

Rashmi:

This is ACM ByteCast, a podcast series from the Association for Computing Machinery, the world's largest educational and scientific computing society. We talk to researchers, practitioners, and innovators who are at the intersection of computing research and practice. They share their experiences, the lessons they've learned and their own visions for the future of computing.

Rashmi:

With 14 years, as the president of the prestigious Harvey Mudd College, our next guest knows a thing or two about engineering. Maria Klawe has spent her career as a mathematician, computer scientist, teacher, administrator, and a vocal supporter of equity in academia and the tech industry. It is rumored that she knows every student on campus by name. She's the recipient of numerous awards, and also has 17 honorary doctorates. Maria, welcome to ACM ByteCast.

Maria Klawe:

Thank you so much Rashmi.

Rashmi:

I'd love to start with the question that I ask all my guests. If you could please introduce yourself and talk about what you currently do as well as give us some insight into what really drew you into this field of work.

Maria Klawe:

I'd be happy to do that. So my name is Maria Klawe, as Rashmi said, I'm in my 15th year as president of Harvey Mudd College, which is a small science and engineering college in Southern California, one of the Claremont Colleges. And before that, I was Dean of engineering at Princeton. And before that I was Dean of science at the University of British Columbia. And I had several positions at the university of British Columbia in Vancouver, Canada. Before that I worked for IBM Research in San Jose. And before that I was at the University of Toronto. So I've spent my career basically, mostly in academia and mostly in academic leadership positions. But also what's quite a lot of interaction with industry, having been at IBM Research for eight years, and then also having been on the boards of Microsoft and Broadcom. And I'm currently on the board of startup called Glowforge.

Maria Klawe:

So the first thing I should say, and we'll probably come back to this, is I actually intended to be a mathematician from my career. I grew up loving Math and Math was not a thing that girls were supposed to be good at at that time. And I think that's where my passion for equity, diversity, inclusion and equity in all STEM fields stem from, because everyone at that point would say to me, "I don't see what you want to be a mathematician." Even though they knew I was really good at Mathematics. But they would say, "There are no great female mathematicians. You're

so good at lots of other things. Why don't you do something else?" And I happened to be extremely stubborn as are both of my children, I will just say. And so the easiest way to get me to do anything is tell me not to do it. So of course I stuck with Mathematics and I ended up getting my PhD in Mathematics

Maria Klawe:

At the time. Both of my parents were academics. My mother was an economist and my father was a cartographer and I had always loved teaching and I love doing research. And I just assumed that I would be a professor in, started as an assistant professor at some university somewhere. And I did know that there were lots of people on the job market, in the field of pure mathematics. And I knew that there were not a lot of positions, but of course I assumed that didn't really apply to me. And sure enough, I got a tenure track position at a University of Michigan, about 25 miles North of Detroit called Oakland University. And moved there and was really stunned to discover that I didn't like being there. So it was mostly a social thing. I was single and I had one date in the entire time I was there and with somebody I didn't like. I mean, there was just no social [inaudible 00:04:01] whatsoever.

Maria Klawe:

And I was teaching student multi-variable calculus and linear programming, things like that to students who literally could not add fractions. And this is not a description of Oakland University today. Let me say it's come a long way from those days. But there had been some issues. Then they changed their admission standards and all of a sudden the students were not very strong. And so one of the ways I coped with being there was to spend a lot of time at conferences. And I just discovered through that, that there were people that were doing the kind of Mathematics that I had moved to do when I went to Oakland, which was discrete Mathematics, who actually were in Computer Science Departments and that the job market was crazy. And so as a result, I decided I would get a second PhD in Computer Science. And that would mean that I could be a faculty member at, for example, a Canadian University or a top university someplace else.

Maria Klawe:

And I've spent my career at the interface of Mathematics and Computer Science, and I feel incredibly lucky to have had that opportunity. I've been heavily involved in professional societies and research institutes and so on, on the Math side, but also on the Computer Science side. And I think one of the things that became very obvious to me in the 1980s is that the number of women in Computer Science were dropping and there weren't the same kinds of activities that they're ready were in Mathematics, just to encourage women in Mathematics. So I just sort of, it was obvious to me that I need to start a number of organizations to try and encourage more women to enter and stay in Computer Science. So I was talking to a student with whom I'm currently working with on discrete Mathematics.

