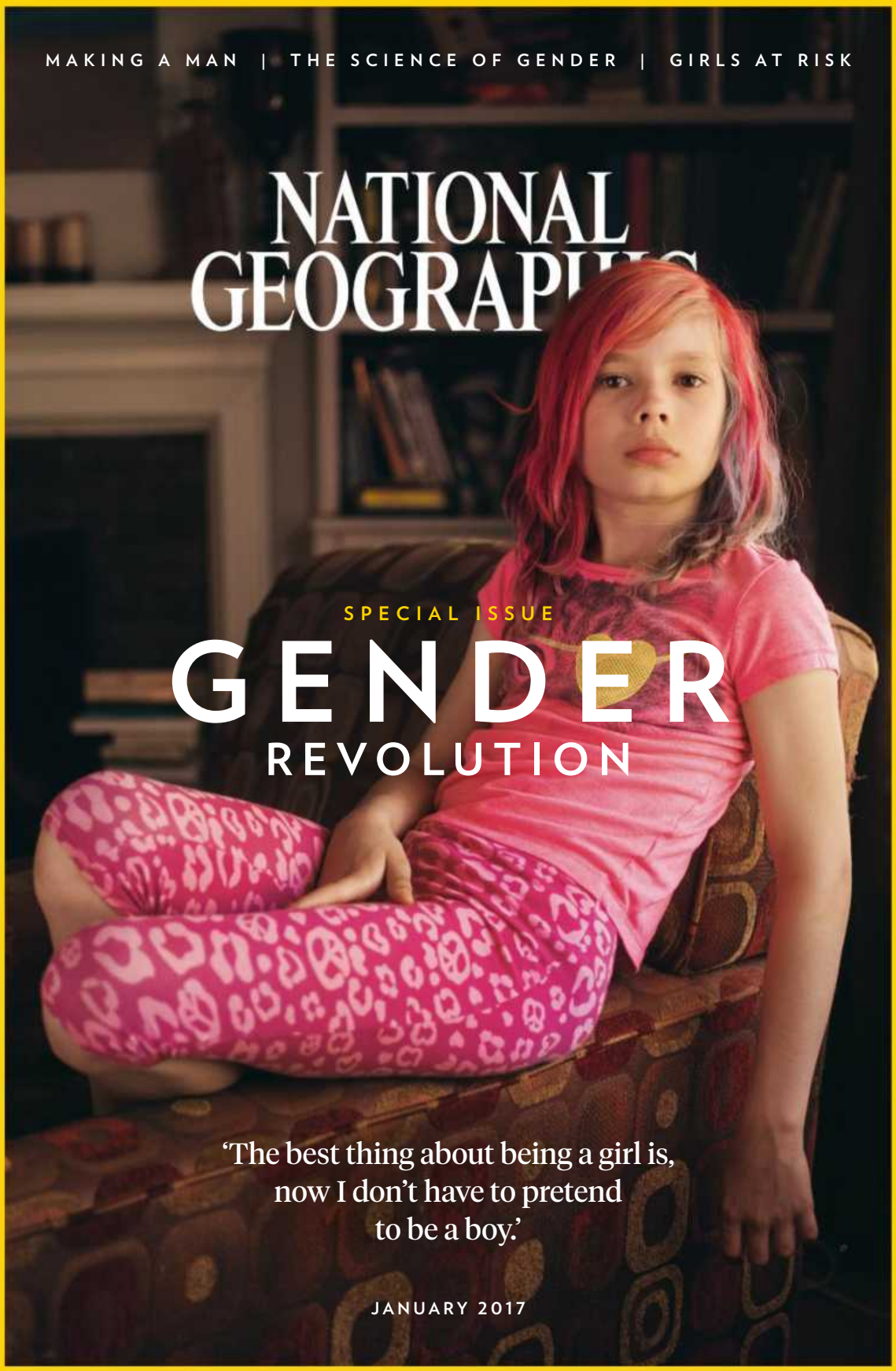
MAKING A MAN | THE SCIENCE OF GENDER | GIRLS AT RISK
NATIONAL
GEOGRAPHIC
SPECIAL ISSUE
GENDER
REVOLUTION
'The best thing about being a girl is, now I don't have to pretend to be a boy.'
JANUARY 2017

Atlantic Puffin *(Fratercula arctica)*
Size: Body length, 26 - 36 cm (10.2 - 14.2 inches); wingspan, 47 - 63 cm (18.5 - 24.8 inches)
Weight: Approx. 460 g (16.2 oz) **Habitat:** Found throughout the northern Atlantic
Surviving number: Estimated at 4.8 - 5.8 million

Photographed by Markus Varesvuo

WILDLIFE AS CANON SEES IT

Love is in the air... and the water. During courtship, Atlantic puffins engage in a hovering flight called "moth flight," as well as pair-swimming together in the ocean. Monogamous couples share in the responsibilities of feeding their young, doing so three to nine times a day after diving deep in pursuit of fish, small crustaceans and squid. But puffin colonies are hardly a safe refuge for growing families, threatened as they are by egg gathering and hunting by humans and the introduction of feral cats, dogs and rats.

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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CONTENTS

JANUARY 2017 • VOL. 231 • NO. 1 • OFFICIAL JOURNAL OF THE NATIONAL GEOGRAPHIC SOCIETY

THE GENDER ISSUE

CONTENTS

ELSEWHERE

TELEVISION

GENDER REVOLUTION: A JOURNEY WITH KATIE COURIC

A look at how genetics, culture, and brain chemistry shape gender. February 6 at 8/7c on National Geographic.

TELEVISION

JOIN THE SAFARI

Watch live as guides track Africa's iconic animals on *Safari Live,* a series premiering January 1 at 10/9c on Nat Geo WILD. The guides also will take viewers' questions via Twitter at #SafariLive.

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On the Cover Youth interviewed for this issue on gender include Avery Jackson, a transgender girl living in Kansas City, Missouri. *Photo by Robin Hammond*

Corrections and Clarifications Go to *ngm.com/corrections.*

KATIE COURIC PHOTO: GENARO MOLINA, *LOS ANGELES TIMES*/CONTOUR BY GETTY IMAGES

AN IN-DEPTH LOOK AT THE ROLE OF GENETICS, MODERN CULTURE, AND BRAIN CHEMISTRY ON GENDER FLUIDITY.

GENDER REVOLUTION

A JOURNEY WITH KATIE COURIC

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NATIONAL GEOGRAPHIC

WHAT IF ALL COULD THRIVE?

All of us carry labels applied by others. The complimentary ones—"generous," "funny," "smart"—are worn with pride. The harsh ones can be lifelong burdens, indictments we try desperately to outrun.

The most enduring label, and arguably the most influential, is the first one most of us got: "It's a boy!" or "It's a girl!" Though Sigmund Freud used the word "anatomy" in his famous axiom, in essence he meant that *gender* is destiny.

Today that and other beliefs about gender are shifting rapidly and radically. That's why we're devoting this month's issue to an exploration of gender—in science, in social systems, and in civilizations throughout history.

As Robin Marantz Henig writes in our story on page 48, we are surrounded by "evolving notions about what it means to be a woman or a man and the meanings of transgender, cisgender, gender nonconforming, genderqueer, agender, or any of the more than 50 terms Facebook offers users for their profiles. At the same time, scientists are uncovering new complexities in the biological understanding of sex. Many of us learned in high school biology that sex chromosomes determine a baby's sex, full stop: XX means it's a girl; XY means it's a boy. But on occasion, XX and XY don't tell the whole story."

For a future-facing perspective on gender, we talked to 80 young people. From the Americas to the Middle East, from Africa to China, these keen and articulate observers bravely reflected our world back at us.

Nasreen Sheikh, seen here, lives with her parents and two siblings in a Mumbai slum. She'd like to become a doctor, but already she believes that being female is holding her back. "If I were a boy," she says, "I would have the chance to make money…and to wear good clothes."

I expect Nasreen will learn that gender alone doesn't preclude a good life (or, for that matter, ensure it). But let's be clear: In many places girls are uniquely at risk. At risk of being pulled out of school or doused with acid if they dare to attend. At risk of genital mutilation, child marriage, sexual assault. Yes, youngsters worldwide, irrespective of gender, face challenges that have only grown in the digital age. But in telling these stories, we are reminded again how dangerous girls' lives can be—and how much work lies ahead to change that.

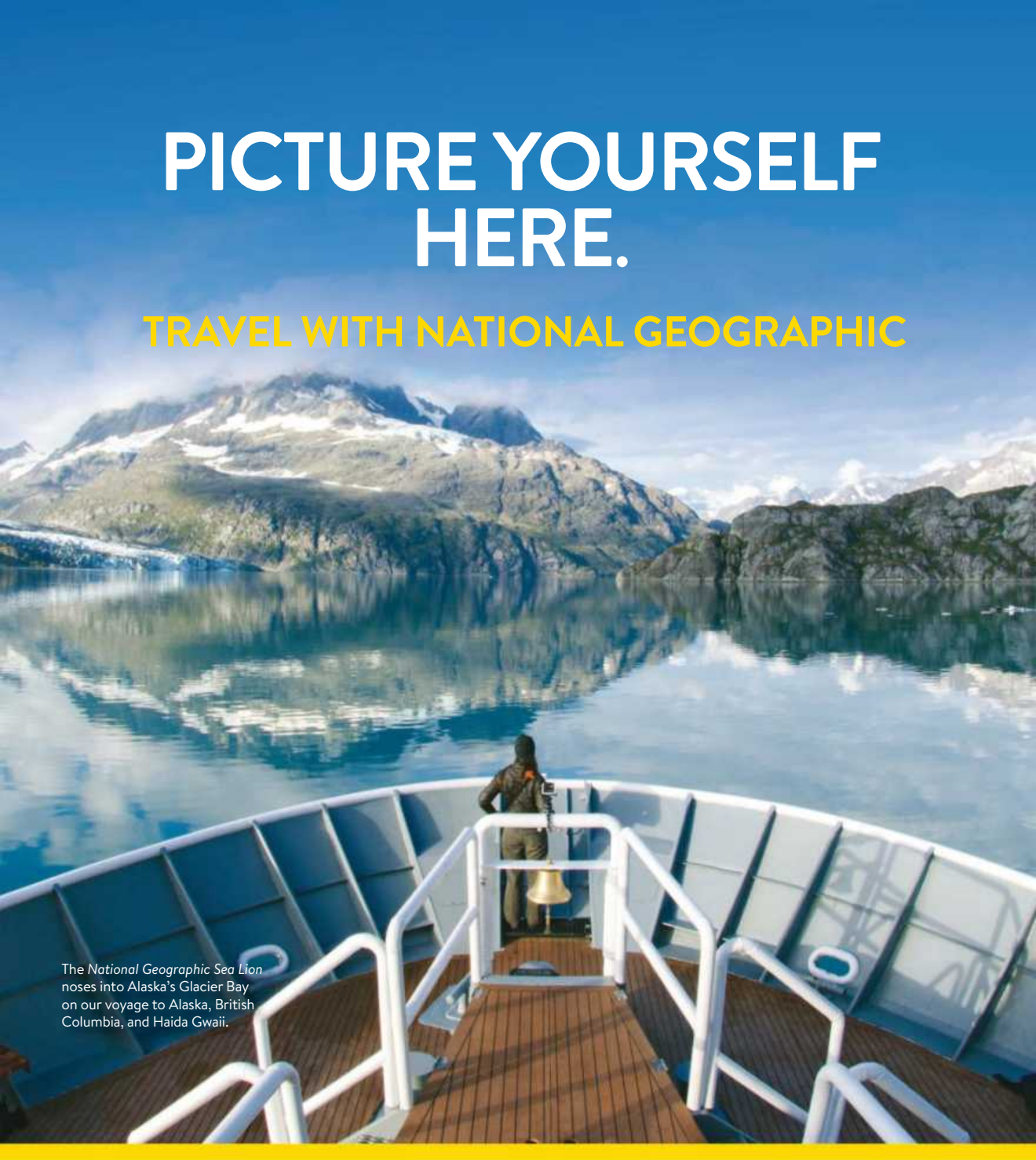
Thank you for reading *National Geographic*.

Susan Goldberg, *Editor in Chief*

PHOTO: ROBIN HAMMOND

PICTURE YOURSELF HERE.

TRAVEL WITH NATIONAL GEOGRAPHIC



The *National Geographic Sea Lion* noses into Alaska's Glacier Bay on our voyage to Alaska, British Columbia, and Haida Gwaii.

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THE POWER OF SELF

Writer and activist **Gloria Steinem,** 82, has been one of the world's leading feminists since the 1960s. In her memoir, *My Life on the Road,* the *Ms.* magazine co-founder describes a life of nearly constant travel, from her itinerant childhood to her ongoing global advocacy.

What was a defining moment in your life, related to gender?
It's difficult to think of a defining moment because gender, in my generation, was just so assumed. I never remember wanting to be a boy, except perhaps to put my feet over the movie seat in front of me in the theater. And I never remember feeling limited as a girl, because I was not going to school very much. It came as a shock and surprise when I got to be a teenager and gender became very limiting and very important. There were always whispers and rumors about girls who got pregnant and had to get married. If someone was raped, it was her fault. In my teenage years I became aware of being careful.

