



Episode 41: Leading With Adventure
Alexander M. Norbash, MD, MS, FACR

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[00:00:00] **Dr. Rubin:** Hello, and welcome to "Taking the Lead," a podcast from the Radiology Leadership Institute that profiles radiologists as leaders, seeking insight and inspiration from a variety of perspectives and experiences. I'm Geoff Rubin. Today I'm speaking with Alexander Norbash, professor and chair of radiology and adjunct professor of neurosurgery and neuroscience at the University of California, San Diego School of Medicine, and the radiologist-in-chief at the Hillcrest, Thornton, and Jacobs Medical Centers, and the Mo Cancer Center. Alex has held a number of leadership positions within academic radiology, including director of head and neck radiology at Stanford University Hospital, director of neuroradiology, founding director of interventional neuroradiology, founding director of endovascular neurosurgery, and co-director of the Cerebrovascular Center at Brigham and Women's Hospital in Boston, Massachusetts, and Chair of Radiology and Assistant Dean for Diversity and Multicultural Affairs at Boston University and Boston Medical Center.

[00:01:15] After joining UCSD of Chair of Radiology in 2015, he served a term as university-wide associate vice chancellor for equity, diversity, and inclusion, climate, and professional development. He is past president of the American Roentgen Ray Society, the Massachusetts Radiological Society, the New England Roentgen Ray Society, the Society for Chairs of Academic Radiology Departments, and currently serves as vice president of the American College of Radiology. An avid technology innovator, Alex has founded six companies, served on the advisory boards of over 20 companies, and is founder and faculty director of Blue LINC, which stands for learn, innovate, network, collaborate, a biomedical incubator certification program that includes students from the schools of medicine, engineering, and business.

[00:02:22] Alex, welcome.

[00:02:23] **Dr. Norbash:** Thank you, Geoff.

[00:02:24] **Dr. Rubin:** Let's start at the very beginning. Where were you born?

[00:02:28] **Dr. Norbash:** London, England. My parents were Iranian immigrants, and they left Iran looking for opportunity in education. Mama ended up becoming educated in the Montessori way. So, she's a pre-primary teacher. And it was harder to get to the United States than they anticipated. They thought they'd be in England for a few months, a few months turned into several years. And during one of those several years, I was the joyful package that arrived unexpectedly.

[00:02:51] **Dr. Rubin:** And how long were you a citizen of England?

[00:02:56] **Dr. Norbash:** I am still a citizen of England, and we lived in London for three years, and then we moved to the United States, moved to Denver, Colorado, where my father did his residency in general surgery.

[00:03:06] **Dr. Rubin:** Terrific. And did you have brothers or sisters?

[00:03:09] **Dr. Norbash:** I have one brother who's seven years younger. He's a roboticist at Carnegie Mellon University. We don't see each other as often as we'd like to, but I was on

the telephone with him last night, talking about a ski trip we're trying to coordinate for this winter.

[00:03:20] **Dr. Rubin:** Marvelous. Did you spend all of your years growing up essentially in Denver?

[00:03:26] **Dr. Norbash:** No. We actually stayed in Denver for my dad's training. And my father and mother felt that they would go back to Iran and establish a life there close to their families. We moved back to Iran for a couple of years. And just being abroad briefly had modernized my parents to the point where graft and corruption and other inefficiencies that one encounters in developing countries became things that didn't necessarily have to be tolerated. So, we came back to the United States after a couple of years and ended up settling in a small town in northwest Missouri.

[00:03:55] **Dr. Rubin:** Okay. And at what age were you when you returned to Missouri?

[00:03:59] **Dr. Norbash:** 10 years old.

[00:04:00] **Dr. Rubin:** 10 years old. So, that was a lot of action during those first 10 years. Do you have many recollections?

[00:04:05] **Dr. Norbash:** I have a lot of rich memories of that time. And, you know, fortunately, my tendency is to remember pleasant and positive things. There were some difficulties in terms of family members and in terms of the health of various people who we were close to. And fortunately, a lot of that has receded into the distant mists of memory. But what remains vivid are the good times and the positive things and the sights and the sounds and the noises. And so I'm grateful for those opportunities that I had.

[00:04:30] **Dr. Rubin:** That sounds like pleasant recollections. Now, once in Missouri, you had your formative school years and such, and at that point, your brother was born. So, you were all four together. Your dad was a practicing physician at that point?

[00:04:44] **Dr. Norbash:** He was. He was a general surgeon, and he also had a general practice. So, he did both. And we lived in a small town that at that point in time was about 35 miles from Kansas City, north of it. But, you know, it was a different time. 35 miles seemed like a long distance to go. And I remember not having tasted sushi until I was 22 years old. It seems like society didn't move quite as quickly, and the homogeneity that we see now where trends pop up in multiple places wasn't as ready back then. It seemed like the distances were further and time stretched out a little bit. And so, you know, now it seems like it's a bedroom community, but back then, it really seemed like it was separate from Kansas City.

[00:05:20] **Dr. Rubin:** And your mom, did she work outside of the home?

[00:05:23] **Dr. Norbash:** She did. She is a Montessori teacher, and she loves doing pre-primary education. And I'm proud to say my mom is still working. She teaches at De Anza College. And as I understand it, her courses are very popular. She does keep getting awards, which is a source of tremendous pride for me.

[00:05:37] **Dr. Rubin:** Fantastic. So, you were there in what seems like rural Missouri having lived in London, England, and in Iran, and in Denver, Colorado. Do you recall any

dinner table conversations that the four of you had that might have been a reflection of such a diverse upbringing for that location?

[00:05:58] **Dr. Norbash:** Well, one of the reasons I'm active in the diversity space where I try to be is that, you know, we felt a little bit out of place, honestly. A lot of the community bonded through church and other social activities that we weren't necessarily part of. And that became pretty self-evident. So, the bucolic and the peaceful nature of being in the countryside wasn't lost upon us. I went for walks, and I started writing at a relatively early age. And I loved being in the woods and I loved being, you know, where the fields and the streams met. But I did feel like an outsider. And it was a feeling that was not ideal. And I felt as though there was so much from our culture that I was proud of more than Persian carpets and the peacock throne, more than baklava, more than saffron. And so it was an adventure to try to tell people about the richness of the poetry and the paintings and the history. So, I felt as though it was a lost opportunity for others to build bridges with individuals who are different, to benefit from what they've learned, and to enjoy the richness that the world provides through heterogeneity. And so that was the motivation for me to be in the diversity space that I am now. And so a lot of pleasant memories, going for long bicycle rides in the summertime when we were out of school, going to the local swimming pool, going to the local library. But that sense of belonging was never really there.

[00:07:15] **Dr. Rubin:** It sounds like you tried to reach out and to make connections.

[00:07:19] **Dr. Norbash:** I did, but, you know, it's one of those things where you work as a family unit when you're a kid. And so if your parents aren't part of the normal activities and entertainment in society, then you're also not part of it. And I felt that that was a loss for my parents, it was a loss for the community, it was a loss for me. And so that memory is still pretty vivid.

[00:07:41] **Dr. Rubin:** Did everybody in the family manage to keep a positive outlook despite feeling like outsiders in your own hometown?

[00:07:48] **Dr. Norbash:** They did. We did. You know, we put on a happy face, and we made sure that everybody knew that we were grateful for the privilege and the opportunity of being here because, after all, when you're an immigrant, you do not take anything for granted. Maybe it sounds like I do take being socially enculturated for granted a little bit, but the rest of it was something we were grateful for, the safety, the opportunity to establish financial stability, the desire for people to try to welcome us. It was an interesting time, and it certainly has decreased some aspects of nostalgia in my mind in terms of always looking back finally at your childhood saying, wow, it was an unalloyed positive experience. It was a mixed bag.

[00:08:25] **Dr. Rubin:** Understood. Do you recall your first job?

[00:08:28] **Dr. Norbash:** I certainly do. I was a stockroom clerk for McPhee, Allen, Wright, and Dolan Pathologic Laboratories. And my job was to organize the stockroom, which had an inventory problem and had a lot of issues in terms of space utilization. And so that's something that my Montessori school background trained me for very effectively. In Montessori, you learn to put everything in its place. So, I came up with a stockroom

inventory system, and I think it was the beginning of my interest in management. And I was 14 years old at the time.

[00:08:58] **Dr. Rubin:** Wow. And so you were given responsibility over the stockroom.

[00:09:01] **Dr. Norbash:** I was the only employee in the stockroom. So, I was responsible for myself. You can call that personal leadership if you will.

[00:09:10] **Dr. Rubin:** Well, it's marvelous. I mean, there are stockroom boys who are told what to do and must follow instructions, and then there are those that are given the opportunity to set their own standards.

[00:09:22] **Dr. Norbash:** In retrospect, Geoff, I believe that they set me loose. It was quite a gamble on their part. But thankfully, I didn't embarrass myself. And I remember, with my very first paycheck, I took my parents to Victoria Station, which was a purveyor of prime rib in Kansas City. And I spent the entire amount on one dinner with my parents and some of my extended family. So, it was a very memorable time.

[00:09:49] **Dr. Norbash:** How did that make you feel, spending your entire paycheck on a meal like that?

[00:09:53] **Dr. Norbash:** It made me feel great. It made me feel like I was able to finally give back a little bit of something, what I'd been taking for all of those years. And, you know, I really didn't have that much in the way of expenses at that point in time, but it was a really pleasant set of memories.

[00:10:07] **Dr. Rubin:** Yeah. What a generous act. I'm sure that your parents were really delighted.

[00:10:11] **Dr. Norbash:** They were.

[00:10:11] **Dr. Rubin:** Marvelous. And during high school, were there any extracurricular activities or things outside of the classroom that you pursued?

[00:10:20] **Dr. Norbash:** I really liked to run. I'm using the past tense. I'm not running quite as much anymore. Once in a while, if there's an event that I can participate in, I'll train up for it. But it does take time away from the family and I'm cognizant of that. But when I was in high school, I liked running very, very much. And I'd go running through the countryside. And it was nice because I'd see my friends and some of their families driving by in cars and waving at me as I'd be on some country road a few miles away from our house. So, running was a big deal for me.

[00:10:44] **Dr. Rubin:** It was cross country then that you were doing?

[00:10:46] **Dr. Norbash:** Cross country and track.

[00:10:47] **Dr. Rubin:** Oh, marvelous. How about leadership in high school? Did you pursue any?

[00:10:51] **Dr. Norbash:** Not really. Not to speak of. I was in the Boy Scouts and I made it one step below Eagle, but I never got to Eagle. And that's always been a source of

consternation to me, wondering, "Why didn't I stick it out and actually get that?" But I was a life and I was a senior patrol leader. And that was nice. It was some degree of regimentation, some degree of responsibility. But what I realized at that point in time was I was trying to decentralize the leadership. And that's something that I still try to do. I was trying to empower others, so that we could, in a collective way, share ideas. And one of the early things that I did is I remember some of the patrollers didn't like the food that we were serving on some of our campouts. And so we were coming up with alternative ways and...alternative ways of distributing the responsibility, alternative ways of feeding ourselves and others. I remember that pretty vividly. And I think there were a lot of flawed experiments as part of that, but it was part of the learning process for me about how in management, you certainly cannot please everybody all the time.

