6 SUPERHEROINES

WHO PAVED THE WAY FOR JESSICA JONES P. 36 + HOW A COWGIRL WRANGLED THE SUPREME COURT P. 52

FEEL SMART AGAIN

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54 POWERFUL WOMEN who Changed the World

INCLUDING

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AN OBITUARY WRITER P. 48

A GRILLED CHEESE TRUCK ENTREPRENEUR P. 38

AMY JOHNSON

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(FOR GARBAGEMEN)

P. 10

MARCH/APRIL 2016
VOLUME 15, ISSUE 2
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FEATURES

54 WORLD-CHANGING WOMEN

IN EVERY ISSUE

COVER: ALAMY (AMY JOHNSON). THIS PAGE: DOMINIC PHUA

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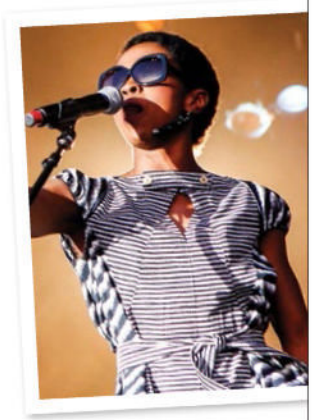

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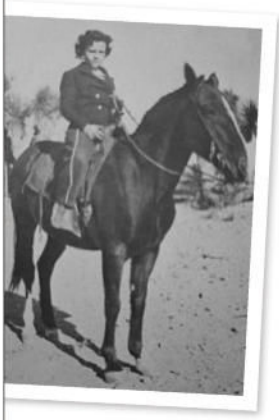

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WE CAN BE HEROINES

The first week of college was the first real time I spent connected to the Internet. It took entire minutes to load a single page on my Mac Color Classic, but it was still an extraordinary feeling to be able to look up anything at all, any time I wanted. So that week, before homework got heavy, I would stay up late, clicking around and even printing things out—just because I could.

That's how two grainy, low-res images came to be tacked on the bulletin board above my desk. One was of Emma Goldman, the early-20th-century anarchist famous for the (paraphrased) quote "If I can't dance, I don't want to be part of your revolution." The other was of a young woman in a beret identified only as "Celine, activist, Paris." She wasn't famous. I don't even know what she was advocating. But in my teenage mind, she filled an important void: the missing link between me, the first-week college student figuring out what mark I planned to make on the world, and Emma Goldman, super-iconic icon. (Also: that beret!)

I was thinking about these two women as we were putting together this issue. It's always thrilling to read the stories of women who've earned their place in history books (like Sandra Day O'Connor, page 52). It's even more compelling to learn about the ones who have been left to the margins: like Barbara Hillary (page 33), who became the first African American woman to visit both poles—in her seventies!

Even though I'm well past that first week of college, it's especially inspiring to study those who are still in the process of making their mark, and to learn exactly how they are doing it. That's why we chose to focus our attention on 11 young women who have just begun—like Trisha Prabhu (page 34), who at 15 launched an app intended to end cyberbullying. To make sure we got it right, we teamed up with Amy Poehler's Smart Girls, an organization that shines a light on young women who are using their brains to make the world a better place. Our hope is that their stories serve as something like the missing link that Parisian activist provided me.

Is our list definitive? We think so. Exhaustive? Of course not. Our point is that there's plenty of room for everyone, regardless of their calling, to jump into the action of making history. What's your plan?

jessanne

@jessanne

ALAMY

mental_floss

VOLUME 15, ISSUE 2 | MARCH/APRIL 2016

A staff editor for mentalfloss.com, **APRIL DALEY** wrote the profile of Trisha Prabhu for this issue (page 34). When she's not editing news stories, Daley plays resident shopping expert for the mentalfloss.com gift guides. Before turning to the flossy life, she was an assistant editor at *Us Weekly*, where she "learned more about the Kardashian family than anyone ever should."

Brooklyn writer **LIZZIE JACOBS** couldn't be better suited to provide a piece on Sandra Day O'Connor (page 52). "My parents are both attorneys—I went to the 'Jacobs School of Law'—and when I told my mom I was working on this, she sent me a photocopy from the book *Secret Lives of the Supreme Court* featuring a ridiculous illustration of O'Connor in her aerobics gear."

It's not often that a story makes a writer ponder her own death, but profiling America's premier obituary writer (page 48) is an exception. "I started thinking about what I'd like in my own obituary," says **MARGARET EBY,** whose work has been in the *Los Angeles Times* and *Vanity Fair*. Her new topic: the history of award-show food. "Who knew aspics were so fashionable?"

Photographer **SAVERIO TRUGLIA** staked out the library to shoot Trisha Prabhu for our "Women Who Changed the World" story (page 34). "We shot very early, and I remarked how unusual it was to be waiting for a librarian to arrive." Truglia's work has appeared in *Rolling Stone*, *Forbes*, and *O*, and he's currently working on ad campaigns for the Steppenwolf Theatre.

LUCY QUINTANILLA (DALEY). NICK RUSSELL (EBY). COURTESY JACOBS. TRUGLIA

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This issue's *mental_floss* is a cat lady's dream come true.
JoanieLee88

You know they are destined for greatness when you catch your toddler reading an issue of *@mental_floss*.
@crebeke

Just finished Dec.'s *@mental_floss* and used the info to correctly answer trivia yesterday! #winning!!
@MundstockM

One of my favorite things in 2015 was *@mental_floss* giving a sexy new look to my "Kennections" quizzes. Try 'em all.
@KenJennings

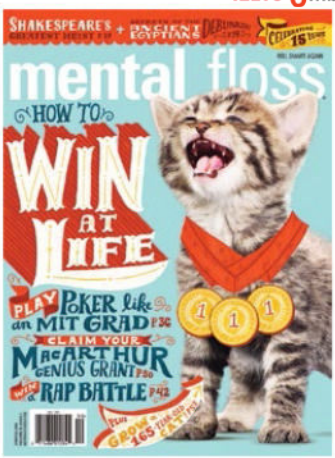
COOLEST READER: NICOLAS CALABRESE, WHO SHARED THIS PIC VIA INSTAGRAM

Bittersweet Letter of the Month

My dearest dad passed away in June this year, and I miss him so much, but I want to thank you on his behalf: He was an avid reader of *mental_floss*, cover to cover, the day it arrived—we spent hours bonding over it and discussing our favorite articles (his were anything to do with traveling or birds).

—CARRIE WOODRUFF

Carrie: Thank you for the kind words. In honor of your dad (who sounds like our kind of guy!), here's our favorite bird fact: The official bird of Madison, Wisconsin, is the pink plastic flamingo.



MISSING PERSONS

You missed an important person in your [Dec. 2015] list of the 500 Most Important People in History—me.
—Dave Hegner

Dave: We also left out Cleopatra, Jim Henson, and Einstein, among others. You did, however, make our list of the 500 Most Important Hegners.

MIXED SIGNALS

A.J. Jacobs's history column about road travel and traffic lights ["Bad Trips," Jan./Feb. 2016] left out Tipperary Hill in Syracuse, N.Y. The green light is at the top of the traffic light, while red is at the bottom. The city has tried to change this several times, but the neighborhood always found a way to knock the light out. The city gave up.
—Betty Schlecht Ristau

NOT MY TYPE

As usual, I'm impressed by your utterly INSPIRING, EXOTIC, BRILLIANT publication! Here and there I even discern a bit of sanity in it! Enclosed is part of one of your pages. I was stunned that such a professional, erudite organization printed such a dim summary ["The 4 Greatest Victors in History," Jan./Feb. 2016]. Couldn't you have used bold black?
—Orion Mehus

FROM THE DEPT. OF SUCCINCT COMPLAINTS

No "Bottom Line." Very disappointed.
—Nancy Heathcote

Nancy: You're not the first to notice that we've nixed The Bottom Line, our fact-filled footer in Scatterbrain. Stay tuned—we're thinking of bringing it back. No promises.

ONLINE AT MENTAL FLOSS

- 10 Exceptionally Clever Female Con Artists
- 9 Female Pirates You Should Know
- 8 Things Women Used to Be Banned From Doing
- 7 Things Historical Women Used to Wear Under Their Skirts
- 6 Modern Societies Where Women Really Rule
- 5 Online Campaigns Empowering Women and Girls

How Do Parrots Talk?

ISTOCK (PARROT, BICYCLE)

Polly want an answer? Go to mentalfloss.com/talkybird to find out.

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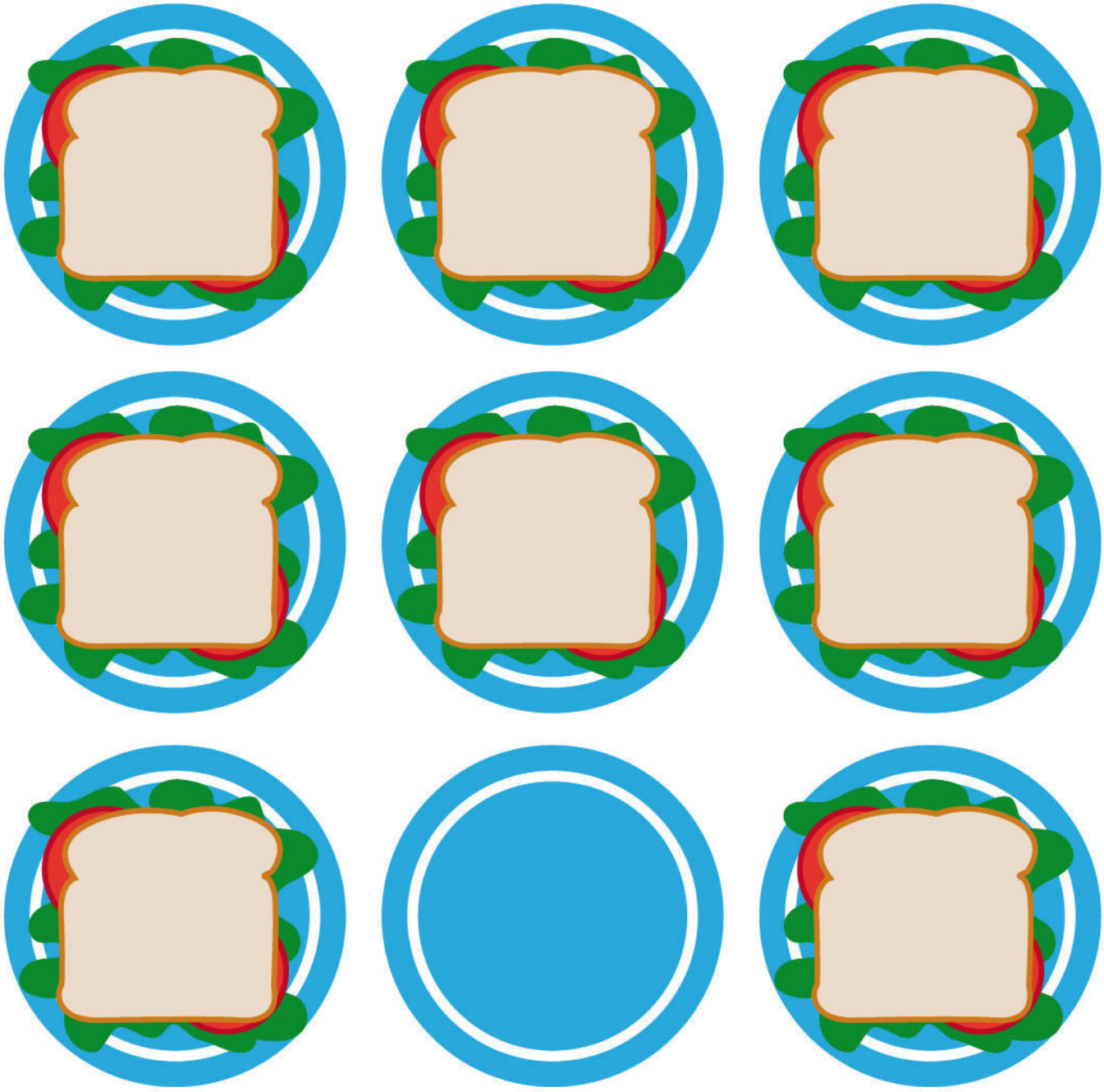
1 IN 9 AROUND THE WORLD GO HUNGRY.



THAT'S ONE TOO MANY.

Finding solutions to hunger means supporting local vocational programs, volunteering at local food banks and putting the right agricultural resources in the hands of developing communities.

Be a part of the solution. Sign up for We Scare Hunger or donate today at WE.ORG.

WE FREE THE CHILDREN

THIS ISSUE'S THEME

TRASH

6 WAYS TO CLEAN UP SPACE JUNK

Earth's orbit is crowded with trash—and it's a problem. Space junk puts billion-dollar satellites and the lives of astronauts at risk. (An object as tiny as a screw could pierce the International Space Station.) Here's how scientists plan to clean up our crowded skies.

BY **BRYAN DUGAN**
ILLUSTRATION BY **BRATISLAV MILENKOVIC**

1. ROBOT REPAIRMEN

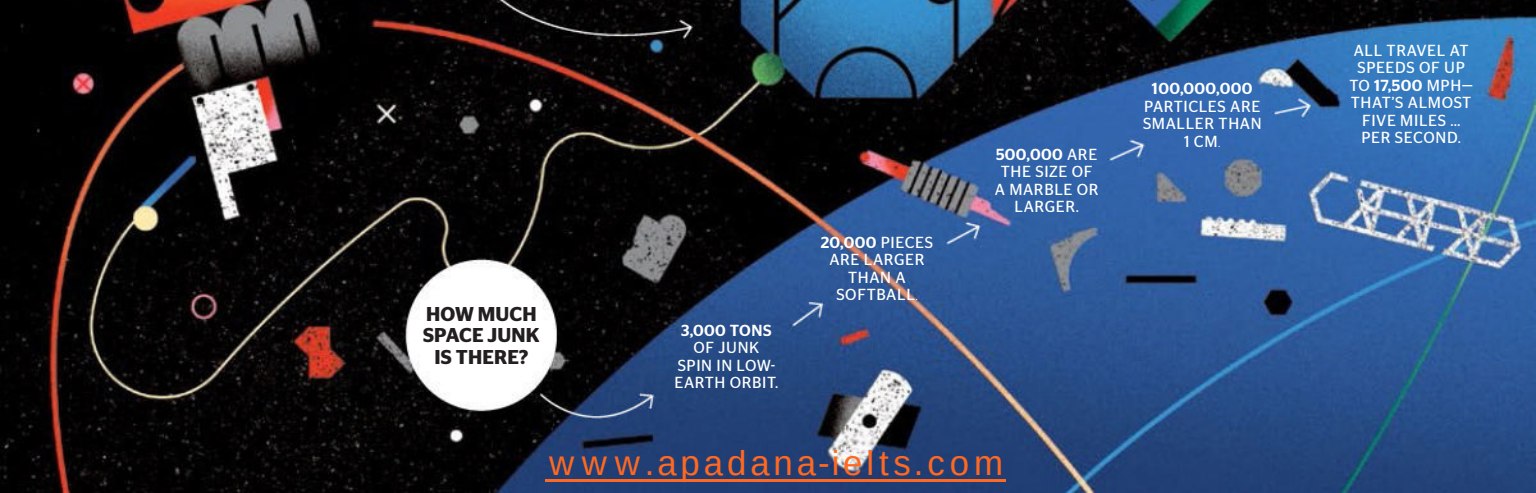
A lot of space junk consists of old antennas and solar panels that fell off satellites. The Defense Advanced Research Projects Agency (DARPA) wants to send robots into orbit to scavenge for loose parts. The robots will piggyback onto broken satellites and make repairs.

2. PLANETARY PAC-MAN

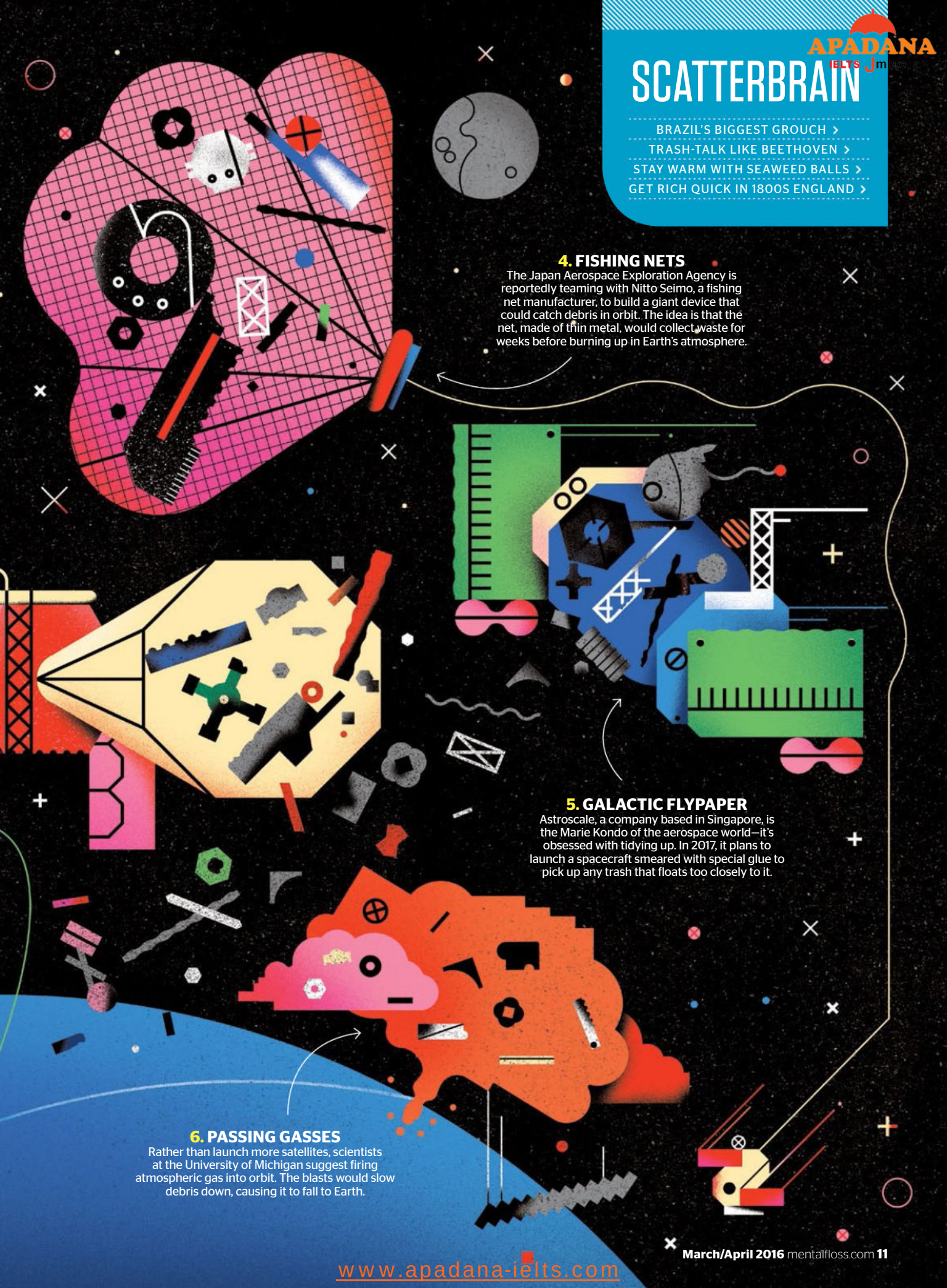
Swiss scientists propose building a "Pac-Man" probe—a retractable cone with a mouth—that gobbles up debris. Once the probe has eaten its fill of space junk food, it will head toward Earth and burn up upon re-entry into the atmosphere.

