RICE UNIVERSITY'S BAKER INSTITUTE FOR PUBLIC POLICY
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LUIS PROENZA

PCAST

Transcript of an Interview
Conducted by

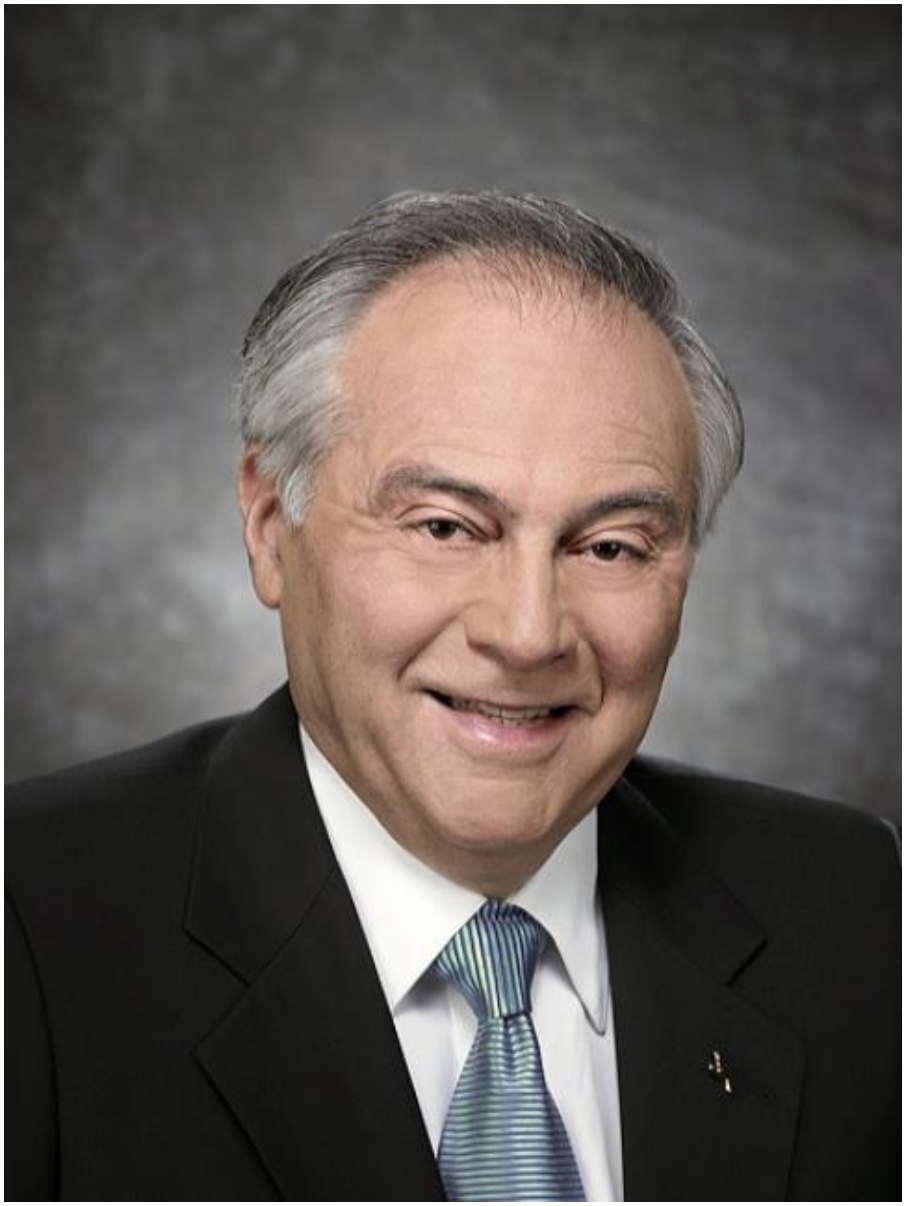
Kenneth M. Evans and David J. Caruso

via Zoom

on

16 July and 6 August 2021

(With Subsequent Corrections and Additions)



Courtesy of The University of Akron

Luis Proenza

ACKNOWLEDGMENT

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LUIS PROENZA

1944 Born in Mexico City, Mexico, on 22 December

Education

1965 BA, Emory University, Psychology
1966 MA, The Ohio State University, Psychology
1971 PhD, The University of Minnesota, Neurobiology/Psychology

Professional Experience

Ohio State University
1965-1966 United States Public Health Fellow

Universities of the Americas
1967-1968 Assistant Professor, Department of Psychology

University of Minnesota Medical School
1968-1971 Research Fellow, Neuropsychology Laboratory, Department of Neurology

University of Georgia
1971-1978 Assistant Professor, Department of Psychology
1978-1984 Associate Professor of Zoology (Tenured)
1984-1987 Professor of Zoology (Tenured)
1984-1986 Assistant to the President
1986-1987 University Liaison for Science and Technology Policy

National Academy of Sciences
1977-1979 Study Director, Committee on Vision, National Research Council
1979-1982 Member, Committee on Vision, National Research Council

American Council on Education
1983-1984 Fellow in Academic Administration

University of Alaska Fairbanks
1987-1992 Vice Chancellor for Research and Dean of Graduate School
Professor of Biology (Tenured)

	Arctic Research Consortium of the United States (ARCUS)
1988-1992	Member, Executive Committee, Board of Directors, Founders' Committee
1988-1990	President
1991-1992	Past President
	National Institutes of Health. Appointed by The Secretary
1990-1993	Member, National Biotechnology Policy Board
	United States Arctic Research Commission. Appointed by President George H. W. Bush
1990-1992	Member, Board of Advisors
1992-1996	Vice-Chairman and Commissioner
1994	Chairman, Executive Resources Board
1997	Commissioner Emeritus and Resolution of Appreciation
1997-1998	Member, Board of Advisors
	Office of the Governor, State of Alaska. Appointed by Governor Walter J. Hickel
1991-1994	Advisor to the Governor for Science and Technology Policy
	University of Alaska (System)
1992-1994	Vice President for Academic Affairs and Research (Acting)
	Purdue University
1994-1998	Vice President for Research and Dean of the Graduate School
1994-1998	Professor of Biological Sciences (Tenured)
	University of Akron
1999-2014	President
1999-2014	Professor of Biology (Tenured)
1999-2014	Adjunct Professor of Education
1999-2014	Adjunct Professor of Political Science
2014-2019	Trustees' University Professor and President Emeritus
2014-present	President Emeritus
	Council on Competitiveness
1999-2014	Member
2014-present	Distinguished Fellow
	President's Council of Advisors on Science and Technology (PCAST). Appointed by President George W. Bush
2001-2008	Member

U.S. Secretary of Energy Advisory Board

2006 Member

The National Academies' Government-University-Industry Research Roundtable (GUIRR)

2009-2014 Member

National Institute of Standards and Technology (NIST)

2009 Member, Technology Innovation Program (TIP) Advisory Board

The National Academies' STEP Board (Science, Technology, and Economic Policy)

2010-2014 Member

Advanced Manufacturing Program 2.0 (AMP2.0). Appointed by President Barack Obama

2012 Member, Executive Board, AMP2.09

ABSTRACT

Luis Proenza was born in 1944 in Mexico City, Mexico. When he was growing up, his parents ran a family business. He grew up in Cuernavaca, Mexico, and Acapulco, Mexico. Proenza remembers spending time by the ocean and learning English as a second language from a young age. He talks about his mother helping to start an orphanage in Cuernavaca and going to visit it. When Proenza was eleven, he moved to Georgia to attend Riverside Military Academy because his father wanted him to get an education in the United States. Although he was originally homesick, Proenza talks about rising in the ranks as a cadet. The school had a structured regimen, although occasionally there was time for extracurricular activities. He selected the more science-focused curriculum at school, but he cannot remember exactly why. Upon graduation, Proenza decided to attend Emory University near Atlanta, Georgia. One of the first classes he took in college was a psychology class, and he was hooked. He worked with Dr. Bonnie R. Strickland studying social psychology and became interested in pursuing graduate work. Upon the recommendation of Dr. Strickland, Proenza was accepted at the Ohio State University. He had planned to major in clinical psychology, but when all of the faculty left after a year, he looked into different options. He decided to return to Mexico and taught at the University of the Americas for a year-and-a-half.

At the invitation of Dr. Starke R. Hathaway, Proenza returned to the United States to pursue a PhD in psychology at the University of Minnesota. He focused on neuropsychology and began doing research on the retina. His PhD work focused on visual sensitivity as measured neurophysiologically. At Minnesota, he learned the work of a scientist like writing papers and grants. During his graduate education, he first became interested in sailing and sailboats, an affinity which continued the rest of his life. At this point, Proenza knew he wanted to pursue a research career and accepted an offer at University of Georgia in the psychology department although he later moved to the zoology department where he received a full professorship and helped establish a neuroscience program. During his time at Georgia, he served as a study director of the National Academy of Sciences—his first introduction to science policy work. He also was a liaison for science and technology policy at Georgia. In 1987, Proenza moved to Alaska to take a vice president for research position at the University of Alaska. He talks about his life in Alaska, his work at the university, and his service on various science policy boards, including the National Biotechnology Policy Board and the United States Arctic Research Commission. After seven years in Alaska, he accepted a vice president for research position at Purdue University. Proenza discusses his work on the Council of Competitiveness, encouraging academic-industrial partnerships, and life in West Lafayette, Indiana.

After almost five years, Proenza accepted a position as university president at the University of Akron in Ohio. At Akron, he oversaw facility and renovation projects, helped promote recruitment, and encouraged academic-industrial partnerships. While serving as university president, the George W. Bush administration invited him to join the President's Council of Advisors on Science and Technology (PCAST). He talks about PCAST meetings, the other PCAST members, and the reports they worked on—technology transfer, homeland security, manufacturing, and others. Proenza also discusses PCAST recommendations on the research and development budget, meeting with the President and Congress, and advice for

future PCASTs. He believes that the presidential science advisor should be a cabinet member. Proenza concludes by discussing PCAST's impact on his life, his work on the Advanced Manufacturing Partnership 2.0, and reflections on his career, including mentioning online education.

INTERVIEWERS

Kenneth M. Evans is a scholar in science and technology policy at Rice University's Baker Institute for Public Policy. He received his BS in physics from the University of Virginia and his MS and PhD in applied physics from Rice University. His research focuses on the history and organization of the US federal science advisory and policymaking system, with an emphasis on the role of the White House Office of Science and Technology Policy.

David J. Caruso earned a BA in the history of science, medicine, and technology from Johns Hopkins University in 2001 and a PhD in science and technology studies from Cornell University in 2008. Caruso is the director of the Center for Oral History at the Science History Institute, president of Oral History in the Mid-Atlantic Region, and editor for the Oral History Review. In addition to overseeing all oral history research at the Science History Institute, he also holds an annual training institute that focuses on conducting interviews with scientists and engineers, he consults on various oral history projects, like at the San Diego Technology Archives, and is adjunct faculty at the University of Pennsylvania, teaching courses on the history of military medicine and technology and on oral history. His current research interests are the discipline formation of biomedical science in 20th-century America and the organizational structures that have contributed to such formation.

ABOUT THIS TRANSCRIPT

This interview was conducted as part of the project, "The President's Scientists" (NSF SMA SBE #1854055). The goal of the project is to improve and expand existing knowledge of the role of the President's Council of Advisors on Science and Technology (PCAST), and its impact on U.S. federal policy. This project examines the working nature and policy impact of the council by compiling and analyzing presidential archives and university collections of former presidential science advisors, including developing a digital archive of this material (https://whitehousescientists.rice.edu/); and conducting oral history interviews of former PCAST members to determine their perspectives on PCAST, as well as their personal histories before and after their tenure on the council.