[00:11:47] **Dr. Rubin:** So true. And what a great recollection about Boy Scouts. I have my own journey that I'm flashing back to right now. We'll save that for another time. You pursued a combined bachelor of arts and MD program at the University of Missouri in Kansas City straight out of high school. When did you decide to pursue medicine as a career?

[00:12:05] **Dr. Norbash:** It's kind of a two-part realization. The first was I did spend some time following my father around in the office. Part of that was that he had a private practice and my mom took care of it. She was the office manager, and I helped out by doing some filing. And I'd help him occasionally going in if he needed an assistant if he was doing a removal of a mole or a skin lesion. And so I find it interesting but not fascinating. And I took one of these armed forces aptitude tests when I was a sophomore, and the results came back that I should consider two things, either being a short-order cook or being an airline pilot. So naturally, being somewhat compulsive, I wrote away, and I received quite a bit of literature from Embry-Riddle University about airline transportation pilot training courses and what that consists of and how you can get a bachelor's degree in aviation science.

[00:12:50] And I remember I was sitting in our living room reading the material on a weekend morning, perhaps a Sunday morning, sun streaming in through the window, and I was reading this thinking, "Boy, this really does sound interesting. You know, I really do like airplanes and helicopters, and this is something I'd like to do." And my mom came in and she sat down next to me and she said, "What are you doing?" I said, "Well, I'm looking at some material for Embry-Riddle University in South Dakota." She said, "What are you thinking of doing there?" I said, "Well, I took an aptitude test and it told me that I should be a short-order cook or I should be an airline pilot." She said, "If the test told you to jump off the cliff, would you have done that?" I said, "Well, I don't understand." And she said, "Alex, you need to think about either engineering, medicine, or some other form of profession that has a more sustained income stream." And I said, "But mom, flying sounds like fun to me." And my mom said, "Well, you can always fly on the weekends. If you're a doctor, you can be a private pilot. So, I wouldn't give it much thought, but you really need to be thinking seriously about medical school or about being an engineer." And again, this is I think a typical story for people who are first-generation immigrants, it's a socio-cultural expectation.

[00:13:54] And so being a dutiful son, I gave it some thought and I thought, you know, "She's right. If I am a physician on the weekdays, I can fly on the weekends. But if I choose to fly on the weekdays, I get in big trouble if I act like a doctor on the weekends." So that was not an option. So, what I ended up doing is I applied to the BA/MD program at the

University of Missouri, Kansas City, which was a great program. I was kind of half-hearted about it when I went for my interview. I actually remember wearing corduroys, Oxford shoes, an open shirt, and a sweater. Everybody else was dressed in suits and ties. And when I arrived, I thought "Wow, you've probably blown it." Well, for whatever reason, I ended up getting in and attending it. And my father also struck a deal with me. He said, "If you stay here and go to UMKC, we will move to town, we will move into Kansas City, and I will pay your tuition, but I want you to live at home and to be a positive influence for your brother." At the time, tuition was about \$4,200 a year, which is hard to believe now in retrospect. And so I ended up with my family living in Kansas City itself for the duration of medical school, those six years, from 1980 through 1986.

[00:14:57] **Dr. Rubin:** What led you to choose the six-year program as opposed to an option that would have been a full four years of undergrad and then four years of medical school?

[00:15:06] **Dr. Norbash:** The fact that my father said he would pay for it is the reason I ended up choosing it. Honestly, it was purely a financial decision as I'm embarrassed to admit.

[00:15:15] **Dr. Rubin:** No. Nothing embarrassing about it. I mean, It's a great offer and a great opportunity. But he was only willing to pay if it was the six-year program?

[00:15:22] **Dr. Norbash:** That is correct.

[00:15:23] **Dr. Rubin:** Wow. That's a high bar he put the pressure on. Good thing you delivered.

[00:15:28] **Dr. Norbash:** Thankfully, I got in.

[00:15:29] **Dr. Rubin:** Yes, thankfully. Yeah. And the rest is history. Did you pursue any extracurricular activities while at the University of Missouri?

[00:15:36] **Dr. Norbash:** While I was there, I ended up spending a lot of time playing pool, billiards. And I didn't do it in a league. I just did it with my friends, but I seemed to do it every spare moment that I could find. But other than that, I just tried to get through medical school and tried to figure out which specialty I wanted. And I was at home at the same time, so I was trying to be responsible in terms of mowing the lawn and helping around the house. So, it went by pretty quickly, actually.

[00:15:59] **Dr. Rubin:** Did pool become a skill that you have relied on lifelong?

[00:16:04] **Dr. Norbash:** Not literally. Now, certainly, collisions and angles and bouncing off of things, I mean, that's something I think we do emotionally and intellectually. So, I could probably extrapolate in some fashion from the actual act, but I enjoyed it very much. But we do not own a billiards table, and I have not been playing in a very long time, unfortunately.

[00:16:23] **Dr. Rubin:** Do you pine for that? Would you love to have a billiards table?

[00:16:26] **Dr. Norbash:** Geoff, there are many things that I think I'm gonna have to do once I fully retire. I have a very long list of things I'd like to pick up including billiards again.

[00:16:34] **Dr. Rubin:** All right. We'll get to that list in a little bit then. That sounds exciting. Excellent. And living at home through undergrad in medical school, most of the other students I imagine were free, independent, you know, pursuing all of the opportunities that independence provides. How did you feel about that?

[00:16:51] **Dr. Norbash:** It felt a little constraining, and I felt like I would have enjoyed having my freedom. But a deal is a deal. And my father was paying and I made a promise.

[00:16:59] **Dr. Rubin:** What would be your advice to a high schooler who approached you and said, "I really wanna go to medical school, I have an opportunity to consider a six-year or an eight-year program"? What would you advise them?

[00:17:11] **Dr. Norbash:** I think a six-year program is a great idea for certain people, but we had a very high attrition rate between our second and third year. And it's challenging for a 16 or 17-year-old to decide to be a physician. A little bit of maturation helps most people. So, unless they're dead set on becoming a physician and they've been wanting to do it for a very long time and they have a strong sense of perspective and direction and they're very accomplished, I would say spending the extra time to travel, to mature, to think, to grow through associations with other people, that's probably the better idea for the vast majority of us. And it probably teleologically explains why there aren't that many six-year BA/MD programs. The ones that exist right now are successful and they're doing well, but they're small in number. Because to your point, to your implied point, having that extra time is a really positive thing for personal growth and development.

[00:18:04] **Dr. Rubin:** At what point during this journey through your bachelor's in medical training did you decide to become a radiologist?

[00:18:11] **Dr. Norbash:** It was very accidental. As I was doing my rotations, I realized that I was not drawn to all the specialties. Now, I have to tell you, when I did my surgery rotation, I seemed to take to it, I seemed to enjoy it, I liked the tasks, I liked the attendings I was working with, but what I also found, I found that some of the individuals in surgery were very opinionated. Maybe at times, they could be a little abrasive. And I realized that I wasn't entirely comfortable around the community. So, I liked the job, I liked the tasks, but I didn't feel as though I was part of that community. And that realization has propelled a couple of statements that I make to people when they ask me, "What should I do?" I tell them that they have to focus not only on the tasks that they have to perform, and they have to be able to enjoy those tasks and do them well. They also have to like the organization they're in and the culture of the individuals who are similar to them and work with them. That is just as important if not more important. And so I was drawn to the tasks, but I was not drawn to the community, and I was not drawn to the framework. And so I felt as though I would end up going into surgery and becoming a partner for my father and taking over his practice at some point, but it was kind of a half-hearted realization. I was kind of resigned to that because I figured, "Well, I guess I like surgery. I just don't like being around surgeons, but I can figure this out."

[00:19:35] And then I rotated through radiology. And I have to admit to you, I was bored to tears. As soon as the lights went down after lunch, I would fall asleep. And so I remember sitting in the back of the room watching two individuals going over ultrasound images,

which at that point in time were even more speckly than they are now, realizing that I was not enjoying the rotation. And it was in the last four days of the rotation that the chair of the department was walking by, he saw me sitting in the back of the room disinterested, and he put his hand on my shoulder, and I looked up. His name is Fong Tsai. And I said, "Hello, Dr. Tsai." He said, "You look bored." I said, "I'm sorry, Dr. Tsai. I'll try to be more interested." He said, "That's not what I'm telling you. Get up, you're gonna follow me." And I thought I was in trouble. I thought, "Well, you really blew it, Alex." I got up and I followed him. And we went into the next corridor and he said, "Stand here and watch what I'm doing." So, he was being consulted on a cerebral angiogram by a number of other physicians. And I looked at his picture, which had a bunch of black spaghetti thrown onto a clear screen, and I thought, "How can he figure out which vessel is which and what it does?" And so I was peeking from the back interestedly, and he asked me to continue following him around the rest of that afternoon. It was from about 1:30 to 6 or 7 p.m. And I was just fascinated. And he said, "I want you here tomorrow morning at 7:00." I said, "I'll be here, Dr. Tsai."

[00:20:58] So, for the next four days, I followed him around, and this is in 1984. And I watched him do a meningioma embolization with silicone microbeads, I watched him do a dozen cerebral angiograms, I watched him do a carotid angioplasty with a balloon catheter. And he was an interventional neuroradiologist back when there were maybe a dozen of them in the United States if that many. And he had just started at UMKC after leaving Los Angeles. And he had been there on the job maybe six or seven weeks when I saw him. And even so, he was able to build up that referral base in no time flat. So, by the end of the rotation, the last day I said, "Dr. Tsai, I have to tell you, I'm fascinated by what you do. I'm amazed by it, and I wanna be like you." He said, "Well, good luck with that because there aren't many of us." I said, "What do I need to do?" He said, "Well, you're gonna have to go into radiology first of all." And I said, "Do I have to? Isn't there any other way of doing this?" He said, "No, Alex, right now it's only neuroradiology, and the only way to do that is to start off by being a radiologist." And so I signed and I said, "Okay, Dr. Tsai, if that's what you say." And so I have to tell you that over my life, I have assembled panels of mentors and they mean the world to me.

[00:22:08] And Dr. Tsai, he and I occasionally still keep in touch and he knows how much he has mattered to me in terms of a life that I've chosen. There's another radiologist who's been very formative, I can come to that, and that's Chuck Kerber, who is another interventional neuroradiologist who convinced me when my energy was lagging. I was finishing up my residency and I thought, "You know what, can I really spend two or three more years training?" And I ran into Dr. Kerber at that point in time. He gave a talk when I was a resident at Pitt and I thought, "You know what, I really do need to do this." So, I met with him individually. He still remembers that day, I stayed in close contact with him. And I ended up pursuing neuroradiology and then interventional neuroradiology.