What do you consider the most pressing gender issue today?
I suppose getting rid of [the idea of] gender. You know, living in India was a revelation because I came to understand that there were old languages that didn't have gender—that didn't have "he" and "she." The more polarized the gender roles, the more violent the society. The less polarized the gender roles, the more peaceful the society. We are each unique and individual human beings. We are linked; we are not ranked. The idea of race and the idea of gender are divisive.

What advice would you give to girls and boys today?
To trust the unique voice inside them. And to be sure and listen as much as they speak, so that they are honoring the other unique people outside them. It's important for girls not to internalize a sense of passivity or inferiority or second-classness, and for boys not to internalize a sense of having to be stronger or superior or in control. What helps the most is for boys to be raised to raise children. I don't have children, but I was raised to raise children—to be empathetic and pay attention to detail and be patient. Boys are often raised that way, but not often enough.

PHOTO: ROBYN TWOMEY, REDUX
THIS INTERVIEW WAS EDITED FOR LENGTH AND CLARITY.

THE POWER OF PEERS

Sheryl Sandberg, 47, is a champion for women's leadership and the author of *Lean In: Women, Work, and the Will to Lead*. After years of government service, she leaned in to the tech boom, first with Google and now as chief operating officer for Facebook.

What was a defining moment in your life, related to gender?

One was being pregnant and realizing we should offer parking for expectant mothers. The "aha" wasn't, oh my God, Google needed pregnancy parking. The "aha" was that I had to be pregnant myself to think of it. I opened my book with this, but I'm not sure I drove home the point: It matters to have diverse voices at the table. When I first entered the workforce, in 1991, there were just as many women as men going into entry-level jobs. I looked to the side of me, and it was equal. But I looked above me, and it was almost entirely men. As my career progressed, I had fewer and fewer women in every group I was part of. If you look back at the 1950s, '60s, or '70s, of course we've made progress. But we have not made progress in getting a greater share of the top jobs, in any industry, in the past decade.

What do you consider the most pressing gender issue today?

It's definitely equal rights and equal opportunity for women. As part of that, access to information is critical. There are four billion people still not connected to data and the Internet, and more of those are women than men. Connectivity is a very important driver of opportunity.

What advice would you give to girls and boys today?

Raise your hand if you're a girl in class; run for class president. If you're interested in it, be a leader. Don't let the world tell you girls can't lead. From the moment they're born, boys and girls are treated according to stereotypes. We tell little boys, "Don't cry like a girl." Not helpful. I'd add that we all need people who will encourage us. Here's an example: We help women form Lean In Circles and just hit 29,000 circles in over 150 countries. That shows the power of peers. We cannot just help ourselves take on leadership roles; we can help each other. There are men in these circles too—men who are really working hard toward equality.

PHOTO: MICHELE ASSELIN, CONTOUR BY GETTY IMAGES
THIS INTERVIEW WAS EDITED FOR LENGTH AND CLARITY.

EXPLORE

The Gender

To a degree unimaginable a decade ago, the intensely personal subject of gender issue of the magazine, we look at cultural, social, biological, and political

Issue

identity has entered the public square. In this special aspects of gender. But first, we define our terms.

PHOTO: HENRY LEUTWYLER. CASTING: ADAM BROWNE

For a list of our models' identities, turn the page.

A PORTRAIT OF GENDER TODAY

To get a glimpse of what's been called the gender revolution, look no further than this group photograph. Through contacts with activist groups, *National Geographic* assembled 15 individuals representing a broad spectrum of gender identities and expressions. Their identifications below are stated in their own words.

1. Harry Charlesworth, 20, *queer* **2.** Asianna Scott, 20, *androgynous model* **3.** Memphis Murphy, 16, *transgender female* **4.** Angelica Hicks, 23, *straight female* **5.** Alex Bryson, 11, *transgender male* **6.** Morgan Berro Francis, 30, *bi-gender* **7.** Denzel Hutchinson, 19, *heterosexual male* **8.** Eli, 12, *trans male* **9.** Ariel Nicholson Murtagh, 15, *transgender female* **10.** Lee, 16, *transboy* **11.** Pidgeon Pagonis, 30, *intersex nonbinary person* **12.** Shepard M. Verbas, 24, *nonbinary genderqueer* **13.** Cherno Biko, 25, *black/trans activist* **14.** Jules, 16, *transboy* **15.** Alok Vaid-Menon, 25, *nonbinary*

REDEFINING GENDER

This glossary was prepared in consultation with Eli R. Green of the Center for Human Sexuality Studies at Pennsylvania's Widener University and Luca Maurer of the Center for Lesbian, Gay, Bisexual & Transgender Education, Outreach, and Services at New York's Ithaca College. They are co-authors of the book *The Teaching Transgender Toolkit*.

Agender: Describes a person who does not identify as having a gender identity that can be categorized as man or woman or who identifies as not having a gender identity.

Androgynous: A combination of masculine and feminine traits or a nontraditional gender expression.

Cisgender (pronounced sis-gender): A term to describe a person whose gender identity matches the biological sex they were assigned at birth. (It is sometimes abbreviated as "cis.")

Gender binary: The idea that gender is strictly an either-or option of male/man/masculine or female/woman/feminine based on sex assigned at birth, rather than a continuum or spectrum of gender identities and expressions. The gender binary is considered to be limiting and problematic for those who do not fit neatly into the either-or categories.

Gender conforming: A person whose gender expression is consistent with cultural norms expected for that gender. According to these norms, boys and men are or should be masculine, and girls and women are or should be feminine. Not all cisgender people are gender conforming, and not all transgender people are gender nonconforming. (For example, a transgender woman may have a very feminine gender expression.)

Gender dysphoria: The medical diagnosis for being transgender as defined by the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders,* fifth edition *(DSM-5)*. The inclusion of gender dysphoria as a diagnosis in *DSM-5* is controversial in transgender communities because it implies that being transgender is a mental illness rather than a valid identity. But because a formal diagnosis is generally required in order to receive or provide treatment in the United States, it does enable access to medical care for some people who wouldn't ordinarily be eligible to receive it.

Gender expression: A person's outward gender presentation, usually comprising personal style, clothing, hairstyle, makeup, jewelry, vocal inflection, and body language. Gender expression is typically categorized as masculine, feminine, or androgynous. All people express a gender. Gender expression can be congruent with a person's gender identity, or not.

Genderfluid: Someone whose gender identity or expression shifts between man/masculine and woman/feminine or falls somewhere along this spectrum.

Gender identity: A person's deep-seated, internal sense of who they are as a gendered being; the gender with which they identify themselves.

Gender marker: The designation (male, female, or another) that appears on a person's official records, such as a birth certificate or driver's license. The gender marker on a transgender person's documents is their sex assigned at birth unless they legally change it, in parts of the world allowing that.

Gender nonconforming: A person whose gender expression is perceived as being inconsistent with cultural norms expected for that gender.

SOURCE: *THE TEACHING TRANSGENDER TOOLKIT*, BY ELI R. GREEN AND LUCA MAURER
AVAILABLE THROUGH *TEACHINGTRANSGENDER.COM.*

Specifically, boys or men are not "masculine enough" or are feminine, while girls or women are not "feminine enough" or are masculine. Not all transgender people are gender nonconforming, and not all gender-nonconforming people identify as transgender. Cisgender people may also be gender nonconforming. Gender nonconformity is often inaccurately confused with sexual orientation.

Genderqueer: Someone whose gender identity is neither man nor woman, is between or beyond genders, or is some combination of genders.

Intersex: A category that describes a person with a disorder of sexual development (DSD), a reproductive, genetic, genital, or hormonal configuration that results in a body that often can't be easily categorized as male or female. Intersex is frequently confused with transgender, but the two are completely distinct. A more familiar term, hermaphrodite, is considered outdated and offensive.

LGBTQ: An acronym used to refer to lesbian, gay, bisexual, transgender, queer, and/or questioning individuals and communities. LGBTQ is not a synonym for "nonheterosexual," since that incorrectly implies that transgender is a sexual orientation. Variants include LGBT and LGBQ.

Nonbinary: A spectrum of gender identities and expressions, often based on the rejection of the gender binary's assumption that gender is strictly an either-or option of male/man/masculine or female/woman/feminine based on sex assigned at birth. Terms include "agender," "bi-gender," "genderqueer," "genderfluid," and "pangender."

Pronouns: Affirming pronouns are the most respectful and accurate pronouns for a person as defined by that person. It's best to ask which pronouns a person uses. In addition to the familiar "he," "she," and "they," newly created nongendered pronouns include "zie" and "per."

Puberty suppression: A medical process that pauses the hormonal changes that activate puberty in young adolescents. The result is a purposeful delay of the development of secondary sexual characteristics (such as breast growth, testicular enlargement, facial hair, body fat redistribution, voice changes). Suppression allows more time to make decisions about hormonal interventions and can prevent the increased dysphoria that often accompanies puberty for transgender youth.

Queer: An umbrella term for a range of people who are not heterosexual and/or cisgender. It has been historically used as a slur; some have reclaimed it as affirming, while others still consider it derogatory.

Sexual orientation: A person's feelings of attraction toward other people. A person may be attracted to people of the same sex, of the opposite sex, of both sexes, or without reference to sex or gender. Some people do not experience sexual attraction and may identify as asexual. Sexual orientation is about attraction to other people (external), while gender identity is a deep-seated sense of self (internal).

Transgender: Sometimes abbreviated as "trans," an adjective used to describe a person whose gender identity does not match the biological sex they were assigned at birth. It can refer to a range of identities including transgender boys and men, people who identify as a boy or man but were assigned female at birth, and transgender girls and women, people who identify as a girl or woman but were assigned male at birth.

Transsexual: This is an older term that has been used to refer to a transgender person who has had hormonal or surgical interventions to change their body to be more aligned with their gender identity than with the sex that they were assigned at birth. While still used as an identity label by some, "transgender" has generally become the term of choice.

ILLUSTRATION: FELIX SOCKWELL

HELPING FAMILIES TALK ABOUT GENDER

When addressing gender and sexuality matters, where should families begin? This guidance is drawn from *HealthyChildren.org,* the American Academy of Pediatrics' parenting website.

Gender identity: Once young children learn to talk, most will declare a gender identity, boy or girl, that aligns with their biological sex. However, as some children grow, identity is not so clear-cut. Around two years old, children become conscious of the physical differences between boys and girls. By age four, most children have a stable sense of their gender identity. During this same time of life, children learn gender-role behavior—that is, doing stereotypical "things that boys do" or "things that girls do" when they choose toys, clothes, activities, friends.

What parents can do: All children need the opportunity to explore different gender roles and styles of play. Ensure your young child's environment reflects diversity in gender roles and opportunities for everyone.

When children's interests and abilities are different from what society expects, they're often subjected to discrimination and bullying. It is natural for parents to want their children to be accepted socially. But if children's strengths don't always conform to society's or your own expectations, it's important to help them fulfill their own unique potential rather than force them into the mold of current or traditional gender behavior.

For some young children, identifying as another gender may be temporary; for others it isn't. Some children who are gender nonconforming in early childhood grow up to become transgender adults (persistently identifying with a gender different from their assigned sex at birth), and others don't. The causes for this are likely both biological and social; there is no evidence of a link to parenting or experiencing childhood trauma.

There is no way to predict how children will identify later in life. This uncertainty is one of the hardest things about parenting a gender-nonconforming child. It is important for parents to make their home a place where their child feels safe, loved unconditionally, and accepted for who they are. Research suggests that gender is something we are born with; it can't be changed by any interventions.

Sexual orientation: While gender identity typically becomes clear in early childhood, sexual orientation—which refers to the person one falls in love with or is attracted to—becomes evident later. Research suggests that like gender identity, sexual orientation cannot be changed.

Parent and child alike experience anxieties as an adolescent enters and moves through puberty. Many parents feel that by talking to their children about sex, they are sanctioning it, but the opposite is true: Adolescents who are the best informed about sexuality are the most likely to postpone sex. When talking about sexuality, parents should not shy away from discussing their values. They should openly explain their beliefs and their reasons for them to their child.

Many gender-nonconforming children grow up to identify as gay, lesbian, or bisexual; all are at risk for bullying and mental health problems. Gender and sexuality concerns spur a large share of teen suicide attempts.

What parents can do: Your most important role as a parent is to offer understanding, respect, and support to your child. A nonjudgmental approach will gain your child's trust and put you in a better position to help your child through difficult times.

When your child discloses an identity to you, respond in an affirming, supportive way. Understand that gender identity and sexual orientation cannot be changed, but the way people identify their gender identity or sexual orientation may change over time as they discover more about themselves.

Be on the lookout for signs of anxiety, insecurity, depression, and low self-esteem. Stand up for your child when your child is mistreated. Do not minimize the social pressure or bullying your child may be facing. Make it clear that slurs or jokes based on gender identity or sexual orientation are not tolerated.