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INTERVIEWERS: **Kenneth M. Evans**
David J. Caruso

LOCATION: **via Zoom**

DATE: **16 July 2021**

EVANS: [. . .] So [I] guess to start, I just want to situate us in place in time. I'm Kenny [Kenneth M.] Evans, and I'm here with Dr. Luis [M.] Proenza and Dave [David J.] Caruso from the Science History Institute and today we're doing an oral history interview with Dr. Proenza as part of our work studying the history and function of the President's Council of Advisors on Science and Technology [PCAST]. So as Dave mentioned, [this is a] life oral history interview, so we want to start at the very beginning. I know that you were born in 1944. Is that correct?

PROENZA: Yes.

EVANS: That's correct, and you were born in Mexico City, [Mexico]?

PROENZA: Yes.

EVANS: Great. Well, maybe we could start by . . . if you're . . . if you could tell us a bit about your early life. What your family was like, where you were located, and what you remember from your childhood years?

PROENZA: Please feel free to ask more detailed questions. I'll be brief. Born in Mexico City, but then my family moved because of my father's [Luis Proenza Abreu] high blood pressure to Cuernavaca, [Mexico], and eventually to Acapulco, [Acapulco de Juárez, Mexico]. But at age eleven . . . he had been born in Cuba, moved to New York City, [New York], in 1920, and I think his experience there suggested to him that I would do well to get a US-based education. He and my mother [Sara Gonzalez de Proenza] had married in 1941, I believe, '42 roughly, and then I was born in '44. My mother was from the northern part of Mexico. My father's family probably originally from the Canary Islands and Portugal before that perhaps—the Iberian Peninsula—and my mother likewise through Spanish influence in Mexico. But in any case at age eleven, I came to the United States to start my education in the seventh grade at a . . . Riverside Military Academy in Gainesville, Georgia, which was a boarding military academy that had both a junior school—seventh and eighth grade—and then a high school, so I did my

high school there. Went then to college at Emory [University] and eventually graduate school at Ohio State [University] for a master's and University of Minnesota for my PhD. My training was in, sort of, physiological psychology early on and then neuroscience with a focus on the on the retina—the visual system in general—but particularly my research was on the retina, and I joined the faculty of University of Georgia in 1971. And as a result of the things that were happening at the time in neuroscience, started the university's first program in neuroscience. And as a result of some of those interests, I chose to join the National Academy of Science as study director for the committee on vision. I believe that was in roughly 1977. Did that for about two years, returned to the university and then found myself still very interested in not only the organizational aspects of the developing thrusts that were taking place in neuroscience, but in the relationship of the research programs at the university to obviously the funding agencies in Washington, [DC].

So I became what you might call the first federal relations person for the university focusing on science and technology and did that for a few years. And then [I] found myself with opportunities so [I] went to University of Alaska as vice president for research, and that was at a time when a lot of things were happening in the US interest in the Arctic and the Antarctic and the polar regions. Rita [R.] Colwell had just chaired a **<T: 05 min>** major report for the National Science Foundation—the National Science Board I think, actually—on the polar regions with a strong focus on the Arctic, so [I] found myself very much immersed in that and moved the university to compete for and win the contract for the polar ice coring office at that time, which that the ice core drilling in both polar regions.[1] So that was a great deal of fun because I had a chance to not only travel more extensively in the Arctic—Greenland and, of course, other parts of Alaska and even during my time in Alaska is when the glasnost began, and we had a chance to travel . . . . I'll come back to that in a minute.[2] But in any case, that was a great time; we had a chance to, of course, go to Antarctica as well.

During my time in Alaska, I was appointed to the National Biotechnology Policy Board so that was an endeavor that was very helpful and also at that time, Senator [Ted] Stevens, Senator [Frank H.] Murkowski, and others established a presidentially-appointed commission on the Arctic—the US Arctic Research Commission—and I was one of the early members of that. And so that continued a framework of engagement in policy and in aspects, if you will, of the US interests broadly in science, but at that time, particularly on high latitude research. Anyway, then quickly jumping, and I'll end with just . . . after seven years in Alaska, I had an opportunity to take the parallel position at Purdue [University]—vice president for research there for five years—and then I took the presidency at the University of Akron in 1999, and shortly thereafter, is when my tenure at PCAST under Bush 43 [George W. Bush] began, so that's a quick rundown.

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[1] See "The Role of the National Science Foundation in Polar Regions," Committee on the NSF Role in Polar Regions, June 19, 1987, accessed March 23, 2023, https://www.nsf.gov/nsb/publications/1987/nsb0687.pdf.

[2] Glasnost is the Russian word for openness and is used in reference to Mikhail Gorbachev's measures in the 1980s to increase openness and transparency in the Soviet Union. See "glasnost," Encyclopedia Britannica, accessed December 16, 2021, https://www.britannica.com/topic/glasnost.

EVANS: Thank you for that. Well, I want to jump back to, I guess, both your childhood and your parents. You mentioned your dad was in New York for a period. What did he do for a living, and why did he travel to New York?

PROENZA: Oh goodness. I think he left Cuba in 1920, and my sense of it was really it was a time when the US [United States of America] was offering significant opportunities. My understanding is that he looked to see what the great city of New York had to offer. I don't really know a great deal of what he did early on; I do know that he took odd jobs initially like just washing dishes but eventually [he was in various forms of] business and when he married my mother, he had agreed to represent a number of companies for sales in Mexico. That didn't go so well, so he actually joined and partnered with my mother. She had started a business at the Mexico City Airport before that was anything other than a hanger and a runway. And so together they built a business that became quite successful, and as it grew . . . obviously, Mexico City Airport also grew and so rather than being the dominant and only business at the airport, it became one of just a few and eventually one of probably eighty or more small businesses along the concourse at the Mexico City Airport. But I think it was that time in New York from 1920 to early 1940s that suggested to him that I would be well-served by getting a US-based education. and I don't think my mother quite bargained on the fact that that might take me away from the family and to situate me here from the rest of my life. That's life, as they say.

EVANS: What was the family business?

PROENZA: **<T: 10 min>** Initially, it was what you might call a general purpose business from soft drinks to snacks to some Mexican curio . . . souvenirs and the like. Eventually, when the airport began to grow, by that time they had moved to Acapulco and they had initially a small department store. But then eventually they focused on jewelry, and the business was called Plata de Taxco, or Taxco Silver, and so they focused on jewelry and things made from sterling silver in Mexico and that became the focus both in Acapulco and at the airport in in Mexico City.

EVANS: So they had both stores at once?

PROENZA: Yes, and they kept it for quite a while. Let me try to remember. Somewhere around the middle of the 1960s, they sold the business in Acapulco and focused almost entirely on the shop in the airport.

EVANS: I see, so your father moved back or—excuse me—he moved from New York to Mexico sometime in the early 1940s, and that was when your . . .

PROENZA: Correct.

EVANS: Right. And with that . . . Go ahead.

PROENZA: Well, he had met my mother in a curious set of circumstances [whereby she took over one of her sister's pen pals, and my mother then corresponded with my father] for a number of, I guess, years. He wanted her very much to move to New York and get married there and live there, but she would have nothing to do with that. So he eventually relented and came to Mexico, met her and her family and settled in Mexico. So I think he always kind of longed . . . and indeed during my college years at Emory, they moved to Atlanta, [Georgia], and he had a small business there. They lived there for probably four, maybe five years, and he got involved in some other ventures with some other people there, but eventually they moved for a very short period of time to Texas for a few months and then back to Mexico, Mexico City, and Cuernavaca.

EVANS: So, at the time of your birth, they had their business in Mexico City at the airport together?

PROENZA: Yes.

EVANS: And so what . . . in your . . . before you moved, you mentioned that you moved to Riverside [Military Academy in Gainesville], Georgia at eleven. At that time were you still in Mexico City, or had they moved to Acapulco for the second shop?

PROENZA: They were already in Acapulco by then, and so, indeed I traveled to Gainesville, Georgia, from Acapulco, and I was at Riverside, traveling back to Acapulco for Christmas and summers, but otherwise basically was based in that boarding school for six years.

EVANS: I see. So previous to that move, you went to grade school in Acapulco?

PROENZA: Right.

EVANS: Do you have any—

PROENZA: Starting in Cuernavaca. I think we moved to Acapulco when I was maybe . . . oh goodness, six or eight, something like that. I'm not quite sure. You continue, and I'll occasionally take a little bite of Maryland crab cakes here.

EVANS: Go ahead.

PROENZA: You go ahead with your questions. I'm fine.

EVANS: Oh, okay. Yeah, I guess I wanted to follow up on your childhood in Cuernavaca and Acapulco. Do you have . . . I guess what I want to ask is what was life like for you? You were enrolled in a . . . kind of a K-12 or elementary school at that time?

PROENZA: By the time we moved to Acapulco, I was probably in the second, third, fourth, maybe even sixth grade. I'm not quite . . . no, probably fourth, fifth grade something like that. Gosh, life was great. Acapulco was relatively small at the time, there were lots of open **<T: 15 min>** countryside—very interesting—big boulders and rocks, and you'd go exploring and jump from boulder to big boulder. And obviously being on the ocean, learned to waterski, swim. At that time, I did not have as much of an interest in sailing as I do now, but Mexico is not a big seafaring, sailing country . . . but wonderful place for a young boy to grow up—walk down to the beach, swim, go home. Saltwater was always good for bruises and cuts. [laughter] So, very, very nice, indeed.

EVANS: Did you have any siblings growing up?

PROENZA: No, I was an only child.

EVANS: I see. And what was . . . do you remember that early education when you were in grade school, what classes, teachers . . . what was that like?

PROENZA: Well, I remembered a few things. It was challenging, but one of the things that certainly I was pleased to do is to . . . in Mexico in virtually every school they teach you a second language—typically English—right from the start. So I was fortunate to have a chance to learn English from an early start so by the time I did go to Riverside, I didn't speak it fluently, but it was in pretty good shape, anyway. And the other thing I remember, I guess, is that the topics and levels of education were such that when I went to Riverside for the first couple of years, there was not much new material to learn other than [English] . . . in short, like, I think you would be aware of the fact that European countries, Latin American countries move at a

faster pace than [the] US educational system, so when our . . . when students from the US go to Europe or to Latin America, they usually are behind educationally and, by contrast, when they come back or when a Latin [American], a Mexican student, comes north, they're ahead of their peers here for a period of time, and then they do fine thereafter. So that was another surprise, I think, but a good one. There was some great fun in terms of learning the subtleties of . . . shall we say . . . colloquial English and accents and so forth. But I was fortunate, I guess, not to get mired with one particular accent, either in Spanish or in English, and speak fairly neutral except in context. As my wife likes to say being southern is contextual, not congenital. [laughter]

EVANS: I like that. You had this English class and you're learning English. Were there other courses that stood out to you that you remember from those early years?

PROENZA: Not really. My memory of subject matter really begins in high school. I very much enjoyed . . . geometry, for example, was something that I exceled at. Enjoyed science, but at that time, nothing in particular stands out and obviously history and other languages took . . . It was funny the people in Riverside thought that maybe I should take Spanish as a second language. That didn't go over so well because the teacher was from Italy and didn't speak English or Spanish particularly well, so I quickly switched to French.

EVANS: Do you speak French as well?

PROENZA: Not fluently, but I enjoy it and love the rhythm and pronunciations; it's a wonderful language.

EVANS: Yeah, I liked French as well. So I guess before we move to your move to Riverside, I guess, I want to still follow up on **<T: 20 min>** life in Mexico. Were there . . . You mentioned going up on the rocks, being in the ocean, getting bruised up, doing all the fun things that kids do. What about at home? What was home life like? Did you guys eat dinner together, get ready for school together? What was it like in your home growing up?