[00:22:46] **Dr. Rubin:** It's so fortunate that you met Dr. Tsai, and what a great message for those in a position to give to a medical student in a similar situation.

[00:22:54] **Dr. Norbash:** And Geoff, I have an admission to make. I don't know if I chose radiology because of how interesting what Dr. Tsai did, how interesting it was, or because he took a personal interest in me. And in medical school, a lot of the time I felt like we were kind of cattle being herded from one place to the next and we were invisible. I was not

invisible to him. He saw somebody in the back of the room who seemed disinterested, and he reached out and he tried to do something about it. So, to amplify your point, if you take an interest in other people, and if you try to tell them what it is that you do, you make certain connections that may be durable and may influence their lives in a positive way. Every moment of your interactions with other people can have profound consequences.

[00:23:39] **Dr. Rubin:** From Kansas City, you headed to Pittsburgh for a transitional internship and radiology residency at St. Francis Medical Center. What led you to St. Francis for your radiology training?

[00:23:50] **Dr. Norbash:** You know, right now when we're interviewing residents and we're in the thick of interview season, our resident applicants are applying to many, many programs. It wasn't the case when I was going into radiology. When I was going into radiology, you would interview somewhere between 5 and 10 programs, maybe 11 or 12, if you were feeling particularly motivated. And so I ended up interviewing maybe six programs, and St. Francis was in the middle of my list. At the top of my list were Mayo Clinic and Emory. And I did not match with either of those, but I thought St. Francis was a place where I could be comfortable. I liked Pittsburgh the city. I realized five years is a long time to be in one place, so you've gotta like it. And it was the first big step away from home for me. And so I think I was a little delayed in my own social development. Some may argue that I'm still delayed in my social development, but I thought Pittsburgh was a nice town and that's why I ranked it third. And thought St. Francis was a great program in department. Joe Marasco at the time was the incoming chair of the Board of the American College of Radiology. And he was the chair of the department at St. Francis. And they had a practice at several different hospitals. So, I thought there was a variety. I thought Dr. Marasco must know what he's doing or he wouldn't be chair of the board of chancellors. And Dr. Marasco is now retired and in Florida and we do keep in touch occasionally. And I saw him a couple of years ago, and he was an inspirational leader and a wonderful manager for the department. And that's one of the reasons why I believe I've ultimately had this interest in management.

[00:25:15] **Dr. Rubin:** After three years, you transferred to UPMC for your final year of residency. Why change at such a late point in the residency?

[00:25:25] **Dr. Norbash:** I rotated through UPMC for pediatric radiology because they had a phenomenal children's hospital and they still do. Oddly enough, that children's hospital moved from being in Oakland to being exactly where St. Francis Hospital was. They ended up raising St. Francis Hospital and putting the pediatric hospital there many years later. When I rotated through pediatric radiology, it was a different environment than what I experienced at St. Francis in the private practice residency. It included residents and fellows and unusual cases and a lot of deliberation between the attendings and discussion and multimodal conferences. I was just entranced by this and I thought it was spectacular. And so Dr. Gredini was the chief of pediatric radiology at the time. As the end of the month approached, he said, "Alex, you know, we really like having you here. Would you consider transferring here and being a pediatric fellow for your final year of residency?" And I said, "Well, Dr. Gredini, I don't know how this is gonna go over at St. Francis." He said, "Well, come back to me with an answer because we'd love to have you here." So, I went back to Dr. Marasco and I explained what had happened. I said, "You know, Dr. Marasco, I really like the environment."

[00:26:30] And Dr. Marasco said, "You know what, Alex, you've always struck us as a bit of an odd bird, wanting to explore concepts may be in greater detail than is necessary to just get the job done. I think that would be a good fit for you, and I agree with it. Of course, it's gonna be tough for us to lose a resident, especially as we're coming up on that fourth year, but I think this is gonna serve you best and I think you've got a bright future in academics potentially." So, I moved over with Dr. Marasco's blessing, thankfully, and I enjoyed the first half of the year very, very much. But what ended up happening was as I'd been there for the six months, seven months, eight months, I started wondering, "Well, you know, I do like pediatric radiology, but I don't love it like I loved this concept of interventional neuroradiology from what I remember when I was nearing the last year, my third year, in medical school. And so I wonder if I'm selling myself short and abandoning a dream just because the training period is that much longer." It would have been three years longer to be an interventional neuroradiologist, and I thought that's an investment of time that I just didn't have the patience to make.

[00:27:33] But as the end started approaching, I started questioning myself. And so what I ended up doing is I called around to a number of programs in neuroradiology. There was an opening that popped up at Stanford and one at Michigan and one in University of Florida. And I had the support of the neuroradiology division at the University of Pittsburgh to do that. And so I approached my chief at the time in pediatric radiology, and I asked if I could do this. And they said, "Of course, you've gotta pursue your passion, and you have to do what you have to do," despite the fact that I was supposed to come on board as a faculty member at Pitt. And so I ended up going to Stanford, which is where I met you. And I wondered initially for the first year, "Have you made a mistake? Are you too jumpy? Are you too indecisive? Why are you going from institution to institution rather than staying in one place and finding happiness?"

[00:28:19] And so while I was in diagnostic neuroradiology at Stanford, I started doing interventional neuroradiology cases, and I just loved them unconditionally, every single one. I didn't get tired of doing myelograms or doing a diagnostic angiogram. And I thought there would be either fatigue, boredom on UI as I was looking at these cases, but that just didn't happen. And I wanted to do every single case. And so I realized at that point that I had chosen the right thing. And even though path had been somewhat circuitous, I ended up in the right place, and my decision was reinforced by those U-turns and dead ends that I hit. And so again, I'm of the philosophy and of the opinion now that there are no mistakes, and there are no dead ends, and you learn from everything, and it allows you to be the person you are. And it allows you to contextualize your experience in your life in terms of what you see and what you do. And so don't be too upset if you have to take a left-hand turn or a right-hand turn because you will be the better for it.

[00:29:19] **Dr. Rubin:** Very insightful, and great that you followed your passion and that you were willing to take those chances. I was a fourth-year resident, and you were the neuro fellow that I looked up to when you arrived at Stanford. After your fellowship, you stayed on at Stanford, and you joined the faculty, an assistant professor for four years. And those were fun years starting out our academic careers together, especially with the birth of your twins, closely time to the birth of our triplets. With two physicians in the family, how did you and Sepi approach managing twin boys while starting your academic careers?

[00:29:51] **Dr. Norbash:** It was a bit of a blur, or it is in retrospect. And I have to tell you, as a father of twins, I could not imagine having triplets in addition to another singleton who came before the triplets, Geoff. So, you were my idol when I was trying to understand, how does one do this work-life balance thing. We had to figure out how to create interdigitating schedules, how to find childcare, and sometimes things would fall through. So, as an example, I remember my wife being in-house doing, you know, otolaryngology, being up for operations, me being on call for neurointerventional being called, and then having to either take my kids in a stroller to an adjoining apartment where Ross Schwartzberg was a radiology resident and say, "Hey, Ross, I know it's 2 a.m. in the morning, do you mind watching my kids? I'll be back in a couple hours." And he did that on numerous occasions. Or on one occasion when Ross was out of town, I remember wheeling my kids into the control room in angiography, putting a barricade of blankets around them, having them lie on the floor with my technologist and my nurse in the room being there, realizing that that probably was not the right thing to do. And I needed to be a little more creative. And again, I can't imagine someone doing that now and getting away with it. I would certainly be extremely disappointed in them if they did. But in the moment, I think I was formulating solutions that were not the optimal solutions. Nevertheless, somehow we got through it.

[00:31:20] **Dr. Rubin:** You had a formal leadership role at Stanford right out of fellowship as director of head and neck radiology. What were you able to accomplish within a relatively top-heavy division at that early stage of your career?

[00:31:33] **Dr. Norbash:** So, we had at the time five neuroradiologists, and it's a much bigger division now. And our responsibilities were also covering the VA. So, I had to go over to the VA on Thursdays. And Bart Lane was there, and Michael Marks was there, and Dieter Enzmann importantly was there, and Gina Lowe was also there. And so we covered the VA, and Dr. Marks and I were the two neurointerventionalists. Dr. Marks was the senior neurointerventionalist and I was his student. And Dr. Enzmann, Dieter Enzmann ended up becoming a lifelong friend for me and also a mentor. And so it was a very interesting time because the dynamics in the group and because of the state of neuroradiology and where it was moving and how it was moving. It was also interesting because each of us had a different life narrative. I had been a fellow at Stanford. So, I always felt like a bit of a student, but it was a great experience in terms of trying to build the program and trying to grow in terms of having autonomy and independence as a neurointerventionalist while still doing diagnostic neuroradiology. It was a very enjoyable time, it was a very memorable time. And I think I learned more in those four years at Stanford that I haven't accumulated years since.

[00:32:43] **Dr. Rubin:** Wow. That's quite a statement. And it sounds like the division was supportive of you in your role and in taking on that early leadership step. And you've mentioned Dieter as a mentor and your mentors in Pittsburgh and in Missouri. How would you define the role of mentors in your career? And have you sought out mentorship consistently at every stage?

[00:33:06] **Dr. Norbash:** I've realized how important it is to me, and it's because Dieter was such a phenomenal mentor, and Michael taught me how to be a neurointerventionalist. And also Gary Glaser, who was the department chair at the time. I had the sense that he cared for me as an individual. I remember him walking by my office at one point coming in saying, "I

know you're new. How are things working out? Are you getting the support you need?" And once in a while, he'd walk by and sit down and come into my office and talk to me. And I thought that was just remarkable, given his span of influence in what he was doing. And in terms of the head, neck imaging role that I had, I was the one person out of five who was really interested in head, neck imaging. So, I'd go to the ENT tumor board, and I ended up being the go-to person for head, neck imaging by attrition because nobody else was that interested in it. My wife was an otolaryngologist. When I went to tumor board, it got me a chance to sit next to her. And so there were other motives for my doing that. And so I did have the title, but it basically meant it was like being the stock ward clerk at MAWD. Again, It was just me, an army of one, but it gave me an opportunity to learn about leadership in terms of being a domain expert and allowed me to be a contact point for ENT, for oncology, for radiation oncology. And so I like the fact that I could come back to our department and make some improvements based on what I was hearing from individuals who are non-radiologists.

[00:34:20] And as part of that, the individuals in ENT also became my mentors. And I learned from them. And Sarah Donaldson became a very important force for me. And she was a great mentor as a radiation oncologist at Stanford who would work with me, again, in the head-neck tumor boards and in the pediatric neuroradiology tumor boards. And so I realized how important these other individuals were in terms of wayfinding, in terms of telling me how I could grow and how I could tap into my own potential. I saw the value in their lives lived, and how they could educate me and inform me. And so most of my education came from those individuals. And Dieter is one of my closest friends right now, again, because I'm continuing to grow and learn from him, even though I'm a chair, he's a chair. And if I have a problem, I'll call him and I'll say, "Hey, I'm having this issue right now. How do you suggest I address it?" So, those lifelong mentors have been important, and I've picked up additional ones over the past years.

