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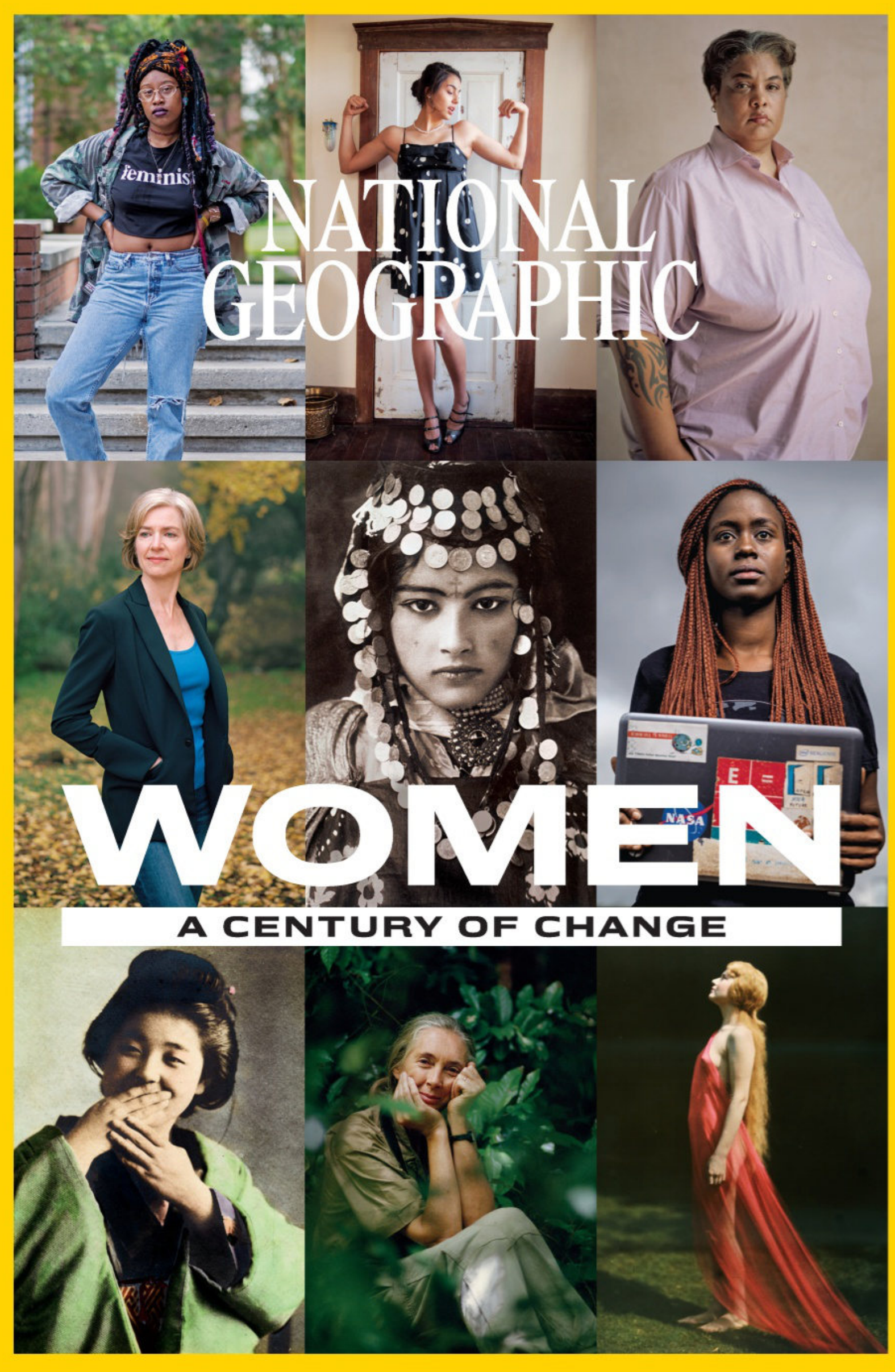


Prius

The Toyota Prius with available AWD-e[1]

The Toyota Prius has the highest MPG of any vehicle equipped with AWD[2]. It won't let a little weather get in your way. ***Let's Go Places.***

Options and accessories shown. Removable cross bars not recommended for luggage. Do not overload your vehicle. See *Owner's Manual* for weight limits and restrictions. Always properly secure cargo and cargo area. 1. Prius AWD-e system operates at speeds up to 43 mph. 2. Based on the U.S. Department of Energy data as of February 13, 2019. Excludes all-electric vehicles.

HEARING OUR VOICES

BY **SUSAN GOLDBERG**

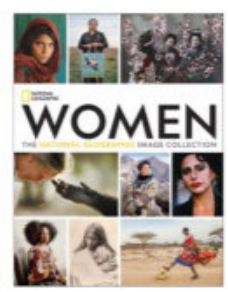
THE FIRST SCENE in the history of National Geographic doesn't have a single woman in it. It occurred on January 13, 1888, when 33 men of science and letters gathered in a wood-paneled club in Washington, D.C., and voted the National Geographic Society into existence. Our archive contains no photographs of the event, as none were made—which seems ironic, since if National Geographic is known for anything, it's for creating an indelible visual record of life on Earth.

Over time, as the National Geographic Image Collection grew—to more than 64 million physical and digital assets today—another record unwittingly was formed: a global chronicle of the lives of women, up to the present day. These pictures, taken largely over the past century, are snapshots of their times, showing how women were perceived, how they were treated, how much power they had—or didn't have. The images illuminate what used to be called, quaintly, "a woman's place"—a concept that's changing before our eyes.

You'll see many images from the archive in this special issue on women—our first in which all the contributing writers, photographers, and artists are female. With this issue, we kick off a year of coverage across our print, digital,

People at this 1913 Washington, D.C., parade were demanding voting rights for U.S. women.

The documentary *Women of Impact: Changing the World* includes interviews with more than 40 boundary-breaking, history-making women. It premieres October 26 at 10/9c on National Geographic.



WOMEN: The National Geographic Image Collection reflects women's lives, with stunning photographs, interviews with luminaries, and tales from famed female photographers. It's available October 22 where books are sold and at *shopng.com/books*.

PHOTO: CLINEDINST STUDIO

and broadcast platforms exploring the lives of women and the massive changes under way for girls and women around the globe.

You can see the shift begin with one grainy picture from the archive, on the previous page. It captures crowds surrounding a Washington, D.C., parade of women seeking the right to vote—which they got when the 19th Amendment to the U.S. Constitution was ratified in August 1920. Our coverage through 2020 will celebrate the centenary of that victory. And of course, that was just a start.

This issue documents how women around the world are rising up to demand civil, personal, and professional rights. It's happening through the #MeToo and equal-pay movements rippling through workplaces from Hollywood to soccer fields. It's happening among women governing in Rwanda, insisting on safety in India, and being finally acknowledged as groundbreaking pioneers in their fields.

In addition, throughout this issue you'll find interviews and portraits of accomplished women. They are scientists and self-described social justice warriors; attorneys, philanthropists, writers, athletes; a doctor fresh from a war zone, and a seasoned war correspondent. Four of the women are ranked in the top 30 in *Forbes* magazine's 2018 list of powerful women.

We put the same questions to all these impressive, insightful women, and we're delighted to share excerpts from our conversations. Every one of them espoused this belief: that women who follow their convictions can overcome almost anything. "Never take no for an answer," said broadcaster Christiane Amanpour. Or as American soccer star Alex Morgan put it: "Don't be discouraged in your journey."

"Journey" is the right word for reflecting on the story of women. I was a newspaper editor in 1992 when my publication and many others proclaimed it the Year of the Woman. Why then? That was the year we saw the largest number of women voted into the U.S. House in a single election—24, of 435 total members—and the greatest number of women ever in the Senate: six members out of 100. As naive as it seems now, this was hailed as a harbinger of real change.

So when there's yet another assertion that women's status is rising, skepticism might be forgiven. But this time, to me, it feels different. It *is* different. I'm the 10th editor of *National Geographic* since its founding and the first woman to hold this job—an appointment that once would have been unthinkable. Wherever you look, women are reaching higher positions: in business, the sciences, the law. And they're being seen and heard on their own terms, as speed-of-light communications and social media allow them to make an end run around patriarchal systems that once stifled them.

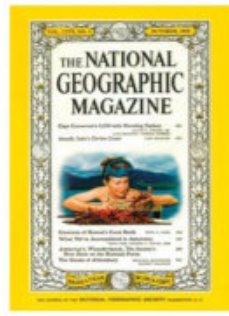
Today the numbers really do tell a story of change. The sheer volume of elected women has vastly increased in developed and developing nations around the globe. You can see a snapshot of that change in this issue's exclusive maps and graphics, on page 74.

Throughout this yearlong project, we'll share heartening examples of how women have gained rights, protections, and opportunities during the past century. We're bound to also come across cases where women have experienced the opposite: rights denied, opportunities withheld, vulnerabilities exploited, contributions ignored.

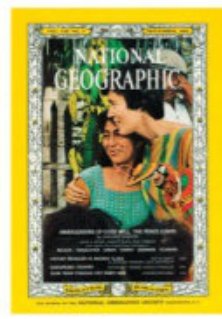
In more than 130 years of covering the cultures of the world, we've witnessed how inequality can become invisibility, until the oppressed hardly can be seen or heard at all. At this anniversary, we aim to bring more women's lives into the light—and more women's voices into the conversation.

Thank you for reading *National Geographic*.

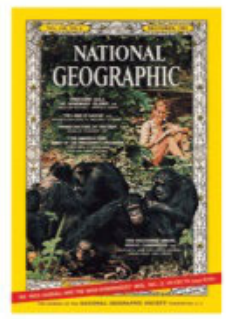
Past issues show how the magazine's representation of women evolved.



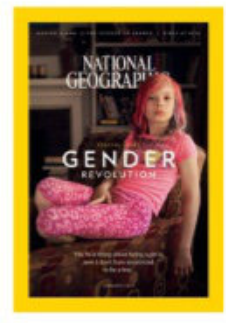
October 1959: The first woman on the cover was Eda Zahl, shown gathering sea urchins.



September 1964, a U.S. woman at work abroad: Peace Corps volunteer Rhoda Brooks.



Pioneering primatologist Jane Goodall and her chimps were on the December 1965 cover.



January 2017: Avery Jackson, age nine, was the first transgender female on the cover.

March 2018: Astronaut Peggy Whitson holds the U.S. record for days spent in space (665).

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WE'VE BUILT A NAME ON BOURBON AND A LEGACY ON RYE.

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JILL BOUGHTON

is founder and president of Waste2Worth Innovations, the evolution of an initiative first launched during her 24-year career at Procter & Gamble. A chemical engineer by training, Jill now works on the ground in emerging regions to revolutionize the use of solid waste as a resource. Affectionately known as "The Trash Lady," her groundbreaking solutions are providing direct environmental, economic, and social value to communities around the world.

MEET THE WOMAN WHO'S PROTECTING THE ENVIRONMENT, COMMUNITIES, AND LIVES THROUGH THE POWER OF TRASH.

DON'T LET IT GO TO WASTE.

To learn more about these initiatives, go to DONT-WASTE.DOW.com

"I fell in love with the challenge of trash. In some ways it's more complex than a moon shot."

The 42,000-ton mountain of trash is 50 years old, seven-acres wide, and on fire. It towers over little Dagupan City, Philippines, on the South China Sea; endangering the ocean, a river, the local economy, and families who live in its shadow. Jill Boughton looks at the massive mound of steaming garbage—and sees an incredibly valuable resource.

"There is only one universal truth about trash: if it's worth something, it gets picked up."

Project by project, Jill works to prove that every piece of waste has worth. Rather than starting with technology, she begins with an extensive analysis of the trash itself. Next she dives into the local politics, economy, and culture to determine how to extract the maximum potential from the community's waste. The solution that emerges is tailored to make the biggest positive impact—environmentally, socially, and economically.

In Dagupan City's case, the entire economy is predicated on fishing. Sitting seaside, and at the mouth of a river, when wind and storms feed waste from the dump—particularly plastics—into the water, a crisis unfolds for both the environment and local livelihoods.

With crucial enabling capital from Dow, a new zero emissions waste-to-energy plant is set to transform plastic trash into diesel that will fuel the local fishing fleet and public utility vehicles. Rotting food at the dump sends methane gas, 26 times more harmful than carbon dioxide, into the air. In response, Waste2Worth Innovations is adapting 300 of the city's motorized tricycles to run on natural gas converted from Dagupan City's food waste.

"I knew if we could make our solution economically viable on a small-city scale, it could work anywhere."

With far more small cities than large in the world, Jill realizes success in Dagupan City will set an important precedent. Already, the plant is creating 92 jobs, a significant boost to the local economy.

Partnering with the city's motivated mayor, and the help of Dow, Waste2Worth Innovations will safeguard more than the environment. Waste pickers who gather recyclables from the trash will be protected from harsh sun with a first ever roof over the dump. Pickers' children will no longer spend nonschool hours on the mountain of waste thanks to a new day care and medical center. Without toxic plumes of smoke blanketing the city, potential health risks will be averted.

"My goal is to make it easy for the average person to do the right thing. If we don't, we'll soon face an even bigger crisis."

Today, Waste2Worth Innovations has expanded to Indonesia, Africa, India, and Thailand. Jill notes that in many communities, caring about trash is an understandably low priority for people struggling to put food on the table, educate their children, and stay healthy. Her transformational solutions bring a new possibility to the front, proving that sometimes waste can be the most valuable resource on earth.

DOW®

NATIONAL GEOGRAPHIC
NOVEMBER 2019

DEMANDING EQUALITY, AND POWER, IN AMERICA

Women must reject

THE

subordinate status that society confers.

PAGE 10

BY **MICHELE NORRIS**

FRAMING HISTORY IN PHOTOS

National Geographic's archive contains millions of images. Consider what they reveal about the lives of women. **PAGE 34**

BY **SARAH LEEN**

A Kenyan woman with her pet, a juvenile antelope

RWANDA'S RENEWAL BY WOMEN

After the 1994 genocide, women stepped up to fill the gaps in power. Now Rwanda has some of the most female-friendly policies in the world. What's still to be done?

PAGE 82

BY **RANIA ABOUZEID**
PHOTOGRAPHS BY **YAGAZIE EMEZI**

Maria Grazia Chiuri is the first woman creative director in the Dior fashion house's 72-year history.

SHAPING THE FUTURE

In numerous male-dominated societies, women aren't waiting for men to cede or share authority. Instead they organize, legislate, campaign, and

MARCH

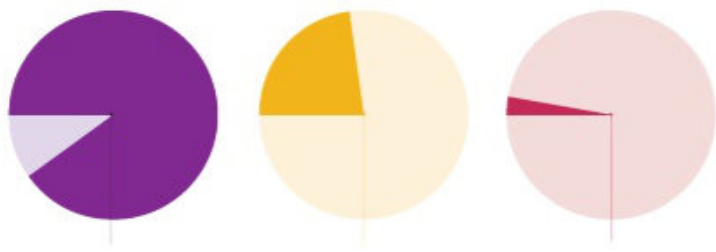
to secure roles, rights, and privileges often reserved for men. "Women find strength to fight," says one, "in their own way." **PAGE 50**

BY **RANIA ABOUZEID** PHOTOGRAPHS BY **LYNN JOHNSON**

PROSPERITY, PROGRESS, AND PERIL: THE INDEX

Measuring women's sense of inclusion, security, and discrimination around the world. **PAGE 74**

BY **IRENE BERMAN-VAPORIS, LAWSON PARKER,** AND **ROSEMARY WARDLEY**



90% of countries have one or more laws that discriminate against women.

23% of national legislative seats are held by women.

3% of countries afford women and men equal legal rights.

UNDERWOOD AND UNDERWOOD, PRE-1910

Contents

SPEAK UP

WE ASKED NOTABLE WOMEN SOME POINTED QUESTIONS. THE ANSWERS MAY SURPRISE YOU.

ELLEN PAO
CHRISTIANE AMANPOUR
TARANA BURKE

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WHAT ADVICE WOULD YOU GIVE TO YOUNG WOMEN?
PAGE 154

On the Cover

Top, left to right: student Janae' Sumter at Atlanta's Spelman College; teen Carolyn McDermott on a Nebraska farm; author Roxane Gay. **Middle:** scientist Jennifer Doudna; an Ouled Naïl woman in Algeria; Kenyan student Jessica Chege. **Bottom:** hand-tinted photo of a Japanese woman; Jane Goodall in Tanzania; woman draped in silk.

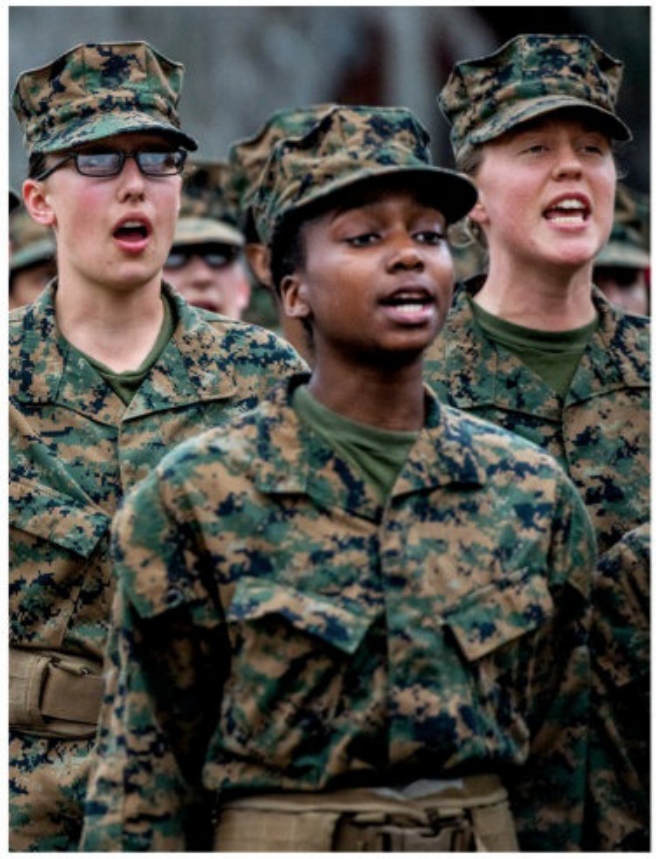
A RIGHT TO BE SAFE

Urban India's women have long risked harm just by walking down the street. Now there are signs

OF PROGRESS

in burgeoning programs to make spaces safer and increase penalties for assailants. **PAGE 98**

BY **NILANJANA BHOWMICK** PHOTOGRAPHS BY **SAUMYA KHANDELWAL**



All female marine recruits pass through Parris Island, South Carolina, for boot camp. Men and women at the base once had different training regimens; now they're the same.

WHERE ARE THE WOMEN IN SCIENCE?

During women's long history in the sciences, they've been handicapped by sexism and harassment. **PAGE 110**

BY **ANGELA SAINI**
ILLUSTRATIONS BY **LAUREN BREVNER**

FOR GIRLS IN SCIENCE, THE TIME IS NOW

Encouragement for girls' STEM ambitions

IS

replacing some of the barriers that frustrated previous generations. **PAGE 118**

BY **CLAUDIA KALB**
PHOTOGRAPHS BY **DINA LITOVSKY**

IN THE FIGHT

As militaries open frontline roles to women, the rise in opportunities is

UNDENIABLE.

From the United States to hot spots around the world, a veteran conflict photographer documents women warriors in training and in the field. **PAGE 132**

PHOTOGRAPHS AND STORY BY **LYNSEY ADDARIO**

COVER PHOTOS, FROM TOP LEFT: RADCLIFFE "RUDDY" ROYE, 2017; JOEL SARTORE, 2011; ERIKA LARSEN, 2018
MIDDLE ERIKA LARSEN, 2019; RUDOLF LEHNERT & ERNST LANDROCK, 1905; CIRIL JAZBEC, 2016
BOTTOM ELIZA SCIDMORE, 1912; MICHAEL NICHOLS, 1995; FRANKLIN PRICE KNOTT, PRE-1930

"The answer we were pursuing

was right here inside my body."

Boris / CAR-T Researcher

Justin / CAR-T Patient

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MAKING LIFE CHANGING DISCOVERIES

Research scientist Dr. Laura Michael is helping shape a brighter future for people with type 2 diabetes.

“The advances in diabetes prevention and treatment are truly remarkable, but it’s also important to remember that there’s so much more we can do,” Michael adds. “I’m excited to be on the frontlines in shaping that future.”

Growing up as a science-loving kid, Dr. Laura Michael says she figured she would teach high school biology one day. That is until, as an undergraduate at DePauw University in Indiana, she worked on a project with her biology professor, Dr. Kathleen Jagger, and realized, for the first time, that scientific research was a career option.

“Dr. Jagger’s confidence in me opened up the possibility of being a research scientist,” says Michael, a type 2 diabetes researcher at Eli Lilly and Company. “She spent an incredible amount of time mentoring me so that I could believe that I could make discoveries no one else had made.”

Today, that’s precisely what Michael is doing: making daily discoveries to help improve the lives of people with type 2 diabetes. At Lilly, Michael leads a research team working to develop new medicines to help manage and prevent diabetes-related complications, such as heart and kidney failure.

Conducting research in college sparked Michael’s passion for scientific discovery, and contributing to research resulting in life-changing innovations – like automated insulin delivery systems and therapies reducing stroke and heart failure risk – continually fuels her determination to achieve more for people with type 2 diabetes.

“The advances in diabetes prevention and treatment are truly remarkable, but it’s also important to remember that there’s so much more we can do,” Michael adds. “I’m excited to be on the frontlines in shaping that future.”

Contributors

NATIONAL GEOGRAPHIC'S FIRST EVER ISSUE WITH ALL FEMALE CONTRIBUTING WRITERS, ARTISTS, AND PHOTOGRAPHERS

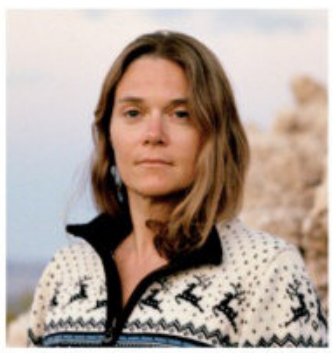
WHAT IS YOUR GREATEST STRENGTH?

My greatest strength is my ability to recognize blind spots, see and hear things that most ignore, and spot pathways beyond well-worn trails.

Michele Norris
Writer
Page 10

My belief in what I cannot see or hear but in what I feel.

Erika Larsen
Photographer
Page 29



I am tenacious. I am passionate about what I believe in. And I'm not afraid to fight for what I feel is right.

Sarah Leen
Director of Photography
Page 34

I listen.

Lynn Johnson
Photographer
Page 50

The ability to cross boundaries—social, physical, religious—to understand others. Also, knowing who I am and being true to myself.

Rania Abouzeid
Writer
Pages 50, 82

PHOTOS: (CLOCKWISE FROM LEFT) REBECCA HALE, NGM STAFF; MORGAN LEVY; JARED SOARES; ERIKA LARSEN; DALIA KHAMISSY

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Contributors

WHAT IS YOUR GREATEST STRENGTH?

My self-care. Weeks can go by where sacrifice is necessary but so is rest and love. There is no beauty or glory in suffering.

Yagazie Emezi
Photographer
Page 82

I can delve beyond the obvious and apparent, and transform experiences into stories that matter.

Nilanjana Bhowmick
Writer
Page 98

Everything that's in me by virtue of being a woman: I feel closely, live intuitively, and steal moments of silence from what I see.

Saumya Khandelwal
Photographer
Page 98

My BS radar. I'm pretty good at reading people and can usually spot when someone's spinning me a line.

Angela Saini
Writer
Page 110

My greatest strength is the ability to see the potential, whether in people or in an idea, and to craft that potential into reality.

Lauren Brevner
Illustrator
Page 110

For every story, I look for an unexpected angle, a way of going beyond the surface, of finding the uncanny in the modern and familiar.

Dina Litovsky
Photographer
Page 118

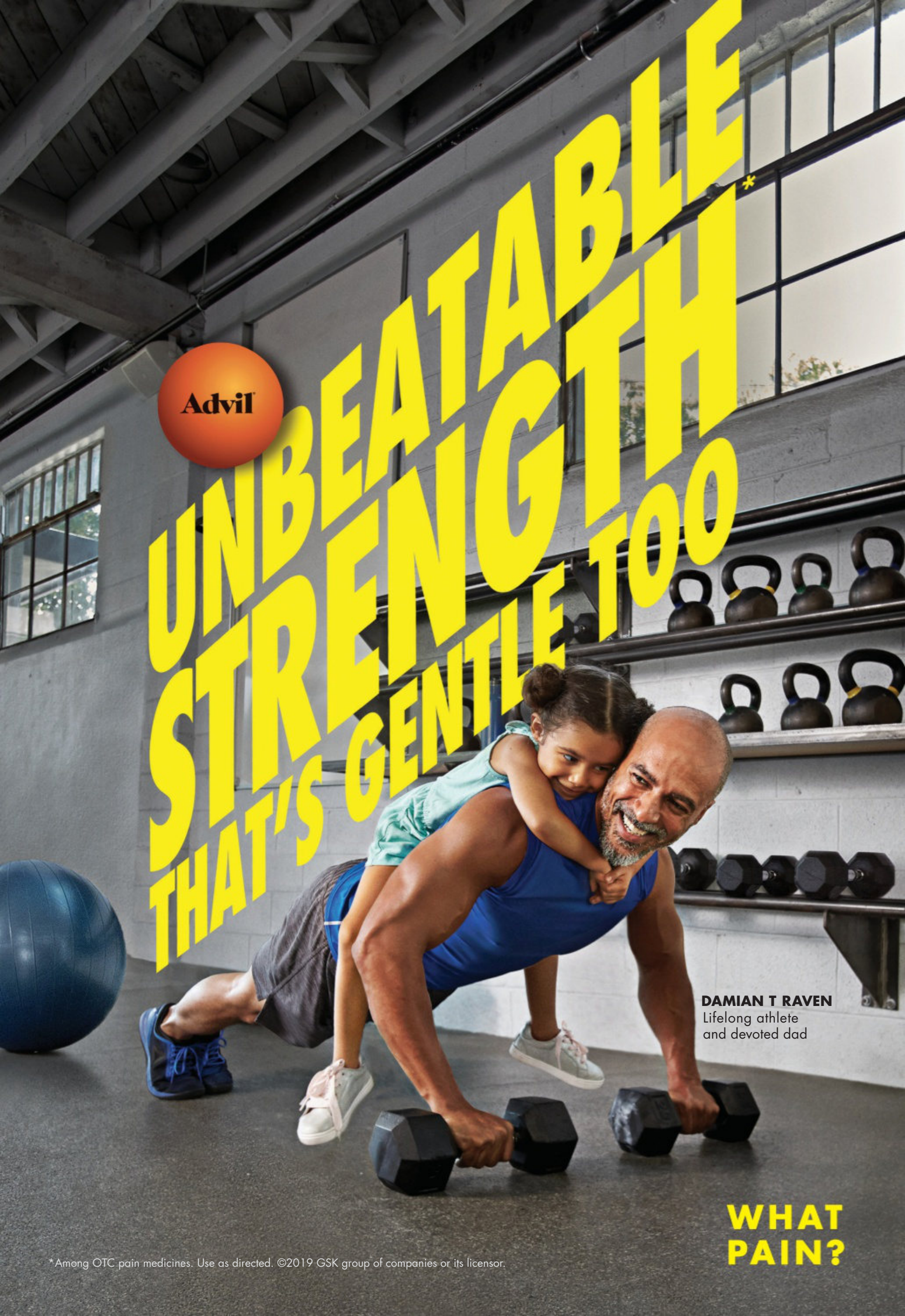
Awareness. I try to see the world through the people who populate my stories and my life. Their perspectives lead to unexpected insights.

Claudia Kalb
Writer
Page 118

Empathy, and my ability to connect with people regardless of their culture and background and to treat everyone with dignity and respect.

Lynsey Addario
Photographer/Writer
Page 132

PHOTOS: (FROM TOP LEFT) CHRISTINA POKU; NILANJANA BHOWMICK; REUBEN SINGH; HENRIETTA GARDEN
SECOND ROW CAROLLYNE SINCLAIRE; ALEX KNELLER; HILMAR MEYER-BOSSE; NICHOLE SOBECKI, VII



*Among OTC pain medicines. Use as directed. ©2019 GSK group of companies or its licensor.


SEE
WHAT
OTHERS
CAN'T

BY MICHELE NORRIS

WHY THE FUTURE SHOULD BE FEMALE

Our writer says it's time for women to reject inferior status, demand equality, and unapologetically revel in their ambition and success.

WHEN I HEADED OFF TO COLLEGE, my mother gave me a piece of folded-up paper with a message she thought I would need. She wrote it longhand on a page torn from one of the little notebooks she kept by the phone.

It said: No one can make you feel inferior without your consent.

It's a quote widely attributed to Eleanor Roosevelt, and it was a wonderful gift for a young woman setting off into the world.

I wish I'd kept that tiny piece of paper. For a time it was in my wallet, and then, after it got frayed and kind of dingy, I put it inside a sparkly bobby pin and kept it in a dresser drawer with jewelry and keepsakes. After several years and several moves, I lost track of it—but I've always tried to cling tightly to the idea that we have the power to reject any attempt to make us feel small or subordinate.

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AGED 8 YEARS

MADE IN SCOTLAND

PHOTO BY GEORGE RINHART, CORBIS VIA GETTY IMAGES

The key word is "feel." As an African-American woman, my mother was acutely aware that a person, and a woman in particular, could be shoved into a lower rank in a very real and profound way. Laws could dictate where you could live or work and whether you could get a business license or own property or vote. Customs and social mores and self-appointed status checkers could keep you out of the boardroom or the clubhouse. But no one actually has the power to reach inside your soul and turn down the dial on your self-confidence.

My mother has a strong work ethic, but she also has a fierce "worth ethic." Self-regard in the face of oppression is her superpower.

That word—power—takes on different dimensions viewed through a gendered lens. Power is most often associated with strength, which in turn is linked to physical prowess or financial might. The default assumption is that all of society benefits when men are raised to become powerful—their families, their communities, their places of work and worship. When women talk about exerting power or flexing their collective might by coming together, the assumptions are very different. It's too often seen as a zero-sum game, in which women gain power at the expense of men and at the peril of larger society.

Could we finally be at a turning point?

I came of age during a period of protest in the streets. Women have been marching and picketing and demanding their rights for my entire life. And as with most movements, progress comes in fits and starts, times of setbacks and periods that feel like a whoosh of momentum. The Equal Rights Amendment, first drafted in 1923, seemed certain to be ratified by the early 1970s but stalled. We are now in another moment of sweeping progress, most evident in the #MeToo movement—an astounding upwelling of emboldened and infuriated women saying time's up to sexual harassment and assault. That revolt has produced a new wave of legislation, greater awareness, and immediate consequences for men who had previously gotten a pass or slap on the wrist for predatory behavior. Veterans in the struggle for women's rights, used to disappointment, are hoping this really is a long-lasting movement, not just a moment.