PROENZA: Well, as an only child and at that time, my parents were able to afford—of course, it was very, very inexpensive—to have a nanny for me and someone that helped around the house as well. And she, [Paula was her name], was just a great, great person that was a wonderful memory of a person that influenced my life in an emotional and supportive sense. But yes, so typically ate breakfast and lunch and dinner with my parents. In those days, certainly in the smaller cities in Mexico, people who worked or had a business would go to work at, say, nine o'clock, maybe open at ten, they'd take a break at one o'clock for lunch—typically a couple of hours—and then go back to work. So it was possible for my father to come home, have lunch, and then return to work, and my mother too who helped in the store, so yeah, we

were pretty much together. Obviously, while school was in session, the lunch would be taken there, and so forth, but otherwise meals [were] with the family. Occasionally would be invited to a friend's home and that sort of thing, but good, solid, and very supportive family. My father, I think, was a person of his word—very ethical—my mother sometimes chastised him because she said that if he promised to do something that he didn't think about very thoroughly, once he promised, even if he thought it wasn't very good idea, he'd feel obliged to carry through with the promise. So very ethical person. My mother was very business savvy and also very, shall we say, generous in the sense that she was always looking to help orphan kids. And so, she helped start an orphanage in Cuernavaca, and she helped start an orphanage in Acapulco. But then her . . . she insisted that anything she did wasn't simply giving them money; she would help them set up a business that would then help sustain them as well as feed them—a bakery, a tortilla factory, that sort of thing. So she was very business savvy in that regard, and also, I think, understood that you don't really help young people by giving them things but by helping them understand the value of work and that work has its rewards both intrinsically, as well as financially, and so forth. That continues to this day, as far as I'm aware.

EVANS: The orphanages?

PROENZA: Yes, yes, both. In fact, the one in Cuernavaca that she helped established has been featured in various publications like Reader's Digest, etc., and if I recall correctly, was the subject of a documentary of some sort. There was, I believe, he was from the US—American priest—who helped established . . . his name was Father [William B.] Wasson . . . he's probably deceased by now, but anyway, he was, sort of, the person that my mother worked with to establish it, and I'm sure that continues. The orphanage was called Nuestros Pequeños Hermanos, Our Little Brothers, and as far as I know, it's probably still there and was fairly well known then.[3]

EVANS: Did you ever tag along with your mom at her . . . at that . . . while she was creating these orphanages?

PROENZA: **<T: 25 min>** Oh yeah. We would often—certainly several times a year—go by and visit and get to know the kids, and she continued to sponsor a child or two later on, but again her focus was to help them establish a business and to insist that they learn how to run it and so forth.

EVANS: During this time, were you [. . .] So I guess I'm curious about two things. One is if, you know . . . outside of going and exploring, climbing on rocks, being in the ocean, were there

[3] See "Nuestros Pequeños Hermanos," accessed March 24, 2023, https://www.nph.org/.

other hobbies you had as a young child, interests that you developed? You'd mentioned geometry. Were there other things that you were involved with as a kid?

PROENZA: Well, a couple of things that I know—horseback riding was something I did with some regularity. But one thing that does stand out in my mind is on one of our early trips when I was probably four, five, something like that, we went and visited some of his family in Cuba and then went to New York, and my folks bought me a Meccano erector set and it was . . . they're still around; they're not like Legos—you may know them. Anyway, they came in a big nice wooden box, and they had all sorts of screws and bolts and different kinds of metal parts with pre-drilled [holes for screws] and so forth, and you could build all sorts of things—trucks and cars and cranes and backhoes—things of the sort. And I really, really loved that thing, both because it showed what was possible in pictures but because it enabled, I think, the imagination to take over and to take the components and build things that weren't in the books and so forth. So that was great fun, and frankly, I think that continued in my life. My wife and I eventually built the boat, I built bookcases and just about to finish building a rowboat and things like that that become both creative and . . . it's a skill anyway that has many applications.

EVANS: Yeah, that's cool. Yeah, my grandmother had a set at her house; I remember they were like indestructible.

PROENZA: Yeah, yeah. I've looked them up periodically, and I think they still make them in France, but they're not commonly known these days in the US for reasons that . . . and I haven't seen anything quite like that since.

EVANS: Yeah, maybe . . . Legos by the time I was a kid seemed to have taken over in terms of early building sets and stuff like that.

PROENZA: Yeah, and ironically, Legos just doesn't seem to have the look and feel of what might be truly things you could today find in a hardware store and pull together and make things from. You know, you can do all sorts of things, but they're not as functional you might say—at least I don't think so, personally.

EVANS: Yeah, I would agree with that. So yeah, thanks for that and for sharing. I think the next question I have . . . and I guess if Dave has anything on early childhood, I was going to talk . . . like ask about your transition to Riverside. Was there—

PROENZA: Sure.

CARUSO: The only question that I had was in terms of the time that you were spending with your parents, I'm always curious to know if . . . what are the discussions that you have with your family around the dinner table or on weekends or when traveling. Are you sitting there talking about politics, religion, education . . . you know, what were some of the common discussions that you had with family members or friends or any anyone else as just, like, a background to your life—literature, books read, complicated mathematical problems? I'm just curious what were some of **<T: 30 min>** those discussions like, if any?

PROENZA: Sure, my father was . . . both of my parents were relatively apolitical, shall we say. But we certainly followed, for example, what was happening . . . can you hear me okay, by the way, because I've got a blank screen at the moment.

CARUSO: Yes, I can hear you just fine.

PROENZA: Good. No problem. Anyway, we were certainly following, for example, the things that happened in Cuba with the revolution that brought in Mr. [Fidel] Castro, and that was not a happy occurrence for the family. His folks clearly communicated a need for just very basic things, and my mother would pull together packages of medicine and some basic supplies. But aside from that, shall we say, international dimension of politics, not much involvement. We didn't track Mexican politics, in particular. But to your question, it was conversations mostly about what was happening in the community, what was happening in their business, people that they knew. There was elements of . . . my father was pretty well-read—neither of my parents had more than a high school education. I think my mother didn't complete her high school education even. But my father had acquired some of the classic Greek literature, for example, and kept that at home and would . . . was well-enough-read to comment about this or that in world history from time to time. So that was interesting, and I remember admiring his modest, but reasonably sophisticated library. [I] would enjoy sitting with him while he was reading. One of the very first books that he bought me was *The Life of Sir William Osler*, thinking that I might become a physician, which I wasn't particularly interested in doing so.[4] [laughter] But that was interesting.

I think my father more than my mother understood that a life in academia was very respectable. My mother . . . in Mexico, teachers, although valued for teaching, they're not the kind of thing that you wish your son to become. So that was sort of an interesting dimension in that domain. I don't recall anything else [in particular] . . . in the evenings, particularly when we lived in Acapulco, the beauty of the place was just such that just sitting there and observing the changing nature of the scenery was very worthwhile and that might lead to, you know, "Did you remember to do this? Did you remember this couple that bought that?"—things of fairly simple matters.

[4] Harvey Cushing, *The Life of Sir William Osler* (Oxford, England: Clarendon Press, 1925).

CARUSO: Thank you.

EVANS: Thank you. At that . . . so you mentioned you didn't want to be a physician. At that young age, did you have any dreams, aspirations . . . did you . . . and that you're playing with erector sets, did you have any [goals for your] career that early?

PROENZA: No, in fact, you know, I retained the idea that I might become pre-med when I went to college, but it didn't really gel. No, to be honest, I often joked that I still don't know what I want to do when I grow up. And a lot of what transpired in my studies was what I became interested in and followed where it led. That was very much how I got to neuroscience, but we can talk about that later. So no, there was nothing that I would say was a driving passion that I had to learn this.

EVANS: Thanks. You went off to Riverside in Georgia at eleven. Was that . . . that was 1955?

PROENZA: Fifty-six.

EVANS: Fifty-six?

PROENZA: Yeah. I was born in December of '44 **<T: 35 min>** so that's the switch there.

EVANS: I see. And so what was it that brought you to Riverside? You mentioned your father had wanted you to have an American education. Go ahead.

PROENZA: Sure. Very interestingly, my mother often expressed for many years a real surprise and she couldn't understand . . . my father was not a person to be interested in the military, so she wondered why my father would, sort of, push towards my going to a military school. And clearly, in large measure what he thought was that the discipline and structure would be good for me. And it did turn out to be that way. I credit a lot of my interest in leadership and how I do a lot of things—perhaps too fastidiously—but that was part of that. But we came to it . . . it was interesting—in those days, boarding schools advertised in the back pages of the National Geographic magazine. So we wrote to a number of them, and, interestingly, I think Riverside Military Academy—where I went—had the most interesting catalog or promotional literature, if you wish. Humorously, later the students, they would say,

"Oh yeah. That joke book that we got." [laughter] The promotional literature was not exactly the same as the reality, but anyway, not far from it, but yeah so . . .

EVANS: You had mentioned you already traveled to the states at least once—you'd visited New York—but was this your first time in Georgia? Was this . . . and also are you traveling alone at this point, or did your parent send you off?

PROENZA: My father accompanied me to enrollment, but then after that, I traveled by myself any time that I was coming and/or going.

EVANS: I see, and that was . . . you were there, kind of, year-round, and you'd go back for holidays?

PROENZA: For Christmas and summers. My last summer before I graduated, I did stay a good bit in Atlanta, took a small job at a grocery store, and was really making friends in the area. And by then, you know, I'd been gone for nearly six years, and the ties in Mexico to friends had begun to not be as strong—the other kids have gone off to college or whatever—so I began to really be interested in remaining. Once I graduated and I knew I was going to Emory . . . in fact, I started my college education the summer after I graduated from Riverside, so I did not go home for the summer.

EVANS: I see. What was . . . you know, when your dad accompanied you to enrollment, I mean what was the transition like? Was this your first time, kind of, being away from your family for a period of time?

PROENZA: Yes, very much so. So two things. Number one: that very first day in Riverside was lots of things happening in getting this, getting that, getting books, getting oriented to the barracks where the rooms were and so forth. But when I went in to get my uniforms—fitted for my uniforms—my dad left without telling me, and he later said that he wasn't sure that if he stayed anymore that he would then be actually able to leave and leave me behind. So it was traumatic for both of us because when I came out of the fitting and so forth, I went looking for him, and he wasn't there. And I asked, and I'm not sure that anybody really knew, except that he wasn't there. But so it was difficult for both of us, but that was the beginning, and **<T: 40 min>** there's an initial period of homesickness. I did have a chance to call home and so forth on a regular basis. But, you know, once we settled into a routine—both of classes and the various things that the military school did—parades and inspections and you name it involving the military life—I got very much into that. So in the junior school—the seventh and eighth grade—I became the company commander, the highest-ranking cadet—my second year. And in high school I progressed nicely, and indeed my final year I was the commanding cadet colonel for the

school. So in short, I had developed the leadership and acumen and so forth, to rise in the ranks, as they say.

EVANS: Yeah, and as a leading cadet, what did that mean for you did in terms of responsibility? Were you . . . what types of things were you then responsible for as being, kind of, an officer?

PROENZA: Well, overall discipline in general, but particularly the performance of the formations, the parades, inspections. I seem to recall we had either four or five companies, so the company commanders reported to me, and, as a result, in the usual sense of a tiered structure—hierarchical structure—we'd use them to carry forward the orders, the sense that this was not going quite well, would they take care of this or that and so on. I'm sure you're familiar with some of that, so very similar. Learned about . . . we had junior ROTC [Reserve Officers' Training Corps] so we learned to assemble M1 rifles and I think it was M[2] .50 caliber machine guns and to do on bivouacs and things of the sort that were like camping and so forth, and that's kind of fun.[5]

EVANS: Yeah, I was a Boy Scout, but nothing near a military cadet. Well, I'm curious . . . . I mean, what was like . . . what was a typical day like for you?

PROENZA: Reveille was always—I forget what it was—six or seven o'clock in the morning, you had a period of time to get dressed and ready, then there was a formation, the formation then moved sequentially through the companies to go to breakfast. As you did that, if you were the last company to go through, I always felt that you had to rush through it, so I learned to eat fast in order to get what I liked and eat adequately—or at least enough. And lots of fun with the staff. We remember some unusual things I guess you'd say. So, you know, following breakfast, it was the immediate call to classes and then formation for lunch, go through lunch, afternoon classes, athletic things, ROTC things, and then again at an evening formation, which was the more formal one, followed by a dinner and study hall time, either in the library or in the barracks. So just pretty . . . a very structured day, which I guess served me well once I got to have responsibilities like running . . . being president . . . from five to ten o'clock at night at times.