[00:35:14] Reuben Mezrich has been a mentor for me for years because I ran into him when I was at the Brigham and Women's Hospital. And Reuben was just this incredibly bright, insightful, thoughtful person. And he's, to some degree, selfless, and he sees something of himself in me, what I'm not quite sure, but something resonates enough to create that bond of connection. And so mentorship to me has been a critical ingredient in the life that I've lived in terms of the things that I have seen as positive lessons and positive growth opportunities. I'm not sure how much of it can be formalized, and I'm not sure how much of it has to be subjective in terms of that bond of affection that becomes created between two people, for who knows what reason, but it has been something that is a critical variable in my life and has been a source of tremendous satisfaction.

[00:36:00] **Dr. Rubin:** It's terrific that you highlight all of those mentors, but in particular, you point to Sarah Donaldson because she was our guest on the podcast just last month. And what a phenomenal spirit she is. After four years on the Stanford faculty, you headed east to Boston and had appointments at both Massachusetts General Hospital and Brigham and Women's Hospital. For the late 1990s, that seems like an unusual arrangement, was it?

[00:36:25] **Dr. Norbash:** Well, what happened is as we reached that four-year mark, my wife was finishing up her training. And so she said, "Alex, I think maybe we need to leave California for a period of time, generally a little autonomy, a little change of scenery. Why

don't you go find some jobs and come back to me and you'll tell me what the options are and we'll figure out what I do?" So, I was offered positions in Portland, Oregon at OHSU and at the University of Washington. At that point in time, Eliza Huni [SP] was still at Johns Hopkins, and we were talking about a role for me there. And my wife said, "Well, Hopkins is an incredible place." I said, "Yeah. I know." And she said, "Well, is that the job you would want if you got it?" I said, "I really don't know." And I had grandparents who were living in Boston at the time. And I was always kind of impressed by the Harvard brand. And so I said, "It would be interesting to work at someplace like the Mass General to see what it's like also in addition to Hopkins." She said, "Well, why don't you ask them if they have a position?" I said, "Sepi, it doesn't work that way. You don't just call up a place and say, 'Hey, do you have a position for me?'" She said, "Well, isn't that how you ended up getting the Stanford position?" I said, "Yeah. Okay. You've got a point."

[00:37:25] So, I ended up calling the Mass General. I called Dr. Thrall's office, and I was forwarded to Dr. Gil Gonzalez, who was chief of neuroradiology at the time. And I mentioned that I was looking at positions and I was an interventional neuroradiologist. And Gil said, "Alex, why don't you hop on a plane, come on out here? We'll talk" So, I did exactly that. And less than a couple of weeks after that conversation, I had a contract from the Mass General to go there. And at the time, the Mass General was also covering the Brigham and Women's Hospital in a contractual manner. So, to be a neurointerventionalist at the Mass General at that point in time meant you also had to go over to the Brigham and Women's Hospital just as when I was at Stanford, being a neuroradiologist in a radiology division meant you had to go to the VA one day a week. And so I landed at the Mass General, and I was amazed and impressed by the cases that they were receiving, which were these complex cases sent from the four corners of the globe, an incredibly high amount of volume, generational excellence. And I would occasionally volunteer to hop on the shuttle and go to the Brigham and do one of the Brigham's cases. And the Brigham was a little more peaceful, a little slower paced, a little less hectic, and there was a greater likelihood that you'd be able to get out by 6 or 7 p.m. than if you were at the Mass General on service.

[00:38:36] And so I ended up volunteering a significant percentage of the time to go to the Brigham when others felt that it was a little bit of an inconvenience or a disruption to get on the shuttle and go across town to do a case and then have to come back again. After I'd been at the Mass General for maybe a year and a quarter, Dr. Steven Seltzer approached me, and he mentioned that, " You know, Alex, we appreciate your coming over to the Brigham and Women's Hospital and doing these cases. I have to admit to you that our staff do enjoy working with you. And my chief of neurosurgery and my chief of neurology are asking for us to have an independent interventional neuroradiology group independent of the Mass General, to have our own person here. If we combine that with the chief of neuroradiology division role, could you be interested in it?" And I said, "Well, Dr. Seltzer, it sounds like I'm out of that league. I mean, this is something you want people who are more professionally developed, who have more experience." And he said, "No, not really. I think you'd be okay at this. I'll work with you. We'll give it a shot, but we do have to do a national search. I'm not saying you're a shoo-in, but I think you'd be competitive." So, they did a national search, and I ended up getting the position, I moved over.

[00:39:40] And let me tell you about imposter syndrome because when all of a sudden I had to be responsible for six other neuroradiologists and a diagnostic division when I was a neurointerventionalist and I was only doing the diagnostic stuff part-time, it really was challenging initially. I ended up approaching Dr. Seltzer after maybe four months on the job and I said, "Dr. Seltzer, I don't think I'm doing a really good job." And he said, "What makes you think that? The people in your division seem to be happy with you." I said, "But, you know, they're all older than me, they're all more experienced than me. I feel like they may be resentful of the fact that I have this position. I feel like I'm deficient in terms of my leadership skills." And he said, "You know, there's a course at the Harvard School of Public Health," which was next door, "and it has to do with training leaders in academic medicine. It's a couple of week course, it's maybe \$3,000 or \$4,000. Let me pay for that if you're willing to go. You may get something out of it." And I said, "Very well, Dr. Seltzer. Thank you very much." So, I ended up signing up for the course, I was accepted. I went, I came back to his office after I'd done the two weeks and I said, "Dr. Seltzer, this was fantastic." He said, "What did you like about it?" I said, "Well, first of all, they talk about things like management science that I was unaware of, but the cohort is really something. I mean, these people who are doing this course, they're fantastic. They're from all over the place, and they're gonna be a great network for me."

[00:40:56] He said, "Well, that's great, Alex. I'm glad that you enjoyed it." And I said, "But, Dr. Seltzer, I wanna get the degree now, the health care management degree that they offer." And he said, "Well, are you sure you need the degree?" I said, "I think it'd be really helpful for the division and for me." He said, "Okay." I said, "But, Dr. Seltzer, I can't afford it because it's way too expensive right now." And he said, "Well, I think we can find an internal grant and I think the department can pay for it." So, he did. And Dr. Seltzer was a phenomenal boss because he was interested in my professional development, and he helped me find the trajectory just like Gary Glazer had, just like Dieter had. So, when I say mentoring is important, I think mentoring has been critical in terms of my professional development and the mindfulness for professional development that those leaders have. And I have to tell you that in my current role, Geoff, I think the most important job a leader does is professionally develop his charges. That, to me, is the core and the essence of what we do.

[00:41:49] **Dr. Rubin:** Remarkable that Steve picked you out at that stage of your career to take on leadership of the division. I understand the feeling of the imposter syndrome as you described because there you were, as you described, the most junior member, but it seems that you were the right person. And I'm really intrigued. Did Steve ever relate to what he saw in you that led him to say that you were the right person for that role?

[00:42:15] **Dr. Norbash:** I think you will have to ask him that question. I figured he was desperate.

[00:42:21] **Dr. Rubin:** All right. Now, I am also intrigued about another aspect of your appointment at that time, and that was as this founding director for interventional radiology and founding director of endovascular neurosurgery. Now, did these two appointments differ or they're just opposite sides of the same coin?

[00:42:39] **Dr. Norbash:** So, they differed. And one is because it was in the department of neurosurgery. And Peter Black was the chair of neurosurgery at the time, and I cannot tell

you what a positive influence he was. Peter gave me an office right next to his. In neurosurgery, he brought me on board as adjunct faculty for the neurosurgery department. I ended up going to the neurosurgery morbidity, mortality meetings presenting there and sitting there as a faculty member. It was very unusual because, as you know now, and as was the case then, typically, there was conflict between radiology, neurology, and neurosurgery departments for who is going to land interventional neuroradiology. So, to have the chair of neurology, neurosurgery, and radiology lined up empowering the same person equally, and having them coexist in those three departments was absolutely unheard of. So, it was a really, really unique opportunity. And I think it's a testament to Peter Black's vision, his collegiality, and his collaborative nature. And I truly enjoyed those years.

[00:43:40] I also had a sidekick. My sidekick was Kai Frerichs, who was at that time a Ph.D., and he was in the neurosurgery residency at the Brigham and Women's Hospital, a very storied residency. He was interested in interventional radiology. And when Steve Seltzer offered me the position of moving over, he said, "Hey, by the way, it comes with a neurosurgery fellow." I said, "Really?" So, I met Kai and I fell in love with him. He's just a wonderful human being, an incredible physician. And so he ended up being my Robin to my Batman if you will. And we grew together and we started the service together, and it became successful. We got a nurse manager. Kai finished his fellowship after three years and then joined me on the faculty. It was a wonderful period of time.

[00:44:26] **Dr. Rubin:** Being empowered in this neurosurgical seat by the chair probably puts you into some interesting circumstances with other members of the neurosurgery department. And at such an early stage, learning how to collaborate and to bring lateral or leadership to the role is something that many might struggle to develop. What are some of your learnings from that role in terms of building the right bridges? Were there any particular interactions that were challenging and that you were able to overcome through thoughtful leadership?

[00:45:03] **Dr. Norbash:** That's one of these ongoing challenges that each of us faces and realizing what your special powers are or what your kryptonite is. And in my case, my kryptonite has always been a confrontation. And that's a challenge. If you shy away from confrontation, if you aren't able to deal with it...there are times when confrontation is necessary, and you have to figure out how to either get in character or you cannot take on administrative roles. And so to your point, it's something that I still am working on, still scripting the conversation in my head, "What if they say this? How do I deal with it? How will I work with it?" You don't wanna be in a flight, fight, or freeze mode, you wanna be able to use your telencephalon and actually think through issues rather than be in escape mode. And so that's something that I noticed at that point in time. Even at Stanford, I realized that when there were times and I had to be confrontational, I did not do well in those circumstances or situations. So, what I've tried to do ever since then is pick up keys from people around us who relish a good fight. We all have seen that, recognizing how I can get into character by scrimmaging in certain instances and figuring out, "Well, I'm gonna put myself in a difficult situation on behalf of the institution. Somebody's gotta do it. It might as well be me. I need the practice right now."

[00:46:21] So, that's something that I've continuously had to work on in terms of, "How do I deal with that set of issues?" There are other things that I know about myself. I try to cut to

solutions way too quickly. Rather than listening, deliberating, spending time iterating, I wanna get to solutions quickly. And maybe that's why I became an interventionist. I wanna solve problems rather than talk about the problems. There's a certain amount of deliberation that is essential and it cannot be short-circuited. And I'm learning more with each passing year about how I can spend more time deliberating and still get to a solution rather than feeling that deliberation is the enemy of solution-finding.

[00:46:58] **Dr. Rubin:** Very insightful. You held the role of director of neuroradiology for four years, and then you moved crosstown to become the chair of the Department of Radiology at Boston University and the Boston Medical Center. That was a big role change. How did you know that it was time to chair an entire department? What attracted you to be you?

