Episode 19: Bruce J. Hillman, MD, FACR
A Renaissance Leader
March 19, 2020

Geoff: 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 Ruben. Today I am speaking with Bruce Hillman, the founding editor and chief of the "Journal of the American College of Radiology" and a pioneer of the field of health services research as applied to radiology. A native of Miami, Florida, after graduating from Princeton and the University of Rochester School of Medicine, Bruce simultaneously completed radiology training in an NIH-sponsored clinical research fellowship in Boston at the Peter Bent Brigham Hospital. Immediately following fellowship, he was appointed section chief of genital urinary radiology at the University of Arizona where in addition to leading GU radiology, he produced groundbreaking work on the economics of referral patterns for medical imaging, payment reform, and the impact of imaging on health outcomes.

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After 14 years in Arizona, he relocated to the University of Virginia where he served as chairman of the Department of Radiology for 12 years. He was the founding principal investigator and chair of the National Cancer Institute Funded Clinical Trials Cooperative Group and the American College of Radiology Imaging Network, or ACRIN, which has been a critical enabler of radiology's leadership in major clinical trials, including the National Lung Screening Trial. He served as the editor and chief of both investigative radiology and academic radiology before founding the JACR and serving as its editor in chief for 15 years. A president of 5 radiological societies, recipient of lifetime achievement awards from 6 radiology organizations, and author of over 400 published works, including 3 creative nonfiction books for laypeople that span topics from discovery of AIDS to Albert Einstein, Bruce is a Renaissance man as well as a wholly original and inspirational leader.

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Bruce, welcome.

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Bruce: Oh, thank you. It's quite an introduction.

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Geoff: It's all you.

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Bruce: The encapsulated. Yes. Thank you.

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Geoff: So let's start at the beginning. You were born and raised in Miami Beach. What was life like for you growing up there?

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Bruce: Well, everything was really idyllic. It's not like Miami Beach today. It was just a small town. And my father owned one of the little hotels that now is so popular in South Beach. He owned a third of it anyway with his family. And I grew up a lot on the porch there. I met the little old men, the little old ladies. I became, sort of, their surrogate grandchild.

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Geoff: That sounds like a quite an upbringing. This was right on the beach, this hotel?

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Bruce: It actually was directly across the street from the Delano Hotel on 17th and Collins.

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Geoff: Wow. Wow. And so, you met the guests as they came and went. Any interchanges that are particularly memorable or just stand out in your mind?

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Bruce: Well, there was a band called the King Fish and I have no idea why they called him the King Fish, but he sort of held court on the porch out in front of the hotel and every once in a while he'd sneak me and puff on a cigar and he taught me how to pinochle, an art form that I'm afraid I've long forgotten.

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Geoff: Sounds quite idyllic indeed. Did you have brothers and sisters to share the experience with?

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Bruce: Yes. My brother Jeff is 19 months younger than I and I would have to say there was strong sibling rivalry. We've become much friendlier now that we're older.

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Geoff: And you mentioned that your dad owned a third of the hotel. Was this his full-time job to engage in and oversee the management of the hotel?

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Bruce: He was the manager. His family had bought the hotel. He was kind of the black sheep of the family. He'd crossed a number of forbidden bridges in his earlier life and basically, this was his last chance when he married my mother, his father who was something of a land baron in Manhattan, sent him to Miami Beach and said, "Make good on this or you're out."

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Geoff: And did he make good?

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Bruce: Well he did, but it costs quite a lot. It cost him his life. He was a very anxious man. He was an early taker of Miltown, an anti-anxiety drag back in the '60s, and he died young. He died at age 51.

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Geoff: Oh, I'm sorry to hear that. How old were you when he passed away?

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Bruce: I was 12. So that idyllic life ended very quickly with that. My mother did the best she could. She was a schoolteacher. She went back to teaching kindergarten at the elementary school that I attended, and we got by.

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Geoff: Were you called upon to become an earner or to contribute and work at the hotel after your father passed?

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Bruce: My mother and my father's family did not get along well. They sold the hotel, the money that she earned from the hotel went one-third to my brother, one-third to my mother, and one-third to me, and it was really responsible for helping me get through both college and medical school with loans and work at the same time. I held summer jobs from the time I was 12 years old. I was a

grocery...I used to be one of the guys who swept up on the beachfront hotels, I was a drugstore delivery boy. I was a piping contractor guy who crawled into pipes and brushed out the weld. So many, many jobs before I actually became an adult. What they convinced me of was I didn't want to do any of them the rest of my life.

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Geoff: Yeah. That's a theme that we've heard from others, but sometimes upon reflection, those early jobs as a teenager have taught us lessons that we carry forward. Other than the lesson that you didn't want to do them as a career choice, are there any other lessons that you carry from those early positions?

[00:07:14]
Bruce: Well, absolutely. I mean, I think that anything of that nature really does have an enormous impact on you. It teaches you industry, it teaches you to be timely. All of those things are important in later life.

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Geoff: What do you recall being your first experiences as a leader?

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Bruce: Well, let's see. I think there's always this discussion of whether leaders are born or made and I think it's part of each. Yes, as early as playing at summer school parks and things of that sort of nature, I was always the pitcher, I was always the quarterback. I wasn't necessarily the most talented, but I turned out to be most successful.

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Geoff: And to what you attribute to your success, particularly, if you didn't see yourself as having the most talent?

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Bruce: Well, I think just industry and working at it. Learning that you can get better if you work at something is really a critical lesson for all of us.

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Geoff: So even from an early age, you are a hard worker and even if it was quarterbacking or throwing a baseball, these were things that you worked at.

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Bruce: Yes, absolutely. I mean, as I say, I don't think I've really ever been great at anything, but I've been very good at a lot of things and mostly that's just because I've tried hard.

[00:08:34]
Geoff: Did you hold any leadership positions in high school?

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Bruce: Let's see. Yes, I was president of the Key Club. The Key Club is a junior subsidiary of the Kiwanis. It's an international organization and I was president of that and I also was the editor, believe it or not, of another publication called "Florida Key," which was the state Key Club newspaper.

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Geoff: As a high school student, you were editor of the state Key Club newspaper?

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Bruce: I was.

[00:09:03]
Geoff: Was that a role that was intended for high school students?

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Bruce: Oh yes, yes. We expanded it a great deal while I had my editorship. But, yes, it had previous editors and successor editors as well.

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Geoff: That's really a remarkable foreshadowing of your future. Your literary interests developed at an early age. Is that what drove you to seek that editorial position or was there some other quality of the role that enticed you?

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Bruce: You know, you're asking about something that happened 60 years ago. I'm not sure I could tell you exactly. Well, I do attribute my interest in writing to a 12th-grade honors English teacher who just encouraged me. She saw something in my writing, though when I read it now, you know, I say, "Well, who could have written this kind of crap?" But she saw something in me and it's something I carry with me even today. In the acknowledgments of my first, what I'd call, non-medical book, "The Man Who Stalked Einstein," I acknowledge her contributions, a woman named Ann Hendricks.

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Geoff: Remarkable. As you point out, even 60 years ago, recognizing how those early influences continue to have impact well beyond there occurrences.

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Bruce: And I'm grateful to you, Geoff, for helping me remember them. I have to say these are not things I carry in my conscious self.

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Geoff: Well, I'm delighted. It's a marvelous recounting indeed. So having grown up in such a warm environment, your choice of Princeton, New Jersey, Rochester, New York, and Boston, Massachusetts for undergraduate education, medical school, and radiology residency respectively were interesting choices, all very prestigious institutions, but decidedly colder environs than your hometown.

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Bruce: Absolutely true. Well, Princeton is a very long story, and I'm not sure that everybody would be interested, but obviously, when my father died at 12, I really lacked for a male father figure. And I found that man in the father of a girl that actually I was very attracted to in high school, but she was well beyond me. She was the smartest girl in school, maybe the smartest girl that ever had attended school in Miami Beach High School. And her father was a local pediatrician who, even though he was a community doctor, was very involved in national pediatric politics, eventually, not at that time. And he convinced me that my goal of going to the University of Miami or the University of Florida wasn't up to my challenge and he had gone to Princeton and he urged that I give it a try, and damn it if I didn't get in. And that was the start of my Northern sojourn.