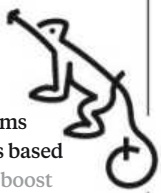
Having a gender-nonconforming child can be stressful for parents and caregivers as they deal with uncertainty and navigate schools, extended families, sibling relationships, and the world around them. Among the organizations that support parents and families with gender-nonconforming children are: the Family Acceptance Project, *familyproject.sfsu.edu;* Gender Spectrum, *genderspectrum.org;* and PFLAG, *pflag.org.*

ILLUSTRATION: FELIX SOCKWELL

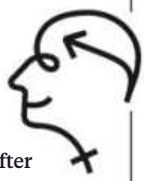
THE STUDY OF GENDER

The battle of the sexes: what science has to say

Women are more likely than men to accept climate change. A 2010 analysis of Gallup's environmental survey data found that 64 percent of women, but only 56 percent of men, believe global warming is caused by human activity.



Lizard moms allot genes based on sex. To boost survival odds, female brown anoles mate with several males, then produce sons with sperm from larger males and daughters with sperm from smaller ones.



Men make gestures of friendship after conflict more often than women do. Who's a sore loser? After a game, men are more likely to offer competitors a handshake or back pat while women reconcile less often, according to Harvard researchers.

Though 50% of men and 48% of women play video games, 60% of Americans say they think of gaming as a male activity. — **Pew Research Center survey,** 2015

GIRLS, BOYS, AND GENDERED TOYS

By Natasha Daly

For adults, play can be a break from life. For children, play *is* life, and toys are the tools of early learning.

That includes lessons about gender. Sociologist Elizabeth Sweet analyzed more than 7,300 toys in Sears catalogs from the past century. She found that early gender-based toy ads pushed traditional roles—the "little homemaker," the "young man of industry." At century's end, the roles were simply more fantastical: The homemaker was the princess; the carpenter, the action hero.

It wasn't that way all along. Aided by feminism's rise, Sweet says, the 1970s saw a drop-off in gendered toys: Only 2 percent of toys in the 1975 Sears catalog had gender-specific entries. But in the 1980s the pendulum began swinging the other way. Gender distinctions resurged in children's goods, especially clothing. Marketers may have seen an opportunity as ultrasound technology became widely available and parents could learn the sex of their babies before birth, says Sweet.

Targeting toys by gender has consequences. A 2015 study found boys are more likely than girls to play with toys that develop spatial intelligence—K'nex, puzzles, Lego bricks. Marketing can play a role, says developmental psychologist Jamie Jirout, the study's author. The girl-oriented product line Lego Friends focuses on playacting, not construction; some toy stores distinguish "girl" sets from conventional building sets. Girls play with puzzles that have fewer pieces. These distinctions may shape later life: "Spatial skills are a piece of the explanation for the underrepresentation of women in science and tech," says Jirout.

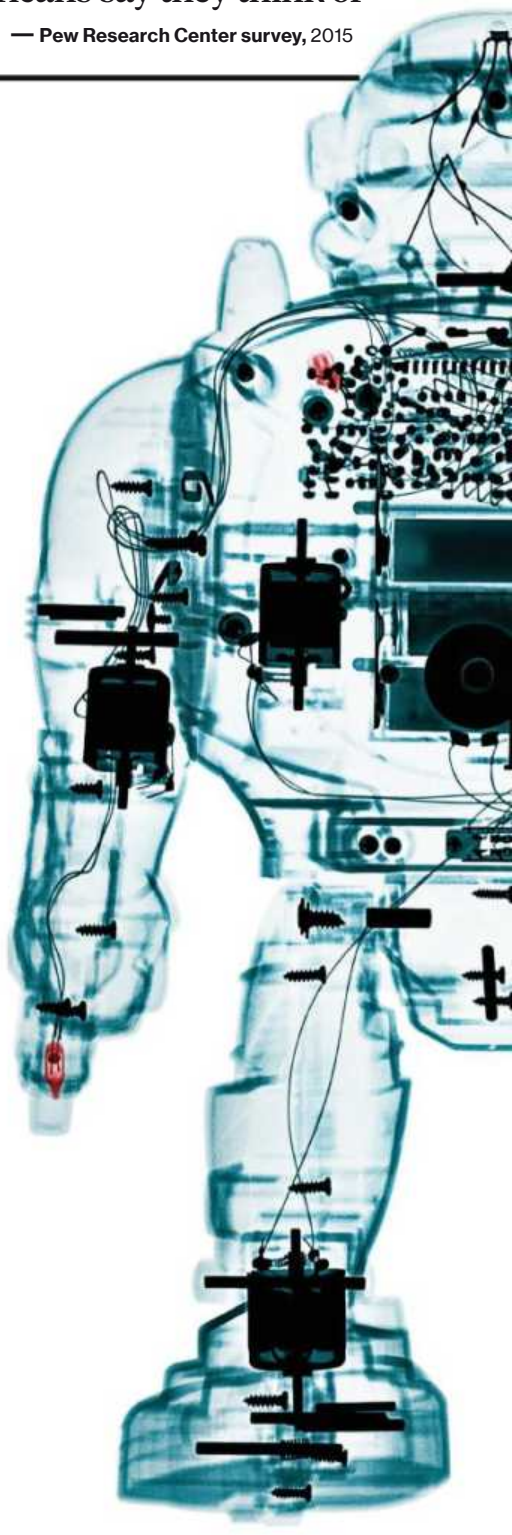


PHOTO ILLUSTRATION: BRENDAN FITZPATRICK
SPOT ILLUSTRATIONS: FELIX SOCKWELL

COLOR CODE

Fascinated by her daughter's early obsession with pink, one photographer explores two highly influential hues.

Dressed in pink from head to toe and surrounded by her many pink possessions, four-year-old Jeeyoo strikes a pose in her Seoul, South Korea, bedroom for a 2007 photograph. Also in Seoul, six-year-old Donghu stands amid his blue toys, clothes, books, and more for a portrait shot in 2008.

By Catherine Zuckerman
Photographs by JeongMee Yoon

WHEN JEONGMEE YOON'S DAUGHTER was five, she wanted to wear only pink. Yoon, a South Korean photographer, knew that her child's preference was shared by legions of young girls. But she was so intrigued by that seemingly universal inclination that she began the "Pink and Blue Project," an ongoing photographic series of the two colors that are most frequently associated with girls and boys worldwide.

"I wanted to show the extent to which children and their parents, knowingly or unknowingly, are influenced by advertising and popular culture," Yoon says. "Blue has become a symbol of strength and masculinity, while pink symbolizes sweetness and femininity."

Linking gender with these colors is relatively recent, according to Jo Paoletti, a University of Maryland American studies professor. In the 19th century pastel colors were fashionable in most of Europe and the United States and were worn "to flatter the complexion, not denote gender," she says. In the early part of the 20th century, gender distinction in clothing hues began to emerge, she says—and by 1940 pink and blue took root as the intensely gender-associated colors they continue to be today.

The United States has contributed significantly to the "pink for girls and blue for boys" phenomenon, says Paoletti. It's been fueled by the pervasive color palettes of Barbie, superhero movies, and other staples of American childhood, she says. And it has had the same kind of cultural staying power as "traditional ideas about sex, gender, and sexuality."

Since Yoon began her "Pink and Blue Project" in 2005, she has observed that children's color tastes often shift as they age, typically around third or fourth grade. For example, when Yoon photographed Maia (right) at age eight in her home in Hempstead, New York, the girl was beginning to gravitate away from pink and toward other colors, including purple.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‘I WANTED TO SHOW THE EXTENT TO WHICH CHILDREN ARE INFLUENCED BY POPULAR CULTURE.’

JeongMee Yoon, photographer

Little Jiwon – who was four years old when this picture was taken in 2008 – blends into the sea of pink belongings at her home in Goyang, South Korea. Ethan, age five, sports a Superman cape for this 2006 photograph in his blue-filled bedroom in Queens, New York.

Gallup interviewed more than 148,000 people from 140 countries about their quality of life.

48% OF WOMEN 72% OF MEN

Employed full or part time

World average, 2015

58% OF WOMEN 70% OF MEN

Feel safe walking alone at night in the city or area where they live

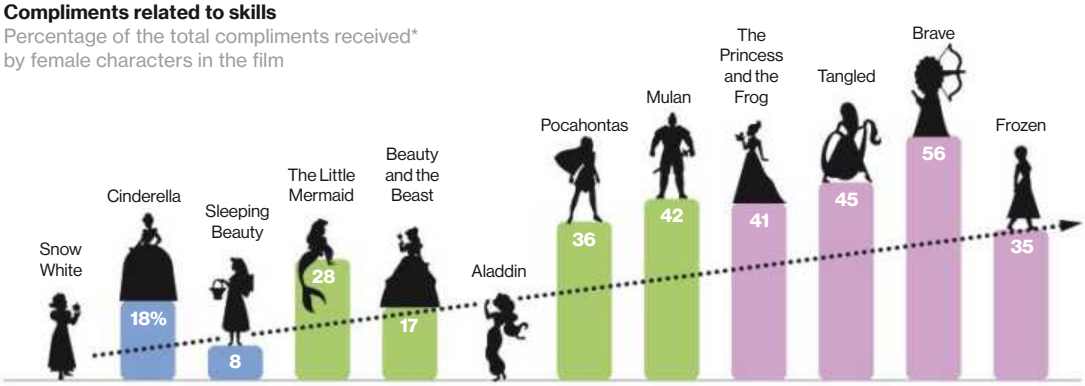
WHO'S THE FAIREST?

By Kelsey Nowakowski

In classic Disney animated films, a female character receives seven times the praise for her appearance as for her skills and actions. When linguists Carmen Fought of Pitzer College and Karen Eisenhauer of North Carolina State University analyzed the dialogue from 12 Disney movies, they found that in early films 60 percent of compliments to females related to looks and just 9 percent to abilities. Such patterns send children "a message about what it means to be a girl or boy," Fought says—suggesting to girls that "their value is based on their appearance." In newer films Disney has flipped the script. The analysis found that in movies such as *Brave,* girls get more nods for courage and abilities than for beauty.

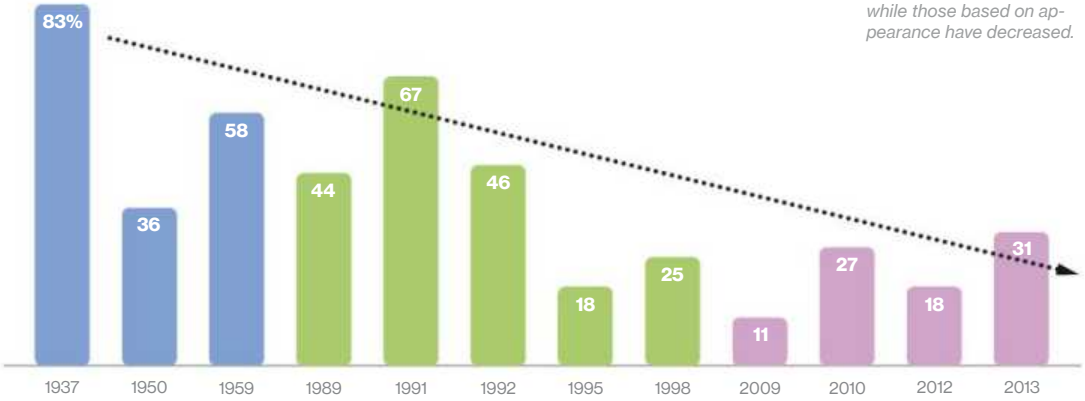
Compliments related to skills

Percentage of the total compliments received* by female characters in the film



Compliments related to appearance

Compliments on skills have trended upward, while those based on appearance have decreased.



Classic Era
These groundbreaking films establish Disney's mastery in bringing fairy tales to the big screen.

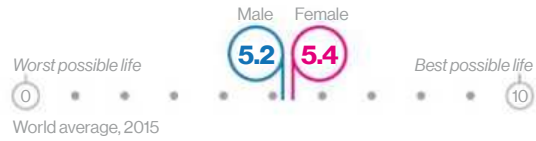
Renaissance
After a long hiatus, the company returns to the genre with larger casts and more musical numbers.

New Age
Disney expands more into computer-generated imagery films, capitalizing on their popularity and production advantages.

*THE REMAINING PERCENTAGES TO 100 ARE COMPLIMENTS ON POSSESSIONS, PERSONALITY, AND OTHER ATTRIBUTES.

DISNEY GRAPHIC: ÁLVARO VALIÑO, KELSEY NOWAKOWSKI. SOURCES: CARMEN FOUGHT, PITZER COLLEGE; KAREN EISENHAUER, NORTH CAROLINA STATE UNIVERSITY

Despite reporting differences in employment and perceived safety, women responded slightly higher than men when asked to rate their lives on a 0-to-10 scale.



A girl wears a Sleeping Beauty costume for the photo project "Dress Rehearsal."

Is dressing up as princesses 'a normal girlie-girl phase,' or does it 'encourage girls to define themselves based on appearance and passivity'?

A question photographer Blake Fitch asks with her images of girls wearing princess attire

THE STUDY OF GENDER

The battle of the sexes: what science has to say

Across cultures, people see odd numbers as masculine and even numbers as feminine. A study in the *Journal of Experimental Psychology* found gender is assigned to an item based on the number next to it. The association of numbers with gender has roots in ancient Greek and Chinese philosophies.

Boys and girls may get different breast milk, depending on family finances. The *American Journal of Physical Anthropology* reported that wealthier mothers produce richer breast milk for their sons and may nurse boys more frequently, while poorer mothers do the same for their daughters.

