behind the winner.

The social media content generated by these meets has turned a number of high schoolers into influencers. Some of them get sponsorship deals. Most receive perks rather than money—notably loads of free swag that they're encouraged to flaunt online—though that may change as brands increasingly realize how much high school stars can shape the tastes of young consumers.

I watched one of those sought-after celebrities, 17-year-old Natalie Dumas, compete at the East Coast International Showcase. The New Jersey native had been one of the most recognizable faces of trackflation for nearly a year, ever since she'd won an incredible three races at the New Balance Nationals in June 2025. In Baltimore, she warmed up for a mere 20 minutes before demolishing the field in the 400-meter hurdles. She looked almost bored as she finished in 58.78; it wasn't until I checked her Instagram later that I realized it was (at least at that moment) the fastest a high school girl had run the race this year.

When I caught up with Dumas right after the race, she implied that she would have run much faster if she wasn't in such high demand. "I ran Wednesday, Thursday, Friday, and today's Saturday, so this is my fourth meet this week," she told me. "This is my sixth event in the past four days."

FOR A BRIEF moment in April, a stunning video was everywhere in my Instagram feed. It showed a 12-year-old girl from Utah running the mile in 4:40.98, a time that crushed the previous world record for her age group by nearly six seconds. She might have run even faster had she not elected to celebrate with the Scuba Dance a few steps short of the finish line.

The feat made Shyheim Wright, the content creator who specializes in high-

How a Typical Fit Adult Stacks Up

FOR THE MOST PART, recreational adult runners don't time themselves in common track-and-field events. But one point of comparison is the US Air Force fitness test, which can include a 2-mile run. To score the maximum points on that run, a man younger than 25 has to finish within 13:25 (averaging 6:42.5 per mile), while women in that age range have to hit 15:30 (7:45/mile). For men and women aged 45 to 49, the cutoffs for a full score are 14:30 (7:15/mile) and 16:55 (8:27.5/mile), respectively.

Men <25	Men 45-49	Women <25	Women 45-49
13:25	14:30	15:30	16:55
6:42.5/mile	7:15/mile	7:45/mile	8:27.5/mile

Compared to Middle Schoolers:

At the New Balance Nationals on June 19, 2026, an eighth-grade girl won the 2-mile race in 10:21.44, obliterating the previous meet record of 10:43.05. The top five finishers in that event all broke that record. The winning time equates to a per-mile pace of 5:10.72.

The fastest middle-school boy, also an eighth grader, finished the 2-mile run in 9:21.63, or an average of 4:40.82 per mile.

Boys	Girls
9:21.63	10:21.44
4:40.82/mile	5:10.72/mile

Compared to High Schoolers:

For the 2026 outdoor track season, the fastest high school girl to run the 2-mile was an 11th grader who finished in 9:45.40 (average pace of 4:52.7/mile). The top 10 girls all broke 10:00.

The fastest high school boy in 2026 was a 12th-grader who hit 8:44.65 (4:22.33/mile on average). Every boy in the top 10 broke 8:50.

So by Air Force standards, even if you're one of the fittest recruits, you might be a total slug compared to a good school-age runner.

Boys	Girls
8:44.65	9:45.40
4:22.33/mile	4:52.7/mile

lighting the most ludicrous examples of trackflation, lose his mind. “Nah, bro, nah, bro, no way!” he began his Instagram post. “Bro, nobody was even in the camera with her, bro. There was other people in the race. I didn’t see nobody.” (“She was in my heat,” wrote one commenter, a seventh grader from North Carolina who ran her personal best in the race. “I didn’t see her once, she was so far ahead.”)

To many longtime track observers, however, the video was a cause for alarm. Multiple coaches and researchers told me this particular world record crystallized their fears for the safety of young runners who feel compelled to keep topping their peers. “When you see these amazing performances, it’s also just the tip of the spear of a lot of people also falling apart,” says Douglas Casa, a kinesiology professor at the University of Connecticut who studies elite athletes. “I’m not excited about all this progress. It just means that they’re working so much harder at a younger age.” He’s especially worried about young girls who specialize in middle- to long-distance events, since running the mileage required to excel in these races can delay puberty, leading to long-term issues such as lower bone density.

Burnout has always been a major problem in track, a sport anchored in

American middle-distance runner at the University of Washington, went public about her serious anxiety, which often caused her to vomit before races.

One 2022 study looked at the careers of 67,600 top-ranked teenage track-and-field athletes. Less than a quarter of 16- and 17-year-olds achieved comparable success past those ages, a transition rate the study authors described as “low.” Burns told me the results are even worse for kids who dominate at 16 or younger. “It’s a Faustian bargain,” he says. “Like, do you hyper-specialize and develop as a middle schooler and high schooler so you can get access and get scholarships and open all these doors, but it comes at the cost of actually being able to be good at it later?”

I didn’t meet a single young runner who showed any trace of having pondered that question—naivete is one of the blessings of youth. They were instead wrapped up in envying the kids whose increasingly impressive victories get pumped into their phones every day: “When you see a girl run a faster time, all of them are trying to attack it, and they all have the mindset that they want to win,” said Dumas, the 17-year-old phenom.

Whenever it seems like times are about to plateau in a certain race, another 14- or 15-year-old emerges to set a new standard

“When you see these amazing performances, it’s also just the tip of the spear of a lot of people also falling apart.”

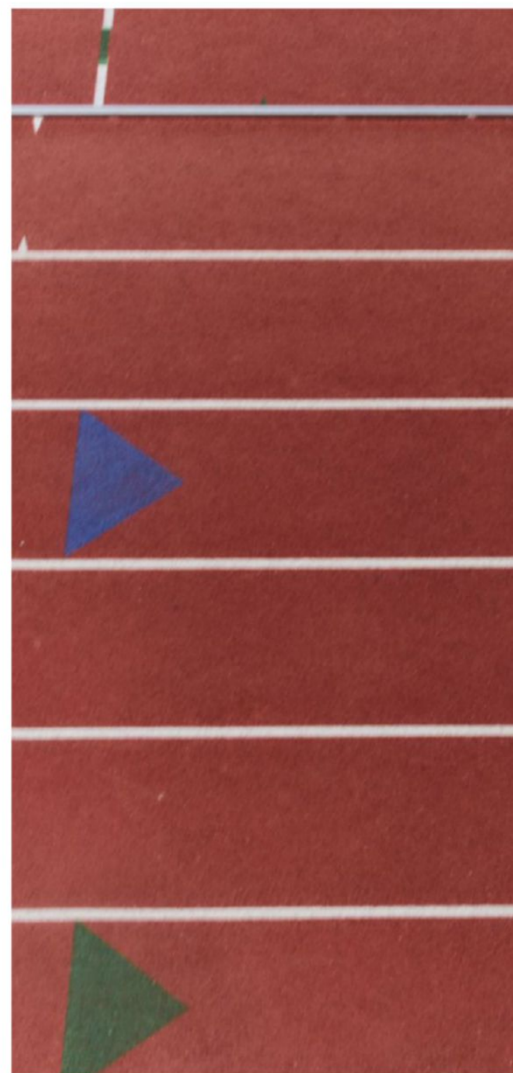
athletes’ ability to sop up unnatural amounts of punishment. “I’ve spent my whole life running a race fueled by fear, never-ending expectations, and external validation,” wrote Stanford University 800-meter specialist Roisin Willis in a 2025 Instagram post about overcoming her mental health struggles; around the same time, Chloe Foerster, an All-

and stoke the competition. (That Utah girl who set the internet alight with a 4:40 mile in April? She beat her own record by two seconds in June.) Jesse Williams, a meet organizer in Seattle, used to give coaches a rough estimate of what times would earn their athletes a spot at the Brooks PR, an elite invitational that he helps oversee. He had to stop—records

are falling too fast for Williams to keep up.

All that progress, of course, is built atop a foundation of pain, and I had to ask the kids why they love a sport that primarily tests their ability to endure agony. The answer that stuck with me most came from Dane Szczepkowski, an 18-year-old sprinter from SPIRE Academy in Geneva, Ohio. I caught him during a rough moment in Baltimore, mere minutes after he’d finished 39th in the 400 meters; he was clearly struggling as he tried to stretch away the damage he’d done to his legs. When I asked him why he’d become so devoted to running, he thought for a beat before offering an emphatic answer. “It’s hard,” he said. “It’s hard.”

I’d heard that sentiment from a lot of runners. They had chosen track specifically because it’s an unglamorous grind—a lonely contest between them





ture, but track's rise does feel connected to the unique tumult of the past few years. Kids are understandably reeling from the echoes of the pandemic, social media, AI. Track just might be the ideal sport for those who tend to turn inward when looking to build self-belief. Amid the acceleration of everything, there's clarity to be found in trying to get a tenth of a second faster.

MY SON WAS good-natured about his thumping loss at the 2025 sectionals, but that race turned out to be the apex of his running career. He ran winter track again as a senior but his heart wasn't in it—he grew averse to the harsh training for the 1,600 and dropped down to shorter races, where faster sprinters dominated. A second trip to sectionals wasn't in the cards, which didn't bother him; by season's end, he'd become more interested in trying to learn how to kick field goals so he can walk on to his college's football team in the fall.

But our family's journey through track seems far from over. My 13-year-old daughter joined her middle-school team this spring, and after some trial and error, she settled on the 800 as her primary race. She gutted out some decent times at a few meets, and her coach rewarded her with a spot in a postseason meet held in a nearby college town.

