

**HIDDEN BRAIN**

# < Nature, Nurture, And Our Evolving Debates About Gender

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SHANKAR VEDANTAM, HOST:

This HIDDEN BRAIN. I'm Shankar Vedantam. For many years, tech companies have been really good at innovation and making money. What they've been less good at is in hiring and keeping a diverse workforce.

(SOUNDBITE OF ARCHIVED RECORDING)

UNIDENTIFIED WOMAN #1: In the past few months, frequent reports of Silicon Valley's rocky relationship with women have bubbled to the surface.

(SOUNDBITE OF ARCHIVED RECORDING)

UNIDENTIFIED WOMAN #2: Very few women and non-Asian people of color in engineering.

(SOUNDBITE OF ARCHIVED RECORDING)

UNIDENTIFIED WOMAN #3: Their diversity or lack of diversity and what they plan on doing to tackle it.

VEDANTAM: Many companies have gone to great lengths to study the problem and to address it. Google, for example, spends tens of millions of dollars every year on efforts to recruit more women and people of color. Some of that money went to produce this video.

(SOUNDBITE OF VIDEO)

UNIDENTIFIED WOMAN #4: Make it really clear - we want to see more women in senior leadership positions. We want to see more people from underrepresented groups because it makes us a better company.

VEDANTAM: While there are recruitment success stories in Silicon Valley, the overall results have been dismal. Many women, African-Americans and Latinos say tech is unwelcoming to them. Some have filed discrimination lawsuits against their companies. One senior software engineer at Google, James Damore, recently suggested his company and the tech industry were going about it all wrong.

In an internal memo, he argued that the vast gender gap in technology wasn't the result of prejudice but of biological differences between men and women. Damore cited research studies into the psychological and biological differences between the sexes. Women, he said, were more interested in people than things. They had more anxieties and lower stress tolerance. They tended to be less confrontational.

This quality, he said, made it hard for them to ruffle feathers and take on leadership roles. The memo created a firestorm inside the company. Many women at Google said it made them feel inferior and unwelcome. When that memo was leaked to the world, Google was not happy.

(SOUNDBITE OF ARCHIVED BROADCAST)

DAVID GREENE, BYLINE: Google has fired a software engineer who wrote a controversial internal memo that leaked over the weekend.

(SOUNDBITE OF ARCHIVED BROADCAST)

AUDIE CORNISH, BYLINE: He claimed that biology, in part, explained why there were more men than women in the tech field.

VEDANTAM: Almost instantly, everyone seemed to have an opinion about the Google memo, the firing decision and the larger question about women in tech.

(SOUNDBITE OF TV SHOW)

UNIDENTIFIED MAN #1: As far as I can see, they've - effectively have fired somebody for dissenting from the group consensus.

(SOUNDBITE OF ARCHIVED RECORDING)

UNIDENTIFIED WOMAN #5: The crux of his argument was that women were inherently less competent to hold high-status positions, which is a biased opinion.

(SOUNDBITE OF ARCHIVED RECORDING)

UNIDENTIFIED MAN #2: The infamous Google memo, the most important document since the Magna Carta - James...

VEDANTAM: Damore said the media took his statements out of context. His point, he said, wasn't to put down women or discourage them from entering tech. It was to find solutions to the technology gender gap by acknowledging the differences between men and women and seeking ways to bridge them. Science, he said, had conclusively found that nature trumps nurture, that women and men are different, and all the diversity training in the world couldn't change that.

If you have an opinion about Damore, it probably comes in one of two flavors. You might say, of course, he's right. Lots of scientists agree with him. Political correctness is keeping us from acknowledging the obvious. Or you may say, this is just the latest effort to use science to advance a racist or sexist agenda. It's no different than people

who used spurious science in the 19th century to argue that blacks were slaves because they were inferior to whites.

This week on HIDDEN, BRAIN we ask how much the gender differences we see in the world can be explained by genes and chromosomes, and how much they are the result of culture and the environment. Nature...

LISE ELIOT: Gender identity, really, is largely socially learned.

VEDANTAM: ...Versus nature.

DEBRA SOH: Socialization cannot override biology.

VEDANTAM: ...Versus reality.

JAMIE SHUPE: The categories aren't even realistic. And that was toxic to me because I could never, you know, fit into either one of those categories. You know, we're back to, I was never able to make peace with being a male, and I know that I'm not a female, as well.

VEDANTAM: We're going to ask if this age-old debate really captures what we see in the world today. Is it possible that terms and categories of this debate are increasingly outdated?

(SOUNDBITE OF MUSIC)

VEDANTAM: When the Google memo hit the news, the talk shows went hunting for experts.

(SOUNDBITE OF RADIO SHOW, "THE LUKE THOMAS SHOW")

LUKE THOMAS: Let's go to our guest now. She is a writer about the intersection of science of sex and its politicization. She has a Ph.D. in sexually - neuroscience from York University, and she has done quite a bit of work and research around this topic

that we're going to get into with the Google memo. The one and only Dr. Debra Soh is here. Dr. Soh, how are you?

SOH: I'm well, thanks. How are you, Luke?

VEDANTAM: Debra Soh was in demand because like former Google engineer James Damore, she is a firm believer that biology makes men and women different. Debra has a Ph.D. in neuroscience, but her opinions on gender are also personal. When we got in touch, she told me that when she was young, she did not feel much like a girl.

