# Kumar Garg: “History Has Its Eyes On You”
## Season 1: Episode 7

Speaker 1: Welcome to Stayin' Alive in Technology, a series of conversations with Silicon Valley veterans touching on war stories from the past and practical advice for today. And now, here's your host, Melinda Byerley, founding partner of Timeshare CMO.

Melinda Byerley: Twitter is often a place where you can be surprised by the things you run across. And one day in my feed, I saw a share of a whiteboard that had been posted in the Obama White House in the Science and Technology Office. And that whiteboard lived in the office of a man named Kumar Garg. I had never heard of Kumar. I did not know him. But I was so interested in the thoughts that were expressed on the whiteboard. And even more so, I was impressed by how Kumar was genuinely curious about the reactions of everyone to the messages on the whiteboard asking each of his respondents which message resonated with them most, and so on.

Melinda Byerley: And he actually, when he posted that post, he only had a few thousand followers and I asked him if he'd be willing to be on the podcast, and within days of that he had 10s of thousands of followers. So, clearly, I was not the only one with whom that post resonated. And Kumar's stories of the Obama White House have a lot in common with a startup, which is why I asked him to come on the podcast. That team had limited time and resources and, let's face it, a pretty firm deadline for getting accomplishments.

Melinda Byerley: The real difference is that in public service, the team has to plant seeds, as they say in the musical Hamilton, for a garden they may never get to see. In the world we live in today, with the excesses and the abuses of the Trump administration, I found Kumar to be a hopeful, generous spirit. He's a reminder of the value of smart and thoughtful and dedicated public servants. He could've done anything with his fancy law degree, but instead he chose to help science and technology reach more people, especially young people.

Melinda Byerley: I also believe on this exact day as I record this introduction, that Kumar has a compelling personal story to tell. He's an immigrant who came to America as a middle school child with his parents and he has spent his life improving America's relationship with science and technology at a moment when we need it more than ever. I hope you'll enjoy learning from him as much as I did.

Melinda Byerley: Welcome back to the next episode of Stayin' Alive in Tech. I'm your host, Melinda Byerley, and as I explained to you in the introduction, I am very excited to welcome Kumar Garg to the program. Kumar, I've given the audience your background in the introduction, so we can jump right in. Welcome.

Kumar Garg: Great. Hi, everybody.

Melinda Byerley: So Kumar, I always like to go back in the time machine a little bit with everybody to get started. And I read in your commencement address to Harrisburg University last year that you came to the United States with your parents in middle school. And I thought it would be interesting to our audience for you to talk about that a little bit, where you came from, where you landed, and what that was like.

Kumar Garg: Yeah. So I was born in New Delhi, India. I lived there until I was eight years old and then moved to Britain, where I spent three years. Then I came to New York at the age of 10. When you leave at eight, you actually have a pretty strong memory of where you were born. So I have lots of fond memories of my grandparents and growing up as a very small kid in India. And my parents really, they were both doctors.

Kumar Garg: My dad was one of four brothers and four sisters. And he was, as the one who became a doctor, he both through reading a lot and working really hard was able to get a really good education. It was really on him to provide a lot of the financial support. My grandfather passed away at a pretty young age right before I was born. And so he really felt like he needed to step up and part of that meant that they started to look about whether they should go abroad where there were more opportunities. So, both for that family obligation and then also his two young kids, they moved. First to Britain and then to the United States.

Kumar Garg: So I have all of these funny memories of first being in Britain where I didn't know much about the country. My English was ... In India, you

learn English as a second language, so I could definitely read and write. But it was not conversational English and I think I remember the teacher saying I didn't speak a single word in the classroom for about three months. Like, just kind of went mute for a little while. Just kind of shocked. And then eventually just sort of totally converted to English. So it was like a classic immersion story. And then, I was in Britain. And I didn't realize that it was ... We were kind of in a far suburb so it was a pretty rural area outside Birmingham. And then moved to New York. And sort of showed up in sixth grade.

Kumar Garg: Now looking back at it, I think the first couple years were a little bit painful to transition because I ... One thing was, I picked up a little bit of a British accent which, I think, my new sort of New York classmates found kind of funny. And I was like ... And one thing you pick up in Britain is being extra friendly, which can definitely get you beat up in a public school. And then the other thing was just that everything felt a little unfamiliar. I didn't know any of the sports teams. I didn't know ... Luckily I sort of caught up by watching tons of TV. But-

Melinda Byerley: What shows did you like the best?

Kumar Garg: If I can remember ... I just watched ... I basically watch a lot of the sitcoms like Fresh Prince and sort of everything that was on. And my parents weren't paying super close attention, so I kind of overloaded on just watching sitcoms. So everything from Full House to ... And this is like you're in middle school, so basically as long as you can keep the TV on, you'll watch.

Kumar Garg: So, that was my crash course. And then, I had the benefit of ... We were in Yonkers in middle school and one of the teachers actually pulled my mom aside and said that I think he's doing okay in school, but he seems a little bit detached from it. I don't think necessarily this school is ... He's finding it particularly challenging. Now looking back at it, there was definitely some kids who pick on you and all that stuff. And so my mom got concerned and we actually moved to a different high school in a nearby district. And that ended up being a really big moment because in that high school is when I found high school debate. So I did debate in high school, developed my interest in politics and in policy and a lot of different things came out of that. So really small things added up. But it all sort of ... Where you ended up,

where all these decisions started with my parents deciding to move across the world.

