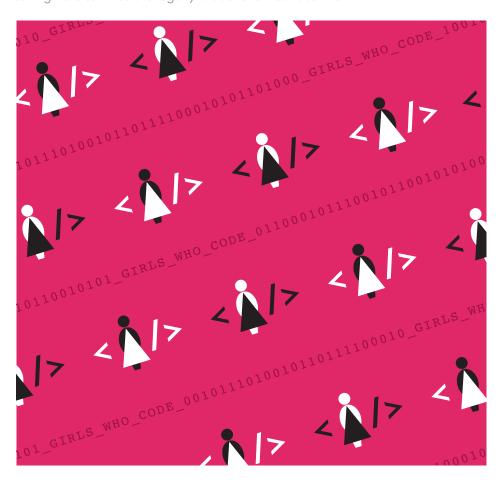# *Legacy in the Making* | GIRLS WHO CODE

In 2012, two years after she lost her bid for a seat in the U.S. House of Representatives as a New York Congresswoman, **Reshma Saujani** launched a nonprofit organization that is creating social change by successfully leading, not following, the government's educational agenda. Girls Who Code, Reshma's launch, is on a mission to "inspire, educate and equip girls with the computing skills to pursue 21st century opportunities." Over the long term, her organization is committed to creating greater gender parity in the field of computing by working on making the kind of disruptive change where the world doesn't need her organization called Girls Who Code because, one day, every girl will know how to code. Recently, The Legacy Lab had the opportunity to speak to Reshma about her inspiration for pursuing the Girls Who Code dream, the distance that exists between what her organization aims for and what it has achieved, and the importance of her taking risks to write the legacy that she is meant to live.

Can you tell us a little about how your upbringing, as well as your academic and professional career, has culminated in the launch of Girls Who Code?

■ I often tell people that I am such an unlikely person to have started an organization called Girls Who Code because I'm not a professional coder. Growing up, I distinctly remember sitting with my dad at the dinner table while he quizzed me on my math homework. I felt uncomfortable because I didn't know the answers. I never thought that I was good at math and science. I shied away from pursuing anything that required having a technical background because I did not feel that I was smart enough. Throughout my early career, in law and in finance, this haunted me.

Both of my parents were engineers. They came to this country as refugees from Uganda in the 1970s. My parents were at home one day watching television when dictator Idi Amin said they had 90 days to get out. They applied to what must have felt like every country for refugee status. They got rejection after rejection until, eventually, they received a letter from the United States saying, 'Congratulations, you have been accepted.' They showed up in Chicago, Illinois, wearing T-shirts and shorts because they threw a dart on a map, and that's where it landed. My parents built a life for themselves in America. Seeing everything this country did for my family inspired me to want to give back someday through public service.

In college, I studied political science, policy and the law. By the time I finished school, I accrued $300,000

in loan debt. My plan was to move to New York, pay off the debt in a year or two and then run for office. In 2008, several years later, I was getting ready to turn 33 years old, hating my job in the financial services industry and feeling like I lost sight of my dream. Then, I saw Hillary Clinton give her concession speech when she ran her first campaign to be the President of the United States. She said something very inspiring, 'Just because I failed doesn't mean you shouldn't try too.' I felt that she was talking to me. I was still an idealistic woman. I felt time was running out. If I was going to pursue my journey, and run for office, I was going to have to do it soon. So I quit my job and went for it.

In 2010, at the age of 35, I ran for the United States Congress in a Democratic primary against a person who had been there for 18 years. I had a one percent chance of winning, a 100-page policy book and a banging website. I remember, in the first two weeks, getting $50,000 donated online from Indian aunties who were just so happy that an Indian girl was running. During the campaign, in total, I raised about $1.3 million. *The Daily News* endorsed me. I was in *The New York Times* several times above the fold. CNBC had called this one of the hottest races in the country. I had convinced a lot of people that I was going to win. On Election Day, I remember clutching my father's hand, watching the television screen. The votes for me never went past 19 percent. I lost. My victory party never happened. I was broke and humiliated. I pissed off many in the Democratic establishment. And I didn't know what I was going to do next.