SOH: All my friends were boys. I dressed as a boy. I looked like a boy.

VEDANTAM: Debra says she felt male. She has helped conduct studies into the nature of gender. She thinks both her outlook and her interest in science stem from her biology.

SOH: I do think that I, personally, was exposed to higher levels of testosterone in the womb.

VEDANTAM: Prenatal testosterone - that's Debra's simple explanation for her boy-ness.

SOH: The levels of exposure to prenatal testosterone is actually the determining factor in terms of what children will be interested in and what they will gravitate towards in terms of their interests and behaviors.

VEDANTAM: In some ways, Debra's point of view sounds pretty old-fashioned.

SOH: Boys tend to gravitate towards mechanically interesting things, so they tend to be interested in things. When they're playing with toys, they'll gravitate towards trucks and cars. Girls tend to be more interested in socially interesting activities - so things like playing with dolls and playing house.

VEDANTAM: Old-fashioned, right? But Debra says the science backs her up with

many studies. She gives one example of a research study on girls who have a genetic condition called congenital adrenal hyperplasia.

SOH: These girls are exposed to unusually high levels of testosterone in the womb. And what we see when they are born is, they will gravitate towards male-typical toys, and this is even if their parents give them more praise for playing with female-typical toys. So it speaks to how powerful biology is and that gender identity and gender preferences can't really be molded as much by socialization.

VEDANTAM: Testosterone masculinizes the brain, Debra says. You can see this play out in many ways. Men's brains, on average, are bigger than women's, and there are differences in the connective tissue in the brains' white matter.

SOH: There are more connections running from the front to the back of the brain in men and more connections running left to right or interhemispherically in women. So this leads to, in adulthood, differences.

Well, I mean, this is evident from a very young age as well in terms of what children gravitate naturally towards, differences in terms of efficiency of processing. So men tend to be more efficient, on average, when it comes to visual-spatial processing, whereas women tend to be more efficient with processing analytically and intuitively.

VEDANTAM: In animals, researchers have observed behavioral changes after birth if testosterone levels are changed in utero. In the wild, male and female monkeys behave differently.

SOH: Monkeys are not socialized to prefer certain toys over others, and we see the same thing with male monkeys. They tend to gravitate towards trucks and cars, wheels - toys that boys tend to find more interesting. And we see the same thing with female monkeys. They tend to gravitate towards more socially interesting toys like dolls.

VEDANTAM: The bottom line, says Debra, is that men and women are different. These differences are so obvious that she gets frustrated when people argue that

gender is a social construct. To Debra, that doesn't make sense.

SOH: If we look at it from an evolutionary perspective, we will - and I think people who take the socialization approach will agree. When we look at men and women, on average, men tend to be taller than women. Our reproductive organs are different.

So they'll acknowledge and accept that there are these differences in terms of biology and physiology. But for some reason, those differences stop at the brain. And I don't think that makes much sense because when you look at the brain as an organ, it's responsible for these differences that we see with regards to organs and growth.

VEDANTAM: Debra wants to be clear. Believing that biology shapes the choices men and women make does not mean she's sexist, nor is she advocating lesser roles for women. In her view, these two things have nothing to do with each other. The scientific findings should be allowed to stand on their own.

SOH: You know, if we acknowledge that men and women are different because this is what biology is telling us, that doesn't mean that they shouldn't be equal. It doesn't mean that one is necessarily better than the other. And I think, also, there's this sense that female-typical traits are somehow inferior to male-typical traits. And I think that's the thing that we should be talking about - why is that the case? - not, you know, pretending that women and men are absolutely identical and that the only differences we see are due to socialization.

VEDANTAM: In a sense, this is exactly the point that former Google software engineer James Damore was making. If you accept that men and women are biologically programmed to have different interests, then all the efforts to get more women to become engineers can look foolish.

But there's a problem with this view. When we look at the world, we have a tendency to think that the way the world is is the way the world is supposed to be. Women are supposed to be kind and affectionate. Men are supposed to be tough and dominant.

Similar arguments to the ones that James and Debra are making were made a couple of generations ago to explain why Caucasians were smarter than Asians. There were very few Asians in American scientific institutions and very few Asian Nobel Prize winners, so it seemed reasonable to say that there was something about the biology of Asians that made them bad at science and tech. Today, we'd find that idea laughable, again, because we see so many examples of Asians excelling at places like Google. If biology produces reality, how can that reality change dramatically in just a few decades?

In a moment, we'll take a deeper look at the brain and what neuroscience can tell us about gender choices. But first, I want you to meet an historian. She thinks many of the choices that men, and women, and boys and girls make today are shaped by norms, by culture, even by marketing. I met Jo Paoletti at a mall in suburban Maryland.

JO PAOLETTI: I'm a professor in American studies at the University of Maryland.

VEDANTAM: Jo is also the author of the book "Pink And Blue," which explores the history of how we dress our children.

PAOLETTI: So I always head right for the infants' department first to see how much pink there is and how many things you could put either a boy or girl in.

VEDANTAM: The children's clothing section at Macy's is packed with racks of onesies, and dresses and tiny suits for the under-7 set. It is, Jo told me, an excellent place for a history lesson.