Maria Klawe:

And we're loving doing it, and it's just being incredibly productive. And he said, "I just can't understand since you love doing Math so much, why you went into administration." And I said, "It's because I want to change the world. And it's much easier to affect change when you're actually in a leadership role." And I think one of the important places to affect change isn't academia because academia affects the pipeline. I mean, if we don't graduate more women in Computer Science, it's very hard to really increase the numbers of women in the tech industry. But I've also been involved in the tech industry and trying to move things there. So I would say I love both Math and Computer Science. I still love research and teaching. And I love being an administrative leader because it allows me to be more impactful in terms of creating change.

Rashmi:

Thank you for that introduction. And for that history, it really sort of adds color to the decisions that you've made and the path that you've taken. I'd like to go back to the point where, I mean, when you had a very strong motivation to leave the Math world that you had created for yourself because clearly your social life was being impacted tremendously. But when you entered the Computer Science world, whether it was to choose, I know you were, you were pursuing a PhD in Computer Science when you found a position that clearly the jobs were there, but did you find that that transition from Math to CS was fairly seamless and the number of women there I'm guessing was still very low. You didn't have a whole lot of role models, I'm guessing, to look at and say, "Okay, I want to be like that person."

Maria Klawe:

So the first thing I'll say is it definitely wasn't seamless. I entered graduate studies in Computer Science at the University of Toronto taking five graduate courses per semester, never having written a line of code or taken a course in Computer Science. And of course for the theoretical Computer Science courses, that wasn't a problem because I have had a very strong background in Mathematics. But I was taking things like compilers and operating systems and all of this programming language, all of these kinds of things where I had absolutely no background. And so the first three weeks or so, I didn't have a clue what was going on in any of my courses, other than the theory ones. But I just was determined. And I literally worked seven days a week, from 7:00 AM, till midnight, every single day. I did nothing but work. And by the time I was sort of four weeks in, I was starting to understand things pretty well.

Maria Klawe:

And I got pretty much straight A's in all of the courses I took. And by the time I... And I was also teaching introductory Computer Science. I think I didn't start teaching until my second semester, but I started teaching introductory Computer Science. And within... By February, I was getting invitations to apply for Computer Science faculty positions in Canada. And I went to interview for one of them. And when I came back, there was a message from the department head at the University of Toronto that I should call them right away. And I did. And he said, "Maria, I heard you went for a job interview." And I went, "Yes." And he said, "We have positions here at the University of Toronto. Why haven't you applied?" And I said, "Because Toronto is one of the top

10 departments in the world, and I'm just making this transition." And he said, "There better be an application on my desk by 9:00 AM on Monday morning." And so they hired me.

Maria Klawe:

And there's a lot of things. There are different within Computer Science and Mathematics, even in theoretical Computer Science. I mean, people make different kinds of presentations at conferences and seminars. So computer scientists, theoretical computer scientists and Computer Sciences in general are much better at motivating the audience about why they should care about a result. It's not uncommon to go, or at least those days, it wasn't uncommon to go to a Math talk where the person says, "Let F be a function from X to Y ." There's no motivation whatsoever. I mean, it just [inaudible 00:10:21]. And there were things I liked better about Computer Science than Math and things that I liked way better about Math than Computer Science. But probably the most important thing that happened in my first, let's say three months as a faculty member at the University of Toronto is that the department put me in charge of a seminar series because they thought that I was going to be this incredible success in Computer Science.

Maria Klawe:

And they wanted me to meet famous people. And the first person I invited was John Backus, who was an IBM fellow at that time, who did very well known for his work on programming languages, particularly functional programming. And the second person was somebody also from IBM Research just by coincidence, was a person named Nick Pippenger. And he was a theoretical computer scientist. So actually in the Math Department at Yorktown Heights at that time. And the bottom line is that let's say six weeks later, we're engaged to be married. In spite of the fact that he was only there for a couple of days and then went back to New York and this is one of these things. So we've been married for 40 years and that's how I ended up joining IBM Research. Nick was incredibly shy when I first met him. Absolutely brilliant, but incredibly shy.

Maria Klawe:

And if I'm grateful to anything about having made the move to Computer Sciences, I probably never would've met Nick without making that move. And the fact that I met someone who, and we [inaudible 00:11:54] have children together, and we have worked together at the same institution for our entire career. So I joined IBM Research and then we both moved to the University of British Columbia. And then we both moved to Princeton University. And now we're both at Harvey Mudd College where Nick is a professor in the Math Department. And I think that the ease of being able to do that, a lot of that was because when we were young, so I was 28 and Nick was 32, when we married, there weren't enough theoretical computer scientists to meet the demand. And what that means is that as we became more senior, there were never enough of us to meet the demand. And so it was always very easy for us both to get positions wherever we were going to move, because everybody wanted more leading theoretical computer scientists of the age we were. And there we were. So it was very lucky.