[00:47:17] **Dr. Norbash:** I was finishing out my healthcare management degree. And at that point in time, I already was sending out letters of inquiry about chair positions because I knew that would be the next step for me. And I enjoyed applying what I learned at the School of Public Health in terms of management science on a daily basis to my interactions, to the strategy of the division, and I wanted an increased scope of responsibility. I wanted to have more financial responsibility. And I have to admit that after I got it, I wondered why did I want this initially. However, I felt that that was a growth direction that made sense. And I ended up going to Memphis, and I was offered the chairmanship at St. Jude Children's Hospital, leveraging some of the pediatric neuroradiology stuff that I was familiar with because I was also at that point doing interventional neuroradiology at Boston Children's Hospital while I was at the Brigham. And so I considered it. I came back home, talked it through with my wife, and Sepi said, "You know, Alex, I don't wanna move the kids while they're going to school. It's gonna have to be an amazing job that you just simply cannot turn down. I really would prefer that you stay close to home."

[00:48:18] Well, I remember this conversation because I was aware that the job at BU had opened, and I knew that a couple of our vice-chairs at the Brigham had applied to it. So, I said, "Well, Sepi, there's a job opening at Boston University, but I don't think I'd be competitive for it." And she said, "Well, you won't know until you throw your hat in the ring. So, you might as well throw your hat in the ring. If they don't interview, they won't interview you." So, I applied and I was the last person that they interviewed for that role. And for whatever reason, and I believe it's because I lived at the intersection of three departments. And at that point in time at Boston University, there was some degree of factionalism taking place between the departments. And I can only guess that they felt that that ability to function in three departments in a positive way and draw them together, that's a skill that would benefit their next chair. And so I think that's why they chose me. And I was drawn to Boston University because it was in Boston, but also because it was a safety net hospital and because of its charge, and because of its mission, and because of its selflessness. And what I learned over the next 11 and a half years at Boston University was that the people were spectacular, and you still need money to get things done. And that was one of the central challenges is finding enough fuel for the engine. And we all know that that's a critical challenge, no matter how big, how small, or what the mission of the organization.

[00:49:39] **Dr. Rubin:** When you began as chair at Boston University, what did you identify as the main imperatives that you needed to pursue?

[00:49:47] **Dr. Norbash:** So, the infrastructure that had been installed over time had languished and it had become a dated department. It needed an infusion of capital, top to bottom, side to side, front to back, it needed everything from new angio machines to new ultrasound machines to new CT machines. And that is a very big-ticket. And I realized that it couldn't happen slowly. When we were negotiating for the position, I was told that we could replace it as part of the normal capital expenditure process, and it would take seven years to turn the department over. And I felt that by turning the department over slowly, it would fail to demonstrate a change mandate and it would fail to attract young, new faculty. And I felt that that ability to attract young, new faculty hinged on a rapid timeline for refreshing the department. So, we had several conversations and the CEO agreed to this. And the result was that we had to get a \$50 million set aside from the board of trustees to allow us to have a fund to do this, to turn over the department, and we did it in less than two years. That's a testament to the capital planning group of Boston University. I can't imagine doing something like that. Now, It's a testament to the CEO's vision and their willingness to do that. And turning the department over quickly allowed us to recruit faculty, which is not an easy thing in Boston because, after all, you've got the Mass General, the Brigham, Beth Israel Deaconess, Tufts, Boston Children's, UMass down the street. There are a lot of academic medical centers that are vying for faculty. And so Boston University really had to distinguish itself in some way. And how we did it was by having a brand new department.

[00:51:21] **Dr. Rubin:** \$50 million commitment in a safety net hospital really is astounding. How did you convince the CEO and other leadership that all those eggs should go into your basket?

[00:51:36] **Dr. Norbash:** Well, it's one of the earliest times when I realized the power of academic-industrial collaborations because General Electric came in, and they did a full inventory of our department, including age of equipment. And they spelled out for us what the challenges were in terms of how that connected up with things like throughput span of service. And so it was a compelling document that was created. We did this work together, and I had to present it to our CEO. We had to do it in very short order. We had less than two months to put it together because I had a drop-dead date by which I had to either agree or disagree to take the position. And so it was that partnership with GE and they having a vested interest. And again, we ended up buying Philips MRI scanners. So, it's not the case that we committed to purchasing GE, but GE saw an opportunity in terms of taking the young chair and helping them see what a capital refresh really looked like. And the institution understood that even through the eyes of an outside vendor, what we had was really antiquated. And some of the equipment was really antiquated.

[00:52:34] **Dr. Rubin:** When you started at BU, how did the cultural differences between BU being a safety net hospital relate to your experience at your prior institutions? And how did they impact your ability to get things done? Did you find that you needed to substantially recalibrate your approach?

[00:52:52] **Dr. Norbash:** I've had to recalibrate my approach in every institution that I've been at because every place has a different culture, as I'm sure you appreciate as much as I do. And so at Stanford, there was this brilliant, innovative Silicon Valley, nothing can stop us, the sky's the limit, let's reinvent the future attitude. At the Mass General, it was, "Let's understand that we need to maintain our dignity, we need to grow in a thoughtful and careful

manner. We can innovate, but we have to do so responsibly." It's a very different message. You move over to the Brigham and the Brigham attitude was, "We're here at Longwood. We're right next to the basic science campus for Harvard Medical School. We need to do translation. We need to lead in translation." When we moved to Boston University, it was, "We're here to help the people who cannot help themselves." And our motto was "Exceptional care without exception." The culture at each place is different because it demands different personalities and structures and systems that allow those deliverables. And typically, they're formulated over multiple generations. So, they're embedded, and it's not easy to change multigenerational culture. And so that has always been one of the key challenges is identifying what the culture is of the organization that I'm entering, trying to understand how malleable and elastic is because it's usually not very much, and recognizing, "What can I get done given this cultural milieu and foundation?"

[00:54:11] **Dr. Rubin:** And what tips would you offer to leaders moving into a new organization in order to attune themselves to the unique characteristics of the local culture?

[00:54:23] **Dr. Norbash:** There are a couple of parts to this. The first is you've got to do a comprehensive assessment. And that comprehensive assessment means talking to people who are successful at that institution, aren't successful at that institution, have left and gone to someplace in a positive way, have left and gone someplace in a negative way. You really need to get a 360 of what that organization looks like from a host of individuals who are there, and the more, the merrier. And so doing that kind of due diligence is really, really important because you wanna know the history of the place, the trajectory, the strategy, and how you will fit into that environment. I cannot stress enough how important it is to get multiple perspectives on an organization before you enter it. And ideally, before you even interview there, you need to learn about it. It's not a matter of "I'll go in and, you know, case que sera sera and if it works out, it works out." You need to understand what you're getting into so you can visualize your own contributions for your own benefit.

[00:55:23] **Dr. Rubin:** So, talk to me about day minus 60 today plus 120 of the job. How would you prefer to schedule your time? What do you think are the most important ways to apply yourself in that transitional period?

[00:55:38] **Dr. Norbash:** I think day minus 60, it's gonna consist of making the right connections and finding out who the people are there through networking more than anything else. And so what you'll find over your career is your network is absolutely critical. And what's interesting is today we had resident interviews. And at all these institutions where these residents are coming from, I have friends, I have acquaintances, I know about those organizations, I know about motion between organizations. So, the network becomes, not just a flu in the dynamic thing, but it becomes an incredibly important thing that kind of perpetuates your connection with radiology, with different institutions, and with opportunities. And so that network, tapping into it to make sure you're asking the right questions of the right people. And I had a handful of people that I started off with initially when I was looking at Boston University or when I was looking here at UC San Diego. And my understanding grew as they would connect me with other individuals. So, it starts off through connections, then there's certain concrete questions that need to be answered, depending on the kind of role that you're assuming.

[00:56:35] So, if you're gonna have a heightened amount of financial responsibility, you need to have financial information, and not just the financial information that comes to you in a pro forma, you need to have background financial information, and you need to do a little bit of detective work to figure out, you know, what are the bond ratings and how have they changed over time? And what happened with this one major building initiative? And why was it defaulted? And why were the conditions not maintained? You need to have that understanding because you're gonna be part of this new family that you're essentially marrying into. By the time you get to day zero, now you realize you're landing on site. What's the most important thing you have to do? Establish trust. You need to start by establishing trust and making those internal connections. And so every conversation you have has to be truthful, it has to be forward-looking, it has to make sure that you're establishing the right kind of a relationship for your own future success.

[00:57:25] So, I would say that first part is trying to look at the landscape. The second part, day zero, is establishing trust. And then day 90 to day 100, there have to be two or three things that you need to accomplish and get done in that first 90 to 100 days that shows you can get something done. If you don't, then you will be seen as a leader who doesn't really get things done. And it's not important to do something that is incredibly ambitious, it's just making sure you can do something that's significant enough to figure on people's radars and to show that you can complete something that you commit yourself to in that 90 to 100 days. It can be something small like, you know, going to QGenda, for example, for the department schedule, or figuring out what kind of a capital budget plan you're gonna suggest to the institution and delivering that suggested draft. But you've got to verbalize it early on within the first couple of weeks of being there, and you have to actually deliver it by day 90 or day 100, whichever you've promised.

[00:58:24] **Dr. Rubin:** After 11 years as chair at BU, you switched coasts, moved to San Diego to become chair of radiology at UCSD. What motivated you to make the change and start over as a new chair?

[00:58:36] **Dr. Norbash:** So, a couple of things happened. First of all, my sons left home. My 27-year-old identical twins who are the lights of my life, they ended up moving to the United Kingdom. They went to St. Andrews for college. And all of a sudden it's me and Sepi at home. And we have a great relationship, but it changes because now all of a sudden your house is a quiet place of serenity rather than a bundle of light and energy. And so I was looking forward, wondering, "Well, you know, what is the next transition that will be interesting for me?" And I was proud of the work that we did at Boston University, but I realized that becoming more of a research institution that it was designed to be would not be easy. It's not easy to take a department that has focused purely on safety net activities, clinical delivery, and teaching and introduce that research piece. It is costly. And again, that capital wasn't sitting there. I did not have \$50 or \$100 million to jumpstart a major research program. And so Bill Bradley was chair of radiology, he's passed away, and he was a friend of mine. He was chair of radiology here at UC San Diego. And Bill always knew that I had a place in my heart, a sweet spot for San Diego, the city, and he also knew I had a sweet spot in my heart for his program here at UC San Diego because, you know, as being part of this brotherhood, sisterhood of chairs, we go to meetings, we sit with each other, we talk to each

other, we talk about our problems, we try to solve each other's issues. And Bill and I became friends. Ever since I'd been at Stanford, actually, I knew Bill.