PHOTO: BLAKE FITCH
SPOT ILLUSTRATIONS: FELIX SOCKWELL
POLL GRAPHIC: LAWSON PARKER. SOURCE: GALLUP

ONE PART HE, ONE PART SHE

By Patricia Edmonds

The difference in appearance between a species' males and females is called sexual dimorphism. The term implies that there's a bisecting line between sexes, a clear divide. But in the animal kingdom, a lot of creatures straddle it.

The natural world is replete with hermaphrodites, animals that may outwardly appear male or female but have the reproductive organs of both. Their less common cousins are gynandromorphs, animals that are a mosaic of male and female traits—say, the size and coloring of one with the genitalia of the other.

Rarer yet is the bilateral gynandromorph (above), an animal that's half him and half her, split at the midline. The phenomenon has been documented in birds, crustaceans—and butterflies.

Evolutionary biologist Josh Jahner explains "what most scientists think happens" to form these outliers: Butterflies' sex chromosomes are the reverse of humans'—males have two alike (ZZ), females two different (ZW). A female's egg sometimes has two nuclei, a Z and a W. When they're "double fertilized" by a male's Z sperm, Jahner says, the resulting embryo is half each sex.

How rare are these specimens? In a 1980s study, a research team that raised nearly 30,000 butterflies found only five bilateral gynandromorphs among them. Colleagues at the University of Nevada, Reno have been "really excited," Jahner says, to find four since 2011.

Jahner says gynandromorphs in his lab have tried but failed to lay eggs, likely because of an irregularity in their reproductive systems. So though their breed sports striking fusions of color, it's a beauty they apparently can't pass on.

PAPILIO GLAUCUS

HABITAT/RANGE
Woods, parks, and suburbs in the eastern half of the United States and parts of Canada

OTHER FACTS
The yellow side is male and the dark side is female on this bilateral gynandromorph eastern tiger swallowtail (shown about 1.5 times life-size). The term combines the Greek *gyn,* or female, and *andro,* or male.

PHOTO: JAMES K. ADAMS

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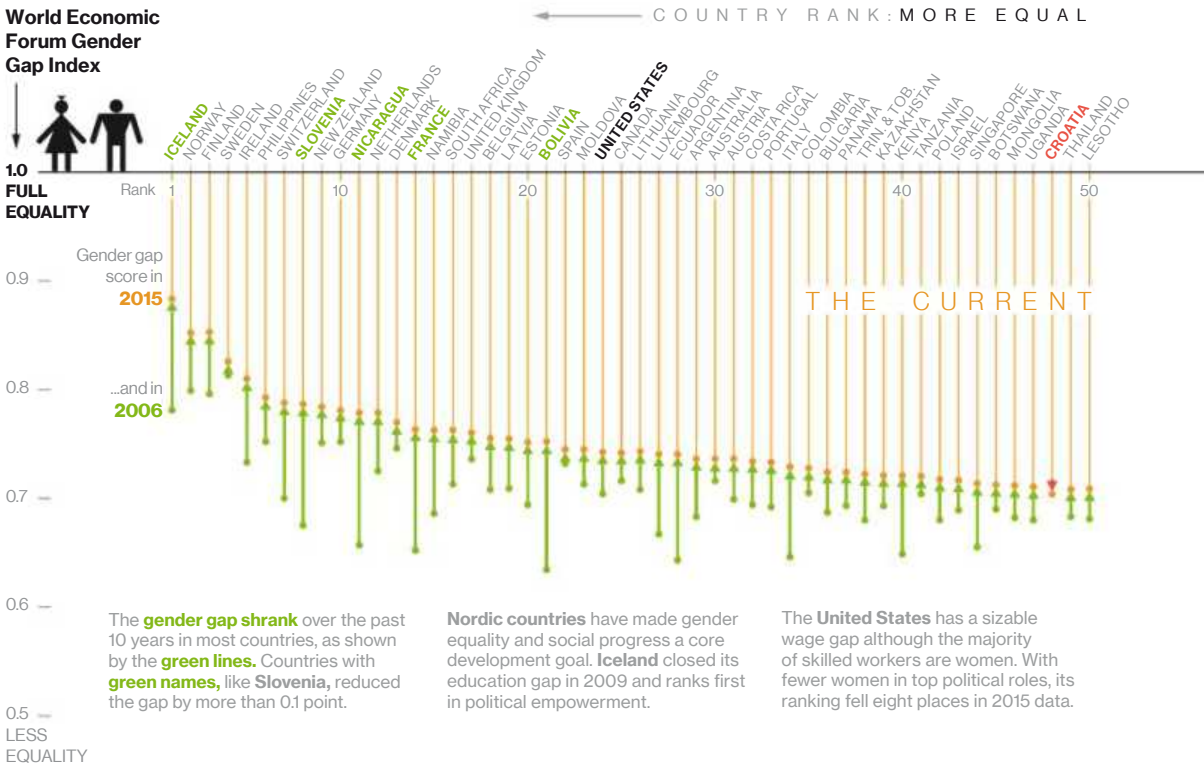
NATIONAL GEOGRAPHIC



The **gender gap shrank** over the past 10 years in most countries, as shown by the **green lines.** Countries with **green names,** like **Slovenia,** reduced the gap by more than 0.1 point.

Nordic countries have made gender equality and social progress a core development goal. **Iceland** closed its education gap in 2009 and ranks first in political empowerment.

The **United States** has a sizable wage gap although the majority of skilled workers are women. With fewer women in top political roles, its ranking fell eight places in 2015 data.

WHERE IN THE WORLD ARE WOMEN AND MEN MOST—AND LEAST—EQUAL?

By Kelsey Nowakowski

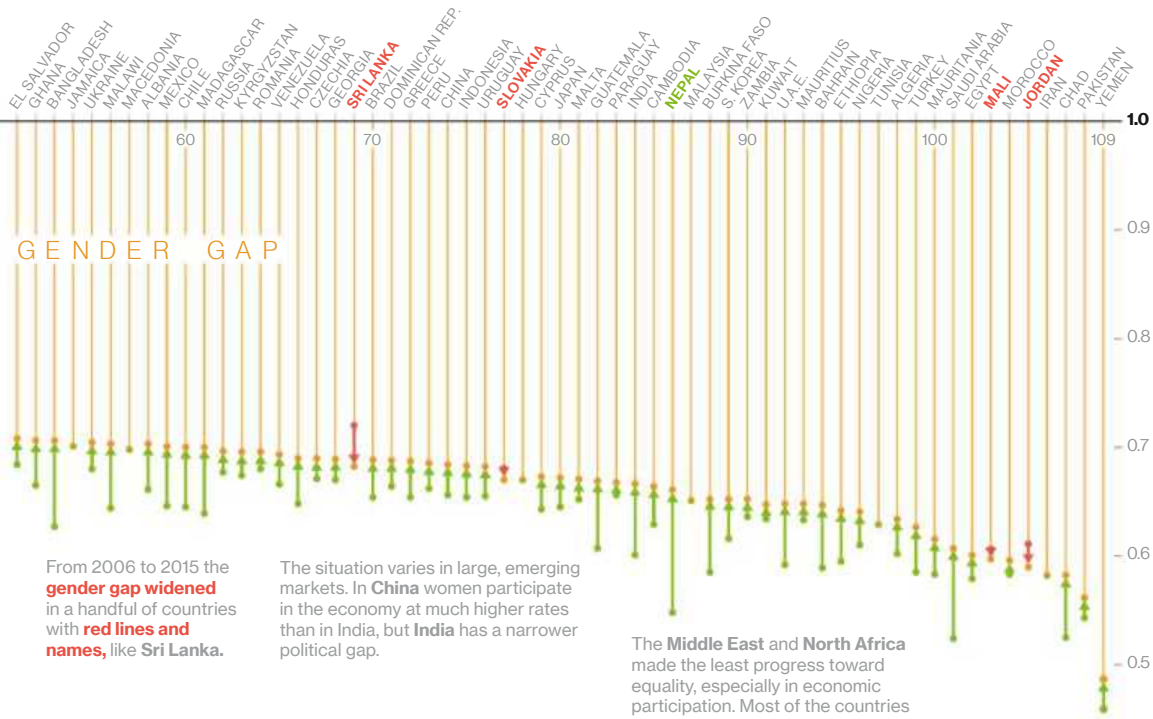
Since 2006, the World Economic Forum's Global Gender Gap Report has tracked progress toward ending gender inequality by measuring women's and men's educational attainment, health and survival, economic participation, and political empowerment. A decade of data shows that equality is closest to being achieved in health and education—10 countries have already reached that. But women still lag behind economically and politically: Not a single country has reached parity in those arenas.

In some countries, particularly in the Middle East and North Africa, shrinking the economic gap means lowering the barriers that keep women from working outside the home. In others, like the United States, it entails getting more women into leadership roles—and increasing their pay. "What you can measure," says the forum's Saadia Zahidi, "you can address."

Progress can happen at any stage. Though Saudi Arabia has a notably large gender gap, it is one of the countries that have made the most relative progress toward improving women's economic participation. Over the past 20 years, the number of women there graduating from college has risen significantly, and a recent government initiative encourages female employment.

A country's income level isn't always a predictor of equality. Some rich places, such as Japan, South Korea, and Kuwait, rank in the bottom third of the index overall, while the Philippines and Nicaragua are in the top 15.

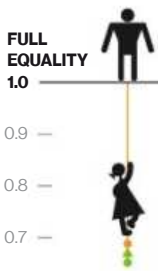
LESS EQUAL →



From 2006 to 2015 the **gender gap widened** in a handful of countries with **red lines and names,** like **Sri Lanka.**

The situation varies in large, emerging markets. In **China** women participate in the economy at much higher rates than in India, but **India** has a narrower political gap.

The **Middle East** and **North Africa** made the least progress toward equality, especially in economic participation. Most of the countries in the bottom 10 are from this region.



The index is a snapshot of the disparity between the sexes. It measures the gap in four areas: **health, education, economic participation,** and **politics.**

Health
Health disparity increased in large economies such as India and China, widening the global gap by a fraction.

Education
Twenty percent of nations offer equal access to education, up from 14 percent in 2006. Sub-Saharan Africa has the widest gap.

Economic Participation
This gap is slowly closing; North America, Latin America, and the Caribbean improved the most.

Politics
This gap is shrinking fastest, but it has the farthest to go. Quotas for women in politics are common in top-ranked countries.

HOW COUNTRIES ARE RANKED
The index looks at the gender gap from several perspectives. It measures whether men and women have differing access to resources, such as education, regardless of a country's wealth. It examines outcomes, like the proportion of women in high-skilled jobs. Countries are ranked based on how close they are to achieving equality.

The index has regularly measured 109 countries between 2006 and 2015. Data constraints excluded other countries.

GRAPHIC: ÁLVARO VALIÑO, KELSEY NOWAKOWSKI. SOURCE: WORLD ECONOMIC FORUM

I Am Nine Years Old

CHILDREN ACROSS THE WORLD TELL US

HOW GENDER AFFECTS THEIR LIVES.

BY EVE CONANT | PHOTOGRAPHS BY ROBIN HAMMOND

AVERY JACKSON
KANSAS CITY, MISSOURI
"The best thing about being a girl is, now I don't have to pretend to be a boy."

If you want candid answers about how gender shapes destiny, ask the world's nine-year-olds.

At nine, a girl in Kenya already knows that her parents will marry her off for a dowry, to a man who may beat her. At nine, a boy in India already knows he'll be pressured by male pals to sexually harass women in the street.

At nine, youngsters from China to Canada and Kenya to Brazil describe big dreams for future careers—but the boys don't see their gender as an impediment, while the girls, all too frequently, do.

On the cusp of change, in that last anteroom of childhood before adolescence, nine-year-olds don't think in terms of demographic statistics or global averages. But when they talk about their lives, it's clear: Children at this age are unquestionably taking account of their own possibilities—and the limits gender places on them.

To get kids' perspectives, *National Geographic* fanned out into 80 homes over four continents. From the slums of Rio de Janeiro to the high-rises of Beijing, we posed the same questions to a diverse cast of nine-year-olds. Being nine, they didn't mince their words.

Many readily admitted that it can be hard—frustrating, confusing, lonely—to fit into the communities they call home and the roles they're expected to play. Others are thriving as they break down gender barriers.

What's the best thing about being a girl?

Avery Jackson swipes a rainbow-streaked wisp of hair from her eyes and considers the question. "Everything about being a girl is good!"

What's the worst thing about being a girl?

"How boys always say, 'That stuff isn't girl stuff—it's boy stuff.' Like when I first did parkour," an obstacle-course sport.

Avery spent the first four years of her life as a boy, and was miserable; she still smarts recalling how she lost her preschool friends because "their moms did not like me." Living since 2012 as an openly transgender girl, the Kansas City native is now at ground zero in the evolving conversation about gender roles and rights.

THE GROWN-UPS TALK ABOUT IT—but kids like Avery want to have their say too. "Nine-year-olds can be impressively articulate and wise," says Theresa Betancourt, associate professor of child health and human rights at Harvard University. They face increased peer pressure and responsibility, she says, but not the conformity and self-censorship that come with adolescence.