Rashmi:

I mean, that's such an incredible story because I think the way you also describe it is that the blending or the merging of our personal lives with our career aspirations, finding that part and sort of having those two converge is definitely the way to sort of continue to have a fulfilling life, so to speak. But one of the things that you mentioned about being theoretical computer scientists and the fact that you went into industry, where did you find areas of research that were most relevant or most interesting to you in the engagement between industry and academia, is well known. I mean, that it's super critical for the success of both. What are your thoughts around that?

Maria Klawe:

So at the time IBM Research and the group that we ended up starting at IBM, San Jose Research was one of the top places to do theoretical Computer Science, any place in the world. And we were doing exactly the same kind of research. So just basic research as we would have done if we were at Berkeley or Stanford or MIT. And so one of the things that seems to happen is that various companies will start a research division, where they will enable people to do groundbreaking research that's entirely basic, that doesn't necessarily have an immediate application. And they sort of use that as a way to attract more people with PhDs, whom they would like to bring in, but persuade some of them over time to do more applied research. So at the time when we moved to IBM Research, the two top places at the time to do theoretical Computer Science, where Bell Labs and IBM Research. Today, it would be for theoretical Computer Science, so it would be Microsoft Research.

Maria Klawe:

The Microsoft Research is itself becoming more applied as time goes on, and who knows who it will be two from now. So at the time the research we worked on was, we had a research seminar called BATS, Bay Area Theory Seminar. And it rotated between Stanford, Berkeley, Xerox PARC, and IBM Research San Jose. And we would have faculty members from university, particularly Stanford or Berkeley, but occasionally Santa Cruz as well, visiting the lab. We would have graduate students for those departments visiting the lab. And we would also have researchers from IBM going to spend time in those universities as well. So during the time we were at IBM Research, Nick and I spent, I think it was 1984 attending a research semester at the Mathematical Sciences Research Institute at Berkeley, that was on Theoretical Computer Science. And we also spent another semester, two days a week at Stanford attending an analytic number theory course.

Maria Klawe:

So it was very much working Theoretical Computer Science programs are all motivated by either trying to find algorithms to solve various kinds of problems or prove to complexity theory, proving that you can't find a linear time algorithm or polynomial time algorithm, or whatever for

various kinds of problems. And so we were doing the basic kind of research we would have been doing at any university department at the time.

Rashmi:

Got it. Do you see that that level of engagement that you, given the exposure that you had and the close connects that you had between the two streams as well, do you see that happening today and are there any pros or cons to how things are in industry and academia today?

Maria Klawe:

So it definitely happens to a certain extent and the different companies, if one looks at sort of the companies that have people working in these kinds of areas. So probably the hottest area in terms of interaction between industry and academia right now is machine learning, AI, data science, those kinds of things. And every major company has people working in those areas. And every major Computer Science Department has people working in those areas as well. And so the areas of where there's lots of interaction changes over time. But I think the level of interaction continues and it's for all kinds of reasons. So one of them is often industry wants to recruit PhDs or graduating students, bachelor's degrees from top institutions. And one way of doing that is to have a relationship with them, a good way to do it is for instance, to have somebody from industry who's actually teaching a graduate course or an undergraduate course there, or is actually partnering in research.

Maria Klawe:

So it feels to me like it's pretty similar now to the way it was in the 1980s when we started doing this, but it varies also greatly by country. So when we left IBM Research to go to the University of British Columbia, and that was partly a family issue and partly a desire to go build a top Computer Science Department in Western Canada. And the family issues was that our children were three and six, and I really wanted them to go to public school. The Canadian public schools are an average much better than the US public schools. I wanted them to go to school in French immersion because French was a very important language. It was the only language my parents had in common when they first met during world War II. And so sort of everyone in our... my sisters and I all learned French and have maintained fluency in French because of that.