EVANS: I see. It was also close to the water? Were there water sports?

[5] The M1 rifle was also known as the M1 Garand, named for its designer, John C. Garand. This weapon was the US service rifle in World War II, the Korean War, and the Vietnam War. See "Garand rifle," Encyclopedia Britannica, accessed December 17, 2021, https://www.britannica.com/technology/Garand-rifle. The M2 machine gun, also known as the .50 caliber machine gun, was a heavy machine gun used near the end of World War II. See "M2 machine gun," Encyclopedia Britannica, accessed December 17, 2021, https://www.britannica.com/technology/M2-machine-gun.

PROENZA: There was a pool. Riverside Military Academy was close to Lake Lanier in Georgia, but we didn't . . . except to go for picnics, there weren't any water sports like sailing or rowing or things of the sort, but it was fun to be near that lake. But yeah, no other water sports. Swimming was the closest we got. **<T: 45 min>**

EVANS: I see. Did you have . . . was . . . were you allowed, kind of, extracurricular activities, or were people . . . did you have particular extracurriculars that you wanted to be involved with, more involved with outside of leadership?

PROENZA: Things within the academy were fairly structured so that you could join different sports. I did wrestling, I did—what do you call it?—marksmanship. I'm not particularly interested in some of the other sports, so I didn't do those. We had a time on Saturdays and Sundays for other things, and we could take . . . the school had a bus that we could take into town and walk around and have a coffee or lunch or whatever. There was a nearby girls' academy and so that was always a time also to meet young ladies and get to know them and [there] were then structured events that the two schools would join together and have a dance or a picnic, you know, the usual—what you call . . . I'm trying to hunt for the word . . . learning social graces you might say.

EVANS: Like cotillion? Something like that?

PROENZA: Yeah, yeah.

EVANS: That sounds fun.

PROENZA: It was okay. Not enough of those times and, indeed, when I finished at Riverside and went to Emory, my first year felt so, so very free that I didn't do as well my first year in college as I might otherwise have done if I was focused so . . .

EVANS: What was the education like at Riverside? There were structured classes, you had to take a pretty rigorous, regimented—

PROENZA: Right. And they offered which might call a science kind of curriculum, a science-focused curriculum and a more liberal arts and social science curriculum. And I did get the science one. I don't really know why I chose it at the time. A lot of it was, you know, basically

something that they suggested I would be able to do and so I did. But otherwise, typical—I guess, I didn't know any better, so I don't know what to compare it with—I didn't know what a typical public high school would do, for example, but math, chemistry, physics—the usual gamut of things.

EVANS: I see. Well, around this time, Sputnik was launched in '57.

PROENZA: Yes.

EVANS: Which would have been around thirteen, you know, in middle school at the time. Do you have a recollection of that and what that was like?

PROENZA: Yes, I do. I seem to recall not only the TV transmissions with the beep beep sounds that presumably were coming from it, but also at that time, the sky was dark enough and also it was possible to see the satellite moving overhead, so I remember that kind of wonder. Interestingly, certainly don't remember anything about the news communicating kind of the US having been beat to this. Obviously, it was big news indeed, but there wasn't that awareness of this having been a big "insult" to technological capabilities.

EVANS: I see. Well, do you . . . . I mean, were there any—outside of leadership—were there things that, you know, drove you? You said you didn't know exactly why you picked science. Was there anything that, kind of, drove you in that direction? Did you have an idea of what you wanted to study later, or were you just interested in things?

PROENZA: Well, again, I think the basic idea from my father was that I should try to move towards becoming a doctor and so the school probably took that and guided me towards a pre-science, pre-medical type college curriculum. And, you know, obviously some of **<T: 50 min>** those things were more interesting. Again, I don't know what it was about geometry and proving various theorems that interested me or the simple equations for a line for a parabola—that sort of thing. I remember being intrigued of how you could graph some of those equations, and that was kind of fun.

I had a very interesting math teacher. He had some kind of deficit, so he moved and . . . he was unusual—let's put it that way—although also rigorous, but he also had some . . . . One day in class, he talked about, "Did you know what the cowboy sang to his horse before he died?" And so he sang a little song about the cowboy saying, "Oh, kiss me cayuse and whisper goodbye." Something like that. [laughter] That stands out in curious back of the recesses of memories.

EVANS: So were there . . . did you . . . so you were . . . I mean I loved geometry when I was in high school too. Were there . . . you were at Riverside for then it was a school that went from eleven all the way till graduation?

PROENZA: From seventh grade all the way to the twelfth grade, yes. The other thing that you may not know is that for many years, they had a winter home in Hollywood, Florida near Fort Lauderdale, [Florida], and so at the end of the fall period of time, kids would go home and then report to school in January in Florida. And that was great fun because obviously, a warmer environment and access to the beach, which the school would take us to the beach on Saturdays and Sundays. But the other thing that happened is during that transition period, the honor society for the school on which I was engaged with were allowed to run the grill while the regular staff would move to set up the one at the other site, and so for—I don't remember—two days or five days or a week—I don't recall—we would run the grill and then we would get to keep the profits to mount the annual dance or various events of that sort, so that was a lot of fun. You get creative with how you use every last little piece of bread, rather than charging twenty-five cents for a sandwich, you take the end of the bread, put a piece of salami or baloney in it to fold it over and sell it for a nickel, you know, so that was fun.

EVANS: Nice. Sounds like you learned some industriousness from your mother, maybe.

PROENZA: Yes, and from this other experience, yes.

EVANS: So you were . . . was there, kind of, something that drove you to Emory? Was it a . . . were you applying to other schools thinking about college early on, or what was your thought process going in?

PROENZA: It was very interesting. I think it was always clear that I would go to college. But I had no idea about what was available throughout the country and so being in northeast Georgia, the typical schools that the better students were interested in were either Emory in Atlanta or Duke [University] in North Carolina. So I happened to be dating a girl from Atlanta, and so it was clear I wasn't going to go to Duke. So chose Emory, if you wish, both because it was recommended and because I was dating a girl from Atlanta.

EVANS: I see, and had you spent time in Atlanta before? I guess did you visit her?

PROENZA: Well, you know, Gainesville, Georgia, is about seventy miles northeast of Atlanta, so from time to time, we would get a chance to go to Atlanta, and obviously, in **<T: 55**

min> getting to Riverside, I would always land in Atlanta and either spend a night or two there or just transit up. And a lot of the kids at Riverside were from the area, and so I got to know Atlanta—not particularly well, but enough to know that it was a decent city. It's gotten too large now for my taste, but in those days, it was sufficiently large and attractive that it was a very pleasant larger city.

EVANS: How big was, kind of, your incoming class at Emory? You said you knew some incoming—

PROENZA: Yeah, I honestly do not know. Wow. I imagine in those days it was maybe a thousand or two thousand students. I have no idea—just don't have that recollection. That would have been 1962. I don't even know what the total enrollment of Emory was in those days. It was a very nice campus on the northeast side—actually in Decatur, Georgia, just a suburb of Atlanta. It was a very nice campus. Anyway, but as to the size of it, I don't remember; they already had a medical school, but primarily, the campus was relatively small, comparatively speaking.

EVANS: Was it was coed by this time, by the time you entered? You said it was nineteen—

PROENZA: Yes. By that time, Emory was coed. In fact, I think it had been coed for many years I just don't know. I don't even know if Emory was all-male at any point in its time. I don't know.

EVANS: Interesting. Well, you mentioned, kind of . . . did you . . . . I guess I was curious if you continued ROTC or junior ROTC into Emory. Was there pieces of the, kind of, military academy mindset that you brought into college?

PROENZA: No, I think only a little bit of the structured aspect. But, as I said, the first year there was such freedom for me compared to Riverside that I was more interested in getting to know the rest of the world than anything . . . so no, I did not continue with any aspect of military ROTC. At least, I don't remember doing . . . no, I don't think so.

EVANS: Did you continue to be close with some of your . . . you mentioned some of your Riverside cadets also went to Emory. Did you keep close with them or contact with them?

PROENZA: You know, I'm trying to remember. I don't . . . . I think there may have been a few, but I don't recall pursuing them in any particular way. Again, at that point, I started going my own my own way.

EVANS: I see. So what did you enroll in your freshman year in terms of—

PROENZA: I remember being thrilled by the large amount of offerings and paying very close attention to what I was expected to take in a mixture of science and social science and etc., humanities. And so, at that point, I was still interested in possibly being pre-med. I had a professor that wanted me to major in physics, and that sounded interesting, but I don't recall why I might not have gone that way. But one of the classes that I took very early was a psychology class. And then they'd have abnormal psychology class, and I got fascinated by obviously the brain and the anomalies that were portrayed in the abnormal psychology class. That pretty much . . . certainly after my first year, it looked like I was going to major in psychology, and I did at Emory. I had a fine mentor, a woman who had gone to Ohio State. <**T: 60 min**> And she and I became very close, and she was very supportive of my interest, and, as I mentioned, I didn't do so well my first two years at Emory, and if it had not been for her seeing both my interest and my success in these psychology classes, I might not have been easily admitted to graduate school. So she was able to recommend me very highly to her mentor at Ohio State, and I began my graduate career as a result of that.

EVANS: What was her name?

PROENZA: Bonnie [R.] Strickland. She became eventually a professor at the University of Massachusetts at Amherst and eventually also the president of the American Psychological Association. So she did well for herself.

EVANS: I see. Did you keep in contact with her over the years? Was she . . . ?

PROENZA: We did. When I later traveled to . . . for some research at the Woods Hole Marine Biological Laboratory, I remember stopping by Amherst and spending an afternoon or evening catching up, and we talked . . . last time we talked was probably three, five years ago or something, as she'd retired but retired in the area, so yeah, we stayed in touch, and I was a candidate for the presidency/chancellorship at UMass Amherst—oh goodness—probably in . . . sometime in the mid-nineties, and she was very gracious, hoped that I would get the position, which of course I didn't, but that's a different story. That was a good time to interact; she was a great champion of my ongoing career.

EVANS: Did she have a research lab at Emory, or was she . . . ?

PROENZA: She did research more in what you might call the social psychology, personality psychology. She'd been a student of Jules [Julian B.] Rotter at Ohio State—eventually moved to [University of] Connecticut—and Jules and she initially developed a number of studies along what they call internal or external locus of control . . . people . . . trying to characterize people by how much they guided themselves as opposed to how much they were tended to be guided by others, so that she did a lot of research in that area, and after that I didn't much follow the nature of her research. So we did—I forget exactly—I know we did at least one study before I left Emory.

EVANS: Were you involved in any of her research efforts or involved in other, kind of, outside of coursework research activities?

PROENZA: Only a little bit with her guidance. We did a study together on . . . oh, what was it called? Anyways, it was, sort of, the early beginnings of some of the Civil Rights movement, so there was great interest in how white and Black students perceived each other, and so there was a study that looked at some of those differences.

EVANS: Was it conducted at Emory?

PROENZA: Yes. With Emory students, as I recall.

EVANS: Were you helping interview students or collecting data?

PROENZA: Yes, we developed a questionnaire, and I forget how we then distributed them—went to different classes. Some of the protocols that exists today for both approval of social science research and selection of subjects, etc., were not in place at that time.

EVANS: Was there a point there at Emory where you . . . you know, you had mentioned that she—your mentor—had pushed **<T: 65 min>** you to go to graduate school. Was there a period where you recognized that as a possibility and that was something you wanted to do?

