

Erin Welsh

Hi, I'm Erin Welsh and this is This Podcast Will Kill You. Welcome everyone to the latest episode in our TPWKY Book Club series where we get to expand our minds and our bookshelves as we read fascinating books in science and medicine covering a wide range of topics, from the origins of American gynecology to the plant and animal-derived substances we use to harm and heal; from a post-pandemic COVID playbook to the impacts roads have on ecosystem and human health. We've covered so much ground in this series. And if you'd like to check out the full of books we've covered or are going to cover this season, head on over to our website thispodcastwillkillyou.com where you can find a link to our bookshop.org affiliate account under the EXTRAS tab. There on our Bookshop page, you'll find various TPWKY book lists including one for our book club.

As always, we'd love to hear your thoughts on this book club series. Send us your favorite books, unasked questions, future recommendations, whatever you can think of over to us via the CONTACT US form on our website. We make this podcast for you all, so let us know what you think. Another great way to share your thoughts is to take a moment to rate, review, and subscribe. It really does help us out. Okay, let's get into the book of the week. Pulitzer Prize winning journalist, reporter for the New York Times since 2000, and author Kate Zernike joins me to discuss her recent book 'The Exceptions: Nancy Hopkins, MIT, and the Fight for Women in Science'. In 1999 the Massachusetts Institute of Technology, MIT, made an extraordinary admission: that they had discriminated against women on its faculty, confirming a suspicion held by many for many years and prompting a reckoning for institutions of higher education across the country.

In 'The Exceptions', Zernike, who was one of the reporters at the Boston Globe to break this story in 1999, revisits the sequence of events that led to 16 women on the faculty of MIT coming together to demand a seat at the table that had for so long been denied. Zernike centers this story on groundbreaking molecular biologist Dr. Nancy Hopkins, taking readers through Nancy's educational and career journeys, and culminating with the story of how, armed with a tape measure, Nancy began to quantify the marginalization that women faculty at MIT faced. By taking this panoramic approach, Zernike paints a vivid picture of how gender equality in higher education evolved over the 20th century, starting with more overt or explicit gender discrimination such as denying women students access to the library on campus and shifting to be more subtle, more insidious, like senior faculty, men of course, lying about how much lab space women faculty have compared to the men. Spoiler, women actually had much less but you probably could have guessed that.

Zernike's thoughtful storytelling places these events in the broader context of changing gender roles and popular discourse on whether women could or should be scientists in the 20th century. What results is an enlightening, infuriating, but ultimately inspiring book that everyone should add to their to-read lists. When this story broke in 1999 it was at a time when the problem of sexual discrimination in higher education was kind of thought to have been solved at least for the most part. Nancy Hopkins and the other women faculty across the MIT campus who brought this marginalization to light showed that that was far from the truth. And being scientists, they quantified this marginalization and minimization, clearly demonstrating that their experiences were not just one-offs, that it was not just the attitude of one particular department, that it was not about scientific achievement or not being a team player, that the discrimination they faced was systemic and actively discouraged women from remaining in science in academic institutions.

This story resonated with me so much. To learn about these amazing women and how they refused to be ignored, how through their tireless efforts they made higher education a better, more welcoming place for women in science today. I am so grateful. At the same time, I think this book resonated to such a degree because parts of this story feel painfully familiar. It serves as a reminder that the problem of marginalization in academia is not close to being solved. But we are a whole lot closer now than we would be without the efforts of Nancy Hopkins and the other women faculty at MIT featured in Kate Zernike's amazing book 'The Exceptions'. So let's take a quick break here and then get into some questions.

TPWKY

(transition theme)

Erin Welsh

Kate, thank you so much for joining me today. I am thrilled to chat with you about your incredible and incredibly infuriating book 'The Exceptions'. Can you tell me about the title of your book? Who are the exceptions? Where did this title come from?

Kate Zernike

Yeah. Well first of all, I'm so excited to be here. Thank you for having me. It's really a question of not just who are the exceptions but what are the exceptions? And I started out this book and I knew exactly what the story was, I knew the arc of the story but I didn't know the title. And I would say about halfway through the reporting, it became clear to me that like there was no other title, there was nothing else that I could call this book. Because every time I talked to people so often in conversation or as I was reading something, I would stumble on this word which is like exceptions or it was the exception or she was exceptional. And so on some level it was like well historically why are these women so exceptional? Why is it so exceptional that women can succeed in science? Do you have to be exceptional in the sense of being exceptionally smart? Like is there something genius or unique about you?

But it was also as women, as I talked to these women and ask them about their story or their stories, they would say to me well this thing happened to me but I thought it was the exception or I thought I was the exception. Or I thought it was just the circumstances, it was really just the exception. And this just as it accumulates, you start to think well actually no, that's not exceptional. Like this is actually very common and the exception starts to look more like the rule. So for some women, this manner of dealing, telling yourself this was the exception, this was just the circumstances, that was a way of coping and it actually allowed them to be successful. Like they just put blinders on and said if I get distracted by this stuff, I'm going to go off the rails and I can't do that. But for other women, it became very demeaning and very crippling in a way because they kept... Something would happen to them and they would say oh, well I must be the problem here. And so it stopped them from succeeding.