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I went to the University of Rochester, it was the only medical school that took me. I was the median student in my class at Princeton. And I thank Princeton for helping me get into medical school because it's been a great career. And then I tried Washington, D.C. I tried internal medicine somewhere there and I didn't like it. It's actually a name that you may remember, Dennis O'Leary was my residency leader and he called each of us in towards the end of the first quarter and said, "Either we want to keep you or we wanna let you go, but if there are a lot of people who wanna stay." He told me, "If you don't wanna go into internal medicine, now is the time to tell me." And I did. I stepped up and I said, "I don't like this." Within a few weeks, I had a residency promised at the Brigham, and that's where I went.

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Geoff: Wow. That is a great recounting of your educational journey. At what point did you make the decision to enter medicine?

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Bruce: Same thing. Dr. Robert Grayson who, amazingly, it was also the pediatrician of my wife, Pam Wexler, and we found that out 50 years later. But it was really hanging around Doctor Grayson that convinced me I was going to be a pediatrician. I was gonna return to Miami Beach, maybe take over his practice. All of that never happened because my first pediatric patient died on me and I found myself just emotionally unable to continue that as a considered career.

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Geoff: Ooh, that does sound like an impactful occurrence and probably very uncommon to have your first patient pass away in that manner. Can you recall for us a little bit about how you dealt with that information and how it led you on your pathway then to internal medicine, but then ultimately to radiology?

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Bruce: Sure. Well, he was a patient who had leukemia and he'd been in remission. He came down with a urinary tract infection. I was the next in line for a patient. Well, actually, I did see the patient for about 3 or 4 hours, worked about, but he died within 24 hours of septicemia. And I can recall having my residents say to me, "You have to go talk to the family." And I did, and I have to say I felt sorrier for myself that I did for the family. And I have no doubt they were lovely people. They understood that there really was nothing that could have been done and they didn't blame me for anything, but I blamed myself. And I just felt, as I say, psychologically incapable of doing that for the rest of my life.

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Geoff: Yeah. Such a formative event so early in your career. Help us understand then what ultimately led you to radiology, particularly after sampling internal medicine?

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Bruce: So in my last year of medical school, I took an elective in radiology and the teacher was extraordinary. He would regularly win the best teacher of the university award and the medical school award. His name was Ted VanZandt and in, sort of, knowledgable, educational circles, he's really thought of

nationally as an extraordinary teacher. And he took a shine to me. I mean, it was a summer elective and he would invite me down to his lake house, Lake Ontario. He'd take my wife and I out to dinner. And he taught me a great deal and he was just a very funny man as well. I mean, he was a joy to be around. But, you know, I was looking around for something to do in the way of my lifetime's work and most of my fellow students were going into some version of internal medicine or some specialty, so I thought I'll give that a try, and I matched the George Washington.

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And as I say, it just wasn't for me. I mean, intellectually, I'd become fairly intellectual over the years and, to me, making the diagnosis was a thing. And I remembered how much I'd enjoyed that elective. And so, when Dennis O'Leary gave me a chance to get out, I did. And that was before there was a match in radiology. So as it turned out, my aunt and uncle in Philadelphia were card players, they were bridge players, and they knew some folks in radiology. I phoned them up, they told me a few places to apply. I did, and I got in, and then I went and I enjoyed it very much. I took an extra year in research, as you mentioned, Geoff, and that really set the stage. It taught me one thing that I've tried to impart to others in life. It's fine to say that you wanna be such and such, but there's nothing like training. There's nothing like getting a formal education to help you to have a credential, but also they have the knowledge to compete effectively at academic medicine, as you know, a very competitive field.

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Geoff: Words of wisdom. Absolutely. I can't help but be struck by the very personal one-to-one interactions that you have recalled that led to a lot of the formative decisions that you made that guided your career. It's fortunate that you had such great mentors and such great exposures at that time.

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Bruce: So true.

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Geoff: So I'd like to focus in on your time after completing your fellowship in genitourinary radiology and then a re-fellowship in ultrasound. You headed to Tucson, finally a warm environment, and immediately out of fellowship, you took on the role as section head. How was it that a freshly-minted GU radiologist straight out of training came into this leadership role?

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Bruce: Well, section head and also sole member of the Division of Uroradiology.

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Geoff: Okay. And so, perhaps, help us explain that, the notion of having a section of one, I mean, it's nice to be recognized as the head and the leader, but how did that all get framed up?

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Bruce: Well, you actually are too young to remember, but really formal fellowships were unusual. What constituted my fellowship with the Brigham was really hanging around Harry Melons. Harry Melons was just a wonderful man and brilliant, absolutely brilliant. And that's what I did for my last clinical year at the Brigham was I hung around Harry Melons. At the University of Arizona, it was a brand new medical school. It was only five or six years old. The hospital was less than that. And so, the whole faculty of the Department of Radiology might've been five or six people when I joined.

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Geoff: That's amazing to think about an academic department so small. But it must've been a lot of fun to join in with a small team and to be there from the early days.

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Bruce: And watch it grow. Yes, absolutely. I mean, Paul Capp was the chairman and he was another man...I mean, if you met him, you liked him and if you met him, you know him and you had a friend for life. He'd get on an airplane, sit next to somebody, and they keep in contact for the rest of their lives. Paul is still alive, as best I know, in Tucson and he was the chairman of the department. He took a shine to me and he really helped me guide my own career and also provide opportunities to help develop it.

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Geoff: That's marvelous. Now, over the course of your first six years or so, your academic career seems logically focused on research and publication centered upon clinical research and pre-clinical models of renal physiology and microcirculatory abnormalities. But then in 1984, you took a sabbatical at the RAND Corporation at the Center for Health Policy. What led to this sudden change of focus?

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Bruce: I wish I could tell you. I just know that one morning I woke up in Tucson, I had a lovely view of this city by then and I was sitting...you know, we were very happy there. I woke up one morning and said, "I'm not killing another rat. Never again am I gonna kill another rat." And so, I started to think, "Well, what can I do if I'm not going to be a bio-physiologist of some sort if I'm not gonna do traditional medical research so much anymore?" And it took me some time, but I called Barbara McNeal. You must know who Barbara McNeal is.

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Geoff: I do know Barbara.

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Bruce: Yes. And she had been one of my teachers at the Brigham,a young faculty member and assistant professor, but growing up with a bullet, no question about that. And I said, "Barbara, I wanna be like you but I don't wanna go back to Boston. I don't want back in that cold again." And she had a contact or two at the RAND Corporation, which was finishing up something called the RAND Health Insurance Experiment. And there was an economist named Chuck Phelps and he called me up and said one day, "I've talked to Barbara, she speaks highly of you, and I wanna write a paper with you. I wanna write about why MRI is progressing forward at such a rapid rate and PET scanning and older technology is sort of dwindling." And, of course, we all know now, it's about the money, but we worked together on that paper.

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And when the Pew Foundation dropped a load of money on RAND and 4 other sites, RAND's particular job was to train old people like me, I was 37, retrain them into being health services researchers and health policists. Paula Cap gave me the 10 months off and I went and I spent it in the most idyllic place imaginable, Santa Monica, California. And the RAND Corporation was right on the ocean. You couldn't tell it was the RAND Corporation unless you knew. It was a bunch of low brick buildings strewn over three blocks right across from the Santa Monica Pier. And so, every day I'd drive down from the Palisades where I had rented an apartment and down through the fog, or as they call it, the marine layer, to RAND. In the mornings, I'd sit in classes and learned and in the afternoon, I ran projects or helped others with their projects.

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Geoff: What an interesting echo of your upbringing on the Atlantic Coast now being on the Pacific Coast.

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Bruce: Yeah, but I never had a house on the Atlantic. This was magnificent.

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Geoff: That sounds idyllic. The experience of being at RAND seems to have been an inflection point for you as you became an early champion of health services research and radiology. How do you define health services research and why is it so important?