3. HARPOON REELS

In 2012, scientists at Astrium, a European aerospace manufacturer, built a prototype satellite that wields a harpoon. Like a cosmic spear fisherman, it flings the tethered arrow at offending rubbish and reels it in.



SCATTERBRAIN



4. FISHING NETS

The Japan Aerospace Exploration Agency is reportedly teaming with Nitto Seimo, a fishing net manufacturer, to build a giant device that could catch debris in orbit. The idea is that the net, made of thin metal, would collect waste for weeks before burning up in Earth's atmosphere.

5. GALACTIC FLYPAPER

Astroscale, a company based in Singapore, is the Marie Kondo of the aerospace world—it's obsessed with tidying up. In 2017, it plans to launch a spacecraft smeared with special glue to pick up any trash that floats too closely to it.

6. PASSING GASSES

Rather than launch more satellites, scientists at the University of Michigan suggest firing atmospheric gas into orbit. The blasts would slow debris down, causing it to fall to Earth.

THE LINEUP

OSCAR THE GROUCH'S CRANKY COUNTERPARTS

These characters from Sesame Street*'s globe-spanning coproductions represent a fuzzy multiverse of kvetchy Muppets.*

BY **SAMUEL ANDERSON**

BRAZIL

The first international coproduction of *Sesame Street*, the Brazilian show *Vila Sésamo*, featured **Gugu**, a gruff and boisterous green Muppet with orange cheeks and a blue nose. Those details didn't matter, though—Brazil didn't have color TV when the show ran from 1972 to 1977.

ISRAEL

When *Rechov Sum-Sum* debuted on Israeli TV in 1983, **Moishe Oofnik** (whose surname is Hebrew for "grouch") lived in an old, beat-up car. By 2006, he caved to peer pressure and downsized to a trash can. His other claim to fame? Getting drunk on screen.

FRANCE

Oscar's French analog from 1978 to 1982, **Mordicus** spent most of his time in a trash can, but he had hobbies: He loved eating apple cores, playing the sax, and hanging out in the sewers below *1, rue Sésame*.

GERMANY

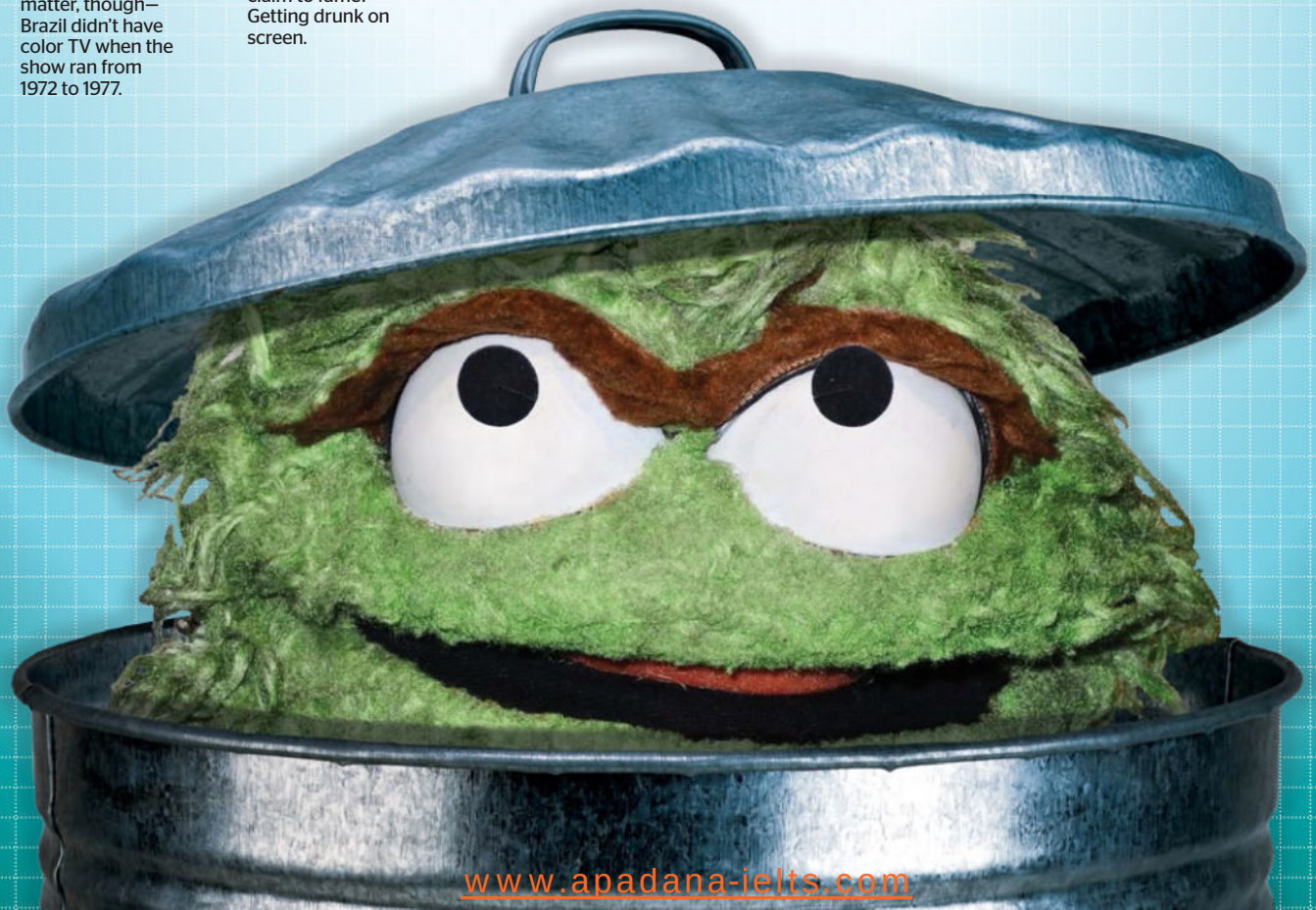
Created in 1973, Germany's *Sesamstrasse* has had three Oscar equivalents: **Oskar**, whom parents thought was too grouchy; **Rumpel**, who lives in a rain barrel with Gustav, his pet caterpillar; and **Super-Grautsch**, a superhero who wears a cape and helmet.

PHILIPPINES

Kiko Matsing, from the Philippines' *Batibot*, was the missing link of Grouches—a raspy cross between Oscar and a gorilla. Unfortunately, the show wasn't officially sanctioned by *Sesame Street*, so producers removed him to avoid a licensing dispute.

MEXICO

On Mexico's *Plaza Sésamo*, which debuted in 1972, **Bodoque** lived in a pile of boxes. He used those boxes to move out in 1995, when he was replaced by a charismatic, onion-loving, cello-playing, yeti-like Grouch named **Pancho Contreras**.



POUND FOOLISH

WHEN VICTORIANS GOT RICH ON DUST

IT WASN'T UNUSUAL in Victorian London to see children digging through junk-yards, looking for anything they could resell: scraps of metal, rags, bones—which could be used to make buttons and soap—and even dead cats, which they peddled to furriers. But the most prized find? Coal dust. Brickmakers, who mixed it with clay to make blocks, paid a pretty penny for it (as did farmers, who used it in manure). It's not that coal dust was scarce. In fact, because of open-hearth fires, ash was everywhere, and would have clogged the city's streets were it not for the dustmen who lugged it from dustbins to the city's outskirts. The scene resembled a regular Dickensian recycling operation: women, men, and children stood thigh-deep in dust, sorting it with metal sieves. Their bosses got filthy rich, but as London's dust supply outstripped demand, profits declined. By the late 19th century, prospects had already tarnished for these once "Golden Dustmen."

—JULIE WINTERBOTTOM

The Trash Talker Hall of Fame

Add these barbs to your arsenal.

"WILL IT BE LONG BEFORE YOU BEGIN?"

LUDWIG VAN BEETHOVEN

After listening to a competitor improvise on the piano for half an hour

"NO MORE BACKBONE THAN A CHOCOLATE ÉCLAIR"

THEODORE ROOSEVELT

On President McKinley, after he refused to declare war on Spain in 1898

"AS THIN AS THE ... SOUP THAT WAS MADE BY BOILING THE SHADOW OF A PIGEON THAT HAD BEEN STARVED TO DEATH"

ABRAHAM LINCOLN

On his presidential opponent Stephen A. Douglas's ideas

"MY OPPONENT IS A GLOB OF SNOT."

SØREN KIERKEGAARD

On his academic and philosophical rival, Bishop H.L. Martensen

"A MAGNIFICENT BUT PAINFUL HIPPOPOTAMUS"

H.G. WELLS

On the writing of Henry James

"IT IS NOT EVEN WRONG."

WOLFGANG PAULI, THEORETICAL PHYSICIST

After a young physicist's work failed so spectacularly, it couldn't even be proven incorrect with an experiment

FAST FACT

To prevent the spread of imported microbes, the Austin Straubel International Airport in Green Bay sterilizes all of its garbage from foreign flights.

ILLUSTRATION BY MICHAEL JACOBSEN. ALAMY (LINCOLN, OSCAR); ISTOCK (TRASH CAN)

EXPLORE

DESTINATIONS FOR DUMPSTER DIVERS

It may not be as sexy as hunting for buried treasure, but digging for garbage has its rewards. You just need to know where to look.

MYANMAR'S DIVE JOINT

Villagers along the Yangon River in Myanmar are masters of working with what they've got. When they discovered shipwrecks on their riverbed in the 1970s, they began exploring the wreckage, hoping to find coal, metal, and other bits of reusable debris. Villagers didn't have SCUBA gear, so they rummaged through junk and made breathing devices from old bicycle pumps. Today, they've upgraded to homemade air compressors, using heavy chains to dive 200 feet below the surface. It's arduous work, but the metal scraps they find can be melted down and reused, earning crews up to $1,000 per month. That, of course, is pennies compared to the real treasure buried beneath the current: In the 1600s, the world's largest bell (weighing 270 tons!) sank into the river—and divers have been searching for it ever since.

+3 PLACES TO GET TRASHED

1. EUCLID'S LOCAL DUMP Discovered by two college students in the 19th century, the ancient landfill near the old Egyptian city **Oxyrhynchus** ("town of the sharp-snouted fish") yielded some of history's most important documents—discarded drafts by Euclid, New Testament apocrypha, multiple plays by Menander, and even a cure for "drunken headache." (Wear a necklace strung with leaves.)

2. THE FIRST LAND OF EQUAL OPPORTUNITY About 9,000 years ago, **Çatalhöyük,** believed to be the world's first city, contained more than 3,000 people. Residents simply dumped trash around their homes and had to enter their dwellings from the roof. When archaeologists studied the rubbish, they noticed that everyone's diet and burials were the same, suggesting that Çatalhöyük's men and women lived as equals.

3. SECOND CHANCE CITY For decades, Cairo had no sanitation service. Instead, a group of 60,000 Coptic Christians called the Zabbaleen collected 4,000 tons of trash a day, taking it back to their neighborhood, **Manshiyat Naser**. The village has no running water, sewers, or electricity. Garbage billows out the windows and can pile three stories high. But thanks to the Zabbaleen, Cairo has one of the world's best recycling rates: 80 percent.

PHOTOGRAPHY BY SANDRA WELLER (YANGON DIVERS). ILLUSTRATION BY MICHAEL JACOBSEN (DIRTY WORK). ALAMY (NASER)

Dirty Work

The Mafia used to control every inch of New York City's garbage-hauling business. Then an undercover cop decided it was time to take out the trash.

BY **SALLY GAO**

IN MAY 1992, New York City detective Rick Cowan received a routine assignment: to investigate a fire that destroyed an empty garbage truck. The vehicle belonged to the Chambers Paper Fibres Corporation, so Cowan visited their offices, where Chambers's president, Salvatore Benedetto, complained of arson. As he spoke, two strangers burst into Benedetto's office. One buried his hand in his jacket, hinting at a gun. They asked who Cowan was. Thinking fast, Benedetto lied. "That's Dan Benedetto," he said, "my cousin." When the strangers left, Cowan realized he had just come face-to-face with the Mob.

It was an open secret that the Mafia controlled New York City's $1 billion garbage industry, ritually intimidating other trash collectors in order to eliminate competition and keep prices high. But law enforcement couldn't obtain hard proof. When Cowan returned to the station, his superiors cooked up a ruse to catch the criminals.

For the next two and a half years, Cowan posed as a hauling manager. He loaded trucks and dined with goons sporting names like "Joe Garbage," secretly recording more than 400 conversations. At one point, thugs threatened to beat him with clubs and shovels if he kept collecting from a Bronx factory. They even forced his company to pay more than $790,000 in dues to the cartel's trade associations.

By 1995, Cowan had proved that the cartel inflated the cost of garbage collection for city businesses by $400 million a year. The city prosecuted 23 hauling companies, ending the Mafia's reign over the Big Apple's trash industry and cleaning up its grimiest business. Now, if only it could do something about the rats.

FAST FACT

Sweden is so efficient, only 1% of its garbage ends up in landfills.

4 REASONS TO PRAISE YOUR TRASH COLLECTOR

BY **SAMUEL ANDERSON**

1. THEIR FIELD IS MORE CUTTHROAT THAN HARVARD
In 2014, some 96,000 people submitted applications to become sanitation workers in New York City. The department hired about 500, making the job acceptance rate less than one percent. Harvard's acceptance rate is 6 percent.

2. THEY RISK DEATH FOR YOU
With 33 fatalities per 100,000 employees a year, sanitation work is one of America's deadliest jobs—two to three times as dangerous as being a police officer and seven times as dangerous as firefighting.

3. THEY'RE AS TOUGH AS SUPERHEROES
In the 1940s, sanitation workers in New York were forced to endure a harsh physical fitness exam called the "Superman" test. Candidates had to lift a 120-pound trash can onto a tall ledge, climb an eight-foot fence, and run a football field with 50 pounds in each hand. (Officials realized this was over-the-top and later made the test easier.)

4. THEY FIGHT CRIME, TOO
Trash collectors cruise the streets when most neighborhoods are empty, prompting some towns to enlist garbage collectors as neighborhood watchpeople and report back to police about suspicious activity.

SIGN LANGUAGE

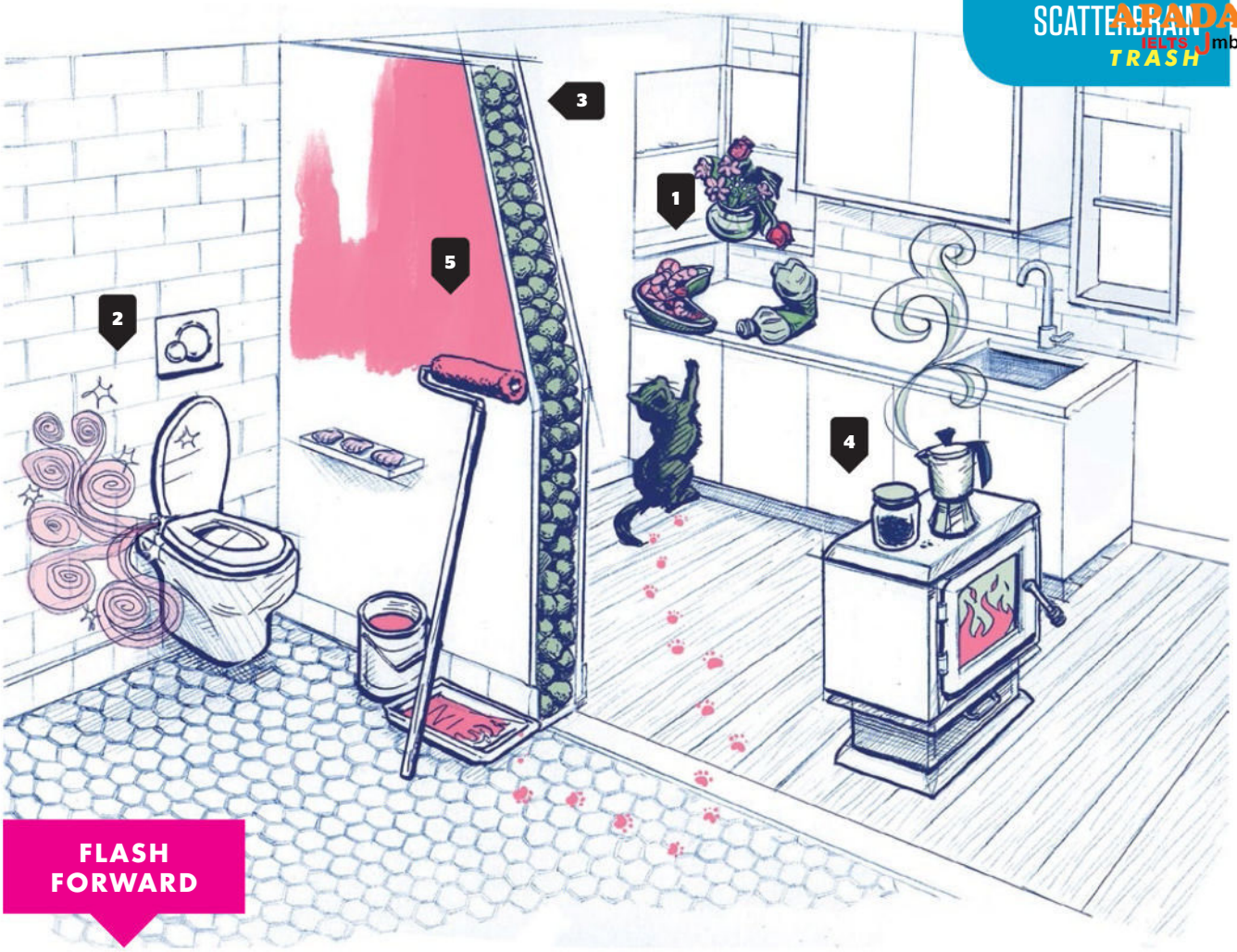
How Texas Taught Litterbugs a Lesson

THE SLOGAN "DON'T MESS WITH TEXAS" may embody the state's toughness, but it isn't their motto (that's "Friendship"). It is, however, the centerpiece of America's most successful anti-littering campaign. In 1984, an engineer for the Texas Department of Transportation named James Evans was driving down a Texas highway when he noticed trash falling out of the back of a pickup truck. He knew litter cost the state millions, so he asked a local organization to help clean up a stretch of highway, sparking America's first Adopt-a-Highway program. To help the cause, the state cooked up the "Don't Mess With Texas" tagline. In a year, littering plummeted 29 percent, and the Lone Star State embraced its best battle cry since the Alamo.