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It was a crazy expedition. I ran as the young candidate who was a disruptor. At the time, I was the first candidate talking about technology in terms of helping to get people who do not normally vote out to vote. We used Jack Dorsey's Square for the first time, and we used NationBuilder first too. On the campaign trail, we would often talk about where future jobs were at—and they were in tech. When you run for office, you end up visiting with a lot of schools. I was going to lots of robotics labs and computer science classes, and I would often see a bunch of boys all clamoring to be the next Steve Jobs or Mark Zuckerberg. I remember thinking to myself, where are all the girls? That question stayed with me. After I lost the election for Congress, I reflected on all the young women who were absent from the technology revolution. So what did I do about it? Well, I spent about all of 2011 and half of 2012 working to understand the problem: Why was there a lack of women in the field of computer science? My passion for this topic was rooted in creating greater economic opportunity. In the technology sector, where jobs were growing, where a person could make a lot of money as a software engineer, where the related income could help to move a family up to the middle class, why were women so badly underrepresented? I began to explore what it would take to put together a curriculum aimed at young women. I became very focused on identifying women with an interest in tech and inspiring their talent for applying it. This became my full-time focus. It became the obsession of someone who is, herself, not a professional coder. This was the origin of Girls Who Code.

When I named it, I thought Girls Who Code would be a fun name. I did not market test it. I didn't spend millions trying to figure out if it was going to work. I do not think I asked a friend or even my husband or anybody. I went on GoDaddy, the name was available, and I bought it. At the start, I borrowed a friend's conference room for the first program and paid for pizza for the girls on my credit card. My husband's assistant built our first website by putting up a splash page. It was all very bootstrap. I did not walk into this on day one knowing that I would help to build a movement or having any idea that four years later we would have reached 40,000 girls in nearly every state. But from those earnest beginnings, have come some really meaningful results.

Why is it that girls are so underrepresented in the field of computer science, and what can you tell us about the mission Girls Who Code is on to help address that situation?

■ In 1984, 37 percent of all computer science graduates were women. Today, the number is more like 18 percent. At a time when women make up the majority of those in college, the majority of those in the labor force, and are soon to be close to the majority of those who are breadwinners, this lack of interest in the subject is a problem. Equally alarming, only 22% of Advanced Placement Computer Science test takers are women. It is not an aptitude issue, since girls outperform boys in math and science. The problem is that from the time they're very young, girls are actively choosing to not participate in the field.

One of the key drivers of their lack of interest is the influence of popular culture. In the 1980s, for example,

when personal computers became more popular, marketing was more precisely aimed at boys. When you read the biographies of influencers like Steve Jobs and Mark Zuckerberg, they talk about how their parents introduced them to technology at a young age: 'Got a computer as a kid, took it apart and, boom, there was Facebook.' Having a toy or thing to take apart, play with and understand in order to really learn and develop was transformative for male entrepreneurs. Women and girls need to similarly have that experience. I would add that media has also played a big role in pushing girls out of the field by portraying an image of the programmer as, basically, a dude in a hoodie in a basement, drinking Red Bull® and not showering. Girls who are people and relationship-oriented, who want to work collaboratively, see that image and think, 'That does not look like me. That isn't what I want to do with my life.' They opt out. I strongly feel that culture, including the media, has played a big role in pushing girls out.

Culturally, we have done a bad job explaining what it means to be a computer scientist and what it means to be an engineer. That's why we are embedding our Girls Who Code classrooms inside tech-based companies. Our girls are learning while inside of companies such as Twitter, Google™ and Facebook: meeting data scientists and programmers. They are seeing what it is like to work on teams, to collaborate in these environments and to help solve problems. That really gets the

girls excited. Because if it weren't for having that real-life experience, they would have no idea what it really means, or what it really looks like, to be a computer scientist.

In total, the mission of Girls Who Code is to inspire, educate and equip girls with computing skills to pursue 21st century opportunities. When it comes to the educating and equipping components, beyond showing girls how to tinker, we want to teach them real computer science, including deep technical computing skills. When it comes to being inspiring, we want to dramatically change the image of a computer scientist to be far more diverse than some dude in his basement staring at a computer and not making a difference in the world. Our research shows that 74 percent of high school girls want a career that is focused on making the world a little bit better. Girls want to change the world. Making a connection between coding and being a change agent is a high priority for us.