So it was just a sort of interesting... It was this idea of how seeing these things as the exceptions can help and can hurt. But also these women really were on the most fundamental level, they were exceptional because they were able to get jobs in science at a time when women couldn't, they were exceptionally bright, they were exceptionally accomplished. But this whole idea of being the exception was in some way holding them back. Even just what MIT did here, which was to admit as a result of all the work of all the research that these women did, that it had discriminated against the women on its faculty, that in itself was an exceptional move. And really it wasn't just the women who were affected and sort of influenced by this idea of things being exceptional, of circumstances being exceptional. It was the men. One of the men who became an early ally to these women talked about how he knew all of their stories and he understood, he thought he understood what was happening in their lives.

But there's a point in the book where all these women are in his office, there's six women in his office, six of the total sixteen of the story, and one after another they tell their stories and they tell their experiences. And he says later that this was... He compares it later to one of the greatest scientific epiphanies he's ever had, like a real eureka moment. And he said had any of these women come to me one on one, I would have said oh her problem is this, her problem is that, it's the exception, it's not the rule. Seeing these women, hearing their stories one after another, he was like oh we have a problem. And that's what really started the whole series of events in motion that did ultimately result in MIT acknowledging it had discriminated against the women on its faculty.

Erin Welsh

Let's talk a little bit about that incredible extraordinary admission. So this is kind of jumping to the end of your book chronologically but can you tell me how you first came across this story of Nancy Hopkins and the other women faculty at MIT that faced this like decades of sexual harassment and discrimination and then finally were able to get that acknowledged.

Kate Zernike

I started covering higher education for the Boston Globe in September of 1998. And my father who was a physicist said to me at the time oh, you should look into the work this woman named Millie Dresselhaus is doing to get more women into physics. And Millie was this incredible woman. We talk about exceptional, she was amazing. She had four children. The story was that she had taken a total of five days maternity leave because two of the kids had been born on weekends and one on the snow day. I mean it was really... She's extraordinary, she's exceptional. So my father says this to me and I think well that is the worst idea ever. Like what's the action there? What's actually happening in that story? It's going to be some story about like some good program trying to solve a long standing problem. Six months later I got a tip from someone in the newsroom that there was something going on with women and discrimination at MIT. And the only thing I had was the name of this woman, Nancy Hopkins, and her phone number.

And so I called her and she told me that in fact MIT was going to admit that it had discriminated against the women on its faculty. And I was like oh, well there's definitely a verb in that story, there's action there. And that was really striking to me. And this was not something in 1998 you thought was going to happen. I thought when I heard about women and discrimination in MIT, I thought oh someone's filed a lawsuit, right, and it'll be like this he said, she said story. Then she tells me that the reason MIT is admitting this is because this group of women including her, led by her, had gathered the data to show how women were discriminated against. So salary and lab space and the amount of work that they did outside of their usual job roles, speeches and appearing on committees, that work was generally done for free. All of the ways in which women were disadvantaged compared to men.

So that to me just struck me as kind of like... There's this tradition on MIT of hacks, right, where they sort of... Before we heard of hackers, it was MIT hacks. And they would do things like, clever scientists, they would do things like take apart a cop car and reassemble it on top of the great dome at MIT. But what these women had done struck me as that kind of hack, like they had leaned into their science to prove their case. So I sort of love that aspect of it. So I went and I met with Nancy in her office and she talked to me about really what was so striking to me at the time, and again we have to remember this is March of 1999. But she talked about that this wasn't discrimination the way we tend to think of it, right. I mean there was some overt cases of that, right, like salaries were lower. But the way they described it was marginalization.

And it was really just the sort of pushing, the gradual pushing aside of women across the arc of their careers, as they got older. The problem wasn't as they were junior faculty members, it was really as they advanced in their career, they were gradually sort of pushed aside, what they described as marginalization. And again they said like this was not what we thought discrimination looked like. We thought discrimination was the door closed on you, someone telling you, they have to say I'm not hiring you because you're a woman. In fact it was much more subtle than that. And now when we look back, they use this word at the time and it was a fresh word at the time, what they were talking about was unconscious bias which of course now we're so familiar with. But at the time that was really a new idea. And so I really do credit these women at MIT with making that concept, with popularizing that concept and making people understand just what it looks like.

Erin Welsh

One of the most kind of compelling aspects of this is that, or the most shocking aspect, is that MIT acknowledged that this is what had happened over years. So what was so extraordinary about this admission and kind of like what were some of the changes immediately that resulted from this acknowledgment?

Kate Zernike

The admission by MIT is in 1999 but the women first came together in the summer of 1994. And for many twists and turns that I tell in the book, it took an incredible 4.5 years for this to happen, for this to become public. So MIT started fixing issues for the women pretty much almost as soon as they started coming together. The women come together, they asked for this committee to sort of outline the problems, to look into the problems. And the dean who was their great ally starts beginning to address them. What happened in 1999 that was really striking was the story. So my story ran on the front page of the Boston Globe on a Sunday. The women at MIT and I did not think, we understood that this was really an incredible story and something amazing, but I think we all thought maybe this is just an MIT story or maybe just a story of women in science.