She was nervous for days beforehand, and I tried to assure her that just showing up and running would be a victory—no one expects her to be the next Natalie Dumas. On the afternoon of the meet, though, she called me to report that things had gone much better than expected. Not only had she conquered her butterflies, she'd also won her heat. She'd looked over her shoulder with about 50 meters to go and realized that no one was even close to overtaking her. "I pulverized those other girls," she said with evident glee.

She's still light-years away from a shout-out in a Shyheim Wright video. But in the era of trackflation, all things seem possible. **W**

and a pitiless clock. The joy is in learning to appreciate the cause-and-effect relationship between arduous labor and incremental progress, even when that progress delivers a middle-of-the-pack result. Sophia Belcher, a high school junior from the Dallas area who won a Texas state title in the 800 meters this May, told me how the never-ending demands of track have been her rock through the most difficult moments of adolescence: "In a world where I think a lot of things are changing and not constant, I kind of had running that I could focus on, that would always be there."

There's obviously nothing new about unmoored teens searching for struc-

BRENDAN I. KOERNER is a contributing editor at WIRED and the author, most recently, of *The Skies Belong to Us: Love and Terror in the Golden Age of Hijacking*.

SOME



"I think it should stand for *artificial idiot*," one 9-year-old says. Here's why kids of all ages are calling AI "disgusting" and "creepy."

KIDS

BY ELANA KLEIN

WILL

NEVER



ILLUSTRATIONS BY
LEON EDLER

THINK

AI IS COOL

F

FORGET CHEATING ON homework and chatbot friends. Some kids are getting in on a new AI trend: thinking it sucks.

In the four years since chatbots went mainstream, and their marketing campaigns went into overdrive, young people have grown increasingly skeptical of the hype around LLMs. Yes, many of them still use the tech for school assignments and companionship, but according to market research firm YPulse, 37 percent of teens aged 13 to 17 cringe when they see AI content like music and videos, and more than half worry about misinformation and deepfakes.

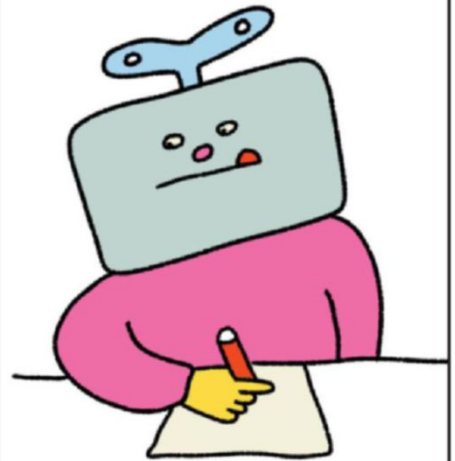
The polling on youthful AI attitudes shows a great deal of contradiction. Adoption rates are high, with a majority of America's teens reporting they use chatbots, but enthusiasm is mixed. A recent Pew Research report found that while many teens think AI will be good for them personally, over a fourth of their cohort believe AI will have a negative impact on society in the next 20 years, citing job loss, the decline of critical thinking skills, and environmental impacts as concerns.

Young people typically adopt new consumer technology eagerly, but Melanie Green, a communications professor at the University at Buffalo, says AI is different. This time, the moral panic isn't coming from older generations—in fact, kids are turned off by the way AI is being pushed on them by adults and tech corporations. They're also, Green says, "acutely aware that whatever disruption happens, their generation is going to be bearing the brunt of it."

Ergo, the eye-rolls. On Bluesky, parents bond over their kids' distrust of AI, with many claiming that their children come home saying "that's AI" to mean "that's BS." On Reddit, educators share that students—even those who use AI—worry about its consequences and can't stand the art it produces. WIRED spoke to young people, their parents, and their teachers to find out why some kids don't want to be on the AI bandwagon.

They think AI is making them stupid ...

Zoe Katz, a middle school science teacher in Los Angeles, says her students believe AI is actively decreasing people's intelligence, and "they love to call people dumb for using it." They see AI usage as something far more nefarious than flicking through SparkNotes. When Jasper Owens, a 16-year-old from Canada, was assigned questions in English class about *Night*, by Elie Wiesel, he says his classmate "just copy and pasted the questions into ChatGPT, and then copy and pasted whatever ChatGPT spit out into the answer sheet." Many of his classmates, he says, are "relying on ChatGPT and other AI chatbots as their brains, basically."



... and that the bots themselves are stupid

Maggie McPherson, a 14-year-old from Minneapolis, noted that an AI overview once claimed there were whales in Lake Superior. "It came from a fake information website," she says. "So it's like, how does that help you learn things?" Kids also worry about faulty AI's potential for serious harm. "In the future it could be bad because maybe people would use AI to become doctors, and then we would have the wrong doctor, and we could die," says Arabella Hippisley Coxe, a 12-year-old from Westchester, New York. Marian Agnew, 9, from Norman, Oklahoma, puts it plainly: "I think that [AI] should stand for *artificial idiot*."

It's coming for their (future) jobs

Seventeen-year-old Selene Kelley from Buchanan, Virginia, describes her group of friends as “art kids that love to draw or act and stuff like that,” so she finds it “disheartening” that AI is trained on the creative work of real people. As an aspiring writer, she worries that if she releases a novel or a television series, it will “just be stolen” by AI. And McPherson, despite believing AI is often a source of fake news, worries that “it’s going to get too smart.” “They should stop developing it,” she says. “She has seen *Terminator* and *Terminator 2*,” adds her dad, Steve McPherson.



It's harming the planet

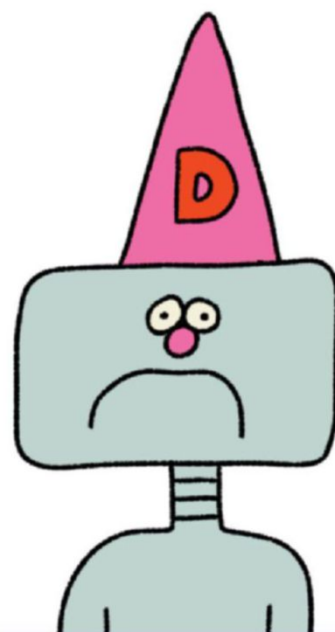
If AI companies want to build goodwill with today's kids, they'll have to confront the fact that many of them are profoundly concerned about climate change. Kelley's mom, Danielle Kelley, says that news of a Google data center being built near their family's Virginia home prompted Selene and her friends to worry about the future of their local water supply.

Similarly, Owens and his friends worry that the technology is “taking fresh water away from many communities in the US and other places.” He believes that this downside of AI should be obvious to his peers: “To be using AI without a thought about the problems that it causes for people around the world, and the water and electricity it's consuming,” Owens says, “feels like they're failing an open-book test with the answers being screamed at them.”

AI slop looks dumb as hell

When an AI video company visited Katz's Los Angeles school to encourage AI-assisted cinematography, her students were “just sitting there dying of laughter.” The school decided against inviting the speaker back because “none of them were going to take it seriously.”

Agnew described AI-generated video as “creepy”—a sentiment her father, Brendan Agnew, says his kindergarten students have expressed as well. And Agnew thought an AI-generated commercial she saw was “gross.” “Because why not use actual people?” she asks. Hippisley Coxe, 12, is disturbed by the uncanny quality of AI-generated images, specifically when it comes to her favorite animal. “They make the cats have weird big eyes,” she says. “The eyes are popping out of their heads almost. And then the mouth is just very, very non-cat-like.”



**“It continuously
is dumbing down
just the whole
community
within school.”**

—SELENE KELLEY, 17

**“When I’m on
TikTok, I never
know what’s real
and what’s fake.”**

—DAVID HAIM, 13

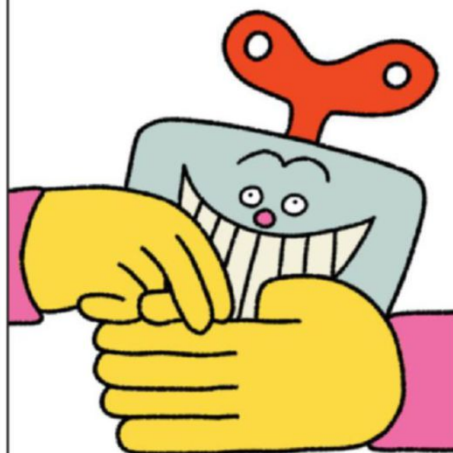
... and boring

Joe Corey of Raleigh, North Carolina, says his 17-year-old daughter, Josie Corey, who enjoys music and writing, views AI as “a menace.” Last year, when Josie was part of a Christmas show that included jokes written by AI, she was “pissed off,” Joe says, and “not happy that she was having to read this stuff,” because she felt it was “cutting out the creativity.” He says that while on a walk with Josie, “she just pointed out every poster and logo where she was like, ‘That person got that from AI.’” Many kids want to put in the effort it takes to make art. “AI is used to come up with ideas,” says 9-year-old Agnew. “People can do that. It’s part of the fun.”

It’s cringe ...

“Everybody shames people for using AI,” says 13-year-old David Haim. When McPherson saw a YouTube ad for an AI note-taker, she found it ridiculous that someone would offload something so simple. “I’m very much like, ‘Just do it yourself. It’s not that hard,’” she says.