PAOLETTI: You know, one of my tag lines that I'm going to put on my business card is I think deep thoughts about shallow things.

VEDANTAM: (Laughter).

PAOLETTI: It's what you do when you study popular culture. You can't just say, oh,

I'm only going to study the intellectual stuff.

VEDANTAM: Jo's been keeping tabs since the mid-1980s on gender norms by strolling through the clothing section of mainstream retailers. In recent years, she's noticed more gender-neutral options for kids. But mainly, she says, children's clothing remains predictable. Boys mostly wear the same palette of colors.

PAOLETTI: A lot of navy blue and olive and brown and black and gray.

VEDANTAM: The boys shorts, sweaters, jackets and pants have pictures of trucks, bulldozers, sports cars and cute macho sayings. This goes even for infants. Jo points to a stack of onesies.

PAOLETTI: There's dude. And we have a puppy. And we have an alien coming out of a pocket - matter of fact, the two out of the first four have little pockets. Even though they're not functional anymore, it's a pocket because he's a boy - little brother, super rad like Dad, super hunk, local cutie...

VEDANTAM: Next, we head over to the girls section. It's overflowing with soft and cheerful hues.

PAOLETTI: It used to be that pastels were kind of summer colors. And now pastels are girl colors all year round, but...

VEDANTAM: But if I'm looking at sort of things like this, for example, in the racks over here, it feels like there's absolutely no question that this is girls clothing.

PAOLETTI: Well, it's very decorative. We have not only a flamingo but a flamingo with flowers on it and a bow on its head, so you know it's a girl flamingo.

VEDANTAM: Why do so many of us dress little boys and little girls so differently? It isn't biology. A hundred-odd years ago, Jo says small kids were all dressed the same - in frocks.

PAOLETTI: And partly, what it was was people really thought that drawing a child's attention to what their sex was - was bad - that - to the late 19th century mind, early 20th century, the cause of any kind of sexual depravity was precocious sexuality. Like, little girls should not be thinking in terms of being a woman someday. A little boy must not be thinking that he's like daddy until it's kind of developmentally appropriate. And back at that time, that developmental appropriateness was well past toddlerhood.

So by the time they were 4 or 5, a lot of the advice columns, when the mothers were writing in and saying, when should I put my little boy in trousers - because they'd be wearing little dresses. And he's tall for his age. Or he's this, or he's that. And they'd say, well, you wait until he insists upon it. So it's the idea that your gender was innate, and you would start to express it later. But if you put children in - put a little - put a baby in pants, they would be - well, they'd be horrified at little girls in pants and the little boys in pants because pants were just not for babies.

VEDANTAM: In the 1950s, many boys and girls wore similar navy and maroon outfits to school. Play clothes were also dark. Pastels were thought appropriate only for holidays like Easter or formal locations. But gradually, the distinction between boys' clothes and girls' clothes started to grow - one reason, money. By the 1970s, American families were having fewer kids. Fewer kids meant families needed fewer clothes. For retailers, fewer clothes sold meant fewer dollars. They didn't like that. So they came up with an ingenious way to sell more stuff. They marketed the idea that clothes defined what it was to be a boy or a girl.

PAOLETTI: The more you make something individual, the more you can sell. So having something that can only be worn by a girl means it can less likely be handed down to a brother.

VEDANTAM: This led to a small bit of marketing genius.

PAOLETTI: What we think of now as - it's just a law, right? - that pink is for girls, and

blue is for boys.

VEDANTAM: That was invented too. If you made pink a girls color and blue a boys color, then male and female siblings couldn't wear the same clothes. Marketing wasn't the only force at work. Societal biases came into play that allowed girls to sometimes wear blue but made it hard for boys to ever wear pink.

PAOLETTI: A girl can wear blue. I look around, and I see plenty of blue things. And nobody says, oh, she's wearing blue. She must be a boy. Or she's wearing blue. Her mother must be making a statement about gender politics. But if a boy wears pink, there always has to be some kind of explanation.

VEDANTAM: Why is that?

PAOLETTI: Because it goes back to the idea from the early unisex period, in the '60s and '70s, that it is better to be a boy than a girl - that for a girl to want to be like a boy, that's understandable. And she'll grow out of it. But for a boy to want to be like a girl, that's deviant, and he must be taken to therapy.

PAOLETTI: Or at least expect to be made the butt of jokes, like in this episode of "Friends."

(SOUNDBITE OF TV SHOW, "FRIENDS")

DAVID SCHWIMMER: (As Ross Geller) Has anyone seen my shirt? It's a button-down, like a faded salmon color.

COURTNEY COX: (As Monica Geller) You mean your pink shirt?

(LAUGHTER)

SCHWIMMER: (As Ross Geller) Faded salmon color.

(LAUGHTER)

COX: (As Monica Geller) No, I haven't seen your pink shirt.

(LAUGHTER)

SCHWIMMER: (As Ross Geller) Great, great, then I must have left it at Mona's. I knew it.

MATTHEW PERRY: (As Chandler Bing) I'm sure you can get another one at Ann Taylor's.

(LAUGHTER)

VEDANTAM: But seriously, what's interesting about Jo's point is it shows that what today might seem like individual gender choices are actually driven by many hidden factors - money, marketing, homophobia, sexism. Does this mean that biology has no role in shaping what boys and girls and men and women do? It turns out the contention that genes and prenatal testosterone don't matter is as simplistic as saying they explain everything.