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Bruce: So yeah, actually, people tried to dissuade me from becoming a health service researcher. I'd run small grants that I had a very prestigious national fellowship, but I was still a renal researcher, a rat researcher clinician. But I saw something there and sure enough, when I got out, I was pretty much the only health services researcher. And it's so important because the federal government, of course, in 1965, passed Medicare and health insurance had become increasingly important to the unions and we were already spending much more money than anybody else on healthcare in the world, and so that was what made it for me. I really, I had a niche, a niche that was uninhabited by anyone else.

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Geoff: Yeah, phenomenal opportunity and trajectory that you then leveraged. Your earliest forays into health services research seemed to focus on technology assessment and its diffusion into medical practice. What is your perspective on the most important elements of technology assessment today and how would you advise radiology leaders to apply these principles for clinical decision-making?

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Bruce: I have written extensively on this subject. And I feel that radiology came so close to giving away the store without even knowing it, that is to say that we didn't have a lot of other technology assessment, people who were really scientifically educated, and so it was there for the taking and nobody actually seemed to want it. If you go back into history, everybody was still very attached to what they'd learned in medical school and we were very fortunate that some other specialty didn't come in and really put up a strong display of attack until later on when, of course, self-referral became such an important issue.

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Geoff: And so, technology assessment today, can you sort of distill for us some of the elements that you think translate and should be translated into practical

decision-making, for example, for a department chair or a practice leader when considering how to approach, whether it's upgrading equipment, whether it's bringing in a new technology, what can you distill from your years of research and writings and your deep knowledge in this area?

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Bruce: Well, I think first thing is to become a knowledgeable reader before you become a knowledgeable investigator. And so, I've always encouraged departments, for instance, to have journal clubs, but not the kind where people just read the abstracts and recite what they'd read, but critical journal clubs where there may be only one or two or three manuscripts or papers for the hour, hour-and-a-half period, and that's what I established at Virginia when I went there and we turned out a bunch of very able researchers who understood the scientific process and where the biases lie and how to avoid the biases and then how to decide, just exactly as you said, whether what you read is something that's adaptable into your own practice. That's the bottom line.

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Geoff: Yes. One of your early HSR papers focused on government health policy and the diffusion of new medical devices. What changes have you observed in the role that the U.S. government takes in encouraging or discouraging the adoption of new technology?

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Bruce: Well, there seems to be a convergence. I mean, if you read any of those early papers, they really focus on MRI and how it was that MRI came to diffuse in America and one state was trying absolute repression, we're only gonna have four in the state, and Massachusetts was like that. And other states were really the Wild West. I mean, for instance, in California, if you drove down one of the bay east-west thoroughfares, there was an MRI center going up every two or three blocks. People were capitalizing not on the technology itself, it was really money that was driving it and what the government wouldn't allow in terms of making money off of technology. Now, as they say, there's been a convergance to, you know, one or two or three large technology assessment or meta-analysis groups that do this kind of work now. You don't see the kind of fingerprints that you used to.

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Geoff: What is your perspective on cost-effectiveness analysis as a basis for healthcare policy?

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Bruce: Well, when it occurs, it's extraordinary. I mean, I take as examples, for instance, the work we did in ACRIN for DMIST, Digital Mammographic Imaging Screening Trial, or what you mentioned, the National Lung Screening Trial, but these kinds of things take an enormous amount of money. And I was shocked when I heard, for instance, that the government was getting back into the mega imaging clinical trials business with Etta Pisano's trial, digital sonography, because it just seemed like those days were gone. ACRIN, at its height, was the taking in roughly $200 million over a 9-year period to run clinical trials. Aside from TMIST, I don't think we've seen anything like it for years.

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Geoff: Yeah. Fascinating. In the U.K., cost-effectiveness analysis seems to be revered by NICE, but relatively eschewed in the U.S. Why do you think those dynamics exist between these two countries and their approaches to healthcare evidence?

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Bruce: Well, there is a book in that, Geoff. I actually have conducted about 30 interviews. I think most interesting of all the people I've talked to has been Adrian Dixon, the former chair at Cambridge, now retired, and he was really among the first to do those kinds of things with imaging technologies, perhaps the very first. And I don't know, I just think that the English want to attribute fewer resources or feel it's necessary to attribute fewer resources to tap high technology medicine, and therefore, they feel the need for scientific basis to make these decisions. In America, it seems like...I mean, even still, people talk about how much tighter things have become, but the amount of money we attribute to healthcare is extraordinary. I don't wanna sound like Bernie Sanders, you know, I'm not that crotchety yet, but I'm getting there.

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Geoff: It's interesting to reflect on the investment of evidence generation through what you have indicated are expensive trials to get true cost-effectiveness data and the approach in the U.K., which ultimately leads to lower-cost care, to have the evidence upfront to make the decisions on how to deliver that lower-cost care, whereas here in the U.S. we just don't seem to have the will to fund that kind of research and consequently, our costs are a lot higher.

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Bruce: I think that's true and I think you really hit the nail on the head when you said...I mean, in this country, the question still remains when is the right time to

conduct a clinical trial? And the answer ought to be, I believe, at the first case, but the fact is we allow technologies to diffuse much more rapidly than that before we try to get scientific with them.

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Geoff: Yeah. Now, one of today's hottest topics in imaging technology is the use of artificial intelligence to streamline interpretation or other aspects of the imaging value chain. What lessons should we take from your work in technology assessment as practices consider investing in AI?

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Bruce: Well, you know, I had trouble just getting on the discussion with you today. Technologically, I'm hardly what you'd call a maven. But on the other hand, I do read some and I've got to say, I think we're heading down the same path that we have with every other medical technology. This one though is different. I really believe that this one translation is something much, much bigger. And I don't say that I know the answers. I have to feel that AI, particularly as it's driven more corporately than publicly, is likely to be really arresting in one dimension or the other. I don't know that I can predict it what ways, but I think it's bound to play an extraordinary role in the future. I'd love to see it. I may be too old for that.

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Geoff: Are there any warnings or approaches that you would suggest people be attentive to in order to hopefully stave off any unwanted consequences of its diffusion?

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Bruce: Well, what do you mean by unwanted consequences? For the public, for the government, for radiologists?

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Geoff: Well, let's start with the public. I think that, you know, as physicians, we strive to serve our patients and radiology can always evolve and adapt and should always evolve and adapt, hopefully. If we're smart about understanding the role that we play in healthcare delivery, we will harness this technology as long as it's providing value, value to patients and by that extension to society. So that would be the lens I ask you about.

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Bruce: Yeah, and I enjoy the broader scope that you mentioned because I really do think that ultimately, AI will be a good thing for people, for patients, for the

population more broadly. And I think that, in fact, it will enable what we talk about all the time, population radiology or population-based imaging. I think inevitably, that has to be because of the eventual hope for extraction of new information that we've never had before that it's bound to help the population, ultimately. Radiologists, I'm less sure about. I mean, I think it's hard to imagine that radiology will, in part, be taken over by machines. I don't think we're ever gonna see the end of radiologists, but it may be that there's less work for radiologists, therefore, less room for the same number of radiologists that we have now or that we're training right now. I'm very concerned, not that I know any more than you do, Geoff, but I'm very concerned there we're ultimately training more radiologists than we can support reasonably, and that this will lead to, kind of, me first kinds of attitudes that we saw in the early parts of this decade where people were trying to protect themselves against falling prices by continuing to read at rates that really were not helpful for the public and perhaps ultimately responsible for kind of burn out that we've seen.

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Geoff: Yeah, that is a very provocative topic and one that would be fascinating to unpack in more detail, but I'm gonna steer us away from that to focus...

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Bruce: I'm grateful. Thank you.

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Geoff: Yes.

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Bruce: Very uncomfortable to be the bearer of bad news, or at least, I'm hoping I'm wrong. We'll see.

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Geoff: Another important cause that you took on early in your career was the impact of self-referral and in-office medical imaging. This was a very hot topic for at least 15 to 20 years. But I have to say that my sense is that the furor has really died down around this issue. Is it your perspective that the issue has gone away or is our attention diverted by bigger fish to fry?

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Bruce: Both. I don't think it's truly all gone away. Things never go away from the past, but they maintain less importance. And part of the reason why in this case is really, I mean, we went about as far as we could in the legislative rounds, which was considered the cure-all and, in fact, we got sort of partial

satisfaction, with the Stark Laws I'm talking about now. I think also, as you say, bigger fish to fry.