When asked the best-and-worst-things questions, Sunny Bhope—who speaks as his mother cooks rice over a charcoal fire, sending smoke through his small home near Mumbai, India—says the worst thing about being a boy is that he's expected to join in "Eve-teasing," his society's euphemism for sexually harassing women in public.

For Yiqi Wang in Beijing, the best thing about being a girl is "we're more calm and reliable than boys." And for Juliana Meirelles Fleury in Rio, it's that "we can go in the elevator first."

How might your life be different if you were a girl instead of a boy (or a boy instead of a girl)?

Jerusalem's Lev Hershberg says that if he were a girl, he "wouldn't like computers." Fellow Israeli Shimon Perel says if he were a girl, he could play with a jump rope.

If they were boys, Pooja Pawara from outside Mumbai would ride a scooter, while Yan Zhu from China's Yaqueshui village would swim in a river that her grandmother insists is too cold for girls. Because she's not a boy, Luandra Montovani isn't allowed to play in her Rio favela's streets, where she says the dangers include "violence and stray bullets."

Eriah Big Crow, an Oglala Lakota who lives on South Dakota's Pine Ridge Reservation, says in a near whisper that there's nothing that she can't do, because boys and girls are "exactly the same."

Eriah's claim might sound too optimistic to Anju Malhotra, UNICEF's principal adviser on gender and development. With respect to gender inequality, she says, "we're not seeing an expiration date for it yet"—but there is progress.

For global citizens under age 10, recent decades have seen more gender equity in areas such as primary school education access, says UNICEF's Claudia Cappa. But statisticians can count only "those who were able to survive," she notes, and "sex-selective abortions of female fetuses" persist in some countries.

Past the age-10 mark, however, the closing gap is replaced by a wide gulf. "Things change completely in adolescence," Cappa says, with "striking" gender gaps in access to secondary schools, for example, or exposure to early marriage and violence. "This is when you stop being a child," she says. "You become a female or a male."

What do you want to be when you grow up?

Lokamu Lopulmoe, a Turkana girl living in rural Kenya, says that when she grows up, her parents will "be given my dowry, and even if the man goes and beats me up eventually, my parents will have the dowry to console them." Some 300 miles away, in a gated community in Nairobi, Chanelle Wangari Mwangi sits in her trophy-filled room and imagines a much different future: She wants to be a pro golfer and "help the needy."

In Ottawa, Canada, William Kay confidently plans a future as "a banker or a computer, like, genius guy." Beijing's Yunshu Sang wants to be a police officer, "but most police are men," she says, "so I can't." In Selinsgrove, Pennsylvania, budding journalist Hilde Lysiak rides her neighborhood on a silver and pink bike, hunting for news—all the while suspecting that a boy reporter might "get more information from the police."

What is something that makes you sad?

For Tomee War Bonnet, an Oglala Lakota, it's "seeing people kill themselves." What plants such thoughts in a nine-year-old's head? Her reservation's history of suicides, by kids as young as 12.

Mumbai's Rania Singla feels sad when her little brother hits her. Lamia al Najjar, who lives in a makeshift home in the Gaza Strip, says, "I feel sadness when I see [how] our home is destroyed"—a result of fighting in the area in 2014.

What makes you most happy?

High on this list: family, God, food, and soccer. And friends. Other answers give a flavor of kids' individual lives. One youngster loves powwows, another Easter eggs. For Amber Dubue in Ottawa, happiness is "room to run." For Maria Eduarda Cardoso Raimundo in Rio, whose parents are separated, happiness is "Mom and Dad by my side, hugging me and giving me advice."

Around age nine, Bede Sheppard says, children are "developing important feelings of empathy, fairness, and right from wrong." As deputy director in the children's rights division of Human Rights Watch, Sheppard has worked with child laborers, refugees, and other youngsters in dire circumstances. He says the most oppressed and disadvantaged can also be the most empathetic and selfless. Turkana herder Lopeyok Kagete dreams of giving away money and "slaughtering [livestock] for people to eat." Though Sunny Bhope and his family live in a single concrete room, the Indian boy aspires to "provide rooms to the homeless."

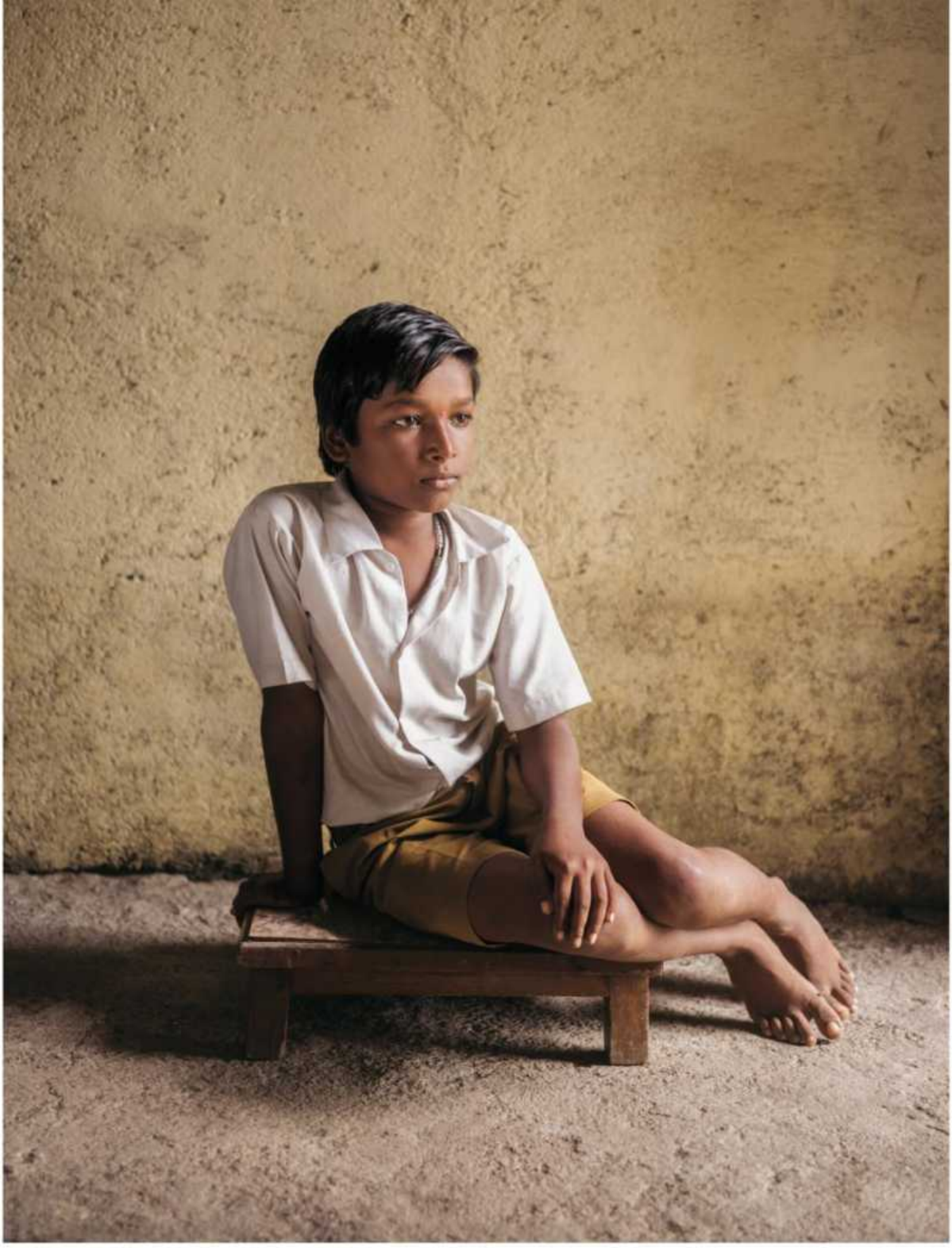
WHEN NINE-YEAR-OLD GIRLS and boys discuss themselves and each other, points of consensus emerge. Boys get in trouble more often than girls, both sides agree, and girls have to spend a lot of time on their hair. Such things are part of their reality—but much weightier matters are too.

If you could change something in your life or in the world, what would it be?

Rio's Clara Fraga would make thieves "good, so that they wouldn't steal." Abby Haas would free her South Dakota reservation of the "bad guys." Kieran Manuel Rosselli, of Ottawa, says he would "destroy terrorists." The grim content of some answers, and the grave tones in which they're delivered, give the impression of a miniature adult speaking, not a child. If she could, says China's Fang Wang, the thing she would change is "what it's like when I'm lonely."

The aspiration mentioned most often, across lines of geography and gender, was summed up by Avery Jackson. If the world were hers to change, she said, there would be "no bullying. Because that's just bad." □

Between them, *Geographic* staff writer **Eve Conant** and photographer **Robin Hammond** worked with 80 children on four continents to create this story.

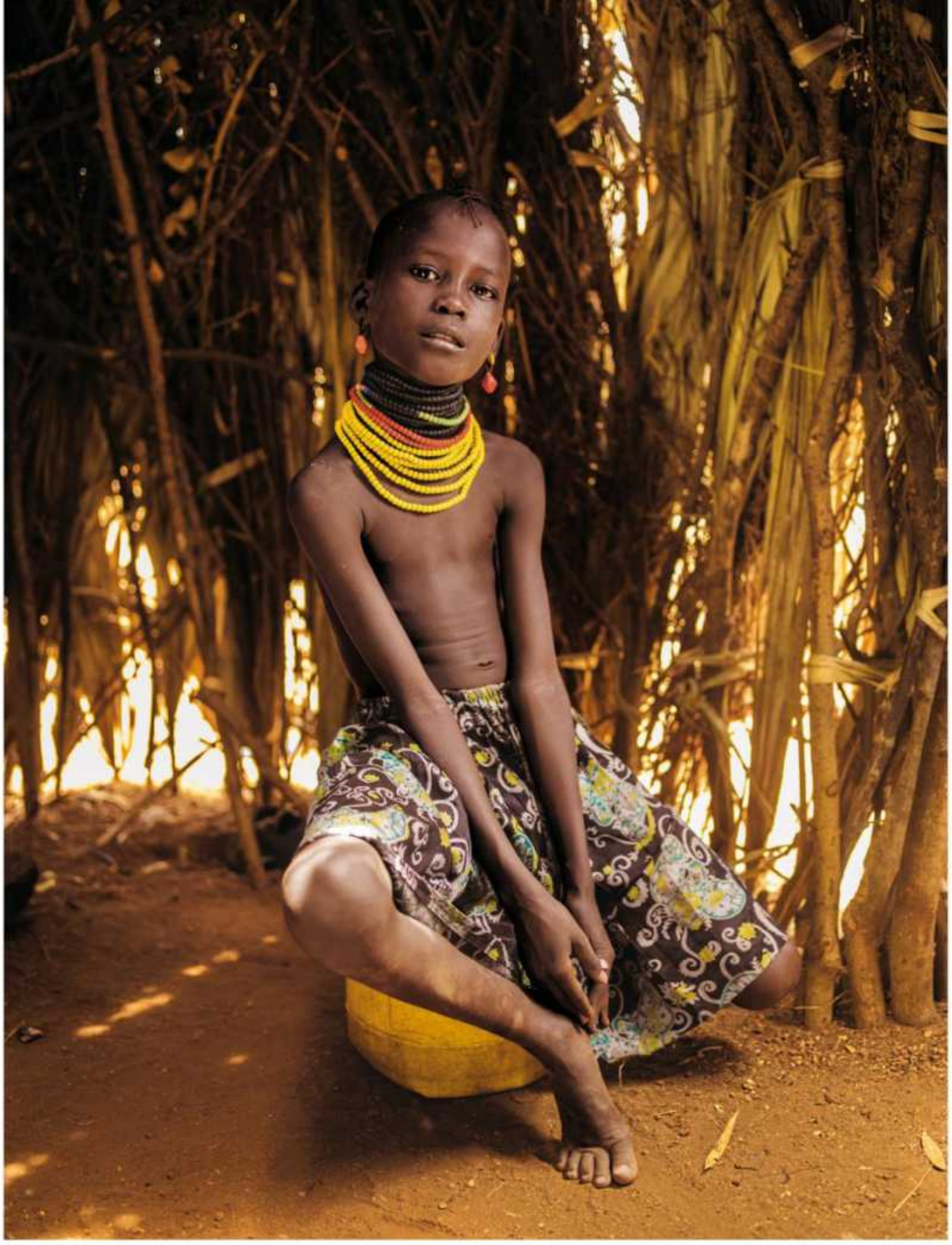


SUNNY BHOPE MAHARASHTRA, INDIA

"The worst thing about being a boy is that they steal stuff and do Eve-teasing [harassing females]."

FANG WANG YAQUESHUI, CHINA

"Sometimes I secretly help my older brother [on the farm]. Mom whacks me when she finds out. She says that girls who do these things will grow calluses on their hands; then they become ugly."



NAWAR KAGETE KAPUTIR, KENYA

"You are seduced wherever you go. You are chased by men. If you go to fetch water, you are chased; you go to collect firewood, you are chased."

MIKAYLA McDONALD OTTAWA, CANADA

"There isn't anything I can't do because I'm a girl. Everyone is equal. There is always the same amount of opportunities for everyone, but in the olden days everyone wasn't equal."