What happens when the story appears the next morning on Monday, the Dean of Science there, this man who was a great ally, the Dean of Science shows up at his office and there's a news crew from CBS Evening News outside his office. That Tuesday, the New York Times runs the story on its front page. And suddenly really again, this is like sort of it's an early internet era so things don't really go viral as much as they do now. But as much as they did then it really did go viral. And women across the country and across the world started saying, like really writing in to Nancy and to all these other women and saying I thought I was the only one who had this problem but this is my problem too. So what MIT really did was acknowledge a problem that women thought that they had been suffering alone. It put the problem on the map. It made it a problem that other universities had to discuss.

One of the things that the MIT women like to point out is that other universities initially said like oh no, this isn't a problem we have, like Harvard. There's a great quote in the Harvard Crimson like oh no, this isn't an issue for Harvard. Well of course it had been an issue for Harvard for many, many years. Harvard had had a committee on the status of women. They've been doing reports on the status of women for years, the reports would be issued, be printed, someone would put it on a shelf, no one would notice it. So I think really what was so extraordinary was that the president of MIT, Chuck Vest, put his name to this. And he had this great quote that was repeated in every newspaper story, every editorial about this. And what he said, I'm probably going to get the words a little bit wrong but I think I can remember it pretty much word for word, was 'I've always thought that gender discrimination in higher education was part perception, part reality. True, but I now understand that reality is the greater part of the balance.'

And for him to say that, I mean that was like Nancy Hopkins really almost fell off her chair the minute she read that phrase. And I think the fact that it was MIT, the fact that it was this prestigious institution really helped. But it really did just put the discussion on the map. So in many concrete ways, there were changes. The Ford Foundation gave a million dollars for other universities, for MIT and other universities to work out the problem, to do this sort of analysis these women had done at MIT, looking at resources for men and for women. That money went to help other universities do the same thing. Suddenly you really saw there was really an acceleration in the number of women at being asked to lead. By 2002 you had three women as presidents in the Ivy League. You had a president of MIT who was a woman very soon after. So I really do think like this put that conversation on the map. It made women in science... The question of why do we have so few women at the highest levels of math and science, it put that question on the map.

Erin Welsh

And that question has deep, deep roots. And as someone who went to grad school in the 2010s, it's really too easy to forget how different things are in higher education today compared to not just like the late 1990s but also especially the mid 20th century. Like I knew about pay differences, I knew about tenure being withheld or just not being hired in the first place. But when I was reading your book, it was the little things that really stood out to me, like these mundane acts of discrimination like not being able to buy faculty football tickets or these gender dining hall restrictions.

Kate Zernike

Yeah. And no locker room for you, little girl.

Erin Welsh

Oh my gosh. And I was wondering if you could sort of paint a picture of what it was like to be a female student or a female faculty member at Radcliffe around the time that Nancy Hopkins, then Nancy Doe, was at school there.

Kate Zernike

Yeah. So Nancy graduates from Radcliffe in 1964. And that was I think the first or second year that Radcliffe and Harvard actually had a joint graduation. So women still got separate diplomas which is kind of amazing. I mean just to go to your point, I'll get back to that but like to go to your point about being in the 2010s, we forget that in even 1999 there was no daycare on campus. That alone is just an extraordinary change. But Radcliffe, Harvard and Radcliffe in 1960-1964, this was some of my really favorite part of the book to research. Because first of all, you write about universities and they remember everything, they memorialize everything. So there's just a ton of archival work that you can look into. So that's really wonderful. But it is, as you say, it's so striking how different it was.

So Radcliffe existed, that was where the quote unquote "girls", there were men of Harvard and girls of Radcliffe, that was where the girls were educated. But of course there were no women on the faculty, right. So if you were a young woman at Radcliffe, you were learning from men. You were not allowed to wear pants downstairs in the dorms at Radcliffe, you had to wear skirts. You were not allowed in the main library on the Harvard campus because there was some fear that you would be a distraction to the men. You were in the same classrooms with men but that was really only since WWII. And the reason that Harvard made this accommodation was that during WWII of course so many men left to to be on the battlefield, so they needed the tuition from women. You couldn't stay out past midnight.

And what was so striking to me though about those years is I think we tend to think of maybe 1967, right, which is when the National Organization for Women is founded. We tend to think of that as kind of the beginning of the women's movement. But when you look at this class, they arrive in 1960, they graduate in 1964, it really became clear to me that this was a generation very much on the cusp, right. Like they're not quite at that full push of the second wave feminism but they're starting to change, right. So they're starting to push for hey, we don't think we need to be checking into the dorm by midnight every night or 11 o'clock every night. We don't think we need that kind of babysitting. More women were starting to major in things like biology rather than the traditional fields of English and history, right. Like they were starting to imagine a more professional future for themselves.

But they were also, this was so amazing to me reading their yearbook because there are these essays by these young women who were graduating and they talk about themselves as a generation of culturally induced schizophrenics. And the schizophrenia for them is they believe that they are going to be able, they are going to be the first generation that is going to be able to really have a career and to have a family and they won't have to make the choices that women have had to make for so long. And they're being encouraged in this by the president of Radcliffe, a woman named Polly Bunting, who is herself a scientist. But they're sort of struggling with this idea, right. Like they think that the men of Harvard are going to treat them as equals but they're not really sure yet. And they're still waiting to see.