PROENZA: Yes, but it was quite a surprise. I remember telling both my professor and others, I said, "I thought I'd come to college, so I could finish and that, you know, my major would be my profession, and that's it." I didn't know there was graduate school and that you had to get a

master's or a PhD, so that came as a little bit of a shock. But once I understood that, it was clear that that's what I needed to do. In Mexico and Latin America, when you go to college, again, the level of instruction is at roughly one to two years ahead of the US system and so when you finish university, college in Mexico, you get a diploma that is a license and you're called a *licenciado* [graduate with a licentiate], and so you practice what you went to college to study and/or you teach—so anyway. So that's when I started exploring where I might go to school, and it was clear that my grades weren't immediately stellar, so she called the Ohio State, strongly recommended me, and I got in at that time into the clinical psychology program at Ohio State.

EVANS: I see. That was . . . you graduated in 1965 from Emory?

PROENZA: Yes.

EVANS: I see. So you mentioned your grades were—

PROENZA: And from Ohio State around '65, '66, yeah.

EVANS: Did you like . . . I mean, so you mentioned your grades weren't stellar. Did you enjoy class . . . were there classes that you enjoyed and really excelled at, or what was it about . . . ?

PROENZA: Yeah, I really started getting serious about school my . . . the end of my sophomore year, beginning of my junior year. And because I had started early, I went through Emory in three years, rather than four. But yeah, I enjoyed not only the psychology, but I remember a music appreciation course that I enjoyed a great deal. I enjoyed philosophy a great deal as well, and I think if I recall correctly that I'm minored in philosophy. So that was very, very enjoyable.

EVANS: What was campus life like? Were you doing other extracurriculars besides schoolwork or still looking for leadership roles?

PROENZA: I joined a fraternity for a short period of time, but really didn't find that to my long-term satisfaction, I guess. But no, other than that, I really . . . . I lived on campus I think that first two quarters, then my folks moved up from Mexico, and so I lived at home and commuted to Emory. And I was interested in cars at the time, and I was interested in horses. In fact, I almost quit school to go into the horse business. But yeah, that was fun. Again, the influence of women—ladies—the girl that I had been dating and why I went to Emory loved

horses and how I found this this particular stable I don't recall. But the long and short of it is I worked at the stable for probably a year or more and bought a horse and then bought two more. And, as a result of that, I needed a place to keep them and thought about going into . . . so there was a residential development beginning in northeast Georgia that was revamping a barn and wanting to have an equestrian side to it, and so I got to the point where I had negotiated a deal with them. But then it became clear that it wasn't going to work out. The person that I wanted to hire to **<T: 70 min>** manage it, his boss said that if he left and went to do this, that he'd be sure to blackball him in the industry. I didn't have a second option on that, so I stayed in school. I had literally gone to the dean at Emory and said, "Look, I may need to drop out for a while. Here's what I'm thinking about." And, obviously, as all good deans are likely to do, he encouraged me not to do that; I may not come back. There but for the grace of God I might have been in the horse business instead of in science.

EVANS: Interesting. Was there . . . what was it about . . . were you racing the horses, or were they show horses?

PROENZA: They were show horses, three and five gated American Saddlebreds—lovely, lovely creatures—and I just loved the aesthetics of it. And, indeed, aesthetics has played a great part in my life and certainly played a great role in how my wife and I built the boat that we now have. But anyway, the aesthetics of the horse and how they're trained and how they move their hoofs. It was just lovely, yeah.

EVANS: Yeah, my favorite book as a kid was *Misty of Chincoteague*.[6]

PROENZA: Oh! Did you ever go to Chincoteague?

EVANS: Excuse me?

PROENZA: Did you ever go to Chincoteague?

EVANS: No, we never went, which is, you know . . . I don't know. I've never been, but it must be close to you at this point, right?

PROENZA: Well, it wouldn't have been too far from Arlington either.

[6] Marguerite Henry, *Misty of Chincoteague* (New York: Aladdin, 1947).

EVANS: Well, this just popped in my brain. I haven't thought about this book in at least fifteen years so . . . well, yeah, that's really interesting. So you were dating this girl at this time, got really into horses. You also mentioned cars?

PROENZA: Yeah. Again, the aesthetics of what was then the Mercedes-Benz 190 SL, a small sports car, and 300 SL were very, very dear to me. So I don't remember exactly how, but in those days it seemed like they weren't all that expensive. So I first bought a 190 SL and then traded that in for 300 SL. And I deeply regret that, when I went to graduate school, I felt obliged to sell that because that alone would have ensured my retirement. So anyway, sold it for what I paid for it; today it's worth two million dollars.

EVANS: I had no idea. Were you working on cars too? Was it an aesthetic thing, or was it . . . ?

PROENZA: No, I just enjoyed the . . . I took care of it, participated in a couple of shows—Concours d'Elegance-type shows—but that was about it. Oh, and I did . . . the other thing that I did do—I almost forgot—my advisor and my mentor, Dr. Strickland, raised German shepherds, and at one point, I bought a young pup from her and showed the dog for a number of years and then of course the dog traveled with me to . . . for the rest of his life, anyway, which was . . . moved to Ohio State with me, moved to Mexico and to Minnesota, and then to Georgia and then died in Georgia, so for the better part of twelve, fifteen years. I don't recall. Lovely creature.

EVANS: What was the dog's name?

PROENZA: Sam.

EVANS: Nice. Did you name him after a particular Sam?

PROENZA: No, let's see. He was a beautiful solid black color . . . how did we get to . . . ? We registered because, of course, that was part of the ethos of her kennel, her raising of the dogs, but I think it had a little bit more elaborate . . . but anyway, Sam was the shortened version.

EVANS: I see. **<T: 75 min>** Well, I guess I want to talk about your transition into graduate school, but I also want to check in on Dave and see if he has other questions about your time at Emory.

CARUSO: No, nothing comes to my mind. Nothing's come to my mind.

EVANS: Well, one thing I'm curious about is, you know, at this time after Sputnik, there was kind of an increased . . . at least interest and also budget from the . . . at the federal level for doing scientific research. Was there anything you saw in terms of opportunities during this . . . this must have been the early sixties?

PROENZA: Not at that time. It came a bit later. What happened is I went to Ohio State, and literally within a . . . at that time, I thought I was going to continue in psychology, and, as I mentioned, got accepted into their clinical psychology program and literally within months of my arriving at Ohio State, virtually the entire clinical faculty announced that they were leaving and going elsewhere. And so I initially said I would go with one of my professors to the University of Connecticut and very rapidly with his help and guidance finished a master's thesis and a master's degree at Ohio State. [I] moved to Connecticut, but at the end of one semester, decided that I might want to go back and live in Mexico, so moved to Mexico, taught at the University of the Americas for about a year-and-a-half, met Starke [R.] Hathaway, who was a physiological psychologist and together with Paul [E.] Meehl, the author of the Minnesota Multiphasic Personality Inventory (MMPI)—he traveled to Mexico fairly often. We'd met. I translated for him a few times with some humor attached to it along the way, and he then encouraged me to continue my work for a PhD and invited me to come to the University of Minnesota and so that's what I did. By the time I got to Minnesota, there was clearly a good bit more going on in science, and that's when I transitioned to neuroscience.

EVANS: I see. What was it that brought you back to Mexico?

PROENZA: You know, it's a very good question. I've asked that several times. I think at that time, traveled back, got very, very enamored with some of the architecture, some of the ethos, was a little bit—shall we say—not disenchanted, but clearly the change at Ohio State and the likelihood that I'd be in a totally different state just felt a little bit like, "Hey, maybe this is an opportunity to go back home," so to speak. That just really didn't work for a number of reasons. By then I had been so acculturated to the American system and American way of life, that being back in Mexico now felt foreign instead of familiar, and while I was teaching comfortably at the University of the Americas, it was clear that if I wanted to do anything sufficiently—shall we say professionally—in psychology, I'd have to get a degree. I forget which university invited me to do a PhD there, but they put all sorts of restrictions like I would have to start from scratch and so on and so forth. So it clearly didn't feel like the thing that I needed to do after so many years here. So with Dr. Hathaway's invitation, it seemed like, "Hey, this is what's destined to be." Off to Minnesota in the . . . what year was it? That would have been 1967, I think.

EVANS: Did **<T: 80 min>** you . . . you were teaching psychology?

PROENZA: Yes, primarily physiological psychology, but [it was a] small enough school that they needed some things, so I taught a course in cross-cultural psychology. What else? Oh, of course, in animal behavior.

EVANS: Did you have any experience teaching before that, or was this your first entrance into leading a classroom?

PROENZA: As a graduate student, I had taught a couple of classes—just filled in and so forth, but not a full class, no.

EVANS: At Ohio State?

PROENZA: Yes, and even as an upperclassman at Emory, I think I had helped a professor teach one class. You know, a couple of lectures at most.

EVANS: I see. I mean, teaching for me has been an interesting transition. How did you face teaching? Was it something that you . . . how did you learn how to teach, I suppose?

PROENZA: It's a good question because I don't think we were ever taught how to teach it at our graduate schools, which is a bit of a problem, but I think that's where some of my leadership skills from Riverside began to fall into place because as a leader—company commander, platoon leader, squadron or battalion leader—you need to project your voice, you need to command a certain level of authority and communicate that well, and so I think that served me in good stead, and it felt almost natural.

EVANS: I see. Did you want to be . . . at that point was teaching your preferred career path? Were you thinking you wanted to be a professor, or you wanted to do other things? Were you . . . did you still want to buy horses? Were there . . . ?

PROENZA: No. At that time I still didn't quite know what I wanted to do; it was clear that now I was interested in the brain and behavior, so I was a little bit more focused on physiological psychology, neuropsychology. And Minnesota had a very fine department of psychology and, of course, a program in neuropsychology and close relationship with neurology and neurosurgery at their medical school. But, you know, I didn't even know that at the time.

Starke Hathaway was just simply the reason and [enabler] . . . he not only felt strongly that I should continue, but he saw to it that I had an assistantship and so financially, I could make it work.

EVANS: I see. Were there other schools that you were looking at, or you just . . . you wanted to follow Dr. Hathaway and thought it was a great program?

PROENZA: Yeah, and I guess there's one thing I did omit. At Ohio State as part of my master's, I had done a paper on . . . there were a number of ideas at that time about what is it that was the problem with schizophrenia, okay? What exactly is wrong with a schizophrenic patient? And one theory was input dysfunction—that the schizophrenic is so unable to control the sensory inputs, that they are overwhelmed and can't cope, and hence the psychosis is a result of that. Well, I had discovered around that time that the brain has efferent as well as afferent projections. In other words, for example, our fingers carry touch information to the brain, but the brain can control how we feel by focusing the attention or directing the attention elsewhere. That's why, in part, if you are very busy doing one thing and are injured in another part, you may not even notice that you've been injured. So that was an interest that I carried into Minnesota. I can tell you about that when we talk about Minnesota.

EVANS: Yeah, well, I think now would be great time to hear about it . . . you were also a . . . I know you were a research fellow there too, so you were working both in a research lab and also **<T: 85 min>** at the medical school there?

PROENZA: It was still in the psychology department, although I did have a number of interactions and courses with both neurology and neurosurgery. But yeah, that's . . . so the idea stayed in my mind and a young professor in psychology and neuroscience had gone to Minnesota, Dwight Burkhardt. He graduated from, I believe, [University of] Iowa or Iowa State [University] and then did a postdoc—oh, where was this because . . . ? He did a postdoc with John [E.] Dowling, who eventually went to Harvard [University], and I'm sorry I cannot remember . . . maybe at Wash U, Washington University in St. Louis. Sorry, but I'm fuzzy on where they were at the time. But anyway, [to] make a long story short, he was working on the retina, and I was aware of the retina having efferent projections to the retina from the brain. And Dr. Burkhardt was working on a signal from the kinds of cells in the retina that were almost surely the ones to receive the efferent projections from the brain and thus it seemed natural that we might be able to see if stimulating the optic nerve retrogradely would modulate the response of these cells to light, and that's how I began to get interested in neuroscience, in particular, and retinal neuroscience, specifically. And so we started some work on that. Eventually, the idea of doing this as a model for schizophrenia fell by the wayside; I fell in love with neuroscience and the retina and did my PhD on visual sensitivity as measured neurophysiological, and it was the beginning of my neuroscience career.