ILLUSTRATION BY MICHAEL JACOBSEN, ALAMY (TEXAS)

FAST FACT

T.S. Eliot's "The Waste Land" was originally titled "He Do the Police in Different Voices."



FLASH FORWARD

THE ECOHOME OF TOMORROW

Save yourself the trouble of cleaning with these supersmart breakthroughs—coming to a future near you!

BY **SAMUEL ANDERSON**

1

SHRIMPY PLASTIC

Recycling could be a thing of the past with "Shrilk," a biodegradable plastic made from shrimp shells. In 2014, scientists at Harvard developed the moldable plastic out of chitin, the substance that makes crustacean shells so tough. Not only durable, Shrilk is also discreet—it decomposes within weeks of being thrown away.

2

AIR-PURIFYING TOILET SEATS

Giving the toilet a courtesy flush is a luxury these days, especially with water shortages and droughts. So, companies like Kohler have developed air-purifying toilet seats. Once a user sits on the bowl, a deodorizing system and tiny fan start emitting fragrances like "Garden Waterfall" and "Avocado Spa."

3

INSULATING SEAWEED BALLS

In the Mediterranean, clumps of seaweed called Neptune balls regularly appear on the beach. For years, beachgoers viewed them as an eyesore and a nuisance. But a German company just discovered the seaweed makes great insulation: It's mold-resistant, nonflammable, and rot-proof. The only tricky part? Getting the sand out.

4

HOME-HEATING COFFEE

Coffee does more than perk you up. Thanks to a new biofuel, it could heat your house. In London, the company Bio-bean collects coffee waste from cafés and instant coffee factories to make biomass pellets, which burn as a cleaner alternative to wood chips. This technology could make up to 15,000 homes warm and roasty.

5

PAINT FOR GERMAPHOBES

To help stop the spread of bacteria, Sherwin-Williams recently introduced a microbicidal paint that can reportedly kill Staph, E. coli, and MRSA. (It takes about two hours for the bacteria to die once it hits the wall.) The company hopes the paint can help hospitals, schools, and other germ factories prevent infections.

ILLUSTRATION BY MICHAEL JACOBSEN

THE BEST PLACE IN THE WORLD TO ...

Wage a Water War!

When it comes to soaking up the culture, most places have nothing on Southeast Asia, where many countries—especially Thailand—go all out celebrating Songkran, a three-day holiday that marks the resetting of the Buddhist solar calendar. Traditionally, Songkran is a ritual that involves washing your hands, the hands of others, and statues of Buddha to cleanse yourself of the previous year. But in its most liberal and celebrated form, it's what you see here: a weeklong party of anarchy-laden water fights through the streets of Thailand, where, for just three days, everything and everyone is fair game.

SONGKRAN WATER FESTIVAL

Bangkok, Thailand
APRIL 13-15, 2016

ALAMY

APADANA IELTS Umbrella

LIVE SMARTER

TRY THIS!

SHAKSHUKA

This Middle Eastern breakfast staple is a mouthwatering take on a ridiculously simple dish: eggs in sauce.

BY **FOSTER KAMER**
PHOTOGRAPHY BY **DAVID WILLIAMS**

In Mexico, it's *huevos rancheros.* Spain? *Pisto.* In Italy, it's *uova al pomodoro.* Nearly every culture has its own distinct spin on this universal dish, but whatever it's called—and wherever you are—the difference comes down to a few small details, like spices and preparation. The dish's popularity varies by region as well, and in Israel, *shakshuka* reigns supreme among comfort foods, right next to the crispest falafel and creamiest hummus.

Its name roughly translates to "all mixed up," and the dish has vaguely North African origins—it likely made its way to Israel as Jews emigrated from Libya and Tunisia. As far as eggs in sauce go, shakshuka stands out because of its muddled origin and the exotic array of spices and other ingredients that play against the silky simplicity of the egg (for example, *labne,* or strained Turkish yogurt, is sometimes added to make the dish extra creamy). However you make it, shakshuka is among the most easily prepared comfort foods—and whatever time of day you serve it, it's as beautiful as it is delicious.

1 The basic recipe for shakshuka: eggs cooked in a sauce of tomatoes, chilies or peppers, onions, garlic, salt, pepper, and seasonings (like cumin, paprika, caraway, turmeric, and harissa).

3 This shakshuka is from Jack's Wife Freda in Manhattan's West Village, and regularly ranks among the best breakfasts in the city. It's not a traditional preparation—Israeli-born co-owner Maya Jankelowitz's recipe uses tomatillos, green peppers, and cilantro.

BRAINTRAINER

Get Creative

Recent studies have us rethinking the ways we tap into our imaginations.

BY **FOSTER KAMER**

1 ARTISTS DON'T HAVE TO BE "TORTURED." The cliché that great art comes from one's saddest days might be an overstatement. A 2015 paper[1] by Brandeis University economics professor Kathryn Graddy compared data on paintings made by famous French and American artists during times of bereavement. Turns out, that work was less likely to be chosen for the Metropolitan Museum of Art's collection, and fetched lower prices at auction, than work created during happier times. So no one has to die for there to be great art!

2 BUT EMOTIONS MATTER. A new Johns Hopkins School of Medicine study[2] monitored jazz musicians' brains as they improvised. Researchers showed them a happy, sad, or ambiguous face and asked them to play something that expressed that emotion. The results? Different emotions opened and closed different creative pathways and created varying patterns in the musicians' brains.

3 TRY YOUR WAY TO TALENT. So you think you're not blessed with creativity? Don't give up. In a 2015 Northwestern University study[3] researchers asked participants to come up with ideas for Thanksgiving dishes, punchlines for sketch comedy routines, and ad slogans for charities. They then asked subjects how many more ideas they thought they could develop with 10 more minutes. The subjects underestimated the number of ideas they would produce—and the new ideas were better than the original set. When it comes to creativity, persistence pays off.

[1] "Death, Bereavement, and Creativity," Graddy, K. 2015
[2] "Emotional Intent Modulates the Neural Substrates of Creativity: An fMRI Study of Emotionally Targeted Improvisation in Jazz Musicians," McPherson, M. J. et al. *Scientific Reports,* January 2016
[3] "People Underestimate the Value of Persistence for Creative Performance," Lucas, Brian J.; Nordgren, Loran F. *Journal of Personality and Social Psychology,* August 2015

BIALETTI'S FAMOUS MASCOT, *L'OMINO CON I BAFFI* ("THE MUSTACHIOED LITTLE MAN"), IS DRAWN BY ILLUSTRATOR PAUL CAMPANI. THAT'S NOT A FASCIST SALUTE—HE'S ORDERING ANOTHER ESPRESSO.

GET IT!
FROM $25,
BIALETTI.COM

THE LITTLE THINGS

The Bialetti Moka Express

How a tiny coffeemaker percolated its way into Italian homes and hearts, becoming a national design icon along the way

BY **JIAN DELEON**
PHOTOGRAPHY BY **ROB CULPEPPER**

1819
A Frenchman named Morize develops the Neapolitan coffee pot, with a bottom section for water, an upside-down pot on top, and the middle for coffee. When the water is boiled, the pot is flipped so water filters through the grounds. Prior to the Bialetti, this was the standard.

1918
While watching his wife wash laundry using a *lessiveuse*—a sealed boiler with a central pipe that draws soapy water from bottom to top, spreading it over the clothes—aluminum worker Alfonso Bialetti gets the idea to adapt this process for *espresso*.

1927
Mussolini bans materials like stainless steel, leading Italy to produce upward of 2,000 tons of aluminum. The material quickly becomes the de facto national metal. Six years later, production rises to 11,800 tons.

1933
During the Great Depression, Bialetti crafts his first aluminum espresso maker and starts hawking it at markets. Italians now have an easy way to make flavorful espresso at home: by heating the contraption on a stovetop with coffee and water inside.

1946
Renato Bialetti takes over his father's company and begins mass-producing the Moka Express, eventually opening a factory in the industrial hub of Omegna in 1956. Sales boom. The elder Bialetti sold 70,000 units in six years. His son does that in one.

Lauryn Hill at the 2012 RBC Royal Bank Bluesfest in Ottawa, Canada

101 MASTERPIECES

#47 THE MISEDUCATION OF LAURYN HILL

Hip-Hop's First Lady

It's difficult to overstate Lauryn Hill's impact on modern music—or the pressure that came with it.

BY **CAMILLE DODERO**

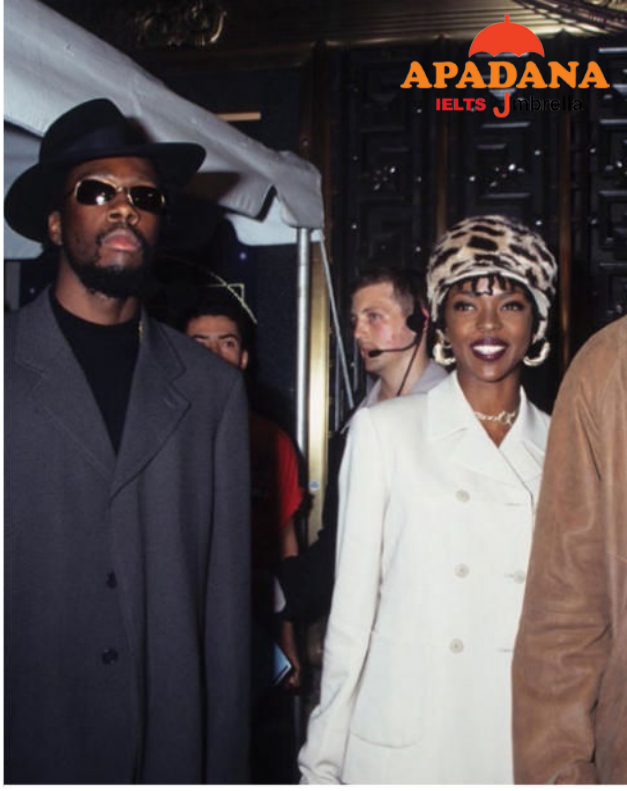
LAURYN HILL LAY ON THE FLOOR, half-asleep. It was the summer of 1997, and at 22, she was already the star of the biggest-selling hip-hop group in history and an actress with a promising future. She had the entertainment world waiting eagerly for her breakout moment, the one that would turn her into a household name.

She was also eight months pregnant.

The timing wasn't great. Hill had been cast alongside Oprah Winfrey in an adaptation of Toni Morrison's novel *Beloved*, but had to withdraw. Close friends urged her to reconsider the pregnancy. Singer Nina Simone, whom Hill idolized, told her she didn't think a woman could have both a family and a music career.

But Hill's most immediate concern was far less weighty. She'd been tapped to cover Frankie Valli's "Can't Take My Eyes Off You" for the closing credits of the 1997 thriller *Conspiracy Theory,* and the song was overdue. To finish, she'd enlisted an engineer friend, "Commissioner" Gordon Williams, and they were recording in his apartment. Singing into a handheld microphone, Hill ad-libbed an intro, eased through the opening verses, and, in a rousing catharsis, belted out the chorus: "I. Need. You. Babyyyyy … "

Just like that, the track was done. "She did all of those vocals off the top of her head," Williams recalled. "That blew me away." What neither of them could have imagined was that Hill's version of a 30-year-old classic would power an accidental radio hit and a Grammy nomination. Or that it would become a key piece of a multiplatinum album, one that would immortalize her as an artist, forever change a musical genre—and nearly destroy her as a person.



Clockwise from top: Hill at the 1999 Grammy Awards (she won five); with the Fugees at the MTV Music Video Awards in 1996; Hill's 1998 debut solo album

AS A CHILD IN SOUTH ORANGE, New Jersey, Hill grew up in a talented household surrounded by music. Lauryn, the baby of the family, was always performing, dancing to the Jackson 5 and mugging for the family camcorder. At 13, she entered Harlem's legendary Amateur Night at the Apollo. Singing Smokey Robinson, she won over the notoriously tough crowd.

Around that time, Hill joined a trio that included her brother's friend Prakazrel "Pras" Michel (the son of Haitian immigrants) and, later, Michel's 19-year-old cousin Wyclef Jean. They called themselves the Fugees, short for refugees, and their unique hybrid of R&B, dancehall, and hip-hop confounded talent reps: Michel was a street rapper; Jean emulated Rastafarian icons like Bob Marley; and Hill was a soul vocalist with a knack for clever wordplay.

Hill's innate charisma had long been evident. In high school she landed a recurring role on *As the World Turns* and a supporting part in Whoopi Goldberg's 1993 comedy *Sister Act 2: Back in the Habit*. Critic Roger Ebert panned the movie, citing Hill's "big joyful musical voice and luminous smile" as "talent gone to waste."

That mirrored the takeaway from the Fugees's 1994 debut, *Blunted on Reality*, a mostly ignored LP of awkward hardcore-rap posturing. But Hill's prowess was unleashed on their sophomore record, 1996's *The Score*, which showcased her knockout rhyming skills and voice.

Drawing from doo-wop, jazz, and reggae, the album became a crossover coup with the group's radio-ready cover of "Killing Me Softly With His Song." Overnight, *The Score* zipped to No. 1 on the Billboard 200 album chart and became one of the first hip-hop records to connect with an international audience. It spent seven weeks at No. 1 in Germany and sold more than 670,000 copies in France. It was also one of the first rap albums to be both socially conscious and critically acclaimed—lyrics addressed racial profiling and police brutality, advocating social responsibility instead of nihilism.

Hill was clearly positioned as the group's breakout star. On *The Score*'s cover, she's the only member facing forward, her head in the center. But the 21-year-old declined other opportunities. Clef and Pras were like brothers, she said. What she didn't say: She and Jean had been romantically involved for some time.

The relationship was rocky from the beginning. Jean was with another woman when he began seeing Hill, nearly six years his junior. As *The Score* took shape, Jean got married, but when the Fugees resumed touring, the couple rekindled their affair. It bred terrific art (the album "came out the way it did because of our passion," Jean wrote in his 2012 memoir), but also jealousy and screaming matches.

Hill never blamed the tension in the group on her romance with Jean. In a 1998 *Vibe* cover story, she attributed the strain to the attention showered on her, but insisted it played out differently than the press suggested. "I really wasn't thinking of doing a solo album," she said.

But Jean and Michel were. When Hill learned they were plotting solo careers, she felt betrayed. "I said, 'OK, have I been stagnant for the sake of promoting this group collective effort?'" *The Score* wasn't just the second Fugees album—it was also their last.

In the summer of 1996, Hill met Rohan Marley, son of reggae legend Bob Marley, when the Fugees were on tour. By early 1997, Hill was pregnant with Marley's child.

She began work on a solo album, propelled by the feeling she had everything to prove: She wasn't a puppet Jean brought to life or just a pretty face, she had her own identity and unique perspective, and her decision to keep her baby wouldn't torpedo her career like everybody said it would.

HILL REBUFFED major producers and enlisted a crew of studio musicians from Newark she dubbed New-Ark. She composed in her attic, recording in Manhattan and at the Marley family's production hive in Kingston, Jamaica.

In May 1998, a bootlegged version of Hill's Frankie Valli cover aired on a San Francisco radio station. Other stations picked it up, and the track rose to No. 35 on the Billboard Radio Songs chart. Hill's label urged her

PREVIOUS SPREAD: CORBIS. ALAMY (FUGEES, GRAMMY)

to add it to the forthcoming record. Begrudgingly, she conceded. "If I had my way, it wouldn't be on [the album] at all," she told *The Irish Times*.

Despite her hesitation, the success of that single track helped attract attention to Hill's album. At 78 minutes, the singer's solo debut, *The Miseducation of Lauryn Hill,* is a master class in black American musicality, encompassing early R&B, gospel, doo-wop, soul, '70s funk, reggae, and hip-hop. But *Miseducation* is also a product of late-20th-century rap culture—break beats, vinyl-record scratches, cross-disciplinary rhymes like "bomb graffiti" with "the tomb of Nefertiti"—that acknowledges its place within a broader tradition. The title is an allusion to the 1933 book *The Mis-Education of the Negro* and the 1972 black-nationalist autobiography *The Education of Sonny Carson*.

Its theme revolves around the bittersweetness of love—romantic, divine, parental. Songs detail Hill's affair with Jean and subsequent heartbreak ("Lost Ones"; "I Used to Love Him") along with her Biblical introspection and spiritual awakening ("Final Hour"; "Forgive Them Father"). This was unprecedented: Female hip-hop artists were rare, and felt compelled to show toughness over vulnerability. On *Miseducation*, Hill demonstrated both. She lashed out at masculine control ("Sick of men trying to pull strings like Geppetto"), while the Carlos Santana collaboration "To Zion" was both a gospel hymn and an affecting testimony to the pressure Hill faced during her pregnancy: "I knew his life deserved a chance / But everybody told me to be smart / 'Look at your career,' they said."

Released when Hill was 23 and carrying her second child, *Miseducation* debuted at No. 1 on the Billboard 200 album chart and sold more than eight million copies in the U.S. It yielded nine Grammy nominations (including one for that "Can't Take My Eyes Off You" cover) and won five, including album of the year—a first for a hip-hop album. Hill was hailed as a creative genius, with Selwyn Seyfu Hinds writing in *The Village Voice* that *Miseducation* "is a record that redefines hip-hop."

HILL "REALLY WASN'T THINKING OF DOING A SOLO ALBUM"—BUT HER BANDMATES WERE.

Time cemented *Miseducation*'s broader cultural significance when Hill graced the magazine's February 1999 cover as the face of America's emerging "hip-hop nation." Rap music was 20 years old, but had largely been viewed as niche. Then in 1998, for the first time, hip-hop CDs outsold country music. Also for the first time, *Miseducation* represented a multidimensional woman's perspective that was at once sensual, spiritual, and streetwise.

But there was a complication. The album credits Hill with writing, producing, and arranging all but one of its songs. In December 1998, New-Ark's members filed a lawsuit demanding proper attribution and profits. "If you put Lauryn Hill in a studio alone, she couldn't do it again," the plaintiffs' lawyer told the press. Mired in legal problems and shell-shocked by the scrutiny, Hill receded from public life.

THERE WERE RUMORS she had a breakdown. After landing on *People*'s 50 Most Beautiful People list in 1999, Hill began dodging the public eye. In July 2001, five months after the *Miseducation* suit was settled for a reported $5 million, Hill emerged for a taping of *MTV Unplugged*. "I came to terms with the fact that I had created this public persona—this public illusion," she said. "I couldn't be a real person because you're too afraid of ... what your public will say." She rejected pop music's unseemly pageantry, but to a self-sabotaging degree.