I talked to some of Nancy's friends who ultimately did not have careers and went on to have children. They say well I always felt inadequate because I wasn't choosing to have a career. And of course Nancy struggles with well I'm not really sure I want children, I really want a career. So whatever you were doing, and I do think again this is a struggle that women still are working on, whatever you're doing, you're feeling inadequate. You're thinking I can't possibly do both things and do them both well. Going back to this whole idea of the exceptions and the woman Millie Dresselhaus I mentioned, right, with the four kids, she was an amazing semiconductor physicist. She had many twists and turns in her careers and also an extremely supportive husband. So there are many things to explain her success.

But really what the leadership of MIT did for decades was say to women, well why can't you be like Millie? And so the women themselves were like oh well I have to be like Millie. And so I talked to this one woman, one of the women in my story, a wonderful woman named Penny Chisholm who's a National Medal of Science winner now. She's a marine biologist but she was in the school of engineering because I kind of didn't know what to do with her when she arrived in the 70s. And she says that in her reviews and her discussions about her career, men would compare her to Millie. And she would say how exactly does my work marine biologist compared to Millie as a semiconductor physicist? And really there was no way except that they were both women. But so that's another way in which this whole idea of the exceptions kind of inhibits women because they're being told well you can do it. And MIT was able to point to these exceptions and say well what's our problem with women? We have Millie.

Erin Welsh

And it doesn't really send the message that it's okay if you don't want that, whatever that is. I think that that is something that really stood out to me too is when Nancy was deciding what to do post graduation and these sort of different paths that at the time time were kind of still split with like maybe a very narrow, right down the middle that some people both wanted to have a career in science as well as having children and raising those children.

Kate Zernike

Yeah.

Erin Welsh

How did that influence Nancy's choices?

Kate Zernike

Yeah. In an incredible way. Nancy, like many of us I think, is a planner. And so if you consider the culture that she was entering, women tended to have three children, they had the last of those by age 30 which is. looking back at that, that's kind of extraordinary. A lot of women don't start having children now until 30. So Nancy thinks, she's 19, graduated from college, and she's thinking okay, she's got one year until graduation when we first meet her. And she's like I have this one year to figure out what I'm going to do with the next 10 years of my life because I only have 10 years to have this incredible career because then I have to get married and have kids. Like she understood that she had to do it all and she understood that her time was very limited.

So she ultimately goes to grad school, but she does it really only because her mentor, James Watson, tells her she should do this. But she doesn't really want to go to grad school because she's like why would I need a PhD when I'm just going to drop out of science by 30? So it really shapes her early career choices. But ultimately she gets very lucky because she not only does she have Jim Watson as her mentor but she decides to drop out of graduate school to go do this big experiment that she's really, really curious about. And she thinks like I don't care if I have a PhD. The experiment turns out to be enough of a success that she's able to get her PhD by doing that experiment. And then at that point she says oh okay, I'm going to keep doing this but again, I'll stop doing it when I'm 30.

She ultimately does. She marries her boyfriend, she anticipates having children but it really produces this incredible tension with her and her now husband, Brooke. And I describe it as Nancy does as kind of this love triangle, right. Like she knows she wants to be married to her husband but she really loves science, she doesn't want to give it up. She knows just based on seeing the women around her. The women around her, if they're successful scientists, it's because they don't have kids. There aren't many of them. For the most part the women around her that she sees have children and they're not running their own labs, they're working in the labs of their husbands. And so she thinks that that's what she has to do. So she marries, very briefly she drops out of science because she's like I just can't do this, I cannot have children and this marriage and also have science.

Ultimately the other tension that's interesting here and I think maybe it's still all too common is that she has a struggle with her husband because he sees that she is more successful than he is. He's struggling to get published, he's struggling to get a job as a professor of English. And so ultimately he leaves her. Nancy is again lucky enough that she has this training and she can get a job and she at this point has to work. She gets these job offers from MIT and Harvard, takes the job offer from MIT. But she tells herself like I'm not going to get married ever again and I will not have children. That is the choice that she makes. And she thinks that she is making a choice for science and that it's the only logical choice. And what's really striking to me about all of the 16 women who are involved in this story is really I think it's only half of them had children. So it just shows the constraints again against women at that time. If they wanted to be successful in science, they recognize that they could not also have a family.

Erin Welsh

Let's take a quick break. We'll be back in just a few.

TPWKY

(transition theme)

Erin Welsh

Welcome back, everyone. I've been chatting with Kate Zernike about her book 'The Exceptions: Nancy Hopkins, MIT, and The Fight for Women in Science'. Let's get back into things. Earlier we kind of talked about how this generation that Nancy Hopkins was part of graduating from Radcliffe in 1964 was sort of this cusp generation. And in your book I remember reading that in the 1970s the proportions of doctorates earned by women and tenure track faculty positions held by women at universities in the US, those proportions were actually lower in many cases in the 70s than at the turn of the century. What were some of the drivers for this sort of downturn? And how was this, this is sort of a two-parter, but how was this new, more subtle discrimination different than in past decades where it was just like a sign on the door, do not enter the library?

Kate Zernike

Yeah. Again, one of the extraordinary things about this whole MIT story in 1999 was that I think there still was a subtle maybe unexpressed bias that the reason there weren't a lot of women in math and science is because either women didn't want to do math and science or that they actually weren't that good at math and science. But it really gave the great lie to that whole idea because there were women, at that point there were women as undergraduates who wanted to get into science. The problem was really at the faculty level. So something was happening, isn't that for many, many years we thought oh we just need to fill the pipeline and get more women into science and then they will organically become faculty members. So that story gave the lie to it.