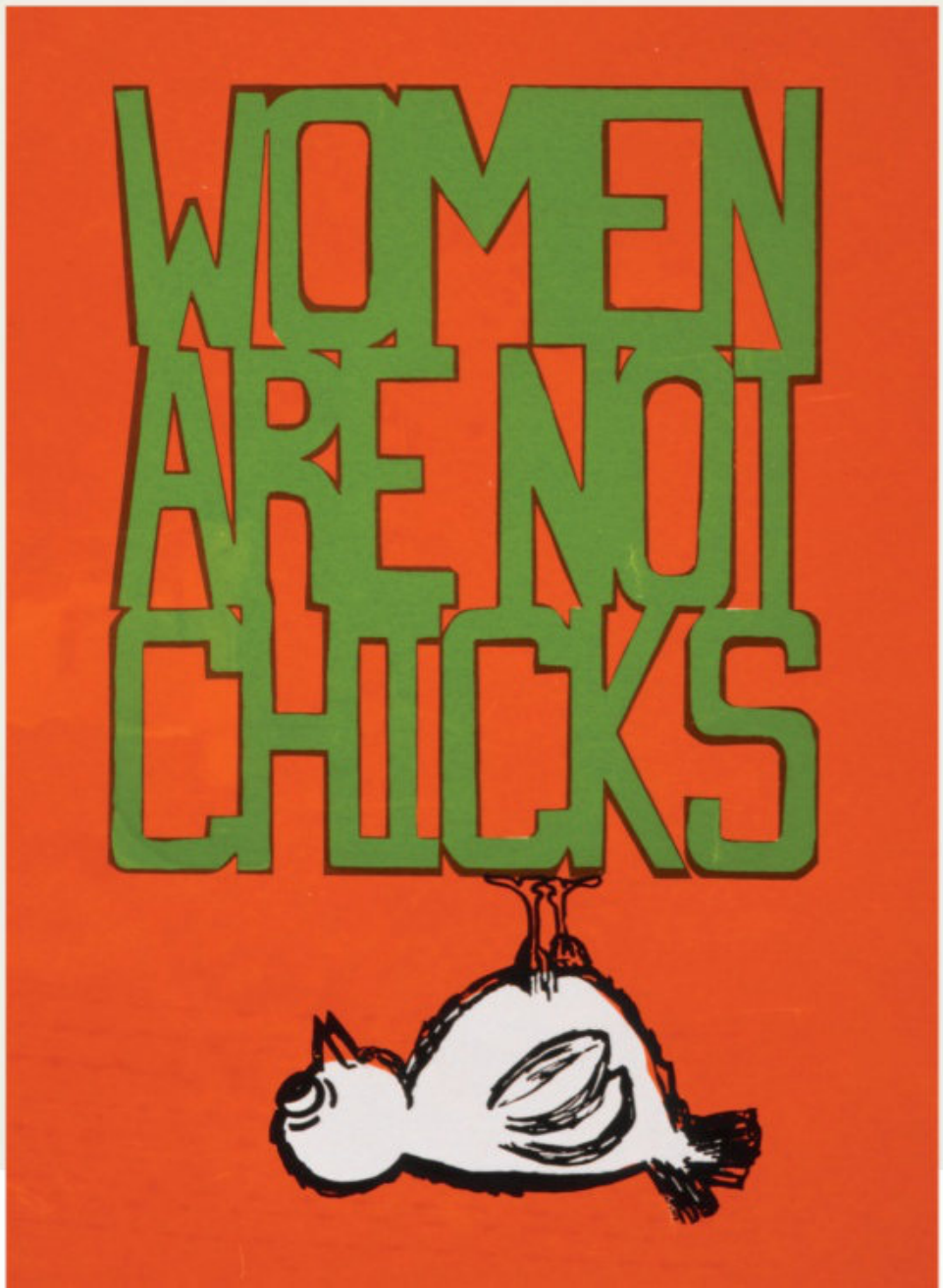
This is an era of outrage and division, but there are strong reasons for optimism. We are witnessing an age when six women can stand on debate stages in the United States and credibly argue that they should be elected to the most powerful office in the world and when a woman is the speaker of the House of Representatives. We live in a time when a woman can become a four-star general or an Oscar-winning film director or a *Fortune* 500 CEO.

Around the globe women are gaining unprecedented power. They hold a majority of seats in the lower house of Rwanda's legislature. Nearly two-thirds of the Spanish government's cabinet ministers are women. The only country that banned women from driving, Saudi Arabia, has finally allowed it. Women have led almost a third of the world's countries.

In a seismic development, the U.S. women's national soccer team dominated the World Cup with such force, consistency, and chutzpah that it outperformed the U.S. men's team in victories, viewership, and pop culture status. When you mention American soccer today, the women are the ones who symbolize the sport. But we still live in a time when those megastars are fighting in court to ensure they are paid the same as the men. Actually, it's not even about equal pay for equal work; it's equal pay for demonstrably more successful work. These are women who strut their success, reveling in their triumphs on the field and becoming role models for women seeking to challenge the basis for their second-class status.

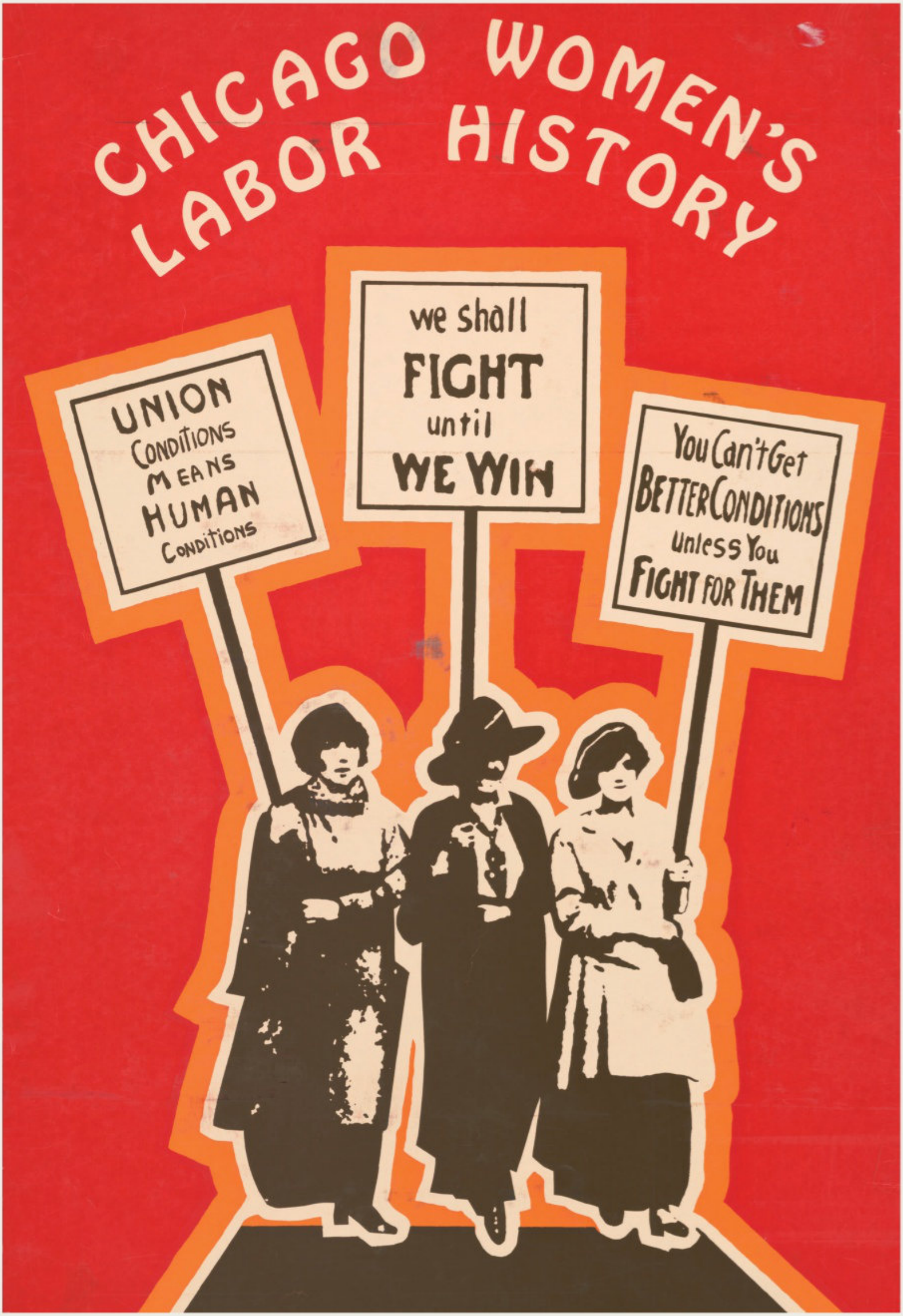
For centuries women have been viewed as the weaker, more vulnerable gender. They have been rendered inferior, not necessarily with their consent, but with considerable help from social constructs and scientific research. British journalist Angela Saini documents how science has long defined and confined

Actress Dorothy Newell was a national sensation in 1915 when she painted her demand for equal rights on her back, less than a month after tens of thousands of women marched down Fifth Avenue. Two years later, New York allowed women to vote, and in 1920, the nation did. It had taken a sustained campaign launched in 1848 to win women the vote denied them by the U.S. Constitution.



When the women's movement in the United States was gaining momentum in the 1970s, artists belonging to the Chicago Women's Graphics Collective printed a steady stream of posters seeking to raise consciousness and inspire change. Making as many as 20,000 copies of each design, they shipped them to bookstores, women's groups, and other organizations around the world.

LIBRARY OF CONGRESS, YANKER POSTER COLLECTION


CHICAGO WOMEN'S LABOR HISTORY
UNION CONDITIONS MEANS HUMAN CONDITIONS
we shall FIGHT until WE WIN
You Can't Get BETTER CONDITIONS Unless You FIGHT FOR THEM

We are still ambivalent about women and power. Women are more apt to be deemed 'unlikable' if they are seen as powerful or ambitious—traits seen as management material in men.

women in her book *Inferior: How Science Got Women Wrong—and the New Research That's Rewriting the Story* (see essay, page 110). Saini argues that male scientists used their studies and influence to amplify their own attitudes about gender (and racial) inequality. The results of their work "hardened sexism into something that couldn't even be challenged." And to make sure that women didn't have the chance to prove the science wrong, they were denied the ability to flex their intellect or fully develop their talents.

Much of the research that tagged women as the weaker sex was flawed or biased. A body of work counters that early science, showing that women possess intellectual capabilities equal to their male counterparts. While men have greater physical strength and a height and weight advantage, studies show that women have a distinct edge when it comes to resilience and long-term survival.

So why do men hold more power than women today? Why does gender inequality persist? The explanation is so often: It's just the way it's always been. That's simply not good enough. And that justification should crumble in the face of evidence showing that places with policies hampering or oppressing women lose ground economically.

Take Asia as an example. Slightly more than half of the region's women work, and those women are paid less than men. Gender norms, barriers to education, and entrenched cultural forces could maintain that status quo, but analysts warn that countries impeding the advancement of women will pay a steep price. The consulting firm McKinsey & Company estimates that the regional economy would gain as much as $4.5 trillion in annual GDP by 2025 if women were no longer sidelined in the Asian workforce.

Every country on the planet should take notice. Those T-shirts and posters that read "The future is female" should warn instead "The future better be female!"

But the obstacles to power are deeply ingrained and aren't easily overcome. You can write laws telling people what they can and cannot do, but you cannot legislate their feelings about themselves or others. We are still ambivalent about women and power. Studies suggest that women are more apt to be deemed "unlikable" or "untrustworthy" if they are perceived to be powerful, brash, or openly ambitious—traits that, by the way, are seen as management material in men.

New York University professor Madeline E. Heilman conducted a series of studies to investigate the reaction to successful women in jobs traditionally held by men. In one experiment she asked undergraduates to review nearly identical profiles for employees holding the position of assistant vice president for sales in an aircraft company. One of the employees was named "James." The other was named "Andrea." They were in the top 5 percent in employee performance reviews and described as "stellar performers" or "rising stars." Their profiles provided no background on their personality or character. The students rated "Andrea" as more disagreeable and uncivil than "James," who got more glowing responses.

That means the well-worn gender tropes don't just describe how men and women allegedly behave, Heilman found, they also set a template for what behavior is suitable, and that behavior is "directly related to the attributes that are positively valued for each sex." Women who are kind, caring, and gentle are valued and rewarded socially. Women who are ambitious, strategic, or direct—not so much.

As a society, we demonstrate

a degree of trepidation and surprise about women taking the reins of power, because it's still a novel concept. Women who become police chiefs and ship captains and construction supervisors are not just hailed as mavericks. They are also practically portrayed as unicorns. The greatest barrier that many women have to overcome is experience. Again, studies find that men often are hired for "potential," while women with the same experience are deemed underqualified.

Our collective cultural narrative contributes to this bias. The phrase "women's work" is limiting and stereotypical—attached to softer domestic tasks thought

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This poster of a woman flexing her muscles appeared in Westinghouse factories for two weeks in 1943. It's thought to be based on a photo of a worker in the machine shop at the Naval Air Station in Alameda, California, one of more than 300,000 women who worked in the aircraft industry during World War II. It was not until the 1980s that it became popular as an image of feminist empowerment.

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Many women had to strategically build an audience for their work without calling too much attention to themselves, because they were operating well outside of their prescribed roles.

to be the province of women. Cooking. Cleaning. Tending. Gardening. But historian and activist Lisa Unger Baskin has been exploring women's work going back seven centuries, and she has found quite a different story. Women have been holding up half the sky while toiling in jobs considered "men's work." "It is so important for our girls, and for women too, to see what they can do and be, so it is not just in their imaginations," Unger Baskin told me recently. "And it is so important for men, for us all really, to see female accomplishment, because over centuries humans have been conditioned to see women as the weaker, less capable sex, when all around us there is evidence showing that simply is not true."

Unger Baskin has spent a lifetime trying to add to that evidence file, amassing an astounding collection documenting women's work through photographs, books, trade cards, artifacts, personal letters, and ephemera. She believes her collection, housed at the Sallie Bingham Center for Women's History and Culture at Duke University, is the world's largest record of women in work and professional enterprise.

Women have worked—and succeeded—in occupations long seen as the province of men: as laborers, scientists, printers, navigators, and mechanics—sometimes purposely keeping a low profile to avoid reproach, but most often invisible simply because of their gender.

"I think that the stories that we can glean from what I put together, from my collection, say something about power, something about disenfranchisement," Unger Baskin said. "The assumption that women did not do things that were always male dominated is just not true."

Her collection grew out of curiosity and umbrage. She traveled to book fairs and rare book auctions, looking for signs that women were reading and getting educated and working all along. She discovered that women were allowed to inherit and run a printing press if they were widowed because the work was so important and the expertise so rare. As a result, there were several significant women printers in colonial America.

She discovered that Sara Clarson was working as a bricklayer in England in 1831, that Madam Nora led a troupe of glassblowers who traveled the United States in 1888 making whimsical sculptures, and that Margaret Bryan introduced math and astronomy into the curriculum at her girls school in London in 1799. She discovered that Maria Gaetana Agnesi wrote a widely translated mathematics textbook in Milan in the mid-1700s and that the German naturalist and illustrator Maria Sibylla Merian made the first observations and drawings of insect metamorphosis in natural settings.

As a collector, Unger Baskin often was not taken seriously. That worked in her favor as she snapped up documents, books, personal letters, needlepoint, engraved silver—things that no one wanted or understood—often for just a dollar or two at bookshops, book fairs, and flea markets.

She talks about her discoveries as if the women she's rescued from anonymity are old friends. One that breaks her heart was an enslaved woman called Alsy, who lived in Virginia. Unger Baskin found her story on a fragment from an 1831 medical certificate in which a physician described a device to hold up Alsy's prolapsed uterus so she could "be made usefull" again. His subject's humanity was of little interest, but her labor was so important that he was tasked with getting her back on her feet. Unger Baskin said this particularly devastating story shows how women through time have been considered inferior and yet essential.

Enslaved and indentured women are included in the collection, along with items from Harriet Beecher Stowe, Emma Goldman, Elizabeth Cady Stanton, the Brontë sisters, Virginia Woolf, and Sojourner Truth. Unger Baskin sees her collection as a rearview mirror that can guide women as they move forward, imagining a future that is attainable but avoiding the mistakes of the past.

One of those big lessons is inclusion. Aspirational women's movements of the past—reaching all the way back to the 18th century—have been led by and centered on white, educated, upper-class women. Even abolitionists fighting for the rights of the enslaved often kept those women at a distance socially. Sojourner Truth is known for rattling the conscience of the nation with her "Ain't

I a Woman" speech, but there were tensions between Truth and abolitionists such as Stowe.

Truth "was not a Southern enslaved person. She was in the North. She was in New York State with Dutch owners," Unger Baskin said. She was self-sufficient, spoke well, dressed well, and acted too much like an equal. That pattern would repeat itself in the suffrage movement and the equal rights movement and into second-wave feminism of the 1970s.

Examining women's work over centuries, not as it was portrayed in tapestries and paintings and literature, but rather as it was actually conducted, with callused hands and financial acumen and clever strategy, is enlightening and heartbreaking.

Why don't we know more about these brave women? How is it that their stories have been overlooked or erased? Most unsettling to me as I listened to Unger Baskin describe her life's work was recognizing that so many of the women had to strategically build an audience for their work without calling too much attention to themselves, because they were operating well outside of their prescribed roles. Surviving as a businesswoman was a special art. But first each had to survive as a woman.

My mother gave me that slip of paper because she never wanted me to accept subordinate status. I had two sisters, and the mantra in our house was: "You are not better than anyone else, but no one is better than you." It's the language of equality, and I find myself sharing it with my own children. But is it the language of power? If we want to push our daughters to compete side by side with our sons, we have to be willing to teach them to be comfortable with making someone else uncomfortable with their talent and success. We have to teach them that the discomfort is not theirs to solve.

Power has its own language. Captains are powerful. Titans are powerful. Ringleaders and pacesetters are powerful. Now, ask yourself, when you were reading those words, did an image of a woman pop into your head? If the answer is yes, take a bow, and let's hope your outlook is contagious. But if not, thanks for your honesty, and let's get to work.

I have always admired the writer and producer Shonda Rhimes for her storytelling gifts and monumental success at the production company that bears her name. For more than a decade, Shondaland churned out profitable and wildly popular TV shows, featuring women, black, Latino, Asian, and gay characters in groundbreaking roles. Rhimes now has a multimillion-dollar production deal that gives her complete creative freedom.

Her success as a woman of color in Hollywood is beyond impressive. But what I most admire is her unapologetic embrace of her phenomenal success. She has no hesitation describing herself as a "titan," which she surely is.

Power has been denied women for so long that it can often feel like a garment designed for someone else. A generation of women are challenging this. U.S. soccer star Megan Rapinoe. Tennis great Serena Williams. Susan and Anne Wojcicki (sisters who are the CEOs of YouTube and 23andMe). General Motors CEO Mary T. Barra, TV superstar Oprah Winfrey, and all the women who have inspired the #MeToo movement that rose up to challenge a system that flagrantly disregarded women's rights for decades.

If we want to push our daughters to compete side by side with our sons, we have to be willing to teach them to be comfortable with making someone else uncomfortable with their talent and success.

When the stories of sexual harassment in Hollywood and then finance and then journalism and then everywhere exploded into a drumbeat of, yes, titans dethroned for sexually abusive behavior, a small group of women began meeting in Hollywood every day to collectively demand changes that would protect and uplift women. Their effort ran parallel to the #MeToo campaign to raise awareness about sexual harassment. The Hollywood group was looking to create a movement, not a moment, and they called it Time's Up.

Half of the early attendees and many of the financial supporters were women of color, and as their numbers grew with each week, so too did their focus,

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In preparation for the 2017 Women's March on Washington, Amplifier, a design lab that supports grassroots activism, issued a call for poster art that could be distributed for free. These designs were among the many created in response.

TOP: JESSICA SABOGAL
BOTTOM: SOFIA ZABALA
OPPOSITE: BROOKE FISCHER


THE
FUTURE
IS
FEMALE
LET EQUALITY BLOOM

Women who want to change the world, or to go as far as their talents or interests take them, sometimes have to resist or reject that little voice in their head that stokes our insecurities and suggests how we should or shouldn't behave.

thanks in large part to a "Dear Sisters" letter written on behalf of female farmworkers. Those women, led by Mónica Ramírez, now the president of Justice for Migrant Women, wrote to the women gathering in Hollywood to express solidarity and explain that they faced a similar plight in the employ of men who took advantage of the instability and powerlessness that come with poverty and itinerant work.

The letter, which appeared in *Time* magazine, read in part: "We wish that we could say we're shocked to learn that this is such a pervasive problem in your industry. Sadly, we're not surprised because it's a reality we know far too well."

Read aloud at a Time's Up gathering in Beverly Hills by the actress America Ferrera, the letter set off a geyser of tears, said Michelle Kydd Lee, an early Time's Up organizer and the chief innovation officer for Creative Artists Agency.

"This was just the crystallization of something that allowed us to rise above the crisis to the meta moment. Can we rise as sisters across race and class and create a new language together that allows us to celebrate our differences and truly, truly in sisterhood allows us to celebrate our link?" she explained. "On a hill or in a valley, we are all in this together."

Within a year the group had raised $22 million for a legal defense fund to help women employed as hotel workers, health care workers, factory operators, security guards, lawyers, academics, and artists seeking equal pay, safe working conditions, and protections from sexual harassment.

Rhimes was able to create the kind of workplace she always wanted, but she knows that most women don't have that luxury. In the months when the Hollywood women were meeting at least once a day, Rhimes was the one who pushed the group to think boldly, not just imagining how they could fix the system, but imagining how the system should have worked from the beginning, free of the power dynamics that instinctively conferred subordinate status to women.

Even in that moment when women were taking control and seeking to foster a truly global movement, even when they were coming together in a collective roar, gender stereotypes still could have a pernicious effect, creating a kind of knee-jerk reticence.

"I continue to find it really sad that people are afraid to ask to be equal," Rhimes told me. And women "seem very afraid to ask to be equal," she said, adding that she's seen it over and over, "from the way women apologize and from the way women try to negotiate their contracts, from the way women stand up for themselves."

Women who want to change the world, or to go as far as their talents or interests take them, sometimes have to resist or reject that little voice in their head that stokes our insecurities and suggests how we should or shouldn't behave. It's like a flashing "merge carefully" sign: Push hard or speak out or act up and be prepared to be seen as the angry black woman, the feisty Latina, the shrew, the shrill, the agitator, the troublemaker, the word that rhymes with witch.

Rhimes said a lot of the women struggled with the idea of demanding equality. "It was more about, 'How do we make the men feel comfortable with the little pieces of pie that we're asking for?'" she said. "It's truly a ridiculous place to start, to ask people to give you a tiny sliver of what should already be yours."

So how do you change a system that is designed to dole out less to women in terms of personal safety, respect, earnings, stature, or accolades? How do you refuse to give your consent when the system slots you into a lower shelf that says "inferior"?

Remember that quote attributed to Eleanor Roosevelt? It turns out she probably never uttered those exact words. In response to a question about a perceived snub, however, she had this to say: "A snub is the effort of a person who feels superior to make someone else feel inferior. To do so, he has to find someone who can be made to feel inferior."

People invested in the status quo will always be looking for people who can be made to feel inferior. It's the wobbly floor they stand on. But in this moment, where there's so much promise and so much at stake, let's make sure that it's no longer easy to find women and girls who can be made to feel inferior. Let's make sure they know their power and their place—as equals. □

Michele Norris spent a decade as a cohost of NPR's *All Things Considered*. She's the founding director of the Race Card Project, a narrative archive exploring race and cultural identity.

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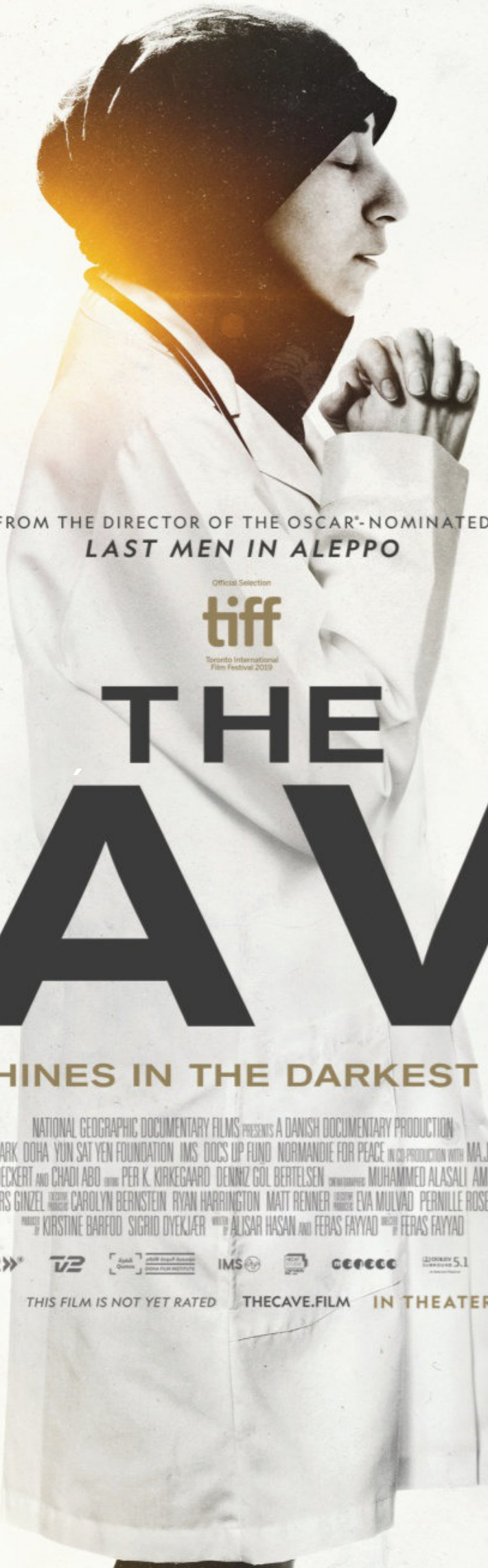

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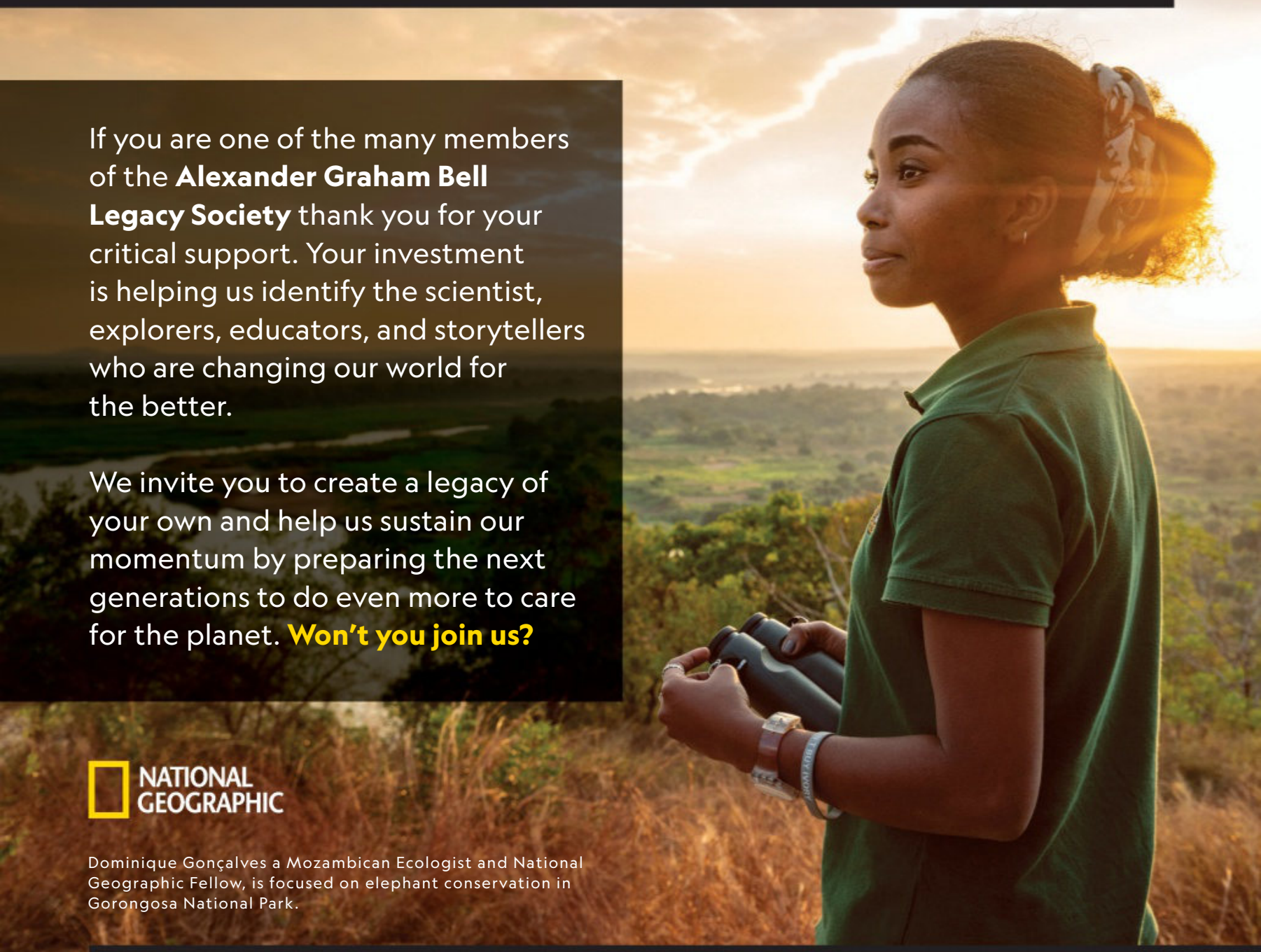

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Dominique Gonçalves a Mozambican Ecologist and National Geographic Fellow, is focused on elephant conservation in Gorongosa National Park.

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WE ASKED A DIVERSE ARRAY OF WOMEN TO TALK ABOUT THEIR TRIALS, THEIR VICTORIES, AND WHAT NEEDS TO CHANGE.

Speaking Up

LOOK FOR THE WORDS and portraits of impressive, insightful women in six colorful sections like this throughout the issue. You'll see that we've posed the same questions to women from all walks of life. Some are notables from our new book *WOMEN: The National Geographic Image Collection*. Others are National Geographic Society scientists and explorers. Still others belong to Women of Impact, a 56,000-strong online community that National Geographic convened as a place to share women's stories. Ponder the questions if you like, or make use of the answers. Welcome to the discussion.

There's more at *on.natgeo.com/womenofimpact*.

PORTRAITS BY ERIKA LARSEN

QUESTIONS BY SUSAN GOLDBERG

The QUESTIONS

ILLUSTRATION BY BETHANY NG

Q: What Is the Most Important Challenge That Women Face Today?

"BEING TREATED EQUITABLY, BASED ON ABILITY TO CONTRIBUTE, BASED ON SKILLS. BEING ACCEPTED AS EQUAL."

Ellen Pao

TECH INVESTOR, DIVERSITY ADVOCATE

When Pao sued her Silicon Valley employer for gender discrimination, she put the tech field's treatment of women on trial. In 2015 a jury ruled against Pao, who by then led the social media site Reddit. Now she runs Project Include, a nonprofit she founded to foster inclusion and diversity in the tech world.

Q: What Is the Most Important Challenge That Women Face Today?

MELINDA GATES

SHE CO-FOUNDED THE BILL & MELINDA GATES FOUNDATION, WHICH SUPPORTS EFFORTS TO REDUCE INEQUALITY, POVERTY, AND OTHER GLOBAL ILLS.