[01:00:01] At one particular meeting, Bill came up to me and tapped me on the shoulder. And I can remember like it was yesterday. He was over my left shoulder. He said, "Alex, I've got some interesting news." I said, "Yes?" He said, "I'm gonna be stepping down." I said, "Bill, that's terrible. I'm sorry to hear that. Why is this happening?" He said, "No, Alex, it's the right time, it's the right thing. I'm grateful. The reason I'm telling you is I want you to be my successor." And I said, "Well, Bill, that's very kind and gracious of you, but I think that's like the dean's decision or a committee of people." He said, "Alex, I know what they want and I will feed you the lines. And you can trust me on that." And I did, and I trusted him. And I went into the mix and I came out as the chair.

[01:00:39] **Dr. Norbash:** Were there any urgent issues that needed your attention upon arrival?

[01:00:43] **Dr. Norbash:** I think being an East Coast guy and coming to the West Coast, automatically, there's a barrier there. And having been in Boston for 17 and a half years, I was solidly seen as an East Coast guy. And so I had to reassure the faculty and the trainees in the institution that I was not gonna try to turn San Diego into Boston, certainly not the medical center. And so again, establishing trust necessitated having the conversations and showing that I was deliberative, that I was inclusive, that I was decisive when I needed to be. That's really what the focus had to be for the first couple of years.

[01:01:22] **Dr. Rubin:** If you think back to the early days as being chair at BU, and then 11 years later, the early days of being chair at UCSD, how did your approach evolve toward integrating in the new department in university through those years of experience?

[01:01:41] **Dr. Norbash:** So, another fundamental difference between BU and UCSD is UCSD has two medical campuses. It has a general hospital which is downtown in the Hillcrest facility which is where I am right now. It also has a large campus in La Jolla, which is where the Cardiovascular Institute is, the common outpatient pavilion, our CTRI. And the north campus is connected to our general campus. At Boston University, to go to the engineering school, you had to get on a shuttle and spend time going several miles in Boston, which could take half an hour. So, the proximity of the general campus was a tremendous attractant for me. And I realized that collaborations with engineering or the school of pharmacy or the business school would be immeasurably easier if I just had a 10 or 15-minute walk across the bridge to go and meet my counterparts. And so one of the things that I tried to do at BU is figure out how these connections could work. Well, coming here all of a sudden, I had this whole network of connections that I could make much more easily, recognizing that I could not neglect the things that I was doing in terms of the departmental focus and the healthcare focus.

[01:02:42] So, it was a different juggling act. It was a balancing act of trying to explore this new area, see where those connections are while not jeopardizing the existing research that was being done in the department and the existing clinical focuses in the department. Now, what I noticed in myself was, being almost 12 years older, I was 12 years more patient because I lived through a number of crises, and I knew how they would turn out for the most

part. And so I was not all of a sudden at DEFCON 1 if a problem was popping up. And at BU, I remember, initially, whenever there's a problem, whether it's a budgetary, or a manpower, or a human resource issue, you would worry that "Oh, my God, I'm gonna get fired, the hospital's gonna collapse, radiology will never be delivered in this fashion again." With the passage of time, you mellow out a little bit, you see a few crises, it calms you down. And so I was a different person when I started off here than I was when I started at Boston University.

[01:03:33] **Dr. Rubin:** Recalling the adage that if you've seen one academic medical center, then you've seen one academic medical center. From a chair's perspective, how would you characterize the cultural differences between BU and UCSD?

[01:03:45] **Dr. Norbash:** So, BU is very focused on a safety net role, very much so. And UC San Diego is very much focused on trying to have this balancing act where we have one safety-net hospital, but it's an institution that's also had 16 Nobel laureates and with 5 Nobel laureates at the Salk Institute next door. And so research is incredibly important for UC San Diego. It's critical, it's central, and research excellence is supported and it's promoted. So, that in and of itself means that scientists have a different stature and a different presence at UC San Diego than they do at Boston University where a clinical department like radiology is concerned.

[01:04:22] **Dr. Rubin:** And how does that elevated profile of scientists in the institution impact the clinical practice?

[01:04:30] **Dr. Norbash:** It does so very vividly because, if we're focusing on translational science, which is what we focus on in the radiology department, well, now all of a sudden, you have to make sure that the installed capital equipment, your fixed base, is able to incorporate these new findings into the workflow. So, if we're working on, for example, 40 cardiac MRI, we have to make sure that the servers and the network and the software and everything on the clinical scanners where we're doing this work allows us to incorporate the latest findings that we're putting into place. And what that demands is it demands a lockstep coordination, recognizing that there's also a budgetary hit, and we have to create a justification basis for that budgetary hit based on discovery. So, now discovery doesn't just become discovery for the sake of itself, it is supposed to be a translational opportunity to distinguish us in the marketplace because of how what we do as our core competencies in academic medical center, which is create and innovate, how that is put into place for every single patient who can take advantage of the opportunity.

[01:05:32] **Dr. Rubin:** How has UCSD in your department, in particular, been doing at this stage of the pandemic? How is that affecting you?

[01:05:39] **Dr. Norbash:** Well, I'm incredibly proud of the organization. They're proactive, they are broad-minded. What's happening is I'd say a couple of things. In terms of the work being done, a spectacular job of doing what has to happen, whether it's creating distancing or putting up shields, or being gracious with patients. And our press gaining scores skyrocketed after COVID hit because I think our technologists on our frontline were spending a lot more time with each individual patient and generating and projecting empathy. So, I'm proud of what our people have done, but I have to tell you also, COVID has had a tremendous cost

and an effect on our people. Why? Because of the childcare issues, because of the fear of your personal safety, because of the fear of taking a virus home and infecting a loved one who may have an immune-suppressive state. So, you can see that individuals are strained and are stressed because of the conditions. And it demands a greater degree of hand-holding and a greater degree of engagement so that they will understand how much we appreciate this and how much we care for them.

[01:06:40] And again, the leadership of the organization has done a spectacular job. Our CEO is very selfless, very public, very engaging, and has numerous town halls. And so the rest of us have picked up that queue. And so we as chairs also now have regular town halls with our faculty to make sure everybody has a chance to air their concerns, ask their questions. And we've also tried to be adaptable. One of the things we've tried to do is have telecommuting. And particularly, you can imagine, you know, if you have this understanding of how society disadvantages certain genders or certain minorities, we understand that the burden of responsibility for childcare falls on the shoulders of women, unfortunately. And so when you have a mid-career woman who happens to have a couple of kids at home and they are burdened with the childcare responsibilities now that it's not so easy to find a nanny or there are issues with daycare or the schools are closed, that it will affect their professional presence disproportionately to a much greater degree. And so these are important things that have to be minded and have to be discussed. And then solution-finding is something also you have to create the right groups to help you solution find as you're sorting your way through things like the COVID crisis.

[01:07:49] **Dr. Rubin:** There has been word of UC campuses seeking to achieve closer integration as a health system. How's that going?

[01:07:57] **Dr. Norbash:** I can tell you from a radiology perspective, we're having the conversations. The five chairs across the five campuses, we like each other, we work well together. Every six months, we have retreats where we get together, and we go over some of our issues and challenges. And one of the things we did recently, which I think is a clarion bellwether of how positive the relationship can be, is we agreed among ourselves to purchase a common infrastructure for a PAC system going with a single vendor. And that for us was a giant step because it is such a big investment. And a couple of us have to do close-term refreshes. UC San Francisco is going through it right now. And we've had 60% of our new PAC system installed and it's gonna go live March 21. But for every campus to agree to that, that's a significant capital investment that the CEOs agreed to because the CEOs see a benefit in systemness. Once we have that in place, it's gonna allow us to start working on individual programs. And you can imagine, as a radiology department, remote reading is one thing that you can obviously think about, having aggregated super sub-specialized services, having tumor boards, there are a lot of opportunities. So, we are having the conversations to establish the infrastructure that will allow us to be more effective in that space. We're all excited by it, and I hope you'll see some big stuff from us in the next one and a half to two years in that space.

[01:09:16] **Dr. Rubin:** Oh, I look forward to seeing that. I can't help but make what seems to be a cultural observation that apparently transcends all of the UC campuses, which is the primacy of chairs of radiology in determining technology direction. And in many institutions, that's not a given. And IT and other elements of the organization sometimes take a front seat

role. To what extent are department chairs involved as drivers versus bystanders in the organization?

[01:09:46] **Dr. Norbash:** I think what happened in our instance was we were empowered, and we were empowered by several people, specifically. The Chief Information Officers for the health system at each of the campuses have a strong relationship, and several of them empowered us. Again, one of these individuals, notably, Chris Long, Chris is my chief medical officer, who was my chief information officer and is currently both our chief data officer and chief medical officer. And he empowered us to sit down. He facilitated the conversations. And so this is a reflection of what's happening in the macrocosm, where all of our different campuses are trying to understand where those alignments exist. Because one of the points that I contend routinely is you cannot have dissonance between how the microcosm and the macrocosm work, there has to be some degree of coherence. You can't be a collegial, collaborative department working with other departments if your housing institution is a battleship. You have to have some degree of collaboration at the upper levels for this to resonate. And we had that. And we had that in multiple institutions. There's a little bit of sibling rivalry, of course, and you can imagine, with UCLA and UCSF, these are behemoths. However, recognizing the changes that are gonna have to happen in the next 5 to 10 years in healthcare, looking at some of the seismic things that are happening with artificial intelligence, with population health, with payment systems, we realized that it's important for us to band together because we do believe there is strength in scale.

[01:11:11] **Dr. Rubin:** I wanna rewind a bit and ask you about a few leadership roles outside of radiology that you've held at school of medicine and university levels. And let's start with your role as Assistant Dean for Diversity and Multicultural Affairs at Boston University. You served in this role during your final six years at BU. How did that appointment come about?

[01:11:32] **Dr. Norbash:** Jon Woodson ended up becoming undersecretary for defense, and he was a general. He is a general. And he had been our diversity dean at Boston University. As he left, he decided to broaden the office's charge, he had the permission of the dean to do that, by selecting a panel of three or four people to help share the responsibilities. And I interviewed for the roles, and I was one of the people who was selected. And there were a team of three of us at the time who were looking at the different sectors of how we were planning on working in this space and continuing General Woodson's legacy. What we ended up doing is we looked at cultural education, how do we have cultural education nights? How do we make sure that we're looking at metrics for recruitment, for students, for faculty, for residents because we have to mirror the community that we're into the extent that we can, how do we look at our connections with the community and strengthen those? So, there's a whole body of work that we established based on the strength of the group that was assembled. So again, teams work when you've got the right individuals, and they have the right unified line vision. And that was a very gratifying period of time. But there was this shift between General Woodson being the only person in charge of diversity and then three of us having shared responsibilities.

[01:12:48] **Dr. Rubin:** As you've described BU particularly with its safety net status, one can well imagine that the BU community is diverse and multicultural. I'm intrigued about what you believe distinguished you to serve at the helm of initiatives related to diversity, equity, and inclusion there.