But as you say, when I went to do the work expanding this from a newspaper story 20 years ago into a book and you look at the numbers in the early 20th century, you see that again like it's not that women weren't good at this or weren't interested in this, it really was something culturally that was happening. And the period that I really am struck by is during WWII. So again as men leave, as men go join the fight, the number of women who became professors actually really rises quite substantially. What happens though is the men come back from the front and colleges and universities, including by the way women's colleges, decided that actually there was more prestige in having men among your professors, men as college presidents. So the number of women as professors begins to go down, women's colleges began having male college presidents again. I mean it's just this whole shift.

I think it really was this idea in the 50s that women's place really was to have a family, to be at home, right. That was the image that they thought that they were fulfilling. So one of the things that we see after WWII is that universities began adopting anti-nepotism policies. So they won't hire a husband and wife together. And of course who are they going to hire, the husband or the wife? They're going to hire the husband. The only way that a wife who has perhaps met her husband when they are both PhD students as scientists, the only way she can get a job at the same university in most cases is that she could work in his lab because then she will get money not from the university but from external funding. So you see a lot of women who go to work not as lab heads in their own right but they go to the work in their husband's labs. So that was really the pattern up until about the 70s.

Erin Welsh

And then in the 70s people began to realize that maybe this narrative that had been pushed for so long about how well women just don't like science, they're just not good at science and they want to stay home with the kids, like that might not actually be what's happening here; that it might be that in the workplace they're either facing extreme discrimination, harassment, marginalization, or just being actively discouraged from seeking training in science. Can you talk about this shift and how it was received by the public?

Kate Zernike

Yeah. The 60s was such a time of ferment. And one of the things that was most interesting to me was reading about the early 60s and President Kennedy's Commission on the Status of Women. And that in itself is sort of a separate and long story. But what's so striking is that this commission identified a lot of the things that we're still talking about today and a lot of things that didn't get resolved or really addressed for 30 years. So family leave, maternity leave, daycare, universal childcare, all of these things, they proposed a universal basic income which today is still considered a pretty fringy idea. But I think that was a group of women who, and their report became a bestseller by the way which is really, again, very striking. I mean it was sort of like we think about maybe the 9/11 report or something that becomes a bestseller. This was a major event in American society.

But it really was this discussion about well why is it that women aren't succeeding in science? And maybe it's because if you read some of the early newspapers at MIT when women start to become a greater percentage of the students, it's still like well but they're not very attractive. You gotta go to Wellesley to find the really good looking girls. And there was this idea that well we don't want women in the labs, because as one person says like they're going to spill their nail polish. I mean it's really silly petty stuff. What happens in the 70s that's interesting and I think we have to remember that laws can't fix everything but they do, they can signal a culture shift. So after the president's Commission on the Status of Women makes its report in 1963, President Kennedy signs the Equal Pay Act. And there are laws passed, anti-discrimination laws begin to be passed. Of course the 60s was a wave of anti discrimination laws in many respects against many different marginalized groups.

But so universities recognize that they could no longer discriminate. Then of course comes Title 9 in 1972. And there really was pressure, there was a way for women to say to universities you have to hire us because you are getting federal funding and discrimination against women is against federal law. So universities recognize that they had to hire more women. The other interesting thing that's happening at the end of the 60s is that men on campuses are suddenly saying well we don't want to be on all-male campuses, like we don't want Harvard to be single sex anymore. So men are demanding, they want coeducation. And that happens. And really in the 70s there was a push for more women on the faculty but the real push was to get more women into higher education, for coeducation. That's when you see the Ivys going co-ed, Vassar starts men of course. And there really is this idea that we're going to educate both and again, organically, like time will fix this problem, right.

So to go back to Millie Dresselhaus who does this report at MIT in 1972, one of the things she notices is that there's some sort of more obvious ways in which women are discriminated against. Like there are no women's bathrooms near the halls where women take exams. So they have to like run 20 minutes and back to find a bathroom. So things like that are addressed. But it's also the comments that people are making about women not belonging here. Millie has this idea in the early 70s that it's hard for women to speak up in class. But if every class has at least two women in it, those two women will feel less shy about raising their hand. I mean imagine that just for a moment that there is entire classes where there is only one woman and like whatever, 40, 100 men.

And so Millie says, she does this kind of back of the envelope calculation and she says okay, if we can just get 15% women in all of our departments, every class will have at least two women and that will help women feel stronger, feel more confident raising their hand and speaking up in class and that will be one change. And I do think that MIT does first in the 70s and then again in the 80s, because of a real push from the male president, does begin to get more female students. But the percentage of women as faculty at MIT, there's a big bump in the early 70s because of Affirmative Action. Suddenly lo and behold, 1994 this group of women gets together and they're like oh wow, in fact the percentage of women on the faculty has not changed.

This whole idea, women are now 50% students in many departments, even more than that in a couple of departments, but the women aren't ending up as faculty. So what is going on here? And ultimately as I said, it's the pipeline leaking. And you have to think why is the pipeline leaking? And it's the same problem that had begun to be identified in the early 60s which was that institutions were just sort of built by men for men, that women weren't really welcome there, they were tolerated but not welcomed. And so many women, frustrated, decided to kind of give up and leave. We call it opting out now. They didn't call it that back then but that's what they were doing. They ultimately decided my family needs me, my family appreciates me more than the people at work do. So I'll just go back to my family.