There isn't a country on Earth where women have achieved true equality, and the barriers they face look different in different places. But no matter where you are in the world, understanding these barriers is the first step to dismantling them—and that requires making a concerted effort to gather better data about women and their lives. We don't have reliable information about how many girls are going to school, how many women have the chance to earn an income, what their health and safety looks like, and whether they're dying preventable deaths. And without that data, we can't design effective policies or interventions to meet women's needs. Data is power.

30%

of the nations reviewed for the World Bank's *Women, Business and the Law 2019* index instituted no reforms to advance gender equality between 2008 and 2017. Of 187 countries, 131 enacted reforms to further gender equality, 54 did not—and two, Uzbekistan and Bahrain, made changes that increased gender *inequality*.

JANE GOODALL

THE PRIMATOLOGIST, WHO DID PIONEERING WORK AS A NATIONAL GEOGRAPHIC GRANTEE, LEADS AN INSTITUTE THAT PROMOTES CONSERVATION AND EDUCATION.

In so many developing countries, women have no freedom. In poor communities families tend to provide money to educate boys over girls. In many cultures women have no access to family planning, have numerous children, and are solely responsible for their care. For these reasons not only women but children—and thus our future—will suffer.

LAURA BUSH

AS FIRST LADY OF THE UNITED STATES DURING HER HUSBAND'S TWO TERMS (2001-09), SHE WAS A LITERACY ADVOCATE. THROUGH THE GEORGE W. BUSH PRESIDENTIAL CENTER, SHE NOW CHAIRS A GLOBAL INITIATIVE TO IMPROVE WOMEN'S STATUS.

My interest in Afghanistan, specifically in the lives of Afghan women, showed me that there are serious challenges in some parts of the world for women just to live safe lives. But I also think that in many parts of the world—and certainly in the United States—it's a wonderful time for women. When George was president, I looked at the statistics of girls versus boys in the United States and realized that boys needed some attention too. We had focused so much on girls, and girls had become more successful than many boys in school. We expected more from boys in a way, without giving them the sort of nurturing that we did girls. So it's important that, while we continue to support women at home and around the world, we pay attention to boys too.

'ALL THE FORMS OF SEXISM.'

Emma González survived the 2018 mass shooting that killed 17 students and staff at her Florida high school. She is an activist and co-founder of the March for Our Lives movement.

"Probably harassment and discrimination, including verbal abuse and sexual abuse, in the workplace and in the home. Just all the forms of sexism that are used to demean and oppress women."

INTERVIEWS HAVE BEEN EDITED FOR LENGTH AND CLARITY.

‘TO GET MEN ON OUR SIDE.’

← Christiane Amanpour is chief international correspondent for CNN. A veteran war reporter, she has covered conflicts from Bosnia and Rwanda to Iraq and Afghanistan.

“The most important challenge is still being considered second-class citizens, and the most important thing for us is to get men on our side, period. This has to be something that men help us with; it’s not a question of just swapping who’s dominant. We’re not looking for female dominance; we’re looking for equality and to level the playing field—and we can’t do that without men’s buy-in as well.”

← TARANA BURKE

A BROOKLYN-BASED ACTIVIST, SHE’S KNOWN AS THE FOUNDER OF THE #METOO MOVEMENT.

“

If you ask different people who are passionate about reproductive justice or economic justice, they would have different answers. Obviously, for me, sexual violence is one of the most important challenges facing women. But all of it comes under the umbrella of patriarchy and the ways that patriarchy affects women economically, physically, professionally.

AMANI BALLOUR

LEADING A LARGELY FEMALE STAFF, THIS YOUNG PEDIATRICIAN RAN AN UNDERGROUND HOSPITAL CARING FOR SYRIANS UNDER SIEGE.

“

Many women are still facing tyranny and control from the men in their society. This is a big challenge, but necessary for us to change.

PHOTOS: ERIKA LARSEN. ILLUSTRATIONS: LAUREN TAMAKI

2014, MONTANA

2014, MEXICO

1919, MARQUESAS ISLANDS

SAY YOU HAD AN ARCHIVE WITH TENS OF MILLIONS OF IMAGES

WHAT STORIES WOULD THEY TELL

2018, MICHIGAN

1994, SICILY

1968, AFGHANISTAN

2016, KENYA

2016, ALASKA

2016, ENGLAND

TAKEN ALL AROUND THE GLOBE, SINCE THE LATE 1800s

ABOUT THE LIVES OF WOMEN?

BY SARAH LEEN

1960, ENGLAND

PRE-1910, EGYPT

PRE-1942, CALIFORNIA

THE IMAGES IN AN ARCHIVE form an invaluable record of the eras in which they were made. Looking through early files to find photographs for these pages—and for our new book, *Women: The National Geographic Image Collection*—we were struck by how narrowly women were once defined. The pictures are often beautiful, sometimes funny or sad or even shocking—but they are reflective of the prejudices and practices of the times.

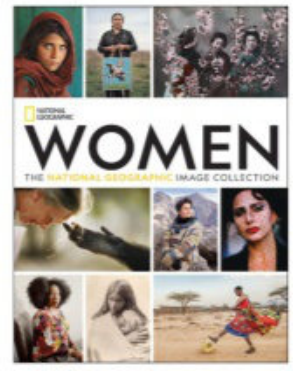
The archive holds more than 60 million images amassed since National Geographic's founding in 1888: published and unpublished photos, slides, negatives, glass plates, and more. It's almost certainly one of the world's most comprehensive visual records of women in diverse societies and cultures.

In the early 20th century the magazine's images—shaped by the technical limitations of photography then and a very Western colonialist point of view—often portrayed women as exotic beauties, posed in their local costumes or bare-breasted. That reflects who was behind the lens in those days: mostly white men. As camera technology evolved, our images of women became more active, but still focused heavily on traditional archetypes: wives, sisters, mothers. It wasn't until World War II that women turned up in more roles: boosting the war effort by working in industry, hospitals, the military. Postwar, the magazine reverted to more domesticated views; women smiled their way through a few more decades until the 1970s and the rise of photography that captured an unvarnished view of life.

The archive also documents the history of the women behind the photos: the magazine's photographers and photo editors, the few that there were in the early days. Writer and photographer Eliza Scidmore's first credit as photographer was in April 1907. She is believed to be the first woman whose color photos—lovely hand-colored images of Japan—were printed in the magazine, in 1914. The first female staff photographer, Kathleen Revis, was hired in 1953; the next two, Bianca Lavies and Jodi Cobb, not until 21 and 24 years later. Since then the magazine has sought out more female photographers to tell our stories.

I was one of those young photographers. I started freelancing for *National Geographic* in 1988. I remember the excitement in 2000 when we published a book, *Women Photographers at National Geographic,* with images from more than 40 contributors. Four years later I joined the staff as a senior photo editor. In 2013 I became the magazine's first female director of photography. As the sign on the facing page says: We've come a long way, baby!

Today, as we celebrate the 100th anniversary of the image collection, we're telling real stories about real women in images taken by more women photographers than ever before. We encourage "the female gaze": the idea that women photographers might see the world differently than men do, and choose different topics to emphasize and explore. Thanks to women photographers' vision and images, we have the chance to bring you the whole world, not just part of it.



WOMEN: The National Geographic Image Collection illuminates and reflects on women's lives with 400 stunning photographs that span more than 30 countries. It features 17 behind-the-scenes stories from famed female *National Geographic* photographers and interviews with luminaries including Jane Goodall, Sylvia Earle, Oprah Winfrey, Laura Bush, Nancy Pelosi, and Melinda Gates. The book will be available October 22 wherever books are sold and at *shopng.com/books*.

Sarah Leen is National Geographic's director of photography.

1971, MASSACHUSETTS

Smith College alumnae from the class of 1921 march during graduation festivities, hoisting signs that emphasize the strides women made in the previous half century.

DAVID ARNOLD

PREVIOUS PAGES: (TOP ROW, LEFT TO RIGHT) ERIKA LARSEN; DIANA MARKOSIAN; L. GAUTHIER; CIRIL JAZBEC; ERIKA LARSEN; ROBIN HAMMOND (BOTTOM ROW, LEFT TO RIGHT) ZACKARY CANEPARI; WILLIAM ALBERT ALLARD; THOMAS J. ABERCROMBIE; ROBERT B. GOODMAN; UNKNOWN; B. ANTHONY STEWART

EARLY IMAGES OFTEN CAST
WOMEN AS POSED MODELS
IN TRADITIONAL SCENES.

IT TOOK MANY DECADES FO
as men commonly were: as
In the early years, women o
beauties. From the 1970s th
in stories as varied as the liv

PRE-1918, JAPAN

PRE-1944, FLORIDA

FAR RIGHT
A young girl draped with gold coins belongs to the Ouled Naïl tribe in Algeria. A 1922 caption describes girls acquiring coins for their dowries by dancing in Mediterranean port cities.
RUDOLF LEHNERT AND ERNST LANDROCK

TOP LEFT
Eliza Scidmore, believed to be *National Geographic*'s first female photographer, pushed for color photos in the magazine. Here, she framed young Japanese girls with cherry blossom branches.
ELIZA SCIDMORE

TOP RIGHT
Two fishing enthusiasts show off their haul of native Yellowstone cutthroat trout at the national park circa 1940.
EDWIN L. WISHERD

BOTTOM LEFT
Performing swimmers apply lipstick in crystal clear Wakulla Springs, Florida, a popular spot for filming underwater scenes.
J. BAYLOR ROBERTS

BOTTOM RIGHT
At the annual rose show in Thomasville, Georgia, a festival queen and her attendants hold bouquets of local red roses.
HOWELL WALKER

OR WOMEN TO BE SHOWCASED IN THE MAGAZINE
scientists, explorers, adventurers, and leaders.
ften were depicted as exoticized, bare-breasted
rough today, women increasingly have appeared
ves they live.

PRE-1940, YELLOWSTONE

1953, GEORGIA

1905, ALGERIA

2017, GEORGIA

2010, AFGHANISTAN

2017, UGANDA

IN MANY CASES, M

WOMEN PHOTOGRA

SEE THE WORLD DIFF

2002, INDIA

2007, TONGA

FAR LEFT

As co-president of Afrekete—a campus advocacy group—artist, activist, and student Janae' Sumter encouraged Spelman College in Atlanta to be more supportive of LGBTQ students.

RADCLIFFE "RUDDY" ROYE

TOP LEFT

Women share a meal of flatbread, meats, and fruit in the Women's Garden, where they can socialize freely, outside of Bamyan, Afghanistan.

LYNSEY ADDARIO

TOP RIGHT

In India, a family of debt laborers stack and haul bricks to pay off loans. Ballooned by interest, these debts can last for generations.

JODI COBB

BOTTOM LEFT

Irene Sonia poses in front of a *milaya,* or bedsheet—one of the few things her mother managed to bring when they fled South Sudan for Uganda.

NORA LOREK

BOTTOM RIGHT

Fuatapu Halangahu practices martial arts with other members of the Tonga Defense Services. The Polynesian island kingdom began admitting women to the forces in 1979.

AMY TOENSING

EN AND
APHERS
ERENTLY.

IN 1907 *NATIONAL GEOGRAPHIC* published a picture by Eliza Scidmore, believed to be our first woman photographer and the first woman contributor to the magazine. The photos that followed were almost always made by men. As that shifted, our worldview evolved. In 2018 women photographed nearly three times as many stories in *National Geographic* as they had a decade before.

2007, MONGOLIA

A pharmacist (at right) beams as she meets her hero, a widely admired actor, in a town square in Ulaanbaatar.

LYNN JOHNSON

Q: What Is the Greatest Hurdle You've Overcome?

"THE *DISEASE* TO PLEASE. IT HAPPENS WHEN WE ARE NOT RAISED TO KNOW OUR OWN VALUE & OUR OWN WORTH."

Oprah Winfrey

AWARD-WINNING MEDIA MOGUL

From a childhood marred by sexual abuse and poverty, she rose to career success, fame, and fulfillment—and uses her life story to encourage downtrodden women. Winfrey is a power player in broadcasting, publishing, and entertainment, and has a fortune estimated at $2.6 billion.

Q: What Is the Greatest Hurdle You've Overcome?

CHRISTINE LAGARDE

SHE'S THE FIRST WOMAN TO HOLD THE FOLLOWING PRESTIGIOUS POSTS: CHAIR OF ONE OF THE WORLD'S LARGEST LAW FIRMS, MINISTER OF FINANCE IN HER NATIVE FRANCE, AND TWO-TERM MANAGING DIRECTOR OF THE INTERNATIONAL MONETARY FUND. IN 2019 SHE WAS TAPPED TO DIRECT THE EUROPEAN CENTRAL BANK.

When I was just 16, my father passed away; that difficult time was one obstacle. And I think one obstacle is actually myself, you know. Over the course of time, the issue of confidence is one I had to struggle with. It's probably closely related to the passing of my father and the sense of loss that you feel as a result. Then, whenever you face that same sense of loss, that lack of support or love or whatever, you have to build that confidence within yourself. I think love is an extraordinary engine for confidence, and when you lack some of it in an early stage, you have to constantly battle against it.

67%

of senior business leaders who are female—compared to 32 percent who are male—said in a 2019 survey that impostor syndrome kept them from pursuing a raise or promotion for which they qualified. Psychologists in the 1970s coined the term impostor syndrome for people who doubt their talents and fear they are frauds, despite accomplishments proving otherwise.

TARA HOUSKA

AN OJIBWA OF THE COUCHICHING FIRST NATION AND A LAWYER, HOUSKA WORKS FOR INDIGENOUS PEOPLE'S RIGHTS, FROM WASHINGTON, D.C., TO THE SITES OF PROTESTS ON TRIBAL LANDS.

Not being consumed by experiences of trauma, assault, abuse, and other experiences that were difficult, especially in the formative years. On a personal level it's enabled me to understand the importance of forgiveness, of moving forward and focusing on how we do better. How do we understand one another and create spaces for survivors? How do we do better as a society overall?

TAYLORANN SMITH

A SELF-DESCRIBED "QUEER WOMAN OF COLOR," SMITH IS GETTING A MARINE BIOLOGY MASTER'S DEGREE AT CALIFORNIA STATE UNIVERSITY, NORTHRIDGE. SHE'S IN NATIONAL GEOGRAPHIC'S WOMEN OF IMPACT COMMUNITY.*

Being raised by a single mother with no involvement of my father was really challenging. I grew up watching my mom struggle to pay bills and to feed my sister and I, but we never went without her love. Poverty and homelessness were two experiences I wouldn't wish on anyone, but they made me a stronger person. Growing up near Chicago, I never got to study the ocean like I dreamt of, until I received a scholarship to study at the Duke University Marine Lab for a semester. I conducted independent research, made connections, and grew as a scientist. I never thought someone like me could do all of those things!

'PATRIARCHY IS A HUGE ONE.'

Alicia Garza, a workers' rights advocate, is a co-creator of the #BlackLivesMatter movement.

"Patriarchy is a huge one. Racism. And also—and I think this is a by-product of both of those other things—what people call impostor syndrome. Right? Where you can't imagine why anyone would think that you could be a leader or consider you to be a leader."

*NATIONAL GEOGRAPHIC'S WOMEN OF IMPACT, A COMMUNITY WHERE WOMEN SHARE THEIR STORIES, IS AT *ON.NATGEO.COM/WOMENOFIMPACT.*

‘I AM MY OWN BIGGEST HURDLE.’

← Jacinda Ardern is prime minister of New Zealand. She was the second world leader in modern history to give birth while in office (daughter Neve was born in June 2018). Nine months later Ardern responded to the massacre of 50 people at mosques in Christchurch by demanding gun law reform.

“Myself. I am my own biggest hurdle, because no one will be a bigger critic of me than me. Whether or not you’re your own worst critic, whether or not you overemphasize your confidence deficit, I do think many women are much harsher on themselves and on their abilities. And I’m one of them.”

← ASHA DE VOS

THE MARINE BIOLOGIST HAS BECOME AN EXPERT ON THE BLUE WHALES FOUND OFF THE COAST OF HER NATIVE SRI LANKA.

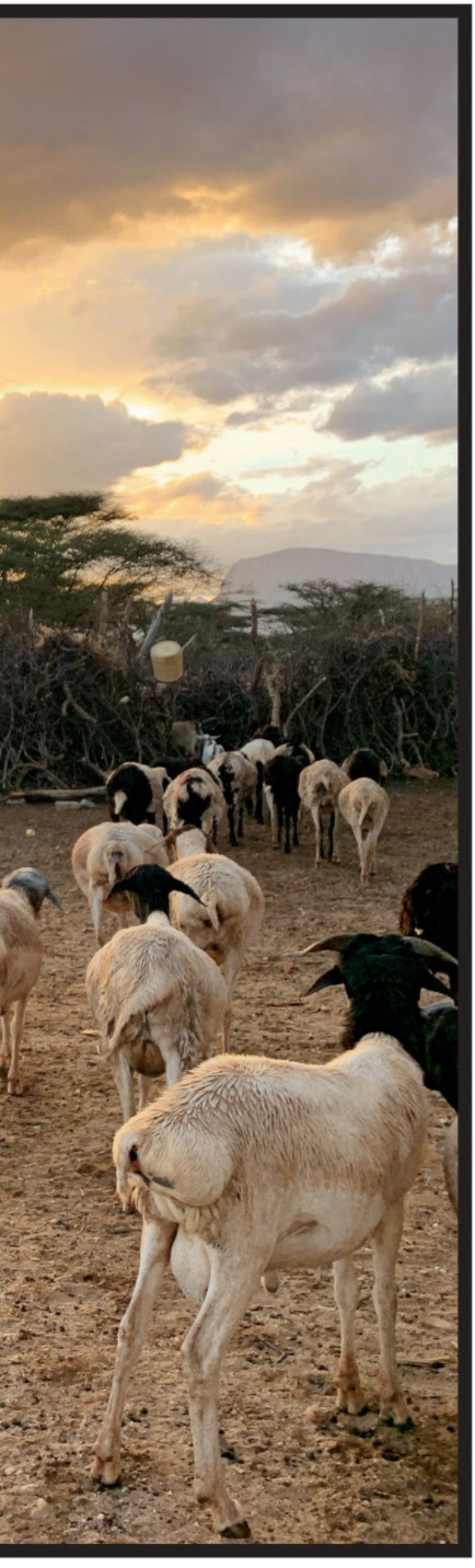
First of all, I was creating a sort of new field in Sri Lanka; marine conservation was pretty unheard of before I started. The other challenge is that marine conservation is very, very Western-centric: almost perceived as a field that belongs in the developed world. So I had to prove myself, not just as a woman, but as a locally grown woman.

ROXANE GAY

A SOCIAL CRITIC AND PURDUE UNIVERSITY FACULTY MEMBER, GAY IS AUTHOR OF BEST-SELLING BOOKS INCLUDING *HUNGER*, *BAD FEMINIST*, AND *DIFFICULT WOMEN*.

The biggest hurdles I’ve had to overcome have probably been racism and misogyny and fat phobias. Just dealing with living in a body that this world has tried to legislate or discriminate against in a lot of different ways throughout history. Sort of working against that while trying to just live and thrive is a challenge.

PHOTOS: ERIKA LARSEN, DEEPTI ASTHANA (DE VOS). ILLUSTRATIONS: LAUREN TAMAKI. INTERVIEWS HAVE BEEN EDITED FOR LENGTH AND CLARITY.



SPEAKING OUT TAKING CONTROL CHANGING DESTINIES SHAPING THE FUTURE

Women around the world are making their voices heard in government and their communities, moving many closer to gender equality.

BY **RANIA ABOUZEID**

PHOTOGRAPHS BY **LYNN JOHNSON**

FRANCE

PEACE ADVOCATE

When a radicalized Muslim went on a 2012 killing rampage in his hometown of Toulouse, the first victim was also Muslim: a paratrooper named Imad Ibn Ziaten, targeted for his service to France. In her grief, his mother, Latifa Ibn Ziaten, began a campaign for *la jeunesse et la paix,* youth and peace, and named it for her son. A Moroccan immigrant, Ibn Ziaten—here reading a book aloud in her grandson's bedroom—visits schools and prisons, pleading for mutual understanding. "Look into people's eyes and smile," she says. "And they will come to you."

KENYA

ANIMAL TRACKER

Previous photo: A mother of three at 23, Mpayon Loboitong'o herds her family's goats on her own; after her husband left to find work in Nairobi, she was told he'd been killed there. Her other full-time job: charting animal movements for Save the Elephants. For a monthly salary she and eight other women traverse the bush, unarmed, amid elephants, lions, and African buffalo. "I do this work so my kids don't go to bed hungry," she says.

INDIA

DEFIANT SISTERS

Their superiors keep pressuring them to keep quiet and stop making trouble, but they refuse. When a nun in Kerala told church leaders multiple times that a bishop had raped her repeatedly, nothing happened, so she turned to the police. Months later, in September 2018, these fellow nuns joined a two-week protest outside the Kerala High Court. The bishop, who maintains his innocence, eventually was arrested. From left: Sisters Alphy, Nina Rose, Ancitta, Anupama, and Josephine. Instead of supporting the nuns, the church cut off the protesting nuns' monthly allowance.

Photography for this story was supported by the Pulitzer Center for Crisis Reporting.

THERESA KACHINDAMOTO REMEMBERS the first child marriage she ended, just days after she became the first female paramount chief of her southern Ngoni people in Malawi. In Dedza district, southeast of the capital, Lilongwe, she'd walked past a group of girls and boys playing soccer, a common sight, but then one of the girls stepped away from the game to breastfeed a baby.

"I was shocked," Kachindamoto recalls. "It pained me." The mother "was 12 years, but she lied to me that she was 13."

Kachindamoto informed the elders who had appointed her chief about the young mother, a girl named Cecilia. "They said, 'Oh yes, here it's common everywhere, but now you are chief, you can do whatever you want to do.' "

So Kachindamoto did. She annulled the marriage and sent the young mother back to school. That was in 2003. The chief paid the girl's school fees until she completed secondary school. Cecilia now runs a grocery store. Every time she visits her, Kachindamoto says, "she always comes here and says, 'Thank you, Chief. Thank you.' "

Since Cecilia's annulment, Paramount Chief Kachindamoto, 60, has terminated a total of 2,549 unions and sent the girls back to school. She also has banned an initiation ritual for girls who reached puberty that involved losing their virginity to strangers.

Kachindamoto's voice is one among many pushing for women's rights around the world. A woman's voice, as Egyptian protesters in Cairo's Tahrir Square once chanted, is a revolution. The slogan was part of a 2013 campaign against rapes and sexual assaults, a strike against the silence that often is the status quo—in Egypt and, as the #MeToo movement showed, around the world.

INDIA

INTREPID VOTERS

The 1950 Constitution of India, the founding national document of the former British colony, ensures suffrage to every adult Indian citizen regardless of "religion, race, caste, sex, or place of birth." From the launch of the modern republic, in other words, Indian women have had the vote—and they exercise it. These women in Bengaluru have just cast their 2019 parliamentary ballots; the fingernails they're showing off were indelibly inked by election officials, a national practice that's supposed to prevent repeat voting. Women still make up only 14 percent of the Indian Parliament. But with the Election Commission offering all-women-staffed polling stations in every parliamentary district, some states report more women than men turning out on election days.

In recent years women from France to India and from Namibia to Japan have felt more empowered to call out men's wrongdoing, leading to a global conversation about sexism, misogyny, and the power dynamics that women are subjected to in the home and beyond.

In many ways it's still a man's world, but from politics to the arts, women are working to change that in their communities. It's a mission playing out in several arenas: in government institutions, inside the workplace and home, through activism on the streets, and in the ability to tell their own stories and shape their societies.

In countries such as Rwanda and Iraq, legislative quotas have guaranteed a significant female presence in parliament. Since 2003, Rwanda has consistently had the highest female representation, proportionally, of parliamentarians anywhere in the world (see "Power in Numbers," page

FRANCE

MADAME MAYOR

When Marième Tamata-Varin was encouraged in 2014 to run for mayor of the village of Yèbles, her two children were bullied and she was subjected to racist and anti-Muslim insults—the first time in her life, says the Mauritanian immigrant, that she had felt labeled "other." But she won, becoming France's first black Muslim woman mayor. From town hall chambers dignified by a bust of Marianne, the symbolic figure evoking republican France, Tamata-Varin creatively raised money, including a crowdfunding campaign, for a new school building and other civic improvements.

Western feminism can't work here … In Africa, women have been leaders before, and they have not been leaders by intimidating men but by engaging them and persuading them … We need to look at our own traditions and do it our own way.

JOYCE BANDA
FORMER PRESIDENT OF MALAWI

89). In Malawi and other African countries that don't have the legislative mandates to help women rise, change is being fomented on the ground, through female chiefs who are empowering women and girls.

But change is seldom easy. The patriarchal status quo is deeply entrenched, especially in authoritarian states where challenging the system, whether you're a man or a woman, comes at a hefty cost. To date, no country in the world has reached gender parity. Nordic states such as Iceland and Norway lead the way, achieving the highest ranking in the World Economic Forum's annual Global Gender Gap Index. The population-weighted index measures gender disparities across four key areas: health, education, economy, and politics. The poorer performing half of the list includes Malawi and most of the rest of sub-Saharan Africa. But significant variation exists within a region, and two sub-Saharan African nations also place in the list's top 10: Rwanda (sixth) and Namibia (10th). Rwanda's high ranking is thanks largely to a generation of pro-women laws that followed the devastating genocide in 1994 (see story, page 82).

Gender inequality is not determined by, or confined to, any one place, race, or religion. Canada, for example, is ranked 16th on the global index, while the United States sits at number 51, dragging down the overall ranking for North America because of stagnation on the "political empowerment" subindex and a decrease in gender parity in Cabinet-level positions, as well as a slide in education.

The rankings add texture to our understanding of women's influence, and challenges, around the world—particularly in the Middle East and Africa, two vast geographical regions that are often flattened into homogenized monoliths and stripped of the nuanced differences that make each country unique.

"There isn't one type of woman in the Middle East," says Lebanese actress and director Nadine Labaki, who made Academy Awards history last year by becoming the first female Arab filmmaker nominated for an Oscar, for *Capernaum,* her wrenching Arabic-language drama about street children.

"There are many different women, but most of them, even in the most difficult circumstances, are strong," she says. "Women find strength to fight in their own way, whether it's within their families or on a bigger scale in their work. They have so much power. When I imagine any woman from this region, I don't imagine her submissive and weak. Never."

Bochra Belhaj Hamida, a Tunisian parliamentarian, human rights lawyer, and one of the founders and former leaders of the Tunisian Association of Democratic Women, says it's "colonialist" to think that an Arab woman, for example, will accept fewer rights than a Western woman. But her approach to attaining those rights may differ.

In Iran activists continue to boldly push for change through individual acts of protest, in social media, and in their homes, such as defying the requirement of the Islamic Republic's leadership that women wear hijabs. During the past few years, dozens of women—often in white clothing—have publicly peeled off their head scarves in videos that have gone viral using the hashtag #whitewednesdays. Nasrin Sotoudeh, the female human rights lawyer who represented many of the women who were arrested, was sentenced in March 2019 to 38 and a half years' imprisonment and 148 lashes.

Yet in May 2019, after a years-long campaign by activists, the same clerical leadership that punished women for removing their head scarves began considering whether to allow Iranian women to pass their citizenship on to children born to foreign fathers. It's a right that more progressive

states in the Middle East—such as Nadine Labaki's Lebanon, where women can wear as much or as little clothing as they please—have not come close to adopting, despite sustained pressure.

The idea of progress on women's rights is usually less about superficial markers like what a woman wears than about her ability to choose what to wear, and to control and make choices about other aspects of her life.

In Saudi Arabia, until recently women and girls had to have a male guardian's permission to travel, get married, or pursue higher education. New laws were introduced in August to loosen a guardianship system that treated women like minors. The same Saudi leadership that in 2018 lifted the ban on women driving had imprisoned some of the most prominent female activists who first called for that right. Many of the women remain incarcerated, and their families say they've been subjected to beatings, torture, sexual harassment, and solitary confinement. Their alleged crimes include contacting international organizations in the course of their activism. The message of their detention is clear: In Saudi Arabia women's rights will be dispensed at the leadership's behest, not won or earned from the ground up. Women have no control or choice over the matter. Don't ask or push, and be grateful for any additional rights that are granted.

So how do women most effectively pursue gender equality? The experiences of several African and Arab states highlight some ways that women are revolutionizing their societies.

In 2012 Joyce Banda became the first

female president of Malawi, even though she is not from a political family and Malawi, one of Africa's poorest nations, does not have a female parliamentary quota. Wedged between Zambia, Tanzania, and Mozambique, Malawi is home to almost 18 million people. Repeated attempts to introduce a quota for women in parliament, most recently in December 2017, have failed. Yet Banda succeeded, despite the lack of institutional infrastructure to pull her up or family connections and money to pave her way.

Banda's father was a member of Malawi's police brass band. She remembers how when she was eight, a family friend whom she called Uncle John told her father that he saw great potential in young Joyce. "It stuck. He planted a seed," she says, "and I was lucky because my father kept reminding me what Uncle John said, so I always knew I was going to do something."

Banda was Malawi's minister of gender, child welfare, and community services and minister of foreign affairs before being elected vice president in 2009. She became president after the sudden death of her male predecessor and served from 2012 to 2014.

Africa has had several female presidents, "and, well, America is still trying," Banda says. "There must be something we are doing right." She credits Africa's progress to the memory of its precolonial history of female leaders, of matrilineal power systems sidelined by the patriarchal Western colonizers, and to a conciliatory approach to feminism.

"So-called Western feminism can't work here," she says, characterizing it as confrontational. "We are not going to achieve gender equality by using models that we borrow from elsewhere. Here in Africa, women

FRANCE

FASHION TRAILBLAZER

Christian Dior artistic director Maria Grazia Chiuri breaks up in laughter as she and the couture studio head wrangle an elaborate cape. Chiuri's 2016 appointment to the most prestigious position at Dior set off alerts in the fashion world: In its 72 years as a leading couture house, Dior had never before put a woman in charge. Chiuri has used fashion to promote women's rights and issues; she's dressed runway models in shirts saying "Sisterhood is powerful" and "We should all be feminists."

FRANCE

HEALER

An 11th-century monastery in Provence, St. Paul de Mausole, also houses a historic psychiatric facility; Vincent van Gogh painted while confined there. Art therapist Anik Bottichio heads the art studio at St. Paul for troubled and traumatized women—"to help them become visible," she says, "first to themselves and then to the outside."

have been leaders before, and they have not been leaders by intimidating men but by engaging them and persuading them to open space." She continued, "It's in the approach. So we need to look at our own traditions and do it our own way."

Banda's life has shaped her struggle for women's rights, first in the community development world and later in politics. Seeing her best friend, Chrissie Zamaere, forced to abandon her education after primary school because her parents couldn't afford the six-dollar school fee pushed Banda to start the Joyce Banda Foundation, which among other things has educated 6,500 girls in tuition-free schools. Surviving a decade-long abusive marriage inspired Banda to establish the National Association of Business Women, a group that lent start-up cash to small-scale traders, because, she said, financial independence gives women options.

In 2006, as minister of gender, Banda championed a domestic violence law, and under her presidency, Malawi in 2013 enacted its Gender Equality

Act. During the two years of her administration, the maternal mortality rate declined, an issue Banda had long highlighted after she suffered postpartum hemorrhaging during the birth of her fourth child. She enlisted the help of male chiefs, persuading them to encourage medically supervised deliveries in clinics instead of traditional home births. It's an example, she says, of feminism that works within a culture and with men's support to change social norms.