Melinda Byerley: You've made it your career since law school working with education, education law, and policy. And would you say that experience had an impact on you? How did you come to work in that field?

Kumar Garg: Yeah, that's a great question. As it often happens, small decisions end up becoming big decisions. I got interested in education, and my sort of big experience in education ended up happening in law school. So I was in law school and just as I was arriving into law school, there was a student clinic that was starting up at Yale Law that was suing the state of Connecticut for underfunding the school system. There had been a set of school districts ... Connecticut is this interesting state because overall it's one of the wealthiest states in the country, but it breaks itself up into 150 plus school districts. And so, it has some of the poorest school districts in America. Hartford is broken up into five separate school districts, some of which are well off, and some that are the poorest in the country. And the poorest school districts in Connecticut had banded together, and they were looking for legal help to sue the state for underfunding the poorest schools. And this sort of really interesting dynamic's in Connecticut around how the suburbs and the cities and others allocate school funding.

Kumar Garg: And so there was a law clinic at the law school that was thinking about and considering taking on these school districts as their legal client. This is just when I was getting there and I thought it was quite exciting and interesting to be able to get a chance to work on something that real. Actually helping parents and kids on getting more educational opportunities. So I dove into that clinic because I was at law school, but I had a lot of interest in policy and politics and this seemed like a really interesting way to get access to that.

Kumar Garg: As often happens with people who do clinics, just like people do project-based courses in college, it sort of takes over your life a little bit. So I started to spend lots of time traveling the state, visiting school districts, interviewing superintendents, interviewing teachers, getting to know some of the parents. You started to learn a lot about the educational system directly through that experience.

Kumar Garg: And then once you start to get that direct exposure, it kind of hooks you. And so that gave me ... I did that case throughout law school and then I stayed a year and supervised that clinic. So, when I was then looking to come to D.C. and do something with the new administration, I had very actively looked for opportunities to do something in education policy. And ended up in the Office of Science and Policy as the person who did STEM education.

Melinda Byerley: You know, you're a little bit younger than some of our guests, but I'd like to ask this question anyway because I think it's instructive. Do you remember the first time you put your hands on a computer?

Kumar Garg: Yes. So I remember us getting a computer when I was in seventh grade. So, this was like ... We had just moved to the United States. I didn't have one when I was in Britain, and I didn't have one when I was in India, but I sort of pushed my parents to get us a computer. So I got one. My parents were definitely not interested in it in any real way.

Melinda Byerley: They're like, "How is this gonna help you become a doctor? We're not sure."

Kumar Garg: Yeah. They were like fine. But it kind of became my hobby. I don't know why I got so into it, but I just spent a lot of time goofing around on it in this ... I made friends with this other student who was a couple years older who was doing really random things on the computer. He would teach me, oh, I wrote this little application that ... And he was really into Star Trek so he was like ... He created this English to Klingon translator.

Melinda Byerley: Awesome.

Kumar Garg: And so he would show me that and I would be like, "Whoa. How did you do that?" So then I would go back and try to do interesting things on the computer around ... And so, that got me interested. I would go to the store and be like, "Oh I can get an extra ..." I could soup up the computer in this way or the other. And every time, like when Christmas came around or a birthday came around, my big purchase was some additional piece of technology. So my parents would get it for me, but then I would have to install it and figure it out.

Kumar Garg: I spent a lot of time on it. And I think partly because I had just spent ... It gave me some degree of confidence that I could figure out. Because there were lots of times when I thought I had wiped all the memory clean by mistake. You know, something like that and freak out? And figure out, oh I just ... 'Cause I was doing things on the command line. But I didn't ... I kind of had one book open. I went to the library and got a book to sort of understand basic DOS command prompts. Not much more than that. But it meant later one, when I was ... I did computer science back in college. I felt a little bit more comfortable even though I had not done any formal coding.

Melinda Byerley: I love to ask that question because there's gonna come a point where people are young enough that they don't remember the first time. Like my niece, right, has had a computer in her hands practically since she was a toddler and so she won't remember. It'll be fascinating to see what the age is. I liken it to the first ... My partner, I asked him the first time he tried rice. He couldn't remember. But I do because of where I grew up. So, it's a fascinating question. So thank you.

Kumar Garg: Yeah. Yeah. And my children ... I've got three little ones and my older, my daughters are just under five. It's interesting to watch how they interact with my phone or something like that where I have yet to ever explain to them any aspect ... 'Cause they're not yet at an age where-

Melinda Byerley: If your oldest is five, yeah, they're not quite there yet.

Kumar Garg: Yeah, they're not at an age where we're letting them spend much time on technology. But they still have figured out ... One of them figured out how to unlock. And I don't know how she did that. They can kind of figure out what's on your phone. They figured out Siri. And it's just fascinating. I mean some of these applications are somewhat intuitive, but it's so fascinating to watch them pick up the stuff where you're not actually showing them how it works.