Maria Klawe:

And I wanted our children to have that. But also my parents lived in British Columbia and they were getting older. And so I wanted a chance to be closer to them. So for all those reasons, we made this move and I sometimes call it the most idealistic decision ever made because we took a salary cut literally a 50% for each of us to go do that. And at that moment in time, living in Vancouver was more expensive than living in the Bay Area. but it was a really... I have zero regrets. It was very good for our children. It was very good for my parents. It was good for Nick and for me. But one of the things that was completely different at that time was there was

basically no... So IBM had a lab in Toronto called the IBM Toronto Lab, but that was the only anything remotely resembling research that it had in Canada.

Maria Klawe:

And it wasn't anything like the research labs that it had in the US. And IBM actually paid our salaries to cover their salaries for the first year that we were at UBC, which allowed us to actually get a major grant from the provincial government, because it counted as a gift. And the provincial government had a matching gift program. And as part of the arrangements of making that happen I had agreed that I would work with IBM Canada to establish much closer relationships between industry and the Canadian academic Computer Science Departments. And so one of the things I did in my first year was to form a new organization, which is the Canadian Association of Computer Science, and then followed by... So it's called CSAC, call it, followed by the French version of saying the same thing. And we brought together 56 departments to do that.

Maria Klawe:

And we established a really excellent collaboration was IBM Toronto. And so now there's a lot more, partly because of the immigration situation in the US, a number of companies, certainly, Microsoft but others as well, have established research labs in Canada. Well, R & D labs in general because of the difficulty in getting H-1B visas and allowing people from other countries to come into the US and Canada has been happy to partner with those companies because Canada has always had an immigration system that focuses on skills. And so the kinds of technology skills that people would bring to go to one of these R & D labs is somethings that Canada would definitely welcome. So one of the things that was of great value having spent time at IBM Research was being able to take that sort of attitude towards collaboration between academia and industry into Canada at the time.

Maria Klawe:

Now, the other thing I'll say there were a couple of other enormous benefits about having had the good fortune to go to IBM Research when we did. The first one was that it was a very good place to combine having children while continuing a research career. And one of the things that's super hard, I would say in academia is if you have your children, pre-tenure, you're under a lot of pressure to publish and to do well with your research. And at IBM, all I had to worry about was continuing to do well in my research, but also they had pretty supportive maternity leave policies compared to the situation at that time in academia. Of course, things have changed, maternity and paternity leave policies are much better, both in industry and academia in Canada than the US today than they were back when our kids were born in 1982 and 85. So that was one thing. And by the time we moved to the University of British Columbia, I went as not only the chair of the department, head of the department, but as a tenured full professor.

Maria Klawe:

And I was the first female professor ever in the Computer Science Department at UBC, the first female department head at UBC and only the fourth female full professor in the faculty of Science at UBC. So just having had that time at IBM to have my children, establish my research reputation was enormously helpful. The other thing that was really helpful was I decided to try to start a new research group in Discrete Mathematics after I'd been at IBM for three years. And it took me a year to convince management to go ahead and do it. So after four years, I was the manager of this Discrete Math group. And after one year doing that, I was made the manager of five groups. So manager of a department that had five research groups in it. And one of the things at that time, and I think still today, the professional development for people who become managers in industry is so much better than in academia.

Maria Klawe:

And so I had the benefit of a lot of that training, and I think that that really helped in moving through positions in academia. And there are today programs to train people, to become department chairs and deans in academia, but there weren't at the time when I became the leader of a department and then a Dean or vice president and all of those kinds of things. So I think the benefits of going to industry early in my career were just, there turned out to be really huge, both in terms of being able to have children, to have connections with industry for the rest of my career, that turned out to be really valuable. But then again, that the professional development was fantastic.

Rashmi:

I think you've beautifully woven together both the learnings as well as the opportunities that you had in both these streams and sort of helped it fuel your career forward. But going back to the point that you made earlier about having held all of these positions as the first sort of female person to have held it, no conversation would be complete without mentioning that you were also the first woman president in the history of Harvey Mudd. When you took on that job, did you sense how momentous of an achievement that was as a female role model for anybody who was aspiring to that role, or did it feel like just another job transition for you because you had had so many firsts already? What kind of glass ceilings did you feel you had to break to make that role change?

Maria Klawe:

So as you said, I was the first female Dean of Engineering at Princeton, the first female Dean of Science at UBC, the first female vice president in any area at UBC. So I've been in that position a lot. So when Harvey Mudd approached me, the only reason I actually read the brochure that they sent about the perspectives was because they had an incredible reputation for innovation in Math education. Now, actually they had a reputation for innovation and all kinds of education, STEM education, but I know a lot more about innovation in Math education and Computer Science education than some other areas. And so I read the brochure and it just sounded like the things they were looking for in their next president sounds exactly like me. So I showed it to

my husband, Nick, and he read it and he said, "Yeah, but we're not moving because we just got here." Which was true.