YINGZHI WANG BEIJING, CHINA

"I think that the worst thing about being a boy is bullying girls, because girls are generally weaker and smaller, and they're also timid... Boys should protect girls, just like my dad protects my mom and takes responsibility for our family."

JIAYI FAN BEIJING, CHINA

"If I could make some changes, I would change my personality, because my social skills are not very good. I would like to make myself become a bit more extroverted, not too timid."

MARIA EDUARDA CARDOSO RAIMUNDO
RIO DE JANEIRO, BRAZIL
"I like to be a girl because girls take better care of themselves than boys."

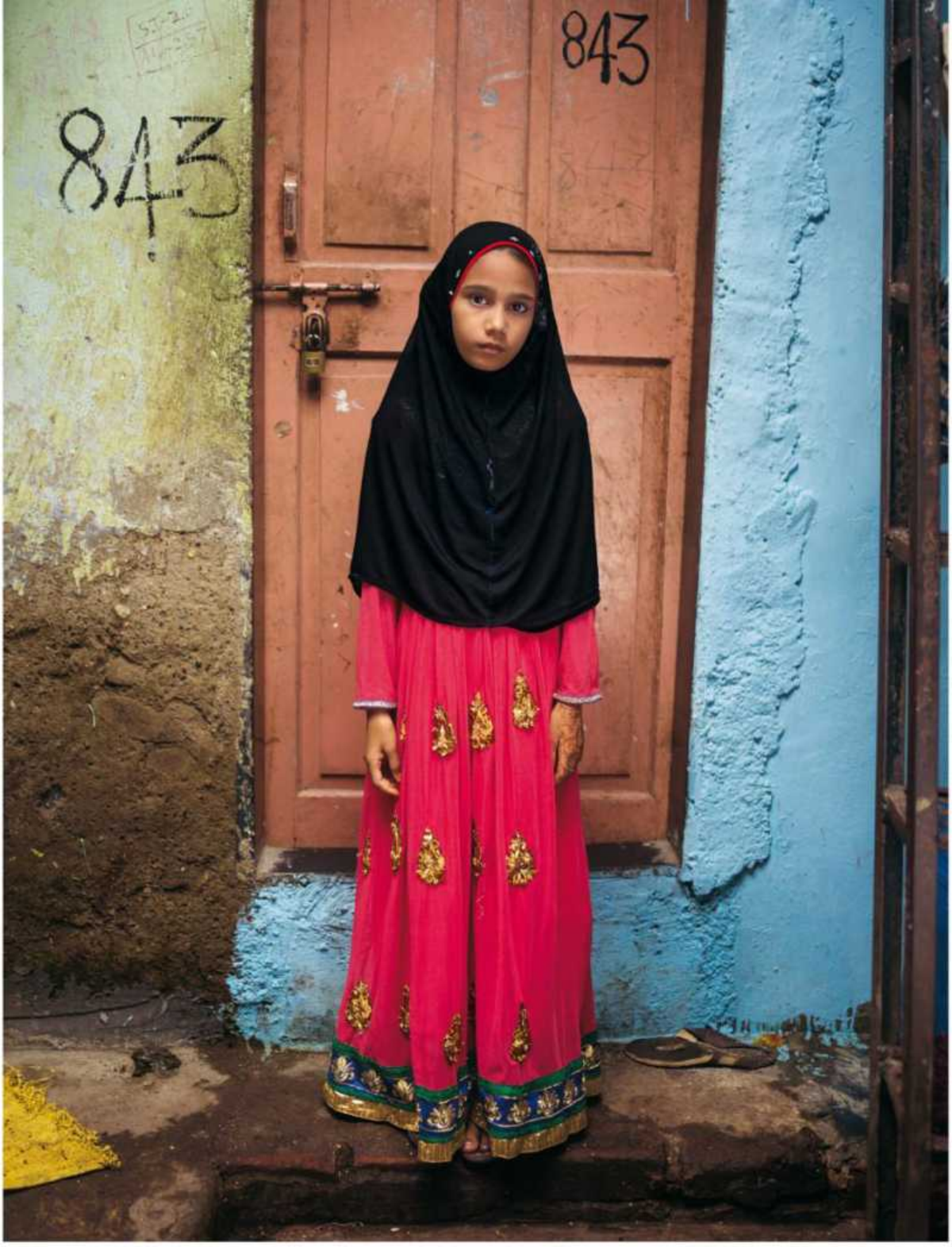
RILEY RICHARDS
PINE RIDGE RESERVATION, SOUTH DAKOTA

"When I grow up, I want to be in the Navy SEALs to protect my country, because other bad people have killed my people."

LOPEYOK KAGETE
KAPUTIR, KENYA
"The good thing about being a boy is the penis."

NICOLE NDUTA MUNYUI OSANO
NAIROBI, KENYA

"The difference between boys and girls is that girls are gentle and boys are rough, and some of them call people names, and they are not kind or self-controlled."



ALFIA ANSARI MUMBAI, INDIA

"We won't get education in school, but boys will be educated, and therefore they can travel anywhere, but girls can't."

DVIR BERMAN
GIVAT ZEEV (ISRAELI SETTLEMENT), WEST BANK

"Being a boy, you're stronger, and you can lift things like refrigerators... As a girl, you have to comb your hair and put on clothes and make sure you're modest and everything."

IBRAHIM AL NAJJAR KHAN YUNIS, GAZA STRIP

"Boys play with each other. And girls play with each other. They don't mix with each other. They play something different from what we play, and we play different from them."

TOMEE WAR BONNET
PINE RIDGE RESERVATION, SOUTH DAKOTA

"The worst thing about being a girl is that you just can't do things that boys can do; like, it kind of bothers me how there was not one girl president."

Rethinking Gender

Freed from the binary of boy and girl, gender identity is a shifting landscape. Can science help us navigate?

When Massachusetts twins Caleb (left) and Emmie (right) Smith were born in 1998, it was hard to tell them apart. Today Emmie says, "When we were 12, I didn't feel like a boy, but I didn't know it was possible to be a girl." At 17 Emmie came out as transgender, and recently she underwent gender-confirmation surgery. She plays down its significance: "I was no less of a woman before it, and I'm no more of one today."

She has always felt more boyish than girlish.

From an early age, E, as she prefers to be called for this story, hated wearing dresses, liked basketball, skateboarding, video games. When we met in May in New York City at an end-of-the-year show for her high school speech team, E was wearing a tailored Brooks Brothers suit and a bow tie from her vast collection. With supershort red hair, a creamy complexion, and delicate features, the 14-year-old looked like a formally dressed, earthbound Peter Pan.

Later that evening E searched for the right label for her gender identity. "Transgender" didn't quite fit, she told me. For one thing she was still using her birth name and still preferred being referred to as "she." And while other trans kids often talk about how they've always known they were born in the "wrong" body, she said, "I just think I need to make alterations in the body I have, to make it feel like the body I need it to be." By which she meant a body that doesn't menstruate and has no breasts, with more defined facial contours and "a ginger beard." Does that make E a trans guy? A girl who is, as she put it, "insanely androgynous"? Or just someone who rejects the trappings of traditional gender roles altogether?

You've probably heard a lot of stories like E's recently. But that's the whole point: She's questioning her gender identity, rather than just accepting her hobbies and wardrobe choices as those of a tomboy, because we're talking so much about transgender issues these days. These conversations have led to better head counts of transgender Americans, with a doubling, in just a decade, of adults officially tallied as transgender in national surveys; an increase in the number of people who are gender nonconforming, a broad category that didn't even have a name a generation ago; a rise in the number of elementary school–age children questioning what gender

By Robin Marantz Henig
Photographs by Lynn Johnson

they are; and a growing awareness of the extremely high risk for all of these people to be bullied, to be sexually assaulted, or to attempt suicide.

The conversation continues, with evolving notions about what it means to be a woman or a man and the meanings of transgender, cisgender, gender nonconforming, genderqueer, agender, or any of the more than 50 terms Facebook offers users for their profiles. At the same time, scientists are uncovering new complexities in the biological understanding of sex.

MANY OF US learned in high school biology that sex chromosomes determine a baby's sex, full stop: XX means it's a girl; XY means it's a boy. But on occasion, XX and XY don't tell the whole story.

Today we know that the various elements of what we consider "male" and "female" don't always line up neatly, with all the XXs—complete with ovaries, vagina, estrogen, female gender identity, and feminine behavior—on one side and all the XYs—testes, penis, testosterone, male gender identity, and masculine behavior—on the other. It's possible to be XX and mostly male in terms of anatomy, physiology, and psychology, just as it's possible to be XY and mostly female.

Each embryo starts out with a pair of primitive organs, the proto-gonads, that develop into male or female gonads at about six to eight weeks. Sex differentiation is usually set in motion by a gene on the Y chromosome, the *SRY* gene, that makes the proto-gonads turn into testes. The testes then secrete testosterone and other male hormones (collectively called androgens), and the fetus develops a prostate, scrotum, and penis. Without the *SRY* gene, the proto-gonads become ovaries that secrete estrogen, and the fetus develops female anatomy (uterus, vagina, and clitoris).

But the *SRY* gene's function isn't always straightforward. The gene might be missing or dysfunctional, leading to an XY embryo that fails to develop male anatomy and is identified at birth as a girl. Or it might show up on the X chromosome, leading to an XX embryo that does develop male anatomy and is identified at birth as a boy.

Genetic variations can occur that are unrelated to the *SRY* gene, such as complete androgen insensitivity syndrome (CAIS), in which an XY embryo's cells respond minimally, if at all, to the signals of male hormones. Even though the proto-gonads become testes and the fetus produces androgens, male genitals don't develop. The baby looks female, with a clitoris and vagina, and in most cases will grow up feeling herself to be a girl.

Which is this baby, then? Is she the girl she believes herself to be? Or, because of her XY chromosomes—not to mention the testes in her abdomen—is she "really" male?

Georgiann Davis, 35, was born with CAIS but didn't know about it until she stumbled upon that information in her medical records when she was nearly 20. No one had ever mentioned her XY status, even when doctors identified it when she was 13 and sent her for surgery at 17 to remove her undescended testes. Rather than reveal what the operation really was for, her parents agreed that the doctors would invent imaginary ovaries that were precancerous and had to be removed.

In other words, they chose to tell their daughter a lie about being at risk for cancer rather than the truth about being intersex—with reproductive anatomy and genetics that didn't fit the strict definitions of female and male.

"Was having an intersex trait that horrible?" wrote Davis, now a sociologist at the University of Nevada, Las Vegas, in *Contesting Intersex: The Dubious Diagnosis*. "I remember thinking I must be a real freak if even my parents hadn't been able to tell me the truth."

Another intersex trait occurs in an isolated region of the Dominican Republic; it is sometimes referred to disparagingly as *guevedoce*—"penis at 12." It was first formally studied in the 1970s by Julianne Imperato-McGinley, an endocrinologist from the Weill Cornell Medical College in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32 33 34 35 36 37

Wearing a suit to the eighth-grade prom was an early step on Ray Craig's journey toward being a "trans guy," although he decided to wait until after graduating from his middle school in New York State to go public. Now everyone calls him by male pronouns. Ray's father wasn't surprised to learn Ray identified as a boy, but "I wasn't sure if it would be a six-week phase or a four-year phase or a permanent thing." Next step: thinking about hormone blockers that suppress puberty.

Oti, nine, was assigned male at birth but never felt that way. When she learned to speak, she didn't say, "I feel like a girl," but rather "I *am* a girl." Oti brought her parents and three older siblings into the transgender activist community. "It's been so great," her father, David, says. "We've met incredible people who've gone through an incredible amount. She opened me. I'm her dad, but she is a leader for me."

Carlos, 12, holds a photo of himself as a girl. He is one of a small group of children born in the Dominican Republic with an enzyme deficiency. Their genitalia appear female at birth — then, with a surge of testosterone at puberty, they develop male genitals and mature into men. His uncle simply says Carlos "found his own rhythm."

New York, who had heard about a cohort of these children in the village of Las Salinas. Imperato-McGinley knew that ordinarily, at around eight weeks gestational age, an enzyme in male embryos converts testosterone into the potent hormone DHT. When DHT is present, the embryonic structure called a tubercle grows into a penis; when it's absent, the tubercle becomes a clitoris. Embryos with this condition, Imperato-McGinley revealed, lack the enzyme that converts testosterone to DHT, so they are born with genitals that appear female. They are raised as girls. Some think of themselves as typical girls; others sense that something is different, though they're not sure what.

But the second phase of masculinization, which happens at puberty, requires no DHT, only a high level of testosterone, which these children produce at normal levels. They have a surge of it at about age 12, just as most boys do, and experience the changes that will turn them into men (although they're generally infertile): Their voices deepen, muscles develop, facial and body hair appear. And in their case, what had at first seemed to be a clitoris grows into a penis.

When Imperato-McGinley first went to the Dominican Republic, she told me, newly sprouted males were suspect and had to prove themselves more emphatically than other boys did, with impromptu rituals involving blades, before they were accepted as real men. Today these children are generally identified at birth, since parents have learned to look more carefully at newborns' genitals. But they are often raised as girls anyway.