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Geoff: Which you see as what?

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Bruce: AI. I think AI is the biggest fish at them all right now.

[00:35:08]
Geoff: Before leaving this topic of health services research, I want to underscore how the medium that you chose to communicate some of your most impactful results of your analysis, particularly on self-referral, namely the "New England Journal of Medicine" and the "Journal of the American Medical Association," amplified what was truly important work, delivering it to a far broader community than radiology-specific publications. What was the process of achieving publication in those journals and were there any specific challenges that were associated with accessing those channels for communicating your results?

[00:35:46]
Bruce: Well, let me start back just one step and talk about how I came to do this work. As I said, when I got out of the RAND training, would've been the fall of '85, I did some consulting work with RAND and I diddled around with health policy and health services research. But really, this study you're alluding to, the one that appeared in the "New England Journal of Medicine" in the late '80s, early '90s was really the watershed for me. And it was because I was sitting in my office one day and I got a call from James Warfield and he was chairman of the Board of Chancellors, the American College of Radiology, and he said, "We want someone to run a study of self-referral. We want it to be highly scientific. We want it to be able to get visibility in top-rate medical journals. Would you be interested?" And so, we carried on some conversations. I was almost totally without really qualifications to do this study, but as I said, I was the only one with any qualifications to do the study by virtue of my RAND work.

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And so, I agreed to do it. They gave me a quarter-million dollars. They bought me access to a claims database, it was a private insurance claims database, and they brought on ABT Associates to help me do it. And I can recall the first thing we had to do is come up with a computer algorithm and we spent months on this computer algorithm that would tell us whether or not a patient had gotten any radiographic work done during an expected period of time during

which they had a certain illness or two or three or four. And that was fine. We didn't have any trouble defining the period of illness and we had no trouble defining whether or not there was reimbursement for an appropriate imaging exam related to it.

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But where we came a cropper was trying to figure out whether it was a radiologist or a non-radiologist who'd done the imaging. And I can remember a dismal day when we just about threw in the towel. We were at the ACR in Reston and Jonathan Sunshine and a person from ABT, a couple of other people that I was working with in this study, we walked around the lake and I was headed back to tell John Curry we couldn't do it. And I've had few epiphanies in my life, but this is one of them, and sure enough, it worked and we went on to conduct this study. And what I tell everyone, when you conduct any kind of study, think of who the right audience is for this. Radiologists were convinced that it was gonna be positive. Although, I mean, there's some stories I won't tell here. They weren't the audience. The audience were the physicians and the politicians and we wanted the highest-profile we could.

[00:38:32]
So we submitted to "New England Journal of Medicine" and damn if they didn't take it and publish it, and you probably know that New England Journal embargoes articles until the Thursday before they come out on the following weekend or I think it's Monday, actually. And I was looking at the chairmanship for the University of North Carolina the day the work came out and I was literally, while I was conducting interviews become the chairman there, I was overwhelmed by phone calls from newspapers and radio stations and television stations and they all wanted appointments and no, the next day wasn't good enough. News travels too fast. It had to be today. I never did get that chairmanship. A lot of the faculty resented the research and I have to say that my attention was diverted.

[00:39:22]
Geoff: Wow. Amazing story. And in the end, the impact of that work and all the subsequent opportunities makes the UNC chairmanship just a footnote, but I have to ask a little bit more about some of the fallout from the publication and what sorts of interactions did you encounter, what unexpected occurrences resulted from your being the lead author on this work as you sought to move through your leadership positions within our field of radiology and also serving as a leader, ultimately, at the University of Virginia?

[00:40:04]

Bruce: Well, I was a villain to everybody except radiologists to whom I was a great hero. And so, there was really this odd asymmetry of email and mail that I got. I got some letters in red Crayola. Believe it or not, this is true. I got some with some letters cut out of the newspaper or magazines. I've never felt threatened physically to the extent that I was willing to call in the law, but there were some nights I remember where I worried for myself and my family. The Stark Laws followed, that sort of reinvigorated the whole antipathy and other specialties towards me. I remember I got invited to the national...I can't remember the name, it's probably the American College of Orthopedics. I was absolutely vilified on stage and was then asked to sort of defend myself, and I did. And as I say, no violence occurred, but I just felt like I was really an unwanted guest.

[00:41:04]
Geoff: Well, it was very brave of you and...

[00:41:06]
Bruce: Foolish, I think. I mean, or ignorant, one or the other. I just couldn't imagine the antipathy.

[00:41:13]
Geoff: Yeah, I'm sure you couldn't, but I can't help but imagine the learning opportunity to listen to these folks. You were front and center in a forum to really understand how a critical audience this information was perceiving it, had you not accepted that role, you might not have really known,

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Bruce: It wasn't about science, it was about anger. They weren't offering arguments in favor of it, of the practices, the self-referral, it really was about personal anger.

[00:41:55]
Geoff: And is there anything positive that you took away from experiencing that raw anger and were you able to somehow turn it into something productive to advance the cause?

[00:42:11]
Bruce: Well, it convinced me that really I had done about as much as I could. I did publish a later paper with a public database that verified the same kinds of things that we'd found with the private database. I was working actually with the United Mineworkers Union through the auspices of one of my fellow RAND health policy fellows, a man named George Olson, not a radiologist. He

was a health administrator. He was a hospital administrator who had come to be chief of benefits, healthcare benefits for the Mineworkers Union. So yes, we verified the work and then I left the field. Dave Levin pretty much took it over.

[00:42:51]
Geoff: Very remarkable recounting. I'm particularly interested, while we're still, sort of, in touch with this topic, having become chair of the Department of Radiology at the University of Virginia, you became the president of the University of Virginia Physician Practice Plan. How did your work with respect to self-referral and the sorts of interactions that you have been recounting impact your leadership within the context of running the physician practice plan and was it a positive or was it a hindrance?

[00:43:31]
Bruce: So yes, that's a good question. I grew up at a time in medicine when sort of the dream was become...you know, if you were upwardly mobile, the dream was become a chairman of a department of radiology and then the next thing, become dean of a medical school, then maybe president of the university sort of stuff. I had those dreams but I found when I became chairman, while they were wonderful times, what I remember, I thought I was doing something creative and helpful to my faculty, and maybe to mankind even. I mean, I had those delusions. You know, I really wasn't suited to daily management tasks. I mean, I think I was a good chairman. I don't think I was as good as, say, Alan Matsumoto, my successor, is now, and I didn't enjoy it.

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And so, before I understood that, I saw as part of one of the ways upward was through the physician practice plan, so when my colleagues voted me chairman, I said, "Well, that's a lovely thing." I was running a major department that still had its problems and I also was beginning ACRIN at the time. And I swear that if something hadn't happened to get me to change course, I'd have died about as young as my dad did. Well, I was already old. No, I was about the same age, as I recall, at that point. And so, I just realized it wasn't for me and that, well, I was gonna have to weather it out. By then I'd lost the skills as a radiologist that I had acquired with such difficulty as we all do. And I said, "All right, I can stand 10, 15 years standing on my head. It's not that hard." But then, you know, someone offered me a new possibility and I thought to myself, why not? And I think that's fundamental is willingness to take risks and also to have your eye open for things that occur along the periphery that might be more interesting than what you'd imagine doing. I think, in fact, if there's anything that has caused me to be a successful leader, it really has been that willingness to think beyond what I'd imagined.

[00:45:37]
Geoff: Yes. And bravery to be willing to consider that the decision that you had made to follow your aspirations, to be the chair of radiology, yet to reflect on it and to say, "This maybe isn't for me, it's time to make a pivot," that's a big step. One that, you know, many maybe wouldn't take.

[00:46:05]
Bruce: Well, I'm going to paraphrase a quote now, and I know I'll probably get it wrong, but it's attributed to Alexander Graham Bell, and that is that, "When one door closes, another opens, but that you're so involved in mourning the door that's closed that you don't notice the new open door." Well, open doors come in many fashions and they're not all good ones. The trick is knowing which ones to pursue and which was to just say no to. And in this case, about, I want to say maybe 2002 or so, yes, it would have been in 2002, I'd been chairman for 11 years. I'd looked at a deanship. I was a finalist for a deanship in Texas, didn't get the job and realized I didn't want the job I did. So I called off the headhunters and just said, "I'm not a management kind of guy. I'm more a founder and a builder."