Malawi's mostly rural-based population is deeply conservative, Banda says, and while some communities practice matrilineal succession or have women participate in the selection of a male chief, "the chiefs in this country, three-quarters of them are men, and they are chauvinistic," she says, spitting out the word. "They are traditionally patriarchal like you've never seen! Eighty-five percent of our people are grassroots based, and so they are under those chiefs. You have to engage them and turn them into fellow champions, and that's what I did."

UNITED STATES

ASTROPHYSICIST

Though her body looked male, her childhood self-portraits showed a girl named Rebecca. A developer of an imaging tool that searches for planets outside our solar system for California's Palomar Hale Telescope, Rebecca Oppenheimer avoids "transition" as a label for her public emergence in 2014: "I like to say I stopped pretending to be a boy."

We women activists feared that the revolution would take women backward, but the exact opposite happened.

BOCHRA BELHAJ HAMIDA
LAWYER AND PARLIAMENTARIAN, TUNISIA

It is "naive," she says, for international groups "to come into Africa and hope that they can solve our problems. What they find is that they can be here for 20 years, and they go back" having achieved little because "some of the issues they come to tackle are so entrenched in tradition that they can't break through." It's more effective to change a culture from within, she says, by enlisting influential power brokers, such as chiefs. And when those chiefs are women, the impact can be huge.

Some women have ascended to power through inheritance or legacy: In Chief Kachindamoto's case, she followed in the footsteps of her late father.

Kachindamoto's jurisdiction extends across 551 villages and 1.1 million people. She lists her first duty as "a custodian of culture," yet since becoming chief in 2003, she has worked to change some of her tribe's cultural practices, including the initiation that had girls at puberty lose their virginity to strangers.

She has faced resistance, even death threats, from the subchiefs and village heads under her and from other chiefs equal to her in seniority. Her family cautions her, fearing for her safety. Other senior male chiefs, she says, told her that "this culture was left to us to continue to do this; who are you to change it?" As she puts it, "I said, 'If you don't want to do this in your area, it's up to you, but in my area I don't want this to continue, whether you like it or not.' "

Her father, when he was chief, tried and failed to ban the initiation practice, but fear of HIV/AIDS in a country where one in 11 adults ages 15 to 49 is infected has now helped her efforts.

Kachindamoto also banned child marriage, sending the girls back to school, well before Malawi enacted a law in 2015 that raised the legal marrying age from 15 to 18. An amendment in 2017 brought the constitution in line with the new law. At first, Kachindamoto says, people didn't want to hear her, so she formed a touring musical band to get people to gather and then ambushed them with her message against child marriage and initiation rituals. She has since created bylaws against the practices in her jurisdiction and publicly fired male chiefs who continued the rituals, making examples of them in the community. At the same time, she has appointed some 200 women to positions of authority. When she became chief, she says, "there were no [village] head women, only headmen, so I changed the culture."

Early marriage is linked to poverty, and Kachindamoto is trying to combat both. She says tuition fees are a big obstacle to keeping girls in school in her agriculture-based region. "I talked to the headmasters [and told them that] if these girls don't pay anything, don't sack them away, because if you do that, their parents will take them straight to husbands," she says.

Her voice is not the only one changing Malawi's cultural landscape. Throughout the Mwanza Traditional Authority in Salima district, Chalendo McDonald, 67, better known as Chief Mwanza, also has banned sexual initiation rituals and child marriage. Chief Mwanza presides over 780 villages and about 900,000 people of the Chewa ethnic group. She too has made it her mission to transform Malawi, bringing the total to 320 women appointed to chief positions in her district, because, she says, "women chiefs advocate women's issues."

In the 15 years since she became chief, she has annulled 2,060 child marriages, but she says that despite the laws of the state and her own people's bylaws prohibiting the practice, it continues. "Yesterday," she says,

when asked about the last time she saved a girl from an early marriage. "And the day before that there was another issue around child marriage, so it's still happening."

In Tunisia, a North African state that

is also in the Arab world and is home to about 11.5 million people, women have long played a major role in politics and civil society, dating to the 1950s under President Habib Bourguiba—but not all Tunisian women. In 1981 Bourguiba, a staunch secularist, banned women and girls from wearing the hijab in public institutions, effectively shutting out veiled women from state schools, civil service jobs, and other public spaces.

The Tunisian revolution in 2011, the first of the Arab Spring uprisings, unseated dictator Zine el Abidine Ben Ali and opened the political arena to new faces, including veiled women. The streets of the capital, Tunis, visibly changed after his departure, with more women donning head scarves, perhaps out of defiance as much as religious belief. I covered the Tunisian revolution and was struck by the sudden change. It reminded me of an old Arabic proverb that says, "That which is forbidden is desired."

Tunisia's Personal Status Code, enacted in 1956, was among the most progressive in the region, banning polygamy, granting equality in divorce, and establishing a minimum marrying age and mutual consent in marriage. Abortion was legalized in 1965 for women with five or more children and with their husband's consent and for all women in 1973. In the decades that followed, Tunisian women have held on to their gains, largely because their country was spared the state-destroying wars, sanctions, and militia violence that savaged Iraq and other countries.

Bochra Belhaj Hamida, the parliamentarian and human rights lawyer, initially was worried about what could happen. "We women activists feared that the revolution would take women backward, but the exact opposite happened." Her concerns were fueled in part because the Islamist Ennahdha Party led Tunisia's first post-revolution government.

"If it weren't for the revolution, the reforms may have happened but much slower," she says. "They were catalyzed by the revolution and the fear of women that they would lose their place and rights."

The changes were swift and sweeping. In 2014 a new constitution safeguarded the rights detailed in the Personal Status Code and decreed that men and women were equal. In 2017, despite strong opposition, Tunisian women were given the right to marry outside the Muslim faith, shattering a regionwide taboo. Previously, a new domestic violence law had been passed, while another had ensured that mothers no longer needed a father's permission to travel abroad alone with their children. A "horizontal and vertical gender parity" law made it mandatory for all political parties to have an equal number of male and female candidates in local elections. Aimed at increasing female representation, it resulted in women winning 48 percent of municipal council seats in the 2018 elections. Women hold 79 of Tunisia's 217 parliamentary seats, the highest percentage (36.4) in the Arab world.

Administrative positions traditionally filled by political appointment, like the powerful head of the Tunis Municipal Council, were opened to elections. In the first vote last year, Souad Abderrahim was elected council

KENYA

SCIENCE LEADER

CEO, conservationist, agitator: Paula Kahumbu runs the Kenyan conservation group WildlifeDirect. Kahumbu describes to city teenagers visiting Nairobi National Park the interplay between species: how ants help a native acacia tree defend itself against herbivores such as giraffes and rhinos.

chief, or mayor, the first woman ever to hold the office since it was created 160 years ago. "The day that the power and choice was given to the people," Abderrahim says, "they chose a woman."

Her approach to governance was also a break from the past. Instead of making decisions unilaterally, Abderrahim adopted a consultative system that involves all 60 members of the local council. In Tunisia, municipal councils are responsible for the affairs of a city, and as Abderrahim says, the Tunis council in the capital is "like a mother to all the other councils," overseeing the 350 scattered across the country. "I have the power to sign certain agreements, but I won't sign a single agreement without discussing it with the members of the council," she says. "Democracy is about inclusion."

Hamida and other rights activists are now pushing to change long-held cultural traditions rooted in religion around issues of inheritance. Tunisia's inheritance law dictates that women inherit half of what men do, a

custom that is widely adhered to across the Arab world, and challenging it means working against a religious establishment that bases the law on the interpretation of Islamic texts.

"The heart of the dispute between us is about the family," Hamida says. "Their idea of a family is patriarchal, which is the exact opposite to ours."

She's referring to people like Halima Maalej, a conservative religious woman and activist who, while supporting most of the pro-women reforms, draws the line at equality in inheritance: "Why do they want to change the foundation of our society and its traditions?" she asks.

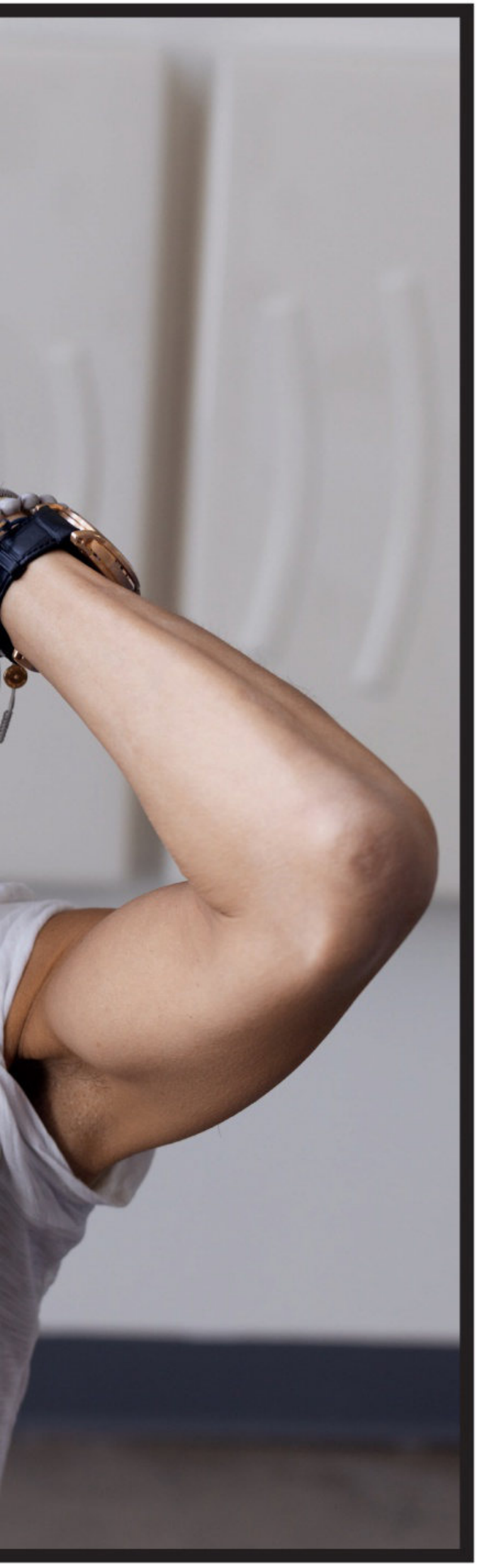
A supporter of the Ennahdha Party, she remembers being silenced during the secular dictatorships of Bourguiba and Ben Ali. She struggled to find a school that would accept her because she was veiled, before eventually finding a place in a Christian school. "Our voices were weak, almost silent."

Now she and her veiled friends want to be heard. She believes that

KENYA

COMMUNITY ACTIVIST

After her family accepted her ardor for learning, Elizabeth Pantoren earned a doctorate and became an officer for a conservancy group and a champion of girls' independence. Today's exhortation, as she shows a Karare class a reusable sanitary pad holder: No girl should ever have to miss school because of her period.



UNITED STATES

CULINARY WARRIOR

A luminary in the high-testosterone restaurant world (she's the only woman in the U.S. ever awarded three Michelin stars), San Francisco chef Dominique Crenn made what she says seemed the obvious decision after her invasive breast cancer diagnosis this spring: She went public with it. "For all the women who have been on this journey before me and now with me, my heart is with you," Crenn wrote her 270,000 Instagram followers. The answering roar of love and accolades is still carrying her through. "Guess what? I'm strong," she says. "Not everything is happy, you know? But I'm very thankful and very grateful. Being in the public eye was never my main thing. My main thing is always to fight the fight."

equality in inheritance contradicts sharia, or Islamic law, and is a "side issue" pushed by "bourgeois" women who don't represent her. Islamism, like any other political ideology, is not monolithic, and even among supporters of a party such as Ennahdha there are a spectrum of views. Meherzia Labidi is an Ennahdha parliamentarian and former deputy speaker of the assembly. Like Maalej, Labidi is veiled and remembers the religious repression that denied her a voice before the revolution, but that's about the extent of the similarities between the two women.

Labidi, who describes herself as post-feminist, believes that Tunisian women must listen to each other. "I think what we need in Tunisia, in the Arab Muslim world," she says, "is to reclaim our voice from these two tendencies—ultrasecularists and the ultrareligious."

She's proud of Tunisia's advances for women's rights and the fact that in debating core issues such as equality in inheritance, Tunisia is once again an example for the rest of the Arab world.

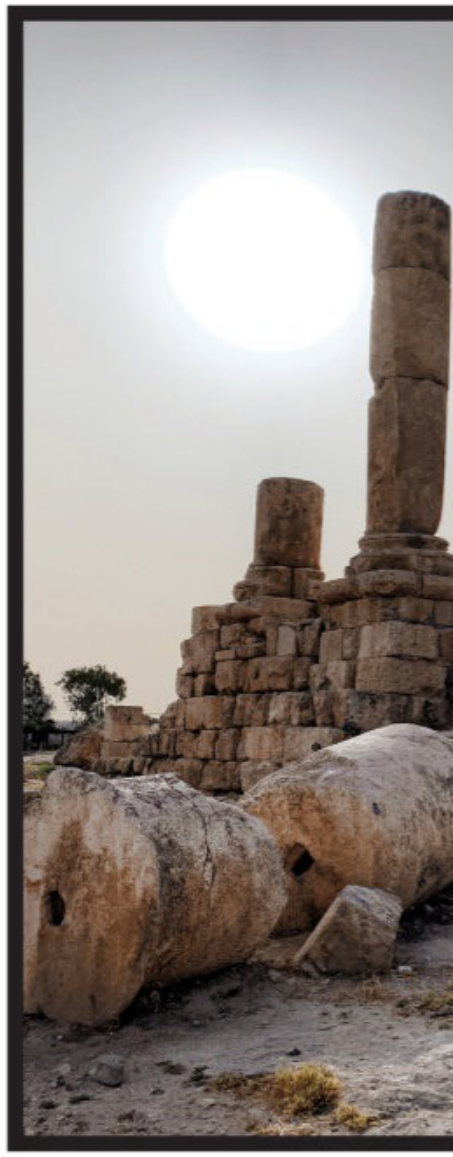
"Wherever democracy progresses, women's rights progress, because you can speak, you can do, but in spaces where there is no democracy, even if there [are] some changes in favor of women, they are forced by the authority—the government, the president, the king, whatever represents authority," Labidi says. "So they are not inculcated, they are not adopted, they stay very superficial. What we are doing is very difficult; it's trying to penetrate into the social tissue."

For Labidi, the "universal heritage" of feminism is the bridge that can unite women at different ends of the activist spectrum, like Hamida and Maalej. And part of that means not having Western women speak for them. "They say we should be given freedoms, yet we are not allowed to enunciate what we want. Is this freedom? Is this feminism?" Labidi asks. She has a message for Western feminists: "I beg you, stop speaking in our name and for us, because when you speak for me, you are choking my voice."

Oscar-nominated director Labaki also believes strongly in the power and necessity of women telling their own stories. Her three films—beginning in 2007 with her first, *Caramel,* a look at the lives of five Lebanese women set in a Beirut beauty salon—explore universal themes about patriarchy and societal ills such as poverty. Labaki says *Caramel* stemmed from her "personal obsession" with examining stereotypes of Lebanese women "who are submissive, who cannot express who they are, not at ease with their bodies, afraid of men, dominated by men, women who were afraid" and the more complicated reality of the strong women around her, starting with her family.

"I felt I was in a way trying to find my own peace," she says. "Who am I amid all these stereotypes?" In her latest film, 2018's *Capernaum,* which garnered the Oscar nomination, Labaki turned her gaze to children living on the streets. "We are dragging them in our wars, our conflicts, our decisions, and we've created such chaos for them, such capernaum," she says. She began researching the movie in 2013, and was in part inspired by the devastating image of the Syrian Kurdish toddler Alan Kurdi, dead and washed up, facedown, on a Turkish beach as his family fled the war in Syria. The image, she says, was her "big turning point."

"I really thought, if this child could talk, what would he say? How angry is he after everything he has been through and everything we put him through?" Labaki says she takes it as a compliment when people tell her that after watching her films they sense a woman behind the camera. "It doesn't mean that it's a better vision than a man's vision.



No. It's a different vision, a differen

She made *Capernaum* to shake peo
of children suffering and because "I

It's a responsibility that extends be
for a seat on Beirut's municipal cou
you become an activist without eve
not a question of choice; it's my duty
going into politics or just lobbying fo

Labaki asks, "How do we start mak
"I want to do things my way from my
sometimes you have more voice tha
onates so much louder than any p
speech or a small video." She says, "
another film. It needs to go further ..
and I need to start really working."

JORDAN

ACCESSIBILITY CHAMPION

At 28, after a decade as Jordan's biggest voice in accessibility, Aya Aghabi passed away in August 2019. Reliant on a wheelchair after a car accident left her with a spinal cord injury, Aghabi did graduate work in Berkeley, California, an early disability rights hub—and discovered the independence possible for people in wheelchairs. In a land where so much is difficult to navigate for the disabled—such as Amman's Temple of Hercules, shown here in May—she became a full-time mobility consultant and launched the website Accessible Jordan. Her work continues to provide online guides for disabled Jordanians and tourists to explore the nation's streets and prized cultural destinations.

Photojournalist **Lynn Johnson** is the recipient of the 2019 Eliza Scidmore Award. **Rania Abouzeid** is a current Nieman fellow and author of *No Turning Back: Life, Loss, and Hope in Wartime Syria*.

t experience."
ople out of their blindness to the sight
need to show what's happening."
yond filmmaking. In 2016 Labaki ran
ncil but did not win. "At some point
n wanting it," she says. "For me it's
now. I don't know if it will mean me
or certain things to change."
king a real change?" and asserts that
y platform, using my voice, because
n any politician, and your voice res-
olitical speech through a film or a
I cannot stop at the frontiers of just
..I need to use my voice in that way,
□

NO COUNTRY HAS IT ALL when it comes to gender equality, but some places are better than others to be a woman. The Women, Peace and Security Index seeks to understand these global differences by measuring women's inclusion in society, sense of security, and exposure to discrimination—key indicators of how women are faring. The latest data show that some of the worst countries for women have achieved gains, even as some of the best are lagging in crucial areas.

PERIL PROGRESS PROSPERITY

WOMEN'S WELL-BEING AROUND THE WORLD

BY **IRENE BERMAN-VAPORIS, LAWSON PARKER,** AND **ROSEMARY WARDLEY**

National Geographic partnered with the Georgetown Institute for Women, Peace and Security to illustrate the 2019 index.

Measuring Empowerment

Three main categories—inclusion, security, and justice—are broken down into 11 subcategories to assess women's empowerment around the world.

INCLUSION
Women's level of participation in economic, social, and political opportunities

Representation in government
Percentage of legislative seats held by women

Cell phone use
Females age 15 and older who have access to a mobile phone

Employment
Women age 25 and older who are engaged in paid work

Financial access
Use of a banking app or other type of account among females age 15 and older

Education
Average years of education among women 25 and older

SECURITY
Sense of safety and exposure to violence

Intimate partner violence
Physically harmed or sexually assaulted in past year by a partner

Community safety
Females 15 years and older who report feeling safe while walking alone at night

Organized violence
Deaths caused by large-scale armed conflicts, per 100,000 people

JUSTICE
Experience of forma

Discriminatory norms
Males 15 years and older who say it's unacceptable for women to hold paying jobs

KEY
The 11 categories are scored from one (best, blue) to zero (worst, red).

Best 1 — Worst 0

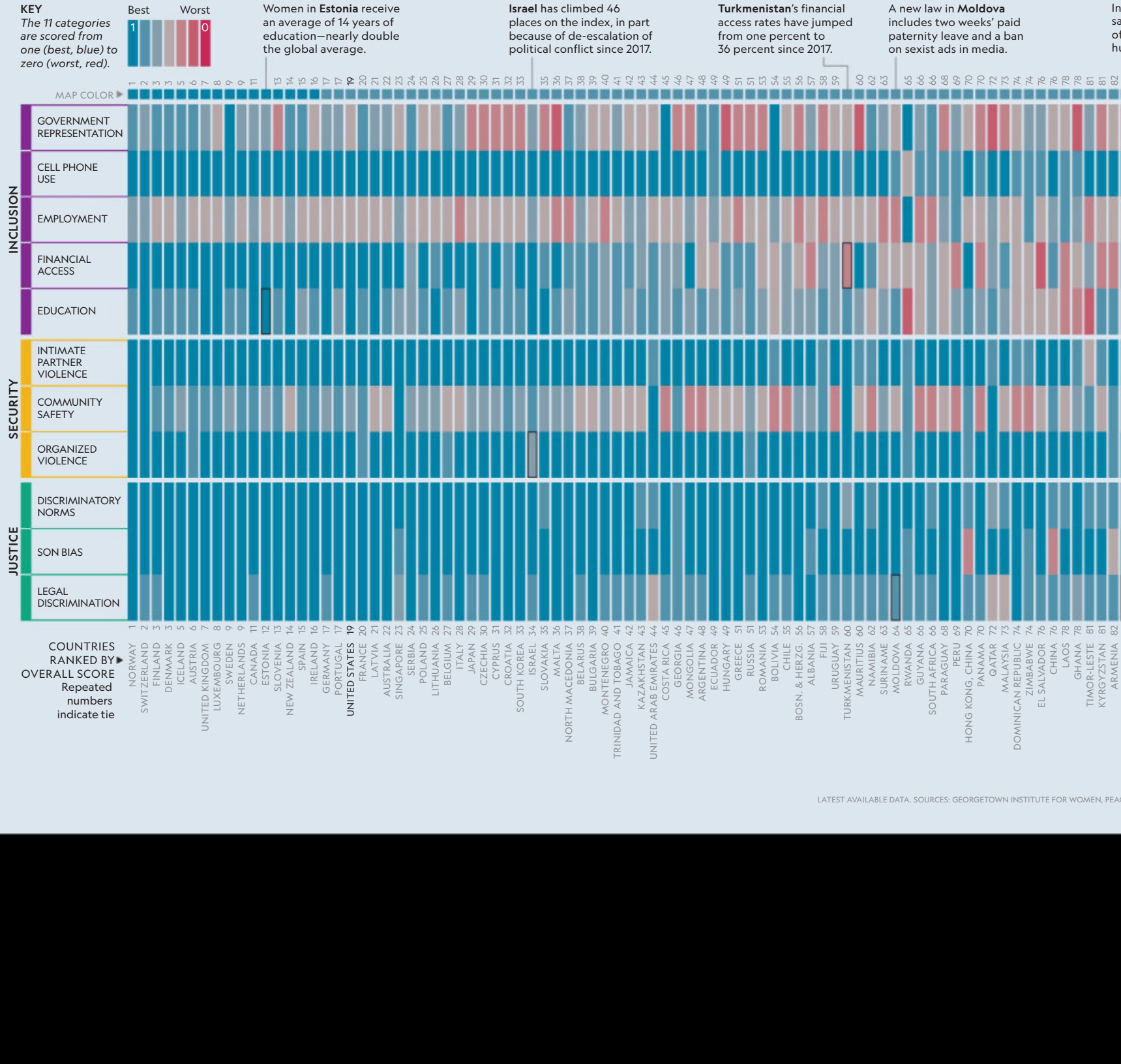
Women in **Estonia** receive an average of 14 years of education—nearly double the global average.

Israel has climbed 46 places on the index, in part because of de-escalation of political conflict since 2017.

Turkmenistan's financial access rates have jumped from one percent to 36 percent since 2017.

A new law in **Moldova** includes two weeks' paid paternity leave and a ban on sexist ads in media.

In sa of hu



LATEST AVAILABLE DATA. SOURCES: GEORGETOWN INSTITUTE FOR WOMEN, PEA

al and informal discrimination

Son bias
When the ratio of boys' to girls' births exceeds the natural rate

Legal discrimination
Laws limiting women's participation in society or differentiating between men and women

GLOBAL VIEW

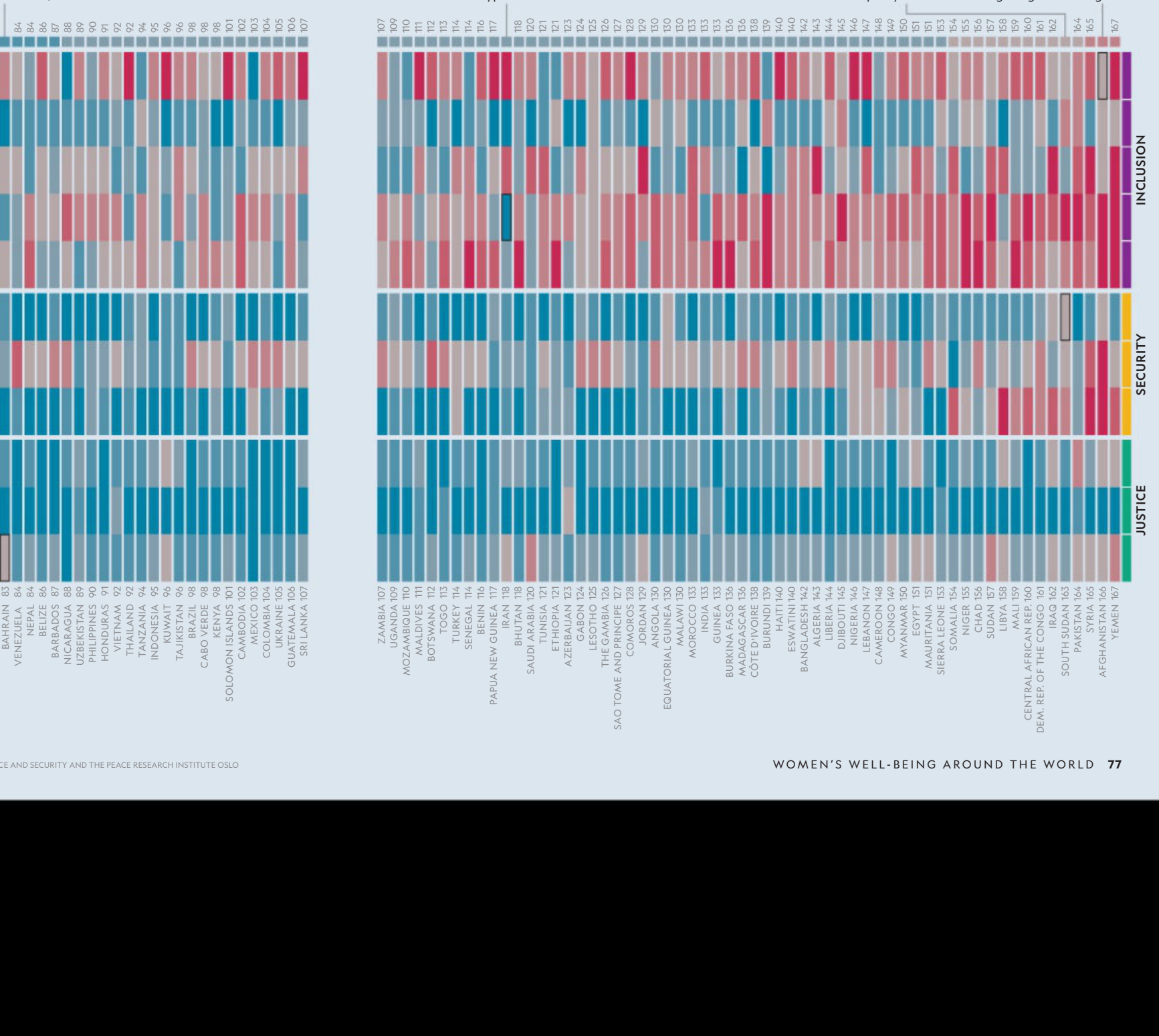
The 11 measures are combined to yield each nation's overall score, shown in the map at right. Differences between countries can be wide, but no country attains a perfect 1 ranking or scores 0.

Bahrain a new mandate ys a woman can go out f her home only with her usband's permission.

In **Iran** financial inclusion ranks high: More than 90 percent of women have a banking or other type of account.

In **South Sudan** at least 47 percent of women experienced intimate partner violence in the past year.

Afghanistan reserves 27 percent of legislative seats for women, surpassing the global average.

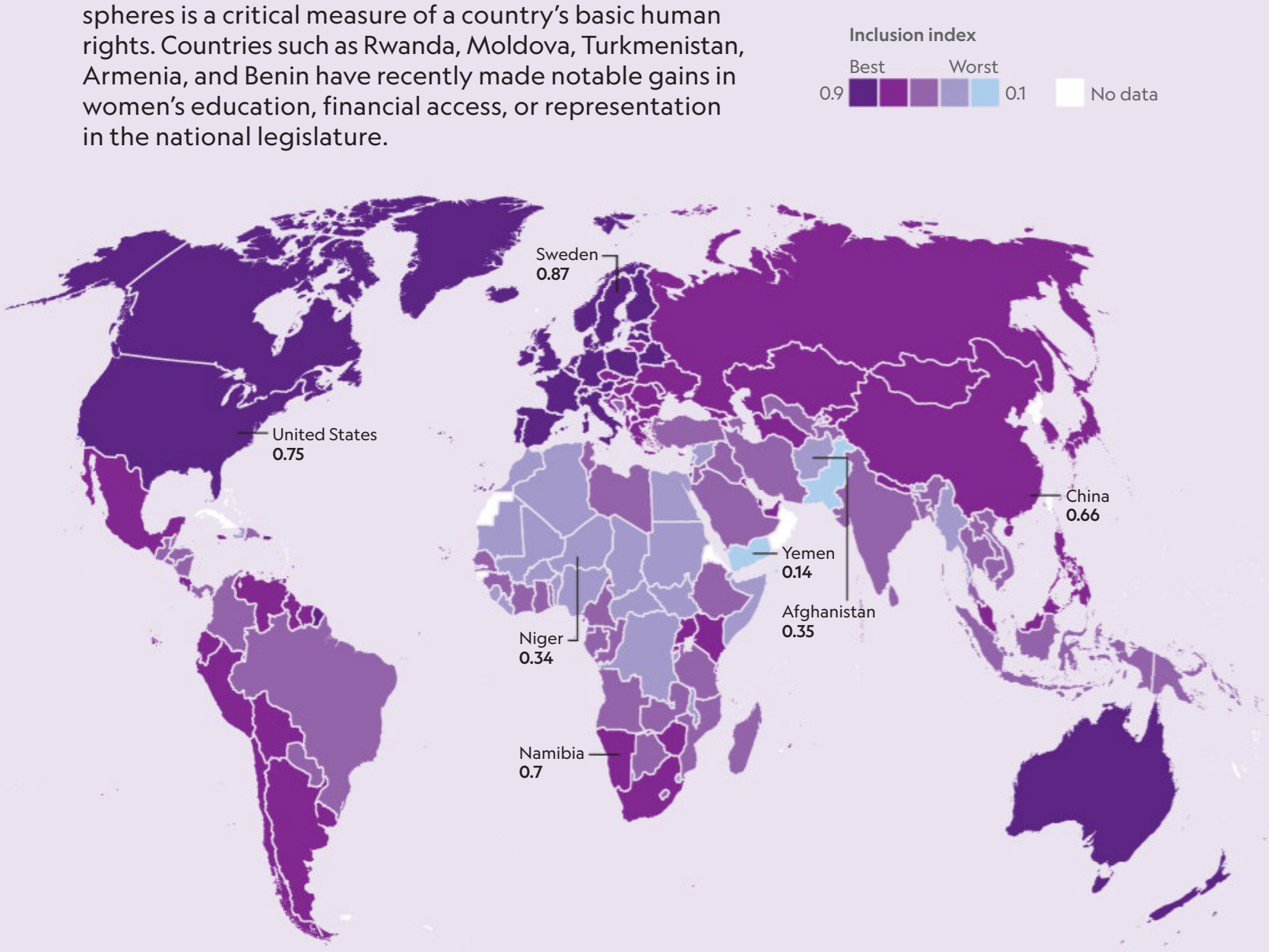


CE AND SECURITY AND THE PEACE RESEARCH INSTITUTE OSLO

AIMING FOR INCLUSION

MAKING THEIR VOICES HEARD

Women's level of inclusion in economic, social, and political spheres is a critical measure of a country's basic human rights. Countries such as Rwanda, Moldova, Turkmenistan, Armenia, and Benin have recently made notable gains in women's education, financial access, or representation in the national legislature.