Maria Klawe:

At the time they started recruiting me, I'd been there for two and a half years. He'd been there for two years because he delayed his move in order to let our daughter Sasha finish high school before he moved. And I sort of said, "Yeah, but we really want to move back to the West Coast." And there aren't that many institutions we'd be interested in moving to. And he said, "Fine, send them your CV and tell them you're not a serious candidate." Which was exactly what I did. And so the entire time I was in the search process, I didn't think I was going to move to Harvey Mudd College. I mean, I really didn't and they made the offer and I basically told them I was going to stay at Princeton. And if you want an answer right away, I know I'm staying at Princeton. If you're willing to wait three weeks, which is a long time in a presidential search, then we're going to be going to our place on Pender Island in British Columbia, which is a neutral space.

Maria Klawe:

And if you're willing to wait that long, I'll think about it. And they were willing to wait that long. And even once we're on Pender, I was sure we were staying at Princeton. And literally 10 minutes before I had to do the phone call with the co-chairs of the search committee to give them my answer. I'm sitting painting at the kitchen table in our cottage, looking out at the water it's drizzling, it's gray, it's like that in December and January and post to the winter in that part of British Columbia. But anyway, I'm looking out and the clouds part and the shaft of light hits the water. And I go, "Oh my goodness. I'm about to miss this magical opportunity." And so I asked Nick if it was okay if I said yes. And he said, "Yeah." Because by then he found the students of faculty at Mudd so compelling that he actually really wanted to move.

Maria Klawe:

But since I will be going to this presidency, he wasn't going to push for it. So I said, yes. And so the fact that I was going to be the first female president really didn't strike me as anything peculiar because I'd been the first female forever. But I think after I actually got there, it was more challenging than I thought. And particularly challenging, I think for dealing with some of the people on the board who I think it's not so much that they weren't used to having a female in the role, they weren't used to having a very outspoken, stubborn female in the role. It was just not what they had imagined happening. Let me put it that way. And there was a first few years were pretty challenging. There's just no question. But I think one of the reasons I said yes was, one of the things I feel very strongly about is that different societies have different images of gender and of race and of all these kinds of things.

Maria Klawe:

And it's really important to me that we be able to demonstrate that gender and race and religion and sexual orientation, all of these kinds of things have nothing to do with whether somebody can excel in any discipline. And I thought that Mudd could demonstrate that in fact people

could... We have a very rigorous education. And I thought this is a place that because of the dedication of our faculty and our staff towards supporting and engaging our students, we could show that women could be just as successful, that people color could be just as successful, that people from low-income backgrounds, that these things just aren't important. And that really has been... I mean, that's the reason I'm still at Mudd 14 years later is that we were pretty successful with women fairly quickly. I would say the first six years or so really demonstrated that. But it took longer for us to be able to recruit more students of color.

Maria Klawe:

And we have now demonstrated that students of color can also thrive at Mudd as well and be very successful. So it's one of these things, at the time when Mudd reached out to me, I really thought there was no chance I would be going there. But now that I've been here for this long, and Nick feels the same way, we're super happy we made that decision.

Rashmi:

I think the fact that you say the pursuit of excellence should be gender, race, economic status, sexual orientation, agnostic is such a powerful statement. I think in many cases, I would say I'm hoping that a large part of the world or people in positions of power do feel very strongly about this and do feel like they want to make their institutions or their organizations as equitable as possible, but not everybody is able to walk the talk if you will. And I know for a fact that, you've been able to make tremendous strides at Mudd since you've been there. Would you care to share some philosophies or methods that you've used that have been effective to make that change? And also how did you approach this problem? Did you gather data and approach it in a manner similar to that you would any Mathematical or Computer Science problem? How did you go about this?

Maria Klawe:

I think probably everybody knows this, but presidents don't actually do anything by themselves. I mean, they fundraise that they pretty much do, they recruit people to their board, but yeah, the actual work of changing culture at an institution that's done by everybody, it's done by the faculty, staff and students, it's the entire community and also involves the alumni. So one of the fortunate things that happened when I went to Princeton was that I had agreed when I was hired that since I didn't know enough about the details of the budget for the Engineering School, to be able to say, "I want \$300 million, this many positions, this many buildings." All those kinds of things, not surely, Tillman and I had agreed that the Engineering School would do a strategic plan and that if the entire university and the board of trustees endorsed it, that then that strategic plan would become a significant part of the fundraising campaign that they were getting prepared to do.