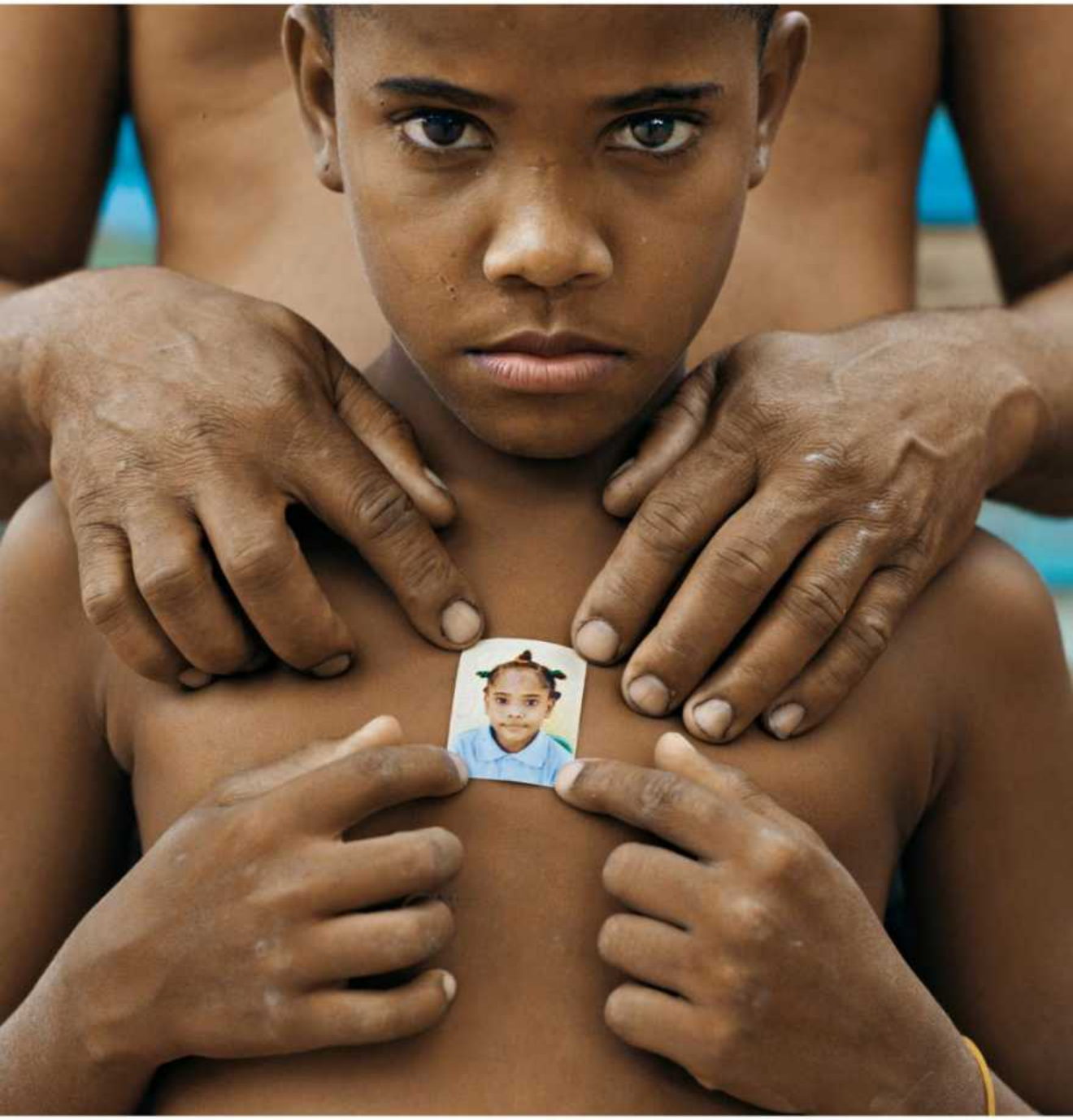
GENDER IS AN AMALGAMATION of several elements: chromosomes (those X's and Y's), anatomy (internal sex organs and external genitals), hormones (relative levels of testosterone and estrogen), psychology (self-defined gender identity), and culture (socially defined gender behaviors). And sometimes people who are born with the chromosomes and genitals of one sex realize that they are transgender, meaning they have an internal gender identity that aligns with the opposite sex—or even, occasionally, with neither gender or with no gender at all.

As transgender issues become the fare of daily news—Caitlyn Jenner's announcement that she is a trans woman, legislators across the United States arguing about who gets to use which bathroom—scientists are making their own strides, applying a variety of perspectives to investigate what being transgender is all about.

In terms of biology, some scientists think it might be traced to the syncopated pacing of fetal development. "Sexual differentiation of the genitals takes place in the first two months of pregnancy," wrote Dick Swaab, a researcher at the Netherlands Institute for Neuroscience in Amsterdam, "and sexual differentiation of the brain starts during the second half of pregnancy." Genitals and brains are thus subjected to different environments of "hormones, nutrients, medication, and other chemical substances," several weeks apart in the womb, that affect sexual differentiation.

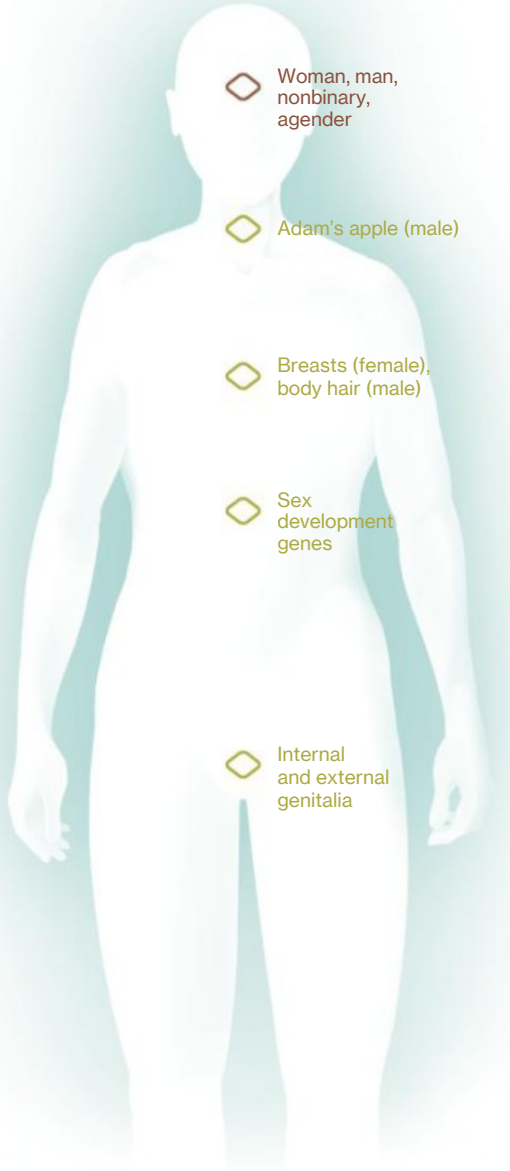
This doesn't mean there's such a thing as a "male" or "female" brain, exactly. But at least a few brain characteristics, such as density of the gray matter or size of the hypothalamus, do tend to differ between genders. It turns out transgender people's brains may more closely resemble brains of their self-identified gender than those of the gender assigned at birth. In one study, for example, Swaab and his colleagues found that in one region of the brain, transgender women, like other women, have fewer cells associated with the regulator hormone somatostatin than men. In another study scientists from Spain conducted brain scans on transgender men and found that their white matter was neither typically male nor typically female, but somewhere in between.

These studies have several problems. They are often small, involving as few as half a dozen transgender individuals. And they sometimes include people who already have started taking



Identity, Sex, and Expression

People are almost always designated male or female at birth based on genitalia. Gender includes components such as gender identity and expression, but not sexual orientation. Some cultures recognize genders that are neither man nor woman. For a glossary of terms, see the Explore section in the front of the issue.



GENDER IDENTITY

Usually established by age three, this is a deeply felt sense of being a man, a woman, or a gender that is both, fluid, or neither. Cisgender people identify with the sex assigned at birth; transgender people don't.

WOMAN	NONBINARY	MAN
Identification with girls or women	Identification with both men and women or a gender that is neither	Identification with boys or men

BIOLOGICAL SEX

Sex determination exists on a spectrum, with genitals, chromosomes, gonads, and hormones all playing a role. Most fit into the male or female category, but about one in a hundred may fall in between.

FEMALE	INTERSEX	MALE
XX chromosomes, ovaries, female genitals, and female secondary sexual characteristics	Any mix of male and female chromosomes, testicular and ovarian tissue, genitals, other sexual characteristics	XY chromosomes, testes, male genitals, male secondary sexual characteristics

GENDER EXPRESSION

People express gender through clothing, behavior, language, and other outward signs. Whether these attributes are labeled masculine or feminine varies among cultures.

FEMININE	ANDROGYNOUS	MASCULINE
Presentation in ways a culture associates with being a woman	A combination of masculine and feminine traits or a nontraditional gender expression	Presentation in ways a culture associates with being a man

RYAN WILLIAMS AND JOHN TOMANIO, NGM STAFF. ART: MATTHEW TWOMBLY
SOURCES: ROBERT GAROFALO, LURIE CHILDREN'S HOSPITAL; ERIC VILAIN, UCLA

hormones to transition to the opposite gender, meaning that observed brain differences might be the result of, rather than the explanation for, a subject's transgender identity.

Still, one finding in transgender research has been robust: a connection between gender nonconformity and autism spectrum disorder (ASD). According to John Strang, a pediatric neuropsychologist with the Center for Autism Spectrum Disorders and the Gender and Sexuality Development Program at Children's National Health System in Washington, D.C., children and adolescents on the autism spectrum are seven times more likely than other young people to be gender nonconforming. And, conversely, children and adolescents at gender clinics are six to 15 times more likely than other young people to have ASD.

Emily Brooks, 27, has autism and labels herself nonbinary, though she has kept her birth name. A slender person with a half-shaved head, turquoise streaks in her blond hair, and cute hipster glasses, Brooks recently finished a master's degree at the City University of New York in disability studies and hopes eventually to create safer spaces for people who are gender nonconforming (which she defines quite broadly) and also have autism. Such people are battling both "ableism" and "transphobia," she told me over soft drinks at a bar in midtown Manhattan. "And you can't assume that a place that's going to be respectful of one identity will be respectful of the other."

As I sat with Brooks, talking about gender and autism, the bartender came over. "What else can I get you ladies?" he asked. Brooks bristled at being called a lady—evidence that her own search for a safe space is complicated not only by her autism but also by her rejection of the gender binary altogether.

THERE'S SOMETHING TO BE SAID for the binary. The vast majority of people—more than 99 percent, it seems safe to say—put themselves at one end of the gender spectrum or the other. Being part of the gender binary simplifies the either-or of daily life: clothes shopping, sports teams, passports, the way a bartender asks for your order.

But people today—especially young people—are questioning not just the gender they were assigned at birth but also the gender binary itself. "I don't relate to what people would say defines a girl or a boy," Miley Cyrus told *Out* magazine in 2015, when she was 22, "and I think that's what I had to understand: Being a girl isn't what I hate; it's the box that I get put into."

Members of Cyrus's generation are more likely than their parents to think of gender as nonbinary. A recent survey of a thousand millennials ages 18 to 34 found that half of them think "gender is a spectrum, and some people fall outside conventional categories." And a healthy subset of that half would consider themselves to be nonbinary, according to the Human Rights Campaign. In 2012 the advocacy group polled 10,000 lesbian, gay, bisexual, and transgender teens ages 13 to 17 and found that 6 percent categorized themselves as "genderfluid," "androgynous," or some other term outside the binary box.

Young people trying to pinpoint their own place on the spectrum often choose a pronoun they'd like others to use when referring to them. Even if they don't feel precisely like a girl or a boy, they might still use "he" or "she," as Emily Brooks does. But many opt instead for a gender-neutral pronoun like "they" or an invented one like "zie."

Charlie Spiegel, 17, tried using "they" for a while, but now prefers "he." Charlie was assigned female at birth. But when he went through puberty, Charlie told me by phone from his home in Oakland, California, being called a girl started to feel unsettling. "You know how sometimes you get a pair of shoes online," he explained, "and it arrives and the label says it should be the right size, and you're trying it on and it's clearly not the right size?" That's how gender felt to Charlie: The girl label was supposed to fit, but it didn't.

One day during freshman year, Charlie

Born with an intersex chromosomal condition, Emma (below), 17, had incomplete male and female anatomy. She was raised as a girl, always aware of her special situation. “I’m comfortable with my differences,” she says. Shy and inventive, she spends hours among the clouds in her bedroom in Florida creating intricate adventures and videos using My Little Pony dolls. Jonathan (right), eight, has identified as both a boy and a girl at the same time since age two and a half. At California’s Bay Area Rainbow Day Camp, where children can safely express their gender identities, Jonathan tries on life as a unicorn.

A recent survey of a thousand millennials found that half of them think gender is a spectrum.

In Samoa, best friends 12-year-old Sandy (at left) and 10-year-old Mandy (in white T-shirt) do an impromptu dance with their friends and cousins. They identify as *fa'afafine,* a gender other than boy or girl. Fa'afafine children generally take on girls' roles in play and family. As adults they remain anatomically male with feminine appearance and mannerisms. They help with household chores and childcare and choose men for sexual partners.

wandered into the school library and picked up *I Am J* by Cris Beam, a novel about a transgender boy. "Yep, that sounds like me," Charlie thought as he read it. The revelation was terrifying but also clarifying, a way to start making those metaphoric mail-order shoes less uncomfortable.