Erin Welsh

Was it also around this time that the term 'minutiae of sexism' was kind of introduced? Can you explain what this term is because I mean I love and hate this term. I love it because I was like oh yes, yep, still around today. But yeah, I was wondering if you could talk a bit about that.

Kate Zernike

Yeah, there's a woman in the book named Mary Rowe who was the ombudsman at MIT in the early 70s and she called it Saturn's rings, right. So all of this dust and debris that you can't... When you're in it, you don't really notice that it's dust and debris but then you step outside and you're like oh god, look at that. That's really noticeable. So the minutiae of sexism as Mary describes it is not, these are the problems that like none of us would raise our hand and complain about, right. Because who wants to fight all the time? These are things that you notice and let it slide. Again, it's sort of like the exception, right. But it's a very small exception. So you're not included in a meeting. I don't know, was that a snub or was it just like those guys are friends and that's why they ended up deciding to go into this venture together? It's the very small things that none of us would raise our hand and complain about. But ultimately it does end up in women being pushed aside.

The women at MIT in 1999 used this phrase marginalization. And I guess I love that in the same way you do the minutiae of sexism because to me it implies like this sort of subtle pushing aside. It's not anything again that like you can complain about, there's no law to prevent this but you sort of have a sense that it's happening. And then on top of that because you have to spend all this energy and time or because you end up spending all this energy and time thinking about, huh, was that a snub or was that just me? Is that the exception or is that the rule? That adds to the level of discrimination because of course you're spending your time doing that rather than on the job that you're there to do.

It's also one of those things where especially before the terms like marginalization or even before like the minutiae of sexism was introduced, it's I think difficult to see those types of things in yourself. Just like you said, like am I imagining this? Am I not? And so I think that that can make it really difficult to identify larger patterns. And you talk about this in your book too and the introduction of the term sexual harassment helped many people put words to be able to articulate what they had experienced for years. And it was like oh, there's a word for that? But in other cases I feel like there is some resistance to apply by the term to themselves because what they experienced wasn't what they thought discrimination looked like. Do you think that this played a role in the efforts to hold universities accountable for these unfair practices? Just like the disconnect between here's this term that sounds very serious and like oh but my experience is I'm used to this, like this happens all the time.

I think that's definitely true. Nancy Hopkins will say, Nancy says now it took me 20 years to recognize the problem, it took me 15 years to recognize that it was happening to other women, and another five to realize what was happening to me. And that idea of sexual harassment and not wanting to mention that phrase, not really accepting that that's what's happening to you, that definitely played for her because for Nancy sexual harassment meant there had to be sex, right. Someone had to make a move on you and then deny you a job because you hadn't accepted, you hadn't given in. So I think there was real confusion.

I think to your point, it probably insulated universities to a degree because women weren't gonna bring it up and so they didn't have to deal with it. They didn't have to mention it. Sometimes when I've been talking about this book over the last year or so, I'm like oh god, I hate talking about this because it's so hard looking back now. When we talk about unconscious bias now, we talk about sexual harassment and I think there's really an eye roll element to it. People are like oh yeah, I had the training on that, it's not a real thing, I don't have that or it's over hyped. There's like this sense that there's just like an excess of wokeism. But what I tried to do in the book was really explain, really because of that, because I was worried that people kind of roll their eyes and be like yeah whatever, stop your complaining.

What I wanted to do in the book was just show how this day in and day out, how the minutia of sexism, the sort of slow grinding of this really sort of wears down Nancy, wears her down over a period of years to the point that she finally feels like she has no option but to mention it because otherwise she's just going to leave science. And I think the pattern probably was more often that women did leave science. So I think the fact that women were reluctant to talk about sexual harassment actually ends up insulating universities because they didn't have to deal with it, they didn't have to respond to the complaints.

Erin Welsh

Many of the scientists that you write about including Nancy Hopkins, like we've talked about, attributed their own mistreatment and the discrimination they faced to their own personalities or the personalities of those around them. Like oh that's just the attitude on the fifth floor or like I shouldn't have been so forceful in that meeting, so shrill. For Nancy, how did this internalization and also especially the myth of meritocracy in science eventually give way to the growing awareness that this was not just an exception, this was a systemic issue?

Kate Zernike

So this for me was in many ways the hardest part of the story to report and convey in the writing but also the most fascinating and compelling. Nancy starts out really, I mean she's not an activist, she's not a feminist. She really hates feminists, right. Like she thinks feminists are the problem. There are these women who are whining about everything, they are the women who complain about every little thing. She doesn't want to be that person and she thinks science is a meritocracy. Lucky me, I'm incredibly well trained, I'm in this field that is a meritocracy. All I have to do is do my work, get good results, and I can win a Nobel Prize. That's what she thinks. And I like to say the next 20 years is her schooling, right.

But so I had to figure out when, because this is something you're not going to find in the archives at Harvard or even necessarily in her diaries, some of which I had, was this whole idea of like when did she change? When did kind of the light begin to go on in her head? And it really was when she... I think the start of that is when she reads a biography of Rosalind Franklin, who of course was with James Watson, Nancy's mentor, Francis Crick, and Maurice Wilkins. Rosalind Franklin contributed to understanding the structure of DNA. And Rosalind Franklin died tragically young, she died before the three men who she had worked with were awarded the Nobel Prize for this discovery. We now understand that Rosalind Franklin actually did play a real, very important role in this but that was not known at the time.