At Selene Kelley’s school, a student organization created a St. Patrick’s Day display in the lobby that “was just pure AI slop,” she says. “I legit looked at my friends and I was like, ‘This is something we as artists cannot stand for.’ It is genuinely disgusting. It continuously is dumbing down just the whole community within school in general.” Katz says her students see failure to identify AI-generated content as a sign of incompetence—those who can identify AI-generated content “kind of use it as if it’s a bit of a superiority complex.”



They can’t tell what’s real and what’s not

“I really think that’s a scary thing, because when I’m on TikTok, I never know what’s real and what’s fake,” Haim says. McPherson feels similarly and worries about both falling for misinformation and perceiving real news as misinformation. “You can just make a fake news site that’s like, ‘Taylor Swift is retiring’ or something. And then people in the comments are like, ‘Oh no, that’s AI, that’s AI.’ And then they’re like, well, what if it’s not AI?”

Kito Dorsla, 14, of Los Angeles, says his inability to discern the truth in AI-generated videos has “been definitely scary” and admits that he recently almost fell for a video in which an AI-generated Steph Curry appeared to be “talking trash” and saying he was going to resign from the NBA. “Sometimes it’s not even anything harmful,” Dorsla says. “Sometimes it’s just a funny video. And then I look at it and it says ‘AI-generated,’ and I’m like, ‘It’s not as funny.’ I feel like I was cheated out of something that didn’t really happen.”

ELANA KLEIN is an associate
manager of audience development
at WIRED.



THE STRONGEST COMMUNITIES SHOW UP FOR THEIR KIDS



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**THE
PAINFUL
TRUTH
ABOUT**

L ● N G



● There might finally be a way forward for long Covid treatment—if only you were allowed to talk about it.

C ● V I D

BY ALAN LEVINOVITZ

NOTHING ABOUT LONG COVID ADDS UP.

Consider prevalence rates: How could one study find it affected 3.3 percent of the population of the UK but others an alarming 51 percent of South Americans and 86 percent of Egyptians? Or treatment methods: The BMJ's systematic review of ways to treat long Covid lists two as supported by moderate evidence, cognitive behavioral therapy and physical exercise. But if you attended the third annual Long Covid International Conference in Boston—as I did, late last year—you'd think the BMJ was encouraging medical malpractice. During two days of presentations, the world's leading scientific authorities brought up exercise only to warn against it. Cognitive behavioral therapy received just one mention: “not recommended.”

Then there's the scientific progress, or lack thereof. Six years since the height of the pandemic, the scientific community remains baffled by long Covid. Researchers still don't know why some people's symptoms persist or worsen after the acute phase of SARS-CoV-2 infection has passed. Almost \$2 billion and half a decade of international effort have yielded little more than hypotheses about micro blood clots and spike proteins and mitochondrial dysfunction. There

isn't a single approved pharmaceutical treatment, not even a test to verify the presence of the illness.

All of this is very strange. Stranger still are patients' stories of astonishing recoveries from severe long Covid, achieved entirely outside mainstream medicine. The stories are connected to a growing community of doctors, therapists, and self-styled coaches who insist the riddle of long Covid has been solved. Like so many health gurus, they offer a solution that depends, in part, on your faith in the process. The solution also works for a remarkable variety of ailments—classic red flags for “holistic” pseudoscience and medical charlatanry. If the stories are to be believed, they represent a neglected approach that demands urgent attention. If not, a colossal medical scandal is operating openly, exploiting sick people desperate for answers and relief.

It's the job of the scientific community to solve mysteries like this one. Doing that job effectively, however, has two basic conditions: Researchers must know what they are studying, and they must be free to study it impartially. In the case of long Covid, neither of these conditions has been met, and patients are suffering the consequences.

ONE OF THOSE patients is a 37-year-old man I'll call Andrew Larson, who came down with a bad case of Covid-19 in late 2023. After a week in bed, he recovered enough to begin working again. But a month later he noticed something was seriously wrong. Mild exertion like a short walk left his brain foggy and his body exhausted. Larson pushed through until June 2024, when he did some construction work around the house. The exertion was too much. His body began to shut down, and two weeks later Larson was bedbound.

Because so little is known about long Covid, sufferers are often dismissed by providers or passed from one skeptical specialist to the next. Symptoms vary dramatically in type and severity, which means one person might experience mild sleep issues and fatigue while another could become completely incapacitated. In those severe cases, it's not uncommon for patients to end up in the psych ward. A privileged few land at dedicated clinics, but empathetic doctors can do little more than treat individual symptoms and hope for improvement.

Larson made his way to such a clinic, but he didn't improve. By late 2024 and into 2025, the once-fit father had been lying motionless and mute in a darkened bedroom for months, pallid and emaciated, unclipped nails like claws, sucking pureed food from a syringe, dependent on a bedpan. Any exertion, even chewing or talking, meant waves of excruciating pain and days of bone-deep exhaustion.

What energy Larson had went into experimenting with treatments discussed in online support groups and Reddit threads: anticoagulants, antivirals, hydrophilic bile acid, a fortune's worth of supplements, low-dose naltrexone. The last produced marginal improvements—“If I hadn't started LDN, I might have taken my life,” he told me—but he still couldn't move or mumble more than a few words.

Medical tests mocked him: normal, normal, normal. To qualify for disability, he traveled hours to a doctor willing to document his deteriorated state. Local physicians had dismissed him, like the neurologist who suggested he was “malingering.” Almost unbelievably, they worked at the same hospi-

tal where he, Andrew Larson, PhD, had been doing research just a couple of years earlier. “I’m in an online group with another 20 medical professionals that have long Covid, and everybody has the same experience,” Larson said. “When you cross the line of being a patient, you’re a patient. They couldn’t care less about your credentials.” (His insurance company has been endlessly skeptical, at one point visiting Larson’s home to confirm his ill health, and he requested anonymity for fear of losing coverage. Some identifying details have been changed.)

His wife, also a medical professional, became frantic. She thought Larson must be mentally ill—despite clear physical symptoms like inflammatory arthritis—and urged him to try antidepressants. He refused. Nevertheless, she continued to seek out alternative approaches and eventually secured a Zoom appointment with an unusual doctor she found online.

Becca Kennedy was the former lead of a multistate long Covid specialty group for Kaiser Permanente. She had met hundreds of patients with similar symptoms and stories. “People are really suffering,” Kennedy said. “Their symptoms are real. But if we want to help them, we need to understand the

source of their suffering.”

Kennedy can barely contain her fury when she discusses mainstream theories of long Covid. She talks about patients who blew their savings on unevidenced blood-washing treatments because they believed the problem was micro blood clots. (Once a popular theory, it has now been replaced by other hypotheses.) She accuses scientists and clinicians who champion biomedical explanations of relying on shoddy, ambiguous research. “It’s poorly done studies that are really small,” she said. “And patients will be like, ‘Oh, well, this is micro blood clots and this is viral particles.’”

Kennedy has a different—and far more controversial—theory. She believes long Covid belongs to a family of chronic conditions that occur when the brain gets stuck in a feedback loop of fight or flight. Pain and fatigue signals, which should play a protective role—pain warns of structural damage, fatigue warns of overexertion—instead go haywire, like a broken smoke alarm. The result is a cascade of symptoms she attributes to nervous system dysfunction. The solution, she argues, is retraining the brain to break the loop. “It’s about how we are designed, our survival brains,” Kennedy said. “And

now we have the neuroscience to understand these symptoms. I’m not saying it’s all in their head. I’m not saying it’s their fault.”

Kennedy is a member of the Association for the Treatment of Neuroplastic Symptoms, which is dedicated to spreading the theory that many chronic conditions can be resolved with specialized therapeutic techniques that target the brain. They lean heavily on the power of “neuroplasticity,” a very general term for the brain’s ability to change structurally and functionally. Howard Schubiner, one of the founders of ATNS and Kennedy’s mentor, has been using brain retraining for years, treating everything from back pain to migraines to, now, long Covid. “Doctors don’t understand psychology,” Schubiner said. “They don’t understand neuroscience. Medicine is stuck in a biomedical model.”

Kennedy and Schubiner use a combination of trauma therapy, emotional awareness and expression therapy, body awareness techniques, and cognitive exercises. They’ll ask patients to imagine themselves undertaking an arduous activity, like going up stairs, and attend to how their body reacts. When the imagined activity triggers symptoms, patients come to see the cause is in their nervous system—which, of course, includes the brain—not structural damage in the body. At Kaiser, Kennedy says she had too little time with patients to form the kind of relationship necessary for this approach. So she quit and started a private practice, which is how Larson’s wife discovered her and scheduled their first Zoom appointment.

Initially, Larson said he “knew too much biology” to believe any of it would work. When Kennedy encouraged him to try simple breathing techniques, his symptoms flared up. He swore at her and accused her of violating his boundaries. But after a few months, he could use the bathroom with a walker, eat real food, and talk for as long as he wanted. As of this writing he can shower on his own and manage a thousand steps in a day. Recovery has been slow, with ups and downs, but he and Kennedy are confident the improvements will continue. “Thank God for her,” Larson said. It’s a refrain in our conversations. *Thank God.*



Becca Kennedy, a doctor who uses brain training to treat long Covid.



I've spoken with a dozen formerly bedbound sufferers who credit brain retraining with partial or full recoveries from severe long Covid and other chronic conditions. Hundreds more have shared testimonials about a range of similar approaches that fall under the gauzy umbrella of "mind-body" therapies. At the ATNS conference last year, I met several people whose experiences were so transformative they switched careers to become health coaches.