Maria Klawe:

And as a result, when I came, we had to come up with a process that was going to be successful and broadly engage the university, not just the Engineering School. And together

with a small group of people, a couple of associate deans, we came up with a process that was extremely engaging and came up with a strategic vision that in fact, even though I left two and a half years after that vision was launched, the Engineering School stayed with that vision for the next eight to 10 years. And so we used a very similar process when we got to Mudd to engage the entire community in thinking about what was important for the future. And one of the reasons that the search committee had, they really wanted somebody who could work with the community to create a strategic vision, and then use that as the basis for a fundraising campaign.

Maria Klawe:

And so we did the strategic planning process. It took about six months and we actually launched the strategic vision at the time of my inauguration. And it had six themes. Most of the themes were sort of obvious things for a STEM school. So innovation, leadership, and impact in Science and Engineering, a focus on experiential learning and experiential and interdisciplinary learning. Those were two things that Mudd has been known for since it was founded. The third one was unsurpassed excellence and diversity at all levels. And the reason for the third one was that when I arrived and started talking about diversity and inclusion, a lot of people said, "yeah, but you can't recruit more women and people of color because you'd have to lower standards for them to succeed." And so we did manage to get it as a theme, but we put this unsurpassed excellence in front of it so that it was very clear, we weren't going to lower the standards.

Maria Klawe:

So the next one was nurturing and developing the whole person. So one after that was global engagement and informed contributions to society. And the final one was ensuring that we have the resources to achieve the level of excellence and community to which we aspire. So that was really the one about making sure we did the fundraising to actually make all the other pieces work. And so that was how we got the community engaged in wanting to do this. After that, of course, we started studying what we actually needed to do to both bring more women here and more people of color, but more importantly, to make them feel engaged and supported. And I would say in general, it is so much easier to actually recruit people than to make them feel, have a sense of belonging, to make them feel as supportive and become as successful as the dominant majority.

Maria Klawe:

And I would say to a certain extent, yes, we read the literature, but a lot of it was also doing basic research and trying things and trying to understand what was more successful and what was less successful. So the Computer Science Department, which was the first department to really significantly increase the participation of women at Mudd, they were at about 10 to 15% female in the Computer Science major before I arrived. And they'd already started thinking about it. And so they looked at what had been done at some other institutions that had made progress. One of them was Carnegie Mellon. The other one was the University of British Columbia, which was work that I had led there. And both of those places had done things like

revise their introductory Computer Science course, create activities to create a sense of confidence and belonging among their female students and faculty, changing their hiring practices to try and recruit more female faculty.

Maria Klawe:

At UBC, they had particularly focused on adding joint majors between areas like Biology and Computer Science or Psychology and Computer Science, where the other area already had a lot of women in it and had seen a fair amount of success from that. So they both learn from the experience of other institutions, but they also tried things for themselves. And I think that this is one of the... If you think about how one does research, that's exactly what you do. You read the existing papers and you're working on a problem that has not been solved before, but you try to learn from similar problems that have been solved, but you also try lots of different approaches that might solve the problem for you. And one thing I want to mention is that the Computer Science Department had actually started working on trying to attract more female majors a year before I arrived as president. So before I was even beginning to be recruited as president.

Maria Klawe:

And the person who was department chair at the time when I arrived, he retired recently and he dropped by to say hello. And he said, "Maria, I just want to tell you that you were really smart when you came to Mudd, we were already busy doing this and you didn't interfere. You just gave us money from we needed it [inaudible 00:37:46]." And if I had interfered, they needed to own it. And so I think one of the most important things that when you're president, you have to let the community own the issues, because if it's your thing, first of all, you're not going to be president forever. So you're going to leave. And if it's... Unless the community owns it, it won't continue. But the other thing is the people who are doing the day to day work, they have a much better understanding of what the issues are.

Maria Klawe:

So part of the success at both Princeton and at Mudd is because we did the strategic planning initiative and got so many people involved, the things that they chose to focus on in the plan, it was owned, not by the person who led the planning but it was owned by the people who actually had to do the work.