Melinda Byerley: So, going back to this commencement address to Harrisburg, which I was so excited to discover, and the text of it is online, and we'll put it in the show notes, you mentioned someone named Thomas Kalil, and I apologize if I've mispronounced his name, and you called him a hidden treasure of a man who has done more to define science and tech policy over the past 25 years than just about anybody. I thought

I'd be able to ask you, who is Thomas? How did you meet him? And why was his work so important?

Kumar Garg: Yeah. Tom Kalil. There's a couple different ways to think about Tom. So, Tom is who recruited me and who hired me into my job OSTP. So, he was my boss, mentor, colleague, everything throughout the Obama years in the Office of Science and Tech Policy. But the fascinating thing is that there are ... He just has really deep roots in the science and tech space. So, I'll give you a couple of really funny stories.

Kumar Garg: So, Tom was there throughout the eight years of the Clinton administration. And he was the science and tech guy on the Natural Economic Council. So he had this amazing story he tells about when he first set down with the then NEC director, so President Clinton ran on the idea that he was going to create a National Economic Council so it had the first NEC director. And he sat down and he said ... He sort of was giving a little presentation, this was in 1993, on the internet.

Melinda Byerley: What is the internet? Yeah.

Kumar Garg: And he said, oh the internet, made a big deal. And the NEC director said, "But who owns the internet?" And Tom said, "Well, nobody owns the internet." And he said, "Well, I don't think it's gonna be a big deal then." And so it's like a classic example of these things that, by 1997, people had a totally different attitude towards. Everything that we take as a given, at one point was emerging, at one point was even before emerging. And the folks in the policy space had to navigate that. He was describing when they first got computers into the White House. And the first email addresses in the White House were all DARPA email addresses. So there's a couple of them, him plus a few others, who in 1993 were like, it'd be great to have a computer and an email address. So they went ... And the only way you can get an email address that early that you could use in the government was to go walk over to DARPA because they ARPANET, and get a DARPA email address. And then you could have government email because the government did not have email in 1993.

Melinda Byerley: So does he still have a DARPA email address? That would be pretty crazy cool.

Kumar Garg: You know, I don't know whether it's still active. At this point, when he came in the Obama years he got a new email address. But he has all these sort of stories about the wave of technology. Decisions that happened throughout the '90s on the tech revolution. But the other thing that I thought, which is sort of fascinating is that there are a lot of ... Tom is somebody, and this is something that I've learned from him, is somebody who really has the deep potential to get excited about other people's ideas. And so, he was somebody who had, over the years, championed a lot of things that have grown up and become massive initiatives.

Kumar Garg: One of the ideas in the later years of the Clinton administration he got very excited about was work that was happening in the nanotechnology community and how fundamental investments could really drive nanotechnology. And so, he actually worked and had President Clinton announce a major initiative, a nanotechnology initiative. Which over the next decades led to billions of dollars investment in nanotechnology, which in the subsequent decade has led to these major advances that we're seeing now in the use of nano and the range of applications.

Kumar Garg: That started with his inkling of an idea based on his interactions with the research community. And it took 15 years of investment, but are now leading to why the United States is a real leader on the topic. And similarly, Tom was a big proponent and worked with New York science community to develop the BRAIN initiative during the Obama years. Which, I was talking to a New York scientist a couple of days ago who said it has been a real game-changer for their community and being able to really focus and go after fundamental advances in how we understand the human brain and the model organisms and brain development up to that.

Kumar Garg: So he's just somebody that I think, because he has had to fly below the radar, champion of the people's ideas, that's he's not somebody who spends a lot of time on the stage, but if you go back and sort of to ask the tech luminaries, you can't find ... Tons of them are like, oh yeah, I know Tom. Tom and I did this together back in the day. It's a fascinating ability to carry a disposition about "technology can do good, but you need to work on it" over a career that now has spanned two administrations and a lot of other projects. So I find that kind of

fascinating. Somebody that I sort of learned the most from and continue to learn from.

Melinda Byerley: How did you come to know him and how did you ... I know that you worked with him in the Obama White House so maybe the two stories come together there?

Kumar Garg: Yeah, so it was ... You get lucky sometimes. So I had a classmate in law school, Robin Sturm, who was interested in ... She was ... I was still finishing up my fellowship, but she was already looking for possible positions in the Obama administration. It was just as the transition was happening. It was a little bit of a crazy time because there was a lot of people who were really excited about the President getting elected, but it's a little bit of a black box as to like, what does it mean that you wanna work in the administration? Especially for a lot of people, it's a really hard ... Where do I send my resume? Who do I call? It's something I'm always happy to give advice to people now, now that I've been on the other side, about what are ways to get into policy. But we didn't know how best to do it. And so Robin decided that she was just gonna move down to D.C., which is the classic thing. Just move here and talk to people and I'll figure something out.