Outside of the community, such recovery stories are frequently met with skepticism and frustration. "To say 'mind-body' makes it sound like these neuroses are keeping them from getting better," said Lisa Sanders, the director of Yale's long Covid care center. "That's just not how I see things at all." In some long Covid groups, moderators remove positive posts about brain retraining and ban the users who write them, as you might in a cancer forum if someone endorsed the healing power of prayer and positive thinking. An influential advocacy news site published, and then removed, a book excerpt by a Georgetown medical anthropologist that was perceived as hinting at sympathy for theories like Kennedy's.

I asked Claire Every, a patient who runs Long Covid Advocacy in the UK, what she thought of these approaches. "It's quite soul-destroying as someone with severe long Covid to be told that it's either your trauma, or your emotions, or your mental framing," she said. "I think it's an awful thing to do to somebody." She and other advocates also worry that emphasis on psychological therapies will distract from biomedical research that could yield a breakthrough disease-targeting intervention.

Surveys show that "proving the realness" of long Covid is a top priority for sufferers—understandably, when newspapers run headlines claiming it's fake. As long as clinicians, insurance companies, and the general public are dismissing people like Larson, even entertaining the plausibility of mind-body interventions can seem irresponsible and dangerous.

And that danger is especially acute right now, because it threatens a fragile paradigm shift around conditions like long Covid that's been decades in the making.

SINCE AT LEAST the 19th century, when physicians described cases of "influenza exhaustion," medical professionals have been documenting chronic illnesses that follow bacterial, viral, fungal, and parasitic infections. Now known as post-acute infection syndromes, severe cases are characterized by cognitive impairment, autonomic nervous system dysfunction, diffuse pain, and, crucially, debilitating crashes after overexertion, which go by the term "post-exertional malaise." Categorizing these severe cases is a terminological minefield. But the most common designation, and the one used by the

ory was straightforward: Sick people get deconditioned from lack of physical activity. When they try to go back to their normal lives, some experience unusual fatigue, because their bodies aren't fully recovered. A subset of people misperceive this fatigue as ongoing infection or tissue damage, leading to a vicious cycle of distress, aversion to activity, and increased deconditioning. In essence, patients cursed themselves by believing their symptoms had a strictly biological cause. The stronger the belief, the worse the curse. "Poor prognosis," Wessely explained, "is associated with holding very firm convic-

"PEOPLE ARE REALLY SUFFERING. THEIR SYMPTOMS ARE REAL. BUT IF WE WANT TO HELP THEM, WE NEED TO UNDERSTAND THE SOURCE OF THEIR SUFFERING."

Centers for Disease Control and Prevention, is ME/CFS, which stands for "myalgic encephalomyelitis/chronic fatigue syndrome."

As with long Covid, ME/CFS has no clear biological explanation or diagnostic test, which means the medical community has struggled to offer care and empathy. Those with the condition knew what to expect when long Covid hit, because they'd seen it before: wisecracks dismissing ME/CFS as "yuppie flu" in the 1980s; scientific journals attributing their symptoms to epidemic hysteria. "People with these conditions get one of two labels in the popular imagination," said Todd Davenport, an exercise physiologist at University of the Pacific who specializes in ME/CFS. "They get 'lazy' and they get 'crazy.'"

In the old paradigm, the dominant authorities on ME/CFS were psychiatrists, like Michael Sharpe, an emeritus professor at Oxford, and Simon Wessely, former president of the prestigious Royal Society of Medicine. Their the-

ory of an exclusively physical origin to symptoms."

If you accept this theory, the right treatments follow naturally: cognitive behavioral therapy to correct the mistaken beliefs, and exercise for the physical deconditioning. Sharpe and other colleagues eventually secured £5 million to evaluate those treatments in a study known as the PACE trial, which Wessely advised on. Published in *The Lancet* in 2011, it was easily the largest study ever of ME/CFS. The authors took the positive results as confirmation of their theories. "For those who appreciate these things, the trial is a thing of beauty," Wessely wrote. "We now have two treatments that we can recommend with confidence to our patients."

Among patients and advocacy organizations, the reaction was uniformly negative. A scathing letter to *The Lancet* from the ME Association's medical adviser put it bluntly: "The patient community has expressed both anger and despair." The association surveyed

patients and found that 74 percent said exercise therapy made them sicker. ME Action, another advocacy organization, collected 10,000 signatures for a petition demanding the study be retracted.

One of the study's most influential critics was David Tuller, a senior fellow at the UC Berkeley Center for Global Public Health. A veteran of the HIV/AIDS crisis, Tuller had shifted his attention to ME/CFS, where he saw something akin to HIV denialism. "It was designed to ratify what they were already claiming," Tuller said of the PACE trial. "It meets every single definition you can think of for research misconduct to a degree." Tuller also collected harsh comments from physicians and scientists: "shocked that The Lancet published it," "blatant methodological lapses," "the height of clinical trial amateurism." (Tuller noted to me that his position at Berkeley is supported by crowdfunded donations from patients and patient advocates.)

In the ME/CFS community, Wessely and Sharpe became talismanic symbols of medical science gone wrong. Their every statement was subject to intense scrutiny. The Guardian reported on a "campaign of intimidation, attacks, and death threats." Wessely was accused of, among other things, throwing a sick boy into a pool to see if he would sink or swim. (Wessely denies this allegation, and many others, on his personal web page.)

Over time, the influence of the PACE trial began to fade. Although The Lancet never retracted it, major medical organizations dropped recommendations for cognitive behavioral therapy and exercise rehabilitation. The CDC's overview of ME/CFS now opens with a decisive rejection of psychological factors: "ME/CFS is a biological illness." In online support groups and patient communities, anything remotely associated with the trial became instantly suspect. Exercise was a threat, not a therapy. To suggest the mind had any role in causing or curing ME/CFS was to align yourself with monsters and malpractice.

Then the pandemic hit.



Influenza patients being treated at an emergency hospital in Brookline, Massachusetts, in 1918.

their side. Prominent long Covid skeptics like Vinay Prasad, a former Trump appointee to the FDA, were already viewed with suspicion by the scientific mainstream for minimizing the risk of Covid-19 and highlighting the risk of the vaccine. Honoring "lived experience" had become more of a cultural imperative, and long Covid patients effectively reframed their clinical encounters with dismissive doctors as "gaslighting" and "abuse."

Musa al-Gharbi, a sociologist at Stony Brook University, thinks that the gendered nature of long Covid—being female is an established risk factor—might have affected the success of advocacy organizations. "This was a political environment where there's a lot of stress on believing women, on trusting women, on taking women seriously," he told me. "It was a fertile moment and a fertile set of conditions for the patient advocacy campaign to actually break through."

Break through it did: The term "long Covid" was coined by a patient, not medical researchers. Virtually every ME/CFS organization pivoted to long Covid in their advocacy. Online ME/CFS forums filled with discussions of long Covid. Everyone emphasized similar themes: Attributing long Covid to psychology, rather than biology, is another predictable chapter in the sordid his-

tory of medical sexism and gaslighting. Because the condition is biological, psychological therapies can't offer a cure. Suggesting they can is just another way to blame the victim and say long Covid is fake.

By 2025, most experts had adopted the same position. "I think everybody now agrees that long Covid is a biologic disease," said Igbo Ofotokun, of Emory University School of Medicine, in his concluding comments at the Long Covid International Conference. "It's not in your mind. It's real." Ofotokun also offered an explanation for the lack of scientific progress. "The big elephant in the room is just that we don't have a gold-standard definition for long Covid."

Part of the definitional problem for long Covid is the absence of definitive biomarkers: genes, antibodies, any unique physiological signature of the illness. To discover biomarkers, researchers must first identify patients presumed to have a specific illness, then see what they have in common beyond their symptoms. Identifying a biomarker allows for the development of disease-targeting interventions—gene therapy, antivirals—and enables the sorting of people who have a particular condition from those whose symptoms mimic the condition but are caused by something else.



Scientific experts are in charge of the search for long Covid biomarkers. But their search depends on the essential question of how to classify someone as having long Covid in the first place, the answer to which has been strongly influenced by patient advocates. Deciding who to include in a study of long Covid requires a provisional set of exclusionary criteria. If the criteria are too strict, they will exclude people who have the condition; if they are too relaxed, they will include people who don't have the condition. Each of these poses a risk to the accuracy of the science.

But for patient advocates, strict criteria have an additional risk. If they are implemented, some sufferers who believe they have long Covid won't "officially" have it. This risk was front and center when, not long after the outbreak, the National Academies of Sciences, Engineering, and Medicine (NASEM) took on the challenge of producing a "uniform, core definition" of long Covid. At the time, basic questions remained unanswered: Does long Covid require a prior positive SARS-CoV-2 test? What symptoms are necessary? How long must they go on?

In 2024, with a "focus on the patient perspective and interdisciplinary dialogue," the committee produced an "intentionally inclusive" definition, to "ensure that patients who experience long Covid will be included in the definition." Long Covid, they decided, is "an infection-associated chronic con-

dition that occurs after SARS-CoV-2 infection and is present for at least three months as a continuous, relapsing and remitting, or progressive disease state that affects one or more organ systems." Among the possible symptoms: shortness of breath, cough, persistent fatigue, post-exertional malaise, difficulty concentrating, memory changes, recurring headache, lightheadedness, fast heart rate, sleep disturbance, problems with taste or smell, bloating, constipation, and diarrhea.