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And so, at the RSNA every year, I would meet and have breakfast with Harvey Neiman and Harvey became a great friend and we would have breakfast one morning when we had nothing else going on. We wouldn't even talk about work. Our families became good friends and he was a wonderful, wonderful man, died far too young. But he said...he broke the rule, he talked about work. As soon as he said that, he said, "Bruce, the ACR is going to start a journal and we want you to think about being its editor." And I said to Harvey, "The world of radiology does not need another journal." And, in fact, a year earlier, we'd had a day-long meeting where they run maybe 20 of us that I was the only one who voted against it. But Steve Amos and Harvey Neiman were sure it could be done. And so I said, "Harvey, I have a good job." And we left it at that.

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Two or three weeks later, I'd been thinking it through the whole time in dull or lazy moments, and realized I didn't have a good job. I loved ACRIN. In fact, I will tell you now that I think starting ACRIN was absolutely my favorite job that I ever had of any sort, better than grinding out the welds of pipes, for instance. So I called Harvey back and I said, "Well, have you hired an editor yet?" He said, "No. But you could have this day to interview for it." I didn't realize it would be a competition. He made it sound like he would just name me editor. But it was a competition and they eventually chose me and I've got to

say, it was a wonderful decision. When I was able to tell the dean I was quitting, when I was able to tell the practice plan I was getting out, it was just the happiest day of my life. I could feel literally the gloom lifting from my shoulders.

[00:48:45]
Geoff: That's great. Great to have had that opportunity to experience that renewal in your career.

[00:48:51]
Bruce: Saved my life. I have no doubt that it saved my life. I used to go home and just grind and grind over and over.

[00:48:58]
Geoff: What did you mean by grinding?

[00:49:00]
Bruce: Well, I just was thinking in loops. I mean, I never really was able to rid myself of the anxieties I felt. Really, I think being responsible for the livelihoods and the advancement of so many people is just not my strong suit. I really am much better at designing things, building things, and then passing them on to others who are perhaps better managers that I am.

[00:49:27]
Geoff: I see. I see. Okay. And so, your insight that you're more of a founder and a builder and less of a manager was ultimately critical to what came next. Are there any specific events or tasks, in particular, that convinced you once and for all that management was not your cup of tea?

[00:49:49]
Bruce: Yeah. No single episode, but I can recall numerous cases of where people were coming and asking me for things that I was unable to supply, perhaps most significantly money. I mean, it never seemed to be enough. No matter how much their salaries were, how much they were earning, they felt that they always deserved a little more and they deserved it more than someone else who could make just as good a case as they could for the money.

[00:50:18]
Geoff: Was it an internal struggle to have to say no?

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Bruce: Yes, it certainly was. I could see their points, I can see if everyone was really pulling hard and trying to build the department as much as they wanted a good department as much as I did. It's just there was a limitation of resources and I always felt I couldn't quite satisfy the demand.

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Geoff: Referring to your quote of Alexander Graham Bell, what advice can you offer on knowing which open door is the right one to take or perhaps more importantly, which is left unentered?

[00:50:57]
Bruce: Yes. Well, you know, I don't think that, for the most part, there are really bad choices. I mean, of course, there are, but I think in a situation where you're presented two very promising choices and you have to pick one and you just work as hard as you can at it, you get the training you need, you do the work you have to become expert that it's gonna work out and that surely you cannot ever know how the path untaken would have turned out. You can make something good of what choice you make.

[00:51:29]
Geoff: So you're a advocate of taking chances.

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Bruce: Absolutely. I think calculated risk is essential to leading a happy and productive work life.

[00:51:39]
Geoff: And were you actually searching for open doors or did you just happen upon them?

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Bruce: Well, in the case of both ACRIN and JACR, really, they were things that presented themselves to me. I can recall a number of times saying that if it hadn't been for the ACR, I might not have had any career at all. And when you think back, that's really true. I mean, they presented me with the self-referral opportunity, they presented me with the ACRIN opportunity, and they presented me with the JACR opportunity. Those are the three things that really, I think, define my career. Yeah.

[00:52:17]
Geoff: That's marvelous. And as you have indicated, your career is marked by a number of creative firsts where you essentially founded and guided important to

novel elements of the field of radiology. I'd like to explore two of them with you in a bit greater detail. The American College of Radiology Imaging Network, or ACRIN, and the "Journal of the American College of Radiology." Let's start with ACRIN. You mentioned it briefly earlier, but let's get into a bit more detail. What is ACRIN first and what was its origin?

[00:52:55]
Bruce: Well, ACRIN is a clinical trials cooperative group and what that means is that the National Cancer Institute provided funds for us to design an organization, to fill it with creative and hardworking people, and then to conduct clinical trials. And it really was something long overdue. There were imaging clinical trials funded by the National Cancer Institute prior to that, but this was a free-standing organization that continues today, although in a much different form.

[00:53:29]
Geoff: And what led the National Cancer Institute to fund this separate organization?

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Bruce: Yeah. Well, and you really have to credit Dan Sullivan with that. Dan was really an extraordinarily creative and visionary individual who managed to talk the NCI into starting a cooperative group for imaging. And for nearly 50 years, at that point in time, it had been in the business of cooperative groups to conduct clinical trials but never of imaging. As I say, the RDOG, or so-called Radiology Diagnostic Oncology Group Trials, were one-offs one after another and they'd pretty much run their course by the time they had convinced the director of NCI, Rick Klausner, that's who it was, to give a try to a longitudinally standing organization, which became ACRIN.

[00:54:23]
Geoff: Thank you for mentioning Dan, a leader that I've benefited from working with as well. Having largely refocused your academic career previously on health services research and health economics, what led you to then pivot and focus on clinical trials, which really feels different again from the prior pivot?

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Bruce: Well, I'm trying to remember, roughly 1995, the ACR asked me if I wouldn't join their board of chancellors as the chair of their relatively new research and technology assessment commission. And about four years into that was when the NCI offered requests for applications for ACRIN, what became

ACRIN. I mean, I'm the one who made up the name ACRIN, so it was really for clinical trials, cooperative group of imaging and cancer that the RFA came out for. I'm sure I'm not going to remember exactly, but it was somewhere around $20 million, $25 million for 4 years. And so, we started in, and it was really, as I say, for the presentation, ACR gave me a call and said, "Well, there's this RFA," I had not heard anything about it, "and we'd like you to be the principal investigator of our application." So I quickly whipped together an organization and we applied to do...I think we offered maybe five trials, one of which eventually became the National Lung Screening Trial, another became the Digital Mammography Imaging Screening Trial, another was the National CT Colonography Trial. All of these in embryonic form were presented as part of our application. There were two other applications, but the NCI selected the ACRs and so I became the initial chair.

[00:56:11]
Geoff: Yeah, that's fantastic. I can't help but be thinking about the time at the RAND Corporation and the efforts that you undertook in order to get health services research off the ground, create an identity around health economics and the heavy lift that you described with respect to exposing the challenges of self-referral and in-office imaging. And yet, here you're presented with what seems to be a completely different focus, which is helping to coordinate and organize clinical trials and you jumped right in with both feet.

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Bruce: Well, actually, I think it is fine to think of clinical trials as clinical research and they certainly are that, but they are also health services research, at least in my mind. And our biggest trials did do cost-effective analyses as part of the trial.

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Geoff: That's excellent. Yeah. Now, at the time of its founding, what were your aspirations for ACRIN?

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Bruce: That it should, in fact, be it continuing organization that wouldn't end after the first four years, but then would grow in stature and would produce important research that would guide the specialty.

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Geoff: And what strategies did you pursue to get it off the ground, gain traction so that it would realize those aspirations?