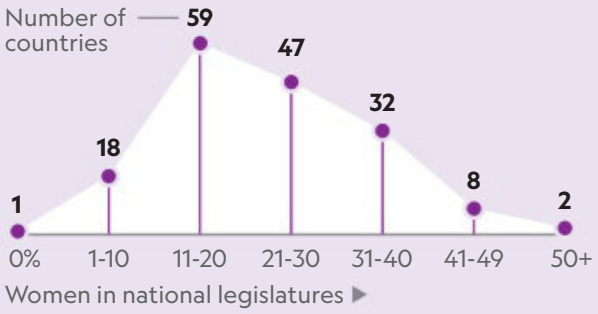


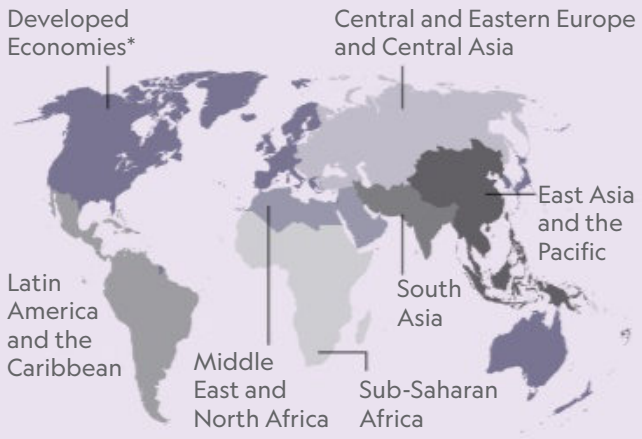
Financial access
Two out of every three women worldwide hold some form of financial account. Only one in 10 does in conflict-ridden countries.

Employment
The global gender gap in employment spans 30 percentage points, with exceptions: Ninety-three percent of Rwandan women work.

Representation in government

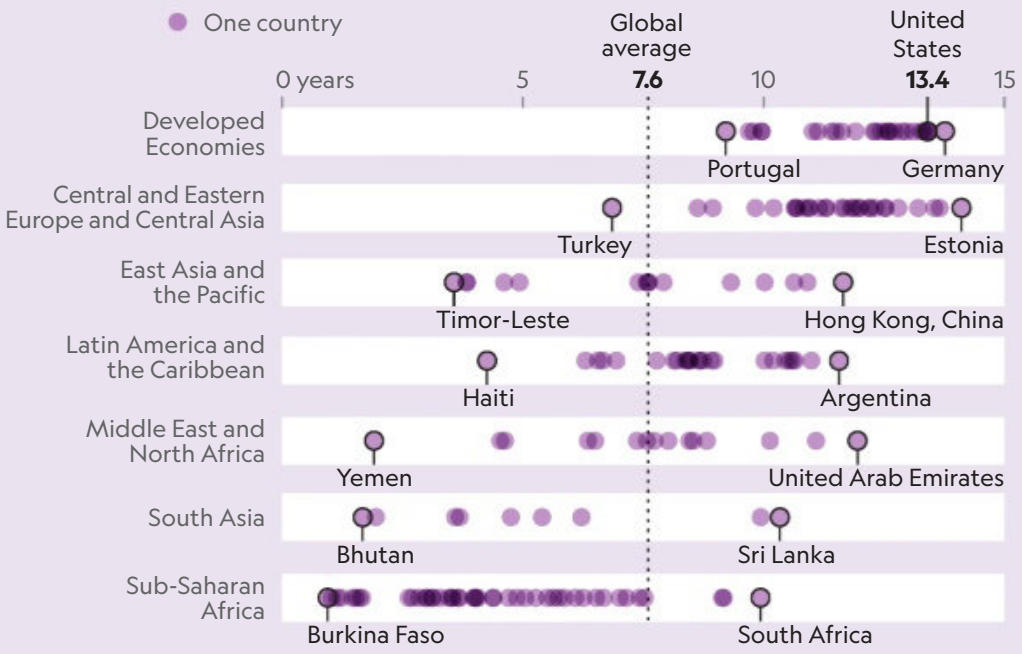
The average share of women in national legislatures is 21.5 percent worldwide. At the current pace, it will take 52 years to reach gender parity.





Education

Many countries have excellent rates of completion for girls at the primary school level but fall short in the quality of secondary school education and graduation rates.

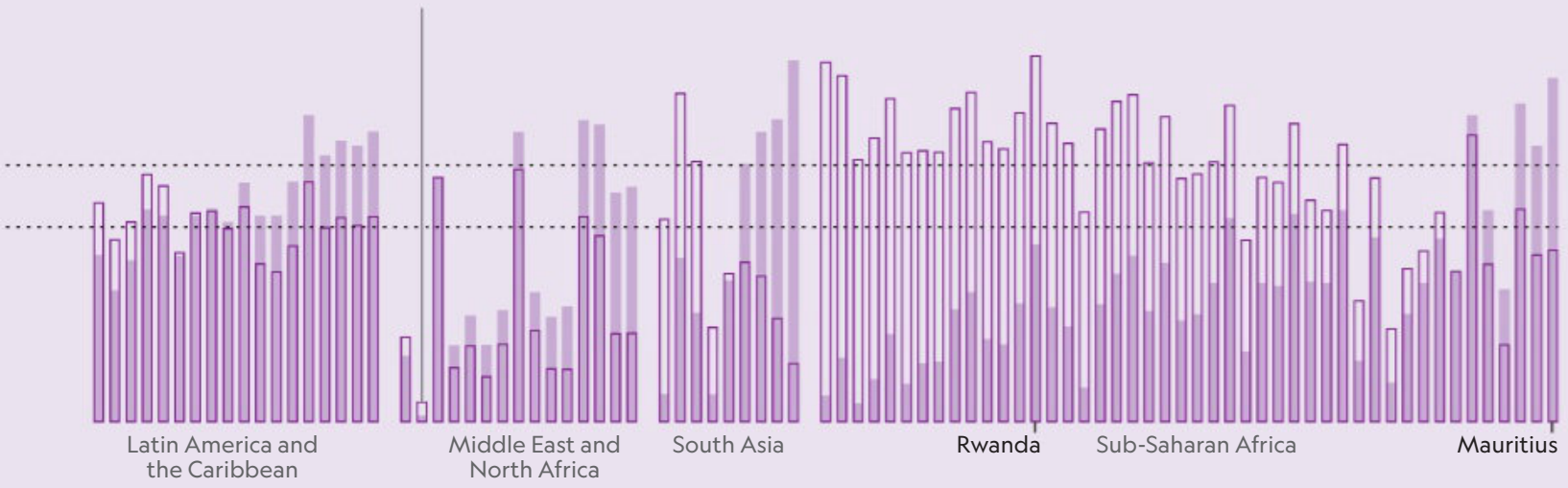


Cell phone use

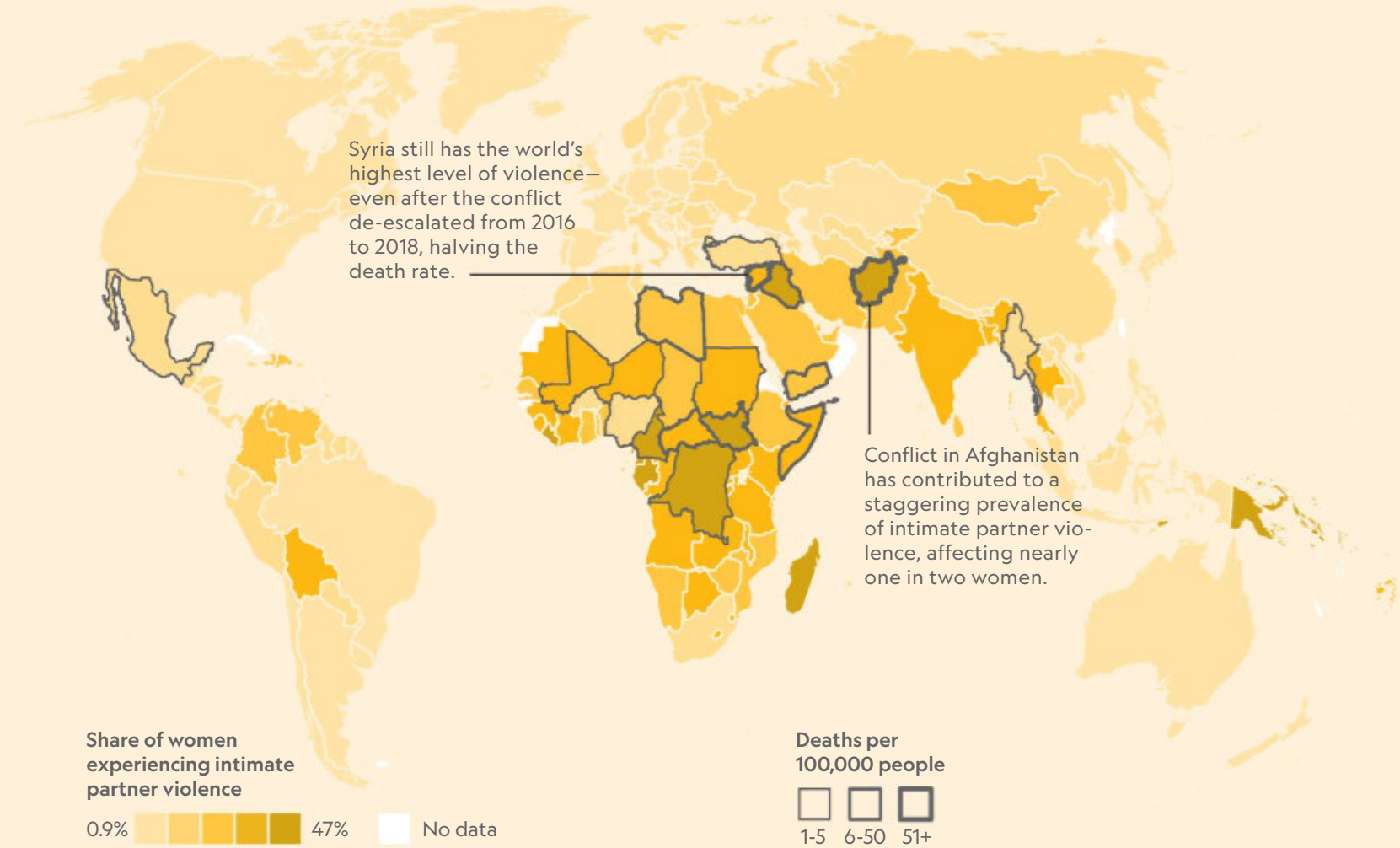
Phones can expand access to economic opportunities and promote independence.

Women in war-torn Yemen have the world's lowest level of financial inclusion (1.7 percent) and employment (5.3 percent).

Some 35 percent of people in sub-Saharan Africa are not covered by 3G+ networks, which inhibits mobile banking and can perpetuate male control of female incomes.



*27 COUNTRIES, INCLUDING U.S., CANADA, WESTERN EUROPEAN NATIONS, AUSTRALIA, AND JAPAN (PER GEORGETOWN DATA SET, BASED ON UN CRITERIA)



Intimate partner violence
About 379 million women experienced intimate partner violence in 2018. Yearly rates are a third higher in conflict-affected countries.

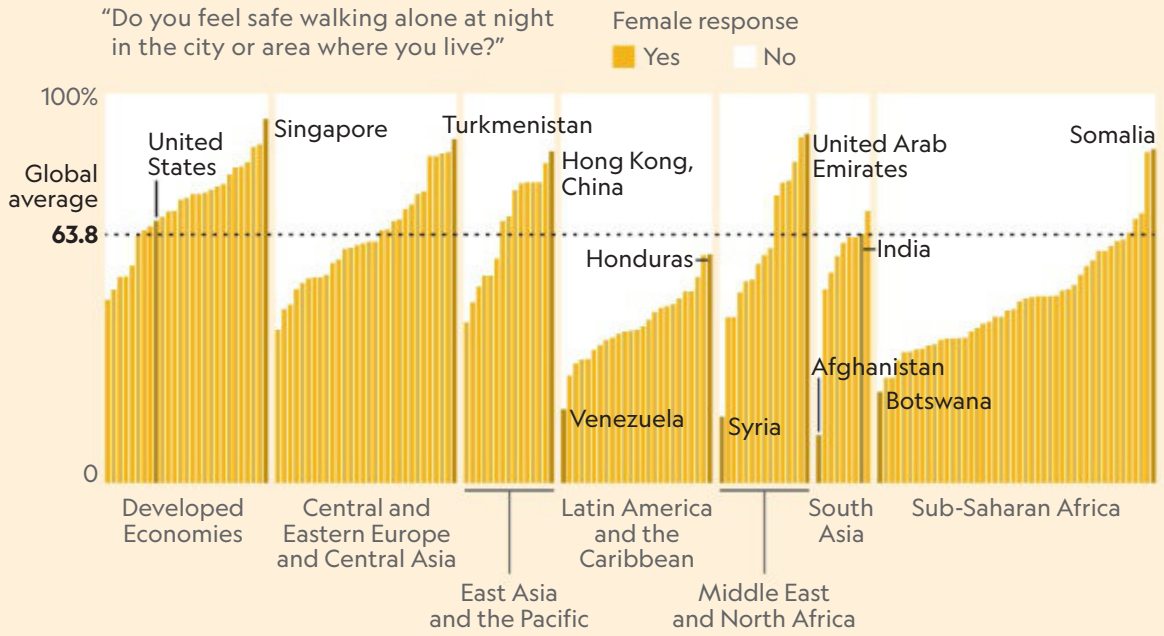
Organized violence
Deaths from war or other armed conflicts have declined worldwide for the fourth consecutive year since 2014.

SECURING SAFETY

BREAKING FREE OF VIOLENCE

Large-scale conflicts can normalize violence against women within their homes and communities. Such general insecurity can promote a hypermasculine culture, which has widespread repercussions for women.

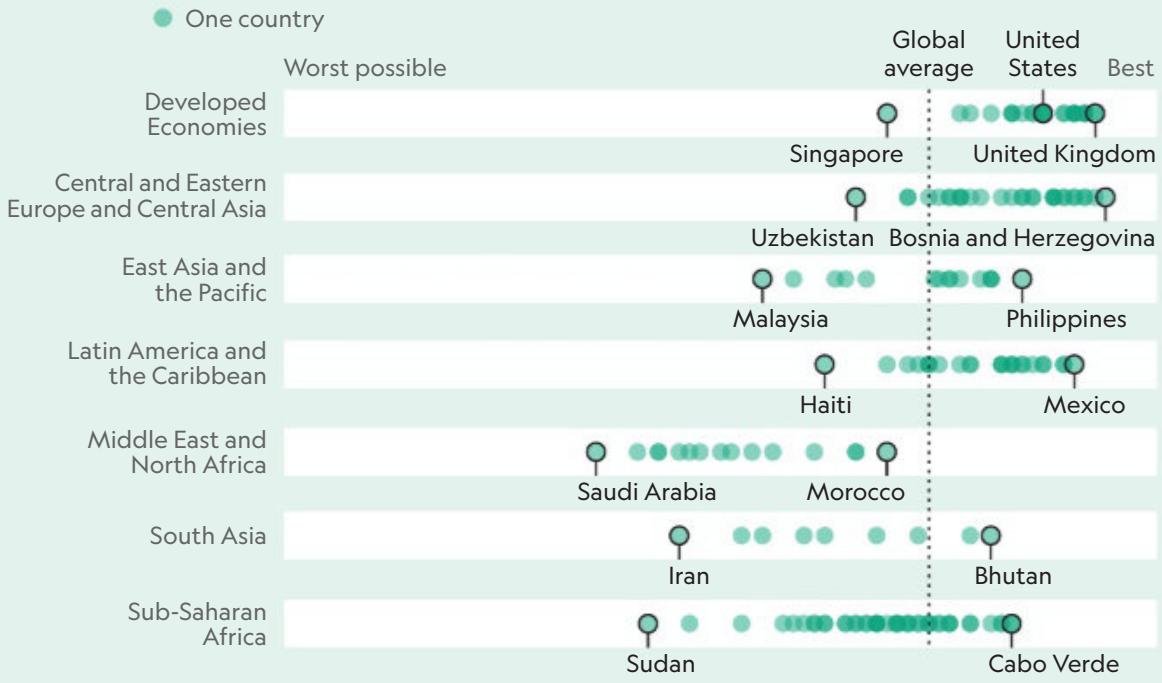
Perception of community safety
Fewer than 25 percent of women feel safe at night in Afghanistan, Syria, Venezuela, and Botswana. A lack of security makes women less willing to commute to opportunities outside home.



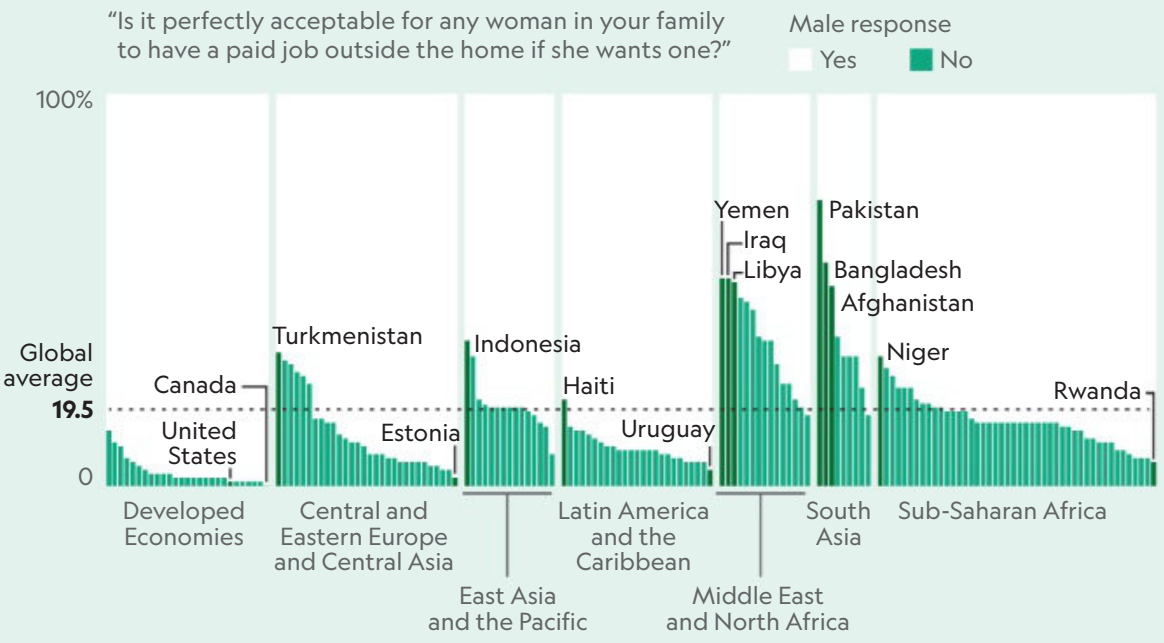
BALANCING THE SCALES OF JUSTICE

Discriminatory gender-based laws and societal prejudice can make it hard for women to own property, open bank accounts, find employment, start businesses, and otherwise participate in society. Even in nations that have laws to protect women, what's on the books may differ widely from what's enforced.

Legal discrimination
Ninety percent of the world's countries have one or more laws that discriminate against women. In the past two years, however, 118 countries took steps to reduce legal discrimination.



Discriminatory norms
Nearly 75 percent of men in Pakistan believe it's unacceptable for women to have a paid job. Disapproval exceeds 50 percent in Bangladesh, Yemen, Iraq, Libya, and Afghanistan.



Son bias
Prenatal sex determination and selective abortion can result in more boys born than girls.

BY **RANIA ABOUZEID**

PHOTOGRAPHS BY **YAGAZIE EMEZI**

REMAKING RWANDA

Tragedy and necessity have created opportunities that seemed unimaginable. The challenge now: to make them last.

Cynthia Ikirezi (center) beams with her fellow prefects, student leaders, at Gashora Girls Academy in Rwanda. Educating girls and preparing them for leadership roles are government priorities to empower women.

RWANDA'S GENOCIDE MUSEUM is a haunting place, one of the memorials in the capital city of Kigali that commemorate a hundred days of terrifying tribal conflict in 1994.

The horror was triggered after Hutu extremists blamed Tutsi rebels for the downing of a plane carrying Rwandan President Juvenal Habyarimana and Burundian President Cyprien Ntaryamira. Habyarimana, like about 85 percent of Rwanda's population, was a Hutu. Tensions over the fatal crash exploded into a killing rampage that left up to one million Tutsi dead. Thousands of Hutu also were killed. At least a quarter of a million women were reported to have been raped, and more than 95,000 children were orphaned. When the conflict was over, Rwanda's surviving population of about six million was predominantly female.

Visitors to the Campaign Against Genocide Museum are ushered through seven galleries in near darkness, harrowing images, videos, and maps on the walls, before they emerge into the neon light of liberation in the last two rooms. The museum sits in the administrative heart of the capital, adjacent to the parliament and across the street from the supreme court, institutions that were forever altered by the atrocity.

Alice Urusaro Karekezi remembers those dark days and the daunting questions of how Rwanda would move forward. A human rights lawyer, she spearheaded an effort to have the rapes punished as a war crime in 1997, and she co-founded the Center for Conflict Management in 1999.

"You had the majority of the dead—men," she says. "The majority of the fugitives—men. The majority of the prisoners—men. Who will run the country?"

Out of tragedy, necessity, and pragmatism, women—up to 80 percent of Rwanda's surviving population—stepped in to fill the leadership void.

Aided by women's civil society groups, lawmakers have introduced some of the most women-friendly policies in the world.

In 1999, overturning tradition, women officially were allowed to inherit property in the absence of a will, making landowners of rural daughters who'd been disenfranchised in favor of their brothers. Other reforms enabled women to use their land as collateral to obtain loans. Women were granted the right to open bank accounts without their husband's permission, further encouraging financial independence. Girls' education was prioritized through efforts that allowed more of them to attend college, and incentives were created for girls to study traditionally male-dominated subjects.

Rwanda has moved from a nation that treated women like property, whose chief function was to have children, to one that constitutionally mandates that at least 30 percent of government positions are occupied by women. Since 2003 Rwanda has consistently had the highest female representation, proportionally, of parliamentarians in the world—currently 61 percent in the lower house. Four of the nation's seven supreme court justices are women, including the deputy chief justice.

The presidency remains the domain of men—since 2000 the office has been held by Paul Kagame, the former military commander whose forces ended the genocide—but women occupy 13 of the 26 seats in Rwanda's

Since 2003 Rwanda's Constitution has required women hold 30 percent of elected positions. Today, with 49 women in parliament (33 are shown here), that figure is 61 percent—the highest in the world. Four of the seven supreme court seats are held by women.

After the genocide in 1994, lawyer Alice Urusaro Karekezi fought to ensure sexual violence was punished as a war crime. She and many others left well-paying jobs abroad to return to their homeland. “We came here to build,” says Karekezi, shown at her home in Kigali.

cabinet. Viewed as an authoritarian by some, a visionary leader by others, Kagame, with his ruling Rwandan Patriotic Front, championed the push to form a new national identity that purged any mention of Hutu and Tutsi, and took giant leaps toward gender equality.

Born a refugee in Tanzania to a family

that fled Tutsi persecution in 1959, Emma Furaha Rubagumya remembers her grandfather scolding her father for allowing her to start high school instead of getting married. Her grandfather, she says, feared that "she [was] not going to be a good woman" if she continued her studies instead of marrying and having children. The "big fight" between the two men before she entered college was another episode "that I cannot forget in my life."

Today, Rubagumya, 52, is a first-term parliamentarian. Elected in 2018, she leads parliament's Committee on Political Affairs and Gender. Her grandfather, who died in 1997, did not live to see her elected to parliament, but he did meet her husband and three daughters.

She remembers that during the battles over her education, her mother did not intercede on her behalf because "the way society was set then, she wouldn't go in front of her father-in-law to argue for me." Her mother and grandmothers were "just women in villages, cultivating lands, taking care of their children. They never went to school." But today, she says, "do you think I would not argue for my children to be educated? Do you think that my children would not argue for themselves to be educated? Even many women villagers would tell you that … they see educating their children as their first priority."

Justine Uvuza led the legal division of the Ministry of Gender and Family Promotion and was tasked with, among other things, identifying gender-discriminatory laws to be amended or repealed, such as a law that forbade women from working at night. Another law not only prohibited women from entering the diplomatic corps, but said a woman was "part of the property" of a man who became a diplomat. Changes in Rwanda's laws also established a Gender Monitoring Office to promote and oversee gender-equality initiatives. Women in parliament lobbied for laws against gender-based violence that criminalized marital rape, and amended the succession law in 2016 to allow childless widows to inherit a spouse's property.

The post-genocide changes came about in large part because of the absence of men, but as human rights lawyer Karekezi says, also "because of a political vision." Women were rewarded for refusing to shelter men, including kinsmen, who were involved in the genocide, and for testifying against their rapists. The pro-women policies, Karekezi says, also recognized a woman's precolonial role in decision-making, when the country's kings were counseled by their mothers and when rural women held communities together while men were away with grazing livestock.

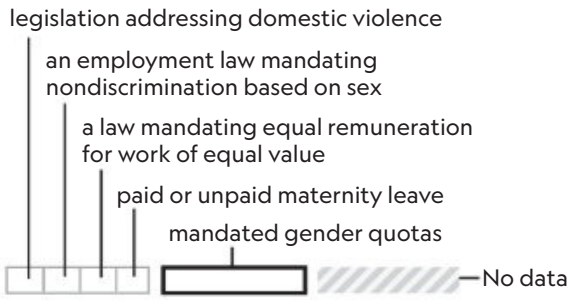
RWANDA'S VALUES AND EXPECTATIONS for women, at least in the public realm, have changed in a generation. As more women like Rubagumya have entered the government's ranks, their impact has been inspirational in addition to shaping laws and policies. Agnes Nyinawumuntu, 39, is president of a 160-member women's coffee-growing cooperative high in the lush hills of the eastern Kayonza district. Before the genocide, she says, the list of things

> **You had the majority of the dead—men. The majority of the fugitives—men. The majority of the prisoners—men. Who will run the country?**
>
> **ALICE URUSARO KAREKEZI** HUMAN RIGHTS LAWYER

POWER IN NUMBERS

Women account for roughly half the world's population but occupy less than a quarter of political seats. Rwanda is an outlier, with more women in power, proportionally, than any other country (followed by two other authoritarian-leaning nations, Cuba and Bolivia). But political parity—whether through appointments or elections—remains an elusive goal in many countries.

A country ▨ has or ☐ does not have:



Elections amplify gains
Rwanda's post-conflict, 2003 Constitution calls for 30 percent of legislative seats to be reserved for women. Last year women won double the seats required by quota and now represent 61 percent of the legislature.

Progress takes time
Sweden's parliament has almost reached gender parity with voluntary quotas introduced in the 1970s. Since then the number of women holding seats has risen from 14 to 47 percent.

Quotas aren't enough
Countries with sanctions for failing to meet quotas, such as Costa Rica where candidate lists below the quota are rejected, tend to have more women leaders. The Democratic Republic of the Congo, which has no sanctions, has a 50 percent quota, yet women hold only 10 percent of seats.

							Rwanda	60-64 percent women in national legislature
								55-59
							Cuba	50-54
							Bolivia	
▲ Women hold more than 50 percent of seats								
					Costa Rica	Grenada	Andorra	45-49
						Mexico	Finland	
						Namibia	Spain	
						South Africa	Sweden	
						Nicaragua	Senegal	40-44
							Belgium	
							Norway	
							New Zealand	
					Argentina	Mozambique	Denmark	N. Macedonia 35-39
					Ecuador	Tanzania	France	Portugal
					Burundi	Tunisia	Iceland	Serbia
					Ethiopia	Austria	Italy	Timor-Leste
					El Salvador	Guyana	Belarus	Switzerland 30-34
					Trin.&Tobago	Cameroon	Germany	U.K.
						Uganda	Monaco	Nepal
						Zimbabwe	Netherlands	Australia
			Canada	Algeria	Albania	Moldova	Kazakhstan 25-29	
			Dominican Rep.	Angola	Bulgaria	Poland	Laos	
			Peru	Djibouti	Estonia	Afghanistan	Philippines	
			Suriname	South Sudan	Latvia	Iraq	Vietnam	
		Dominica	Chile	Eq. Guinea	Lesotho	Seychelles	Czechia	Montenegro Armenia Pakistan 20-24
		Honduras	Uruguay	Eritrea	Malawi	Somalia	Ireland	Romania Bangladesh Singapore
		Panama	Venezuela	Guinea	Mauritania	Bos. & Her.	Lithuania	San Marino China Turkmenistan
		United States	Cabo Verde	Kenya	Morocco	Croatia	Luxembourg	Slovenia Israel U.A.E.
			Barbados	Guatemala	Colombia	Niger	Greece	Cambodia North Korea Thailand 15-19
				Jamaica	Gabon	Togo	Russia	Jordan Saudi Arabia Turkey
				St. Lucia	Libya	Zambia	Slovakia	Kyrgyzstan South Korea Uzbekistan
				Brazil	Madagascar	Cyprus	Azerbaijan	Mongolia Tajikistan Fiji
			Antigua&Barb.	The Bahamas	Congo	Guinea-Bissau	Sierra Leone	Malta Georgia Myanmar 10-14
			St. Kitts & N.	Paraguay	Côte d'Ivoire	Liberia	The Gambia	Ukraine India Syria
			St.Vincent&G.	Burkina Faso	Egypt	Mauritius	Hungary	Bahrain Japan Nauru
				Chad	Ghana	S. Tome & Pr.	Liechtenstein	Bhutan Malaysia Palau
						Belize	Benin	D.R. Congo Iran Marshall Is. 5-9
							Botswana	Eswatini Qatar Samoa
							C.A.R.	Mali Sri Lanka Tonga
							Comoros	Brunei Kiribati Tuvalu
								Haiti Maldives 0-4
								Nigeria Oman
								Kuwait Yemen
								Lebanon Solomon Is.
▼ No women in national legislature								
								Micronesia
								P.N.G.
								Vanuatu

NOTE: IN BICAMERAL GOVERNMENTS, ONLY LOWER HOUSE DATA ARE MEASURED. NATIONAL LEGISLATURE DATA AS OF JULY 2019. LEGISLATION DATA AS OF MARCH 2019.

KENNEDY ELLIOTT, NGM STAFF. SOURCES: ZEINA HILAL, INTER-PARLIAMENTARY UNION; WORLD BANK

TOP LEFT

Rwandan society expects women with jobs to continue bearing the brunt of household duties, says Redempter Batete, who is raising two sons, Aaron (at left) and Abel, while working for UNICEF as an expert on gender issues.