According to the NASEM definition, a single symptom from the list is enough. It can be mild or severe. Previous infection "may have been recognized or unrecognized"—that is, a prior test for Covid is unnecessary. Put differently: If you start having trouble sleeping, on and off, for three months, and you attribute that to an unverified case of SARS-CoV-2, you have long Covid.

As a powerful legitimization of people's suffering and a deterrent against gaslighting, the NASEM definition may be a success. But it fails as a functional element of scientific inquiry. "It is the broadest definition of any clinical entity in medical history," said Adam Gaffney, a pulmonary and critical care physician and an assistant professor at Harvard Medical School. "I don't think it is very useful at all either for research or clinical practice." When researchers select a patient population using an overly broad definition, noise in the data will spike, and studies are likely to generate useless or ridiculous results. A recent JAMA analysis of studies using broad definitions of long Covid, for instance, showed that people with a documented prior infection suffered from long Covid at slightly *lower* rates than people without one.

An overly inclusive definition of long Covid also invites accusations of double standards, since scientists and public health officials use tighter definitions for other conditions, like post-vaccine injury. Anders Hviid is a Danish epidemiologist who has worked on both vaccine safety and long Covid. I asked him what would happen if epidemiologists used an intentionally inclusive definition of post-vaccine injury. "Everyone would have post-vaccine syndrome of some kind, right?" he said. "It's basically what anti-vaxxers are doing. They

are attributing everything that happens after you've been vaccinated to the vaccine."

People with post-acute infection conditions are routinely traumatized by medical professionals and the general public. They are disbelieved about the reality and severity of their symptoms. They are accused of faking. Advocates have fought hard to prevent that trauma, and with long Covid they are finally seeing results, thanks to their emphasis on believing patients. But believing patients about the *reality* of their symptoms is not the same as believing them about the *cause and resolution* of those symptoms, and conflating the two can lead to serious problems.

THE RELATIONSHIP BETWEEN

exercise and post-exertional malaise is a case study in how scientific results can clash with believing patients. Advocates generally agree that people with this symptom should avoid exercise at all costs. In the National Institutes of Health's flagship long Covid study, patients who reported post-exertional malaise were assigned to an arm of the trial that didn't involve any exercise or rehabilitation, because they were considered far too risky. "We need to use the precautionary principle of 'first do no harm' and not offer physical rehabilitation to patients with long Covid and ME, or only with the greatest caution," said Elke Hausmann, a British general practitioner and long Covid sufferer. Sanders, of Yale's long Covid clinic, told me exercise is so taboo she refers to it as the "e-word."

If exercise did indeed trigger post-exertional malaise in most patients, this level of caution would be warranted. But multiple studies have shown that self-reports of crashes don't line up with what researchers find in controlled settings. Unlike mind-body therapies, exercise is widely embraced by mainstream medicine as an effective intervention for conditions that look like long Covid, so the studies have come from well-established mainstream researchers. One of the most rigorous trials so far of exercise interventions for long Covid, including high-intensity interval training, found that "the exercise response was largely compara-

ble” between long Covid patients and healthy controls, “with no profound symptom exacerbation.”

Andrea Tryfonos, the lead on this trial, emphasized that avoiding exercise is, in itself, an extremely risky intervention. “We know that no exercise leads to increased risk of cardiovascular disease, increased risk of metabolic disease, certain types of cancer, diabetes, depression, Alzheimer’s,” she said. “Long Covid itself cannot be a barrier to exercise.” Other rehabilitation specialists echoed her concerns in an invited commentary to JAMA and expressed hope that the trial’s results would assist in “debunking the controversies surrounding graded exercise therapy.”

A single trial, even a rigorous one, is not proof of anything. One way to address uncertainty about the effects of exercise would be more trials, tailored to subsets of long Covid patients. But entrenched resistance makes doing those trials exceedingly difficult. It’s challenging to find a large number of subjects, because patients have read about the perils of exercise online and don’t want to enroll. And at universities, institutional review boards have been primed to think exercise is inexcusably dangerous. “We had a tremendous problem with the IRB,” said William Stringer, a coauthor of a long Covid exercise trial at UCLA. Members of the review board were concerned that asking patients to exercise could be unethical, even under careful expert supervision. “They didn’t want to approve it.”

If overcoming opposition feels too burdensome or controversial, researchers may simply abandon a trial. Siddhartha Angadi is an exercise physiologist at the University of Virginia who specializes in rehabilitation. He designed a long Covid exercise trial with a cardiologist and a pulmonologist, both of whom had experience treating patients with severe heart failure. (In rehabilitation medicine, “exercise” means physical activity in service of rehabilitation, so standing up from a chair could qualify.) The IRB approved it. But then a UVA law professor and long Covid patient emailed him and the IRB with “grave concerns” about the trial. There was “no way this would be approved if the dangers involved” were understood, they wrote. Angadi and his coauthors

“PATIENTS GASLIGHT THEMSELVES. WE COMPLAIN ABOUT DOCTORS NOT BELIEVING US, AND THEN



got spooked. “We were like, this is just too much,” he said. “So we bailed on it.”

The study of cognitive symptoms and interventions suffers from the same dynamic. Long Covid can cause life-changing, verifiable cognitive impairments. But self-reports of those

impairments often don’t match what objective testing finds, as was the case in the neurological arm of the NIH long Covid trial. “We found that only 16 percent of our sample had actual impairments at baseline,” said Jacqueline Becker, a neuropsychologist at the Icahn

**WHEN SOMEONE HAS A
POSITIVE STORY, WE TELL
THEM THAT THEY WERE
NEVER SICK."**



At the long Covid conference, I asked one clinician-researcher why psychological risk factors—for which there is substantial evidence—had gone entirely undiscussed. “The patients are listening,” he whispered. “Talking about psychology can destroy your career.” He was one of multiple experts I interviewed who asked to remain anonymous to avoid retaliation. Paul Garner, an infectious disease epidemiologist who attributes his own recovery from long Covid to brain retraining, received multiple death threats after speaking publicly about his experiences.

Even people who are uninterested in psychological factors feel the effects. Lindsay McAlpine is a Yale neuroimmunologist who treats long Covid patients and conducts research on biomarkers that help provide evidence of cognitive dysfunction. “I learned very early, very quickly, keep my head down, do good work,” she told me. “I don’t want the death threats.”

I spoke with one of McAlpine’s patients, a 65-year-old accountant I’ll call Sarah Halpern. Once an avid golfer, Halpern contracted Covid-19 in May 2020. A few months later, she could barely walk, and cognitive issues were making work a nightmare. Doctor after doctor said they couldn’t help, until Halpern found a cardiologist at Yale “who actually seemed to understand Covid and didn’t dismiss me as being a hypochondriac or having anxiety or making stuff up,” she said. Halpern was subsequently referred to McAlpine, and together the team diagnosed and successfully treated her long Covid.

Surprisingly, Halpern told me her cardiologist characterized her nervous system as being “fight or flight on overdrive,” language that’s commonly used in the mind-body community. And although Halpern was prescribed beta-blockers and aspirin, she credits most of her recovery to three non-pharmaceutical interventions. The first was months of rest and a break from work. The other two—gradually increased daily walks and cognitive exercises with a speech pathologist—are similar to graded exercise and CBT, the very interventions dismissed at the Long Covid International Conference. “Frankly, I think it saved my life,” Halpern said of her sessions with the speech pathologist.

Believing patients is arguably the

School of Medicine who helped lead the trial. Becker pushed for using test results instead of self-reported impairment as the trial’s primary endpoint, but her team decided the tests didn’t adequately prioritize patients’ experience.

The trial ultimately failed to find an

effect for the psychological intervention, but Becker thinks the result could be skewed because they used a subjective endpoint. “To me, that’s unacceptable,” she said. “If patients aren’t impaired at baseline and then you do an intervention, you’re not going to see anything.”



Michael Sharpe, one of the psychiatrists behind the infamous PACE trial.

most important principle of long Covid advocacy. It explains everything from NASEM's broad definition to the taboo on researching exercise. And yet, despite advocates' staunch support of this principle, there's one group to whom it emphatically does not apply: long Covid sufferers who claim mind-body therapies have helped them.

THE MOST HIGH-PROFILE example of this phenomenon is Giorgia Lupi, a New York-based information designer and former long Covid sufferer. In December 2023, confined to her room and wracked with pain, she produced a multimedia op-ed about her experience for *The New York Times*, a tsunami of vivid charts to help convey the reality and enormity of the condition to doubtful readers. "In that moment, I felt there's no awareness of the condition," Lupi said. "I want people to see what it means to live with this on a daily basis." Emails poured in from grateful sufferers. She partnered with a prominent chronic illness research group, offering pro bono design services to support their work.

But then Lupi got better.

In 2024, she decided to give mind-body interventions yet another try. A popular brain retraining approach, the Gupta Program, hadn't worked for her, and neither had Internal Family Systems, a trauma therapy approach to chronic pain. But Lupi's third attempt, which incorporated another variation on brain retraining called the Dynamic

Neural Retraining System, proved successful. The pain receded. Her myriad food intolerances resolved. Soon she was well enough to give a TED Talk about her ongoing recovery, albeit still dizzy and weak. While planning the talk, Lupi overrode her TED curator and insisted on including an important sentence, so no one would misunderstand her. Nearly two years later she recited it to me from memory. "The last thing that I want is for people to think that these conditions are all in our head or that positive thinking alone can cure them. This couldn't be farther from the truth."