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Bruce: Well, it very quickly became clear that even though it seems like such an enormous amount of money, and today the $20 million wasn't going to cut it for trials like the National Lung Screening Trial. In the end, we conducted 30 trials, most of which were very valuable and very important to clinical practice, but the 3 big ones are what people remember. And so, at the time, a new president came in, of course, in 2000. It would have been George Bush. And as all presidents do, he removed Klauser and planted it with Andy von Eschenbach, a very clinically-oriented surgeon from Texas. And Andy and I really hit it off and eventually, I was able to go to Andy and say, "Look, this amount of money isn't going to do it. If you want us to do the National Lung Screening Trial, we need, you know, maybe $200 million, something of that sort."

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And by then we'd already gained a reputation for doing what we needed to do. We actually accrued...it would have been at an Etta Pisano who was the person who was our trial PI for the TMIST trial. We'd already proven we could do that kind of research, complicated, unbiased, highly valuable research. And Andy said, "Sure, we'll support the National Lung Screening Trial." I eventually had to go through the chair of NIH. Yeah, and we were able to do it.

[00:58:59]
Geoff: You refer to starting ACRIN is your favorite job of any sort, what was it about the job that leaves such warm feelings?

[00:59:08]
Bruce: Well, it was the Titans. It was the feeling that we were on a mission from God. We were filing go to bring science to radiology research and everybody felt that way. And we had a nurses committee, and we had a research associates committee, and they were heavily invested in this whole thing. And in my 9 years as chair, we spent $200 million on clinical trials and over half of that went to individual departments, so we were not only building clinical trials, we were building infrastructure that had never existed before. We built a cadre of researchers who understood how to do high-quality clinical research, again, that it never existed in this specialty.

[00:59:53]
Geoff: Yeah. Certainly, a phenomenal opportunity to do that. And I can't help but reflect on your comments about a resource starvation in the role of department chair and the challenge of saying no to an environment where it seemed that garnering resources just was not a problem.

[01:00:13]
Bruce: Well, they always could use four, but that's mainly true. We had the wherewithal to do what we had to do.

[01:00:20]
Geoff: Yeah. I mean, I don't mean to diminish in any way the challenge and undoubtedly the creativity and stick-to-itiveness that you and your team needed to bring to bear in order to garner those resources, but those resources clearly made a lot of good possible.

[01:00:37]
Bruce: They are extraordinary. Yeah, absolutely true.

[01:00:41]
Geoff: Are there any of ACRIN's accomplishments, in particular, for which you're most proud?

[01:00:47]
Bruce: Well, yes. I mean, it would be hard. And even though all the trials we did I thought were very valuable and very important and it wasn't like I selected all the trials, I just selected the first five that we submitted, we had a committee and we had a series of committees that worked on what trials we would do because just like demand and being a chairman, there were many trials that were offered up that we simply didn't think were either worthy or affordable, one or the other. Very helpful was the committee that we formed for patient advocates. They were very, very vocal and they sat on every committee that made every decision as to which trials we would perform.

[01:01:28]
Geoff: Fantastic to have identified patient advocates at such an early stage. Can you talk a little bit in more detail about how you found people to constitute that committee, how you assured that you had people that were able to present a diverse perspective around what might've been their individual interests and maybe any examples of contributions specifically that they made that help steer the decisions?

[01:01:57]
Bruce: Sure. Barbara LaStage was the chair for the nine years that I was the chair of ACRIN and I can't really recall how she came to us, but she was very well recommended and she really poured her heart into it just as much as any scientist did. She was knowledgeable and she helped us pick a committee of

other knowledgeable patient advocates and we had fantastic NIH staff, NCI staff, Barbara Galen, and of course, from way back when, and until he died, Ed Staab, and I know I'm forgetting people that I shouldn't be. It's been a while, but they were all heavily invested. Dan was really the man though. I mean, anytime I needed to talk to somebody, I needed advice or needed encouragement, Dan was there. Carl Jaffe, I forgot to mention Carl. He was also very instrumental.

[01:02:51]
Geoff: You mentioned that the government seems to have pulled back from the funding of large clinical trials until the recent funding of TMIST to assess breast tomosynthesis. What factors do you believe contribute to this reversal of course and creating an evidence base around the use of imaging in healthcare?

[01:03:08]
Bruce: Well, we were sort of peripheral casualties. At some point, the NCI decided there were too many cooperative groups when you added surgical cooperative group, all the clinical oncology cooperative groups, but the clinical oncologists were definitely in control of the whole operation and so they reduced the number of clinical trial organizations, melding them together and so now ACRIN is really part of a much larger clinical trials cooperative we call ECOG, Eastern Clinical Oncology Group, which ACRIN is much more the tail than the dog.

[01:03:48]
Geoff: What do you see as the future of ACRIN today?

[01:03:51]
Bruce: Well, ACRIN will continue under Mitch Schnall. He was my vice-chair for nine years. Mitch has done a great job of doing what's possible, but as I say, ECOG is a little overwhelming for ACRIN.

[01:04:05]
Geoff: Let's transition to the JACR. You had been the editor in chief of investigative radiology and later academic radiology, but had stepped away from editing for 6 years prior to beginning your 15-year run as the founding editor of the JACR. What did you enjoy most about journal editing and what led you to step away from it in the late '90s and early 2000s?

[01:04:31]
Bruce: Well, I had served eight years, investigative radiology and academic radiology were both sequentially the journals of the Association of University Radiologists, and eight years was a long time and I just felt it was time to step

down and allow the AUR to move on with another editor. And then it's just, well, nobody else came by and asked, I guess that's the main reason I stepped away. I was very busy with being a relatively new chairman. In 1999, ACRIN started up. In 1999, I was also elected to be the president of the practice plan for the University of Virginia. So I had my hands full. I didn't go out looking for an editor's job. I think I described it earlier on how really it just sort of fell into my lap, much as ACRIN did.

[01:05:26]
Geoff: Yeah. And what did you enjoy most about journal editing?

[01:05:30]
Bruce: There were a number of things. After being chairman, even though some authors think there are, there's no such thing as an editorial emergency. And so, you know, it was much calmer life then I'd be leading, and again, it was a chance to build something from scratch. Just as with ACRIN, I had been able to name what committees would constitute the organization and which people would fulfill the roles in the community. Here again, I was presented with a completely blank slate and the ACR said, "Do the best you can with it."

[01:06:06]
Geoff: A little earlier, you talked about how Steve Amos had initially helped division the idea that there should be a journal of the American College of Radiology and you also underscored Harvey Neiman's important role in this. And I'm curious the extent to which when you had your first conversations with them, how aligned were your visions for what this journal would be? You mentioned that your first thought was radiology doesn't need another journal, yet ultimately, you seem to carve out a pretty clear niche. Was that something that was evident from the very start for you?

[01:06:43]
Bruce: Well, nothing was added in from the start. As I said, when we had a meeting about a year before Harvey and I had our breakfast conversation, about a year earlier, there were maybe 15 or 20 of us they called in to discuss the idea. They were Steve Amos's brainchild as far as I understand it. And when we took a straw poll at the end, it was 19 to 1 and I was the one who said, "Really, what could you do? There's over 100 English language-imaging publications. Where's the beef?" You know, as they used to say, where's the beef? But when I started to think about it, I realized that no, we couldn't go up against the radiologies and the "AJRs" and the established radiology journals in terms of clinical research, but there was this whole area, or set of areas, that really wasn't part of their purview. They might publish the occasional article, but it really

wasn't what they were designed for. So we put together a journal that really would focus on a number of forgotten but important subject areas like health services, research, and policy, like education, like clinical practice management, and we built the journal. And when say really almost rigidly, we would not go against those visions. We would not publish clinical research.

[01:08:06]
Geoff: To the extent that building out the journal's capabilities and having the strong foundation undoubtedly rested on your ability to reach out and bring experts into an editorial team, could you talk a little bit about that team?

[01:08:23]
Bruce: Yeah, that's right. Well, one of the most important parts of being editor of any journal, but this journal in particular, is knowing people, and by this point in time, I'd been in this specialty for over 20 years and I'd been active nationally and internationally, so I had access to some of the very best minds in radiology and that's who I put on the editorial board. Now, early on, I have to say that it was very much a mom-pop shop without the mom. Even though there was an editorial board, the only thing I expected of them was that they contribute to the journal because it takes a while to build it up to a point where people are voluntarily offering their stuff. But we were lucky very early on. We got indexed in important places and it really wasn't long before I was able to release the people I'd invited to the editorial board from the requirement that they submit manuscripts to where I was simply grateful if they did. But it really was all my personal connections that mostly ended up on the board with a healthy dose of members of the board of chancellors.