In rehearsal for the televised performance, Hill tore up her throat, but went through with the set anyway. Armed with a guitar she had yet to master, she debuted incomplete songs, bookended with candid, searching monologues. "I know the view is that I'm emotionally unstable, which is reality," she said. "Like you aren't?" Released in 2002, *MTV Unplugged No. 2.0* was a critical and commercial disappointment.

When radical transparency failed, Hill built walls. She insisted peers address her as "Ms. Hill" and demanded substantial compensation for interviews. She showed up late to her shows, where, her voice increasingly frayed, she insisted on modifying her back catalog so much that her songs were unrecognizable.

Still, her influence held strong. For more than a decade, rappers like Eminem, Common, and Kendrick Lamar regularly dropped her name in their lyrics. Just this January, Kanye West referred to Hill on his new single "No More Parties in L.A.," which included the line "I was uninspired since Lauryn Hill retired."

Avoiding society has had consequences. In 2012, Hill was indicted for failing to pay taxes on $1.8 million of her earnings. The mother of six pled guilty, and in 2013 served three months in federal prison. But that same year she signed an agreement with Sony to launch a label for new music. Last September, producer Phil Nicolo told the *Fader* she's closer than ever to finishing a proper follow-up to *Miseducation*.

But in some ways, a new album is irrelevant. The singer, now 40, has already accomplished what she set out to do. In March 2015, the Library of Congress inducted *The Miseducation of Lauryn Hill* into the National Recording Registry, calling it "a work of incredible honesty." Hill's songs are an established part of the pop-cultural fabric. She's infused a male-dominated genre with female power and presence, covering topics ranging from feminism to motherhood, heartbreak to artistic ambition. And she proved the naysayers wrong—not only could she have a child, she could also make one of the best hip-hop albums of all time. ❁

With just 85 hours of flying experience, Amy Johnson made her 10,000-mile solo trek from England to Australia—and instantly became a national hero.

ALAMY

OBSESSIONS

GOING THE DISTANCE

The world's best pilot was groomed to be a secretary. But once she took to the air, no one could keep her down.

BY **JAKE ROSSEN**

AMY JOHNSON CLUTCHED HER PISTOL, her eyes darting around for signs of dogs. Four days into a historic May 1930 flight from Croydon, England, to Darwin, Australia, a sandstorm had forced her to make an impromptu landing. Now, she was stranded in a remote patch of Pakistan with wild animals circling her.

In the early days of aviation, this 10,000-mile trek was reserved for the boldest of men, but Johnson was determined to be the first woman to fly the journey solo. The sandstorm was just one of many obstacles that stood in her way. On the ground, she had to convince skeptical instructors to teach her how to fly. In the air, she had to manage monsoons, mechanical failures, and emergency landings. But she overcame it all—including the unplanned detour in Pakistan—and by the end of her trip, the no-name pilot had become a national hero.

Growing up, Johnson didn't seem destined to become a daredevil. The daughter of a fish merchant, she was born in 1903 and raised in the riverside city of Hull, England, with two sisters. She was educated at private schools before pursuing a bachelor of arts degree at the University of Sheffield, where she took extra courses in secretarial work and eyed a Swiss suitor. Her idea of dreaming big involved landing a job with a London advertising agency.

But in 1926, Johnson stepped into a plane for the first time. After the flight—a puddle-jumper pleasure trip that cost five shillings—she wrote in a letter, "I would have liked to have done some stunts." The seeds were sown.

The next year, Johnson left for London in search of an advertising job, but she had no luck. Instead, she

settled as a department store salesgirl. Eventually, she found work as a legal secretary. As she typed all day, Johnson's dreams shifted from advertising to the skies.

She began spending most of her salary on private lessons at the London Aeroplane Club. Her instructor doubted that a woman was mechanically inclined enough to control an aircraft, and it took Johnson 16 hours, twice the norm, to complete the training—but she was hooked. "I have an immense belief in the future of flying," she wrote to her parents. She quit her job and began working full-time as an airplane mechanic. Within a year, she had her pilot's license and became the first woman certified as a ground engineer.

By the late 1920s, it seemed like pilots were setting new records every week. Barnstorming stunts were all the rage, and women like Bessie Coleman—the first African American to earn a pilot's license—and an upstart named Amelia Earhart were making newspaper headlines. Johnson noticed, but it was a pilot named Bert Hinkler who truly captivated her. In 1928, he set a world record by flying from England to Australia in 15 days. Inspired, Johnson announced she intended to break it.

People thought she was crazy. Johnson only had 85 hours of flight experience; the farthest she had flown was between London and Hull—200 miles. Attempting to cover 10,000 miles solo was unthinkable for an amateur still honing her skills, and when she asked for financial sponsors, everybody refused—until the aristocrat Lord Wakefield chipped in. He helped buy Johnson's new plane, a green-and-silver de Havilland she dubbed *Jason*. On May 5, 1930, the pilot waved goodbye to her family on the tarmac and pointed *Jason*'s nose toward Australia.

JOHNSON LATER ADMITTED she didn't understand how difficult the trip would be. Her biplane didn't have brakes or navigational equipment. She had to read maps, eat, drink, and relieve herself while maintaining control of the craft. Bad weather and fuel shortages necessitated several emergency landings. A dust storm forced her down in Pakistan. Flying over the Timor Sea made her grip the controls in a sweat. After an unplanned stop in Indonesia, she was falsely reported missing.

Johnson finally touched down in Darwin, Australia, on May 24. It took her 19 and a half days to complete the trip, but onlookers didn't appear disappointed. Some 200,000 people gathered at the landing field to welcome her home in England, with a million more filling the streets as she paraded through London. The *Daily Mail* awarded her £10,000. Jack Hylton and his Orchestra wrote and recorded a foxtrot titled "Amy, Wonderful Amy." Even Charles Lindbergh sent congratulations.

Even with the accolades, Johnson perceived the trip as a failure: She'd wanted to break a record, and hadn't. In 1931, she tried to fly from London to China, across Siberia. She crash-landed near Warsaw, but wouldn't relent. That same year, she became the first aviator to make the trip from London to Moscow. The next year, she set a world speed record for traveling from London to Cape Town, South Africa. She beat the existing record by 11 hours.

Incidentally, the previous record holder was Johnson's new husband, Jim Mollison. The two pilots met in 1932, and Mollison reportedly proposed to Johnson only eight hours after meeting her. (Other accounts clock it at a week.) An instant celebrity pairing, the "Flying Sweethearts" became famous for attempting to break records together. In 1933, they tried to fly nonstop across the Atlantic to New York. They ran out of gas in Connecticut, 55 miles short of their goal.

Despite all the records and publicity, Johnson still couldn't find a consistent job as a commercial pilot. So when World War II broke out and the Royal Air Force asked her to help transport officers and equipment, she accepted. On January 5, 1941, she was heading toward Kidlington when something caused her to abort. Her plane tumbled into the Thames Estuary; a recovery ship sped toward the crash, but came back empty-handed. Amy Johnson was officially presumed dead.

Historians later theorized the rescue ship's propellers had dragged her down. Others offered that she was shot down by friendly fire. That Johnson could have been rattled by bad weather or a fuel shortage—the truth, most likely—seemed too mundane for those who saw her as superhuman. After all, she had defied the odds, going from first-time passenger to daredevil pilot in just five years. She had become an emblem of British grit and courage—a reminder that even if you weren't born with the right ingredients, you could cultivate them.

IN 1932, SHE SET A WORLD SPEED RECORD FLYING FROM LONDON TO SOUTH AFRICA.

"When an Amy Johnson breaks aviation records, when a Madame Curie discovers radium ... it becomes a trifle harder for young girls to tell themselves, 'It doesn't matter,'" wrote novelist Winifred Holtby in 1934. "The possibility of achievement has been vindicated."

Johnson once told a radio audience that "no one had faith in me except myself," but the idea of speeding into history "obsessed my mind day and night." Up in the sky, no one could tell Amy Johnson she didn't belong. Besides, she wouldn't have been able to hear them, anyway.

mental_floss + Smart Girls
present

WOMEN WHO CHANGED THE WORLD

AMY POEHLER'S SMART GIRLS

Dear Esteemed Reader of *mental_floss*,

"Change the world by being yourself."

That's the Smart Girls motto. But being yourself isn't always easy, and it can be an ongoing quest. You have to put in the effort to get to know your weird and wonderful self.

At Smart Girls, we search out fact-based knowledge and interesting, diverse perspectives from across the globe. In this spirit, we've teamed up with *mental_floss* to celebrate curiosity, to encourage you to participate in the world, and to inspire you to take action.

In the following pages we've worked to highlight women who are changing the world by being their weird and wonderful selves. We asked them to share their ups and downs, the details behind their processes, and their secrets to making things happen. Our hope is that hearing their stories will inspire you—no matter your age, gender, or particular area of interest—to make your own mark.

—Meredith Walker and Amy Poehler
CO-FOUNDERS OF SMART GIRLS

HOW I'M

Skinning a Mouse—and Reinventing Museum Education

BY **EMILY GRASLIE** AS TOLD TO REGAN HOFMANN

When Emily Graslie, 26, started The Brain Scoop, *she was just hoping to find a few like-minded Tumblr readers to share her love of taxidermy. Five years later, she has 300,000 rabid fans tuning in to YouTube to watch her explain everything from millipede reproduction to specimen dissection. Here, Graslie tells us how she became the first-ever chief curiosity correspondent for Chicago's Field Museum, where she's tasked with introducing natural history to a new generation.*

I was always an "outside" kid. I wanted to make epic paintings about the natural world, so I declared my art major my first day at the University of Montana. I was surrounded by natural beauty, and knew it was a resource we were losing.

My coworker at the campus store showed me the natural history collection at the university's zoological museum—it blew me away. There were volunteers skinning rodents, and she asked, "Can Emily do one?" I was like, "I'm not trained to do this."

She said, "If you can sew a stuffed animal like in home ec, you can skin a mouse." It was true! I got to sign my name on the label, the same way you might sign a piece of artwork.

PREVIOUS PAGE: ISTOCK (PAPER)

PHOTOGRAPHY BY SAVERIO TRUGLIA. ILLUSTRATIONS BY ANDY J. MILLER

I started volunteering at the museum and painting portraits of specimens. But oil paint takes so long to dry, so I started doing photography, posting photos on Tumblr and hoping I'd find others like me. And I did! I met Hank Green of Vlogbrothers, which is huge on YouTube, and he asked if I'd be interested in having my own show. That show, *The Brain Scoop*, has just passed 300,000 subscribers. In April 2013, we had a meet-up at Chicago's Field Museum, and 100 fans came. The museum's president told the head of collections they needed to hire me. Now our videos are produced there.

I could keep making videos where we open a specimen drawer and go, "How cool!"—or we can work to secure funding for scientists. A curator at the Field Museum needed evidence that his research would reach the public to win a National Science Foundation grant, so he asked if we could do a series. We got the grant!

I've also become an activist, opening up the conversation about how to keep women and minorities in the sciences. I want to tell more cool stories—I just don't know what form they'll take next.

6 WOMEN YOU WISH WERE YOUR GRANDMA

Baking cookies and crotcheting hats is fine, but swimming with sharks is next-level.

BY **KRISTY PUCHKO**

BADASS

1

REVOLUTIONARY GRANDMA

When the Philippines rebelled against Spanish colonists in 1896, 84-year-old store owner **Melchora Aquino de Ramos** became a revolutionary, turning her business into a rebel meeting place and hospital for wounded soldiers.

2

3

HIKING GRANDMA

After reading that no woman had ever completed the 2,180-mile Appalachian Trail, **Emma Gatewood**, a 67-year-old grandmother of 23, set out on a 146-day journey. She went through six pairs of sneakers on her trek—then hiked the Trail twice more.

4

FLEXIBLE GRANDMA

Tao Porchon-Lynch marched with Gandhi and Martin Luther King Jr. But those walks were just a warm-up. At 85, she took up ballroom dancing and appeared on *America's Got Talent*. Today, at 97, she's also the world's oldest yoga instructor.

5

SWIM-WITH-THE-BOYS GRANDMA

When you learn to swim in shark-infested waters like **Katherine Pelton** did in what's now Namibia, you're bound to swim fast. More than 50 years later, she began swimming competitively. Upon her final lap, the 86-year-old had 34 FINA Masters World Records.

6

BODYBUILDER GRANDMA

After a lifetime of pencil pushing, **Edith Wilma Connor** left her data entry job and started pumping iron. For her 65th birthday, she entered her first bodybuilding competition—and won. By age 77, she'd earned a Guinness World Record for becoming the oldest competitive female bodybuilder.

7

8

VISIT-BOTH-POLES GRANDMA

In her 60s, **Barbara Hillary** retired from nursing. But when she learned no African American woman had ever set foot on the North Pole, she found a new purpose. At 75, she tagged the North Pole. Four years later, she hit the South Pole, too, making her the first African American woman to visit both.

9

10

INCREDIBLY BADASS

HOW I'M

Curbing Cyberbullying

BY **TRISHA PRABHU** AS TOLD TO APRIL DALEY

Two and a half years ago, Trisha Prabhu began work on ReThink, an anti-cyberbullying app that prompts adolescents to reconsider messages they're about to text or post. Here, the 15-year-old Illinois student explains how she created a product that could maybe, finally make the Internet a safe space for teens.

In 2013, I read an article about 12-year-old Rebecca Sedwick, who jumped off her town's water tower because she'd been cyberbullied. I was heartbroken. I started looking up other stories, reading about kids hanging themselves in their bedrooms after being told the world would be a better place without them. It hit me in the gut.

I've always been fascinated with the brain. It controls so much of what we do, and we understand so little about it. I came across another article about how the adolescent brain develops from the back to the front. Scientifically speaking, the reason young people are more likely to act impulsively is because the part of the brain that is supposed to control decision-making skills isn't fully developed until age 26.

I decided to explore the link between that and bullying. I thought, "What if I give people a few extra seconds to pause and think about the consequences of their actions? What if I give kids a rethink word—almost force them to do it?"

That's when the experimenting began. I spent months after school recruiting students, and gathered over 1,500 trials' worth of data. Adolescents were presented with offensive messages and then asked to choose, "Would you post this?" or "Would you not post this?" If they said, "Sure, I'll post 'You are so ugly' on social media," we went, "Hold on! Are you sure you want to do this?" We found that over 93 percent of the time adolescents changed their minds. The overall willingness to post a message actually dropped from 71 percent to 4 percent. I knew I was onto something.

I entered the Google Science Fair and was chosen as a global finalist, one of the top 15. It was the first time Google had accepted a behavioral science project into the finals. I lost, but it hit me: Maybe people could use this. I ended up creating ReThink.

I released two apps this past August, ReThink for Android and ReThink for iOS. It helps that I have parents with a tech background and have been coding since I was 10. I also have fantastic mentors.

We're now working with school districts, parents, guidance counselors, and teachers. Our goal: to build a coalition of ReThink Ambassador schools to help download the app onto school computers and students' mobile devices. ReThink could become more than a solution. It could become a movement, a mind-set, a call to action.

WOMEN WHO CHANGED THE WORLD

PHOTOGRAPHY BY SAVERIO TRUGLIA

I wanted to explore the link between the adolescent brain and bullying. What if you could almost force people to rethink their actions?

HOW WE'RE

Changing the Game By Preventing Sports Injuries

BY **IVONNA DUMANYAN AND GABRIELLE LEVAC** AS TOLD TO SAMUEL ANDERSON

Founded by two college athletes, BioMetrix is creating wearable technology that detects a body's weak spots, then coaches the user on how to stay in the game. We asked its co-founders, 21-year-old Ukrainian Ivonna Dumanyan (opposite, left) and 24-year-old Wisconsin-born Gabrielle Levac (opposite, right), how they're harnessing a Band-Aid-sized device to defy the notion of "no pain, no gain."

We didn't intend for this to become more than a product for ourselves. We were NCAA athletes at Duke University [Dumanyan was on the crew team; Levac did track and field] and noticed the guesswork of treating common injuries—often it's just an orthopedist adjusting your orthotics and asking, "How does this feel?" Training staff couldn't be with us on our rows and runs, so we were limited to filming our workouts to figure out how we needed to change our form. That wasn't an effective tool.

We suffered injuries. Ivonna had recurring shoulder dislocations; Gabby ended up needing surgery. The recovery was brutal. We decided we needed to do something. To ensure athletes could avoid this kind of pain, we set out to create a sensor that could detect small changes in motion—fatigue, abnormal foot position—and identify where the risks lie.

First, we had to come to terms with the fact that our athletic careers were over. Then we had to overcome the fact that neither of us knew anything about electronics. We taught ourselves coding. We built the prototype, which consisted of custom electronics, laser-cut Gore-Tex [a water-resistant material used in outerwear], and a magnetic charger. Aside from a small grant from an incubator at Duke, we funded ourselves.

At BioMetrix we're trying to condense a personal trainer, motion-capture technology, and data analysis into a water-resistant device the size of a Band-Aid. Motion-capture sensors measure weight distribution, wavering in your muscles, and joint extension. Then they wirelessly send that information to a computer or smartphone. If the data indicates a weakness, the app might tell you, "Do 10 squats instead of 20." Normally this kind of analysis requires a trainer, several cameras, and hours of processing. We want to put real-time feedback in the palm of your hand, and prevent injury before it occurs.

When the athletic departments at Duke and UCLA try out the sensor this fall, we want everyone on the team to be able to use it. If you're not a national champion, it's hard to get that level of care. An autonomous, wearable sensor cuts costs exponentially, so no one has to ask, "Is this athlete worth it?" Screw that. Everyone's health is important.

WOMEN WHO CHANGED THE WORLD

6 FORGOTTEN FEMALE SUPERHEROES

You might think of Wonder Woman as godmother to Jessica Jones. But what about those who came before her?

BY **SAMUEL ANDERSON**

SPIDER QUEEN

A heroine from the golden age of comics, Spider Queen had web-spewing wrists in 1941, about 20 years before Peter Parker. And it was thanks to the power of her own mind, not some freak spider bite. (She invented a special bracelet to shoot the webs.) Unfortunately, some stereotypes got in her way: She learned how to make the spiderwebs by inheriting the recipe from her husband. Oh, and she's afraid of spiders.

PAT PARKER, WAR NURSE

A scantily clad Florence Nightingale, Pat Parker could dress a wound lickety-split. A skilled pilot, she destroyed Nazis alongside allies like Captain America.

We're condensing a personal trainer, motion-capture technology, and data analysis into a device the size of a Band-Aid.

PHOTOGRAPHY BY LIZ NEMETH

INVISIBLE SCARLET O'NEIL

For 15 years, O'Neil espoused nonviolence and used invisibility to spread kindness. Her tagline was "Action—without the blood and thunder!"

NELVANA OF THE NORTHERN LIGHTS

American comics weren't allowed in Canada when Nelvana, the country's first national superhero, debuted in 1941. She was based on Inuit mythology. The daughter of Koliak the Mighty, King of the Northern Lights, Nelvana was banished from the celestial world for marrying a mortal. Her brother, a bull mastiff, helped her protect the Inuit people from alien invaders and Axis powers.