She was optimistic about how her story would be received. Instead, the group she'd partnered with sent her a furious email, demanding she cut ties with them and disassociate herself from their work in all public forums. They told her she was harming science. Lupi was shocked and deeply hurt; she'd given them around \$350,000 of free labor, she said. "I've also gotten a lot of nasty comments from patients," she added, ticking them off on her fingers: "*You weren't sick. This is not possible. It is because of people like you that the research for our conditions will stop getting funds. It is because of people like you that we all got gaslit and we get gaslighted.*"

A French patient who used mind-body approaches to recover from severe long Covid told me it felt like betrayal. "Patients gaslight themselves," she said. "It's crazy. We complain about doctors not believing us, and then when

someone has a positive story, we tell them that they were never sick."

ME/CFS and long Covid advocates typically describe mind-body therapies as aggressively marketed brainwashing. Recovery is most likely an illusion, they say, produced by coaches who force clients to deny the reality of their symptoms, at great risk to their health. Many patients have posted harrowing personal testimonials about losing their money to these programs and being made to feel like they were to blame for their symptoms.

But the recovered patients I spoke with, including Lupi, were adamant they'd never encountered pressure to deny the reality of their symptoms. "Obviously, they want you to focus on being positive and trying to get in that mindset of 'I will recover eventually,'" said Rachel McDowell, a science communicator who is currently using a program called Primal Trust to help with long Covid. Like Lupi, she tried various mind-body approaches before settling on the most helpful one. "None of them tell you to say that you're recovered when you're not, which I think is a misconception and something that really drives people away."

The marginalization of mind-body interventions didn't start with the pandemic. Just as long Covid is a subset of a historically dismissed condition, stories like Larson's and Lupi's are a subset of recovery stories historically dismissed by the medical mainstream. Genuinely honoring the principle of believing patients means taking those seriously too.

THE CURRENT CROP of brain retraining doctors all trace their lineage to a peculiar theory called "tension myositis syndrome," developed by the late John Sarno, a professor of rehabilitation medicine at the NYU School of Medicine. Laid out in bestsellers like *Healing Back Pain: The Mind-Body Connection*, Sarno's theory is suspiciously simple: Chronic symptoms without a clear physiological origin are probably caused by repressed distress and anger. To cure them, you must let go of the belief in a physiological cause and release your repressed emotions.

Strange though it may sound, the

testimonials have piled up. There's the celebrities: Larry David describes encountering Sarno's theories as something like a religious experience that instantly cured his chronic pain. Howard Stern practically stars in a patient-made Sarno documentary. And when the CEO of Stripe posted on X in 2022 that he knew four people cured by the book, positive replies poured in, including one from Kevin Kelly, the founding executive editor of WIRED ("Worked for me").

Michael Donnino, a professor of medicine at Harvard Medical School, also attributes his recovery to Sarno. Around a decade ago, he began suffering from horrific back pain. "I had stopped working in the hospital," he told me. "I was on partial disability." Round-the-clock Tylenol, ibuprofen, and gabapentin did nothing. Neither did steroid injections or oral steroids. His back specialist said he had piriformis syndrome, and scans showed a potential problem with his sciatic nerve.

But then Donnino saw accounts of miraculous Sarno book cures online. "I got two chapters into the book and I thought, this is a bunch of baloney," he said. "This is ridiculous. It is nothing like what I learned in medical school." After abandoning the book, something told him to give it one more chance. So he did. "Within 24 hours I was feeling tremendously better." In less than a week he was back at work. In four months he was pain-free.

Donnino was inspired to design and run a pilot randomized controlled back pain trial that used Sarno's approach (funded by the CEO of Quora, another Sarno convert). Although it was small, the results were promising: 63.6 percent of people in the active arm of the trial reported being pain-free, compared with 25 percent and 16.7 percent in the control groups. A few patients also told him their improvements extended to symptoms like fatigue and brain fog. Since those symptoms often accompany post-acute infection syndromes, Donnino decided to run an unblinded pilot study of Sarno-inspired brain retraining for long Covid.

The results were positive, and in some cases, dramatically so. Two participants recovered completely from severe food intolerances, one of whom had previously needed a feeding tube.

When I asked about the recoveries in his study, Donnino teared up. "Some of these people are suffering from severe limitations," he said, taking off his glasses and wiping his eyes. "If a treatment can change their life, it means a lot."

Donnino emphasized to me that a pilot study without a control group does not prove efficacy. That's why he is now running a randomized controlled trial of brain retraining for long Covid. He has discussed with Kennedy—Larson's doctor—the details of his approach. Like her, he uses visualization exercises to show how the nervous system produces very real physiological symptoms. "I

saw someone do the visualization, and their heart rate went up to 120," he said. "They had one of those watches on—we don't advocate those, by the way—but they happened to have one on, and their heart rate went up to 120 just by thinking that they were going up a staircase."

Only a small number of academic researchers are interested in studying these interventions. Unless you've experienced a recovery yourself, it's hard to take them seriously. The practitioners frequently lack medical credentials, and many of the most popular brain retraining programs have a distinctly New Age feel, with websites heavy on stock photos of serene beaches and peaceful people

"THE LAST THING THAT I WANT IS FOR PEOPLE TO THINK THAT THESE CONDITIONS ARE ALL IN OUR HEAD OR THAT POSITIVE THINKING ALONE CAN CURE THEM. THIS COULDN'T BE FARTHER FROM THE TRUTH."



Giorgia Lupi, who suffered from long Covid and produced a multimedia op-ed for The New York Times about it.



meditating. I asked Jacqueline Becker, the neuropsychologist who co-led the NIH long Covid trial, to review some of the neuroplastic approaches. Her assessment was bleak. “I think that it’s baseless,” she said. “There’s no evidence to support it. It’s loosely based on neuroplasticity, which is a legitimate neuroscience concept, but it’s applied incorrectly.”

For researchers willing to investigate further, trial design can be tricky. One of the most important and established factors in effective therapy is “therapeutic alliance,” or the bond between a patient and their clinician. If in a trial you’re assigned a therapy style you find abrasive, or a therapist you dislike, the intervention is unlikely to work. “We’re kind of stacking the odds against us,” said Donnino.

And then there’s the climate of fear. Every mind-body researcher I talked to has dealt with intimidation tactics. “There is a constant feeling that we

are—how should I put it? That we are monitored by specific patient groups,” said Vegard Bruun Bratholm Wyller, a Norwegian pediatric cardiologist who has studied mind-body interventions for ME/CFS for over a decade. “They’re very vocal, and they do everything to try to, for instance, find formal flaws in our research project.” Because this influence is felt so strongly in the US, the majority of work on anything controversial has happened in other countries.

The climate of fear also makes it difficult to secure interviews and report on these issues. Multiple patients and researchers expressed interest in speaking to me but subsequently begged me to take anything they said out of the piece, for fear that even anonymous background information could be used to identify and harass them. As a result, what’s included here represents only the small number of people who were willing to participate.

IF MIND-BODY THERAPIES for

long Covid were thoroughly disproven and shown to harm people—like lobotomies for mental illness—then shutting down trials of these therapies would be the right thing to do. This is exactly what many advocates believe. “If we overload the nervous system, say with neuroplasticity training, cognitive behavioral therapies, then we’ll end up with the same problems that we did with physical exertion,” said Davenport, the exercise physiologist who specializes in ME/CFS. “If these were therapies that worked, they would’ve worked by now, the several trials that have been done would’ve yielded very convincing results. And we just haven’t seen them.”

In reality, however, the science on mind-body therapies for long Covid, albeit more controversial and less mainstream, is just as messy and uncertain as the science on exercise interventions.

Critics have tirelessly documented how every single positive study suffers, in their view, from serious methodological flaws. “It’s all a house of cards built on fraudulent claims of effectiveness,” said David Tuller, of the studies he has reviewed. “Once you look closely at the details, the claims cannot be sustained.”

But other experts have pushed back on this perspective. I brought some of the studies in question to Mark Ebell, a retired professor of epidemiology and biostatistics and the editor in chief of *Essential Evidence*, which summarizes emerging research for practicing clinicians. He told me that many of the criticisms felt like nitpicking and that the studies seemed relatively well designed. “This feels like a religious war and not a scientific one,” he said. “Count me as firmly agnostic.”

Ebell is right: This is a religious war, and not just the debates over mind-body therapies. Ultimately, the disastrous approach to long Covid, from dismissive headlines to useless definitions, is the product of cultural and philosophical issues that share more with religious debates than scientific inquiry. The dismissive phrase “all in your head,” for example, implies that if symptoms have a psychological cause, they are “fake.” That logic leads to the conclusion that legitimizing long Covid, or any medical condition, as “real” requires establishing a “biological” causal nexus and removing any element of psychology, behavior, or belief.

But this logic doesn’t fit the reality of symptoms. What’s typically called “psychological” might also have a biological basis, and what’s dismissed as “all in your head” is often also in the body. Food aversion helpfully illustrates the problems with these binaries, because it happens in animals as well as humans. Rats can acquire a food aversion after eating food that makes them sick. Their gut reprograms their brain, and they will exhibit reflexive distaste for the food, even when the pathogen that sickened them is no longer present. To cure the rats, researchers use the same time-tested technique that’s used on humans: slow exposure therapy. Does this mean the food aversion was “all in the rat’s head”? Were the rats “faking” their reflexive distaste? Did they have a mistaken “belief”?