Kumar Garg: She actually just started effectively ... Not showing up. She started working with a deputy CTO in the OSTP on one project and they said, "Just come on in the building and work on this one project with us, and we'll try to figure out if we can give you a full-time job." And she, during that time, got a chance to know Tom. She'd actually interacted with Tom before through the Clinton Global Initiative as well. And when I called her and I said, "Hey, how's it going? I'm gonna finish up in a few months, who do you think I should talk to?" She said, "Oh, you should talk to Tom Kalil. I think he's gonna be looking for somebody." And she spoke really well of him. And then I started to call around to all the people I knew from the campaign and everybody said not only is he brilliant, but also that he is just really ... Not everybody is great to work for and everyone said that he really seems to value the people he works with. And so, that was a really positive sign.

Kumar Garg: So, I called him up and I said, "I did computer science back in college, but I've gone to law school. I've worked on political campaigns. I've done lots of other things, but I'm not a PhD in this topic." And he said, "Well, OSTP, the Office of Science Tech, is filled with PhDs that are real

issue experts. I wouldn't mind having a few generalists on the team as well that could get up to speed quickly on a lot of topics." So I said, "I'm happy to fill that role."

Melinda Byerley: Oh, you're giving me hope. I'm a generalist too. All of us generalists out there are rejoicing as we hear you say that, that there's room for us in the world.

Kumar Garg: Yeah. And you know, the pairing actually works well. It's sort of folks who are on different parts of that T shape of generalists versus deep issue experts. I found it really enriching. So, a lot of my colleagues had been studying particular aspects of a science and tech topic for most of their career and they found it interesting to work with somebody who was coming new to the topic, but could give them a lot of fast feedback on whether the ideas made sense, how the ideas could be framed for conversation with the President, how we could do an event on that idea, how those ideas intersect with ideas on other topics. I mean a lot of policy-making is actually mixing and matching.

Kumar Garg: And so, at first when I showed up at the White House it was ... It's almost like you don't ... Only over time do you realize how little you knew. You look back at yourselves, and you're like, "Wow, those first three months were a real ... Sort of productive loss. I didn't get anything done comparatively." But you're ... Through that contract exposure you really start to pick up a lot.

Kumar Garg: So I remember one of the first things Tom did, which I think was a really valuable practice was, he just took me to his meetings. He's like, "Why don't you just tag along and then after each meeting, you and I can debrief on what you think happened in the meeting." It was just fascinating because we were meeting with the deputy director of the National Science Foundation. After that, we debriefed, and he says, "Well, I think part of what they're trying to get done is this, and this is why they wanna meet with the White House. And here were some of my goals for that meeting. And why don't you think about the following next steps." You don't need to do that too many times before you start to pick up some general rules as to how to be effective.

Kumar Garg: And then a lot of the job, and really all of the job, is learning by doing. I ... Within four months of starting, I had my first meeting with the President.

Melinda Byerley: What was that like? I mean, when you were a kid did you ever imagine you would be interacting with the President of the United States?

Kumar Garg: No. And neither did my parents. They were kind of blown away by this experience I was having. And very proud. And they remain immensely proud of the whole experience as immigrants to this country. It was one of those things where no matter how many times I did it over the course of those eight years, I still got nervous each time. Because one of the things that was actually, I think, pretty unique about President Obama is that he read all of the memo. And so, often he would walk into a meeting and he would say, "Okay. So is there anything else you wanna tell me?"

Melinda Byerley: Kinda like Bezos. For those of you in tech, this is what Jeff Bezos does. Fabulous.

Kumar Garg: Yeah. And so, usually ... And this is not to malign the traditional politician, but most of the time you write the background memo for the staff. Those closest to them who will actually read it. But for the principal, maybe they'll read it, maybe they won't. You just really don't know. So, in the meeting you have to be prepared for them to say, "So, what are we talking about?" And to start to from scratch. That was never true with the President. I think he always came in pretty prepared. And then if he had a really incisive question or something wasn't clear. So, you definitely had to come in prepared. It just sort of required it.

Kumar Garg: But it was an incredible experience each time. I think one of the things that made me really treasure the experience is every time we did, for example, the White House science fair, it was like, not only could you tell how much he enjoyed it and how much the students enjoyed it, but they just kind of geeked out the other. But that he was on a high for weeks after. Like, one year he was meeting with the governors the next day and he spent a lot of his address to the governors talking about the kids. It really left an impression about how inspiring they were and how much the world ... How much they could do in the world. And so, that too was incredible to watch, that sort of impact

that policy, but then also these experiences can have on our national leaders.

Melinda Byerley: Actually sometimes I like to jump in and comment for our listeners. We always talk about how we never have time and tact to train people. We're moving so fast. And for the audience, think about the fact that they have only eight years, or even less by the time Kumar shows up, and he doesn't even ... He hopes Obama will be elected but doesn't even know if he'll have more than four. And they have to hit the ground running. And yet, even in that environment, Tom Kalil is taking his time to train Kumar, going to meetings with him. There is no substitute for your attention as a leader to train the next generation, to train the people working with you. You can't skip it, even in that environment.

Kumar Garg: Yeah. I mean this was, I think, one of the big, as we built our team... So we went with Tom hiring me to a team that eventually got to about 25 people.

Melinda Byerley: Very much like a startup right? You have a founder, they hire a small, core team. And then those values have to be transmitted through the next group of people 'cause they can't do it all themselves.