Rashmi:

Maria I think what you talk about is the hallmark of a great leader because you unblock your team and then you get out of the way and let them sort of charge forward. And truly, this sounds like a movement of the people, and that's probably what led it to be as successful as it was. But one question I do have is, in the current state that we're in with the pandemic and all of the challenges that the world is facing, that is a sharp focus on the fact that women in tech numbers are taking a beating because there are so many different factors for it, but there's a very draining impact, whether that is enrollment of students or it is entrepreneurs and the kind of women's small business owners, especially that are taking revenue hits and operational

challenges. Does it bother you? Does it dishearten you? Do you feel like there's been some amount of reset. How do we go forward from here?

Maria Klawe:

The biggest thing, problem about the pandemic and the situation for women is we have so many families that either have children at home that would normally be at school or in daycare, or have elders who need care, who need a lot more attention from their adult children than they normally would. And the problem in the society is that that falls very disproportionately on the shoulders of women than it does on men. So as many people have said, pick the right person to be your partner, pick somebody who is really going to share the responsibilities of taking care of children or taking care of your parents or any of those kinds of things. And I am hopeful we will eventually have a vaccine. There's no prediction for when we will have a vaccine. I do think that one thing that is going to be more prevalent forever after, or at least for the next decade after this pandemic, there will be more people working from home and there will be less travel.

Maria Klawe:

So for example, I have not flown in an airplane for seven months. Before this, I was typically flying across the country or up and down the coast every week. And I was literally gone half of the time. And part of that is I serve on a lot of boards and committees and this, that, and the other thing. Part of it is I give a lot of talks. It's become clear to me that it's totally unnecessary to be in that many airplanes at airports. It's still possible to interact with people in productive ways without all of that travel. And so that's actually something that I know there are certain kinds, obviously I didn't travel like that when my children were small because I needed to be... I didn't want to be on the road that much. But they're now grown and so on. And one of the reasons I traveled a lot is because I want to see my grandchildren in Manhattan. But I think that the biggest thing that's causing the reset right now is children not being able to go to school and not being able to go to daycare.

Maria Klawe:

And I believe that children will eventually return to going to school and to daycare, that that will happen. It's very depressing to see the uptick in infections, moving across many, many States. And to me, it's very depressing to see that people don't wear masks regularly. I mean, from my perspective, there is absolutely no reason not to wear masks when you're outside or indoors, but you're outside your house. So I do believe that we will eventually get children back in schools and back into childcare. And when that happens, I think the other changes, so namely being able to work from home and not having to travel so much actually will benefit women in tech. I think that actually working in technology is one of the best possible careers one can have right now. So of all of the vast majority of our graduates from Harvey Mudd are either going to go work in the tech industry, or they're going to go to grad school on some area of Science or Engineering.

Maria Klawe:

And our students that graduated in 2020 have done just fine. If they had offers from industry on this, all of them are still, are working for that company remotely, almost certainly, but they still have their jobs. They're still being paid well. For the students going to grad school, very similar situations. So the only part of the economy that is really, has not seen major problems is the tech industry. And so I actually think the tech industry is going to probably be an even better place for women to work than it was before. And the other thing I think is that given the economic downturn, I mean, one of the things that happens in times of economic distress is that people pay more attention to areas where they might be able to get a reasonable job after they graduate. And I think that's going to help us attract more women into fields like Engineering and Computer Science, Data Science, because those are the areas that are going to be tremendously in demand.

Maria Klawe:

And so, okay, everyone teases me that I'm the eternal optimist. And I just say right back to them, "Well, all the data shows the optimists are more successful than pessimists in their careers." But I really do believe that this reset that we're seeing right now is going to be temporary and the women are going to continue to move forward and succeed at the highest levels in industry, particularly in the tech industry.

Rashmi:

I love to share your optimism and I'm super excited about the prospect as well. I know for a fact that organizations are doing the best they can to accommodate all of these changes that are coming our way and are trying to be mindful of all of the changes and all of the difficulties that employees are currently facing irrespective of gender or any other challenges that they might face. Do you feel like there are other more initiatives that people in industry like myself or my organization or any practitioners, our listeners in this channel are mostly practitioners. What can we do to actually make a difference for people who may have been impacted more than us? The people in the tech are clearly slightly less impacted by this entire situation? What more can we do?