What is your highest ambition for Girls Who Code, and given the gap between your hope for tomorrow and the reality of today, how realistic is it that you can achieve it?

■ The long-term ambition for Girls Who Code, our vision, is to help create gender parity in the field of computing. Specifically, our contribution will be to educate and expose up to one million young women through our programs by 2020.

While I think that in the United States we are now on a path to creating greater gender parity, the gap is still wide. Last year, only 7,500 women graduated in computing science. Today, only one out of 10 American schools even offer computer science. And not nearly enough girls are taking the AP Computer Science exam. Google did a study that revealed that a girl is 40 percent more likely to major in computer science if she takes the AP CS exam. As a country, not just as a single organization, we have a long

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way to go to help educate, equip and inspire—to motivate young girls to take that exam and to pursue higher education in computer sciences—before we ever achieve our highest ambition.

With that said, at Girls Who Code, we are offering an alternative education opportunity through an after-school program and a summer program. We are stepping in and giving girls that experience and exposure to computer science education starting in high school. We are working to set a high expectation that they'll major in it in college and then go to work in the industry. By the end of this year, we will have taught 40,000 girls. That's very significant given the fact that, again, only 7,500 women graduated in computer science last year. At the rate Girls Who Code is growing, we are on track in the next couple years to help double the amount of women who are graduating from computer science programs in this country. So do I see the potential to have gender parity in the next five to 10 years? Yes, because we are not the only game in town. There are lots of other people who are now trying to attack this same problem. We are all doing good work and are, together, building a pipeline for female talent.

Girls Who Code is very committed to its ambition. One of the exciting things we did last year, to help us reach our goal, is create a partnership with PENGUIN® to put out a book in 2017. The book will offer curriculum to help girls between nine and 13 learn to code. Is one million a

big number? Yes. But if we do our job right, if we deliver an amazing book, if we keep the movement going for girls through our clubs and summer programs, we can reach that goal.

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Can you share some specifics about the programs and initiatives, the action that Girls Who Code takes, in support of achieving all of its goals?

■ We run a summer immersion program which is a seven-week intensive program for rising juniors and seniors in high school. Twenty girls per group go to a classroom at a university or in a technology company—like Facebook—over a summer. Then, from 9:00 a.m. to 4:00 p.m., we teach them how to code. They are exposed to mentors and role models, and each week they focus on a new project. They learn how to build a website, how to build a mobile app and a lot more. Then, in the last two weeks, the girls can build whatever they want motivated by what they have learned. The summer program is the equivalent of a half semes-

ter in college. This summer, we're running about 78 of the programs in nine cities, including Los Angeles; Austin; Atlanta; Boston; and Washington, D.C. So call it 1,600 girls will go through Girls Who Code this summer. Last year, we ran 57 programs; the year before we ran 19; the year before we ran nine. We are scaling the program, fast. Ninety percent of our summer alumni are intending to major or minor in computer science. And seven percent of those thought they wanted to do something else before their exposure through us. We are having great results with the girls we are collaborating with at Girls Who Code.

In addition to summer programs, we have created Girls Who Code Clubs. These are after-school programs that will be in almost all 50 states by the end of this year. We're in about 44 states right now, so we're close. The after-school programs are held in schools, community centers, libraries and churches. Some are in the best high schools in America. Some are in homeless shelters and in sanctioned housing. We are starting one in a prison. The clubs are for girls who are of middle school age on up. It is a truly diverse group. We have students who are the daughters of migrant workers. We also have girls from Indian reservations, who literally have no STEM opportunities in a 70-mile radius, who are now getting exposure and access to a Girls Who Code Club. We provide two hours worth of coding instruction a week for girls.

The community we build in the classrooms, and the sisterhood we create, plus the relationships that are built, are very powerful.

Between our summer immersion program, our Girls Who Code Clubs, our book coming out next year and the formalization of an alumni group, we are building a fully networked and supported organization. We introduce girls to the topic and impart lifelong knowledge. We give them access to internships. We create a sisterhood of support to help make sure that the girls do not give up. When the girls run into cultural or gender barriers that they will inevitably face and feel deterred from wanting to do this anymore, we have role models who can encourage them along. We are building this one piece at a time, creating strong foundations for a more sustainable solution.