TOP RIGHT

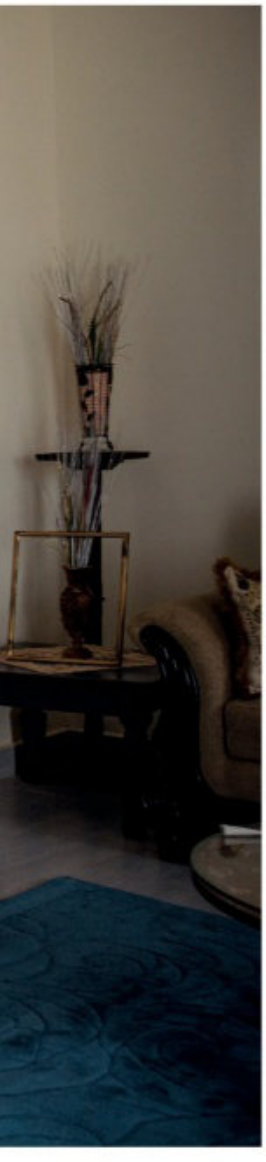
The Rwanda Women's Network provides safe spaces for women to spend time together and acquire vocational skills. In the eastern Mugesera district, Nyirabizeyimana Immaculee (at right) learns sandal making.

BOTTOM RIGHT

Women are leading Rwanda's economic development efforts, says Minister of Gender and Family Promotion Solina Nyirahabimana. "Women have changed the narrative."

BOTTOM LEFT

Anne Mazimhaka (at left) co-founded Illume Creative Studio to change perceptions of Rwanda—particularly what appears on internet search engines—through developing marketing content, filmmaking, and organizing events.



> **We are not yet there 100 percent. Mind-set changing is not something that happens overnight.**
>
> **EMMA FURAHA RUBAGUMYA**
> CHAIRPERSON, COMMITTEE ON POLITICAL AFFAIRS AND GENDER

women couldn't do, including coffee growing, was long. "There was only one activity for us: to be pregnant and have kids." Nyinawumuntu has five, and although her husband also works in agriculture, she's the primary breadwinner. Seeing women in parliament, she says, "gives us confidence and pride. I see that if I work, I can get far. That's why some of us became local leaders."

Rwanda's gender-sensitive legal and policy framework and number of women in power are impressive, but the data also conceal a deeper, messier truth about the limits of legislating change.

Rwandan women didn't fight for their rights in the streets; they achieved them through legislative action, expecting that reform would trickle down and permeate society. Yet neither Rubagumya, the parliamentarian, nor Uvuza, former head of the Ministry of Gender and Family Promotion's legal division, believe society has changed so much that the 30 percent quota is no longer necessary to ensure a robust female parliamentary presence.

"We are not yet there 100 percent," Rubagumya says. "Mind-set changing is not something that happens overnight." That much is clear in gender relations within families, which Uvuza says have not changed as much as the government policies. Uvuza, whose doctoral dissertation examined the public and private lives of Rwanda's female parliamentarians, says a Rwandan woman's power, no matter how vast in public, still stops at her front door: "The men are not changing from the old ways."

Even the husbands of female parliamentarians, Uvuza says, expect their wives to "make sure his shoes are polished, his shirts are ironed, and his water is in the bathtub. These are the kinds of things that most women were telling me."

The next step in Rwanda's gender evolution, says Mary Balikungeri, director and founder of the Rwanda Women's Network, is focusing on men and "how we transform our own families, our own husbands."

"We cannot change much if these men don't change the way they look at things, so we need to bring them into a dialogue," she says.

Minister of Gender and Family Promotion Solina Nyirahabimana agrees that in 25 years of breaking gender stereotypes by telling women what they can do, "men have been left behind" in the conversation. She says her ministry has a more ambitious plan: It intends to prevent discrimination from being seeded, starting with instilling gender-equality principles in children.

In an after-school club in the southern Kamonyi district, teenage girls and boys act out plays based on what they've learned about combating gender stereotypes. In one, a boy questions his mother's decision to prioritize his education over his sister's, saying he can help with the housework and that the task shouldn't fall solely to his sister.

For Redempter Batete, 39, a gender specialist with UNICEF, teaching boys about women's rights is the logical next step. "If we don't target those little

Rania Abouzeid is the author of *No Turning Back: Life, Loss, and Hope in Wartime Syria*. She's covered the Middle East and South Asia for more than 15 years. Photographer **Yagazie Emezi** focuses on stories about African women and their health, sexuality, education, and human rights.

ones now, then we risk to lose out on opportunities when they grow up."

Rwanda is many years into an experiment whose inception—the genocide—will hopefully never be repeated anywhere. Kigali created the legislative scaffolding to help women rise, and is now working on empowering women and girls within their homes, but can change be achieved without robust top-down implementation and enforcement?

Rubagumya, the parliamentarian, knows the pain of feeling disenfranchised and powerless. "As a young girl, as a refugee, wherever you go, they look at you as somebody who doesn't belong there," she says, describing herself as part of "the first generation to come from nowhere" and enter power in Rwanda. Her family returned to Rwanda in 1997. Armed with a college degree and the zeal of a woman who finally felt at home, she set about changing her country, first as an administrator working on gender equality in the Ministry of Education and on girls' access to education, and now as a parliamentarian. She's proud of how far Rwanda and its women have come and is looking ahead to where she wants the country to be: "We have the frameworks, we have policies, we have laws, we have enforcement mechanisms… We've walked a journey, we've registered good achievements, but we still need to go further to make sure that at some point we shall be totally free of all imbalances." □

Vestine Mukeshimana has transported people on her motorbike in Kigali for more than a decade. When she started the business, her male colleagues encouraged her and referred customers. It's normal in Rwanda, she says, to support women entrepreneurs.

Q: What Was Your Breakthrough Moment?

"AFTER 9/11 I DELIVERED THE PRESIDENTIAL RADIO ADDRESS AND DESCRIBED WHAT **WOMEN** WERE FACING IN AFGHANISTAN. AMERICANS WERE SHOCKED & THANKED ME FOR **SPEAKING OUT.** I REALIZED I HAD A VOICE AND I NEEDED TO USE IT."

Laura Bush

FORMER FIRST LADY AND EDUCATOR

The onetime schoolteacher and librarian made literacy promotion her signature issue during her husband's two terms in the White House (2001-09). Now back in her native Texas, she's involved in global initiatives to help women attain health care, education, and gender equality.

Q: What Was Your Breakthrough Moment?

CHIMAMANDA NGOZI ADICHIE

THE AWARD-WINNING AUTHOR OF NOVELS AND ESSAYS IS ALSO ACCLAIMED FOR HER TED TALK "WE SHOULD ALL BE FEMINISTS" AND FOR RECEIVING A MACARTHUR FOUNDATION FELLOWSHIP.

It was when I was nine years old, in the third grade, and I remember this very clearly. My teacher had said that the child with the best results on the test that she gave would be the prefect. So I got the best result—and then she said, "Oh, I forgot to mention, it has to be a boy." I just thought, Why? It would make sense to have said the class prefect has to be the child with the best grades or the child with some sort of useful skill. But the idea that this position of prestige and power in the classroom was reserved for somebody by an accident of being born a particular sex—that was just strange. So my sense of righteous indignation flared up, and I said to my teacher, "That makes no sense." That was the first time that I spoke up about sexism. It didn't work, but it was the moment for me that I don't think I'll ever forget.

23%

of the seats in countries' chief legislative and representative institutions belong to women, as of July 2019. Women's representation in these national institutions—known as parliaments, congresses, senates, assemblies, among other names—has nearly doubled since 1999, when just 13 percent of the seats were held by women.

JACINDA ARDERN

PRIME MINISTER OF NEW ZEALAND

I got a letter from a woman in New Zealand who said that she got pregnant around the same time as me, that her boss had been accommodating and flexible when she told him she was pregnant—and that she did not believe that would have happened had I not made my announcement. I don't know if that's true, but I remember sitting there and thinking: If me having a baby has made one employer look differently on a woman, a mother, in his workplace, then that is a good thing.

SYLVIA EARLE →

OCEANOGRAPHER AND NATIONAL GEOGRAPHIC EXPLORER-IN-RESIDENCE EARLE HAS SET RECORDS FOR DIVE DEPTHS AND LOGGED MORE THAN 7,000 HOURS UNDERWATER. IN 1970 SHE LED THE FIRST ALL-WOMAN TEAM TO INHABIT AN OCEAN-FLOOR LAB.

I had a breakthrough about two things during that first time that I lived underwater. One was as a scientist, getting to see the individuality of creatures in the sea. The other thing was, as a woman being expected to do what the male aquanauts, scientists, and engineers did, I found that we were treated in a very condescending way. We were called aqua-babes and aqua-belles and aqua-naughties. And I posed the question at the time: Suppose you started calling the astronauts astro-hunks or astro-he-men, what would they think? But in the end, having a sense of humor and just sticking by what we were there to do as scientists and engineers was really what kept us going. And the success of our team helped pave the way for women in space.

'I FOUND THE COURAGE.'

Nelida E. Jean-Baptiste Pellot, a member of the Women of Impact community,* is a housing specialist in South Florida.
"I tried to commit suicide a while back, and it was dark, but somehow, sitting in the hospital, I found the courage and thirst for life."

*NATIONAL GEOGRAPHIC'S WOMEN OF IMPACT, A COMMUNITY WHERE WOMEN SHARE THEIR STORIES, IS AT *ON.NATGEO.COM/WOMENOFIMPACT.*

'THAT I BELONG TO MYSELF.'

Alicia Garza, a longtime advocate for workers' and women's rights, joined with two other women to organize protests against police violence around #BlackLivesMatter.

"My most recent breakthrough is that I belong to myself. Sometimes when you're in a position such as this one, there are a lot of demands being placed on you: your time, your energy, your heart space. There are more requests for support, for whatever, than you can reasonably engage. So in the process of trying to prioritize, first and foremost you have to prioritize yourself and what you need to be well."

← EMMA GONZÁLEZ

CO-FOUNDER OF THE MARCH FOR OUR LIVES MOVEMENT AND AN ADVOCATE FOR LGBTQ RIGHTS

"I've been pretty self-aware as to who I am, but there are definitely things that happened, like the "We call BS" speech when I became nationally recognized, which was a pretty big part of my life. In ninth grade I started questioning my sexuality, and then I came out, and that was a big part of my life too. But I think I've been pretty comfortable in my own skin for a very long time.

KRISTEN LEAR

BIOLOGIST RESEARCHING AT-RISK BAT SPECIES, WITH NATIONAL GEOGRAPHIC SUPPORT

"The first time I stepped into a classroom to teach, that's when I fell in love with bat conservation and sharing my passion with others, and felt in my heart that this is how I want to make a difference in the world.

INTERVIEWS HAVE BEEN EDITED FOR LENGTH AND CLARITY. PHOTOS: GILLIAN LAUB (BUSH); ERIKA LARSEN. ILLUSTRATIONS: LAUREN TAMAKI

A RIGHT TO BE SAFE

Since a horrifying assault shocked India, women there have demanded—and gotten—more protection from harassment and abuse in public spaces.

BY **NILANJANA BHOWMICK**

PHOTOGRAPHS BY **SAUMYA KHANDELWAL**

THE YOUNG WOMEN LINED UP in an awkward half circle, six of them pulling at their long tunics, fidgeting with their scarves. For pants, they'd chosen jeans over the baggy *shalwar* trousers favored by India's traditional society—a tiny rebellion. But it mattered, for girls who'd come of age in a southeast Delhi slum. As a journalist, I'd been following their progress in a program that was supposed to raise awareness of women's safety in urban India, and now, in early 2019, I'd brought some foreign visitors to see what these Gendering the Smart Safe City participants had to say.

"Can we sing our song?" one asked.

Of course, we said. We watched as their stance changed—feet apart, faces lifted, no pretense at smiles. They stared right at us. They made their own hip-hop beat, with knuckle beats, claps, finger snaps—and they started to rap. Rapping in Hindi sounds extra tough:

Say it aloud once with me.
This city is for you and me.
This city is not anyone's property.

Did the foreigners see me trying not to cry? I am 42, with a family of my own. I've crisscrossed India, usually alone, for nearly 20 years. The stories women tell me, and the daily stories of my own life, are of a society in which public space has been marked as the territory of men.

I remember being a teenager, trying to make myself invisible inside oversize clothes, hiding from catcallers on the street. Two decades later, as a working professional, I was still hiding away, slipping low in the driver's seat of my car to avoid the intrusive eyes of men.

For women in India, the safety statistics are grim. The National Crime Records Bureau in 2011 reported 228,650 crimes against women, including murder, rape, kidnapping, and sexual harassment. That year an

PREVIOUS PHOTO

A woman walks across a street in New Delhi, near where the gang rape of a woman on a bus in 2012 sparked protests nationwide. In response the federal government fast-tracked court hearings for accused assailants and set up a fund for safety initiatives.

international survey ranked India the world's fourth most dangerous country for women, behind only Afghanistan, the Democratic Republic of the Congo, and Pakistan. The treatment of women in public has been a frustration for generations, but it was the case of Jyoti Singh, the woman also known as Nirbhaya, that caused something to break in India—a long-held willingness to accept danger to women as part of daily life.

Nirbhaya means "fearless" in Hindi. She became known to the world in 2012 as the young medical student who was gang-raped in a private bus by six drunken men who twisted a rod inside of her after the rapes, and then threw her out of the bus. She later died. Her adult killers were arrested, convicted, and sentenced to death, an unusual outcome in a country where only one out of four rape cases leads to a conviction. (A juvenile served three years and is now living under a different name.) More remarkable was Indian society's reaction to Nirbhaya's attack—day after day of women protesting in the streets, chanting "Freedom

Usha Vishwakarma demonstrates self-defense techniques to students in Ramgarh, a rural part of Rajasthan state. Vishwakarma started the Red Brigade after she was attacked and the local police failed to act on her report. Now the group organizes marches, awareness campaigns, and self-defense training.

Indian society's reaction to the gang rape of the woman known as Nirbhaya was remarkable: day after day of women protesting and chanting "Freedom without fear!" It could lead to lasting change for India's women.

Since 2010, one car of each Delhi Metro train has been reserved for women. The transit system also has a help line for women and has female guards at many stations. In June the city announced it would begin offering free rides to women, making transportation more accessible for all classes.

without fear!"—that has perhaps begun to lead to lasting change.

Local and national agencies have poured money into new women's safety initiatives. In 2013 the leadership then in power set aside $145 million, calling it the Nirbhaya Fund, for measures to boost women's security. The current government has promised nearly three times that amount to start turning eight major cities, including Delhi, into safer, better lit, and possibly more compassionate places for women.

The first stages of work are under way: In Delhi police now offer free 10-day self-defense programs for women, and they've fanned out through the city to give "doorstep training" to larger groups. In the southern state of Kerala, all-female police units, the Pink Police, have been assembled to patrol the streets and respond to crisis calls from women.

Pink is the designated color for most of the women-only services in the urban public transportation sector. Pink motor rickshaws are for female passengers; the drivers were all supposed to be women, but because of a lack of female drivers, now men too can drive these rickshaws after they receive security clearances by police. Metro trains now include separate coaches for women. At transit station security checks, women stand in their own lines, protected from men who might deliberately press in too close.

I confess to a certain ambivalence about all this. Government-arranged gender segregation? Is this the only way to begin making women as comfortable as men in public spaces? But then I see the hashtag campaigns of Indian women too, and am cheered: #TakeBackTheNight, a global effort that banded audacious women in India to walk outside together after dark. #MeetToSleep, which organized 600 women across the country last year to safely spend a night sleeping outdoors, as Indian men often like to do.

It's hard, changing men's perception of women as intruders in the public space, a key part of every women's safety program. But it's not impossible. The song of those Delhi rappers is on YouTube now. Look for Khadar ki Ladkiyan (Girls of Khadar), and you'll find it. Watch the women link arms in the street, gazing into the camera, looking fierce.

Listen to us, loud and clear.

We are brave, we do not fear.

The video's viewership isn't huge, but a lot of the admiring comments are from men. The first time I watched it, I recalled the voices of those Khadar girls—women, really—the first time they rapped for us. We were out of our minds with delight. We cheered, we whistled. We stamped our feet. "It's not like I am always brave," said one of the rappers, a woman named Ritu. "Sometimes I am scared too. But I am more angry and outraged."

Ritu told us this story too: A few of them recently had been standing together on a Metro train. They caught a man with his cell phone, recording video of them from behind. They weren't singing or rapping or trying to get attention, they were just standing on a train car, being female. Other passengers looked away, pretending not to see what was right in front of them, so the Khadar girls confronted him. They snatched the man's phone. They took their sandals off and hit him. Before the Khadar women could report him to police, the man jumped off at the next Metro stop and ran away. This is not ideal, Ritu agrees, but concerns about personal safety often override feelings of right and wrong. "What would you do when you know no one cares about what happens to you? You do what feels right at the moment." ▯

TOP

Officers from the Kerala Pink Police Patrol respond to a case of a man trespassing in a female-only accommodation in Thiruvananthapuram. The all-women units, which opened in the city in 2016 and include 32 officers, respond to reports that involve women and children and specialize in cases requiring counseling and arbitration.

BOTTOM

Women take part in the monthly Women Walk at Midnight, in Delhi. The initiative began in 2013 when one woman spent 24 hours walking through the city. Now the project aims to reclaim public spaces after dark and allow women to explore their cities without fear. The event is organized on Facebook and typically attracts four to more than a dozen attendees each month.

Author **Nilanjana Bhowmick** is a New Delhi–based journalist whose work focuses on women's empowerment and politics. Photojournalist **Saumya Khandelwal,** also based in New Delhi, focuses on gender and environmental issues.


POLICE
PINK POLICE PATROL
KL01BQ5320

Q: What Is the Most Important Change That Needs to Happen for Women in the Next 10 Years?

"THERE WILL BE NO HEALTHY WOMEN ON A DEAD PLANET."

Kris Tompkins

CEO TURNED ECO-PHILANTHROPIST

In eco-conscious retail, Kris McDivitt headed Patagonia, and Doug Tompkins co-founded North Face. Kris retired in 1993; the two wed, and began buying and preserving parkland in Chile and Argentina. Since Doug's death in a 2015 accident, Kris Tompkins presses on. Protected to date: 14.2 million acres.

Q: What Is the Most Important Change That Needs to Happen for Women in the Next 10 Years?

DONNA STRICKLAND

IN HER 20s SHE BEGAN WORK ON TECHNOLOGY THAT REVOLUTIONIZED THE USE OF LASERS—AND WON HER A SHARE OF THE 2018 NOBEL PRIZE IN PHYSICS. TODAY SHE'S A PHYSICS PROFESSOR.

What I would like to see is that, in the next 10 years, if we really have made it, we won't even have to talk about it. I think that's really the point that we want to get to. I am a little surprised at the big deal this has made, that I am the third woman to win the Nobel Prize in Physics; I had not even realized that I was. But also what I don't want—and what I do sort of see—is this huge pendulum swing: To try to get women ahead, we're leaving some men behind. There are far more women at university now than we've ever had, and in many of the disciplines women are outnumbering the men now. At some point we have to start worrying about why boys are not going.

43%

of women—compared with 23% of men—in the U.S. have taken at least one year off with no earnings, usually to tend a child or provide other caregiving, says the Institute for Women's Policy Research. Census Bureau data show women make 80 cents for each dollar men make. But when the institute factored in women's time away from full-time work in a 15-year period, the gap widened to 49 cents for each dollar.

JONATHA GIDDENS

AN OCEAN ECOLOGIST, GIDDENS IS A FELLOW AT THE NATIONAL GEOGRAPHIC SOCIETY'S EXPLORATION TECHNOLOGY LAB, WHERE SHE'S DEVELOPING A RESEARCH PROGRAM TO ASSESS BIODIVERSITY AND THE HEALTH OF ECOSYSTEMS IN THE DEEP SEA.

The media portrayal of women as objects. It would be a lot easier to move forward with where we need to go if the message from mainstream media supported women's roles as the keepers of wisdom and cooperation.

CHRISTINE LAGARDE →

ON *FORBES* MAGAZINE'S 2018 LIST OF THE WORLD'S MOST POWERFUL WOMEN, INTERNATIONAL MONETARY FUND MANAGING DIRECTOR LAGARDE RANKED THIRD BEHIND TWO HEADS OF STATE: GERMANY'S ANGELA MERKEL AND BRITAIN'S THERESA MAY.

I think the most important thing is that there be many more women in positions of authority and power. That will be the conduit of many other things that we all need, such as equal opportunity, equal pay, space, and respect. So, many more women in positions of authority and power in all sectors, public and private alike, in the developed and developing worlds. If you give me a second choice, I would say: at least seven years, if not more, of quality education for all girls, particularly in the least developed countries. Because young girls with education will find themselves with more parity with boys. We observe, in the economic research that we do, that they will tend to marry later in life, will typically have fewer children in the course of their life, and be able to make better choices in general.

'TO BE JUDGED ON MERIT.'

Sylvia Earle is an oceanographer and National Geographic explorer-in-residence. Her efforts in ocean conservation earned her the title "Hero for the Planet" from *Time* magazine.

"Equal opportunity. To be judged on merit. The change is not just how women are regarded by men, but how women regard themselves. You know, it starts with you."

INTERVIEWS HAVE BEEN EDITED FOR LENGTH AND CLARITY.

‘WOMEN IN SENIOR ROLES.’

Alex Morgan is an Olympic gold medalist in soccer, a repeat Player of the Year for the U.S. league, a World Cup champion in 2015 and 2019, and an advocate for equal pay in men’s and women’s sports.

“The single most important change is getting more women in senior roles and putting women in positions of power, where they can implement policies that lead to long-lasting change. That means a woman being paid a dollar to every dollar that a man makes. And that means having fair maternity and paternity benefits for people who want to have families: That’s a necessity.”

CHIMAMANDA NGOZI ADICHIE

THE AWARD-WINNING AUTHOR OF NOVELS AND ESSAYS IS ALSO ACCLAIMED FOR HER TED TALK “WE SHOULD ALL BE FEMINISTS.”

“More women’s representation will result in more diverse decisions that incorporate women’s experiences. I don’t think having women in positions of power means that the world is going to be perfect or that conflict will be eradicated. It just means that the concerns of half of the world’s population will finally be center stage.”

JEN GUYTON

NATIONAL GEOGRAPHIC EXPLORER GUYTON FOCUSES ON STUDYING MAMMALS AND CONSERVATION IN MOZAMBIQUE’S GORONGOSA NATIONAL PARK.

“We need to elevate female voices and stories, in journalism, film, photography, and more. For too long we’ve been seeing the world primarily through men’s eyes.”

PHOTOS: ERIKA LARSEN. ILLUSTRATIONS: LAUREN TAMAKI

THE HER

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EY HAVE BEEN RE ALL ALONG

"I HAD TO GET MY BOSSY ON sometimes," JoAnn Morgan said about her 45-year career at NASA. Morgan, the instrumentation controller, was the only woman in the control room at the Kennedy Space Center during the launch of Apollo 11 in July 1969. Half a century later, barriers still abound for women in science. But the women seen here, and their work over the past century, still impress and inspire. Some of them didn't get proper credit in real time; happily, history is remembering them now. As Marie Curie said, "Life is not easy for any of us. But what of that?"

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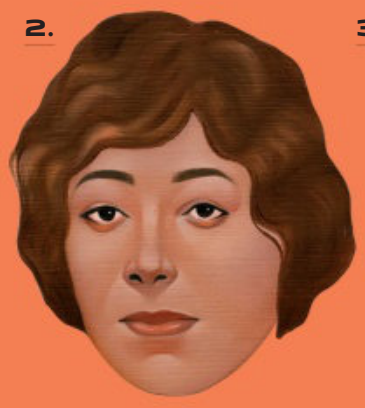


3.

1878-1968

1. LISE MEITNER
THE PHYSICS OF FISSION

Albert Einstein called the Austrian-born physicist "our Marie Curie," even before her discovery that atomic nuclei can be split in half—a first step in the eventual creation of the atomic bomb. She and her assistant, nephew Otto Frisch, explained and named nuclear fission in 1939. But after prejudice against Jews kept her name from a key experimental paper, her former colleague, Otto Hahn, won the 1944 Nobel Prize in Chemistry.

1879-UNKNOWN

2. VERA DANCHAKOFF
STEM CELL PIONEER

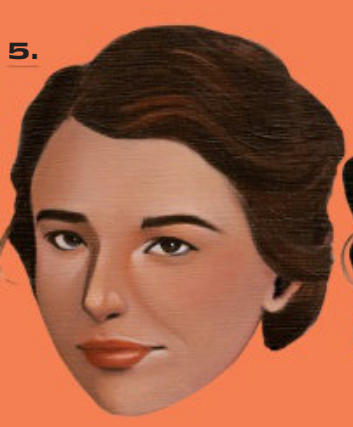
Eschewing her parents' plans for a fine arts education, she was the first woman to become a professor in Russia. In 1916 she described stem cells—those with the potential to develop into many different types of cells in the body. In a 2001 keynote address to the Acute Leukemia Forum, hematologist Marshall Lichtman said: "The rest of the century has been spent filling in the details of [her] experimental insights!"

1897-1984

3. JANAKI AMMAL
SWEETER SUGARCANE

She rejected a planned marriage to follow her passion for botany and hybridized India's sugarcane varieties into a plant sweet enough to grow into a 30-million-ton-a-year industry. Although her work was often ignored by male colleagues, Prime Minister Jawaharlal Nehru hired her to reorganize the Botanical Survey of India; for that work she was awarded the Padma Shri, one of the highest honors Indian civilians can receive.

5.



6.

1912-1997

4. CHIEN-SHIUNG WU
FIRST NUCLEAR WEAPONS

The Chinese-American physicist helped develop the process for breaking down uranium into isotopes during her work on the Manhattan Project, which produced the first nuclear weapons during World War II. Other experiments she conducted resulted in the 1957 Nobel Prize in Physics, awarded to two male colleagues: Tsung-Dao Lee and Chen Ning Yang. Her contribution was not acknowledged.

1920-1958

5. ROSALIND FRANKLIN
PHOTO 51: DNA REVEALED

The English chemist presented her x-ray diffraction photo showing crystallized DNA fibers at a lecture that James Watson attended. He later claimed that he'd paid scant attention. But her "Photo 51" revealed the double helix that Watson, Francis Crick, and Maurice Wilkins later described. She died of cancer at 37 in 1958; the three men won the Nobel Prize in Physiology or Medicine, without mention of her work, in 1962.

1932-2018

6. PHYLLIS BOLDS
THE STRENGTH OF STEM

The African-American physicist spent her career studying aircraft vibrations and flight dynamics in a research laboratory at Wright-Patterson Air Force Base outside Dayton, Ohio. Her work was instrumental in mitigating adverse physical effects on military aircraft, personnel, and cargo. All her life she tutored students in STEM—and she inspired several of her female descendants to become scientists.

8.

9.

1940-2011

7. WANGARI MAATHAI
GREENING THE PLANET

Born in rural Kenya, she was passionate about democracy, human rights, and the environment throughout her life. In 1977 she founded the Green Belt Movement, an environmental organization focused on improving livelihoods, especially women's, through community-based tree planting. She was the first African woman to receive the Nobel Peace Prize (2004), and in 2009 she was named a United Nations Messenger of Peace.

1941-1981

8. BEATRICE TINSLEY
EXPANDING UNIVERSE

At 26 she rose in public to challenge famous astronomer Allan Sandage. He said the universe will someday collapse; she said the universe will expand forever—and further research proved her right. When pursuing her science required that she relocate, she divorced, and left her two children with her ex-husband. Before her death from cancer at age 40, she would become known as a leading expert on the evolution and aging of galaxies.

1945-1985

9. JEAN PURDY
FIRST TEST-TUBE BABY

The British nurse and embryologist was one of three scientists whose work led to the birth, in 1978, of Louise Brown, the world's first IVF baby. Until 2015 the plaque displayed at the hospital where the fertilization took place named only colleagues Robert Edwards and Patrick Steptoe, despite Edwards's protestations. Edwards won a Nobel Prize in Physiology or Medicine in 2010, after both Purdy and Steptoe had died.

THE VAST MAJORITY of famous scientists are men. Since 1901, 96.7 percent of Nobel laureates have been men. Even today, less than 30 percent of the world's science researchers are women, says a UN report. Its conclusion: "Each step up the ladder of the scientific research system sees a drop in female participation until, at the highest echelons of scientific research and decision-making, there are very few women left."

WHERE ARE THE WOMEN IN SCIENCE?

(← Answer inside.)

BY **ANGELA SAINI**

ILLUSTRATIONS BY **LAUREN BREVNER**

"I HAVE SOMETHING to tell you."

I was ready to head home after giving a lecture about book documenting the history of sexism in science and its today—when a soft-spoken woman approached me. She t studying for a Ph.D. in computer science at a British univ the only woman in her group. Her supervisor wouldn't stop jokes. He never picked her for workshops or conferences.

"Every interaction is awkward for me. I feel intimidated," of the time I just find myself counting every minute." Her out the final years of her Ph.D., leave the university, and n

I've had hundreds of these fleeting encounters with wo and engineers, all over the world, in the two years since the book—which seems to reflect back at women the kinds they experience in their own lives. When these women a events to quietly share their stories, I've found what they is empathy, to be told they aren't imagining their misery. of discrimination, marginalization, harassment, and abuse though progress has been made, there's a long way to go.

THE SCIENTIFIC ESTABLISHMENT has long had a woeful r comes to women.

Charles Darwin, no less, described women as the intelle of men. Toward the end of the European Enlightenment, in it was assumed that women had no place in academia. M ties refused even to grant degrees to women until the 20t alma mater, Oxford University, waited until 1920. It took u Royal Society of London—the oldest scientific academy

existence—to admit its first women fellows. (Consequently, as historian Londa Schiebinger notes, "For nearly three hundred years, the only permanent female presence at the Royal Society was a skeleton preserved in the society's anatomical collection.")

It has been routine throughout the sciences for men to take credit for research done by women working alongside them, not just colleagues but sometimes also wives and sisters. This is how, as recently as 1974, pioneering astrophysicist Jocelyn Bell Burnell lost out on a Nobel Prize for her work on the discovery of pulsars, which was given instead to her supervisor, Antony Hewish. In a gesture of extraordinary generosity last year, when awarded a Special Breakthrough Prize in Fundamental Physics, Bell Burnell donated the entire three million dollars to studentships for women and other groups underrepresented in physics.

Even where the doors to the sciences have been pried open, life for women inside is often not easy. Sexism and misogyny linger in both overt and subtle ways. For example: A recent analysis of authorship of nearly 7,000 study reports in peer-reviewed science journals found that when the co-author overseeing the study was a woman, about 63 percent of co-authors were female, on average; when the overseeing co-author was a man, about 18 percent of co-authors were female.

Unsurprisingly, women are exasperated at this state of affairs and pushing for change. Last year physicist Jess Wade at Imperial College London and research scientist Claire Murray led a crowdfunding campaign to put a copy of *Inferior* into every U.K. state school. They hit their target within two weeks; similar campaigns have since been launched in New York City, Canada, Australia, and New Zealand. As Bell Burnell did, women are donating their own money to change a system that doesn't seem to want to change of its own accord.