MOON GIRL

The princess of an extraterrestrial civilization who could fly a spaceship with her mind, 1947's Moon Girl boasted she was "superior to any man."

FANTOMAH, MYSTERY WOMAN OF THE JUNGLE

The first female comic book superhero, Fantomah predated Wonder Woman by a year when she debuted in 1940's *Jungle Comics #2*. Whenever she felt angry, she'd turn into a vicious blue-skinned monster—20 years before the Incredible Hulk! She thwarted jewel thieves by turning them into dandelions and would sic gorillas on evil scientists.

HOW I'M

Making Grilled Cheese Give Back

BY **JORDYN LEXTON**
AS TOLD TO MICHELLE GOODMAN

Jordyn Lexton parlayed her culinary passion and a desire to help troubled youth into Snowday Food Truck, a business with a mission as impressive as the inventive grilled cheeses it serves up. In 2015, Snowday won the Vendy Cup for best New York City food truck. We asked the 29-year-old native New Yorker how she made the leap from teaching incarcerated teenagers English to running a hip start-up that specializes in second chances.

I was a high school English teacher on Rikers Island for three years. New York treats 16-year-olds in the criminal justice system like they're adults, regardless of the offense. They're offered education until the age of 21, so I worked with probably 1,300 young people. Most of them haven't been sentenced yet—they're just being detained because they can't afford bail. I saw how destructive the system is to young people, and I was interested in developing an employment strategy for [those] coming home.

Many of my happiest moments have centered around food. It's a way to connect. There was a culinary arts class on Rikers where a lot of my students were excelling, so I decided a mobile food source where we could be out in the community would be a great way to raise awareness about injustice inside the system.

I hadn't worked in the food industry or in "re-entry"—when a prisoner returns to society. So in 2012, I left my teaching job and pursued both. I worked on the Kimchi Taco Truck in New York City for seven months, then in re-entry programs. In 2013, I got some great people to rally around me, and we raised money. In the spring of 2014, we launched Snowday.

I was inspired by a foundation in Peru called Niños that I'd visited in 2011. It

provides two meals to more than 600 children in Cusco every single day, and generates revenue through a for-profit hotel and hostel it operates. Drive Change, the nonprofit I started that owns Snowday, runs a 12-month fellowship for young people coming home from jail. They work in our kitchen and on our truck, and the revenue from the truck cycles back into the organization to subsidize our costs.

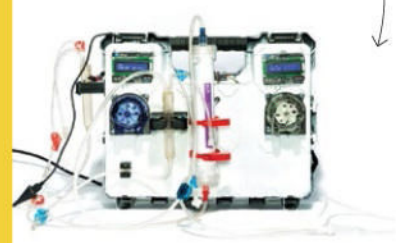
About 20 people per year work on our one truck. We pay our workers $11 an hour and teach them transferable skills through classes like marketing, money management, hospitality, and culinary arts. We also incorporate disciplines like communication skills and community building. We've had a lot of people move on to other full-time opportunities, but we're not a job placement organization. Rather, a big part of the work we do is empowering the youth to take the initiative to secure their next position. We help build their skill sets, but for somebody to excel in future environments they need that foundation within themselves.

Next, we're going to build a garage and commissary for other food trucks. The trucks' owners will pay rent and purchase additional goods and services they need—like ice and propane, getting their truck cleaned, renting the kitchen space. But they will be required to hire people out of Drive Change. We'll be able to work with more people hired by more food trucks.

The goal for us is to help young people coming home get into a position where, rather than all the stop signs and dead ends they generally face, they see futures with new opportunities.

PHOTOGRAPHY BY SCOTT JORDAN BLEICHER (LEXTON). JOHN KEALEY (POGHARIAN)

ANYA POGHARIAN'S PORTABLE DIALYSIS MACHINE IS ONE-FIFTIETH THE PRICE OF THOSE USED BY DOCTORS.



HOW I'M

REINVENTING THE DIALYSIS MACHINE

BY **ANYA POGHARIAN** AS TOLD TO SAMUEL ANDERSON

For a high school science project, Anya Pogharian created an artificial kidney. But after volunteering at a hospital, the Montreal-based 18-year-old turned her sights on inventing a cheap and portable dialysis machine, making it accessible to people in developing countries. She's still too young for med school, but she just might transform health care. Here's how.

I'd never heard of dialysis when I started volunteering at a hospital, but I became interested after working the dialysis floor. The people would come after work for three-hour treatments [to filter toxins from their blood after kidney failure]. While they were hooked up to the machines, we'd play bingo.

I learned about the huge need for dialysis in developing countries. A typical dialysis machine costs about $30,000 and requires ultrapure water, which is difficult to come by. That's why I decided to invent my own portable, affordable dialysis machine.

I'd never invented anything, so to learn more I set up an appointment with a nephrologist. Even the doctors operating the machines don't necessarily know the mechanics. But by reading owners' manuals online, I learned how they worked. I went out and bought the essential parts: a pump, the pressure and temperature sensors, and a filter. Then, I created a circuit, an air bubble detector, and a microcontroller. [It cost about $600, one-fiftieth the cost of the dialysis machines on the market.] I tested it with water and food coloring. After 300 hours of work, I showed the first prototype at my school. It took the bronze prize at the Canada Wide Science Fair.

After tweaking the design that summer, I was ready to run real blood through it. I took it to a blood donation organization and hooked it up to a four-liter bag. The sample was full of potassium and other impurities because it had been stored for six days, but we added even more. We wanted to see what the machine could do. After an hour all the impurities were reduced and the potassium was gone. We could have stopped after 20 minutes.

I've heard from people in India, Pakistan, and South America who want to purchase my machine. It isn't ready for the public yet, but my work isn't slowing. Within the year there has to be something that people in developing countries can afford. The need is non-negotiable.

FORMIDABLE GIRL GANGS

The sisterhood of science, war, underground communiqués, and sitting on men

BY **ERIN BLAKEMORE**

THE EDITORS WHO CUT THE IRON CURTAIN

In the 1980s, seven Polish women founded, ran, and even made ink for *Tygodnik Mazowsze*, a secret newspaper crucial to the anti-Communist movement.

THE NIGHT WITCHES

The most famous witches of World War II didn't fly brooms—they flew biplanes. The USSR's all-female bomb squad took to the air in rickety, freezing planes. Their nighttime raids were so precise, Nazis swore they had bionic vision and took special injections to give them "feline-like" sight. The Night Witches completed some 30,000 missions and were so talented that Germany offered an Iron Cross—one of its highest honors—to anybody who shot one down.

THE WOMEN WHO MAPPED THE UNIVERSE

The 80 women hired by physicist Edward Pickering in the late 1800s created the Harvard Classification Scheme of cataloging stars. It's still used today.

HOW I'M

GIVING KIDS THE UPPER HAND WITH TENNIS

BY **VERONICA OSOGO** AS TOLD TO JAYA SAXENA

Veronica Osogo knows tennis as more than just a sport. For her, it's a tool to teach kids about health, fitness, discipline, independence, and the value of a good education. The 39-year-old tennis champ and Kenyan native founded the Zion Zone Tennis Foundation, an organization that engages children in the slums of Nairobi. Here, Osogo tells us about her success on and off the court.

I was athletic as a child, playing soccer and hockey, but I didn't know what tennis was until I went to Guru Nanak Dev University in India, where a friend introduced it to me. At first I was drawn to the dress code—tennis players always looked so nice!—but I also enjoyed that it's an individual sport. You can play and practice without relying on a team. I liked the idea of finding success on my own.

Most professional tennis players start when they're little, but I was 19 when I learned how to play. I had no idea what I was doing. I wasn't playing to win, I was playing to enjoy! I kept learning and started winning titles.

I got the inspiration for Zion Zone in 2006 when I visited a neighbor who had a project in the Kibera slum in Nairobi. She asked me to teach the kids tennis. At first I refused, scared for my life. Eventually, I agreed.

It was hard to see. It didn't look like a place where people should be living. Kids would get sick because there was no drainage system, and they were living in shanties. But I brought over a few rackets, and the kids loved it. They didn't know what it was—they kept calling it golf! But more kids would pass by and watch. A few were really talented, and I saw that, for them, tennis could be more than just a game.

It never dawned on me that I could start a foundation—I was just keeping kids busy. It was my brother who encouraged me.

At Zion Zone, we teach these kids the fundamentals of tennis as well as discipline. Before, many of them went to school only a few days a week, or not at all. Now, the kids must be enrolled in school to participate. If their parents don't put them in school, I find a school.

We have 500 students now, but I'm hoping to expand the organization to other slums. We've partnered with the U.S. Department of State and ESPN Global Sports Mentoring Program. I hope to recruit more girls, and I also want to start programs for kids in wheelchairs, and for those who are hard of hearing. One day I hope to have our own piece of land, with courts, a school, and a gym—a place where kids can feel at home.

Tennis is a great mobilizer. A lot of these kids played soccer, which is part of the slums. But it's played in a big group. With tennis you can see each child for who he or she is. Some of them who never knew the sport became No. 1 in the country. When other kids see that, they see that a life outside the slums is possible.

PHOTO PROPERTY OF U.S. DEPARTMENT OF STATE IN COOPERATION WITH THE UNIVERSITY OF TENNESSEE CENTER FOR SPORT, PEACE, & SOCIETY; PHOTOGRAPHER: JARON JOHNS

THE LADIES OF INDIA'S MARS MISSION

India's mission to build a Mars orbiter cost 11 percent of a similar U.S. project. Women steered the craft and designed many of its instruments.

THE "PETTICOAT COURT"

In 1925, a lawsuit pertaining to an old boys' network of attorneys required nearly every male lawyer in Texas to recuse himself due to conflict of interest. Though women were not allowed to serve on juries in the state at the time, a special court led by Texas's first female lawyer, Hortense Ward, and two other women, was formed to try the case. It would be 57 years before another woman served on the Supreme Court of Texas.

THE DAHOMEY AMAZONS

Benin's all-female army of 4,000 defended the region through the end of the 19th century, earning fame for their brutal frontal assaults and weaponry skills.

THE "WOMEN'S WAR" OF NIGERIA

When colonial governors in Nigeria tried to increase taxes in 1929, women resisted. They drew from a local tradition called "sitting on men," in which women angry at male family members followed them around and made a public spectacle of them until they admitted they were wrong. They applied this to public officials, heckling them and disrupting work by singing. The result? In two months, Nigerians regained some power in government.

HOW I'M

Creating Print-Your-Own Shoes

BY **KEGAN SCHOUWENBURG** AS TOLD TO AUTUMN WHITEFIELD-MADRANO

Kegan Schouwenburg desperately wanted the world to be more like the futuristic sci-fi she read growing up. She also wanted to wear stylish heels—ones that actually fit her flat feet. Using these twin goals as motivation, Kegan harnessed her industrial design degree from New York City's Pratt Institute to launch SOLS, a company that uses 3-D printing to customize insoles and orthotics. Customers use the SOLS app to capture images of their feet; two weeks and $99 later, individualized insoles crafted from NASA-grade nylon arrive at their doorstep. Here's how the 30-year-old entrepreneur is delivering the future to you.

My family lived in Belgium when I was a kid, where design is part of the culture. Every aspect of society is thought about in terms of aesthetics. Even the tax forms are beautiful! When we moved to the U.S. we got the Design Within Reach catalog.

HOW I'M

It was the first time I realized art was also commerce, which made it accessible. I wanted to integrate art and accessibility, and industrial design was a way to do that.

After college I went to a company where we made 3-D-printed shoes for designers. They were focused on fashion—"What's the most outlandish thing we could make?" This was a perfect application for 3-D technology, yet nobody was actually going to wear the footwear. I had flat feet as a child that made me miss out on sports and outings with my family, and my orthotics were clunky and expensive. I thought, "What if we created something that was a perfect collision of design, function, and technology?" SOLS was an opportunity to redesign an industry.

I wanted to make on-demand products. I want you to be able to take your phone and use it to transfer an image of your body, and then have an affordable product custom-made for you. Before, you had cobblers making expensive, bespoke products. With technology, suddenly it's not just the one percent who have access to custom-made shoes.

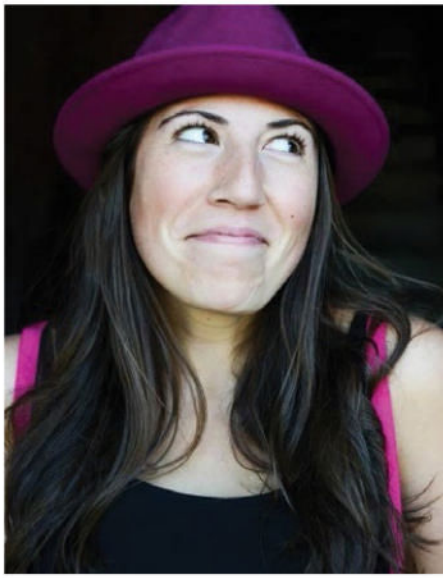
I've always loved sci-fi, and it's pretty much what a startup is: imagining—though everybody says it's impossible—what the future could be. I was talking to another CEO who said, "If I wasn't running this company, I'm not employable." It's true! The entrepreneurial bug is natural for me.

SOLS'S ANTIMICROBIAL NYLON INSOLES ARE PERSONALIZED ACCORDING TO CUSTOMERS' FOOT IMAGES AND OTHER INFO, LIKE HEIGHT AND WEIGHT.

PHOTOGRAPHY BY JOAO CANZIANI/AUGUST (SCHOUWENBURG). COURTESY OF MADELINE SAYET (SAYET)

TRANSFORMING THE WAY WE THINK ABOUT SHAKESPEARE

BY **MADELINE SAYET** AS TOLD TO ALISON KINNEY



As resident director of the arts organization Amerinda, 26-year-old Madeline Sayet is building a better future for Native American performers, helping them land more diverse and complex roles. Her latest endeavor: creating indigenous and feminist retellings of Shakespeare. Here's how she's banishing stereotypes while breathing new life into the Bard.

I grew up with parents from different cultures who couldn't always understand each other. I'm Mohegan and my dad's family is Jewish. I think that creates children who know how to build bridges—and that's what I want to do.

Somebody once told me, "You shouldn't let anybody know you're Native"—especially in the acting industry, where there are lots of ways not to get hired. But the playwright Bill Yellow Robe told me, "There are enough Indians pretending not to be Indians!" Now I'm the resident director of New York's Amerinda Inc., which promotes indigenous perspectives in the arts. I'm also earning my doctorate at the Shakespeare Institute in England. We can reimagine Shakespeare, as indigenous people—the ways he uses metaphors, he doesn't give you everything. You're filling it in from your own experience. When Amerinda does Shakespeare, women play roles traditionally played by men. That makes sense.

I developed the Amerinda Shakespeare Ensemble to create a safe space for Native actors. I'd witnessed non-Native directors shutting down Native actors, telling them who they were based on archaic stereotypes. When casting directors consider a person who's Native, they often say, "We have to justify why their characters are Native"—they can't just *be* Native. That's ridiculous!

My goal is to give an ensemble the opportunity to sink their teeth into material, and then make sure those highly skilled actors become known in the acting pool. When an actor's résumé lists *Macbeth*—and not just seven versions of Tonto—it helps them audition for a wider range of roles.

If it comes down to respectably representing my people or pleasing a funder who wants feathers and fringe in a production, I'm sorry, no. I don't care how much money you have. I'm not going to embarrass my tribe.

HOW I'M

Turning Eggplants Into Electrocatalysts

BY **SHANNON XINJING LEE** AS TOLD TO SHIVANI SRIVASTAVA

What powerful surprises are hiding in your pantry? That question drove Shannon Xinjing Lee, a 19-year-old student from Singapore, to develop a battery electrocatalyst—out of an eggplant! We asked Lee, who won the 2014 Young Scientist Award at the Intel International Science and Engineering Fair, what led her to this groundbreaking discovery.

I was the kind of child who constantly asked "why?" I didn't do that well in science in primary school, but as I got older, it started making more sense. By the time I was in junior college [a pre-university program], I had opportunities to do research. That's what made me fall for science.

The eggplant project started in a lab, with a mentor, trying to find a green, simple, and cheap cathode structure for metal-air batteries. [Metal-air batteries produce electricity by using oxygen in the air to spark a chemical reaction with a metal.] In other words, how might these batteries store and release more power without increasing costs or environmental impact? In the future, metal-air batteries will be able to power cars, but right now they rely on platinum, which is very expensive.

My hope is that eggplant carbon sheets become a greener, cheaper, more efficient way of powering batteries.

What makes metal-air batteries so light, yet able to deliver so much energy, is that

WOMEN WHO CHANGED THE WORLD

they use air as the reactive material. Oxygen flows into the batteries, and that energy is harnessed as power. But you need a conductive surface—like carbon—for the reaction to occur. I figured, what carbon material is more environmentally friendly than fruits and vegetables?

I searched for something with a large surface area. I experimented with apples because they have high water content. Remove that water, and what's left is a large surface area for oxygen to flow into. But apples weren't good catalysts. Then I tried eggplants, which seemed to have catalytic properties. But when I tried to dig up related research to see if others had noticed this, there wasn't much. My mentor encouraged me to keep at it. I was amazed by the results.

Carbonized eggplant is an excellent catalyst for metal-air batteries, largely because of its spongy, porous structure. Its thin cell walls make it easy to convert into sheets with lots of surface area for reactions to occur. In some ways, it even performed as well as platinum.

I didn't expect to get one of the highest prizes at the Intel Science Fair, or all the media attention. It gave me the confidence to say, "Hey, I can really do this whole science thing!" Now I'm in medical school in Singapore. People kept telling me how stressful it would be, but I'm having a lot of fun. I'm no longer working on the eggplant electrocatalyst, but I did publish a paper on mass-producing low-cost carbon sheets from eggplant.

My hope is that the eggplant carbon sheets really do become a greener, cheaper, more efficient way of powering metal-air batteries. I want others to pick up where I left off and take it to the next level. That's the beauty of science.

PHOTOGRAPHY BY DOMINIC PHUA. ILLUSTRATIONS BY ANDY J. MILLER

6 WOMEN YOU'RE NOT SUPPOSED TO HAVE EVER HEARD OF

Top-secret documents! Karate moves! Dynamite! These crafty ladies had a lot to hide.

BY **KRISTY PUCHKO**

1 **OCCUPATION:** State dept. clerk, ambulance driver
SECRET WEAPON: A wooden leg

Virginia Hall—who had a wooden leg she named "Cuthbert"—was known as "the limping lady." But the Nazis called her "the most dangerous of all Allied spies." She forged Resistance networks, created caches of cash and weapons for her rebels, and whisked escaped POWs out of German-occupied France. The one-legged spy once escaped over the snow-caked Pyrenees Mountains. By foot.

2 **OCCUPATION:** Jefferson Davis's servant
SECRET WEAPON: Photographic memory

Born into slavery and liberated shortly before the Civil War, **Mary Bowser** won favor with Jefferson Davis's wife and got a job as a servant at the Confederate White House. Presuming Bowser was illiterate, Confederates weren't worried about leaving classified papers around. She passed the messages word for word to Union spies.