Kumar Garg: Right. And like, how do you onboard that talent? How do you build team culture? But one of the things that I realized is, each person that you bring onto your team, if you can really help them go up that learning curve, just gonna do an incredible amount. Just ... We would do these portfolio reviews at the end of the year about what people had gotten done. And once you get somebody really tooled up and capable, the amount that they can accomplish in a single year is just astonishing.

Kumar Garg: So, for example, we recruited somebody that, for the first time, this was a new position we created focused on entrepreneurship in the White House. So we had an entrepreneurship lead for the Obama White House.

Kumar Garg: Now, I remember the first few months it's like, that same haze of you don't know what you're doing. But by the time he really got momentum on it, in a year there were all these ... And if you look over the four to eight years, we were able to pass a big tax change for

making R&D investments tax accountable for startups. We were able to pass a big ... a number of high skill immigration policies that were really important to the startup community. We were able to have a range of policies around commercialization for all the R&D we were doing and making sure that can go to market. But I remember him collecting the list of everything he had accomplished, and this is a person, I mean, obviously he's working really closely with his agency colleagues across the White House and with the private sector and with the social sector. But, it's a really long accomplishments list. And it's the power of actually trusting in your people to run way farther than you can.

Kumar Garg: One of the things that I always ... We said is always try to put the doer as the face of the work. So one of the things I always thought was a mistake was if you stand on a stage and you say, "Oh our team is doing this and this and this." But then you don't actually point to who on your team is leading each of those projects, you missed a real opportunity because then the people in the room can't go flood that person and say, "Oh I didn't realize you work on biotechnology and are working on this, the update. I wanna talk to you because here's everything we're doing." Hiding that all under your mantel to say, this is all what I'm doing, I think not only robs them of the ability to do that, but also just makes you a lot less effective.

Kumar Garg: So we always said as you soon as you tool people up, send them to the meeting. Have them represent the work. Have them represent, get on stage because they're gonna then build out their network of their doers. And if you hide them from that, you actually become the bottleneck because then everybody comes back to you to get the next bit of the work going rather than going directly to them.

Melinda Byerley: Well this is a great transition into ... 'Cause you started talking about doers and how I found you is delightful. You have a photograph. And those of you who go to the show notes, you'll see a link to Kumar's Twitter feed or you can find him on Twitter. And he posted a photograph of a whiteboard drawing that was taken during his time in the Obama administration. And literally overnight this photograph took his Twitter account, I think, from about 8,000 to close to 40,000 followers. And it stopped me in my tracks. It's the reason I asked him to join the podcast because I could not get over how much, how similar, it seemed to our world in Silicon Valley and the way we think

about running startups. And so, I thought it'd be great to talk about this whiteboard first in terms of what it is and where it came from, and how it got there, and what it means to you. And then we can get into the specifics.

Kumar Garg: This was ... It's origin story was that these were ... So, I wrote it up as this was the whiteboard that hung over my desk. Its original start was not meant to be what it became. When I originally created it, there were a set of things. Some of them were things that Tom had said. And some of them were things that somebody from the team had said to each other. But these were basically strategies that we would articulate as a sentence.

Kumar Garg: So, for example, one of them that we would often say is the schedule is your friend. And this was an idea that was very true in a White House context because if ... One of the things that you can really use is the fact that the President has a schedule of speeches. You can't be like, oh I'm President. I'm gonna now give one to two speeches a year. You are constantly out there addressing various groups and various topics. It's never ... When you're President, you can't just say veterans are important or we need to do more for our world economy. People expect you to actually do things, not just talk about them.

Kumar Garg: So, it just creates the context by which policymakers and those of us who in the White House who are working on policy can actually get ideas that are germinating over the line to announced by using that schedule. So if we know that a President's gonna give a speech on veterans in four months, that's gonna create the context for us to announce things.

Kumar Garg: So, we actually would write ... Had these things like "the schedule is your friend," or "find your doers," or other of these sort of quick shorthands for strategies we were using to try to get our work done. Because we really saw ourselves as policy entrepreneurs. At some point I just thought that I would onboard new team members by going through some of these. And I thought it'd be just useful for me to write these on the board so that when I'm chatting with people when they drop by my office to say, "Oh, I'm struggling with this." I could point to different things that we sometimes say to each other and say, "Oh, have you tried that strategy? Have you tried that strategy?"

Kumar Garg: And so, at first it was just meant to be that, which is just a good clue board as I was providing sort of help to the team. But what started to happen was that it filled out. Once I wrote a few of these down, people said, "Oh, well." They would cite other ones that our team said to each other. So I added until I filled out the board. And the board started to take a life of its own. People would drop by inside the White House and say, "I've heard there's this amazing whiteboard." And the game I would always play with people is to look at the whiteboard and say, "Which ones resonate most for them?" If folks have a chance to look at this on whiteboard, in the show notes, they should feel free to leave a comment for what resonates for them.

Kumar Garg: It was both fascinating what resonated ... So, for example, for some people the statement don't be a bottleneck really resonates. And I think as you can imagine, large organizations, there's a high degree of frustration when the reason why something is not getting done is you're just waiting on somebody. So one thing we always said to people is both "don't create bottlenecks," and "don't create veto chains where everyone can say no when that's not actually necessary." But also one of the best things you can do to be a teammate or to be a manager is to create your own process so that you're not sitting on yes or no. Get back to the people so that they can do the work that they're supposed to do.