(SOUNDBITE OF MUSIC)

ELIOT: Nature and nurture are completely intertwined. And there is no such thing as nature without nurture and vice versa.

VEDANTAM: Stay with us.

(SOUNDBITE OF MUSIC)

VEDANTAM: This is HIDDEN BRAIN. I'm Shankar Vedantam. We're exploring today the differences between the sexes and the debate over where such differences come from. One thing that's not up for debate - an important part of how we understand people is to ask if someone is male or female. This is why when a baby is born, everyone wants to know, what is it?

ELIOT: Gender is unquestionably the most salient feature of a person's identity. That's the first thing we notice about someone. And it's certainly the first characteristic that infants learn to discriminate.

VEDANTAM: This is Lise Eliot. She's a professor of neuroscience at Rosalind Franklin University in Chicago. For some two decades, she's pondered and researched differences between boys and girls. Lise says she first became interested in the subject as she was writing a book on brain development. But she became immersed in the topic after her own children were born.

ELIOT: We had a daughter and a couple of sons. And as many parents will tell you, they seem so different. And that certainly is one of the favorite conversations among parents, is gender differences. So I set out to do the research and really educate myself and translate to others what's truly known about the differences between boys' and girls' brains.

(SOUNDBITE OF MUSIC)

VEDANTAM: Lise didn't start by looking at boys' brains and girls' brains. She started with an insight about all brains. More than any other organ, the brain is uniquely adaptable, designed to change in response to the environment.

ELIOT: My own research has always been in the area of neural plasticity, or how our brains change as a result of experience. And so I'm always sort of acutely aware of the fact that these little babies are absorbing things from the moment of birth.

VEDANTAM: If you think of the brain not as a computer that comes with a chip and a hard drive but more like a liquid designed to take the shape of the vessel that it's in, you start to get the idea. When a baby is born, its brain comes programmed not with the ability to learn one specific language but to learn any language. The infant brain is designed to learn from everything that's going on around it. Much of that starts by being alert to the social world.

ELIOT: It's remarkable the degree of understanding babies have way before they can talk - way before they can even reach out and grab a rattle under control. They appreciate the motives of other people. They can tell the difference between a good guy and a bad guy. And as I said, they can also discriminate gender. And they start learning quite early the distinction between male and female, how their mother and father behave differently. So it's built in from the very get-go of social and communicative development.

VEDANTAM: Although babies are unaware of their own gender, within the first few months of life, they can tell the difference between male and female voices and male and female faces. They're absorbing clues to gender identity.

ELIOT: Once children figure out they're a boy or girl, which happens somewhere in the third year of life when they really have a solid understanding, it becomes a great crystallizer for their own behavioral decisions.

VEDANTAM: Lise doesn't dismiss the power of biology, but she thinks many of us fail to see what neuroscientists know. The brain not only is shaped but has to be shaped by the social world. When we see differences between men and women and then see differences in their brains, we intuitively think, voila, this must explain why Johnny likes trucks and Jane likes dolls. But Lise believes the human brain is basically intersex, or non-gendered, with one major exception. Since men tend to be physically larger than women, the male brain is also likely to be larger than the female brain.

ELIOT: You know, my view is of course there are group-level differences between men and women. But they're statistical, and they are not categorical. So whereas our reproductive organs come in two types - they come in testes or ovaries and some other parts as well - our brains come in one type. And it's a spectrum from masculinity to femininity. The male brain and female brain are no different - no more different than the male heart and the female heart, than the male kidney and the female kidney - which, by the way, also are all proportionally larger in men than women.

VEDANTAM: Now, there used to be a time when scientists thought that the size of the brain was really important. Phrenologists measured the size and shapes of people's skulls and then drew sweeping conclusions about people from different groups. But more recent work has challenged the idea that bigger always means different.

ELIOT: I've done several studies looking at structures that are alleged to differ between men and women. One is the hippocampus, which is important for memory. And the other is the amygdala, which is important for emotion and fear. And both of these structures have been alleged to differ between adult men and women. But when we did a meta-analysis - basically downloading all of the dozens and dozens of studies of comparing men and women's brains - it turns out there is no difference between the hippocampus of men and women or the amygdala of men and women once you correct for overall brain size.

VEDANTAM: Lise agrees with Debra Soh, the scientist we heard from earlier who believes that hormone levels in utero can affect the brain of the baby. But where Debra sees hormonal influence as decisive, Lise thinks of it as just a nudge.

ELIOT: There are probably some properties of toys that may appeal more to boys and girls, quote, unquote, "instinctively." There's so much more layered on top of that in terms of the marketing, in terms of the parent and grandparent, you know, encouragement, in terms of - especially peer reinforcement because we see that there's almost no gender difference before the first birthday in the type of toys that children prefer.

There's a little hint of it maybe at about 9 months. But it's really once children start to gender identify - and especially once they start breaking up into separate playgroups - because gender segregation happens beginning about age 3 - that the differences in preference become extremely pronounced. So there's a - I would say a strong social role, a modest innate or instinctive role. And you put those two together, and you end up with a very dramatic divergence by the time kids are 4 years old.