3 **OCCUPATION:** Actor
SECRET WEAPON: Top-secret undergarments

Best known as a song-and-dance actor, **Josephine Baker,** or "The Black Pearl," served as a spy for the French Resistance during World War II. She used invisible ink to hide notes and maps in her sheet music, and tucked sensitive photographs of German military installations in her unmentionables. Not only was she an excellent sleuth, Baker knew karate and could supposedly shoot the flame off a candle.

4 **OCCUPATION:** Lawyer, journalist
SECRET WEAPON: A knack for breaking hearts

A Czechoslovakian-born U.S. corporal, **Barbara Lauwers** spread morale-crushing propaganda behind enemy lines. "Operation Sauerkraut" involved missives from a fictional "League of Lonely War Women," which suggested that the soldiers' love-starved wives and girlfriends would be unfaithful. Her scheme made 600 Axis soldiers defect during World War II.

5 **OCCUPATION:** Heiress
SECRET WEAPON: Bond-like interview techniques

Krystyna Skarbek was a Polish heiress turned World War II spy. She was so good at escaping Nazis that she inspired Ian Fleming's first Bond Girl. During one interrogation, she began biting her tongue so hard she coughed up blood. Fearing she had tuberculosis, her interrogators let her go.

6 **OCCUPATION:** Nurse
SECRET WEAPON: Open ears

Working in a German military hospital during World War I, **Marthe Cnockaert**, a Belgian nurse, learned vital intelligence by eavesdropping on her patients. She also once crawled through an abandoned sewer under a German ammunition depot to plant dynamite. After she retired from espionage, she wrote a series of spy novels.

Making History as a Judge ... at 25!

BY **JASMINE TWITTY**
AS TOLD TO PRIYANKA MATTOO

Plenty of 25-year-olds might be considered judgmental. Few of them get paid for it. Count Jasmine Twitty among them: At 25, she is the youngest person ever to be sworn in as a judge in Easley, South Carolina. After college she landed a job as a night court clerk, and thanks to her confidence, empathy, and work ethic, she was appointed five years later as associate judge of Easley Municipal Court. Here, she tells us why the early mornings and long nights are worth it.

I was born and raised in Greenville, South Carolina, and was one of those super-smart little kids who might be called "mouthy"—if my parents hadn't been so proud of my vocabulary.

My mother is a social worker who'd give anyone the shirt off her back, and she expected the same of us. We had a big fight because she was so insistent on my candy striping one summer. I never wanted to go into medicine, and didn't understand the point. I cried hysterically because we never got a summer break—I wasn't a morning person and just wanted to sleep in. Later, I realized nothing made me feel better.

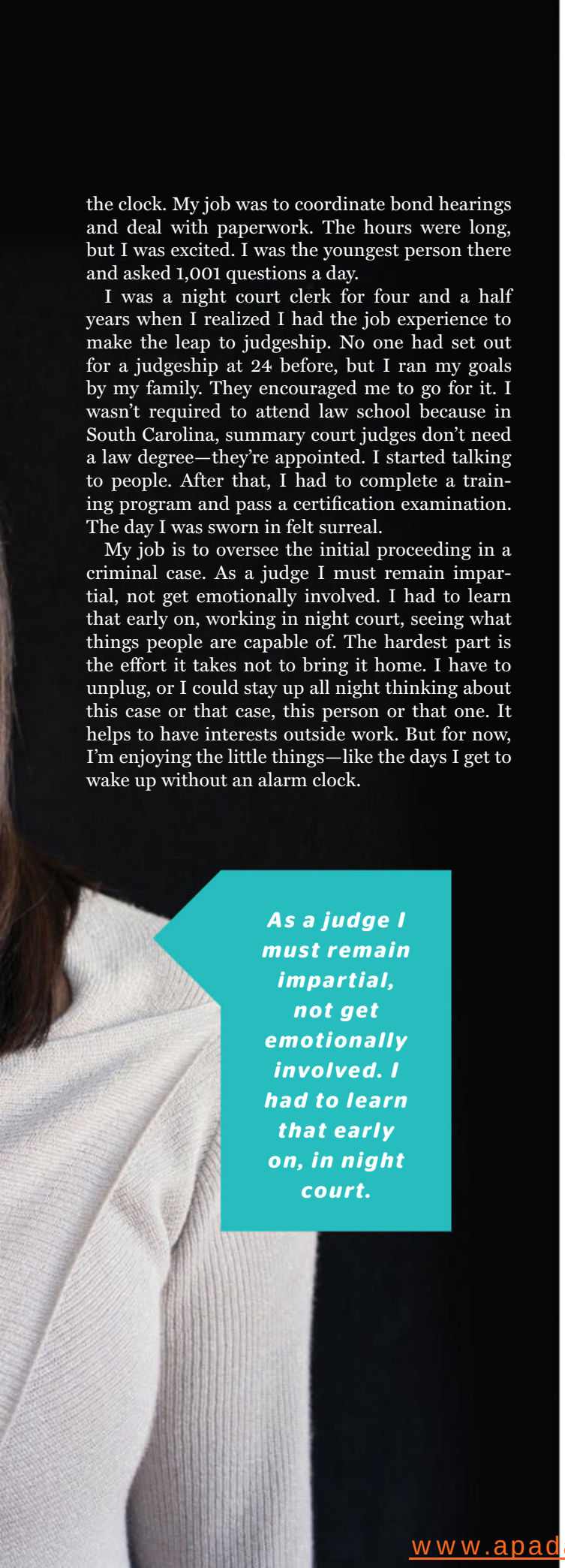
When I graduated with a political science degree, I knew I wanted two things: to work in public service and to get *out* of South Carolina. It was hard to find a job that felt like the right fit, so I reluctantly moved back home. After visiting my old guidance counselor, I set up college prep workshops for high school kids. It felt like I was making an impact instead of treading water while looking for a "real" job.

A few months in, I heard about a clerk position at the Greenville County Bond Court. I didn't realize it was open around

the clock. My job was to coordinate bond hearings and deal with paperwork. The hours were long, but I was excited. I was the youngest person there and asked 1,001 questions a day.

I was a night court clerk for four and a half years when I realized I had the job experience to make the leap to judgeship. No one had set out for a judgeship at 24 before, but I ran my goals by my family. They encouraged me to go for it. I wasn't required to attend law school because in South Carolina, summary court judges don't need a law degree—they're appointed. I started talking to people. After that, I had to complete a training program and pass a certification examination. The day I was sworn in felt surreal.

My job is to oversee the initial proceeding in a criminal case. As a judge I must remain impartial, not get emotionally involved. I had to learn that early on, working in night court, seeing what things people are capable of. The hardest part is the effort it takes not to bring it home. I have to unplug, or I could stay up all night thinking about this case or that case, this person or that one. It helps to have interests outside work. But for now, I'm enjoying the little things—like the days I get to wake up without an alarm clock.



As a judge I must remain impartial, not get emotionally involved. I had to learn that early on, in night court.

5 INVENTIONS THAT WE CAN THANK LADIES FOR

A house that cleans itself, the boom mic, and higher education are just a few

BY **HANNAH KEYSER**

PROBLEM:
No Higher Education
SOLUTION:
World's First University

In the ninth century, Fatima Al-Fihri immigrated to Fez from Tunisia with her family. She and her sister Mariam built a mosque and madrasa that would become the world's first degree-granting university.

PROBLEM:
Summoning a Waiter
SOLUTION:
Gong and Signal Chair

Miriam E. Benjamin invented the Gong and Signal Chair, which could beckon a far-off person. Politicians in the U.S. House of Representatives used it to signal messengers.

PROBLEM:
Dangerous Births
SOLUTION:
Obstetric Mannequin

King Louis XV hired his midwife, Madame du Coudray, to educate others throughout France. She invented an obstetric mannequin that could demonstrate a live birth. The campaign saved countless lives.

PROBLEM:
Housework
SOLUTION:
Self-Cleaning House

Frances GABe (not a typo) outfitted her Oregon home with 68 patented contraptions, including dish-washing china cabinets.

PROBLEM:
Distracted Actors
SOLUTION:
The Boom Mic

Silent film star Clara Bow was so nervous filming her first talkie, 1929's *The Wild Party*, that she spoiled shots by looking at the microphones. Director Dorothy Arzner's solution? Fasten a mic to a fishing pole and hang it out of the shot: The boom microphone, which has graced nearly every film and TV set since, was born.

PHOTOGRAPHY BY AARON GREENE. ILLUSTRATIONS BY ANDY J. MILLER

The GRATEFUL DEAD of KAY POWELL

ISTOCK

FORGET ABOUT SPORTS OR COMICS. IF KAY POWELL WROTE FOR YOUR PAPER, YOU DOVE STRAIGHT INTO THE OBITUARIES.

BY **MARGARET EBY**

THE 10 A.M. MEETING WAS ALWAYS THE SAME.

That's when Kay Powell would gather her staff to comb through the death notices. These were the short, rote missives from funeral homes and chapels—no nonsense, just the unhappy facts, another birth date that now had its declaratory bookend.

But to Powell, a reporter at *The Atlanta Journal-Constitution*, these were raw ingredients. She knew how to identify the subtle clues indicating a thread worth tugging on. In the skeleton outline of a person's life, she could see a full portrait just waiting to be colored in.

When she found it, the meeting was over—and she hit the phones. Like any other reporter, she had questions to ask. Even though her subjects were dead, their stories were just beginning to come to life.

THE GEORGIA NATIVE has a syrupy drawl that turns "ten" into "tin"; an easy, smoky laugh; and a policy of never leaving the house without lipstick and earrings on—"If I'm going through the drive-through window, the part of me that you can see looks like I've been a productive citizen," Powell jokes. From 1996 to 2009, if you knew anyone in Atlanta who passed away, she probably knew them too. Death was her beat, her legacy built by ritually assembling profiles of what she calls "extraordinary ordinary people."

In her tenure at the *Journal-Constitution*, Powell wrote poetic, funny, revelatory obituaries for the following: a moonshiner, the "King of Gypsies," a lobotomy patient, a Tuskegee Airman, a lawyer famous for her cedar-smoked salmon, and a planet ("Pluto, the least of the major celestial bodies, never asked to be a planet," the obit opened). She kept a sign on her desk quoting *Washington Post* obituaries editor Richard Pearson's favorite saying about the profession: "God is my assignment editor."

Powell got her start in high school in Valdosta, Georgia, where she was editor of the school newspaper and edited the Saturday teen page at the *Valdosta Daily Times*. After she graduated from college, the paper hired her as a reporter. She sat in on community meetings, wrote a series on the ravages of drug abuse in the county, and reported on the hearings of a notorious local incest case. She learned to look for stories in everything from grocery circulars to court transcripts.

In 1994, Powell joined *The Atlanta Journal-Constitution*, where, as administrative assistant to the editorial board, she combed through the letters to the editor. At the time, the obituary section had been relegated to the copydesk, but editors Ron Martin and Jim Wooten were eager for a revamp. They imagined pages celebrating the lives of Atlanta citizens who otherwise might not make the papers—not celebrities or billionaires, but neighbors and friends. Wooten noticed Powell had a knack for deal-

ing with readers and polishing their letters to the paper to perfection.

"When I was called in and asked if I would please think about it, I was thinking, 'Oh, goody-goody!'" Powell says. "Every other reporter was covering yet another opening day or weather story. I was getting to write about vagabonds and business and political leaders."

And she got to do it her way. "It's easy to take the path of least resistance and write about the beloved teacher, beloved coach, beloved preacher," Powell says. Instead, "we looked for people whose lives readers would be curious about—I saw a man who was a greeter at Kmart, but turned out to be the retired CEO of a furniture company who had taken the job because he got bored and missed being around people. I found a woman who had sung at Martin Luther King Jr.'s funeral." Powell's more than 2,000 obits paint a picture of a complex city and an evolving South, and go well beyond the tropes of the form—"beloved grandmother" or "Renaissance man" or "dedicated public servant."

One of her favorite opening lines, "George Hopkins died again Friday," was about a man whose heart briefly stopped while testing diving equipment in his youth. Another favorite: "At Matthews Cafeteria, a smiling Thelma Hogan called you by your first name, asked after your mama, made sure your cornbread was cooked just like you liked, and hugged your child in her lap while she rang up your lunch on the cash register. She did that about 800 times a day for 43 years."

INVESTIGATING THE LIVES of the recently deceased is a sensitive endeavor. It's also a crash course in good journalism. Powell quickly learned to avoid asking boilerplate questions, like "What were his hobbies?" Instead, she says, "The way to phrase it is, 'When he had a little time to himself—time he could do what was fun for himself, that made him happy when he did it—what would he do?'" That's how one reporter under Powell's tenure found out that a man who made his living pricing groceries also raised prize-winning skunks for national shows, and had an airbrushed picture of his favorite skunk on his motorcycle.

Powell has rules: 1) Write about women as living their own lives, so "no Mrs. M. obits." (The original *New York Times* write-up for rocket scientist Yvonne Brill, which opened by praising Brill's "mean beef stroganoff," rankled her.) 2) Avoid a laundry list of accomplishments. "I can't stand a résumé obit," Powell says. 3) In interviews, "Keep your mouth shut and let 'em say it. And when you're done, then you have what you have to say."

But most importantly: 4) Fact-check everything, and 5) cut through the euphemisms, clichés, and half-truths

PHOTOGRAPHY BY KATHRYN MCCRARY

we use to talk about the dead. "It has to be factual, and it has to be accurate. If there's a stepdaughter, you say that; I don't care if he loved her like his own daughter," Powell says. "Our job was to answer questions, not raise questions. We always gave the cause of death. We wrote about suicides, even though many papers won't. The question you're afraid to ask is the question you must ask."

Fact-checking family myths was a big part of the job. A common one? That someone had played for the Atlanta Crackers, a minor league baseball team once based in the city. "Everyone says, 'Daddy played ball for the Crackers,' and usually, Daddy didn't. They don't know any different until you call them," she says. Some of the facts Powell uncovered were uncomfortable. While researching an obit for a woman named Patti Hall, a volunteer at the pro-life Pregnancy Resource Center of Gwinnett, she discovered that Hall had had an abortion. "You do encounter that, things the family will tell you, 'Please don't put that in the obit.' But then you have to say, 'Yes, I will, and this is why, and this is your opportunity to respond or elaborate on it.'"

One of Powell's greatest triumphs was in 1998, when she wrote the obituary of Calvin F. Craig, a former grand dragon of the Ku Klux Klan who resigned from the group in 1968. Powell spent hours coaxing his son and widow to go on the record. "They were passing the phone back and forth, and I was explaining that one way or another, Craig was going to be written about. This way, they'd have a voice in the piece. When I finally got his son to talk to me, the newsroom gave me a standing ovation." The piece included the story of Craig's longtime friendship with Xernona Clayton, the coordinator of the Model Cities program in Atlanta, an African American woman who liaised between Craig and the mayor. "Mayor Allen said only in Atlanta could the contact with the KKK be through a black woman," Clayton told Powell.

The most difficult interviews? "Families and friends of other reporters," she says.

Over the years Powell's prose developed a cult following; one reader, a librarian named Thomas Hobbs, gave her the nickname "the Doyenne of the Death Beat." Many thanked her for sharing the story of someone who inspired them. At one conference, Hobbs walked up to her and repeated, verbatim, whole paragraphs of some of her obituaries from memory. "It amazed me how our obits could change people's lives," she says. "I wrote an obit of one man who quit his job to go work for a nonprofit because he knew deep down that's what he should be doing. His wife called me after the obit ran, because she heard from a man who keeps that obit in his desk drawer and reads it every day. You can't predict what's going to touch someone."

"I DIDN'T WANT TO RETIRE—I wanted to just die at my desk," Powell says, laughing. But in 2009, amid a wave of buyouts at the paper, retire she did. Death notices on the obituary page are now mostly reader-submitted, as they are in most American dailies. "I can see that it's a luxury, maybe, to have a dedicated writer or editor for obits," Powell says. "Newspapers are a very different animal now."

Yet she still pens the occasional obituary, including in 2009, when her mother died: "Mrs. Powell took the greatest delight in sharing her home in Valdosta and house at Cherry Lake with family and friends, her children and their friends, her grandchildren and great-grandchildren, friends' children and their grandchildren and sometimes even strangers. In fact, after she was widowed, there were 13 toothbrushes in her bathroom, all kept there by people who regularly enjoyed her company." Last year, Powell wrote an obituary for Manley Pointer, one of the peafowl at Flannery O'Connor's house museum, Andalusia Farm, in Milledgeville, Georgia.

"THE FAMILY WILL SAY, 'PLEASE DON'T PUT THAT IN THE OBIT.' YOU HAVE TO SAY, 'YES, I WILL.'"

In 2010, Powell was honored with a lifetime achievement award from The Society of Professional Obituary Writers for helping "give obituary writing a legitimate and respected place in journalism." Writer Marilyn Johnson praised her for having "recorded things that wouldn't have been recorded by anyone else, certainly not by her brother journalists. Kay Powell has been responsible for fighting the historic sexual imbalance on the obit page."

In a part of the newspaper where the lives of ordinary people shine, Powell illuminated the fact that there can be dignity in death through a life well remembered.

These days, in addition to her writing, Powell gives talks, works as a mentor for a middle school writing program, and pursues her passion projects. She reads, goes to long lunches with her friends, and has contributed to the Georgia Tech Living History Program, making use of her southern accent by narrating a video. "I get time to be lazy. I play bridge. I go to readings. I just enjoy every single day, even if I'm in my nightgown all day," she says. "Work any of that you want into my obituary." ❁

SANDRA DAY O'CONNOR

BROKE THROUGH TO BECOME THE FIRST WOMAN ON THE SUPREME COURT IN SEPTEMBER 1981.

WOMEN WHO CHANGED THE WORLD

CORBIS

BY **LIZZIE JACOBS**

A CASE FOR JUSTICE

For 191 years, the **United States Supreme Court** was an all-boys' club—until an Arizona cowgirl stepped in and became the most powerful woman in the country.

Sandra Day O'Connor's desk was a mess. The day before, on September 25, 1981, she had been sworn in as the first woman on the Supreme Court. Her new office was already littered with briefs and cert requests. Not to mention nearly 10,000 missives from citizens across the nation—packages of hand-knit socks, family pictures, homemade fudge. Then there was the hate mail. "Back to your kitchen and home female!" read one letter. "This is a job for a man and only he can make rough decisions."

The insults didn't faze her. Neither did more pragmatic concerns, including the fact that nobody had ever thought to place a women's restroom near the courtroom—because for 191 years, only men had sat on the Supreme Court. The closest ladies' room required O'Connor to walk down an endless hallway. So she commandeered a nearby restroom instead.

O'Connor also took ownership of another boys' room: the basketball court above the courtroom, jokingly called "the highest court in the land." She wanted to exercise, and after she heard that other women in the building—secretaries and a few lone female clerks—did too, she reserved the gym and asked the local YWCA to send an aerobics teacher. She even ordered custom T-shirts that read WOMEN WORK OUT AT THE SUPREME COURT. The class became a daily ritual.