Reflecting upon the state of Girls Who Code right now, what are some of your organization's biggest successes as well as some of your ongoing challenges for the future?

■ I think our biggest success is that we were among the first organizations that not only talk about doing something, but actually do something in a meaningful way. In turn, I was filled with pride when President Obama talked about coding four times in his last State of the Union address. And I was proud

when the city of Chicago recently made computer science mandatory as a requirement for graduation, which is something that we have been advocating for years. To see this elevate to the level of a bigger conversation, combined with more action, is progress. Four years ago, when we started with Girls Who Code, plenty of people were like, 'What's coding?'

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On a very personal level, the other most rewarding thing for me, given my upbringing, is seeing girls whose parents work at minimum wage jobs or who live in homeless shelters or who have only one meal a day come to Girls Who Code. My parents came here with something like $11 in their pockets. I am the product of the American dream. I often look at how much inequity we have in our country right now and ask myself, 'How is that possible? How can I help fix things?' In turn, it's very exciting for me to see the girls at Girls Who Code

gain technical skills, get internships the following year and then get a full ride to college. These girls are helping to improve their own family's situation—helping to raise them up into the middle class. This is why I come to work every day. It is to do my part in providing these girls with better opportunities. I feel that it is one of our biggest successes.

As for challenges, one of the biggest is that we're a nonprofit that is half like a political campaign and half like a startup. We have big ambitions but very limited resources, including time, money and people. For some, ours can be a hard sell. There are not a lot, if any, other entities out there that operate in the same way as ours. I want to scale Girls Who Code even faster, but oftentimes, I cannot incentivize people or I can't hire people. We depend upon 90 percent of our funding from corporations, so every year I have to take time away from the day-to-day operations to go out and raise $13 million to keep this organization growing. This is an ongoing challenge for us given the size of our ambition and the amount of resources required for us to truly make an impact.

Who are some of the key influencers, and what role do they play, in helping to bring the Girls Who Code message forward to even more audiences?

■ A lot of times, success in life can be linked back to those who believe in you. People who, do or die, believe in you and your vision and will take on risk in putting their own brand behind yours. People who are willing to activate their own network in support of yours. I have, and Girls Who Code has, been the beneficiary of people like that. I have been fortunate in that believers keep popping up in my life.

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Jack Dorsey, the founder and CEO of Square, and cofounder and CEO of Twitter, is one of them. Jack has done a fundraiser for every one of my campaigns. He has been there at every moment for Girls Who Code, including the week I was IPOing. Each year, he speaks to some of the girls in the program. His commitment to me, to Girls Who Code, has been enormous. He has put himself on the line for us.

Sheryl Sandberg, the chief operating officer of Facebook, is another example of an important believer. When we began Girls Who Code, we had a special launch day and were desper-

ately trying to get the press to write a story about us—preferably, *The New York Times* or *The Wall Street Journal*. But that didn't happen. What did happen was that Twitter put us in one of their blog posts. Four small lines: 'We care about the gender gap. We are going to partner with an organization called Girls Who Code.' It went viral. The whole day we were tweeting and using social media. At around 5 p.m., I remember getting an e-mail from Sheryl Sandberg. She said, 'I don't know who you are, but I think what you are doing is amazing. Please let me know how I can help.' I have no idea how she got my e-mail address, but it was amazing that she saw it online, on Facebook or on Twitter, and asked what she could do to support us. We hadn't even had our first class yet, but I think Sheryl was excited that somebody, some organization, was doing something about a problem that she too is passionate about. Now, every year, Sheryl participates in a town hall meeting with us. She always references Girls Who Code when she is speaking. She's always working to introduce new people to us who support Girls Who Code with jobs for our girls or who support our mission in some way. Sheryl routinely activates her own brand for Girls Who Code.

Hillary Clinton has been supportive of our work. President Obama wrote the girls a very first-class and personal letter encouraging them in their pursuits. We rely on our believers, including brands like Microsoft® and Adobe®. So many individuals with strong brands and so many con-

sumer brands who really do believe in what we are trying to do. When I was running for office, I always felt like I was running up a hill. It was very hard to catch a break. In contrast, with Girls Who Code, I know that it has so much meaning in it that a lot of people want to help support by building this with us. It's very rewarding to see and to be a part of.