Melinda Byerley: That's a really powerful thing, I think, in startups, but especially in ... As you're growing fast, it's easy to get caught behind. You're so busy and you say, I don't have time to create process or process scares you because you're afraid that it will make you the bottleneck. But what you're saying is that past a certain point, if you don't have a process, you will become the bottleneck.

Kumar Garg: Yeah. It is hard, but even though we have been on the receiving end, people, I think, substantially underappreciated how much it slows everything down because it's not just that one thing that they're waiting on is not getting done. At that point they also just ... Their own speed of getting work done slows down because they're like, well this is taking a while so everything else is gonna take a while. So it actually lessens their ambition.

Melinda Byerley: Right, it slows down the pace of the organization. This is something we talk about. In of course, large companies and of course, the

government itself has a reputation for being slow. So, you're absolutely right. This is fascinating.

Kumar Garg: Yeah. So I wrote a lot of these on the board and people would visit. And then we started to make these more into ... I felt that they moved from something that we said sometimes to things that became much more part of our team culture. Even though it happened organically, I think they started to become much more core values of the team. And so we would run ... We started this process of running retreats twice a year. We'd bring the team together to do forward planning and what's the important things that aren't getting done, imagining the future. Part of those retreats was also looking back at some of these and saying, "What else should be added to the board? Who's using different tools on this board? Who's struggling with some of these?" And we would have stories about water on stone, which is our frame for something where you're getting a lot of no's, but you're still keeping at it because you really think it's important, and you really wanna keep trying.

Kumar Garg: I still get emails from some of my team where they'll say, "Oh, this thing that we started five years ago, it's finally happening." The email will be labeled water on stone. So we have these frameworks that then start to really sharpen people's sense of which box are they in.

Kumar Garg: Or another one of these was called just add talent, which is our shorthand for sometimes the reason why we're not making progress on a particular area is not that we have misaligned values, misaligned goals. It's just has no one working on it. There's nobody great working on it. And if we could just find somebody great that we could give to that organization, they would work on it.

Kumar Garg: So, an example of this was, we would have these great conversations with the Department of Education where we wanted them to do more on informal science and on making ... And they would agree, but the problem was they were very shorthanded in this area. They just wouldn't get to it in any real way. And so finally we said, "What if we recruited somebody and found some funding and recruited somebody to fill that role?" The Department of Education said, "Well, we would love that. And so, we did that and the person served in the informal science role at the Department of Education for four years. She got an incredible amount done and signed all these partnerships

with NASA and NOAA. Led to thousands more learning opportunities across the agencies for existing funds.

Kumar Garg: And all of this stuff was doable, but there was just nobody doing it. And so, sometimes we would ... Just add talent was our shorthand for sometimes it's not that something needs to get figured out at the highest level, it's just we need to give them a person to work on it. And that would really solve the problem. These are all examples of strategies that we used to make our way through different problem types.

Melinda Byerley: When we were getting to know each other on the pre-call, I think bringing up water on stone is a great transition into this. You told me an excellent story about broadband in schools, and I thought it would be worth sharing here too.

Kumar Garg: One thing that I think is just amazing when you are doing this kind of work is that you realize that none of this is inevitable. None of the work that we do is just automatic. It's a good idea, therefore it will happen. So, one of the things that we did in the second half of the Obama administration is a big initiative called ConnectED, which led to now, over the four years, has led to more than 20 million kids having access to high speed broadband. The original idea started from a very small beginning, which is a team retreat that we had where ... One of the things that we would do in the retreats is we would do this ideation part where anybody could pitch a one-pager. Like, what's an idea we're not doing as an administration that you think should happen?

Kumar Garg: So, a colleague and I presented ... I think it's first name wasn't particularly great. It was like Gigs for Kids, which was shorthand for broadband. And the basic idea was just that increasingly teachers were saying that they couldn't actually meet their educational objectives because the classic, the video would hang. You don't have actually enough broadband into the classroom for most of the education plans to work in a digital environment. So, from basic things like you can't even get the YouTube video to work.

Kumar Garg: And one of the things that we then did ... One of our ideas was: could we go engage the White House, the federal agencies, including the SEC, which actually runs a program for access to internet to schools, a

program called E-rate. I remember the first set of conversations we had with the agencies. There was just a lot of pessimism about what we could do. This was when we had ... This was after the democrats had lost control of the congress. The chance of major legislation that was focusing in low income kids coming to the congress was substantially lower.

Kumar Garg: But through those conversations, the SEC colleagues came up with a pretty big idea, which was the potential for them to do an update of the E-rate program that would actually infuse new dollars into the program through the agency's own rule-making. That took more than two years, but it has led to more than 10 billion dollars in spending and funding going toward low income schools specifically on access to WiFi, access to broadband. And it has ... We are now on track to closing the broadband gap at the school level by 2020. There's some question as to whether that progress is gonna get hampered in the current environment, but we're still on track.