By the end of her first month, Sandra Day O'Connor had done more than break the Supreme Court's glass ceiling—she'd stolen its spotlight. Through the 1990s and early 2000s, she wrote opinions that shaped major social and political issues, making decisions that led Tom Goldstein, a Supreme Court expert and founder of *SCOTUSblog*, to call her "one of the five most influential justices of the century." The fact that this Arizona cowgirl was the first woman on the court, he says, is "more of an asterisk."

How she got there, however, is another story.

IT WAS A HOT DAY on the Lazy B ranch when 15-year-old Sandra Day learned how to change a tire. Her father, H.A. Day, and his ranch hands were tending to cattle far from home, where Sandra was loading a pickup truck with the crew's supplies and lunch. She left at 7 in the morning—plenty of time to reach the cowboys by mealtime—and drove into the desert alone.

The sun was rising. Sandra's grandfather had bought this 250-square-mile stretch of windswept desert straddling the Arizona–New Mexico border in 1880. Fifty years later, when Sandra was born, the family lived in a one-bedroom house with no running water, eking out a living repairing wells and raising cattle. Their closest neighbor was 25 miles away.

Driving over dirt and sand, the Chevy was more rickety than usual. Sandra stopped, hopped out, and noticed that a rear tire had pancaked. She figured out how to jack up the car, grabbed a lug wrench, and twisted the lug nuts as hard as she could. They wouldn't budge. Rusted. Watching the sun rise higher in the sky, she propped her foot on the wrench and began jumping until the rust cracked.

Sandra reached the roundup well past lunchtime, and the men were branding cattle. She explained that she had woken up early, that she'd had a flat tire in the middle of nowhere, that the lug nuts were rusted tight, that she was lucky to be there at all.

It sounds like a triumph, but her father was unimpressed. "You should have started a lot earlier," he said. That was the

CORBIS

In this photo from O'Connor's scrapbook, she's about 10, on her family's Lazy B ranch near Duncan, Arizona.

end of their conversation. No excuses.

Living alone with a bunch of cowboys in the middle of the desert breeds a certain type of pragmatism. For Sandra, days on the ranch could begin lying on her back reading *Nancy Drew* and end with the mercy killing of a calf. She rode horses, drove tractors, branded cattle, shot .22-caliber rifles, and tamed a pet bobcat (named Bob). When she lay in bed at night, she listened to coyotes. "We were ranchers," O'Connor recalled in a 2008 speech at Stanford. "We didn't know lawyers or judges."

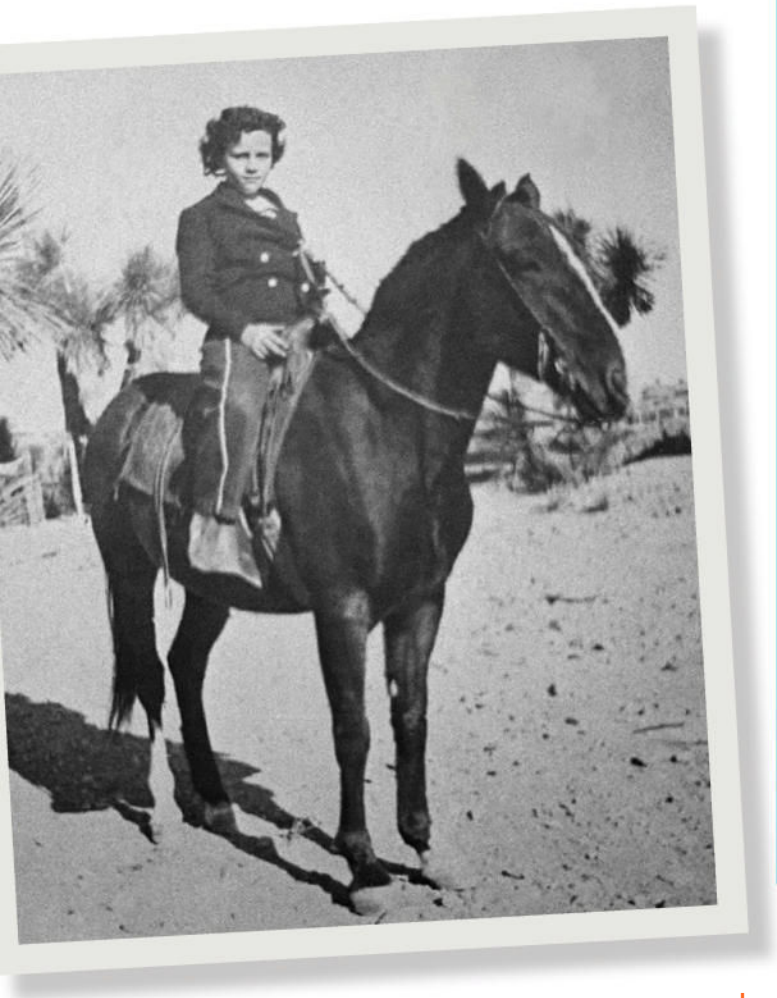
Sandra joined her father and his ranch hands on roundups, steering cattle and spending nights without a pillow or bathroom in sight. In her memoir, *Lazy B*, she wrote, "It had been an all-male domain. Changing it to accommodate a female was probably my first initiation into joining an all-men's club." Soon, her younger sister and niece rode along without objection.

The ranch, however, was no formal education, so Sandra's parents sent her to an all-girls' private school in El Paso, Texas, where she lived a double life with her maternal grandmother. There, she rubbed shoulders with society girls and their families, learning about the right clothes, ice cream socials, and graceful houses. Knowing how to don a lavender suit with a perfect bob gave the Western gal a polished finish that made her, in the words of Eric Citron, a future clerk, "One of the most enchanting people you will ever meet in your entire life."

At 16, after skipping two grades, Sandra entered Stanford University. She majored in economics, but a law professor, Harry Rathbun, changed her life. Each Sunday, Rathbun invited students into his home to discuss the meaning of life, making passionate arguments that each individual had a civic duty to serve his or her community. Sandra was struck. She'd spent her life as a self-reliant cowgirl, miles from the closest town. Now, she felt an obligation to serve. "He was the most inspiring teacher I ever had," she said. After graduating, the 20-year-old applied to Stanford Law School. She was admitted, just one of four women in her class.

O'CONNOR RODE HORSES, DROVE TRACTORS, BRANDED CATTLE, SHOT .22-CALIBER RIFLES, AND TAMED A PET BOBCAT (NAMED BOB).

"I had no understanding then about the almost total lack of opportunities for women in the legal profession," she'd say. "Had I realized how hard it would be to get a job as a woman lawyer, I would have chosen another path."



WOMEN HAVE BEEN SYMBOLS OF JUSTICE since the Egyptian goddess Ma'at, but men have kept the scales of justice from them for just as long. By O'Connor's time, a statue of Lady Justice adorned most courthouses, but actual lady justices—or even lady lawyers—were still very much unwelcome.

It started in 1869, when Myra Bradwell attempted to become America's first female lawyer. She passed the Illinois bar exam, but the state supreme court refused to give her a law license. When Bradwell brought the case to the U.S. Supreme Court in 1872, she lost. The justices deemed that "the natural and proper timidity and delicacy which belongs to the female sex evidently unfits it for many of the occupations of civil life," and described a woman seeking such a career as "repugnant."

For the next seven decades, states could legally deny women the opportunity to practice law—and did. (Charlotte E. Ray, the first black female lawyer, was admitted to the Washington, D.C., bar in 1872 because she went by her initials and the committee assumed she was a man.) At the turn of the century, famed lawyer Clarence Darrow told a group of woman attorneys, "You have not a high grade of intellect ... I doubt if you [can] ever make a living."

Things began to change by World War II, when a shortage of men prompted qualified women—many of whom had settled for jobs as legal librarians, stenographers,

and secretaries—to obtain jobs at law firms. Some law schools saw this as a problem. When Harvard president James B. Conant was asked how the law school was handling the shortage, he crowed, "We have 75 students, and we haven't had to admit any women." By 1950, only three percent of lawyers were women.

Sandra Day paid no attention. She was too busy excelling in law school, where she edited the *Law Review* and ranked third in her class. After graduating in 1952, she realized history was stacked against her: Firms refused to interview a woman. When she finally snagged an interview with California's Gibson, Dunn & Crutcher, one partner asked her, "Miss Day, how do you type?" He was offering her a secretarial job, which she declined.

AT AN INTERVIEW, ONE PARTNER ASKED HER, "MISS DAY, HOW DO YOU TYPE?" HE WAS OFFERING HER A SECRETARIAL JOB.

When Sandra heard that the district attorney of San Mateo County had hired a woman in the past, she visited the office and asked for a job. The county attorney waved her off, saying there were no vacancies. Sandra insisted she'd work for free. They didn't have enough desks, he protested. She later got the job—with no pay—because she convinced the secretary to share desk space with her.

After marrying John O'Connor, whom she met at Stanford, Sandra briefly worked in Germany, then moved to Phoenix to open a small walk-in law practice in a suburban strip mall, the kind of place where customers came in unannounced to complain about grocery bills and shifty landlords. It wasn't prestigious, but it kept her in the game.

Then her babysitter quit.

IN THOSE DAYS, having children was career suicide. But in O'Connor's case, it was the best move she ever made.

"Small children need supervision day and night," she wrote *mental_floss* in an email. "With two little children I needed to be 'at home' with them." She stayed "at home" for about six years—while volunteering for enough civic and community groups to fill a couple of lifetimes.

O'Connor served on the Maricopa County Board of Adjustment and Appeals and the Governor's Committee on Marriage and the Family, chaired the Maricopa County Juvenile Detention Home Visiting Board, and was an administrative assistant at the Arizona State Hospital. She wrote questions for the Arizona bar exam, volunteered at a school for minorities, worked as an adviser to the Salvation Army, and acted as district chair for the local chapter of the Republican party.

All that (and more) while practicing a little law on the side. And raising three boys.

Politicians noticed. Those connections helped O'Connor—who still could not get hired at a private firm—earn a part-time job at the attorney general's office, where she climbed her way up to assistant attorney general. Her work impressed Arizona's governor so much that he selected her to fill a vacant seat in the state senate. Within months, her Republican colleagues voted her majority leader, making O'Connor America's first female majority leader of a state legislature.

O'Connor knew what she wanted: to remove sexism from the books. She searched for laws biased against women and quietly worked to change them. The Republicans had a razor-thin majority—negotiations were essential. She regularly hosted parties at her adobe house, inviting leaders from all sides to eat homemade burritos, not to broker deals, but to get to know one another.

Her cooking was legendary, but at work she was all business. "With Sandra O'Connor, there ain't no Miller Time," one colleague quipped. She was just as fastidious, if not nitpicky, as a stateswoman. (One time she introduced an amendment to remove a single misplaced comma from a bill.) She hit the second shift of motherhood hard. Once, when a budget deadline loomed, a fellow legislator moaned that it would be impossible to reach a compromise before midnight. O'Connor insisted they would finish by 6 p.m.: Her son was leaving for summer camp, and she wanted to be home in time to bake cookies before he left. It worked.

In 1975, O'Connor won a judgeship in Maricopa County, where she built a reputation as a no-nonsense taskmaster who followed the law to the letter, even when it conflicted with her beliefs. In one case, she sentenced a woman to five to 10 years in prison for passing $3,500 in bad checks. The woman's husband had abandoned her, and the jail sentence meant the state would take her children. After ruling, O'Connor cried in her chambers.

In the spring of 1981, President Ronald Reagan learned that Justice Potter Stewart was resigning. Months earlier, as he campaigned for

CORBIS

O'Connor searched for laws biased against women and quietly worked to change them.

the presidency, Reagan had courted women voters by promising to nominate a woman to the Supreme Court. When his advisers tried to talk him out of it, pointing to the dozens of available men for the job, Reagan insisted. A promise was a promise.

In April 1981, two Reagan staffers flew to Phoenix to meet with the candidate, who presented them with a salmon mousse and a stunning knowledge of constitutional jurisprudence. Dazzled, they invited her back to Washington to meet with the president.

Reagan's earliest ranches may have been Hollywood sets with plywood saguaros and stunt horses, but he was a sensible westerner at heart. O'Connor told Reagan's staff she'd meet them in front of a drugstore, wearing a lavender suit. Once they met, they talked about horse riding and life on ranches. Afterward, he refused to meet with anyone else.

Ruth McGregor, who became O'Connor's first clerk, remembers hearing about the nomination on the radio: "I was, like most women in law, literally overcome. I was driving my car and had to pull over to the side because I just burst into tears." Though religious conservatives like Phyllis Schlafly and Jesse Helms tried to sink the nomination on the grounds that O'Connor would uphold *Roe v. Wade*, the Senate confirmed her with a record-setting 99-0. The Supreme Court, 191 years old, had gone coed.

THE FAME WAS SUFFOCATING. "I had never expected or aspired to be a Supreme Court justice," O'Connor said in the *Deseret News* in 1988. "My first year on the court made me long at times for obscurity." She tried to answer every letter she received, even the countless invitations from Washington socialites. She and her husband were happy to dance the night away, but the learning curve was so steep that she had to ditch the dance floor (and sleep) to read briefs and edit opinions.

O'Connor knew she needed to establish herself as a jurist. "Eternally a ranch girl, she wanted solutions that really worked and had little patience for esoteric theory that had no grounding in reality," recalls O'Connor clerk Ronnell Andersen Jones in a *SCOTUSblog* retrospective. Advocates before the court were guaranteed that O'Connor would ask the first question, and it "would be overwhelmingly practical," Goldstein said. Her fellow justices ritually asked how an argument squared with legal precedents, but O'Connor wanted to know how it affected people.

"A wise old woman and a wise old man will reach the same conclusion," O'Connor says, but she acknowledges she brought experiences that her brothers on the court didn't have. She was a key vote on cases about gender equality. In *Mississippi University for Women v. Hogan*, for example, she decided that a women's state nursing college couldn't exclude men, knowing that letting men into a traditionally female profession would probably bring about higher salaries.

She became famous for her narrow opinions, which avoided creating broad, sweeping rules of law that might lead to new injustices. Even when voting for the majority, she often wrote concurring opinions that made the majority's decision less broad. (In one voting rights case, she wrote a concurring opinion to her *own* opinion.) The philosophy distinguished O'Connor as unpredictable. Unless she had encountered a similar case before, it was hard to know what she'd decide. By the 1990s, with consistent blocs to her left and right, she was the deciding vote.

"She wouldn't have felt her vote was any different than anyone else's vote," Citron says. Indeed, O'Connor was the glue of the court. "She knew you have to talk—it's not a question of talking about the court stuff, you have to know people," recalls NPR legal affairs correspondent Nina Totenberg. She set up regular lunches with the justices and took her clerks and staff out hiking, fly-fishing, and white-water rafting. When Ruth Bader Ginsburg was diagnosed with colon cancer in 1999, O'Connor was the first person to call her in the hospital. She reached out to the community, too: In 2001, she made a guest appearance at Washington, D.C.'s Shakespeare Theatre to bring King Lear to trial. (The verdict? "Not mad.")

Retired since 2006, O'Connor sees the current trio of lady justices as her legacy, but her footprint is vastly larger. "We really can't exaggerate how much it affected things," McGregor says. "This was still a time in the legal profession where women were regarded as not capable … Once someone is a member of the Supreme Court and is doing the job well, it's really hard to argue that women aren't qualified." The statistics don't lie. Today, the ratio of women to men studying law tickles 50 percent. Women make up about 33 percent of lawyers and 27 percent of state judges. While the numbers aren't equal, O'Connor kicked the door wide open so that one day, they may be.

READ THIS!

BIRD'S-EYE VIEW

A book reveals the duties, histories, and curiosities of the humble yet powerful feather.

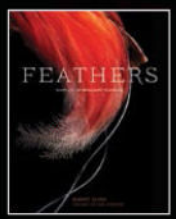
THE INDIAN ROLLER (FEATHERS SHOWN HERE) IS KNOWN FOR TWISTING AND TURNING IN THE AIR AS A COURTSHIP RITUAL.

BY **SAMUEL ANDERSON**

In his new collection *Feathers: Displays of Brilliant Plumage*, Robert Clark, a *National Geographic* contributor, zooms in on plumage spanning the avian kingdom. The book's 70 photos are paired with fascinating case studies of evolution and animal behavior. Take the mandarin duck, whose orange-and-blue feathers function like sails when it's in water. Or the little bustard, braver than its name suggests: It doesn't fly away when threatened, but instead runs from danger on its powerful legs. And what's black, white, red, and drunk? The Bohemian waxwing, which eats fermented berries and occasionally gets fatally intoxicated. As for the bird you thought you knew best—the peacock, or the male Indian peafowl—his plumage is

GO MENTAL

actually brown. That resplendent blue, green, and turquoise coloring is caused by light reflecting off microscopic structures in the bird's feathers—the structures interfere with visible light waves to make the peacock shimmer in Technicolor. If plumage is a map to the ornithological world, consider *Feathers* your new bird-watching legend.



Feathers: Displays of Brilliant Plumage, by Robert Clark (Chronicle Books, $30. Available April 12.)

TO DO

LEARN HOW PIXAR TELLS A STORY

They've been at it for 30 years. But how did they get so good? A new exhibit explains.

"I've come to appreciate why it takes a good four or five years to make a Pixar film," says Cara McCarty, curatorial director of New York's Cooper Hewitt, Smithsonian Design Museum, where the exhibition "Pixar: The Design of Story" runs through August 7. The installation uses interactive features as well as some of the animation studio's actual storyboards, sculptures, drawings, and digital paintings—like those shown here—to break down the creative process. See *Toy Story*'s Woody transform from an idea into one of animation's most revered heroes; peruse soil samples taken from Route 66 in the process of creating *Cars*; and study the way Merida's curls were built in *Brave*. And don't forget about Pixar's signature Luxo lamp, which hops on the letter *I* before each film. You can see why it's so beloved in the 1986 short film *Luxo Jr.*, Pixar's first, screening at the exhibit. Back then, Pixar was still asking itself: How do you animate an object? They seem to have figured it out. –SAMUEL ANDERSON

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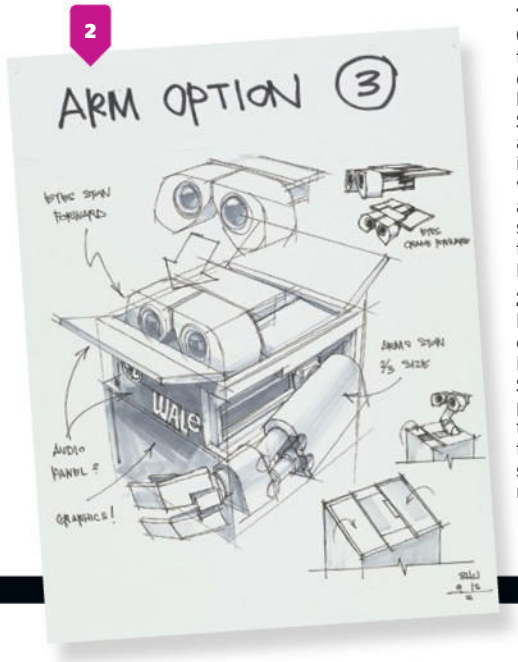


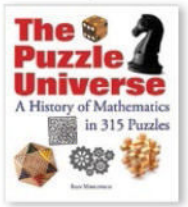
1. *Ratatouille* (2007) "Remy in the Kitchen," a digital painting by Robert Kondo. Since Pixar "started animating films in 1986, they were designing a lot of their own software—and they still do," says McCarty.