People also assume that if psychological approaches can resolve a symptom, the cause of the symptom must have been psychological. This, too, is false: Following a stroke, the injured brain can “learn” that attempts to use an affected limb are difficult or result in failure. After a period of recovery, the limb is technically able to move, but the lesson not to use the limb remains wired into the nervous system. Post-stroke interventions reverse this conditioning, retraining the brain to overcome

“real”—which, from the company’s perspective, means an illness that can’t be addressed with brain retraining. Nor is losing insurance the worst that patients can face. One prominent advocate and long Covid sufferer I spoke with, who requested anonymity to discuss her family openly, was placed under investigation by social services when her daughter also came down with long Covid. Authorities assumed psychological factors were behind the mother’s condition, and that she might be

“THIS FEELS LIKE A RELIGIOUS WAR AND NOT A SCIENTIFIC ONE.”

the assumption. One stroke researcher, Gitendra Uswatte, recently ran a successful pilot trial of a similar therapy for brain fog in long Covid. “If you’re working with the mind, you’re working with the brain, which is the most important organ system in our body,” Uswatte said. “It influences how all our other organ systems function.” He emphasized how “all disorders have components that are genetic, physical, and environmental, and behaviorally related.”

Believing patients, all patients, means that mind-body therapies may work in some cases of long Covid, even severe ones. (Dismissing those therapies as the “placebo effect” is, ironically, to reaffirm their effectiveness: The placebo effect is just a pejorative term for the power of the mind to produce symptom improvements.)

Right now, however, it’s impossible for the scientific community to investigate this possibility impartially. And the fault does not lie with advocates but with our culture. Andrew Larson’s fear of losing his disability insurance arises from the need to prove his illness is

causing her daughter’s illness through a kind of Munchausen by proxy.

As I finished writing this, I received an impassioned plea from this advocate, born of the nightmare she’d undergone: “My final words for people that open the door and speculate that emotional and mental factors are part of our illness... is that this overtly has deeply negative consequences for patients and families,” she wrote. “In assigning agency to the individual or family unit, this also transfers to accusations of direct risk, abuse, and blame onto people who are themselves severely ill.”

This is the real climate of fear that needs to be addressed. Fear of being labeled lazy and crazy. Fear of losing disability insurance. Fear of being blamed for your own suffering. Fear of having your children taken away. As long as people suffering from long Covid fear these possibilities, advocates will be forced to insist on an exclusively “biological” origin of their suffering. Scientists will remain constrained by the false binaries of body or mind, real or fake. And we know what happens then: Nobody ever gets better. ■

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'This is Not a Death House'

by
STEVEN LEVY

STEWART BRAND *is confronting his final years in a home that embodies the self-sufficient, DIY ethos of his famous Whole Earth Catalog.*

Photographs by
MAGGIE SHANNON



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THIS PAST JANUARY, STEWART BRAND PUBLISHED A BOOK, *Maintenance of Everything: Part One*. “Maintenance is what keeps everything going,” he begins. “It’s what keeps life going.”

Brand’s life has been going for 87 years, but lately the going has been tough. The man known for creating the Whole Earth Catalog—the 1960s countercultural guide to self-sufficiency that Steve Jobs was fond of—has an incurable disease and is down to 130 pounds, an alarming weight for a nearly 6-footer. Brand’s mind is sharp as ever; you can’t talk to the man for five minutes without learning something. But his once-nimble movements are now cautious, and he’s never far from an oxygen tank. Stewart Brand’s body, in other words, requires constant maintenance.

Brand is an icon. Besides the Catalog, he’s written a shelf full of books on a panoply of topics. I’ve known him for more than 40 years. In 1968, he worked behind the scenes of what became known as the Mother of All Demos, which introduced the modern computer interface to the world. He was a godfather-like presence in the first years of WIRED. Brand is the living connection between computing’s counterculture roots and the modern world, where his voice still resonates.

Last fall I visited Brand and his wife, Ryan Phelan, at their home, a former horse farm in Petaluma, 40 miles north of San Francisco. The property looks out on an expanse of brown marshes, the Petaluma River, and off to the east, a low horizon of green rolling hills. On a small hill are three buildings with white siding and stately green roofs. The couple lives in one of those buildings, an updated farmhouse that’s more than a century old. Another resurrected building, a former schoolhouse, contains Brand’s book-lined workspace. But it was the third structure, tucked between these two, that interested me. This house was just being completed. As we sat on the wooden porch of the new structure, Brand and Phelan explained to me that it had been speedily—but thoughtfully—constructed to accommodate Brand as he copes with age and illness.

Brand is a world-class pragmatist and a philosopher of structures; he once wrote a book called *How Buildings Learn* about how homes and commercial properties evolve over time. This bespoke house—essentially an inhabitable prosthetic—struck me as an expression of Brand and Phelan’s Whole Earth-ish strategy for playing the losing hand that biology deals us.

In 2020, the pair had told me about their decision to forgo intubation should one of them contract Covid and require a ventilator. I sensed that clear-eyed lack of sentiment at play here too, and wondered how Brand and Phelan—who is a cofounder and executive director of Revive & Restore, a biotech nonprofit devoted to wildlife conservation—were designing this phase of life. As I returned for multiple visits, I found that neither Brand nor Phelan see the new house as a way of coping with decline. They view it as an extension of their romance.

IT WAS FEBRUARY WHEN I

drove back to Petaluma from San Francisco, punching a code into a gate off the highway and heading down an unpaved road, past a cow pasture and over some railroad tracks, until marshlands unfolded before me. Phelan and her Labrador retriever greeted me, and we walked up a hill to the houses. The new building—they call it their studio—was nearly finished, and she and Brand entered it with me. She warned that he might only be good for a half hour or so. The conversation ended up going for more than 90 minutes, with the topic exhausted before Brand was.

We cluster into a small living space with a sofa and chair. A stack of books is on a side table. Phelan explains that her main goal was to prevent their home life from collapsing under the demands of caregiving. “I wanted to ensure that throughout his ordeal with his illness, that he would have agency, and that I would have agency—that I wouldn’t feel like I was the nursemaid when I want to be his wife,” she says.

We do a walk-through of the studio, all 715 square feet of it. Off of the living space, under an arch, is a motorized bed. There are no rails, and it looks nothing like hospital equipment. Brand grabs a remote and playfully shows me how it rises and kneels. The kitchen counters are lower than usual, to accommodate Brand if he ever needs a wheelchair. The bathroom is the space that’s most optimized for accessibility. The shower has no enclosure, making it easy to enter and exit, and there’s a deep, Japanese-style tub with a folding seat that doubles as a step into the basin.

We settle into the living area, and the conversation drifts to managing the very final stage of life. Phelan and Brand discuss the ethics of “taking the cocktail” for a graceful farewell. The couple has given it a lot of thought. Phelan makes it clear that she doesn’t see the house as a staging area for such an exit. For the time

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The studio, built to accommodate Brand's later years, is a short hop from the farmhouse he shares with his wife, Ryan Phelan.

being there's no need, and we return to the subject of the house we're sitting in. We discuss the planning, the strategy, the architect, the contractors. I say I'd like to talk to those contractors, and Phelan gives me the name of a father-and-son team, Steve and Wes Coffin.

I tell her that's a little weird.

"We never thought about that," says Phelan. Pause. "It's a wee grim."

But Brand is delighted. "This is the nicest coffin!" he crows. "Woo hoo!"

THE STORY OF THIS PETALUMA STUDIO

begins a half century ago when Patty Phelan, a recent graduate of UC Berkeley, applied for a job at the Whole Earth organization, which at the time was a loose confederation of projects, including the catalog and a quarterly magazine. (She began using her middle name, Ryan, years later. It was a better fit for her get-shit-done personality.) As she recounts this, Brand interrupts. "I hired her because I was in love with her," he says.

"No, you didn't," she says.

"She was basically jailbait at that point," Brand jokes. (Phelan was 25 and Brand was 39.)

Early in their relationship, Phelan had returned to her apartment from a ballet class and suddenly felt debilitating pain in her abdomen. Brand rushed over and took her to the hospital. She was hustled into surgery for a burst ovarian cyst. As John Markoff describes it in his Brand biography, *Whole Earth*, when she came out of the operating room, Brand greeted her with a pillow he had recovered from her apartment. That's when she knew—"This guy's a keeper," Phelan told Markoff.

The pair had already discovered a shared zeal for unusual homes and big projects. In 1982, they impulsively paid \$8,000 for the bones of a dilapidated wooden tugboat. "The wood was so rotten, you could grab handfuls of the bulwarks with your bare hands," Brand wrote in *How Buildings Learn*. The tugboat, named *Mirene*, was built in 1912 in Coos Bay, Oregon, and after a long career of hauling cargo and pushing boats around, ended up moored on the Sausalito waterfront. Brand and Phelan had heard about a local builder named Pete Retondo and paddled a rowboat to his waterfront home to ask for help. Retondo wasn't yet certified as an architect, but he led a crew that eventually rebuilt *Mirene* into an exquisite treasure, with a varnished wood interior and a versatile kitchen.