Kumar Garg: So that's an example where that work took an incredible amount of powerful work from SEC and our colleagues in the Department of Education and others. But it started with a two-pager. And the first time the two-pager was presented it got the "I don't think that's possible." But sometimes you can't just immediately walk away from the first no because there's a reason why it hasn't happened immediately. And sometimes, if you can work through what some of those initial challenges are, you're going to get to a much ... You can open up possibilities that weren't possible before. I just found that again and again, and so it just gives you this really powerful notion that change is possible and the power of public service, that's one thing that I think is just ... Once you've done it, it actually fills you with a real sense of opportunity in the sense that you can really serve the American people through these kind of roles.

Melinda Byerley: There are two things you touched on that I wanna talk about. The first is you mentioned that it wasn't inevitable. That the idea of the broadband in schools was ... Now you look back and think, well duh. It's a no brainer, but at the time, that wasn't necessarily the case.

Kumar Garg: I think this happens all the time. Sometimes if I'm talking ... When we used to explain some of our initiatives to reporters and to others, you

sometimes get the, yeah, that makes sense. You're going for the low-hanging fruit. Who's gonna be against broadband for kids.

Melinda Byerley: I bet that answer was startling.

Kumar Garg: Right. You know, that makes sense. We're not talking about impractical issues. You're talking about something that feels very doable. And the thing that I would always remind is that, having actually lived through this work, is that even ideas that have this inevitability, in retrospect, actually required an important amount of work and coordination as they were happening and there were lots of people who said, "That's not possible. I don't think we can do that." Or, "That's not a priority." It's people who actually push through and actually make this work possible. And so, that's why I always remind people is that, both for the good and the bad, people are making these decisions and that means other people are gonna have the opportunity to fix them or improve upon them.

Melinda Byerley: This is, especially for young people, I think it's really important to see how the policy changes, or the work that they're doing might not pay off for five years, or eight years, or ten years, or longer because it comes about because people take the time to do the work. It's not someone waves their hand. And I think this is true inside of the large organization ... Or even large organizations where you're trying to affect change. It's the persistence, and the patience that actually gets things done. And you were saying on the call that there were ... So, certainly you said earlier there were things you did while Obama was in office, but there are things that are still happening now that are finally coming to fruition.

Kumar Garg: Yeah. So, for example, I mentioned the BRAIN initiative earlier. This was something President Obama announced in one of his state of the unions and we did some of the early work, which is we convened a lot of the experts. NH developed a major group of scholars to develop a research plan. That was a decade-long research plan. But the BRAIN initiative has only picked up steam in the past few years. Congress, in its most recent budget, gave a major new allocation towards the BRAIN initiative. The number of researchers around the world that are working on it only continues to increase. There have now been some major discoveries under the work. The number of technologists and other technology companies that are involved are growing.

Kumar Garg: This is an initiative where it has continued to pick up steam. And it's something where we're not gonna see the immediate results of it in the next year or two years. I remember when we had our first conversations with our communications colleagues and they're like, all right. The BRAIN initiative. This sounds great. So, in how many years are we gonna be able to solve the following diseases? And we said, "Well, we don't know." These are fundamental investments that we're making that are using these new technologies and these new model organisms and starting to study neurons and, a handful of neurons to the thousands or ten thousands of neurons working together. And we're gonna learn major new insights about how the brain works, screw that.

Kumar Garg: Those investments are gonna pay off in lots of amazing ways is our supposition, but we can't say, "Oh, in five years we're gonna be here." And that requires a certain degree of ability to understand that the fundamental investments we made in microchips that fueled the computer revolution, there's lot of people who theorized at the time, what were the benefits that were gonna come from being able to put that much processing power in a small chip, but certainly we did not ... Those investments paid out over a longer period of time.

Melinda Byerley: For those of you who are Hamilton fans like me, I'm reminded, I think it was of George Washington that says we plant ... We're planting a garden we may never get to see. And the vision that it takes to think in terms of decades is pretty amazing. Did you ... Were you always that kind of person or did you pick that up as ... In terms of the thinking as you got in?

Kumar Garg: That's a good question. I think you get a little bit more of a sense of history while you do this kind of work, which is that there is both the immediacy. I mean, politics has an immediacy to it, so I wouldn't want to say that there's certainly some initiatives where ... One of the initiatives I worked on was focused on getting more stem AP courses into schools that had large numbers of military kids. The amazing thing about this program is it actually was able to show year over year results.

Kumar Garg: So within a year of the program launching in a school, they would increase the enrollment and passage rates for African Americans, Latinos, and girls in stem APs by close to 80%. I mean, it's like an

astonishing result. And they would like ... We would take this back to the military brass and they would say, "Let's put this in more schools." So this is never to begrudge that tangible progress in a timescale isn't powerful. It just ... I always said to people you just have to be able to operate in both lenses which is some things are gonna pay off over a longer period of time. And you have to actually build for those timelines because that's how we're gonna win as a country. And some are ones where you really do wanna look for things that can build momentum. You don't wanna say trust us.

Melinda Byerley: Yeah. We'll get back to you in 12 years.

Kumar Garg: And so, I think you wanna be able to do both. And then it's really powerful.