But Nancy reads this biography of Rosalind Franklin and not only does she realize that Rosalind played this huge role in decoding the structure of DNA but more importantly she sees how the men viewed Rosalind. And this book is written by a friend of Rosalind's and it really describes Rosalind as much more of a human, much more of a well rounded person. And Nancy realizes that like her, like Nancy, Rosalind was very passionate about her science, very driven. She chose not to have children because she was so in love with science. And Nancy reads this book and she thinks oh, this is my life. And she begins to see how the same way that Rosalind was viewed, many of the men around her are viewing her this way. And that's where she kind of... It's not that she has this total epiphany but she begins to notice different things.

First thing she thinks is oh, I'm on this fifth floor at MIT at the Cancer Center at MIT, it's very competitive. It's just that it's too competitive, I have to leave the fifth floor. So she goes to the third floor. Then she discovers that men from outside MIT are taking credit for her work, which is of course the same exact thing that happened to Rosalind Franklin. And so it really is, one of the ways someone describes about Franklin was this slow robbery, right. Like things are slowly being taken from her. And Nancy ultimately leaves her field, she leaves the field of cancer research and goes into a new field. And that's when she goes into studying zebrafish and she tries to get more space for her zebrafish tanks and she realizes she can't get more space. But all the men have the space they need.

So she literally takes out her tape measure and goes around the building and measures all the lab space, all the office space, discovers that she is a fully tenured professor at MIT, has less space than men without tenure. And she begins to complain about it. Then she discovers that her salary is lower. And then there's the final straw that breaks the camel's back is that she co-develops this class with a younger man and suddenly her department head informs her that she's no longer going to be teaching that class because the younger man wants to teach it with another guy. And then she discovers that these men are going to form a company around this course. And as they tell her, they intend to make millions. So it's like this, again, it's this gradual edging out. So this course is taken away from her and she thinks, well again, her default is this must be my fault, this must be my problem.

But then she looks at her teaching evaluations and she realizes no, in fact I get some of the highest teaching ratings in this entire department. There is no way that I'm being pushed out for this reason. It's not a matter of meritocracy. That science, like so many other fields, like life, depends on the relationships you have, depends on who's conferring the merit. We have this idea I think that, I don't know, merit is like gravity, there's some equation that determines it. But of course merit depends on many things. It depends on the context, depends on who's awarding the merit, right. It depends on many different things. So I think one of the great lessons from the book and from the whole experience is that there is no such thing as pure meritocracy because if there were going to be one, it would be science and science is not it.

Erin Welsh

Like I've said, I went to grad school in the 2010s and we have come a long way in academia since this story broke in 1999. But the problem of discrimination, marginalization, sexual harassment, it's still very much present across all parts of academia. And I think that one of the biggest issues is that there are rarely formal channels to share feedback about professors or potential advisors without fear of retaliation. That combined with the fact that professors don't get training in mentorship often, at least like that seems to be the general rule in EEB. What are some of the ways you think we can do better or what are some of the biggest problems that still exist?

Kate Zernike

One of the reasons that we think of science as a meritocracy is because we do have the sense of like oh, it's all about data, it's all about numbers, right. And then in our data loving society there's this whole idea that we can like optimize things, right. And so there is this optimal number and that's the meritocracy when you reach that number. So I do think we have to think about numbers but in a different way. So the way that I think about numbers and how it helps to solve this problem is you just need more women, you just need to keep hiring women. What tends to happen is what happened at MIT in the early 2000s which is that again, as had happened in the early 70s, there was a wave of new hiring of women in MIT. Then the dean who had been sort of very much behind that idea, hire more female scientists, he leaves and again the number sort of plateaus again. So you need people who are... We need to continue pushing for there to be more women because we just have to change the perception of who belongs, right.

So there's a documentary in which Nancy features which some of your listeners may have heard about called Picture A Scientist. And the title from that documentary is taken from this idea that when you ask children to draw a scientist or to picture a scientist, picture a genius, they draw a man, right. When you ask someone to draw a leader, they draw a man holding a briefcase. Like that's our traditional picture. I will say I think that is beginning to change a little bit. And again, one of the ways we change that is just to change the numbers. What happens now is that women come into a field and because most of the prestigious fields in this country have been dominated by men, our picture of who belongs in that field is still a man. So you need to have the numbers so that our picture of that begins to change. And I do think that that's happening. But the other thing I'd like to talk about is the change in really simply our language.

There are really interesting studies done by a woman named Sarah-Jane Leslie at Princeton and Andrei Cimpian who's at NYU. They have looked at the language around genius and the language around when we talk about science and math in particular and who goes into those fields. What they have found is that people tend to associate the idea of genius, the word 'genius', with men. They also tend to think that for scientific fields and particularly for fields that rely a lot on numbers, so pure math, theoretical physics, that to go into those fields you have to be a genius, you have to have some kind of raw brilliance. The ultimate result of this is that women think oh to go into that field, I have to be a genius. I can't do that, that's not me. But if you say to those women this is a field that requires hard work, they're like oh I can do that. So to me, I think just changing our language begins to change the problem. And I again go back to a story about Nancy for this.