2. *Wall-E* (2008) Diagram of an option for Wall-E's arm, by Jay Shuster. Pixar's professionals range from engineers to illustrators to sculptors of clay models.

THE PAPER TRAIL

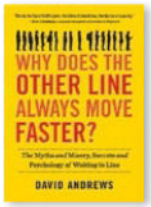
7 THINGS TO READ RIGHT NOW

BRAIN CANDY



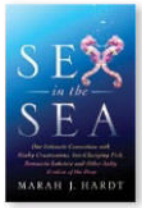
The Puzzle Universe
by Ivan Moscovich
(Firefly Books, $40)

With 315 problems, this tome will tax every brain cell—then soothe them with facts, like how notebook doodles follow mathematical formulas, and that Napoleon was a math whiz.



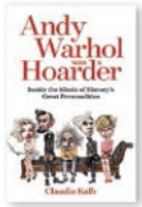
Why Does the Other Line Always Move Faster?
by David Andrews
(Workman, $15)

Andrews delves deep into the history and psychology of waiting in line. It's true: Uncertain waits are longer than finite ones, and cutting a line carries a social cost. (Good.)



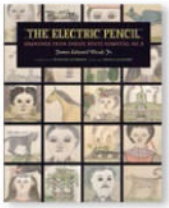
Sex in the Sea
by Marah J. Hardt
(St. Martin's Press, $27)

What happens in the ocean stays in the ocean ... until now. This scientific collection of "salty erotica" compiles some truly fascinating oceanographic work: Did you know that coral reefs have sex only once a year?



Andy Warhol Was a Hoarder
by Claudia Kalb
(National Geographic, $24)

Using historical evidence, Kalb diagnoses Charles Darwin with anxiety, Marilyn Monroe with borderline personality disorder, and a host of other icons with modern mental conditions.



The Electric Pencil: Drawings from Inside State Hospital No. 3
by James Edward Deeds Jr. (Princeton Architectural Press, $29.95)

In 1970, a portfolio on a trash heap caught a scavenger's eye. It contained portraits from a confined artist that would jolt the art world 40 years later.

COURTESY COOPER HEWITT (PIXAR)

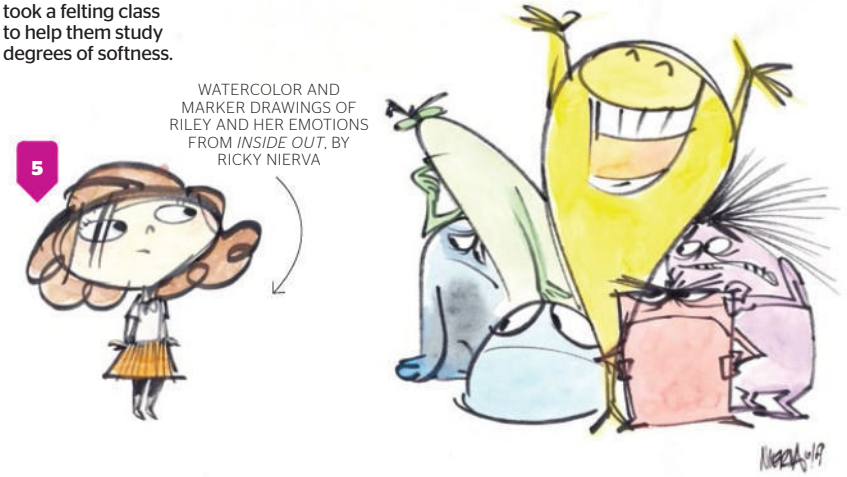
3. *Up* (2009) Animators consulted plumbers to figure out how to put pipes together so the house could realistically be carried away by balloons.

4. *The Incredibles* (2004) "We have a digital table in the middle of the room where visitors can look at 650 other examples of Pixar artwork"—like this one, at right, says McCarty.

5. *Inside Out* (2015) The designers wanted Bing Bong, an imaginary friend, to have the feel of cotton candy. They took a felting class to help them study degrees of softness.

A DIGITAL PAINTING OF *THE INCREDIBLES*, BY LOU ROMANO

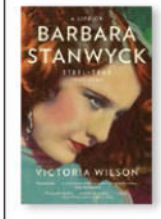
WATERCOLOR AND MARKER DRAWINGS OF RILEY AND HER EMOTIONS FROM *INSIDE OUT*, BY RICKY NIERVA



BRAIN KALE

Stories I Tell Myself: Growing Up with Hunter S. Thompson
by Juan F. Thompson
(Knopf, $27)

The father of gonzo journalism was also father to Juan, now an IT guy. Here he recalls outings with dad (like tagging along to Hells Angels parties).



A Life of Barbara Stanwyck: Steel-True 1907-1940
by Victoria Wilson
(Simon & Schuster, $22)

Parentless since age 4, Stanwyck eclipsed offscreen drama and became one of Hollywood's most enduring starlets (despite having Zeppo Marx for an agent).

ISTOCK (BATS)

HOT DATE!

Female bats give birth while hanging upside down, catching the baby in their wings as it drops.

SPEED READ

7 Essential Sentences on *SCIENTIFIC DISCOVERIES*

FINDINGS: AN ILLUSTRATED COLLECTION, BY RAFIL KROLL-ZAIDI, ART BY GRAHAM ROUMIEU, TWELVE ($20)

1. A Russian zoologist found that stray Muscovite dogs commute from the suburbs on trains. They prefer the front and rear cars and occasionally miss their stops when they fall asleep.

2. Serving sizes in images of the Last Supper were found to have grown by two-thirds over the past millennium.

3. People experience fear when they are given a third, prosthetic arm and researchers threaten that arm with a knife.

4. Scientists proposed they didn't know how good lions were at ambushing prey in dense vegetation—because they were afraid of being ambushed by lions in dense vegetation.

5. Americans are twice as likely to donate to a charity if they've just ridden up an escalator than if they've gone down.

6. A Croatian boy previously believed to be magnetic has more recently been thought to be very sticky.

7. The faces of Lego people have been getting angrier since the 1990s.

The Avon Heritage Duck Tape Festival is held on Father's Day weekend every year.

POP CULTURE SYLLABUS

TAPES

BYE, BYE BETA

In March, Sony will stop making Betamax tapes, 35 years after Beta lost the home video format war to VHS. But why was Sony still catering to the format? Turns out, Beta fanatics loved the tapes' higher quality. Though the entertainment industry was skeptical of both formats, by 1989 they were making more money from home video sales than box-office receipts, thanks to rental businesses like Blockbuster. The last movie to be released on Beta? *Mission: Impossible* in 1996.

READ From *Betamax to Blockbuster: Video Stores and the Invention of Movies on Video*, by Joshua Greenberg (MIT Press)

WRAP IT UP

On June 14, 2014, the Avon, Ohio, annual Duck Tape Festival set a Guinness record for the most participants in a duct tape fashion show, with 340 men, women, and children strutting the catwalk in clothing made entirely from the multipurpose tape. Contrary to popular belief, "duck tape" isn't a mondegreen (a misheard word that takes on its own life)—it's the original term for the sticky stuff, which was initially made of adhesive-backed cotton duck cloth for military use and only later came to be used on heating ducts.

MAKE Duct tape crafts using the tutorials at youtube.com/theduckbrand

MIXTAPE REVIVAL

When the CD overtook the cassette tape as the music format of choice in 1991, most manufacturers switched over to making discs. But not National Audio Company. They bought up discarded cassette equipment, using it for replacement parts to keep their own elderly machines running smoothly. When tapes began to experience an indie-music renaissance, NAC had a monopoly on the nostalgically cool format. The result: 2014 was their biggest year ever, with more than 10 million cassettes sold. Take that, eight-track.

WATCH "The Last Audio Cassette Factory," Bloomberg Business online

COURTESY AVON HERITAGE DUCK TAPE FESTIVAL

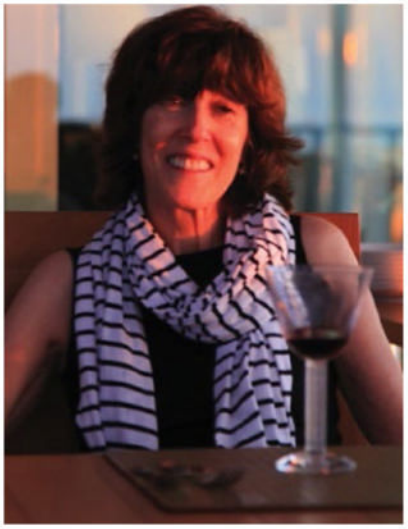
WHAT TO WATCH

3 CINEMATIC GIRL CRUSHES

1 *DRIVING WITH SELVI*
SELVI KUNJIGOWDA

Selvi Kunjigowda escaped an abusive marriage to become South India's first female taxi driver. This documentary, which spans 10 years, follows her from a women's home in Karnataka to obtaining a driver's license to starting a cab company with a group of female drivers.

FOR FESTIVAL SCREENINGS NATIONWIDE, SEE DRIVINGWITHSELVI.COM



2 *EVERYTHING IS COPY*
NORA EPHRON

Ephron's son Jacob Bernstein named his documentary, which explores his mother's battle with leukemia, after her life motto. Her singular wit is on display throughout—such as the time she started a parody of the *New York Post* and then was hired by the real thing.

PREMIERES MARCH 21 ON HBO

3 *THE GREAT GILLY HOPKINS*
KATHERINE PATERSON (AND GILLY)

The film adaptation of Katherine Paterson's 1978 novel, which revolves around a foster home–hopping girl who fantasizes about reuniting with her mother, is finally here. Gilly was a "strong female lead" long before it was a category on your Netflix homepage.

IN THEATERS FEBRUARY 1

ARTIFACT

A Circular Affair

Held in: New York Public Library's Pforzheimer Collection

WAS THIS THE RING FOUND ON HARRIET SHELLEY?

On December 10, 1816, a woman's body was found floating in the Serpentine lake in London. She was dead, her belly swollen from pregnancy. *The Times of London* withheld her name, briefly mentioning a "valuable ring on her finger" and a husband abroad. The woman was Harriet Westbrook Shelley. Her husband, poet Percy Bysshe Shelley, was living with Mary Wollstonecraft Godwin, whom he'd marry just days later, in Switzerland.

Harriet's last letter, written to her sister that month, has led scholars to believe her death was suicide. In that note she addresses Percy: "I never could refuse you & if you had never left me I might have lived but as it is, I freely forgive you & may you enjoy that happiness which you have deprived me of." As for the father of her child? It's suspected she took a lover in her loneliness.

Today the letter is cared for at the New York Public Library, where cardholders can make an appointment to investigate it. The collection also houses Harriet's engagement ring—possibly the one she wore when she plunged into the Serpentine. Together, the objects are tangible markers of a love once promised, then lost. —ALEXIS COE

COURTESY NEW YORK PUBLIC LIBRARY (RING)

THE QUIZ

BY LUCAS ADAMS

START HERE

1 In Japan, what's the onomatopoeia for a bleating sheep?

A) *Meh*
B) *Boo*
C) *Ek-Ek-Ek*
D) *Moo*

2) Violin string was once made from what?
a) Catgut
b) Horsehair
c) Waxed thread
d) Silkworm saliva

3) A 2015 study at Baylor University found that resisting contagious yawns is a sign of what condition?
a) Nearsightedness
b) Psychopathy
c) Epilepsy
d) Depression

4) Ten *Angustopila dominikae* snails can fit snugly into what?
a) A Volkswagen bus
b) A pizza box
c) A beer bottle
d) The eye of a needle

5) Mikhail Gorbachev informally agreed to help Ronald Reagan and the United States if what event occurred?
a) An asteroid collision
b) A UFO invasion
c) A megatsunami
d) A Yellowstone volcano explosion

6) The National Cathedral in Washington, D.C., features grotesques of all but what?
a) Darth Vader
b) A duck wearing a necktie
c) A politician with devil horns
d) Lucy from "Peanuts"

7) In 1939, what sporting match lasted more than nine days?
a) Baseball
b) Cricket
c) Golf
d) Tennis

8) Charles de Gaulle once asked, "How can one conceive of a one-party system in a country that has over 200 varieties of _____?"
a) Wine
b) Cheese
c) Existentialist philosophers
d) Politicians

9) In 2010, this rock star had his genome sequenced and found that some of his DNA came from Neanderthals.
a) Fred Durst
b) Keith Richards
c) Iggy Pop
d) Ozzy Osbourne

10) Liechtenstein is the world's leading exporter of what?
a) Beer steins
b) Handcrafted butterfly nets
c) Lederhosen
d) False teeth

11) The 1958 novel *Red Alert* inspired the United States government to do what?
a) Build a Moscow-Washington hotline
b) Build bunkers under the White House
c) Televise presidential debates
d) Install big red buttons around the country

12) What is the capital of Barbados?
a) Holetown
b) Coral Bay
c) Bridgetown
d) Portmore

13) "Fatty acid salts" is the technical term for what?
a) Cooking oil
b) Butter
c) Soap
d) Fountain pen ink

14) An eyeless Brazilian spider was named after what *Lord of the Rings* character?
a) Shelob
b) Samwise Gamgee
c) Sméagol
d) Gandalf

15 Which former *Saturday Night Live* cast member was not born in Canada?

A) Dan Aykroyd

B) Phil Hartman

C) Norm Macdonald

D) Dana Carvey

ALAMY (AYKROYD, HARTMAN, MACDONALD, CARVEY, GAS STATION)

16) What is the French equivalent of LOL?
a) HUH
b) HOO
c) MOO
d) MDR

17) Otto von Bismarck said, "God protects fools, drunks, and _____."
a) Drunken fools
b) My cats
c) Von Bismarcks
d) The United States of America

18) One in six American men taller than 7 feet are _____.
a) Professional basketball players
b) Construction workers
c) Fashion models
d) CEOs

19 Which is not kosher?

⊏A⊐ Everything on the Dunkin' Donuts menu

⊏B⊐ Drake's Coffee Cake

⊏C⊐ Doritos Late Night All Nighter Cheeseburger chips

⊏D⊐ Five-Hour Energy

20) When wet wipes, lard, and other debris congeal in the sewer, the formation is called a what?
a) Toiletstone
b) Sludgelord
c) Fatberg
d) Lardbarge

21) In 2015, the Institute of Physics published a paper about the behavior of what?
a) Flying formations of geese
b) Chocolate fountains
c) The cooling rate of buffet food
d) Duckling aerodynamics

22 You can't pump your own gas in two U.S. states: New Jersey and _____.

⊏A⊐ Wyoming

⊏B⊐ Rhode Island

⊏C⊐ Oregon

⊏D⊐ Alaska

ANSWERS

1. A
2. A (Catgut is sheep's intestine. Today's violin strings are usually made from nylon or steel.)
3. B (Yawning upon seeing someone else yawn indicates empathy, a trait psychopaths lack.)
4. D (Native to China, it's the world's smallest species of microsnail.)
5. B
6. D (Grotesques look like gargoyles but are not part of the cathedral's gutters.)
7. B (It ended in a draw so the English team could catch their boat home from South Africa.)
8. B
9. D
10. D
11. A
12. C
13. C
14. C (Like Sméagol, *landumoema smeagol* lives in caves.)
15. D
16. D (It stands for *mort de rire*, or "dead from laughing.")
17. D
18. A
19. C
20. C (One the size of a jet plane was discovered in London in 2014.)
21. B (They're models of "very important aspects of fluid dynamics," author Adam Townsend said.)
22. C (Oregon amended its law last year so that rural drivers can self-serve between 6 p.m. and 6 a.m.)

YOUR SCORE!

0–5 Pretty Good
6–11 The Best
12–16 The Worst
17–22 Also Pretty Good

BABY PORCUPINES ARE KNOWN AS PORCUPETTES.

ALAMY

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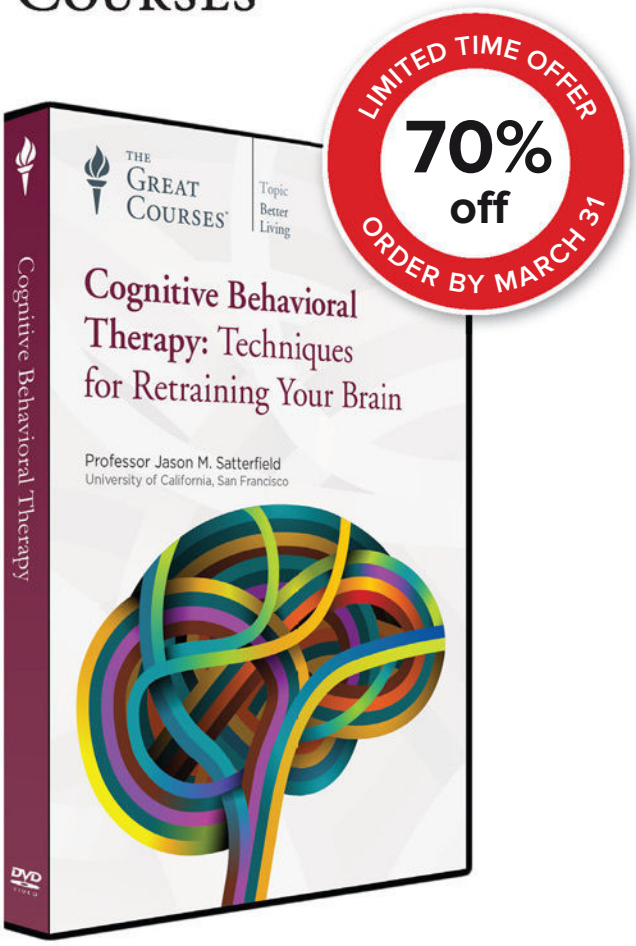

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AN ARGUMENT FOR INCONVENIENCE.

Plastic bottles. Disposable forks. Single-serving containers. If there's anything we humans like, it's convenience. Unfortunately, the easy way is having unforeseen consequences in our National Parks. Each year, visitors to these incredible places generate over 100 million pounds of garbage that ends up buried in our nation's landfills. The good news is that, just like Subaru did over a decade ago, we believe we can work toward making the parks zero landfill. With a little more effort, the environmental expertise of Subaru, and the dedication and passion of the National Park Service and National Parks Conservation Association, we have a real chance to make history in these irreplaceable treasures.

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