(SOUNDBITE OF MUSIC)

VEDANTAM: A host of scientific studies have found evidence of the powerful role that social influences play.

ELIOT: There was this recent study out of Emory University where fathers were studied. And they had these nice audio recorders, so the parents weren't aware of every moment - every interaction. And it turned out that the fathers were commenting more on their daughters' physical appearance - more on their tummies - and also endorsing their daughters' feelings more than their sons', basically reacting more to their sons' neutral expressions and more to their daughters' sad or fearful expressions. And so we do this because we have different expectations for males and females. And that has to do with our very deep-seated gender assumptions.

VEDANTAM: Lise also cites a study with mothers and their 11-month-old babies.

ELIOT: The infants are put on a - what looks like a crazy steep slope to crawl down. But it's carpeted. And it has gating up on the sides, so it's safe. And it turns out when mothers were asked to adjust the steepness of the slope, for the steepest lift they thought their babies were capable of crawling down, the mothers turned it to steeper slope for their sons than their daughters. And then, when the infants were actually tested, there was actually no difference in the courageousness or the physical ability of baby boys and girls to crawl down a steep slope.

VEDANTAM: In yet another study, both mothers and fathers discouraged risk-taking on the playground for their daughters more than for their sons.

ELIOT: So when you start doing that when kids are 1 and 2 and 3 years old, it really sets them on different trajectories.

VEDANTAM: Without necessarily intending to treat sons and daughters differently, adults also subtly communicate expectations about language, math and spatial skills. Research from Israel, for example, found that sixth grade teachers in Tel Aviv schools

give girls slightly lower math scores than they deserve and give boys slightly higher math scores than they deserve. By high school, the children often end up with different beliefs about their own ability in math.

ELIOT: Males and females are both capable of learning spatial skills and verbal skills perfectly well. It really is largely a matter of dose of experience that determines our differences.

VEDANTAM: Here's what all these studies together tell us. Social norms that treat girls and boys in different ways are all around us. And even the most diligent parents will find that they can control only a small fraction of the influences shaping their children.

ELIOT: You cannot erase gender from a child's experience. There's no such thing as a gender-free society. And parents who claim that they're raising children gender neutral - we treated our son and daughter exactly the same - are really fooling themselves.

VEDANTAM: Lise says that doesn't mean people should stop trying to push back against gender stereotypes.

ELIOT: What we can do is we can say, what kind of society do we want to have? And what are the experiences that young children are immersed in that will either make boys and girls have more similarity of opportunity or will drive a wedge between them. And I think, in our society, we're always striving for greater equality, and so we need to think about how to maximize the brain potential of both genders as opposed to slot them into these limited roles that really don't allow them to express the full range of humanity.

VEDANTAM: As I talk to scientists Lise Eliot and Debra Soh and to historian Jo Paoletti, I realize that all of them agreed on one thing. People ought to be allowed to live their lives, to be all they want to be regardless of what the world tells them they should be.

Toward the end of his memo on gender issues, Google engineer James Damore said, I hope it's clear that I'm not saying that diversity is bad, that we shouldn't try to correct for existing biases or that minorities have the same experience of those in the majority. I'm also not saying that we should restrict people to certain gender roles. I'm advocating for quite the opposite. Treat people as individuals, not as just another member of their group.

The person we're going to hear from next has never talked to James Damore or Deborah Soh, never taken class with Jo Paoletti or Lise Eliot, but I'm sure I know what this person, Jamie Shupe, would say to the idea that we should treat people as individuals and not as just another member of their group.

J. SHUPE: The reason I went to court to blow all of this up was, we're all unique human beings, and I think we're a mixture, to some extent, of male and female, you know, irrespective of the - you know, the biology.

VEDANTAM: When we come back - what Jamie Shupe, the first legally recognized nonbinary person in the United States, can tell us about the great gender debate. Stay with us.

(SOUNDBITE OF MUSIC)

VEDANTAM: This is HIDDEN BRAIN. I'm Shankar Vedantam. We've been talking today about gender and about our long-running debates over the role of biology versus culture. For many years, these debates have largely assumed that gender is a binary - male and female.

But even as science struggles to understand the male brain and the female brain, some people are challenging the reality of those fundamental categories. Jamie Shupe is in the vanguard of that movement. Jamie just pulled into Carson City, Nev., after roaming around the West for the past few months in a small camper perched on top of a pickup truck.

J. SHUPE: So basically, we're in what's called a truck camper. It's approximately 17 feet long. It weighs about around 3,000 pounds.

VEDANTAM: In other words, heavy and small, but also efficient.

J. SHUPE: You know, I've got a microwave, an oven, a stove, you know, a double sink, a small bathroom with a shower.

VEDANTAM: Jamie's at ease in this desert town, clad in jeans, a flowing blouse and headscarf. The camper's been traveling a lot of late, but for now, Jamie's biggest journey is over - a rocky trip over the landscape of gender identity.

J. SHUPE: I think the best way to frame this and understand it is to just think of me as very fluid.

VEDANTAM: Jamie lives between the sexes. Jamie thinks not of himself or of herself but of themselves.