Why does the burden fall so heavily on women in the sciences to improve the field's dismal record on women? As the stories I have heard demonstrate, at least part of the problem lies with certain men and the institutions that enable sexism. Girls and young women are choosing science and technology courses in greater numbers, we know, but they fall away sharply as they move up the ladder. Pregnancy and parenting play some part, but not all. A Cardiff University survey this year revealed that even after accounting for family responsibilities, male academics in the U.K. were still reaching senior levels at higher rates than women.

A male physicist I know, who is a vocal champion for women's rights, recently found a typed note slipped into his pigeonhole at work. The writer called him a fool for assuming that women have the same "mental equipment" as men, and claimed, "Women do not think in abstract terms as men can." Such spurious assertions certainly make women feel unwelcome in the sciences. And yet when women—as well as minorities—depart these fields, we reduce it to a mechanistic phrase: the "leaky pipeline" phenomenon.

We can talk all day long about family-friendly policies, but we are in total denial about the fact that there is an actively hostile culture.

PHYSICIST EMMA CHAPMAN IMPERIAL COLLEGE LONDON

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Angela Saini is an award-winning science journalist and author. Her latest book, published this year, is *Superior: The Return of Race Science*. She is the author of two other books, *Inferior: How Science Got Women Wrong—and the New Research That's Rewriting the Story* (2017) and *Geek Nation: How Indian Science Is Taking Over the World* (2011).

Everyday sexism is one thing.

The other, even darker, cloud above the sciences and academia is sexual harassment. The global phenomenon of #MeToo has brought survivors of sexual assault to our attention and abuse and bullying to the fore. And there is reason to believe that these experiences are more widespread than is yet clear. Data to back up women's anecdotal experiences is growing. When Kathryn Clancy at the University of Illinois and colleagues surveyed more than 660 scientists about their academic fieldwork experiences, 84 percent of female junior scientists reported harassment and 86 percent reported assault. That survey was among the first to lay bare just how deep the problem may be.

Physicist Emma Chapman, a Royal Society Dorothy Hodgkin Fellow based at Imperial College London, was so affected by her experience of harassment at the hands of a senior colleague when she was at University College London that she became an outspoken champion for women in the same position.

"I found myself dropped into a very uncomfortable culture," she says, one in which informality crossed the line into unwanted hugs and intrusions into personal life.

An investigation resulted in a two-year restraining order against the man. Chapman was asked to sign a confidentiality agreement, while her harasser remained in his job. "Dismissal is vanishingly rare," she tells me. Yet she considers herself lucky, because in almost all such cases she has seen, women's careers end when they dare to speak out.

Chapman estimates that roughly a hundred women have approached her since she became involved with the 1752 Group, a small U.K. organization working to end sexual misconduct in academia, named after the £1,752 from university event funds that launched the group in 2015. Her greatest battle is persuading universities to stand behind victims rather than cover up for perpetrators. "We talk about a leaky pipeline all the time," she says. "It's absolutely not. Women are being shoved out the back door quietly."

It's a sentiment echoed by Australian microbiologist Melanie Thomson, herself a past victim of sexual harassment. In 2016 Thomson says she witnessed astrophysicist Lawrence Krauss, then based at Arizona State University, grope a woman at a conference. "She elbowed him in the guts," she recalled. Thomson filed an official complaint, and in 2018 Krauss's university confirmed that he had violated their sexual harassment policy.

The problem is not limited to a few such men, Thomson says. "It's huge. In science it's particularly insidious."

84%
of female junior scientists reported harassment during academic fieldwork experiences—and 86 percent reported assault—in a survey of more than 660 people in 32 disciplines of the life, physical, and social sciences.

SOURCES: RESEARCH BY KATHRYN CLANCY ET AL., PUBLISHED IN *PLOS ONE*, JULY 2014

SCIENCE JOURNALIST Michael Balter, who covers sexual harassment cases and has adopted an advocacy role, says the behaviors persist in part because "science is very hierarchical. You've got the head of the lab or the head of the institute and they really have an enormous amount of power," he says. "A democratization of science and a lessening of the power differentials would go a long way to solving a lot of evils."

Balter says investigating harassment allegations is legally fraught, making many cases of misconduct hard to document. BuzzFeed News reporter Azeen Ghorayshi experienced that in 2015, when she published a report

SEXISM UNDER THE MICROSCOPE

Women, underrepresented in STEM (science, technology, engineering, and math) and related fields, are exposed to sexism throughout their education and careers.

HARASSMENT AT SCHOOL

In a University of Texas survey, women reported being sexually harassed* by faculty and staff within their field of study across 13 of its institutions.

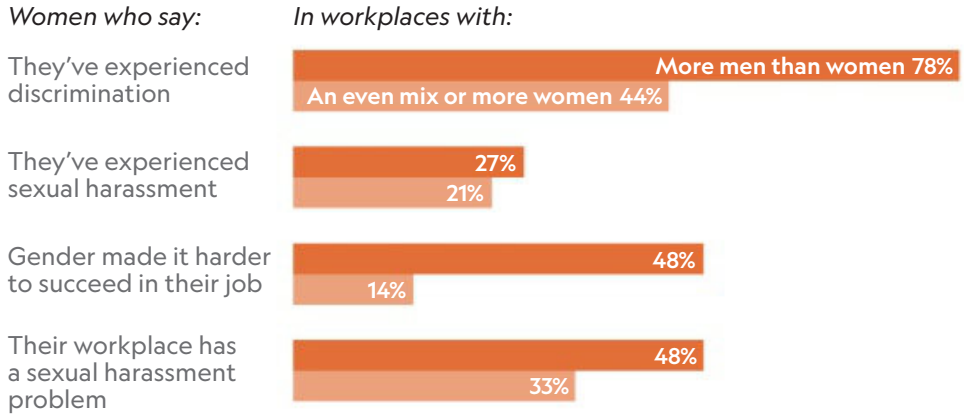
1 in 5 Science

1 in 4 Engineering

1 in 2 Medicine

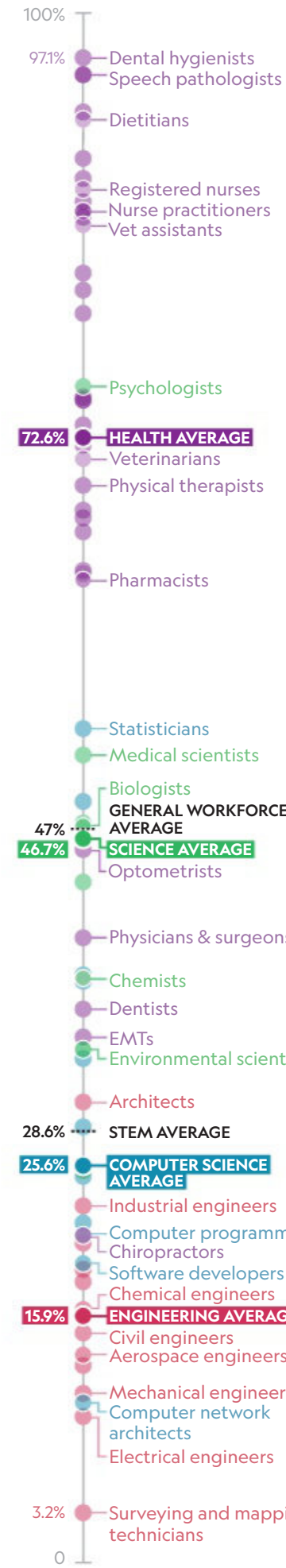
DISCRIMINATION AND HARASSMENT AT WORK

Women in scientific professions in workplaces with larger proportions of male colleagues report more discrimination and harassment.



U.S. WORKPLACE REPRESENTATION

Women make up a large share of workers in health fields (especially in jobs requiring four years or less of education) and a smaller share in computer science and engineering.



on sexual harassment accusations against prominent astronomer Geoff Marcy, then at the University of California, Berkeley. Marcy was so notorious that women there discouraged other women from working under him. But it's so hard for women to get misconduct claims addressed that when he finally was investigated and sanctioned, Marcy was found to have violated sexual harassment policies on campus for almost a decade.

Ghorayshi tells me that since writing about Marcy, she has been approached by dozens more women—evidence of "how prevalent this is at major institutions in the United States and elsewhere." In many of the cases she has reported on, Ghorayshi says, the women involved have left the field: "It's about vulnerability, and who is vulnerable and who is untouchable."

The bottom line, says physicist Chapman, is that universities need to think more carefully about their commitment to equality. "We can talk all day long about family-friendly policies, but we are in total denial about the fact that there is an actively hostile culture," she tells me. "I think it is endemic."

In the sciences today, there remains this implicit assumption that the careers of young women are disposable while those of older men must be protected at all costs, even if that means covering up unacceptable behavior and putting more people in harm's way. As long as we tolerate this situation, there's a steep price to pay.

The damage is not only to individuals, which is terrible enough. The damage is also to science. ▯

*INCLUDES SEXIST HOSTILITY, CRUDE BEHAVIOR, UNWANTED SEXUAL ATTENTION, AND SEXUAL COERCION

TAYLOR MAGGIACOMO AND KAYA BERNE, NGM STAFF. SOURCES: KEVIN M. SWARTOUT, GEORGIA STATE UNIVERSITY; NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE; INSTITUTE ON DOMESTIC VIOLENCE & SEXUAL ASSAULT, THE UNIVERSITY OF TEXAS AT AUSTIN; PEW RESEARCH CENTER; BUREAU OF LABOR STATISTICS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FOR GIRLS IN SCIENCE, THE TIME IS NOW

The future of research is increasingly female. Programs that mentor girls interested in careers in science, technology, engineering, and math are boosting a new generation of students—and countering some of the barriers that have discouraged previous generations.

BY **CLAUDIA KALB**

PHOTOGRAPHS BY **DINA LITOVSKY**

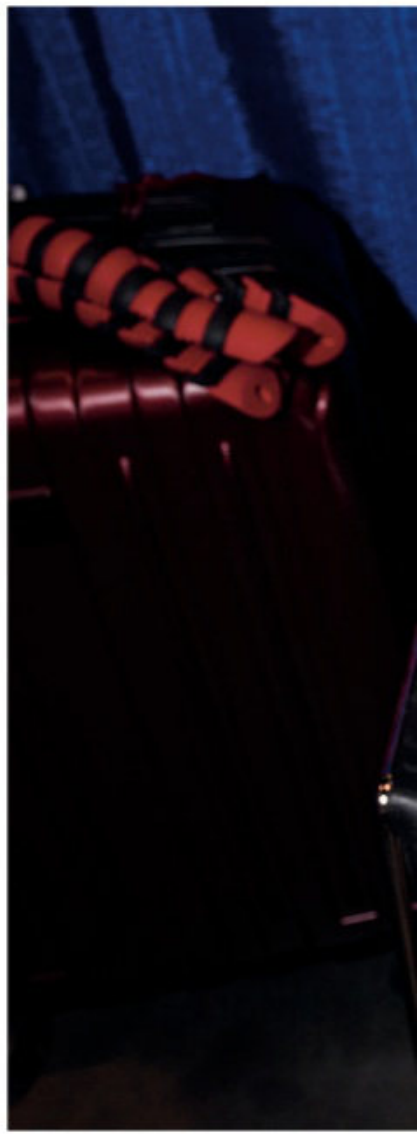
SIXTEEN-YEAR-OLD

Shriya Reddy can't remember a time when she wasn't excited about science. At seven, she read biology books with her mother, who was studying for her medical board exams. By sixth grade, Reddy was competing in rigorous science fairs. The summer before ninth grade she began doing research in a bioengineering lab at Wayne State University in Detroit, Michigan, where she devised a noninvasive approach for rapidly diagnosing melanoma lesions. The project earned her a top prize at the prestigious International Science and Engineering Fair (ISEF) last May.

"Science dwells on the how and why things happen," Reddy says. "I really want to be a part of that." Reddy's determination coincides with a growing effort across the United States to boost the number of female students pursuing careers in science, technology, engineering, and mathematics (STEM). Universities and institutions, from NASA to the United States Naval Academy, are hosting STEM days for girls. Organizations such as the New York Academy of Sciences are pairing women in STEM careers with girls seeking advice and mentorship. ISEF, a program of the Washington, D.C.-based Society for Science & the Public, offers a forum for select high school students to compete at an international level. This year's event had 1,842 finalists, evenly split by gender, and three of the top four awards went to young women, including Reddy. "Just being part of that experience blew my mind," she says.

Mary Sue Coleman, a biochemist and president of the Association of American Universities, is optimistic about women's future in science. When she was in ISEF as a high school student in 1959 and 1960, about 35 percent of the participants were girls. Gender balance matters, she says, because women bring fresh perspectives to tackling scientific conundrums. "People who have different life experiences ask different questions," she says. Clear gaps remain. Young women at ISEF outnumbered males in microbiology and biochemistry this year, but they made up fewer than a third of the finalists in mathematics and engineering mechanics. More women are getting advanced STEM degrees, but men hold most professorships and leadership roles in STEM-based industries, the Association for Women in Science says.

Still, a transformation is taking place, says Maya Ajmera, president and CEO of the Society for Science & the Public. Young women, inventive and tenacious, are harnessing technology to tackle issues they care about, whether it's engineering nutritionally advanced rice or using a crocheting technique to design a wearable Bluetooth device. For these emerging scientists, "it's going to be different," Ajmera says. "I feel very confident that this generation of girls is in a much better place to take on the world's most intractable problems." ▯



Author **Claudia Kalb** wrote the cover story about Leonardo da Vinci in the May 2019 issue.

PREVIOUS PHOTO

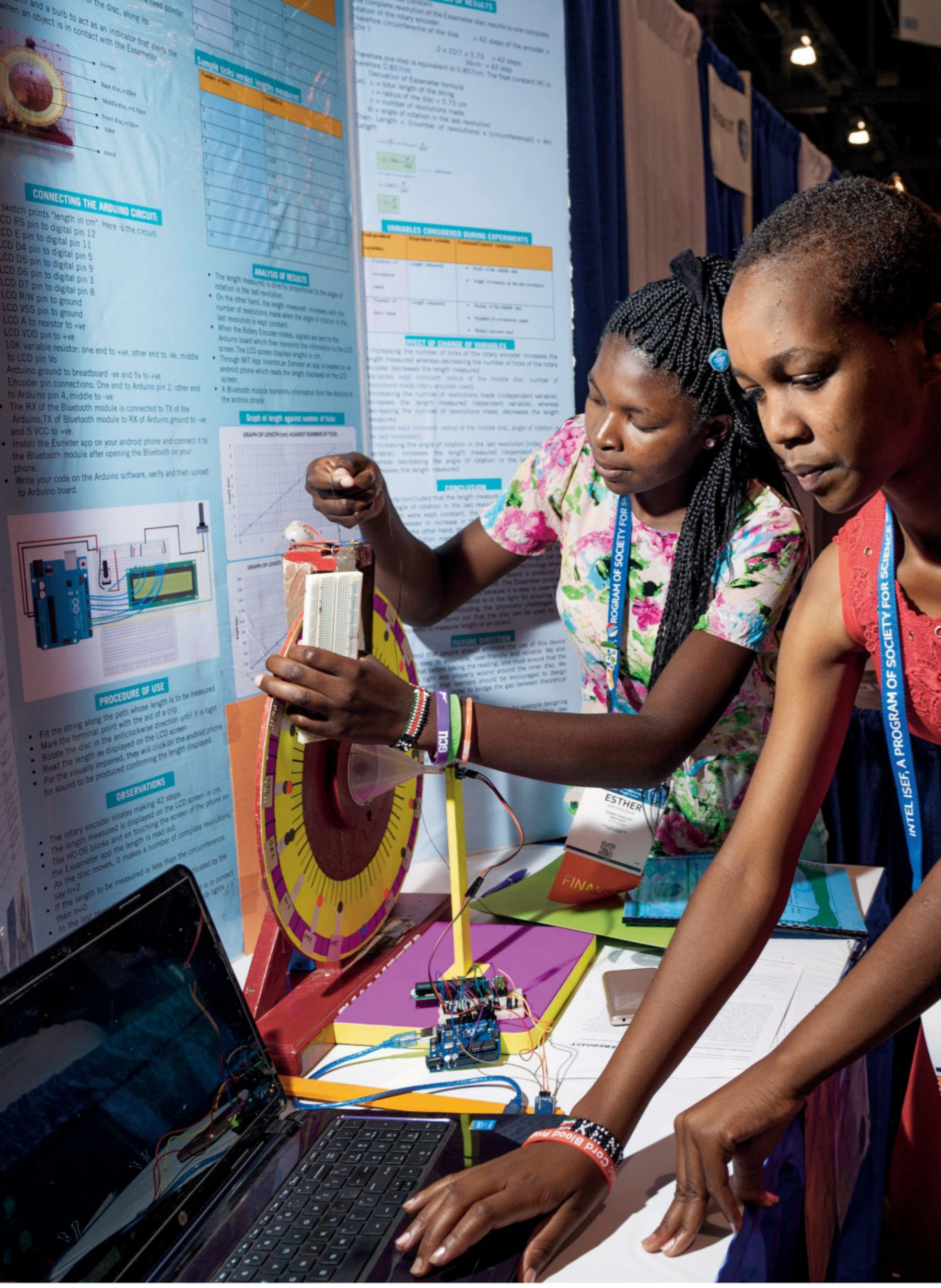
At ISEF 2019, Russian high school student Inna Larina peers through a viewing device she designed with teammate Nataliya Ivlieva. The wireless apparatus is equipped with sensors that map the distance to an obstacle, such as a sidewalk curb, allowing blind and visually impaired people to navigate unfamiliar terrain.

TOP

High school students from 80 countries, regions, and territories competed in ISEF 2019 in Phoenix, Arizona. Ramita Chueamuang-phan (at left), Natthamon Sriprom (middle), and Phan-anong Chuenchokchai (at right) traveled from Thailand to take part in the plant sciences category. The class-mates, from Chiang Rai Province, created a hydrogel that helps protect crops from invasive snails without harming nearby plants and animals.

BOTTOM

Amanda Shayna Ahteck of Holmdel, New Jersey, found scientific inspi-ration while crocheting under her desk during physics class. She cro-cheted stainless steel conductive thread in a chain of hooked loops to create soft, stretch-able sensors that mimic tendons in the hand. Ahteck hopes her wear-able Bluetooth device will promote a more seamless adoption of technologies like virtual reality and help visually or physically impaired users interact more nat-urally with computers.


CONNECTING THE ARDUINO CIRCUIT:
PROCEDURE OF USE
OBSERVATIONS
ANALYSIS OF RESULTS
CONCLUSION
FUTURE DIRECTION
ESTHER
INTEL ISEF, A PROGRAM OF SOCIETY FOR SCIENCE

Esther Anyanzwa (at left) and Salome Njeri created a revolving disk apparatus to help visually impaired and deaf people measure objects. At home in Kenya, the students face skepticism about their scientific abilities as girls. "I really wanted to prove society wrong," Njeri told the Society for Science & the Public.


X-Inactivation: (It's the
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MATERIALS
HYPOTHESIS
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PROCEDURE
Check this out!
Discussion
Conclusion and Future Research
Methods
Step-7: Protein Quantification
Step-8: Combining Fatty Acid and DAB1 Protein by BSA
Step 9: Combine DAB1 Protein/Fatty Acid Mixture and Cadherin Protein and Fluorescene

Twin sisters Gina (at left) and Lisa Sobinovsky, from Martinsburg, West Virginia, share their findings about an X-chromosome process linked to fur color in tortoiseshell cats, which they say could provide insights into breast and ovarian cancers.

TOP LEFT

Shouq Faisal Madani of Dhahran, Saudi Arabia, celebrates with her peers during the Grand Awards Ceremony on the closing day of ISEF 2019. Madani won a $1,000 award in the environmental engineering category.

TOP RIGHT

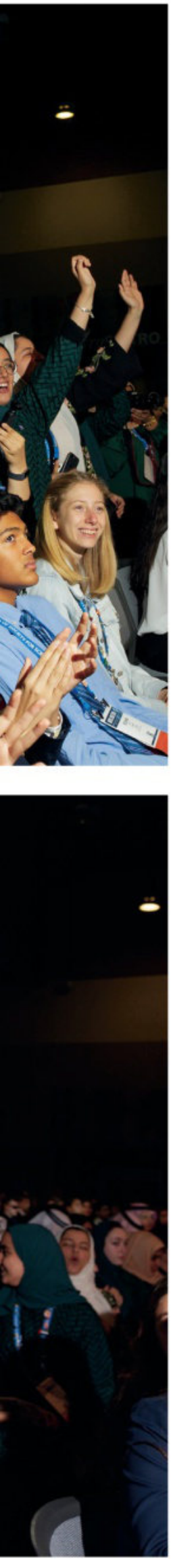
Shriya Reddy of Northville, Michigan, approaches the stage to receive a $10,000 innovation award for her melanoma diagnostic technique. "It was like a dream come true," she says.

BOTTOM LEFT

Allison Jia of Cupertino, California, received a top award of $50,000 for her novel approach to tracking tau, a brain protein implicated in Alzheimer's disease.

BOTTOM RIGHT

Jocelyn Zonnefeld (center), from Sioux Center, Iowa, competed in microbiology. ISEF participants are selected based on the merit of their work.




JOCELYN
THINK BEYOND

Q: What Is Your Greatest Strength?

"MY ABILITY TO IGNORE IT WHEN I GET NO FOR AN ANSWER."

Alicia Garza

#BLACKLIVESMATTER CO-CREATOR

In 2013, when the man who fatally shot black teen Trayvon Martin was acquitted, Garza took to Facebook with a call for justice that insisted, "Black lives matter." In the years since, Garza and two other activists, Opal Tometi and Patrisse Cullors, have inspired and led the #BlackLivesMatter movement.

Q: What Is Your Greatest Strength?

OPRAH WINFREY

THE WORLD-FAMOUS ENTERTAINER HAS AN EMPIRE OF PRINT, DIGITAL, AND BROADCAST MEDIA PROPERTIES. SHE BUILT AND OVERSEES A GIRLS SCHOOL IN SOUTH AFRICA, WHOSE STUDENTS CALL HER "MUM O."

No question, it's connection to other people. You know, I've interviewed rapists and murderers and child molesters and all kinds of people who have done terrible things—but I can put myself in the space of where they are in that moment and meet them where they are. So my ability to connect to where you are in that moment—not to the thing that supposedly defines you—that's one of my great strengths. I think that had I had the love, the attention, the family surroundings that would have nurtured and supported me in the way that I thought I needed, I wouldn't have it. I think that this connection and yearning to know the heart of other people came from my own sense of loneliness, my own sense of wanting to be understood and know that whatever I'm feeling, somebody else has felt it too.

57%

of U.S. bachelor's degrees are earned by women. Women are on track to make up the majority of the college-educated labor force for the first time in 2019. The presence in the workforce of more women with college degrees could increase women's overall earning potential.

DIANE RAINARD

A PHOTOGRAPHER LIVING ON THE FRENCH ISLAND OF RÉUNION, RAINARD IS A MEMBER OF THE WOMEN OF IMPACT COMMUNITY.*

Resilience. Because I am queer, I have experienced physical and social violence in most of my life. What doesn't kill you makes you stronger. Now I use this strength in my job, as an explorer in rough environments.

JENNIFER DOUDNA →

THE BIOCHEMIST'S RESEARCH, WITH COLLEAGUE EMMANUELLE CHARPENTIER, LED TO THE DISCOVERY OF A REVOLUTIONARY GENE-EDITING TECHNIQUE KNOWN AS CRISPR-CAS9. TODAY DOUDNA PROMOTES THE ETHICAL USE OF GENE-ALTERING TECHNOLOGIES.

Probably my stubbornness. I get an idea in my mind, and I don't want to give it up. My definition of success was not success in terms of monetary reward or even professional recognition. It was more at the level of, Can I actually do science that I'm going to be proud of? And can I feel like I've made the right choice with my life, that I decided to do something that I can actually do well? There were a number of times when I was younger when I thought maybe the answer is no and maybe I'm on the wrong track. And again, my stubbornness came into play, because I'm also not a quitter. So I'd have voices in my head doubting what I was doing—but then I'd have contradictory voices saying, But you're not going to quit.

'STRENGTH AND A CERTAIN HUMILITY.'

Christiane Amanpour, broadcast journalist
"Strength and a certain humility—you know, the opposite of arrogance. I refuse to be seduced by the trappings that come with success, and I keep my feet firmly planted on the ground."

*NATIONAL GEOGRAPHIC'S WOMEN OF IMPACT, A COMMUNITY WHERE WOMEN SHARE THEIR STORIES, IS AT *ON.NATGEO.COM/WOMENOFIMPACT.*

ALEX MORGAN

SHE FUELED THE U.S. TEAM'S 2019 WORLD CUP WIN WITH FIVE GOALS IN ONE MATCH.

My greatest strength is feeling confident enough to know I can always bet on myself. When I set my mind to something, I never stop working until I accomplish it and feel like I've reached my full potential. Additionally, throughout my career I have always made sure I surround myself with people who tell the truth, who state their opinions, and who have my best interests at heart.

KELLY MARTIN

YOSEMITE NATIONAL PARK'S FIRST FEMALE FIRE CHIEF AND A WOMEN OF IMPACT MEMBER,* SHE DECRIED GENDER BIAS IN THE PARK SERVICE.

Grit and perseverance to persist through what at times seemed like insurmountable gender discrimination, in an effort to show young women they can succeed in a male-dominated field.

'I'M NOT GOING TO FOLD.'

← Nancy Pelosi, a Democratic congresswoman from California, is two-time speaker of the U.S. House of Representatives and the first woman elected to that leadership post.

"Sometimes people say 'tough,' and I'm thinking, No, tough's wrong. I think I'm strong; I have strength. The strength sprang from my purpose, my knowledge, my strategic thinking—and that gives me a sense of security. So that's what I think some people recognize: that I'm not going to fold from weakness. I may concede on the strength of your argument, but I'm not folding from weakness."

PHOTOS: ERIKA LARSEN. ILLUSTRATIONS: LAUREN TAMAKI. INTERVIEWS HAVE BEEN EDITED FOR LENGTH AND CLARITY.

IN THE FIGHT

Women are taking more active roles in militaries,
serving on the front lines of armed conflicts and as peacekeepers in the world's hot spots.

STORY AND PHOTOGRAPHS BY **LYNSEY ADDARIO**

UNITED STATES

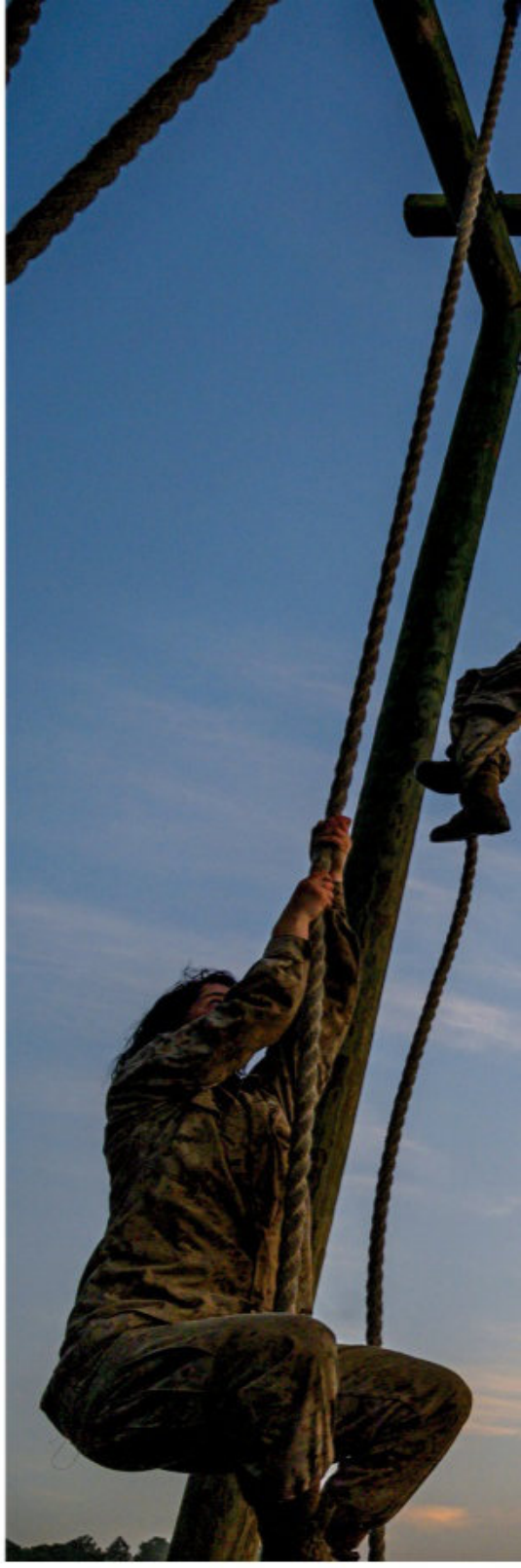
Marines have to be able to carry one another if necessary. USMC Cpl. Gabrielle Green hefts a fellow marine as they ready for deployment on a Navy ship at Camp Lejeune, North Carolina. Of the 38,000 recruits who enter the corps each year, about 3,500 are women—or, in USMC phrasing, "female marines."

UNITED STATES

As their boot camp at South Carolina's Parris Island culminates in a ferocious finale, 20-year-old Desiree White plays a wounded marine being rescued by fellow recruits. This extra-intense stretch of training, required of male and female USMC recruits, has a special name: the Crucible.

UNITED STATES

Slouching! Not acceptable! USMC Staff Sgt. Hollie Mulvihill, 26, a Parris Island drill instructor, barks disciplinary consequences at recruit Melissa Rodriguez Flores, 18. The corps trains all female recruits at Parris; their regimen is designed to be identical to men's.



IN A DESERT TOWN in east-central Syria, two prisoners sat on the ground, guarded by about a dozen Kurdish men. The two had surrendered to the mostly Kurdish defense force, YPG, as it routed ISIS fighters from Baghouz, their last stronghold in Syria. The prisoners awaited transport to a detention camp that already held tens of thousands of ISIS loyalists and dependents. The guards stood over them, their triumph palpable.

A few hundred feet away, female Kurdish fighters with AK-47s over their shoulders guarded women and children, presumably militants' wives and offspring. As these fighters, known as YPJ, chatted, several took long drags on their cigarettes (it had been forbidden for women to smoke under ISIS). Others adjusted their hair using their cell phones as mirrors (under ISIS, a woman who hadn't kept her hair and face covered would have been whipped). Occasionally a YPJ woman spoke to the veiled women, a sea of black cloth punctuated by wary eyes and filthy children.

As the morning dragged on, some YPJ fighters decided to see the enemy up close. The women approached the two prisoners almost casually at first. Then, slowly and deliberately, they walked a tight circle around the men, staring straight at them. Not long ago in this town, a woman could have been executed for such behavior. But ISIS had fallen, and the female defenders of Kurdish Syria were claiming equal footing with their male comrades. They were on the front lines together, savoring victory.

From the desert of Syria and the grasslands of South Sudan to the war-torn jungle in western Colombia, growing numbers of women are serving on the front lines of military conflicts. Their uniforms and circumstances differ, but they cite similar reasons for joining armed forces. They want to serve their country. They want to show confidence, competence, and strength, setting an example for their children while proving something to

themselves. Some mention a larger purpose that their male counterparts do not: They want to make life better specifically for women and girls—in their country, the region, and the world.