A better fitting gender identity didn't come along right away, though. Charlie—a member of the Youth Council at Gender Spectrum, a national support and advocacy group for transgender and nonbinary teens—went through a process of trial and error similar to that described by other gender-questioning teens. First he tried "butch lesbian," then "genderfluid," before settling on his current identity, "nonbinary trans guy." It might sound almost like an oxymoron—aren't "nonbinary" and "guy" mutually exclusive?—but the combination feels right to Charlie. He was heading off to college a few months after our conversation, getting ready to start taking testosterone.

IF MORE YOUNG PEOPLE are coming out as nonbinary, that's partly because the new awareness of the nonbinary option offers "a language to name the source of their experience," therapist Jean Malpas said when we met last spring at the Manhattan offices of the Ackerman Institute for the Family, where he directs the Gender and Family Project.

But as more children say they're nonbinary—or, as Malpas prefers, "gender expansive"—parents face new challenges. Take E, for example, who was still using female pronouns when we met in May, while struggling over where exactly to place herself on the gender spectrum. Her mother, Jane, was struggling too, trying to make it safe for E to be neither typically feminine nor typically masculine.

The speech team that had performed in New York City the night E and I met was getting ready to travel to a national competition in California, and Jane showed me the email she'd sent the coach to pave the way. E might be seen by others as male, Jane wrote, now that her hair was so short and her clothing so androgynous. She would probably use "both male and female bathrooms depending on what situation feels safest," Jane informed the coach, and "will need to tell you when she is going to the restroom and what gender she plans on using." I asked Jane, the night we met, where she'd place her daughter on the gender spectrum. "I think she wants to fall into a neutral space," she replied.

A "neutral space" is a hard thing for a teenager to carve out: Biology has a habit of declaring itself eventually. Sometimes, though, biology can be put on hold for a while with puberty-blocking drugs that can buy time for gender-questioning children. If the child reaches age 16 and decides he or she is not transgender after all, the effects of puberty suppression are thought to be reversible: The child stops taking the blockers and matures in the birth sex. But for children who do want to transition at 16, having been on blockers might make it easier. They can start taking cross-sex hormones and go through puberty in the preferred gender—without having developed the secondary sex characteristics, such as breasts, body hair, or deep voices, that can be difficult to undo.

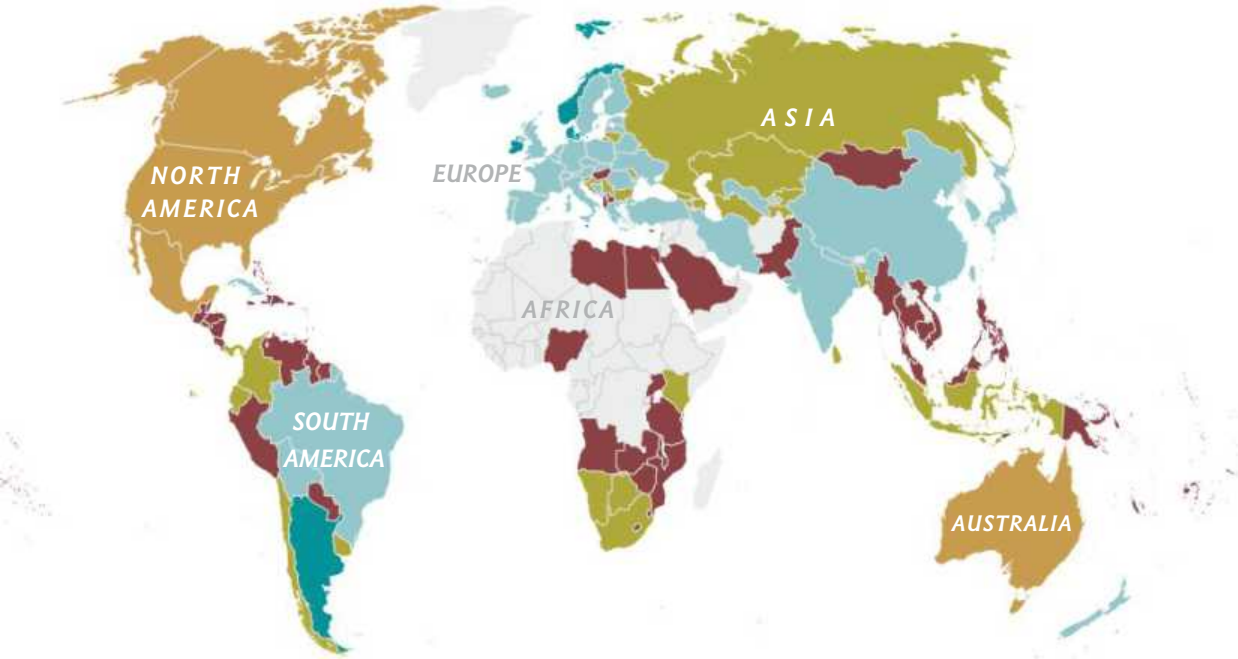
The Endocrine Society recommends blockers for adolescents diagnosed with gender dysphoria. Nonetheless, the blockers' long-term impact on psychological development, brain growth, and bone mineral density are unknown—leading to some lively disagreement about using them on physically healthy teens.

More fraught than the question about puberty blockers is the one about whether too many young children, at too early an age, are being encouraged to socially transition in the first place.

Eric Vilain, a geneticist and pediatrician who directs the UCLA Center for Gender-Based Biology, says that children express many desires and fantasies in passing. What if saying "I wish I were a girl" is a feeling just as fleeting as wishing to be an astronaut, a monkey, a bird? When we spoke

The Legality of Gender Change

Over a third of countries allow a gender change (to male, female, or another) on documents such as passports. Researchers have only begun to document this fast-changing legal topic.



Legally possible

Legal with no restrictions (5 countries)

In these countries, making a change is simply based on the request of the individual.

Legal but with social or medical requirements (41)

Almost all countries that allow a legal change require a diagnosis of mental disorder. Many require a person to be childless or unmarried; some require hormone therapy, surgery, and/or sterilization. Advocates denounce such rules as violations of human rights.

Legal regionally or with difficulty

Legality and requirements vary regionally (4)

In some countries, including the United States, local practices may take precedence, making legality and the requirements for changing a matter of geography.

Legal but inconsistently allowed (27)

Even if a country's rules allow a change to be made, unclear regulations, court decisions, and bureaucratic barriers can block changes in status.

Impossible or to be determined

Not legally possible (67)

No legal provisions allow a change in gender. Some countries are so strict that wearing clothing not associated with the sex assigned at birth is criminalized.

No information available

For much of the world, data addressing legal gender change has yet to be collected, and discussion of the issue is a new frontier. In some countries such discussion may be considered taboo.

OCTOBER 2016 DATA. RILEY D. CHAMPINE, RYAN WILLIAMS, AND IRENE BERMAN-VAPORIS, NGM STAFF. JUSTUS EISFELD. SOURCES: CARLA LAGATA/CARSTEN BALZER, TVT PROJECT, TRANSGENDER EUROPE; TAMARA ADRIÁN, CENTRAL UNIV. OF VENEZUELA; ANDREW PARK, UCLA; KRISTOPHER WELLS, UNIV. OF ALBERTA; SOUTHERN AFRICAN LITIGATION CENTRE; FTM PHOENIX GROUP; MICHAEL VAN GELDEREN, UN OHCHR; OUTRIGHT ACTION INTL. FOR MORE DETAILS, GO TO *NGM.COM/JAN2017.*

Transgender people are at extremely high risk to be bullied, to be sexually assaulted, or to attempt suicide.

Trina (her street name), right, hides during the day and does sex work at night – the only time she feels safe wearing feminine clothing. Still, she's been attacked with acid, knives, a machete, and a gun. English (red hair) and Sasha (also street names) live with Trina and others in a storm-water diversion gully in Kingston, Jamaica. Days after these photos were taken, two gangs doused everyone there and all their belongings with gasoline and set them on fire. English and Sasha were injured.

Young people who may not feel precisely like a boy or a girl might opt to refer to themselves with a gender-neutral pronoun like "they."

by phone last spring, he told me that most studies investigating young children who express discomfort with their birth gender suggest they are more likely to turn out to be cisgender (aligned with their birth-assigned gender) than trans—and relative to the general population, more of these kids will eventually identify as gay or bisexual.

"If a boy is doing things that are girl-like—he wants long hair, wants to try his mother's shoes on, wants to wear a dress and play with dolls—then he's saying to himself, 'I'm doing girl things; therefore I must be a girl,'" Vilain said. But these preferences are gender expression, not gender identity. Vilain said he'd like parents to take a step back and remind the boy that he can do all sorts of things that girls do, but that doesn't mean he is a girl.

At the Gender and Family Project, Jean Malpas said counselors "look for three things in children who express the wish to be a different gender": that the wish be "persistent, consistent, and insistent." And many children who come to his clinic meet the mark, he told me, even some five-year-olds. "They've been feeling this way for a long time, and they don't look back."

That was certainly the case for the daughter of Seattle writer Marlo Mack (the pseudonym she uses in her podcasts and blogs to protect her child's identity). Mack's child was identified at birth as a boy but by age three was already insisting he was a girl. Something went wrong in your tummy, he told his mother, begging to be put back inside for a do-over.

As Vilain might have instructed, Mack tried to broaden her child's understanding of how a boy could behave. "I told my child over and over again that he could continue to be a boy and play with all the Barbies he wanted and wear whatever he liked: dresses, skirts, all the sparkles money could buy," Mack said in her podcast, *How to Be a Girl*. "But my child said no, absolutely not. She was a girl."

Finally, after a year of making both of them "miserable," Mack let her four-year-old choose

Henry was assigned male at birth but considers himself "gender creative." He expresses himself through his singular fashion sense. His parents have enrolled him in the Bay Area Rainbow Day Camp, where he can find the vocabulary to explain his feelings. At six years old, he is already very sure of who he is.

a girl's name, start using female pronouns, and attend preschool as a girl. Almost instantly the gloom lifted. In a podcast that aired two years after that, Mack reported that her transgender daughter, age six, "loves being a girl probably more than any girl you've ever met."

Vilain alienates some transgender activists by saying that not every child's "I wish I were a girl" needs to be encouraged. But he insists that he's trying to think beyond gender stereotypes. "I am trying to advocate for a wide variety of gender expressions," he wrote in a late-night email provoked by our phone conversation, "which can go from boys or men having long hair, loving dance and opera, wearing dresses if they want to, loving men, none of which is 'making them girls'—or from girls shaving their heads, being pierced, wearing pants, loving physics, loving women, none of which is 'making them boys.'"

This is where things get murky in the world of gender. Young people such as Mack's daughter, or Charlie Spiegel of California, or E of New York City, must make biological decisions that will affect their health and happiness for the next 50 years. Yet these decisions run headlong into the maelstrom of fluctuating gender norms.

"I guess people would call me gender-questioning," E said the second time we met, in June. "Is that a thing? It sounds like a thing." But the "questioning" couldn't go on forever, she knew, and she was already leaning toward "trans guy." E had moved a few steps closer to that by September, asking people, including me, to use the pronoun "they" when referring to them. If E does eventually settle on a male identity, they feel it won't be enough just to live as a man, changing pronouns (either sticking with "they" or switching to "he") and changing their name (the leading candidate is the name "Hue"). It would mean becoming physically male too, which would involve taking testosterone. It was all a bit much, E told me. As their 15th birthday approached, they were giving themselves another year to figure it all out.

E'S THINKING ABOUT where they fit on the gender spectrum takes the shape it does because E is a child of the 21st century, when concepts like transgender and gender nonconforming are in the air. But their options are still constrained by being raised in a Western culture, where gender remains, for the vast majority, an either-or. How different it might be if E lived where a formal role existed that was neither man nor woman but something in between—a role that constitutes another gender.

There are such places all over the world: South Asia (where a third gender is called *hijra*), Nigeria *(yan daudu),* Mexico *(muxe),* Samoa *(fa'afafine),* Thailand *(kathoey),* Tonga *(fakaleiti),* and even the U.S., where third genders are found in Hawaii *(mahu)* and in some Native American peoples (two-spirit). The degree to which third genders are accepted varies, but the category usually includes anatomical males who behave in a feminine manner and are sexually attracted to men, and almost never to other third-gender individuals. More rarely, some third-gender people, such as the *burrnesha* of Albania or the *fa'afatama* of Samoa, are anatomical females who live in a masculine manner.

I met a dozen or so fa'afafine last summer, when I traveled to Samoa at the invitation of psychology professor Paul Vasey, who believes the Samoan fa'afafine are among the most well-accepted third gender on Earth.

Vasey, professor and research chair of psychology at the University of Lethbridge in Alberta, Canada, returns to Samoa so frequently that he has his own home, car, and social life there. One thing that especially intrigues him about third genders, in Samoa and elsewhere, is their ability to shed light on the "evolutionary paradox" of male same-sex attraction. Since fa'afafine almost never have children of their own, why are they still able to pass along the genes associated with this trait? Without offspring, shouldn't natural selection pretty much have wiped them out?

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