Melinda Byerley: And so the other angle, and this is, we're nearing the end of our time, and I think it's important given what's going on in the current administration right now. You mentioned water on stone, you mentioned persistence, and you also mentioned when the democrats lost control of congress. I think it was 2010 if my memory serves. How did you manage to stay optimistic in this time, when things get hard? And in the current climate as we see some things that might be unwound, what are some tactics that you use? How do you stay on such an even keel and stay so excited about the future?

Kumar Garg: I think there's two different parts to it. I think the first is that I think we don't really have the option to look away. Which is that when people with good intentions, and the ability to make an impact look away from work that could impact so many others, especially those who are the most vulnerable, we're not doing them any favors. So, I think, to the extent that folks are distressed by the current political and policy challenges we face, I think we have to run at the fire, not away from the fire because as folks who work in science technology, we can actually play a helpful role rather than a disengaging role. So I think one is just a sense of responsibility.

Kumar Garg: I think the second is that as I said, I think people make these decisions and so I think what can be broken can also be remade. And just saw ... I just met a ton of really hardworking public servants who are working hard on this. And whether it happens this year, or it happens next year, I think there's gonna be a wave of democracy brigades that will

want to reenter the government and work with the folks who have stayed and continued this hard work to rebuild a lot of this work and rebuild these institutions. So I think there's power there.

Kumar Garg: And then, I think Government sort of builds off of examples. A lot of things that we did at the national level, we're actually scaling ideas that happen at the state and local level. This is not something where it's all or the other. Which is if you can get an idea going in your town or in your city or in your state, that actually becomes the proof point for a much larger conversation. So, when we did the computer science for all initiative to bring computer science to all kids, the fact that Chicago had adopted this as a major goal, the fact that New York had adopted it, the fact that the Arkansas governor who's a Republican had picked Arkansas as a state that was gonna be really big on computer science, that actually gave us the internal confidence and ammo to say, "this is a bipartisan goal." This is a goal where communities are already leading and that gave us the impetus to really have the President announce this goal in his final State of the Union and to really put resources against it.

Kumar Garg: So, that also suggests that it's not just all at the federal level. You can start working at the state and local level and build the proof points that others can think ... Then national Government can scale.

Melinda Byerley: So, with that, I think it'd be a great for you to talk to the Silicon Valley audience about ... And just people in tech in general. Let them know what they should know about working with their Government or getting more involved with their Government. And also, with the organization that you're with now. How can people get involved and support the goals that you're working on right now?

Kumar Garg: Yeah, that's great. Similar to what I was just saying around be engaged, I think ... The biggest thing that I think the tech community can do is to bring its expertise to bear on questions that matter. And so, that can be everything from showing up at a local town hall meeting or city hall meeting on questions that matter and saying, "I'm an engineer." Or, "I'm a technologist and this doesn't make sense to me and here's why." So I think one is just engaging.

Kumar Garg: The second is, obviously some people have actually taken up the call and are actually running for political office and saying that folks in the

science and tech space need to be actually serving. And then I think advocacy goes a long way. And I think being involved in national organizations and making your voice heard is important.

Kumar Garg: So one of the things I'm doing now is serving as a senior fellow at the Society for Science in the Public. And this is an organization that's existed for 100 years. It was created back in the 1920s when there was a similar fear of fake news. There's a lot of little newspapers that were talking about three-eyed aliens and so they created-

Melinda Byerley: Wow. One of the themes of this podcast is that nothing is new. And I had no idea of that. That's pretty ... Three-eyed aliens?

Kumar Garg: Yeah. So they said, "Oh we need to have this better source for science news." This actually came from journalists who were science-based. So, that's the roots of the organization. And it's approaching its centennial in a couple of years and one of the things it does as a science society is that it's a science society for the general public. It's got folks who are scientists and technologists across domains who are its members. And one of the things I've been working through the organization is how do we increase its voice, and it's ability to work with policy makers.

Kumar Garg: And so I've been ... Just in the past year, we've taken teachers to meet with members of congress. We've taken students to meet with members of congress. And other members of the organization. And we've just tried to make it more of a dialogue between folks who are in the science and tech community and the folks who are serving. Because the worst thing that'll happen is for the community to not make its ... Is to not engage. And so, whether it's with the Society for Science and the Public or other organizations, I think they serve as a great opportunity for folks to get involved. And I hope folks do, both in passing their passion on--so, the society does a lot of work with science and tech competitions and getting the next generation of kids excited--as well as with working with journalists and working with policy makers. And so, my strong suggestion is just to lean in rather than lean out.

Melinda Byerley: Kumar, it's just been a pleasure to talk with you. I just, from one American to another, I wanna thank you for your service. It's certainly ... I hope the audience will feel the same way, it gives me a lot of hope,

and a lot of excitement to know that someone with your vision and your passion and energy is focused on something that's so important to our future. Thank you for coming.

Kumar Garg: No, thank you for having me and thank you for doing these important conversations. I think its incredibly powerful to talk about why we do things and why they matter. So, happy to do it.

Melinda Byerley: Well, thank you. And hopefully we'll have you back again when you've got some more news about what's going on in the institute.

Kumar Garg: Will do.

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