[01:09:36]
Geoff: I see. And how did you leverage the range of perspectives on your team? Do you have any examples of ideas that came up that led you to change your own expectations and plans in favor of directions proposed by others?

[01:09:52]
Bruce: I have to keep reinforcing that it was really pretty much a pop shop. It was mostly, Imean, if I had questions to ask, I could certainly go to these people, but I didn't do that very often. I really had a vision and I built it from that vision. Now, what convinced me to really open things up was that after a while I couldn't keep pace with all of this stuff that was coming in. I mean, initially, obviously, for those first years' worth of issues, if you go back to those issues, every single piece was one I recruited. But really, by year three or four, it'd be pretty heavy lifting for me to cover everything. And by year seven or eight, I don't remember exactly when, I brought in Ruth Carlos, now the editor

of the journal, as my deputy editor and she was terrific. She took an incredible amount of the load and in addition, produced special issues, as we discussed, that were relevant.

[01:10:51]
Geoff: Yes. Interesting recounting of the evolution of the journal and the fact that at its founding, you basically were toeing the line and pulling the load largely independently and it was with the growth of demand that building out the team sounds like it became a necessity as opposed to something that you pursued at the outset.

[01:11:16]
Bruce: That's true. Now, Ruth, she's involved people are much more heavily. Her board, as I understand it from her, is working pretty hard. That would not be true of the early boards for the journal.

[01:11:29]
Geoff: Yeah. Now, having discussed the remarkable birth and subsequent impact of ACRIN and JACR, I wanna return to this topic of management and ask how could you have seen to those two successes without bringing management to the task?

[01:11:46]
Bruce: Oh, I couldn't. See, I wasn't a terrible manager. I just didn't enjoy it as much as I did the creative side of things. So, I mean, I think I was a good chairman. It's just I wasn't enjoying it. It was killing me.

[01:12:00]
Geoff: Well, I'm glad that you identify that you would have not realized these successes if you had not been an excellent manager and leader. How would you qualify the difference in managing ACRIN or a journal relative to an academic department of radiology?

[01:12:19]
Bruce: Well, I mean, being chairman of a department of radiology is really a sinecure for the most part. I mean, not everywhere, but certainly at UVA. I'm trying to think what would've gotten me fired. I mean, really, it had to be something pretty extreme, I think, probably on, you know, an ethical or moral grounds. And that was not true of JACR, by the way. In retrospect, if it had failed, it would have failed. I mean, I think they'd have propped it up only for so long and it would've gone away. Similarly, with ACRIN, and we would never have been given all that extra money by Andy von Eschenbach unless we were

producing, and we did produce. Those years were fantastic. I mean, I have to say, I made one enormous mistake as a manager at ACRIN. When I wrote the charter for it, the rules by which you would live, I put in a two-term limit and it just crushed me when I had to step down. I mean, it was time. I don't think there's any question that Mitch has added a great deal of something that I probably would not have managed on my own, but yeah, I broke down entirely while I was giving my farewell address to the ACRIN group.

[01:13:29]
Geoff: Yeah. It's a very interesting insight, essentially writing in your own obsolescence for the position, but it sounds like the reward in it is seeing how the organization has been able to flourish under others' guidance.

[01:13:46]
Bruce: Yeah. One of the things I'm proud of is that I always have trained my successors and my successors have been outstanding. I mean, if you think of Alan Matsumoto and Mitch Stahl and Ruth Carlos, those are outstanding people.

[01:14:01]
Geoff: That is a fantastic recognition and it is all too often that leaders fail to do exactly what you just identified that you had done and are willing to concede that training their successor is perhaps the best way to assure their own legacy as time passes on. At the time, did you think about the fact that you were consciously training your successors?

[01:14:33]
Bruce: I wouldn't think in the case the department necessarily. I mean, I remember Alan was my vice-chair for a number of years before I quit my job as chair at UVA and I would try to convince him that he really had what it took to be chairman. He said he'd never want to be chairman. Of course, he's been chairman for maybe more than a decade now. So in that case, I think it was more an accident. He learned by watching or he didn't learn at all from me that he did something else, but he's been a great chairman and I think his faculty would say so. When he came to ACRIN and the JACR, absolutely, I was very well aware that I had picked excellent people, that they had performed even better than I had hoped, and that they would be worthy successors.

[01:15:21]
Geoff: For 180 months, you began each issue of the JACR with an editorial. You first highlighted your vision for the journal as a forum for pertinent information that was not published in our traditional journals, skewing basic

translational or clinical biomedical research for practice management, leadership, health services, research, and education, as you've told us. The tone of that initial editorial was informative, optimistic, and inviting. In your final editorial entitled "The Last Hurrah," you eavesdrop on your dog, Lilibet, and your cat, Busy Bee, conversing under the dining room table as they muse about your future. The tone is now very personal, inviting the readership not to worry about Bruce. He has plenty that he will be doing. If the contrast between your first and final editorials in the JACR reflects a portion of your journey, what might we take from these highly divergent expositions?

[01:16:23]
Bruce: Of course, I remember the last one I wrote. I actually don't remember the first one I wrote it all. So I probably should have prepared a little better for this conversation, but there's no question that I changed along with the journal as the journal progressed. I learned and I learned what worked better and what did not. I enjoyed writing those editorials, 1 a month for 15 years, just as you say, and you know, over the 180 that you mentioned, I probably managed to say more than I knew and I enjoyed writing them. I enjoy reading the occasional one now. When I did retire from the journal, Elsevier, the publisher, presented me with a bound compendium of all those editorials as well as any articles I wrote for JACR and it has a prominent place on my desk now. I don't look at it, but I could.

[01:17:16]
Geoff: Yeah. Marvelous to have that appreciation so tangibly presented and it really is something that we as a community should all appreciate from you for having contributed. I am interested though in the more personal nature, essentially, of the communication that you provided as your ultimate end. Did you feel an increasing personal connection with the audience, with the readership of the journal, and therefore, were comfortable in framing that communication through the minds of your pets?

[01:17:54]
Bruce: Well, I had established Busy Bee and Lilibet as allegorical characters in some of the editorials that preceded that last one. So I was really writing to regular readers to express how much not only that I had done for JACR, but how much JACR did for me. You know, I mean, it gave me a platform, it gave me something positive to do for so many years. I'm sure many people feel when they leave that they've not been adequately recognized. I think the opposite is in my case, there were so many times that the ACR and others honored me for my work on JACR. I felt there really was no place to go on from there. I felt very fortunate to have lived the life I have. I had a fabulous career and even though

it's over, I can look around my room, my office, and see the reflections of that, not the work itself, which is really what was most important, but I certainly don't feel under-recognized. If anything, I'm a bit embarrassed.

[01:18:57]
Geoff: It's often stated that one cannot have leadership without followership. As you turn toward the often solitary pursuit of writing books, do you see yourself as stepping back from leadership or are you able to frame your identity as a leader within the context of authorship?

[01:19:20]
Bruce: That's a very tough question. I don't think that in any purposeful way that's an aim of mine in writing. When I write, it's really to inform and to entertain. For the most part, people read to be entertained and you have to frame your ideas with the context of entertainment. I will tell you, Geoff, that it's been hard to write. I don't know if we've talked about my Parkinson's disease at all, but all the things I thought I'd be doing in retirement have been...I can't say completely abolished but certainly short-circuited by the worsening of my condition. I was diagnosed, oh, maybe 10, 11 years ago and for the first 8, 9 years, I got a heck of a break. I had a mild case, but it's gone downhill pretty rapidly since then and it infringed on literally everything I thought I'd be doing.

[01:20:12]
Geoff: Yeah. It must be tremendously frustrating to have to deal with that although it seems that you have come to some sense of equilibrium and appreciation for all the years that you were able and have been able to maintain your production in that final JACR editorial, which was published just over a year ago. Lilibet hints at a new book about radiology. Is that coming along?