EVANS: I see. Was your thesis advisor then Dr. Burkhardt?

PROENZA: Yes.

EVANS: I see, so you joined his lab like, I guess, starting at Minnesota? At what point did you . . . ?

PROENZA: Right, right. Very shortly after I got there. My first work at Minnesota was in the laboratory of Manny [Manfred J.] Meier. And Manny Meier was a neuropsychologist, so he was exploring behavioral manifestations of brain trauma and brain disorders like Parkinson's. So we did a number of studies there, particularly with Parkinson's patients early on. I think I was with him maybe two semesters before moving full-time to Dr. Burkhardt's lab.

EVANS: What . . . I'm not an expert. What did . . . you know this sounds, kind of, more like clinical work like you were . . . were you working directly with patients or was there another way to study [. . .]?

PROENZA: Yeah, we were working with patients, but not in the clinical sense of treating them, in the sense of understanding how their Parkinson's, for example, manifested itself in different gait patterns. So, for example, we developed a walkway, which we put copper wire mesh on, so we were able to measure the time and duration of the shuffling gait, for example, and could trace, through that, how the gait changed over time, or how it might improve with different medications that they might be treated by. So we were trying to characterize the behavioral consequences of neurological disorder.

EVANS: I see. I understand. I imagine . . . you mentioned [earlier] that you had written a paper very early on, maybe even mentioned while you're still at Emory. Is that correct?

PROENZA: At Ohio State.

EVANS: At Ohio State? Excuse me.

PROENZA: On input dysfunction.

EVANS: On input dysfunction. What . . . you know, writing papers . . . especially I remember writing my first scientific paper was a challenge. I mean, did you . . . what was your experience **<T: 90 min>** like learning how to write like a scientific, peer-reviewed publication?

PROENZA: Interestingly enough, and for reasons that I cannot explain, writing and writing technically came fairly naturally to me. I think in part, it was being able to recognize scientific papers that I liked how they were written and probably emulating some of that. And likewise—and here's where the teaching came in—hearing a good presentation whether in teaching or in presenting a research paper, if you felt it was a good presentation, you could . . . I could find that it felt natural to me, so [I] would emulate that that style of writing and/or that style of speaking. To this day, I think that continues to be a . . . it's not trivial; I go through several editions and several rewrites of papers, but it comes . . . again . . . anyway, it works—let's put it that way.

EVANS: I understand. Were . . . so I imagine for your master's at Ohio State, you did do coursework. Were you also taking courses when you got to Minnesota?

PROENZA: Oh yes, continued . . . there was a curriculum, and it wasn't strictly all research. I took a number of courses, both in neuropsychology and psychology in general, but neuroscience generally, neurology. Even did a couple of seminars on neurosurgery, as I recall . . .

EVANS: Were you . . . ?

PROENZA: Which was, kind of, fun to watch a budding neurosurgeon get right/left confusion. [laughter]

EVANS: Were they, like, observations of these surgeries?

PROENZA: Some of that, yes, and then just the . . . how should we call it? The didactic teaching on, you know, neuroanatomy and neurosurgical techniques and so forth. You'd hear from them what was structure, what was the approach to the structure, things of that nature.

EVANS: We spoke earlier about there being permissions and various rules surrounding doing experiments and how they weren't really developed while you were at Emory. By this time, were you doing that, sort of, ethical oversight or research compliance in your work that you were doing?

PROENZA: It was certainly beginning. I don't recall at which point the structures for, you know, animal care and subjects . . . but we certainly followed good laboratory practices, procedures in care of the animals that we worked with. But yeah, the protocols for both animal care and protection of human subjects came in a bit later, as I recall.

EVANS: What about, like, research funding? We spoke briefly about there being a shift in terms of . . . ? What did you notice around that time?

PROENZA: Well, it really . . . it became clear at that time . . . . I mean, I was certainly aware, for example, that anyone who doing research needed the funding to conduct that research and the laboratories were dependent on it, so I began to be aware that my professors were applying for grants and receiving grants and that my salary was being paid either by a grant or from the extra earnings in clinical practice at the medical school there. But certainly, by the time I went to [Minnesota] . . . while I was at Minnesota, it became very clear that I needed to be very supportive of my mentors in order to have good work and **<T: 95 min>** their then being able to build upon that as part of the research grants, but it became very clear that that's what I would be able and needed to do subsequently in order to succeed.

And there were nervous times, clearly . . . that was when I began to hear about the cutoff scores and priority scores and all of the things that go along with study sections or study review committees at either NSF [National Science Foundation] or NIH [National Institutes of Health]. It was also a time when neuroscience in general, and certainly vision research, was exploding. The first time I went to the Association for Research in Vision and Ophthalmology meetings in Sarasota, [Florida], I think there were maybe a hundred and fifty, two hundred scientists and postdocs and graduate students. Today that meeting probably has two thousand, three thousand, four thousand attendees each year, so it was exploding, and the idea of being able to compete successfully with some of the people that you were obviously both learning from and seeing emerge in the field was pretty daunting. So, I've read a number of these things, and you know, obviously was later successful because I . . . for the time that I did do my neuroscience research, I was continuously funded and received during that time an RCDA, a research career development award, so I guess I learned well enough—it worked for those years.

EVANS: Were you were you involved in any grant writing during your PhD program, or was it strictly research?

PROENZA: You know, I'm trying to remember. I'm pretty sure that I either reviewed or helped to write sections of Dr. Burkhardt's grant proposal at one time. But writing a full proposal didn't happen until I was a professor at [University of] Georgia.

EVANS: I see. Well, before we, kind of, move on and talk more about research. You had mentioned that your parents moved to Atlanta while you were in Emory. Did they stay in Atlanta, or did they continue to . . . ?

PROENZA: No, once I went to graduate school, I think it was fairly short order after that that they decided . . . they thought initially of remaining in the United States, and they moved temporarily to Texas—I think Houston, for that matter, but I don't really recall. But I don't think they were there more than a few months and then moved back to Mexico and Cuernavaca in particular.

EVANS: I see, and when you were back in Mexico for that year, did you see them?

PROENZA: Yes, yes, they were living in Cuernavaca by then and not every weekend, but with some regularity [I] would drive to Cuernavaca and spend some time and see them, yes.

EVANS: You and Sam?

PROEZNA: Yes. [laughter]

EVANS: Oh great. Well, I guess, at this point, we've been going from us two hours. I want to quickly check in with Dave and see if he has questions about your time at Minnesota and your activities there.

PROENZA: Okay. Dave?

EVANS: Okay, great. Are there . . . ?

CARUSO: No, I think you did a good job covering it.

EVANS: Okay, are there any other, kind of, reflections from grad school that you are thinking about, want to share? Anything I may have missed?

PROENZA: Oh my goodness. You know, there was a graduate student who eventually became a professor at Ohio State, [Gary Berntson], interestingly enough, who was very, very helpful in

setting up the early experiment that I tried to do with the optic nerve and efferent stimulation. **<T: 100 min>** That was a great help.

I think the only other thing from a personal perspective—this will sound a little corny—one of the things that intrigued me about the United States is that you guys had something called a mobile home, you know, and a travel trailer—that you didn't have to have a permanent home; you could just take it wherever you want it to. Well, that was intriguing but not exactly what I thought that I wanted to do—move my home around. But something got me interested in reading about sailing, and I found a book by an Englishman. Oh my goodness. It'll come back to me. It was called *Sailing Around the World in Wanderer III*, a small thirty-foot cutter that he and his wife—Eric [C. Hiscock] and Susan Hiscock—that's their name . . .[7] And I fell in love truly with the idea that not only was that something that was aesthetically exceptionally satisfying—beautiful—but it also provided the freedom to do extensive traveling with little expense—raise your sails and get carried across an ocean. So interestingly, the lab—neuropsychology lab—that I was . . . had with Manny Meier, he became interested in that, and so we went and looked at a number of boats, and I became very quickly interested. [I] took sailing lessons, decided that obviously as a graduate student and even if I got a job at a university that I wouldn't be very likely to afford buying a boat capable of going across an ocean. So I began to get excited about the idea of building one. And anyway, that would have to wait, but that was another part of that period of time in my life when I just think . . . got truly excited about the idea of sailing and sailboats, and anyway, that'll come later.

EVANS: When . . . did you have opportunities to sail when . . . . I'm not familiar with Minneapolis or . . . but the Mississippi [River] runs right through it. Did you sail on the Mississippi?

PROENZA: No, Minnesota is known as the land of ten thousand lakes and just west of the city of Minneapolis is a very large lake called Lake Minnetonka and [there's] plenty to sail a decent sized, small keel boat, twenty, twenty-five feet. And that's where I learned to sail—on Lake Minnetonka.

EVANS: Cool. Did you ever travel outside of Minneapolis to sail beyond the lake? Did you go up to like the Great Lakes, Lake Superior?

PROENZA: [I remember chartering a small sailboat on Lake Superior and sailing to the Apostle Islands.] But later . . . let's see . . . that would have been '68. It would have been early in my research career that I both bought a small boat and then also charted a boat in the Caribbean for just an afternoon. And then shortly thereafter is when I bought an empty hull and

[7] Eric and Susan Hiscock, *Around the World in Wanderer III* (London: Oxford University Press, 1956).

started building . . . well, that would have been 1976. But all that had its genesis in Minneapolis and this crazy idea that [you] take your home, put it in the water, and go anywhere you want.

EVANS: Yeah. There's . . . like my father growing up was a big van guy, and that was his . . . kind of shared a very similar sentiment about being home wherever you are, which is great. Were you . . . At this point, did you . . . Well, I should also say we've been going two hours, so if you need to take a break at any time, let me know. We can do a five-minute break or something.

PROENZA: I'm okay for the moment. Maybe in half an hour or so I'll be ready for a bathroom break, but okay right now. If you need one, let me know.

EVANS: No, that's fine; half an hour sounds good. I'm curious that, you know, now you've been doing this . . . you're deep in neuroscience research, laboratory research. At this point, are you looking to continue to **<T: 105 min>** do that, or do you have other career options that you're thinking about, or you want to be a professor at this point?

PROENZA: So at that point I'm pretty sure that what I want to do is continue to research and get an academic research job somewhere in the US, so very much so . . . by then, all of my professional acquaintances are colleagues in history of, you know, you studied with this person, he studied with that person, and that way you know that, and you start knowing people and so forth. So I think it was my last year at Minnesota or maybe the following summer—I can't remember—that I did a postdoctoral summer with a colleague, Tom [Thomas H.] Ogden at University of Utah and again doing research on the retina. He had a wealth of experience, both in terms of technical things . . . and that's the other thing I guess that I grew very . . . that felt natural that in order to do research like we were doing it then, you'd build instruments, you'd do a variety of things that required dexterity, and the idea of combining various kinds of elements into something that worked. So that was great fun and part of my . . . back to the Meccano erector set type thing that was fun. But no, very much oriented towards, "Hey, I want to get a job in academia at a university lab."

EVANS: I see, so between . . . like directly after you graduated with a PhD in 1971, did you have that postdoc lined up in Utah then?

PROENZA: I can't remember whether it was that summer or the following summer. I think it might have been the following summer. But after many false starts and so forth, the University of Georgia in Athens, Georgia, invited me to interview for a position in physiological psychology, neuropsychology, and it was just fortuitous. Number one, they knew I was going to be comfortable because I'd gone to school at Emory and at Riverside. Athens was maybe forty

or fifty miles southeast of Gainesville and seventy miles east of Atlanta. So anyway, they had a position specifically in neuropsychology; they had received an NSF grant to support the development of the program. And so they were able not only to offer the assistant professorship but enough money to get the laboratory started and going, which was pretty much unknown anywhere else in the country. Anybody else that even looked at me might have been able to offer the position but not space or the funds for a lab. So that was very fortuitous.