[01:13:10] **Dr. Norbash:** It's interesting. We would have some conversations about diversity, and we would pick things up and we'd learn about them. And I remember one illustrative case for me is the following. We had a lot of Haitian Creole individuals in Boston, and they would come to the safety-net hospital, a significant percentage of them. And I learned from one of the translators at one point that many of them practice Vodoun, the Vodou religion. And for those who practiced Vodoun, having metal in their bodies was defiling their bodies. And so as an interventionalist, well, why does this matter? Well, it matters because, if I have a patient who I'm treating a stroke on and if I know they're Haitian Creole, and if their family is not there, well, if there's a stenosis in the carotid and I'm trying to go up and do a thrombolysis, maybe I'll just do an angioplasty instead of putting a stent in so that their body positivity can remain in place.

[01:13:59] And so it was I think my fascination with stories such as that in terms of, "Well, how do we educate others? How do we educate other interventionalists? How do we let the surgeons know that use sutures instead of using staples if you can avoid it?" And so that kind of swept me away a little bit, and I think it caused me to be a little more conspicuous in the view of the individuals who are the decision-makers that I have an interest in this space and it is a genuine interest. And so I suggest to anyone that if they have an interest in an area that you should feel comfortable advertising it if you find the right sponsors and if you have confidence that the individuals who you report to are keeping your best interests in mind and have your professional development in mind. My dean was very supportive and suggested me for consideration for that role.

[01:14:43] **Dr. Rubin:** How did you find leading as an assistant dean different from leading as a department chair?

[01:14:48] **Dr. Norbash:** Leading as a department chair demands an attention to details, and it's actually even one level further removed in terms of the attention to details when you start looking at being in national offices where you can really stay at 30,000 feet or 40,000 feet most of the time and others will do some of the work. As a chair, you had to do some blocking, you had to do some tackling, sometimes it was trench warfare, you know, hand-to-hand combat, one trench at a time. And so you had to make sure you were getting things done. At an assistant dean level, you could find other individuals who were suitably predisposed to get things done, and your job wasn't on the line every single day in terms of your performance. As an assistant dean, you can do a fair to middling job and still be seen as positive because others didn't necessarily wanna volunteer their time to do that work. So, it was much more forgiving. And the mistakes are much more forgiving, and you're also less worried about "Well, you know what, if I stopped being assistant dean, life goes on, I'm still a neuroradiologist. But if I stopped being a department chair, this is gonna be a heavy hit." And I think it was the nature of the roles, the lightness of the role, the amount of microscopic responsibility you had in one versus the other that really causes them to be different and causes you to be different in terms of how creative you can be. You can be much more creative with a job like an assistant dean position than a chair position. With a chair position, you've gotta know that every step is probably gonna succeed.

[01:16:05] **Dr. Rubin:** Shortly after your move to UCSD, you were appointed Associate Vice Chancellor for Equity, Diversity, and Inclusion, Climate and Professional Development. What did that role entail, and how did it differ from your decanal role at BU?

[01:16:19] **Dr. Norbash:** So, the decanal role at BU was much more arbitrary. And when certain things would happen, I would be assigned to take care of them. With this, there were some specific deliverables that we were seeking to do. And one of the roles that I had was I was asked to construct a mediation initiative. And I did this by partnering with a person who was extremely skilled in our office. MarDestinee Perez is her name, and she is absolutely phenomenal. And she was my dyad. She was my partner in terms of getting this work done. And so we ended up training and certifying a number of faculty. And I think there are probably about 60 faculty now across the entire campus who are certified mediators, including me. So, we had to go through mediation training, and we offered ourselves through our office of diversity as mediation agents when there were bullying events taking place or where there were feuds taking place. That was a very specific structured request. And this is kind of the vision of our Vice Chancellor for Diversity. I was an assistant vice chancellor and I worked for her. Her name is Becky Petitt and she's a visionary.

[01:17:18] And another thing we were asked to do is come up with a survey tool that would look at satisfaction and comfort of individuals where differences are concerned across the entire campus. In order to do that, I had to work with the Senate. At UC San Diego, I needed representation from the Senate, we had to put together a work plan and a work group and a deliverable, and a questionnaire. And so, you know, there were specific projects I was asked to do. The other thing I was asked to do was to deal with individual faculty who felt slighted to do some degree in analysis and try to do repair work with their chairs or with their deans. So, I got to go from school to school and figure out what's going on, you know, in social sciences, what's happening in the math department, what's going on in chemistry. And that was an opportunity for me to learn about the range of cultures inside the organization, inside the institution. So, it was much more prescriptive in terms of what the expectations were for me, it was much more project-oriented. But again, had I not had the experience at BU, I could not have built on those skills and I could not have done what I did here.

[01:18:23] **Dr. Rubin:** As a new department chair, were you concerned that taking on the associate vice chancellor role might spread you too thin?

[01:18:30] **Dr. Norbash:** I was. And so I chose my management team to make sure that they had some autonomy to do the things they needed to do, and I picked a second in command who's incredibly capable. And that reassured me to some degree, but ultimately, I realized that I couldn't continue doing both full time. And so after that first three-year cycle, I decided to just continue as the department chair.

[01:18:50] **Dr. Rubin:** Beyond your roles in support of diversity, equity, and inclusion, you've served on a number of committees and task forces. And I'm intrigued by a couple of recent commitments as a member of the UC Regents Working Group on Innovation Transfer and Entrepreneurship and the UC Regents Health Services Committee Clinical Advisory Group. With campuses spread over 500 miles apart, how do these groups function, and how focused is their charge?

[01:19:18] **Dr. Norbash:** So, the health workgroup charge, it is adaptable based on the subjects that are brought up. And as you can imagine, what we're talking about recently is wellness and burnout, making sure that we organizationally are mindful of the needs, trying to figure out how we can learn best practices from each other, what kind of four we create to

discuss them. So, that has been very interesting. Those discussions have been very, very positive and have resulted in positive action at each of the campuses. Technology licensing is the same thing. Each of us has a technology licensing arm, each of us wants to be entrepreneurial even though we're in different physical environments. And the question is, what can we learn from each other? How can we be nimble and yet be responsible to our organization and to the office of the president at large for the entire University of California system? So, it's a bit of an exploration, it is very energizing, it's entertaining. The deliverables right now in terms of concrete deliverables are yet to be determined.

[01:20:13] **Dr. Rubin:** It says a lot, Alex, that amongst anybody who could be appointed to these working groups across all the UC campuses that you are one of the representatives. I imagine there are no other radiologists and perhaps very few physicians on these groups.

[01:20:28] **Dr. Norbash:** There actually is... In the health workgroup, there's one other radiologist, and he's very, very good, Steve Hetts, from UC San Francisco. He's also an interventional neuroradiologist as it would happen, but he's been a remarkable leader in the conversations. And it's good to know him and it's good to have that kind of talent.

[01:20:43] **Dr. Rubin:** Special pedigree, those interventional neuroradiologists. Healthcare has many leaders, but not so many leadership teachers. Over the past decade, you've directed the Radiology Leadership Summit and taught in many leadership courses. How do you approach preparing a leadership lesson for a group of physicians?

[01:21:04] **Dr. Norbash:** It takes introspection, it takes honesty, and it takes connections. So, the introspection is that, you know, we all know that if you wanna learn a subject, the best way to do that is by teaching it because it forces you to develop some degree of understanding of this particular space and reflect on it and communicate it effectively, and then at some point, to internalize that. And so being in that teacher role, or at least being in a lecturer role has been incredibly educational, and in a self-serving way for me. At the same time, I believe that that opportunity to amplify our positive effect through others is something that we all hunger for. It allows us to have a sense of purpose. And again, as I mentioned earlier, dignity and purpose are what life is all about. And so I think you have to be genuine to yourself, you have to be willing to open up, you have to be willing to share your mistakes. And again, that trust word. You have to have a demeanor, a disposition, and an affect that allows others to trust you. And I think that all has to do with how reflective you are, how engaging you are, how honest you are in terms of the lessons that you learned, and how vulnerable you allow yourself to appear at certain points in time. So, I think it has to do with fluency, it has to do with deportment, it has to do with affect. And again, we learn from our mistakes. I've had many instances where I've tried to engage and I have failed miserably. And so I try to learn from those examples.

[01:22:21] **Dr. Rubin:** So, given a choice between an invitation to speak on advanced imaging of the brainstem or endovascular treatment options for anterior communicating artery aneurysms versus another to discuss managing difficult conversations or pursuing design thinking, which would you pursue at this point? Which would you choose?

[01:22:40] **Dr. Norbash:** I'm really excited by the latter because the latter allows you to interact with more people who are outside of your own domain, which means you can learn a

lot more. You can learn about these vast new areas that are unfamiliar, that are beautiful and amazing and fascinating. And so the world to me is like this magic adventure. And you lose if you just stand in one particular corner looking at a mirror, and you win by going out there and exploring and having a sense of adventure and realizing you're going to fail sometimes, but they're not fatal. Those failures cause you to grow and cause you to have an amplified positive effect on the world around you. And so I think we have to have a sense of adventure to really be able to meet our potential.

[01:23:21] **Dr. Rubin:** Among your many activities within the university setting and many contributions to professional societies, you've also been closely connected with innovative technologies and new ventures, including co-founding of six companies. Would you mind selecting amongst the bunch and describing your greatest successes and maybe a failure that stands out?

[01:23:43] **Dr. Norbash:** Oh, absolutely. So, let me talk about one success that I'm really proud of. Boston Imaging Core Lab is a core laboratory for radiological studies, and it's probably in its, I don't know, 9th year or 10th year. It's been doing pretty well. There was a need in the marketplace. We saw what others were providing. Ali Guermazi had a vision for what he wanted to accomplish. Asim Mian was his sidekick, and they asked me to help them find the way to do this because I was their chair at the time at Boston University. So, we put together the Boston Imaging Core Lab. It's been on message, it's provided something that industrial partners want. And so again, it's about needs finding. Anytime you do a startup, you have to figure out what is the chance for success, what is the need, and what is the ultimate expression of success in this particular version? And so this has succeeded. And I'm very grateful for that, and it's not an area that I thought I would go into.

[01:24:29] An example of a failure. There was a catheter that three of us developed many, many years ago, which was driven by Micro-Electronic-Mechanical Systems, MEM systems. And it was a catheter that looked like a straight catheter, and you would program in a certain curve, and then the tip would curve to a certain shape. So, hypothetically, you could replace all of the catheters in your cath lab with two or three catheters. From an inventory perspective, you can imagine how advantageous that is. You just have a box on the end, you punch in a certain bunch of numbers and it takes that configuration that you wanted to use. Well, we ended up selling it to a very famous vendor and they buried it. What they did is they bought it and they buried it because it would have competed with all of their products and all their services. And we sold it for a pittance because we thought they were going to market it, and we thought we're gonna be able to get some license fees off of it also. And so that was a harsh lesson learned. You have to think of the motives of everyone around the table and their perspective. So again, those multiple perspectives become critical, especially if you're in the business sector.

[01:25:31] **Dr. Rubin:** All six of your companies were founded over a 13-year span with the last one founded in 2008. What turned off the spigot?