J. SHUPE: I can be masculine. I can be feminine. I can do anything I want.

VEDANTAM: Jamie is the first officially recognized nongendered person in America. It was a status that had to be fought for and won. It came after a five-decade struggle, a struggle to find an identity that felt right. Now 54 years old, Jamie was born in Washington, D.C., and raised in a large, blue-collar family in rural southern Maryland. It was a place of tobacco farms and deep conservative views.

J. SHUPE: This is a place where, you know, the kid - the black kids that I cut tobacco with during the summer, they weren't allowed in the farmers' houses because they were black. I mean, it was that kind of place. There were no gay people. There were no trans people. You know, football consisted of being called smeared the queer.

VEDANTAM: Jamie was different and didn't fit in with the boys.

J. SHUPE: As a teenager, I was reading fashion magazines and doing things like, you

know, putting - I remember one occasion, I'd read an article about putting mayonnaise and egg in your hair to make it soft, and my mother absolutely just went ballistic over that, and slapped me and called me a sissy.

VEDANTAM: Jamie's mother also lost it when the teenager refused to get a short haircut and instead got a perm.

J. SHUPE: I just wanted to feel more feminine.

VEDANTAM: So this was Jamie's dilemma. He had a male body, but inside, there was also a she with all this femininity flowing about. Romantically, Jamie was drawn to both boys and girls, but this was the late 1970s, so Jamie took a girl to the queen of hearts dance, and drove a big-wheel Camaro, and cut tobacco and felt nothing at all like a real boy.

J. SHUPE: Yeah, I mean, I just - I've never been connected to identifying as a male. I've never agreed that I was a male. And yeah, I just had - I had no connection to masculinity. But, you know, at the same time, I knew what the boundaries were, and I knew what the punishment was, and I just kind of went along with things.

VEDANTAM: After high school, with no money and few options, Jamie entered the army, trained as a mechanic. It meant more going along with things.

J. SHUPE: You know, the military is a world of testosterone and diesel fuel. And I don't relate to all that.

VEDANTAM: But the young recruit was brilliant at fixing things. Soon, a promotion came. Jamie made supervisor.

J. SHUPE: I was a computer whiz, so they made me an information-systems security officer. I was the go-to person to, you know, write awards and write evaluation reports. Yes, and, you know, I was highly intelligent about how to fix the vehicles. You know, I could walk into the shop and say, well, this is what we need to do to fix this. So all of

those things, you know, they covered up for my gender variances and my sexual orientation.

VEDANTAM: But other soldiers picked up that Jamie was different. It led to some scary situations. Once, at a training site, Jamie was surrounded by several officers and the instructor.

J. SHUPE: And they started describing sex acts between males, and they were just - you know, just getting really vulgar, and they were doing it, you know, entirely for my benefit. They were, you know, saying all these things, and looking at me the whole time and just studying to see what my reaction would be.

VEDANTAM: What was your reaction?

J. SHUPE: Oh, I was terrified.

VEDANTAM: This was Jamie's life for 18 years - walking the finest of lines, fearing that one wrong step might result in an attack or the end of a hard-earned career in the army. It's a sad story, but through much of it, Jamie had one powerful source of support.

SANDY SHUPE: My name is Sandy Shupe. See, I'm married to Jamie. We've been married about 30 years now. We have one child.

VEDANTAM: Jamie and Sandy sit side by side as they talk about their life. They're in a small park across the street from an RV campground under the shade of a picnic shelter. They seem at ease. Sandy grew up outside Fort Knox, Ky. She met Jamie when a friend set them up on a blind double date.

S. SHUPE: The guys didn't have cars, so my friend Tina (ph) - we picked up the guys that - on base. And so when we went to pick them up, like I said, it was really the - kind of the first time I'd seen Jamie. And I'm like - I pulled my friend aside because we're going up to a bar up in Louisville. And I'm like, are they old enough to get into the

bars? Because Jamie had such a baby face.

VEDANTAM: But Jamie also had an endearing personality. They hit it off. Sandy liked how sweet and attentive Jamie was - so different from other guys she'd dated. They had fun together. One thing Sandy didn't notice was Jamie's gender struggles. There were clues, but Sandy shrugged them off.

S. SHUPE: There was like - sometimes Jamie would dress kind of strange. Like, Jamie had the - on this leopard-print kind of like, you know, T-shirt, kind of not - you know, it was, like, sleeveless. But it was, like, this leopard print, and it's not something you would normally see on a guy.

And that was just kind of like, hmm, you know? But I just - you know, I just put - set it - put it down as, you know, one of Jamie's quirks, you know. I mean, I was from Kentucky. And, you know, it's the South. And I was like, well, OK, well, Jamie's not from around here, so (laughter)...

VEDANTAM: So they eventually got married. A few years later, while stationed at Fort Hood, Texas, they had a daughter.

S. SHUPE: She's an awesome kid.

VEDANTAM: And when Jamie talks about getting grief from colleagues in the military, did you hear about that? I'm wondering if these issues of gender and sexuality came up in your conversations.

S. SHUPE: No. Jamie really didn't, you know, discuss that kind of stuff. Yeah, Jamie would grumble about, you know, the things - the, like, you know, work issues and stuff like that. But I really don't remember Jamie, you know, talking about anything like that. You know, Jamie, I guess, kept it close to the vest as - you know, would be an expression to use. But yeah, I don't remember.

