

SPECIAL ISSUE : SEX AND GENDER

SCIENTIFIC AMERICAN

It's Not a Women's Issue

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Go to www.ScientificAmerican.com/sep2017/stroke-research

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THIS IS NOT A WOMEN

Why the New Science of Sex &

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SEX IS SUPPOSED TO BE SIMPLE—at least at the molecular level. The biological explanations that appear in textbooks amount to $X + X = ♀$ and $X + Y = ♂$. Venus or Mars, pink or blue. As science looks more closely, however, it becomes increasingly clear that a pair of chromosomes do not always suffice to distinguish girl/boy—either from the standpoint of sex (biological traits) or of gender (social identity).

In the cultural realm, this shift in perspective has already received a wide embrace. "Nonbinary" definitions of gender—transfeminine, genderqueer, hijra—have entered the vernacular. Less visible perhaps are the changes taking place in the biological sciences. The emerging picture that denotes "girliness" or "boyiness" reveals the involvement of complex gene networks—and the entire process appears to extend far beyond a specific moment six weeks after gestation when the gonads begin to form.

To varying extents, many of us are biological hybrids on a male-female continuum. Researchers have found XY cells in a 94-year-old woman, and surgeons discovered a womb in a 70-year-old man, a father of four. New evidence suggests that the brain consists of a "mosaic" of cell types, some more yin, others further along the yang scale.

These findings have far-reaching implications beyond just updating the biology textbooks. They have particular bearing on issues of personal identity, health and the economic well-being of women. That is because arguments about innate biological differences between the sexes have persisted long past the time they should have been put to rest.

In 1895 an article in *Scientific American*—"Woman and the Wheel"—raised the question of whether women should be allowed to ride bicycles for their physical health. After all, the article concluded, the muscular exertion required is quite different from that needed to operate a sewing machine. Just Championnière, an emi-

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Gender Matters for Everyone

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gent French surgeon who authored the article, answered in the affirmative the question he had posed but hastened to add: "Even when she is perfectly at home on the wheel, she should remember her sex is not intended by nature for violent muscular exertion. . . . And even when a woman has cautiously prepared herself and has trained for the work, her speed should never be that of an adult man in full muscular vigor."

Of course, 19th-century attitudes might be dismissed out of hand for their droll quaintness. Yet as *Scientific American's* current annual in-depth look at a topic of pressing interest shows, embedded notions of women's inferiority persist well into the 21st century. This penchant holds true even in the sciences, where some fields emphasize intellectual brilliance—erroneously associated with white males—as a prerequisite for success, an attitude that drives away female prospects in physics and mathematics.

Since Championnière wrote for *Scientific American*, women's status has undeniably improved. Globally, in countries rich and poor, women have made strides in education and reproductive health and taken on more decision-making roles. It's not enough, though. Economic barriers persist that prevent women from gaining access to capital and jobs and getting paid a decent wage for the jobs they do find. More energy must be devoted as well to researching how diseases affect the sexes differently—and to adapting medical treatments to women's needs. For an interlinked world to thrive, women must be further empowered to hold up their half of the sky—an issue that should demand as much attention as climate change and nuclear arms control.

Change will only continue if the institutions that matter stay open to it. The assault on women's health by Republican lawmakers in Washington looms as a formidable obstacle. Women's well-being needs to be seen as an issue for everyone, regardless of political affiliation. The new science of sex and gender holds the prospect of helping shape public perception and policy making to acknowledge this reality.

—The Editors