AT LEAST 16 INDUSTRIALIZED NATIONS permit women to serve in frontline or combat roles. Women have served as an official part of the U.S. military in noncombat—but nonetheless dangerous—roles since Congress established the Army Nurse Corps in 1901. In addition to working as nurses, they were radio operators and logistical staff and, more recently, helicopter pilots and tank mechanics.

Even when policy allows women in combat roles, commanders may blanch at sending them. But in this era of terrorist attacks and ethnic clashes, women serving anywhere "can find themselves in combat, because the battlefield is nonlinear," says Marine Lt. Col. Misty Posey, commander of female marine recruits at Parris Island, South Carolina, for two years, until mid-2019. "If you're admin, if you're supply, you could be in combat. And they all know that."

UNITED STATES

Getting by on minimal rations and sleep, Parris Island marine recruits shout encouragement to each other as they haul themselves up ropes during the 54-hour exercise known as the Crucible. The demanding exercise includes challenges such as this rope climb and 50 miles of marching while carrying weapons.

UNITED STATES

USMC recruit Dannelle Kallmes, 19, awaits her next orders in the grueling Parris Island training finale. Each recruit knows that if she makes it to the closing ceremony, she'll be handed her eagle, globe, and anchor emblem—and will be addressed, for the first time, as "Marine."

Women recruits, familiar with society's stereotype of "the weaker sex," often arrive doubting whether they're equal to the task. Posey won't hear of it: "Women learn weakness. We can also unlearn it." By the end of training, Posey says, most female marines are confident in their abilities "and know that they're just as capable of contributing" as men.

Josephine Muhawenimana, a Rwandan mother of two, became a police officer because she admires "the way they are strong and ... inspire others." Now she's a chief sergeant in a UN peacekeeping force in South Sudan, a nation bloodied by civil and ethnic conflicts. "I remember what happened," Muhawenimana says of the 1994 Rwandan genocide she escaped; she hopes peacekeepers can help prevent such a bloodbath in South Sudan. That country's women seem proud of the job she's doing, she says; mothers have thanked her for showing their daughters an alternative to getting married when they're barely past puberty.

In Colombia a fighter known as Comandante Yesenia has spent two decades with the ELN, a left-wing guerrilla group fighting the nation's government. She gave birth to a daughter in the forest and carried the nursing baby along with her for months. Yesenia says she's fighting for equality for poor people, indigenous people, and women. "Every person brings her grain of salt," she says. "From different spaces, we all fight."

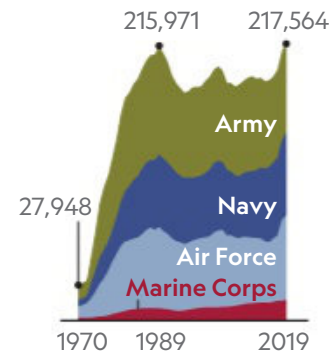
In the Syrian desert, as the captured ISIS fighters wait to be taken to detention camp, a YPJ fighter named Nuda Zagros is imagining the future. "Wherever there is oppression against women, we would like to go there," she says. "We want to fight for equality. We don't want to be superior, and we don't want to have superiors. We are all the same." □

Lynsey Addario has covered most major conflicts and humanitarian crises in the past 15 years, including those in Afghanistan, Iraq, Libya, Syria, Lebanon, Somalia, and South Sudan. She's the author of the *New York Times* best-selling memoir *It's What I Do: A Photographer's Life of Love and War.*

UNITED STATES

RISING UP THE RANKS

Women have been able to serve in aviation and naval combat since the early 1990s, a period that also saw deep cuts in personnel as the Cold War ended. Only in 2016 were all ground combat jobs opened to women; by August 2019, 2,906 women held once restricted Army ground combat jobs.



Number of women in the U.S. military

Women ▼ Men ▼

19% vs. 18%

OFFICERS

The number of female commissioned officers is steadily climbing, surpassing the proportion of officers among males.

For every 100 women in the U.S. military... Officers

32 women join the Army (36 out of every 100 men join)

41% vs. 26%

RACIAL MINORITIES

Native Americans, Alaska natives, African-Americans, and other minorities comprise a large portion of enlisted women.

30 women join the Navy vs. 24 men

22% vs. 18%

HISPANICS

The proportion of Hispanic women who serve exceeds both the men's share and the proportion of Hispanic women in the general U.S. population.

30 women join the Air Force vs. 24 men

1,208 vs. 58,458

CASUALTIES

Statistics for women among the dead and wounded in named operations began to be tracked in 2001.

8 women join the Marine Corps vs. 16 men

Women ▼ Men ▼

5% vs. 17%

INFANTRY

Less than two years after all restrictions were lifted, some 600 women were serving in the Army's newly opened ground combat positions, such as in field artillery. The number has since grown fivefold. As of August 2019, 231 women held once closed positions in the Marine Corps.

GROWING SHARE

Currently there are **100** women in the U.S. military for every **499** men.

25% vs. 11%

ADMINISTRATIVE

Women proportionally hold more administrative jobs, such as clerical and legal support positions, than males do.

10% vs. 12%

HIGH PAY GRADE

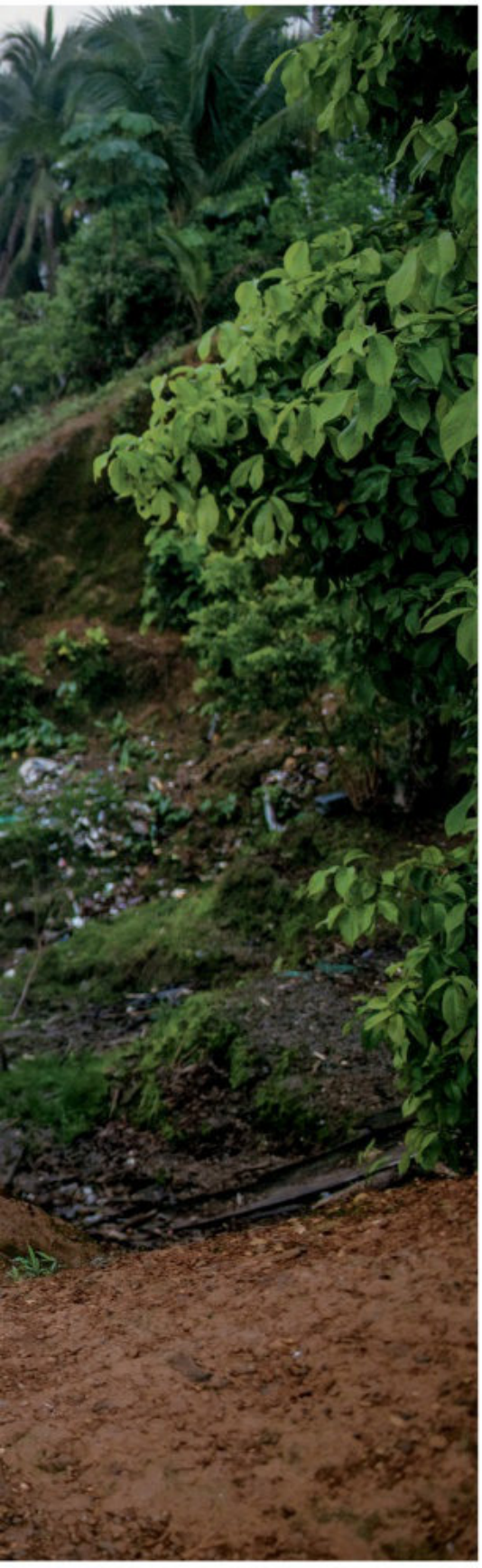
As women progress through the ranks, they are starting to catch up with men in reaching higher salary ranges.

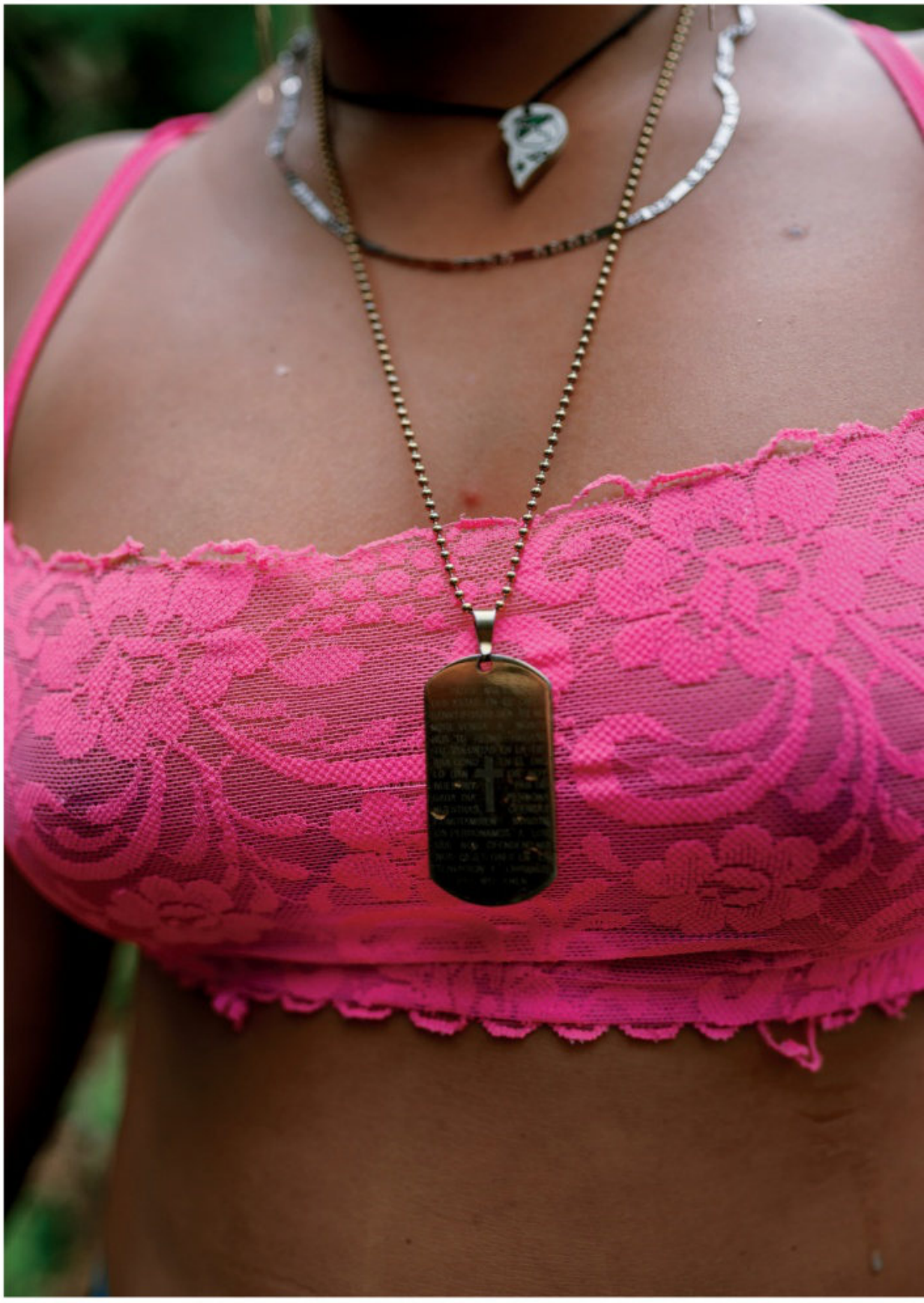
ALL DATA FOR 2019, EXCEPT HISPANICS (2018), LATEST MONTH AVAILABLE. COAST GUARD DATA NOT INCLUDED. INFANTRY CATEGORY INCLUDES GUN CREWS AND SEAMANSHIP SPECIALISTS. MONICA SERRANO, NGM STAFF. KELSEY NOWAKOWSKI. SOURCES: DEFENSE MANPOWER DATA CENTER; DEFENSE CASUALTY ANALYSIS SYSTEM; LORY MANNING, SERVICE WOMEN'S ACTION NETWORK; CENTER FOR A NEW AMERICAN SECURITY

COLOMBIA

REFUSING TO YIELD

Despite efforts to end decades of guerrilla conflict in Colombia, secret mobile camps are still home to the country's National Liberation Front (ELN), which has rejected ceasefires brokered with other groups. Labeled terrorists and extortionists by government officials and other Colombians, ELN members call themselves fighters for justice. "My dream for this country," said a fighter who calls herself Comandante Yesenia, "is social equality—and gender equality. I can feel the *machismo* even within this organization."





LEFT

At a spot by the San Juan River where ELN forces were recuperating and training earlier this year, several fighters reload a boat to head upriver for shooting practice. "When I joined ELN, I didn't know much," says an 18-year-old known as Estefanía. "Now I know how to cook. I know how to shoot. But I still don't know how to fight."

ABOVE

To conceal their identities, Estefanía and other ELN fighters avoid photos that show their faces—which in some cases are very young. Though she's still in her teens, Estefanía says she's been with the guerrillas for more than two years. Washing clothes in the river, she keeps on her jewelry and a dog tag engraved with the Lord's Prayer.

COLOMBIA

This book is a romance novel, but ELN Comandante Yesenia also reads aloud to her river outpost compatriots from works of ideology and ELN history. At 36, she has spent more than half her life as a guerrilla; her two children live with civilian relatives.

SYRIA

INDEPENDENCE WARRIORS

For nearly a decade, the Syrian Kurdish resistance has made a point of including women among its fighters. An all-women unit, the YPJ claims more than 20,000 members; many are Muslims who reject interpretations of Islam that they see as oppressive. “We are volunteers,” a commander says. “We don’t let any others attack our cities and kill our brothers and sisters. Our families say, as women of course you can join.”

THE LAST HONEY HUNTER

ABOVE LEFT

Lifting a child while working crowd control, a Kurdish security force commander, Sheikha Ibrahim, 33, picks her way through throngs of refugees at the al-Hol camp in northern Syria. Kurds run the camp, which has taken in thousands of women, many of them with children, as they surrendered or fled from ISIS strongholds.

TOP

At a secret location in northern Syria, female Kurdish fighters assemble at attention, weapons on display—their way of marking this year's International Women's Day.

BOTTOM

A soldiers' breakfast in Derik, by the Turkish border: olives, cheese, yogurt, bread. The wall photo honors three colleagues killed in combat.

SYRIA

Kurdish fighters surround a surrendering woman as ISIS abandons the town of Baghouz in March. Women who joined or were forced into ISIS need guidance away from an oppressive version of Islam, a Kurdish female fighter says. “They understand the religion in the wrong way.”

SOUTH SUDAN

ARMED GUARDIANS

Of the 19,500 United Nations peacekeepers helping protect civilians in the conflict-roiled new nation of South Sudan, about 1,600 are women, from many countries. The women's presence is part of a newly intensified effort to bring more gender balance to forces the UN deploys internationally. "This is not just a question of numbers but also of our effectiveness," UN Secretary-General António Guterres told Security Council members recently. Adding more women peacekeepers, he said, truly does seem to help keep the peace.

ABOVE LEFT

UN Chief Sgt. Josephine Muhawenimana (center), 37, survived the 1994 genocide in her native Rwanda. Formerly a police commander in Kigali, she now patrols a protection camp for civilians in Juba, South Sudan. "From my childhood I wanted to be a police officer," Muhawenimana says. "I feel I can do the same job as a man."

TOP

In South Sudan, Mongolian women are among the UN peacekeepers patrolling protection camps.

BOTTOM

Mongolian junior sergeant Giimaa Sukhochir, 39, dons ceremonial clothing she brought to her UN deployment in Bentiu. "I want to show Africans what a traditional Mongolian woman looks like," she says.

WOMEN WARRIORS

The women in Pamela Toler's new millennia-spanning history, *Women Warriors,* gallop into battle on horseback, hack off enemies' heads, order executions, mount attacks from jungle cover, and command troops by the tens of thousands. "Women have always fought," Toler says. "And we've tended to lose sight of it." Modern tools such as forensic DNA testing, plus reexamination of burial artifacts and original documents, are giving historians like Toler new insight into the lives of women who fought with or without men alongside. These were leaders, Toler says, "for whom battle was not a metaphor."

ILLUSTRATIONS BY **LAUREN BREVNER**

CA 1200 B.C.

FU HAO
SHANG DYNASTY GENERAL

Fu Hao may be the earliest woman warrior whose name and story we know. A principal wife of Emperor Wu Ding, Gen. Fu Hao was a military commander in her own right. Modern study of ancient Chinese writing suggests she directed troops and led campaigns; her tomb included more than 100 weapons.

CA 358-320 B.C.

CYNANE
MACEDONIAN LEADER

Cynane, Alexander the Great's half sister, earned a reputation as a talented military leader before she turned 20. She commanded Macedonian armies, probably fighting on horseback. The second-century A.D. author Polyaenus credits her with defeating one army and killing its queen—in hand-to-hand combat.

CA A.D. 361-411

MAWIYYA
ANTI-ROMAN REBEL

The widowed Arab queen Mawiyya, ruler of a tribal alliance called the Tanukh Confederation, led a fourth-century A.D. revolt against Romans in what is now Syria. Using desert guerrilla tactics, she led troops deep into Palestine, outmaneuvering Roman legions that eventually accepted her terms.

1582-1663

NJINGA
WEST AFRICAN QUEEN

Njinga used both guerrilla warfare and diplomacy as she defended her kingdoms, Ndongo and Matamba, against the Portuguese. Nearly 75 when she last led forces into battle, she would prepare soldiers decades younger by leading them in a rigorous arrows-and-spears war dance exercise.

1771-1825

LASKARINA BOUBOULINA
GREEK WAR COMMANDER

Ship owner and Greek nationalist Bouboulina secretly commissioned a battleship, assembled a fleet, and then commanded it in the war for independence from the Ottoman Empire. Credited with a successful naval attack on a key Ottoman port, she was nicknamed by her troops *Kapetanisa,* Lady Captain.

1780-1862

JUANA AZURDUY DE PADILLA
SOUTH AMERICAN REBEL

Azurduy joined her husband, Manuel Padilla, as an early 19th-century opponent of Spanish domination. They raised a rebel army and fought together in what's now Bolivia and Argentina; she commanded male soldiers, earned a reputation for battlefield daring, and continued in action after her husband died.

1847-1868

NAKANO TAKEKO
JAPANESE SAMURAI

Takeko led 30 samurai women against imperial soldiers during a 19th-century battle in northern Japan. She and her forces used *naginata* pole weapons and swords to kill soldiers armed with guns. Dying from a bullet wound, she asked that her head be removed and buried so no enemy could make a trophy of it.

CA 1840-1889

LOZEN
APACHE WARRIOR

Described as "a shield to her people" by her older brother, the Chiricahua Apache war leader Victorio, Lozen regularly joined late 19th-century war and raiding parties in the American Southwest. She is said to have excelled at battle strategy, medicinal skills, and stealing enemy horses during raids.

1892-1973

MILUNKA SAVIĆ
SERBIAN WAR HERO

Recipient of multiple medals for combat bravery, Savić initially enlisted in the First Balkan War by disguising herself as a man. As was common for women fighting in disguise, she was discovered when she was wounded—hit by a Bulgarian grenade. But she refused to leave combat and served in three wars.

CYNTHIA GORNEY, BASED ON PAMELA TOLER'S *WOMEN WARRIORS: AN UNEXPECTED HISTORY.* MONICA SERRANO, NGM STAFF. KELSEY NOWAKOWSKI. SOURCES: ADRIENNE MAYOR; LINDA HEYWOOD; BETH ANDERSON; WARWICK BALL; HEATHER HENNES; LINDA DEMERTZIS-BOUBOULIS; VERONICA TILLER; SARAH NELSON; PETER ALESHIRE

Q: What Advice Would You Give Young Women Today?

"NOT BEING AFRAID IS VERY IMPORTANT. YOU MAY FEEL LIKE YOU FAILED AND THERE'S NO WAY TO RECOVER, BUT YOU CAN."

Tara Houska

INDIGENOUS RIGHTS ACTIVIST, ATTORNEY

An Ojibwa of the Couchiching First Nation in Ontario, Houska uses law and advocacy to champion indigenous people's concerns, from Washington, D.C., to the sites of protests against pipelines on tribal lands. She co-founded Not Your Mascots, a nonprofit fighting stereotypes of indigenous people.


NOT OIL

Q: What Advice Would You Give Young Women Today?

KRIS TOMPKINS

FORMER CEO OF THE RETAILER PATAGONIA, TOMPKINS NOW FOCUSES ON THE SOUTH AMERICAN LAND PRESERVATION INITIATIVE SHE BEGAN WITH HER LATE HUSBAND, DOUG TOMPKINS. HER INITIATIVE IS A PARTNER OF THE NATIONAL GEOGRAPHIC SOCIETY'S LAST WILD PLACES PROGRAM.

So many women lack self-confidence. You have to jump 30 more hurdles than the guy next to you to get to the same place. You have to be calculating, you have to be checking all the signals in the room, you have to pick your space, pick your time to say something, to be something. Imagine the inherent exhaustion in all of that! I would say that you need to go for things, trust your instincts, and remember that luck is often a product of hard work. And be outlandish; don't worry about what people are going to think about you. Don't worry about failing or succeeding, just go for things because you think they're the right thing. And don't sit back in the back seat and be driven; get in the front seat, put the key in the ignition, and drive.

78%

of the artificial intelligence professionals in the world are men, according to the Global Gender Gap Report. Within AI talent pools, men fill a greater share of higher level and more lucrative roles, the report says, while "women are less likely to be positioned in senior roles and are less likely to gain expertise in a number of high-profile, emerging skills."

MELINDA GATES

SHE JOINED MICROSOFT IN 1987, MARRIED ITS CO-FOUNDER IN 1994, AND NOW HELPS RUN THE BILL & MELINDA GATES FOUNDATION.

Fitting in is overrated. I spent my first few years at my first job out of college doing everything I could to make myself more like the people around me. It didn't bring out the best in me—and it didn't position me to bring out the best in others. The best advice I have to offer is: Seek out people and environments that empower you to be nothing but yourself.

ASHA DE VOS

FOR MONTHS THE ASPIRING SCIENTIST WROTE SEEKING WORK ON A WHALE RESEARCH VESSEL, UNTIL FINALLY SHE WAS HIRED—AS A DECKHAND. TODAY SHE'S THE ONLY SRI LANKAN WITH A PH.D. IN MARINE MAMMAL RESEARCH. A NATIONAL GEOGRAPHIC GRANTEE, DE VOS FOUNDED THE NONPROFIT GROUP OCEANSWELL, WHICH AIMS TO PROMOTE CONSERVATION BY EQUIPPING STUDENTS TO CONDUCT MARINE RESEARCH.

I would say, try to be defined not by your gender but by your capacity. The harder you work, the more you throw yourself into something you're passionate about, the more your work starts to speak for itself. That's actually what's helped me. At the start everyone was like, "But you're a girl." And today, nobody cares what I am. I'm a necessity: The system needs me to help to make changes. I would say to any girl out there, that's what you want to aim for—to be defined not by your gender but by your capabilities.

'KEEP WORKING.'

Katharine Owens is a 2019 National Geographic explorer who is focused on linking environmental science to policy action and on reducing plastic pollution in Earth's oceans. Recently, Owens trained more than 50 teachers in Kerala, India, on how to engage their students in marine debris collection.

"Keep your head down and keep working. Just keep providing evidence that you are great through hard work. Eventually, people won't be able to deny your talent. Do what you love and all the work will feel like fun."

INTERVIEWS HAVE BEEN EDITED FOR LENGTH AND CLARITY.

‘YOU NEED TO PACE YOURSELF.’

← Zhang Xin, who at 15 worked 12-hour days in a factory, is known as “the woman who built Beijing.” The property development firm that she and her husband founded in 1995 is now among Asia’s largest.

“I see many women really struggling when they want to spend the first couple of years with their babies, but they still have their career. Careers are for a lifetime, from college graduation to your retirement. Keep in mind that your career is a marathon, not a sprint. You need to pace yourself properly to make sure you will make it to the end in good shape.”

← ALEX MORGAN

HER SOCCER PROWESS MADE HER A REPEAT PLAYER OF THE YEAR FOR THE U.S. SOCCER LEAGUE AND A STANDOUT IN BACK-TO-BACK WORLD CUP CHAMPIONSHIPS.

“Don’t be discouraged in your journey. If people talk badly about you, if people say you can’t achieve something, don’t let it discourage you; let it drive you forward. Listen to yourself, listen to your gut, and listen to the people in your life that you trust. Let your passions be your guide.”

INGI MEHUS

THIS NATIONAL GEOGRAPHIC EXPLORER CREATED AN INTERACTIVE PROJECT ABOUT MIGRATION AND CULTURAL DIVERSITY.

“Don’t be scared of what excites you. Always stay curious about yourself and the people and places around you. Focus on the work and goals you have set for yourself, and never compare yourself to others.”

PHOTOS: ERIKA LARSEN; SHIYI PAN (ZHANG). ILLUSTRATIONS: LAUREN TAMAKI

IN THE PICTURE

IN ORDER TO CAPTURE a scene without interrupting or influencing it, photojournalists learn to be unobtrusive, to blend into the background. Occasionally, though, they pause to turn their cameras on themselves. Here, we share selfies that a half dozen women photographers shot while on assignment for *National Geographic,* in spots as dissimilar as a Chinese panda conservation center and a southern U.S. college campus.

Clockwise from top left: Ami Vitale at a panda research center in Sichuan Province, China; Newsha Tavakolian near the waters of Iran's Lake Urmia; Katie Orlinsky with Iditarod sled dog Neko in Nulato, Alaska; Nina Robinson at a Morehouse College event in Atlanta; Cristina Mittermeier (with, front to back, Keith Ladzinski and Paul Nicklen) off the coast of the Antarctic Peninsula; and Daniella Zalcman at a Cody, Wyoming, campground where lodging includes teepees.

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Take Back Our Trails

They're underfunded and ill-fated. Unless we all act.

The John Muir Trail Foundation

Each year, federal funding for trails shrinks while their popularity soars—our gateways to adventure, eroding beneath our feet.

Now, a national treasure is at risk: the John Muir Trail, America's oldest recreational trail stretching 213 miles from the Yosemite Valley down to Mt. Whitney.

That's why Sierra Nevada Brewing Co. is pledging $1 million to the newly formed John Muir Trail Foundation, dedicated to its long-term restoration and conservation. Let's protect this showcase of the Sierra Nevada, the mountain range that inspired our brewery name.

If we don't step up, our trails die out.

We invite you to join us in action and advocacy. Learn more and get involved at SierraNevada.com/TakeBackOurTrails.

Enjoy Outdoors™

Photograph by John Dittli

Great Curassow
(Crax rubra)

Size:
Body length, 78 - 100 cm (30.7 - 39.4 inches); wing chord, 36 - 42.4 cm (14.2 - 16.7 inches)
Weight:
3.1 - 4.8 kg (6.8 - 10.6 lbs)
Habitat:
Rainforest and mangroves, but may seasonally be found in dry forest
Surviving number:
Estimated at 10,000 - 60,000

Photographed by Jurgen and Christine Sohns

WILDLIFE AS CANON SEES IT

Full-bore roar. The male great curassow's distinctive courtship call, likened to the roar of a tiger, is so loud that it broadcasts his location far and wide. However, this call attracts the attention not just of the female object of his affection but also of human hunters. Because the curassow is monogamous, each male who falls prey to hunters means the effective loss of a breeding pair. Between hunting, habitat loss and the destruction brought about by severe weather, populations are under great pressure.

As Canon sees it, images have the power to raise awareness of the threats facing endangered species and the natural environment, helping us make the world a better place.

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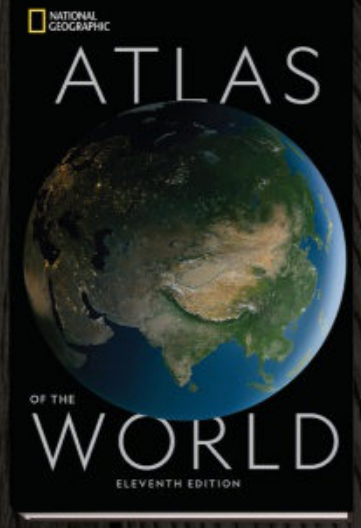
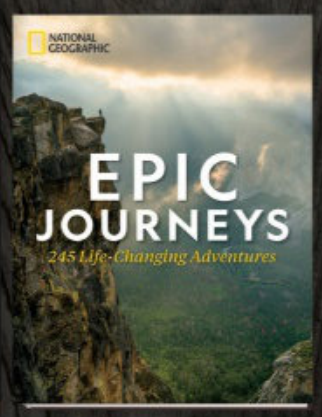
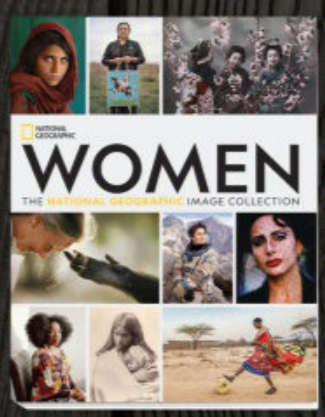
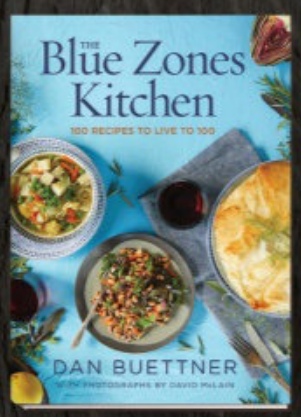
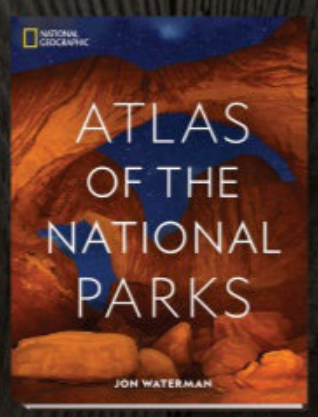
GREAT HOLIDAY GIFTS FOR EVERYONE ON YOUR LIST

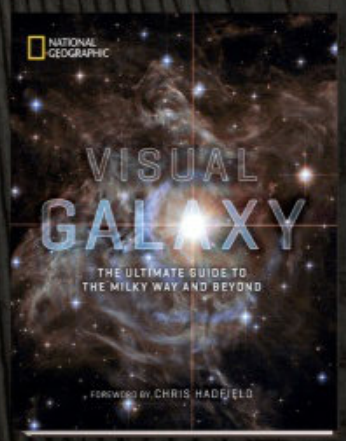


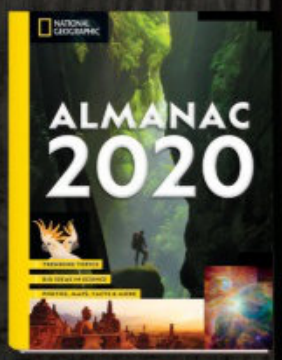


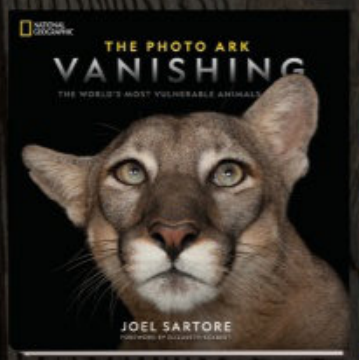


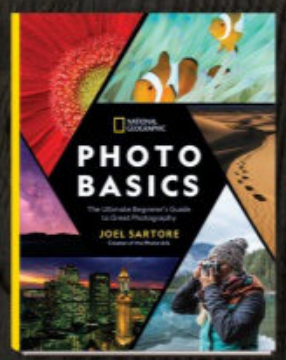












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