EVANS: Did you know faculty there through your network of . . . ?

PROENZA: No, I did not. Some of the professors at the department, I think, knew Dr. Strickland, and, of course, all of them knew by reputation Dr. Hathaway at Minnesota. He was, of course, one of my references. But no, I did not know anybody there.

EVANS: Did you interview . . . you said you had multiple starts and stops. Did you interview other places?

PROENZA: I think we had some telephone discussions, but I don't recall traveling to any other place, so it was just fortuitous that this turned out to be the place.

EVANS: And you were happy to move back to Georgia—that was a place that you were comfortable with?

PROENZA: Yes, let's put it this way, I had no qualms about it. You know, my wife and I occasionally have this discussion that people who have never lived in the South don't really know that it's just like any other part of the United States and **<T: 110 min>** that there's some great irony that one of my professors wouldn't drive through the South; they would fly and have their car driven down simply because they had no idea that it was okay for them to travel through the South. And in like measure, we never witnessed any kind of the things that some people in the North think happens in South until we actually were living in Iowa—not Iowa—Indiana when we witnessed a KKK rally in the middle of the square in Indiana. We never saw one in Georgia. It's interesting the degree of ignorance that keeps people from understanding that our great country is far more than a set of preconceived ideas.

EVANS: Yeah, it reminds me when I told a lot of my physics classmates in college that I was going to Texas everyone was just like, "Why would you ever go there?" But yeah, there's some bias there, for sure.

PROENZA: Fascinating to use an anecdote. Obviously, things have changed a great deal, but when I was the federal liaison for science and technology at the University of Georgia later on, I was speaking to a very highly placed person at a science and technology agency and trying to get to know them, make the case for the good people that were there, and so forth, and without equivocating they said, "Why would I want to visit an intellectual blackwater like Athens, Georgia?" So there you go.

EVANS: Yeah. When was that? That was later on while you're still—

PROENZA: That would have been 1982, '83—somewhere in there. Not so long ago.

EVANS: Well, you're . . . so you move back, you pick up, and you're—at this point—you're just with Sam? You mentioned you're married.

PROENZA: Yes, right.

EVANS: Right, so you're . . . you move back to Athens, and you've got this money to set up a research lab. How big . . . this was your . . . excuse me?

PROENZA: You said go back to Athens. I was never in Athens before.

EVANS: Oh, yes.

PROENZA: That's okay. Just clarifying. Atlanta . . . Gainesville, Atlanta, and now Athens—not far from each other, but that's okay. So you were asking a question.

EVANS: Oh no, that's okay. I was . . . that was my fault. That you're moving back to Georgia and you're moving to Athens, you've got money to establish a research lab. Did . . . and the university had a, kind of, vision for establishing this new lab, but they gave you the reins, so you were in charge of establishing this program and it was NSF-sponsored?

PROENZA: Well, the department had this NSF grant to help develop the program—okay?—and so that's where the money came from for the basic infrastructure of the laboratory. But I very quickly wrote a research grant, and I think within—I don't remember—six months to a year, I had a funded research program and had established at that time, what I called—simply

because it was mine—the Vision Research Laboratory at the University of Georgia. [I] had probably a couple of graduate students and not long—not much long—thereafter a postdoc joined me, [Chester Karwoski], which was very helpful and he eventually, when I went to Alaska, he took over the lab and continued it. But it was not long after establishing the lab and so forth that I did, sort of, lobby and push for the university to establish a teaching program in neuroscience and wrote up the curriculum and found the professors that would constitute the classes that served that new academic program at the undergraduate level. It would be an undergraduate major in neuroscience.

EVANS: I see. So you were, kind of, **<T: 115 min>** in charge of hiring faculty for the new program?

PROENZA: No, it was strictly a coordinated effort among a number of departments. [It] brought the different talent that existed and obviously began to lobby those departments to either hire additional people or to ensure that they continued to maybe to grow the expertise through the faculty in place. I think we had maybe ten faculty throughout the university that collaborated in this fashion and their collective offerings was the possible sampling of courses that students could take to major in neuroscience, neurobiology.

EVANS: I see, I see. So you were . . . when you joined, you also were teaching? So before kind of this program, what was your course load like when you first arrived?

PROENZA: Georgia had a very good policy; it was two courses per semester. A full load would have been three if you weren't doing research, but two courses per semester. Initially, I taught a course on vision and had a course in physiological psychology. Later on, I taught a course in physiology and one in neuroscience, neurobiology.

EVANS: Were you also, kind of, recruiting graduate students at this point for laboratory work and PhD work?

PROENZA: Yes, yes. The program—you know, like all programs—would have applicants some of whom would have an interest in neuroscience or in the retina. We had a number of students that way. And through the network of the Association for Research Vision and Ophthalmology [we] had occasion to meet others who might be might be interested. As I mentioned a while ago, one of them was Chester Karwoski, and he succeeded me in Burkhardt's lab and we overlapped a little bit, but he continued on. When he finished his PhD, at that point, I had just gotten my research career development award, so I had some money that I could offer, and the university—once he was there as a postdoc—had him teach some of my courses and

eventually he took a regular position there as an assistant professor and moved on through the ranks.

EVANS: What was his name?

PROENZA: Chester Karwoski.

EVANS: And so you're . . . at what point . . . so you're hired as an assistant professor. At what point . . . I guess you get tenure, and what was that process like for you?

PROENZA: Sure. It was an interesting journey. The department that I was in—psychology—was fairly traditional and at one point, one of the professors asked me to give a seminar to, I guess, his students and so forth, and they asked me at one point, you, what would you—I talked about the retina and neuroscience and so forth—and at the end, this professor said, "What would you like to offer uniquely as a psychologist to this field?" And I said, nothing. There was nothing unique about this field from the psychological perspective—just nothing. Let's put it that way, I think that did not endear me to a number of people in the department, and so the department of psychology wasn't quite sure they wanted me as a tenured professor. So at that point, the division of biological sciences at the university did invite me to move over to the department of zoology, and I was offered an associate professorship and eventually a full professorship there, so an interesting journey, and, you know, I remained . . . my laboratory remained over in psychology and so forth. **<T: 120 min>** There's no sense in moving it, but my primary appointment shifted to zoology.

EVANS: I see. Did . . . I guess were the zoologists . . . was that department more welcoming to your . . . ?

PROENZA: Yes, yes. I spoke more their language than the others. And, in fact, the person that was my best man and so forth was just actually here recently—they have a farm not far from here—but he eventually became the department head and he and I cotaught a course in human physiology and we just . . . it just worked. And his colleagues respected the kind of journals and a publication record and type of recognition that I'd gotten better than the folks, the people in psychology had never heard of an RCDA and what that meant and so forth.

EVANS: Right, right. Well, I'm curious. You know very early on in your career, you were a study director of the National Academy of Sciences . . . . I'm curious how that process . . . I mean at this point, this was . . . must have been in the mid-seventies. Were you elected to the National Academy at this at this point?

PROENZA: Oh, no, no. I'm not a member of the National Academy. At that time, the National Academies very clearly distinguished between the honorary membership component—the people that are annually invited to become members of the National Academy of Science, National Academy of Engineering, or Institute of Medicine—and what they called the working arm of the Academies, which was then called the National Research Council [NRC]. The National Research Council is the staff that operates the various buildings in Washington, [DC], both at C Street and up at Fifth Street, as I recall. And so it's—how do I put it?—there are a number of committees that are geared up annually and then they go away and then there are a few that continue on for some period of time—some which have been going on, perhaps, since the origins of the Academy, I don't know. But a longstanding set of committees that existed was the Committee on Vision and the Committee on Hearing, Bioacoustics, and Biomechanics. And they were staffed separately but housed together because there's some overlap in impact.

So anyway, the NRC periodically advertises in *Science* and other magazines: "National Academies seeking a study director for the committee on thus and such," okay? And so I saw the ad, and I said, "Gee, that sounds like something I might enjoy doing." And I wrote expressing my interest, sent them my CV, and they thought indeed that it made a good fit. And indeed, I had a lot of fun doing that for a couple of years, and, shortly after I left as study director, I was elected as a member of the committee—not of the Academy—so that continued for me for a number of years in a very successful way. And that was really my true formal introduction to science and technology policy in what you and I now know as the agencies, the funding agencies, the various committees that impacted . . . PCAST, National Science Board, etc.

EVANS: Were you traveling during . . . like to Washington during this time as part of your work with the National Research Council?

PROENZA: I was actually based in Washington during that time. So the building that they occupied was called Joseph Henry building; it was, I think, on 23rd and Pennsylvania, approximately. It's since become something else, and the working building for the Academies is now on Fifth Street, and they have another one on . . . I forget what the other building [is called]. But yeah, so I lived there for two years.

EVANS: Oh wow, and that was in '77?

PROENZA: Seventy-seven through **<T: 125 min>** almost '79, yeah.

EVANS: Were you still maintaining your research lab and work back in Athens?

PROENZA: Yes, yes, at Athens. And by that time, Dr. Karwoski had come, and he was basically managing the lab. We would co-write the grants, and any time I was in town I would help him and so forth, but he was fundamentally carrying the research load at that time.

EVANS: I see. How many . . . how big was the lab at this point?

PROENZA: Oh, I think we had maybe—in addition to Chet as a postdoc, assistant professor—probably three or four graduate students at any one time.

EVANS: I see. And you . . . I guess, so I'm curious where you lived in DC. Were you . . . you were there, kind of, just temporarily for the two years, you knew you would be there for an appointment and then move back, or what was your thinking?

PROENZA: I wasn't quite sure, but I thought about buying a condo. The curious or humorous side of it is that I almost made an offer until I found out that the parking place that was assigned to them—the condo—was an extra twenty thousand dollars or something like that so that quickly dissuaded me from buying the condo and I rented an apartment in . . . at the north end of Alexandria right by the Washington Sailing Marina and right below national airport [Ronald Reagan Washington National Airport]. I'm sure you would know; it's a big building right next to a power plant. [I think it was called Marina Towers.]

EVANS: Nice. Were you sailing at this time? Did you get . . . were you able to get out on a boat?

PROENZA: Yes, as a matter of fact, I had already started building the boat that we have, but, you know, left it back in Athens. And what was fun was that obviously I could walk down to the sailing marina, I could visit Annapolis, [Maryland], I could visit Baltimore, [Maryland], and in my off time I had a chance to go and seek out various pieces of hardware and other things. So it was fun. It was a good place to be to continue that process.

EVANS: I see, and you mentioned that you're . . . well, you're married now, and you had . . . at what point did you . . . you say it's "our boat." Who is . . . who are you sharing this boat with? [laughter]

PROENZA: My wife and I married in the eighties. I had started building the boat, and then she joined and learned all sorts of things like how to fiberglass, how to putty, a little bit of carpentry skills and other things of that sort. So while I designed it and obviously did a great deal of the work, she was very involved in it.

EVANS: I see. Your wife's name is Theresa?

PROENZA: Yes.

EVANS: That's right. Where did you and Theresa meet?

PROENZA: At the University of Georgia.

EVANS: Oh okay. And at what point . . . and then you got married, I guess, like you said, the early eighties?

PROENZA: Yes, [in 1983].

EVANS: Okay, I'm also . . . . I'm curious, you know, you mentioned being a liaison for science and technology policy at Georgia. What was that position entail? Did you still keep a place in Washington? Were you flying back and forth?

PROENZA: Flying back and forth [to Washington]. After I returned from my assignment as committee–study director of the Committee on Vision, I just had this hankering to continue some of that work. And I talked with the president of the university—at that time man named Fred [C.] Davison—and he agreed to . . . on nominating me for what was then—I guess it's still going on—the American Council Education Fellowship in higher education administration. And so I did that for a year and then he actually brought me into his office as assistant to the president, and it was during that time that I basically said to him that I thought the university needed to have an ongoing presence and, if you wish, liaison effort in Washington, and that became me. **<T: 130 min>** That's what . . . . I did that until he left the office, and not long thereafter is when I went to Alaska. But yeah, just flying back and forth to work with the various agencies, members of Congress, etc. It was the sort of thing that I could do with a quick overnight or even go there in the morning and come back at night.