They moved into the tugboat, and in October 1983, they got married. The *Mirene* was a joyful home. The dining table came from a nearby vessel that Otis Redding had occupied; legend has it that Redding wrote "(Sittin' on) the Dock of the Bay" on that surface. The living section, toward the bow, has ample bookshelves, two leather easy chairs, and a wood stove. Every New Year's Day, Brand and Phelan cruised the San Francisco Bay and invited their neighbors to join. The waterfront was full of young couples like them. "Lots of parties, people jumping off their boats into the water, lots of nudity," says Phelan.

There were drawbacks. A tugboat is a continued exercise in ... maintenance. And patience. Their wood-paneled bedroom was in the pilot house, and they climbed an outside ladder to reach it. "After a decade or so, with almost everybody who lives on houseboats, what do they crave? Land," Phelan says.

One day in 2005, Brand and Phelan were sailing *Mirene* on the Petaluma River when they saw a beautiful property, a horse ranch just past the marshlands. It appeared to be abandoned. "Stewart and I looked at this derelict-looking farmhouse and a big, huge hay barn falling in at the roof. And we both said, 'Gosh, if we were ever going to buy a property, this is where we'd buy, right here on the river.'"

At first, they couldn't figure out how to get to the property, let alone find the address. They spent a few weekends driving up Highway 101 and heading down dusty private driveways. Finally they found the dirt road that led to the farm.

It was owned by a woman who shared the deed with her siblings. She did not seem eager to sell. Brand gave her a copy of his book *How Buildings Learn* and eventually she softened. She bought out her siblings, and in 2005 Brand and Phelan took over. They hired the Coffins to renovate the farmhouse. "There was no foundation," says Steve Coffin, the dad. When they opened up the walls, they found newspaper clippings from the 1890s.

The couple then decided to make use of a guano-infested building on the property, the former schoolhouse. They used a crane to move it closer to the farmhouse. The first floor would become Brand's library, with a spiral staircase leading to a second-floor guest bedroom with 7.5-foot windows. The windows were the first on the West Coast to use Ornlux, a special glass that's detectable by birds. Phelan, after all, is an avid birder; she and Brand have spent a good part of the last 15 years in a genomic effort to revive the extinct passenger pigeon.

For many years, Brand and Phelan continued living on their tugboat while spending weekends on land. Phelan cultivated an elaborate garden and roamed the property with her dog. ("Mostly, we have 50 acres of marsh," she says.) During Covid, they moved full-time to Petaluma. A tugboat home, says Phelan, "is not age friendly."

Brand had been diagnosed with idiopathic pulmonary fibrosis, a chronic disease where scarring of the lungs leaves them stiffened and restricted. In his straightforward way, Brand describes his condition as "progressive, incurable, and fatal." After diagnosis, survival time is generally three to five years. Brand has long surpassed that, but he has steadily lost lung capacity. He's now down to about 20 percent.

Early in 2024, Phelan began talking to Retondo and the Coffins about what they might build if Brand needed help. The original thought was to add to the farmhouse, perhaps with a separate entrance for a caretaker. Issues with the septic tank, among other things, scuttled that plan.

Then they lit on the idea of building in the gap between the house and the library. On the *Mirene*, Brand and Phelan were accustomed to living spaces with an unusual flow; they'd have something similar with these buildings.

At first, Phelan and Brand were vague about what this new house was for. "They didn't understand exactly what they wanted," says Wes Coffin. "Between them and the architect it was, what was the actual use?"

They decided it would be the place where Brand could comfortably hang out, along with Phelan. Later, if circumstances dictated, Brand might sleep there with his noisy oxygen apparatus. At some point a caretaker might live there.

Phelan did a lot of the planning while Brand wrote his maintenance book. "I



wanted it wheelchair accessible," she says. "I wanted a really beautiful bathroom. And I wanted a bathtub for two." The bathroom's floor is angled so that water from the open shower spirals into a drain. "It was designed with the idea that you have to be able to turn your wheelchair in a circle," says Retondo. The Japanese-style tub is indeed large enough to fit two people.

In October 2024, Brand contracted pneumonia. "It really laid me low," he says. When he and Phelan visited their longtime doctor, he sat them down and asked, "Do you want to die at home or in a hospital?" Phelan urged the builders to speed up. They filed for permits in January 2025 and got them within 60 days. Even so, Retondo admits, "We actually jump-started the construction a little bit, because Ryan was so anxious to get it done."

As the house rose, Brand was under hospice care. When Retondo came by, he was taken aback by Brand's appearance. Mentally, though, Brand was all there. "His personality and his mental faculties were completely intact," says Retondo, who is 77. "We're both unwilling to bow to the inevitable, I guess."





Left: Brand and Phelan sit in the studio. The farmhouse is visible out the window.

Right: The couple has put their beloved tugboat up for sale.

BRAND RALLIED, AND HIS

status was upgraded to palliative care. Brand finds it comical that some billionaires believe they'll stay hungry and foolish forever. "All these people who think they're extending their life are going to deal with all this, they're all going to die," says Brand. For now, though, he's thwarting his grim prognosis by working on his second book on maintenance. He was well enough to promote the first one and went on Ezra Klein's podcast. He keeps a handwritten journal that logs every scrap of his food, a very Stewart Brand-ish pursuit.

In April, Phelan took me for a cruise on the *Mirene*, and Brand felt well enough to come along. He sat contentedly on the bow and chatted as a two-man team piloted us under the Golden Gate Bridge. There won't be many more rides on the beloved tug, as the couple has put it up for sale. Maybe some billionaire will set aside dreams of immortality and find delight in the Sausalito harbor.

In the mornings, Brand and Phelan head over to their new cottage. Ryan usually makes coffee, and Brand sits on the porch reading *The New York Times*—and often WIRED, he says—or one of the

many books he's working through. Then he'll go next door to his library, flick on his Mac, and, surrounded by an epic collection of 2,000 books, get to work. He uses Scrivener to organize his project; in it, he has a list of sections that runs the height of his monitor. The first book covered solo ocean circumnavigation, gunstocks, motorcycles, and the power of YouTube tutorials. Part two will cover blacksmiths, early Xerox machines, the "sea of plastic" greenhouses in Spain, and how civilization keeps going.

After the cruise, I visit the house one last time. Brand tells me that he's been into Emily Dickinson lately. I reply that working on this story had me thinking of a famous Dickinson poem, does he know which one?

"I do," says Brand, and begins a paraphrase. "I did not wait for death, he kindly waited for me. And so it goes."

Brand then says he has a poem of his own. "It came to me when I was realizing I probably don't want, like Steve Jobs, to have everybody in the room," he says. "But I'd like to have Ryan there, and I'd be holding her hand. A life ends, a life goes on [he points to Phelan], and that is sort of the real event. Anytime somebody dies, life goes on, and that's the river. That's my death poem."

Phelan is not happy at the conversation's turn. "I gotta say something for the record—it's not a death house," she says, raising her voice. Brand begins to say something, but Phelan cuts him off. "It's not, sweetie," she says, and then turns to me. "It's about the quality of life, it's the quality of life! It's very important because ... just because."

There, she's said it. And now she relaxes. "Come see the bathroom," she offers. Love and pragmatism, to the very end.

COLOPHON

Speed hacks that helped get this issue out:

Frozen ravioli, God's gift to toddlers; watching corporate training modules on 2X speed; telling my 4-year-old he can't do something (surest way to get him to do it); Owyn protein shakes; moving a block from the gym (now there's no excuse not to go); Japanese T-shirt folding; switching from fresh to frozen fruit to speed up parfait prep; slip-ins; electrical muscle-stimulation workouts; Ninja Crispi Portable Glass Air Fryer Cooking System; asking the AI to condense and summarize the AI training; practicing patience.

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DO NOT DISTURB MONICA LEWINSKY

The writer and anti-bullying activist is very online, but to protect her nervous system, she prefers not to be alerted.

PHONE MODEL:

iPhone 15 Pro

AVERAGE SCREEN TIME:

4 hours, 28 min

1,025

Unread texts

"The only notifications I get are for texts. I don't do any for social media. I never accept a 'Can we send you alerts?'"

FAVORITE SOCIAL NETWORK:

Instagram

MUSIC APP:

Apple Music

"I like to listen to a book on double speed—that's where I think my ADHD comes in handy."

For more tech lives of the rich and/or famous, go to WIRED.com/tag/user-behavior.

"I try to be really mindful of what I put out into the world. There are times when I really want to respond in a snarky way back to someone, and I have to practice what I preach. That's the thing we tend to forget so easily with the distance of a screen: We're in connection and in conversation with people through technological devices."

UNREAD EMAILS:

3,916

"I think it was at 40,000 at some point. I wish I were an inbox-zero person."

FAVORITE NEWS SOURCE:

Apple News

TECHNOLOGY YOU'RE NOSTALGIC FOR:

Un-enshittified search engines

"I miss the old Google. The ability to search was a lot easier."

LAST THING YOU GOOGLED:

"tide times Malibu"

NUMBER OF BURNER ACCOUNTS:

2



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007[™] FIRST LIGHT

From gameplay to reality, OMEGA introduces the next timepiece from the world of James Bond. This Seamaster Diver 300M chronograph is the same model worn by our favourite spy in 007 First Light, the action-adventure video game from IO Interactive. Crafted in stainless steel, the 44 mm design features a black ceramic dial and bezel, with PVD bronze gold used for the central seconds hand and 3 o'clock subdial ring. The watch is powered by a Co-Axial Master Chronometer movement and is worn on an exclusive new NATO Strap.

Ω
OMEGA

JAMES BOND
007[™]

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