Earlier you talked about scaling your organization. How fast can you scale Girls Who Code, and why is scaling quickly such a high priority for you?

■ I am definitely one of those super intense people. I keep going and I don't pat myself on the back. I'd be lying to say I take moments to really take it all in because I feel like I'm not there yet. I don't feel like I've succeeded yet. I want to help solve a problem. That's why I started this

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organization. That is why I work 20 hours a day. That is why I am so passionate about this. I truly believe that today's young women are remarkable. And there are many problems that they, in turn, could help to solve—climate change, hunger and cancer—if they only had access to the right technology and technical skills that we can help to provide to them.

I'd like to scale Girls Who Code as fast as possible. But we have constraints. I once worked with a coach who said it's a priority to work on something that motivates you, on something where you feel that you are learning, and on something where you are also having fun while you are earning. However, at a nonprofit, you are not earning. So you really have to sign on for the mission that we are on. Girls Who Code operates at the intersection of a political campaign and a startup, where people work hard and are not compensated in traditional ways. Their compensation is the impact they make on these young women's lives. That is not for everybody. So to scale as fast as I want to scale, I have to make sure that I am hiring the very best of the right kind of people—the ones with the most passion who are here for emotional reward. I interview every person who works for this company. I am the filter for passion at Girls Who Code. We have gone from two employees when we started to 58 by the end of this year. I am the last person who every single person has to interview with, and I try to talk each one out of the job to

*"I am the last person who every single person has to interview with [at Girls Who Code], and **I try to talk each one out of the job to see who is really here for the mission.**"*

see who is really here for the mission—who will stay committed to the cause because of their passion for what we believe in.

We could probably stop growing right now, and as long as we kept doing what we were already doing, we could make a reasonable contribution to get more women into computer science jobs. But our ambition is much higher. What we are trying to do is to build an army of change agents. The millennial generation has it within them to be fearless. As a generation, they tend to be very wide-eyed and tend to care about the world. They believe that anything is possible. Once they all know how to code, the world better watch out. The future is going to be amazing.

What lasting impact do you hope to make on the world through your work, and your organization's work, at Girls Who Code?

■ My strong desire with Girls Who Code is to build a movement of young

coders all working to solve the problems of tomorrow. Prevailing culture, however, continues to be one of the biggest barriers to progress. We need to really start thinking, meaningfully, about transforming the way we portray girls who work in computer sciences. We need to show girls that tech has the power to help them change the world. We need to show them that technology is interesting and cool, just like them, to help make sure they do not opt out of learning more about it. I also think our educational system is broken and needs to be fixed. Schools are teaching Microsoft® Word instead of HTML or Python. Girls need to learn to speak the modern language. We need to update our education system to account for where the jobs are, and I think we need to, from a policy perspective, make computer science education a priority by putting in the necessary resources to help make it happen. Today, we're badly behind in terms of where we are at as a country. England just made it mandatory for their young people to learn how to code. In comparison, in America, computer science counts for graduation in only 26 of our states. Anyone who is a parent understands that our kids have busy lives. If they have to study something as an elective, something that doesn't count for graduation, they are probably not going to study it.

Why do I care so passionately? Why should we all care so much? Anyone concerned about the current and future state of the economy should care. Right now, there are around five million open jobs in America. About 500,000 of those jobs are in tech—not just in New York City or in Silicon Valley. Ninety percent of all job openings in Montana are in tech. Fifty percent of all job openings in Salt Lake City are in tech. Meanwhile, 44 percent of executives say they can't hire enough engineers because there's a talent vacuum. For the foreseeable future, it will remain a good time to be pursuing a career if you have the right skills, particularly for women and girls who have the required skills. There is, more, not less, opportunity for those who are well-prepared for the future.

My loftiest personal goal is to help fill the talent vacuum with skilled women and to help solve the problem so that organizations like ours don't have to exist anymore. My hope is that in 50 years from now people remark upon the lasting contribution we made to the world, but that we don't need a Girls Who Code because everyone will be a girl who codes.