VEDANTAM: But the truth is, Jamie's carefully choreographed life was coming apart.

There were run-ins with supervisors who suspected Jamie was gay. One said he wasn't going to recommend Jamie for any promotions despite a stellar work record. It was like being confined in a cell where the walls kept closing in.

And then, one icy winter morning, Jamie fell and broke a wrist during a training run. The injury caused permanent damage. After 18 years, Jamie's army career was over. After getting medically discharged, Jamie's gender crisis intensified.

J. SHUPE: I was 49 years old. I think it's best to term it as, I was at my breaking point. I had literally had nearly five decades of suppressing my gender identity, suppressing my sexual orientation. And it was real - literally to the point of, like - I mean, I was kind of thinking, either I do something about this or I commit suicide. I mean, it had reached, you know, that level of distress.

VEDANTAM: The choice was that stark. And it's the point in our story when you might expect a familiar resolution. In this version of the story, Jamie stops hiding and comes out as a woman, maybe gets gender reassignment surgery. That was indeed the path that Jamie's doctors initially recommended. And for a time, Jamie eagerly listened to them.

J. SHUPE: So I got bought into it - hook, line and sinker - and, you know, right away decided that I was going to transition to a female because I expected it to help alleviate my mental health crisis that I was having from all the suppression.

VEDANTAM: Jamie also finally told Sandy what was going on.

S. SHUPE: It was kind of a surprise. But I mean, I wasn't offended. I was just kind of like - when you marry someone, it's because you love them. And you want them to be happy, and you want them to, you know, be fulfilled. And I just - I wanted Jamie to be happy.

VEDANTAM: It's not that Sandy would have chosen this route. She says of course she would have liked to live life with Jamie as a he. But in a way, she says, this is what she

signed up for when she married a soldier.

S. SHUPE: You know, Jamie really feels that this is something that they have to do. And, you know, I've always supported Jamie. I mean, you know, as an Army wife and, you know, you - that was part of your job. You know, you just like - you were support. You were the one that, you know, took care of things, like, for the soldiers.

VEDANTAM: So with Sandy's support, Jamie started taking hormones, developing breasts, wearing a wig and high heels and hanging out with transgender women. But it still didn't feel right. After hearing a few horror stories about gender reassignment surgeries that turned out poorly, Jamie rejected that option. Also, Jamie didn't want to wear clothes that screamed female.

J. SHUPE: And so my idea of transitioning was, OK, so, you know, I'll start wearing like women's jeans. I'll wear, you know, women's casual shirts. I'll probably, you know, put a flowered scarf on my head or something like that. And the trans women I was interacting with, they were absolutely freaking over that. They were like, well, you don't look like a female. We don't want to hang out with you because I wasn't, you know, doing enough to be hyper feminine.

VEDANTAM: Here's what Jamie was realizing. There were rules about what it meant to be a woman or gay or trans.

J. SHUPE: The transgender community has hierarchies. The - you know, you never see cross-dressers in the news. It's all about the trans women and the trans men. And, you know, the lesbian community, they have their gold-star lesbians that, you know, if you've ever touched a male, then you're not really a lesbian. You're not our equal. You know, everywhere you look in society, there's hierarchies.

VEDANTAM: Jamie didn't like this. Jamie didn't feel like a woman trapped inside a man's body. Jamie felt like a man and a woman. Why couldn't Jamie just be Jamie?

J. SHUPE: You know, like I said, it was all very black-and-white thinking that, you

know, you're either male, or you're female. And if you're a female, you know, this is this pathway that you do to become a female.

VEDANTAM: If Jamie went to the doctor and said, I think I'm female, and the doctor asked why, Jamie might say because I do feminine things. As a kid, I played hopscotch and jacks and permed my hair and hated football. I feel more comfortable among girls than boys. And the doctors might tell Jamie, you're really a woman. And you can transition to being female. But if Jamie had gone to the doctor and said, I think I'm female because I like women and fast cars and tinkering with machines, the doctor might say, I don't really think you're trans. But why not? As I talked to Jamie, I realized that the answer is that most of our conceptions of gender are built around a series of stereotypes of what it means to be a man or a woman.

J. SHUPE: My question and the reason I went to court to blow all of this up was, you know - we're all unique human beings. And I think we're a mixture to some extent of male and female, you know, irrespective of, you know, the biology.

VEDANTAM: So here's what happened. Once Jamie made peace with this idea - that the categories of male and female were too confining - Jamie wanted legal documents to reflect this point of view. Jamie didn't want to be a he or a she but a they. Jamie's Oregon state ID card said female. Jamie wanted that changed.

J. SHUPE: Well, the first stop was actually the DMV in downtown Portland. I walked in there one day. And I told the clerk - I said, I want you to remove either - you know, I had female on my Oregon ID. And I said, I want you to remove the female off of there. And I don't want you putting male on there. I want nothing on there.

VEDANTAM: The answer Jamie received wasn't a big surprise.

J. SHUPE: And she just, you know, calmly and politely says, well, we don't do that. At that point, you know, her denial of taking the gender marker off of my ID gave me an actionable legal claim. And I went and and started searching for attorneys.

VEDANTAM: Jamie found a Portland attorney who agreed to take on the case.

What did you ask him to do?