Maria Klawe:

So the thing I would say is that... So I'll just mention an initiative that is being led by somebody who I'm actually going to talk to later this afternoon, Sathya Narayanan, who's a professor of Computer Science at Cal State Monterey Bay. And I think one of the things that's really important is to provide opportunities for people who come from groups that are underrepresented in the tech industry, gives them the opportunity to have internships and to be able to graduate with a Computer Science or Computer Engineering degree in a reasonable amount of time. So one of the things that happens is California obviously it has the UC system. It has the CSU system, the California State University system, and it has the community colleges. And if I think about the quality of students at those three institutions, the thing that I can tell you is the very best students that start out in community college, they will then transfer

to UC or CSU system. And the very best students who graduate from CSU system, they are just as good as the very best students who will graduate from the UC system.

Maria Klawe:

But they typically come from lower income families. And they're usually not going to have the same kinds of opportunities to get involved with research as an undergraduate that would get them into a graduate program. It's also the case that they won't have a CSU or a community college, they won't have the kind of resources in terms of career services that would give them training for any interview with a Google or Microsoft or Facebook. So one of the things that Sathya is working on is basically putting together a way to recruit students, underrepresented minorities and female, but also say whose parents are farm workers. I mean, we all know that California has a huge amount of people working agriculture. And the children or people working, typically those are migrant workers and their children will end up going to community colleges or CSUs. Very few of them will go to the UC system.

Maria Klawe:

So one of the things he's trying to do is to put together an initiative that would give those students mentoring, would give them training for applying for internship interviews, all of the kinds of things that you get, if you were to UC or a place like Harvey Mudd. And so what I would love to see our tech industry fund is to put support towards programs that will allow students who are going to Cal Poly Pomona or any of the Cal States, and really gives them an opportunity to get industry internships. But also an opportunity to think about going to grad school in Computer Science, because yeah, there's just no question that the people who are hardest hit by the pandemic are often, both in terms of deaths, but also in terms of just economic challenges, are the people who are at the low income end of the spectrum, and also particularly people of color as well. And those two things overlap a lot.

Maria Klawe:

So for people who are listening to this, there are lots of efforts trying to make sure that we give opportunities to people from these backgrounds. I think it's also very important to enable people who got a bachelor's degree in something else, Biology or Agriculture, or Psychology, the opportunity to retrain in Computer Science. And there are a number of programs that allow people to do that, support people doing that because the truth of the matter is Data Science, Computer Science technology is invading every part of society and people are going to have much, much better careers if they have the opportunity to learn some Computer Science or Data Science and combine that with whatever discipline they already were trained in.

Rashmi:

I think that's excellent advice and actionable too. So thank you for sharing that. I think it's super valuable to all of our listeners. I'd like to close our conversation. A little birdie tells us that you're a prolific painter and you paint during meetings to help you listen better. Please tell us more.

Maria Klawe:

Well, I have always painted, when I started my career as a mathematician computer scientist, for many years, I didn't tell people that I was a serious painter because I thought it was weird enough that I was a female. And that if I admitted that I was also a watercolor artists, that people would be even more suspicious about whether I was as serious as a mathematician or computer scientist. And then on my 40th birthday, so I'm now 69. So this is 29 years ago. I decided to come out of the closet and I framed 13 paintings and hung six in my department chair office at UBC, and the other seven in my home where we hosted a lot of functions for the Computer Science Department. And when I became Dean of Science, so typically the time that I have painted during my life has been on weekends. And when I became Dean of Science at UBC, it turned out that there were a lot of meetings for deans on weekends.

Maria Klawe:

And so I decided that, yeah, I was just going to start painting at these meetings because it was so frustrating that my painting time was going away. And what I discovered is there were two things. One is that it kept me much quieter because normally I have a lot of ideas and I tend to be the first person to suggest something. And then I want to say something else as well. And so just the fact that I was painting that it much less likely that I was going to feel the need to say something. And that was greatly appreciated by lots of people there. And then it also sort of turns out that people like to sit beside me because for people who are sort of nervous and antsy, the kind of people who rock their chair or whatever, they find it calming to sit beside me when I'm painting. So it seems to be a very good addition, both for me, but for other people at the meeting.

Rashmi:

Amazing, an artist, an activist, administrator, I mean, this has been an absolutely fascinating conversation, Maria, thank you so much for taking the time to speak with us at ACM ByteCast.

Maria Klawe:

It's been my pleasure Rashmi, and I look forward to meeting you in person sometime soon.

Rashmi:

Likewise. Thank you.

Maria Klawe:

Bye.

Rashmi:

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