[01:25:39] **Dr. Norbash:** The spigot is there. And hopefully, it's gonna come back to life pretty soon. We actually have a robot that we're working on that a colleague of mine who's in the robotics division here in the School of Engineering, and one of his Ph.D. students is almost finished, have done an incredible job with a prototype of this robot. And the robot is

one that's gonna be MRI or CT compatible and it's gonna allow us to do ablations, potentially. So, you can do point and click ablations. And so that's taken some time to develop, but it's been pretty exciting. The other two projects that I'm involved in one has to do with soft robotics and a catheter that unfurls in the blood vessels. And another one has to do with a micro hydraulic system that drives the catheter to have different shape tips based on micro hydraulics rather than MEM systems. You have to be very careful of the patent territory for some of these things. So, I think that the robot that goes in CT and MRI is gonna become a company relatively soon, hopefully. So, hopefully, the other two will also. But, you know, you've gotta stay in the game, you've gotta be part of it. And I've also spent a lot of time over the past several years trying to help the students who are going into these different bits and pieces, recognizing that it can't be self-serving, and I can't have a whole bunch of companies coming out that I'm on the board of or I'm part of. Otherwise, it looks like I'm doing this for alternative purposes.

[01:26:48] **Dr. Rubin:** In what ways do you believe working with industry, and particularly, early-stage companies, can empower an academic career?

[01:26:54] **Dr. Norbash:** I think, if our philosophy is translation, that means from bench to bedside to a market. And if it's not getting to a market, what benefit is it to humankind? And so industry is how you get that second big step. Otherwise, you can't. So, to my mind, if we really are committed to translation, which I believe is our core competence in academic medical systems, we have to be committed to industrial partnerships. The flavor and the nature may vary from place to place, but they are essential partners. They're as essential to us as our patent committees are, as our basic scientists are.

[01:27:25] **Dr. Rubin:** Alex, one of the high points of my life came during a fourth of July barbecue at your house when you invited me to join you for a helicopter tour of the South San Francisco Bay. After leaving our wives to manage our five three-year-olds, we headed to the Palo Alto Airport, and you wheeled out the smallest two-person flying contraption that I had ever seen and away we went. Tell us about your passion for flying helicopters. How did you begin, and what has been your journey through current times?

[01:27:54] **Dr. Norbash:** So, as you may recall, I thought being an airline pilot or a pilot would be a great thing and my mom said, "Well, become a doctor, and then maybe you can do that." So, 1990, I was a radiology resident in Pittsburgh, and I had this hunger for flight and it was unsatiated. And I thought, "You know what, I may not be able to afford to be a private pilot, but I can at least take a couple of lessons and see what it's like." Well, next thing, I took a couple of lessons, and six months later, I had my pilot's license in 1990. The same thing happened in 1992. I was at Stanford, I was a second-year neuroradiology fellow, and I remember driving up towards San Francisco by Palo Alto Airport when I saw a helicopter landing. And I thought, you know, "I've always wanted to fly helicopters, but I can't afford to do it." The same thought popped into my head, "If you don't start, you're never gonna get there." So, I took that first lesson, and three months later, I had my helicopter license. And I've been flying mainly helicopters ever since then, since 1992.

[01:28:52] So, my philosophy based on those two incidents is, if you want something, you have to pursue it, and you shouldn't be dithering about it or overthinking it. If you know you're drawn to something, you know, if it's a constructive thing, then pursue it and do it and

take that first step. Because once you take that first step, the subsequent steps are much easier to take. But if you don't take that first step, when you're 85 years old in a rocking chair at a nursing home, you're gonna wonder, "You know what, I wish I'd flown helicopters because I always wanted to." So, my suggestion is, pursue your passion. And Geoff, I remember that flight and it was a very enjoyable flight. And I fly out of Orange County now. I go up every single Sunday morning and I fly out of John Wayne Airport, and it is the essential thing for my life. And I'm sure Sepi wishes that I had found a cheaper hobby, but I do enjoy it very, very much. And it is a complete escape. When you're flying something like a helicopter, you're really not thinking about anything else, you're living in the moment. And that becomes all-encompassing.

[01:29:52] **Dr. Rubin:** Well, it is a spectacular perspective to have on the world. And I thank you for giving me that experience, and I understand why you pursue it with such vigor and passion. In what other ways do you unwind? Are you surfing much?

[01:30:07] **Dr. Norbash:** Not as much as I was. It's interesting. San Diego lends itself to walks, and so what we do a lot is I like Coronado Island. It feels like a little island of serenity, literally. But on Sunday afternoons, Sepi and I will go and we'll do a parameter of Coronado Island and have dinner there at Kentucky Fried Chicken overlooking the skyline in San Diego, something we do almost every Sunday. And when she wants to, she'll say, "Hey, let's go down and get on the ellipticals." We have two ellipticals that are side by side, and we'll do that sometimes, you know, low impact on the joints, or she'll say, "Let's go walk down to the beach." So, I think spending time with Sepi is something that's really important. Again, as I'm approaching the far end of middle age, I'm realizing how precious the moments are that we spend together. And I'm trying to maximize those moments as much as I can because what you realize after a period of time is that life is fleeting.

[01:30:56] **Dr. Rubin:** Yeah. That's beautiful and important to articulate that message of continuing to renew that connection with family. That's superb. Thinking back across such a breadth of experience as a leader... I mean, we haven't really even unpacked any of your roles leading national organizations and such. We'll have to save that for a future conversation. But I'm curious if there are any accomplishments that stand out in particular amongst the whole breadth of it that you look upon with particular pride.

[01:31:28] **Dr. Norbash:** Since you mentioned the national organizations, this is something that has kind of stuck in my head for better or for worse. Dieter will occasionally call me and he'll say, "Hey, Alex, I want you to read a book because I wanna discuss it with you." "Okay. Fine." So, I read a book and we'll discuss it. He'll have a unique perspective, I'll have a unique perspective. We're both enriched by that. Years ago, he called me and he said, "I've read about this thing called scenario planning and I think you'd be interested in it. I want you to read "Finding Futures" by Peter Schwartz, and then I wanna talk to you about it." So, at the time, I think he was incoming to be the president of the Society of Chairs. I read the book, I got together with him, we talked about it. I said, "This is really cool stuff in terms of what it represents." And so what we were able to do is we were able to get the Society of Chairs to commit to a scenario planning process, which is a strategic plan. We were able to get the ACR to pay for it. And now the ACR is doing their scenario planning project as their strategic plan. And we're also planning on doing something along similar lines for a couple of other organizations that I'm involved in.

[01:32:22] And so what happened is listening to my mentor, and both of us have grown through this. But learning from what he opened the door for, pursuing that, learning about it, it's changed the way I think, it's changed the way I've been a chair, and it has proven to me the value of two things, network, the value of having those connections with other people because I'm continuously trying to build more connections because God knows what I'm gonna learn on the other end, and also the value of knowledge, specialized knowledge. Because without reading and learning about scenario planning and meeting with people who are leaders in that space, I wouldn't have learned about it, I wouldn't have been able to apply it, and it wouldn't have benefited our department, our healthcare institution, and some of these larger organizations. So, to me, that kind of is a distillation of these two variables. Principles are issues that I think are central to living a life well-lived, and I've enjoyed it very, very much. I just stated because it is emblematic.

[01:33:15] **Dr. Rubin:** Looking ahead, what excites you the most about radiology?

[01:33:20] **Dr. Norbash:** The future. I can't wait to see what AI is going to do with radiology. I can't wait to see the time when a radiologist can read 400 head MRIs in a given day because of the extension and how it's going to be incorporated into a combined genetic and pathology report, and how that's going to inform a care pathway, and how those care pathways off a big data are gonna from moment to moment adapt based on all the information that's coming in from all the tens of millions of nodes. I can't wait to see that happen. I can't wait to see standardized reports. I can't wait to see an MRI that is a recliner, it's a Barcalounger. You go in, and as soon as you register in a hospital for an inpatient reason, you sit in the Barcalounger for 15 seconds then you get up. And it quantifies everything happening in your body, and it gives you pathology, and it gives you odds ratios. I can't wait for what's gonna happen with this incredible super-technology that's gonna hit us like a tsunami. I just hope I live long enough to see some of these changes.

[01:34:14] **Dr. Rubin:** I relate to all of that. Well, Dr. Alex Norbash, you are a leader among leaders and are such an inspiration for many and setting the standard in helping others to step up and to take on formative roles and to propel our field forward. It's such a privilege to have you as a friend and to be able to spend this time talking to you today and hearing your journey. Thank you so much for joining us and taking the lead.

[01:34:47] **Dr. Norbash:** Geoff, you are among the most fearless and brilliant radiologists I have ever known, and you've been a source of inspiration to me. It is a distinct pleasure and an honor to be here and share my little slice of perspective with you. Thank you.

[01:35:03] **Dr. Rubin:** Please join me next month when I speak with Robert Grossman, Dean of the New York University School of Medicine, Chief Executive Officer of NYU Langone Health, and professor of radiology, neurology, neurosurgery, and physiology, and neuroscience at New York University School of Medicine, which in 2019 was renamed the NYU Grossman School of Medicine in his honor. Within these roles, Dr. Grossman oversees more than 45,000 employees, students, and non-compensated faculty across six inpatient facilities and over 300 sites throughout the New York region and in Florida. Between 2007 and 2021, Dr. Grossman oversaw an increase in NYU Langone's revenue from \$2 to \$10.2 billion, with more than \$3.9 billion in philanthropy raised. During this time, NYU Langone's National Institutes of Health Research Awards increased more than 288% and totaled \$500

million in 2021. As Dean of NYU Grossman School of Medicine, Dr. Grossman led the historic and unprecedented initiative of providing tuition-free medical education for all current and future students in his MD degree program. A tireless innovator, Dr. Grossman has recently led the establishment of a medical school curriculum that leads to an MD degree in just three years. He has been named one of the 50 most influential healthcare leaders who changed the state of healthcare in America by "Time Magazine," a living landmark by the New York Landmarks Conservancy for his leadership in the aftermath of Hurricane Sandy in 2013, and gold medalist of the International Society for Magnetic Resonance in Medicine and the American Society of Neuroradiology.

[01:36:59] "Taking the Lead" is a production of the Radiology Leadership Institute and the American College of Radiology. Special thanks go to Anne Marie Pascoe, senior director of the RLI and co-producer of this podcast, to Port City Films for production support, Linda Sowers, Meghan Swope, and Debbie Kakol for our marketing and social media, Bryan Russell, Jen Pendo, and Crystal McIntosh for technical and web support, and Shane Yoder for our theme music. Finally, thank you, our audience, for listening and for your interest in radiology leadership. I'm your host, Geoff Rubin from the University of Arizona College of Medicine in Tucson. We welcome your feedback, questions, and ideas for future conversations. You can reach me on Twitter @geoffrubin or using the #RLITakingtheLead. Alternatively, send us an email at rli@acr.org. I look forward to you joining me next time on "Taking the Lead."