By reputation, and even self-admittedly, you are an advocate for disruption. To help Girls Who Code achieve its long-term goals, what new social disruptions or changes need to take place?

■ I recently gave a TED talk. The theme was focused on the fact that we are socializing our young girls to be perfect while we are raising our young boys to be brave. Failure has not been a part of the narrative of young girls. The bravery deficit is, in part, what is causing a real leadership deficit for women. It is, in part, the reason why they are not going into technology-related fields. One of my friends, a computer science teacher who teaches Java® at Columbia University, likes to tell this story, which illustrates the point. He says that when he holds office hours, the guys will come in when they are struggling with an assignment and say, 'The computer is broken.' The girls, in juxtaposition, will come in and say, 'I am broken. There's something wrong with me.'

> *"As women, we are often taught to avoid failure and to avoid risk. I want to undo that. **I want to socialize girls to take risks and to be brave."***

When I think about the work I am doing now with Girls Who Code, and when I think about what it took to run for office years ago, and everything that I have been a part of, I wouldn't have made progress if I had subscribed to the societal expectation. As women, we are often taught to avoid failure and to avoid risk. I want to undo that. I want to socialize girls to take risks and to be brave. So how can I, how can we all, create the next generation of brave, courageous young women? How do we raise the next generation of brave, courageous

young women who will take risks and not worry about getting it right and being perfect? Showing girls that failure can be a good thing is really important, and I think that's part of what we do at Girls Who Code. When we inspire girls to be brave, just like boys, we start to make more social progress.

The first book I wrote was called *Women Who Don't Wait In Line: Break The Mold, Lead The Way*. If I write a next book, I think I may take on the topic of debunking the idea that socializing girls to be perfect is a good idea because, socially, it's not a good idea.

As a leader who has, and who continues to, create meaningful and lasting change in the world, what advice do you have for others aspiring to do the same thing?

■ I think I've learned that to thrive professionally and personally you need to leave yourself open to possibility—that the dream you think you have right now may not be the one that you need to live.

For me, I always thought that my way to make impact would be by running for office. If you asked me five years ago, 'Reshma, will you be leading a nonprofit organization that teaches young girls how to code?' I would have said, 'No. You're crazy. What are you talking about? I don't want to be a nonprofit leader. And I don't code.' That said, I learned to embrace possibility.

Right after I lost the race for Congress, it felt like gut wrenching pain. I was disappointed, I was humiliated, I didn't have a job and I was broke. I was very vulnerable. However, in being vulnerable, I allowed myself to be open to new possibilities. Today, I am making a real impact in starting Girls Who Code. I am creating real educational change and career opportunities, which were the reasons why I wanted to run in the first place. I am likely making more impact, with lasting implications, than if I had been elected.

From experience, I have learned that being rejected, being upset, failing and seeing dreams not work out should never break you. There is nothing wrong, and lots of good, that can come out of trying and, at first, not succeeding. So don't let it break you. From one dream can emerge new, better ones filled with amazing possibility.

"From experience, I have learned that being rejected, being upset, failing and seeing dreams not work out should never break you. There is nothing wrong, and lots of good, that can come out of trying and, at first, not succeeding."

Over a little more than four years, Reshma Saujani's organization, Girls Who Code, has reached 40,000 diverse girls in nearly all states. Because of the after-school clubs and summer immersion programs her organization makes possible, many who would have otherwise never had exposure to positive role models in the field nor advanced learning about coding see the potential for further studies and a career in computer science. Because of her efforts, many girls who have the desire to positively change the world are gaining the technical know-how to do so. Accordingly, Reshma and the Girls Who Code organization are finding that they are not just training a new generation of thinkers, but rather, they are also winning over a highly influential group of believers across business and government who are lining up to support the effort. Before starting Girls Who Code, Reshma Saujani felt some despair over having lost an attempt to realize her dream of winning a freshman campaign for Congress. After starting Girls Who Code, with the benefit of perspective, she now realizes that she is working on a bigger dream. Instead of simply recounting her history, through Girls Who Code, Reshma is an inspirational leader who is writing history every day.

BY MARK MILLER

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