J. SHUPE: I literally told him I wanted to be declared, you know, nonbinary as my sex, which would mean that I was neither male or female.

VEDANTAM: What was his strategy?

J. SHUPE: You know, it's unbelievably simple.

VEDANTAM: Jamie's attorney downloaded a readily available, state-issued sex change form.

J. SHUPE: He put it into the computer. He took Photoshop. And he did - you know, he cut out where it said male and female, and he typed in nonbinary. And he filed it with the court.

VEDANTAM: That was it. A court date was set for June of 2016. Jamie made sure to be ready.

J. SHUPE: I came armed with two letters from, you know, the doctors - you know, one from the VA and one from OHSU saying that the doctors supported the change. We walked into court. I mean, the judge hardly said anything and signed it.

VEDANTAM: With that pen stroke, Jamie Shupe became the first person in America to be legally declared as neither male nor female. A half-century of struggle was over.

J. SHUPE: I was on a different planet. I mean, I was just kind of speechless. Yeah, I mean, it was just a very surreal moment. You know, I - it was kind of like the judge said yes. And, you know, I was in a daze. We walked through the courthouse, and next thing I know, I was crying on the sidewalk.

VEDANTAM: The judge's decision legitimizing Jamie's gender fluidity meant all the

constraints were gone - no more hiding; no more, you are A or B; no more, if you're a this, then you have to behave like that. Water, says Jamie - that's what life feels like now. It just flows.

J. SHUPE: I really like my place now of being nonbinary because I have had all the roles stripped away from me. You know, you can't tell me that I'm in the wrong clothing. You can't tell me that I'm loving the wrong person. You know, I can be masculine. I can be feminine. I can do anything I want. I've broken all the rules and just gotten rid of them.

VEDANTAM: Jamie wants to roam. That's the appeal of being nonbinary and also the attraction of traveling around in the camper.

J. SHUPE: But yeah, we went from the 3,000-square-foot house to the two-bedroom to the one-bedroom to the studio and - right? - which is almost to the pup tent on the beach (laughter).

S. SHUPE: Yeah, and I draw the line there. No, no - no pup tents on the beach.

VEDANTAM: And that's how we leave them - Jamie flowing like water and Sandy the level ground nearby. Debates over gender quickly produce vitriol, anger and contempt. The folks who think biology determines gender roll their eyes at people who think culture is important. Proponents of culture accuse the biology people of being sexist.

This is what happened after that Google memo went public. Everyone quickly took sides. We slotted people into groups even if they didn't want membership in those groups. The former Google engineer James Damore was embraced by ideologues on the alt-right, by groups that were critical of diversity. He said he wanted no part of their causes.

As for Jamie Shupe, there are plenty of people who don't see Jamie as a conciliator or someone who occupies a middle ground. They see Jamie as someone who undermines the hard-earned victories of people who have long suffered disrespect. Jamie thinks

that if people are both male and female, it isn't right for a transgender woman - who's still partly a man, in Jamie's opinion - to have access to women's bathrooms. For the same reason, Jamie also thinks transgender women shouldn't be competing in athletic competitions with other women.

That said, there's a lesson to be taken from Jamie's story and from our larger debates about gender. When I first became a science journalist many years ago, I heard a phrase that stuck with me. Nature doesn't have edges. Humans like to think there is a clear demarcation between one species and the next, between one gender and the next, between one season and the next. But when you look closely, these categories get blurry, especially at the boundary between category A and category B.

So many of our quarrels about gender come down to this. They are really ways of saying, the categories I see and believe are better than the ones you see and believe. To the extent we will ever have progress on these debates, we may all need to get more comfortable with blurriness.

(SOUNDBITE OF MUSIC)

VEDANTAM: This week's show was produced by Jenny Schmidt, Gabriela Saldivia and Rhaina Cohen, and edited by Tara Boyle. Our team includes Maggie Penmen, Renee Klahr and Parth Shah. We had original music by Ramtin Arablouei. NPR's vice president for programming and audience development is Anya Grundmann. Special thanks to Fil Corbitt of the podcast Van Sounds for helping us with our interview of Jamie and Sandy Shupe.

Our unsung heroes this week are Emily Dagger, Si Sikes and Andrew Haden. Emily, and Si and Andrew have helped shepherd HIDDEN BRAIN from a podcast to a radio show relaunched last week on more than a hundred stations nationwide. Emily kept us on track throughout the process while Si and Andrew spread word about the show throughout the public radio ecosystem. All three of them are walking testaments to professionalism. For example, as a fan of the Dallas Cowboys, Si somehow managed to

ignore the fact that I support the Philadelphia Eagles. Thanks, Emily, Andrew and Si for going above and beyond the call of duty.

If you like this show, please share it with a friend. We're on Facebook, Twitter and Instagram. By the way, one of today's guests, neuroscientist Lise Eliot, has offered to answer follow-up questions about gender. So if you have questions, please send an email to [hiddenbrain@npr.org](mailto:hiddenbrain@npr.org). We'll choose a few by Wednesday, October 11, and we'll post Lise's video responses on Facebook, Twitter and Instagram by the weekend. That email, again, is [hiddenbrain@npr.org](mailto:hiddenbrain@npr.org). I'm Shankar Vedantam, and this is NPR.

(SOUNDBITE OF MUSIC)

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