So of course I met Nancy in 1999. And one of the first things I noticed about her, which is one of the first things that many people notice about her, is that she has this very slight English accent. And it's because she grew up living close to her grandmother who was from England. But in 2018 I came back to this idea, I was beginning to explore the idea of doing this as a book. And I noticed that Nancy was using the word 'brilliant' a lot and I thought it was sort of like in the way British people, like (English accent) oh that scone is brilliant, the tea is brilliant, it's a brilliant play, whatever. So I noticed that she would talk about these women and she kept saying oh she's brilliant, she's brilliant, she's brilliant. And I thought it was this Britishism. So I asked her about it and she said oh no, no, no, that's not it at all. She said I just started to notice that everyone always refers to the men as brilliant and no one ever says that about the women. So I just decided that I was going to change this and I was going to start referring to the women as brilliant. And I thought that's kind of brilliant.

So I've done this a little bit when I've talked about the book over the last year or so, I'll just go to a bookstore and I'll have people kind of shift their frame of mind and say like look at the person next to you, look at the woman next to you. Just tell yourself she's brilliant. Like imagine how that changes your perspective. So a lot of this I think can be solved by a kind of very basic thought experiment. And I don't think it just applies to science, I think it applies to the question of like why have we never had a female president in this country, right. Like why are most of the women who are leaders in this country, why do they tend to be in the legislature, not in the governor's chair, not in the oval office? Why are, despite the fact that more than half the law students in this country are women, why are there so few women at the highest levels of law? All those questions.

And I think again it is this subtle frame switch that we have to do in our own minds. We have to start thinking when I listen to this person speak, am I valuing what they say more because it's a man? If as I listen to this woman speak, if she were a man, would I be taking what she said more seriously? Would I be thinking this person is a genius, they should do something really extraordinary, they're going to do something really extraordinary? So again, I think ultimately the answer is to get more women into these roles, to have people see the difference and not just the exception, not just one woman, not just one woman who's made it but many, many women. And that of course means that not only do we see that women can succeed but that women can fail just as men do and it's not the end of the world. It doesn't mean that no woman will ever be successful. So then we need more numbers. But I also think it's a matter of shifting the way we look at women and what we think they're capable of.

Erin Welsh

I was curious what sort of reactions you have gotten from this book from women who are in science, women who are not in science, older women in science, younger women in science. Like what's the range of reactions that you get?

Kate Zernike

Well I often feel like I have to apologize to people for their reactions to my book because women, particularly older women will say to me like oh my god, it was so familiar and I had to take pauses inbetween chapters because it felt like my life all over again. And then they're like I love your book! And I'm like sorry. So I would say that in the same way the story resonated for me at the time, I was 30 when I first reported the story for the Globe, in the same way that the story resonated for me, not a scientist, it has resonated for other women in other fields as I knew it would be. I joked when we were talking about the subtitle for the book, maybe it should be The Exceptions: A Universal Story. Because I think as much as everyone thinks like oh no, this just happened to me, it's really happening to many, many, many of us.

Young women have been interesting. I think some young women do have this recognition of how self doubt is grinding them down and they see what happened to Nancy and they want to change things. Other young women think there's been no progress. They're angry. How can you celebrate the progress, which the book does to some degree, like in fact this didn't change anything. I don't think that's true that it didn't change anything. One of the things I'll say is that Nancy in particular has been most struck by the reactions of men who come to her and most often they're like oh my god, I had no idea this was happening. And so these men, which you can laugh at, but you can also say well good for them, like they're now changing their perspective. And so I think she has had emails and conversations with many men who really now have sort of the zeal of a convert around this. And they really do think that this is an important problem to solve.

I think for women in science, I think the problem is still particularly acute. I think we have changed many of the structural issues, like as I mentioned, there was no daycare at the time. So many of those problems we can fix. It's the problems that you can't measure. It's the things that you can't take a tape measure to, those are the problems that are harder. It is the slight, it is the way people talk to you, the way they assume that you're not as smart, the way that they don't expect you to belong in a lab. That's the hardest problem to solve.

TPWKY

(transition theme)

Erin Welsh

Kate, thank you so much for taking the time to chat with me today and for writing this book and for breaking this story back in 1999. Since learning about this story and reading this book, I don't think a day has gone by without me telling someone about it or sharing some outrageous tidbit from it. And if you would also like to have this story preoccupy your thoughts forever, and trust me, you do, check out our website thispodcastwillkillyou.com where I'll post a link to where you can find 'The Exceptions: Nancy Hopkins, MIT, and the Fight for Women in Science', as well as a link to Kate's website. And don't forget, you can check out our website for all sorts of other cool things including but not limited to transcripts, quarantini and placebo recipes, show notes and references for all of our episodes, links to merch, our bookshop.org affiliate account, our Goodreads list, firsthand account form, and music by Bloodmobile.

Speaking of which, thank you to Bloodmobile for providing the music for this episode and all of our episodes. Thank you to Lianna Squillace and Tom Breyfogle for our audio mixing. And thanks to you, listeners, for listening. I really hope that you liked this bonus episode and are enjoying being part of the TPWKY Book Club. And a special thank you as always to our generous patrons. We appreciate your support so very much. Well until next time, keep washing those hands.