[01:20:40]
Bruce: What it was to me was a dialogue between myself and a number of people who were instrumental in the formation of our specialty as it is today, both in the U.S. and elsewhere, and that's been put on hold. I realized there was too much of me in the book, that it was much more a memoir than it was a dialogue. And so, I started to write a memoir and I wrote about two-thirds of it and just kind of stopped short also. I mean, I really need to get back to writing. I know I have to write, I have this sense of urgency about writing, but it's so hard that I just haven't been able to write like I thought I would.

[01:21:20]
Geoff: Yeah. You're so talented at it and I can't help but think about Ulysses S. Grant for some reason and his pursuit of his memoir and the work that he did

and partnering to get it out. I mean, hopefully, you'll find the right recipe to complete that work because I think people will genuinely be interested.

[01:21:40]
Bruce: Oh, that's very kind. Thank you.

[01:21:43]
Geoff: Now, you also mentioned fly fishing, Busy Bee pines to come along in that final editorial. Have you had an opportunity to enjoy more frequent opportunities to fish?

[01:21:56]
Bruce: Well, I belong to a fishing club in the Raleigh area. You know, I live in Wake Forest now, not far from in Durham, matter of fact, I get all my healthcare at Duke. But there's a Lake in Chapel Hill, also not far from here, that stocks it during the winter with trout and I go every Wednesday and I do fly fish, but I can't wade rivers like I once did. And the last time I tried was about a year ago in Slovenia, one of the most beautiful places on earth. Most people don't even think of it as being a country in Europe but, of course, it is. And it's a very high altitude, this country, lots of big bounds, lots of big rivers. And I went fly fishing with a guide there and he saved my life a couple of times where I could've been washed down the river. So I don't wade anymore.

[01:22:47]
Geoff: Good to understand your limitations and the guide rails around where you can go. I'm glad that you're still able to get out and fish. What role have mentors played in your journey?

[01:23:00]
Bruce: Oh, enormous. I don't care how talented you are, you really can't do it alone. No one can do it alone. And Geraldine McGinty makes the distinction between mentors and promoters, and I think I've done both. And when it's been deserved, much in my own career, I mentioned Harry Melons who was a wonderful mentor of uroradiology, Paul Cap who was my chairman, Al Williams at the RAND Corporation. I mean, I hate to do this because I'm obviously missing a great number of people, but yes, I don't believe I would have achieved very much at all without people to bring me along.

[01:23:42]
Geoff: And clearly, without asking explicitly, you've already described to us how you view the notion of giving back. I mean, clearly you have mentored would-be leaders who have taken on and carried on your work. To what extent

did you or do you continue to actively mentor would-be leaders outside of the organizations in which you specifically engaged?

[01:24:09]
Bruce: Well, I maintain contact with people that I feel I've helped along. One of the things we started very early on at Virginia was to have a separate research residency, one that was in a separate slot in the match and that would attract individuals who really wanted to make academics a piece of their career. And I can name a few of them. I mean, Laurie Fajardo was the first, Jennifer Harvey, Reed Omary, now the chair at Vanderbilt, Talissa Altes, now the chair at the University of Missouri. I think all of them would say that I helped them along and, of course, people like...I'm forgetting Ruth Carlos, but I shouldn't, she's probably, you know, one of the ones that I'm most proud of. So yes, I do continue but at a distance and not...you know, very haltingly. And there's no continuous dialogue, but they call occasionally. I run into them occasionally, and it's a great pleasure to see them develop their own careers.

[01:25:06]
Geoff: Yes, you deserve to be very proud of all the people that you have led along. Do you believe that leaders are born or bred?

[01:25:15]
Bruce: Yeah, I think that's how we started. And the answer is I think you have to have something in you almost from the start that makes you want to lead and then makes you want to be a good leader, but there's no question, experiences modify that enormously. And so, I mean this is almost a silly argument, born or bred. I mean, it's some of each. One story I should mention, I won't use names, but there was a dramatic change in healthcare that occurred starting in the mid-'80s and even to the modern day where radiology chairs, the best of them, used to lead by their heart. They were people who instinctively you wanted to follow, but they really didn't have much training in the technical matters that now are so important in leading almost any venture in medical imaging. And I was on the cusp of that and it really took me a while to understand that you couldn't just lead by example or by attitude, you had to have these technical skills as well.

[01:26:23]
Geoff: What technical skills are you referring to?

[01:26:26]
Bruce: Well, the whole panel of management skills or skills by which you could be successful in even the most creative acts. So, you know, look at any MBA

with healthcare emphasis, all of those kinds of skills are what I'm referring to. I did not take an MBA, and I actually consciously decided not to, but I made sure that I went to a number of courses and acquired the basic skills necessary to manage and to be creative in leadership.

[01:26:59]
Geoff: So looking ahead, what excites you most for the field of radiology?

[01:27:06]
Bruce: Well, I think we got into that a little bit. I do think we're on the cusp of extraordinary technological development again. The last sort of remarkable period of time was really the mid-'70s with the introduction of CT and the mid-'80s with the introduction of MRI, both of which took our specialty from being sort of a sleepy specialty in the basements of hospitals with application, real application, really helpful application to a relative minority of all of healthcare to where we really are a central aspect of all modern healthcare. If you look at an article that was published right around the turn of the century by the economist, the Stanford economist Fuchs, he did a poll of, I think it was 240 or thereabouts, well-known internists or influential internists and overwhelmingly, they said that the most important development in medicine of the late 20th century were CT and MRI and they beat out all kinds of amazing things that you wouldn't imagine, but it's absolutely valid. I mean, it's pivotal. It was pivotal at that time and what's happening now with artificial intelligence and I think, again, we're going to see another strong wind that sweeps across all of healthcare.

[01:28:31]
Geoff: What advice would you offer to would-be leaders, future leaders of the field?

[01:28:39]
Bruce: Well, I think, participate in the research and participate in the clinical application. Truth is that even though everybody talks about cooperation, when you're in the thick of things, there's a set amount of resources. You could talk about growing the pie, but you're probably taking it from another pie. There is not infinite resources. We have to cooperate, but we also have to understand when we need to compete. There's not one without the other.

[01:29:10]
Geoff: Well, Bruce Hillman, I can't thank you enough for your candor and opening up what has been a truly remarkable career to the betterment of our

field. You have offered so many valuable insights and recollections, and thank you for joining us today on the podcast.

[01:29:34]
Bruce: Well, you've been a great interviewer, Geoff, you dragged out stuff that I haven't thought about in years and time flew by. I enjoyed it very much. Thank you.

[01:29:49]
Geoff: As we close this episode of the RLIs "Taking the Lead" podcast, I want to once again, thank our new sponsor, Carnegie Mellon University's Master of Medical Management program. Offered exclusively to physicians, this professional degree from Carnegie Mellon builds expertise in evidence-based management, business strategy, and technology for the future of healthcare leadership. To learn more about the MMM program, please be sure to check out the link on the page for this episode.

[01:30:19]
Please join me next month when I speak with Pek Lan Khong, clinical professor and head of the Department of Diagnostic Radiology at the University of Hong Kong. A native of Singapore, Dr. Khong received her medical education at the University of Singapore and radiology training at the University of Hong Kong. Dr. Khong has pursued research and her sub-specialty field of pediatric neuroradiology as well as hybrid PET imaging in oncology and radiological protection in medicine. With the recent opening of the 2000-bed University of Hong Kong Shenzhen Hospital in 2012, she served as the founding chief of service for its Department of Medical Imaging for 5 years. As an international leader for Chinese radiology, Dr. Khong brings unique perspectives to a range of topics, including the management of COVID-19, radiation protection, and radiology education leadership within the highly dynamic social environment of 2020 Hong Kong.

[01:31:17]
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host, Geoff Ruben from Duke University. We welcome your feedback, questions, and ideas for future conversations. You can reach me on Twitter at G-E-O-F-F-R-U-B-I-N or the RLI, @rli_acr. Alternatively, send us an email at rli@acr.org. I look forward to you joining me next time on "Taking the Lead."

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