EVANS: I see, and who are you meeting with?

PROENZA: Mostly NSF, a number of other entities—some of the higher education organizations—that's about the time that the Council on Competitiveness was being formed. There was another entity called CORETECH, Council in Research and Technology something that a man named [Ken] Kay—I think was his name—was starting.[8] There were a number of the higher education organizations like at that time it was called the NASULGC [National Association of State Universities and Land-grant Colleges]; it's now called APLU [Association of Public and Land-grant Universities] and, of course, AAU [Association of American Universities] and people like myself whose full-time job was that, and so we got engaged with trying to help each other. At that time, the president of Georgia and I were scoping the development of a biotechnology program for the University of Georgia, and the CEO of one of the early biotechnology companies, David Padwa at Agrigenetics, joined us as a visiting university professor from time to time. We'd meet with a congressional delegation to, kind of, inform them about this emerging opportunity in biotechnology, and so it was a lot of fun.

EVANS: Thanks. Dave, did you have a . . . I saw you pop back in. Did you have a question? Okay. Well, so, I also wanted to touch on . . . you had mentioned traveling to Woods Hole at some point to do research. What brought you there, and what more research were you doing up there?

PROENZA: Sure. The Woods Hole Marine Biological Laboratory has long been known for obviously marine biology in general, but a lot of people in neuroscience do some work there during the summer, and John Dowling and Harris Ripps . . . John Dowling by then was at Harvard, Harris Ripps was at the University of Chicago, I believe, and others were doing research on the retina there. My first foray there was being invited by them to help them set up a set of experiments in the skate retina that we had done on mudpuppy retina; they wanted to see if the same signal that we were detecting in the amphibian retina would be seen there. So, I forget, I traveled there for a couple of weeks to help them do that, and it was a year or two later that Chet Karwoski . . . and I think was actually his initiative to really spend a summer at Woods Hole, and I didn't spend the whole summer there, but I spent a few weeks with him and our own lab there. It's a marvelous place for biological science—truly one of the unique places that has supported biology. The first time I went, I remember very clearly George Wald, the Nobel Prize winner as a result of his work . . . on his studies on vitamin A and its role in vision—it was a fascinating array of characters. Anyway, he was one.

EVANS: Well, I . . . so I guess, you know, so it looks like you move . . . you mentioned you moved to Alaska and you're moving in 1987. At this point, are you . . . you have this

[8] There is some discussion of a CORETECH report in a congressional hearing. See University/Industry Alliances. Hearing before the Subcommittee on Science, Research and Technology of the Committee on Science, Space, and Technology, U.S. House of Representatives, 100th Cong. (1998), accessed March 24, 2023, https://files.eric.ed.gov/fulltext/ED300205.pdf.

tremendous research career. Are you looking to continue to do research? Are you . . . do you have, kind of, a vision for moving into a more administrative role?

PROENZA: I wasn't quite sure initially because the University of Alaska did offer me the opportunity to move the laboratory there. But it seemed to me that that not only entailed a very large expense for them, but I knew that the role of **<T: 135 min>** vice president for research was going to almost surely mean that unless Dr. Karwoski and maybe some of the graduate students were willing to move that it didn't make any sense. So what I decided to do was to really focus more on the administrative career and leave the laboratory back at Georgia. Dr. Karwoski and I continued to collaborate in writing grants and in writing papers, but after about two years, I pretty much was in full swing as vice president for research there and just turned the lab over to him.

Alaska gave me the unique opportunity to be very engaged with Washington and Alaska's congressional delegation. Ted Stevens, the late senator, and Frank Murkowski, Lisa Murkowski's father, were quite active. Frank . . . Senator Murkowski was very instrumental in forming the United States Arctic Research Commission. I became active in forming a consortium of universities—US universities—involved in Arctic research. The . . . what do we call it? ARCUS . . . Arctic Research Consortium . . . anyway, whatever . . . of the United States. And so that was very active; it was just as I was moving to Alaska that I was appointed by the secretary [Louis Wade Sullivan] to the National Biotechnology Policy Board, and that was the first, sort of, major policy assignment outside of the National Academies that I had occasion to participate in.[9] Charles [J.] Arntzen, who became a member of PCAST while I was there, was also on the National Biotechnology Policy Board was Rita Colwell, so it was a very . . . not only great opportunity, but a formative experience as well.

EVANS: Was it . . . so in moving to Alaska, I mean, was that . . . what brought about Alaska in particular? How did Alaska get on your radar in terms of a career move?

PROENZA: Sure. Well, I forget exactly the date in the mid-eighties when Fred Davison for a variety of reasons had to step down as president of the University of Georgia. Immediately, the politics surrounding that office made it clear that I wasn't going to be able to continue developing an administrative career there. So I started just, kind of, leisurely looking for opportunities, and Alaska had this research vice presidency open. And I must have written them a note because they called not long thereafter and invited me to come and interview, and it happened rather quickly. They offered me the job, they said, "Please bring your wife; we want her to be happy." We went, and I think it was a month later that we moved to Alaska, so we arrived there in September just at the peak of fall colors and, of course, shortly thereafter "termination dust" occurred, meaning that it started snowing. Typically, October 1 or

[9] "1992 National Biotechnology Policy Board Report," *Biotechnology Law Report* (April 1993): 127-182, http://doi.org/10.1089/blr.1993.12.127.

thereabouts. And it was a great experience. Alaska was in the middle of some international issues related to Arctic circumpolar issues—high latitude phenomena. As the northern component of the two poles, it had some phenomena that the southern circumpolar region did not have, but it also had some similarities like the aurora borealis [northern lights] or the aurora australis [southern lights]. But it was a much broader, expanded role for me and was no longer focused on biology alone, but strong on engineering, strong on ocean sciences, strong in all matters related to cold-weather engineering and the like—truly fascinating.

As I mentioned earlier, [I] had occasion to position the university to win the ice core drilling contract for the National Science Foundation, to travel to Greenland and Antarctica, to **<T: 140 min>** be familiar with what was there, participate with the State Department and the state of Alaska in the Arctic circumpolar policy meeting in Rovaniemi, Finland, north of Helsinki, [Finland], to be science advisor to then Governor [Walter J.] Hickel. Gosh, just almost surreal, and we loved it, but frankly, I was traveling to Washington a great deal, but it took basically a full day. I'd leave Alaska at midnight, be in Washington in time for dinner, crash, start two, three days of work, and then fly back to Alaska. So it meant that I was being gone from home for a full week, rather than just a day or two. It's also, of course, the Alaska winters, they're quite tolerable . . . it's not as bad . . . I was never as cold in Alaska as I was in Minnesota, by the way. It's not that, but, you know, at the peak of winter on December 21, the sun rises at roughly ten o'clock [a.m.] in the southern horizon **<T: 05 min>** and sets at about three o'clock [p.m.] in the northern horizon, and that's a very short day. We . . . as much as we enjoyed it and maybe would have liked to stay, we came South again.

EVANS: Well, it sounds like you described that you had at least three separate full-time jobs at that point. Well, one that I'm very curious about is the advisory role to the governor. How did that come about and, you know, what was that like?

PROENZA: Well, it was truly fascinating, and that was the thing that took the least amount of time. What I was doing for the university was as much for the state of Alaska in general and hence for the governor as anything else. Wally Hickel had a real passion in his heart for anything Arctic and circumpolar, so there wasn't anything I was doing that he was going to disagree with, and besides, if I disagreed with him, he certainly didn't take advice very easily. But we got along fabulously. He was a very generous man and so forth, but it suffices to say that anything we were doing to advance the interests of the nation in regard to Alaska and the Arctic was of interest to the governor, and he was very supportive in that in that regard.

EVANS: I see. I'm curious too because I'm not familiar with the National Biotechnology Policy Board, but you were appointed in 1990. This is an NIH board that's appointed by the secretary, is that correct?

PROENZA: It was the department as a whole. I don't recall the full structure of HHS at that point. It was an appointment by the secretary at the time. I don't remember who that was. But the person who nominated me for it was the deputy director of the NIH, a man named Bill [William] Raub, delightful and really very talented man. He had come to know me as a result of the work I had done at Georgia as liaison and as a result of some of my early work in Alaska. It was a policy board . . . it really was to advise the secretary broadly but other agencies as well. I'm trying to remember enough about it, Kenny. It was clear by that time that the issues related to, for example, recombinant DNA had, sort of, been handled by the Asilomar Conference that the scientists themselves run, but there was still a lot of issues that were controversial.[10] At that time, the US was almost loathe to do any field experiments related to plant biotechnology, for example. <**T: 145 min**> Europe was more welcoming at the time—that effort later reversed. So one of the things was clearly to communicate more broadly to the agencies, to the Congress, etc., that there was enough scientific information emerging to literally constitute this new and emerging industry—biotechnology—which had not existed prior to 1970, arguably, at least not in the sense of plant molecular biology and animal molecular biology and genetics because, okay, you know, the Cohen-Boyer experiment . . . . I think the date was 1970.[11] So it was just budding, so it was a broad effort to explore issues and educate to Washington more broadly.

EVANS: I see. This board, I'm curious about . . . . Does it still exist, or does exist in a different form? Was it a presidential thing?

PROENZA: I don't think so. I remember getting a very nice thank you letter and a plaque. I don't remember exactly when. My memory suggests that I served on it for about three years, four years, maybe—I don't recall—I'm not sure that it continued beyond that. I think I got that thank you and plaque while I was still in Alaska.

EVANS: Did you . . . what was the makeup of this board? Were there . . . was it mostly academics, or were there other types of folks on the . . . ?

PROENZA: It seemed fairly broad, but Kenny, you'd have to look it up. The only people that I remember clearly was Rita Colwell, who, as you know, became NSF director later and director of the Maryland Biotechnology Institute and Charlie Arntzen. Charlie is a distinguished plant molecular biologist, he'd been chancellor for agriculture at Texas A&M [University] or [University of] Texas—I can't remember which—and then is probably retired now, but was most recently at Arizona State University, having had quite a bit of success with plant molecular

[10] See "1972: First Recombinant DNA," National Human Genome Research Institute, accessed March 24, 2023, https://www.genome.gov/25520302/online-education-kit-1972-first-recombinant-dna. For an article on the Asilomar Conference, see Michael Rogers, "The Pandora's Box Congress," Rolling Stone, June 19, 1975, accessed May 23, 2023, http://web.mit.edu/endy/www/readings/RollingStone(189)37.pdf.
[11] See "Herbert W. Boyer and Stanley N. Cohen," Science History Institute, accessed March 24, 2023, https://www.sciencehistory.org/historical-profile/herbert-w-boyer-and-stanley-n-cohen.

biology and was developing plants as sources for growing vaccines—very fascinating. Clearly one of the pioneers in plant molecular biology. But I don't remember [who else was on the Board.]

EVANS: Yeah, it rings a bell, but I was not familiar with the history, so thank you. I'll definitely look it up. How are you . . . ?

PROENZA: If you find the membership, please send me a copy.

EVANS: Yeah, I think I . . . yeah, I read something about this a while back. But yeah, I'll have to look it up, and I'll send you send you what I find.

PROENZA: I appreciate it because I mean, I could, sort of, see the table, but I just . . . in fact before this meeting, I was looking at the membership of PCAST because I couldn't remember everybody. Glad I did because otherwise you might have asked me something about who was on it, and I would have said, "Gee, I don't remember."

EVANS: Well, how are you doing? Do you . . . would you like a . . . kind of, a short break? I guess we're about thirty minutes . . . we have about thirty minutes left scheduled. But what are you . . . how are you feeling?

PROENZA: How about a two-minute break? I'll go to the restroom and be right back.

EVANS: That's perfect.

CARUSO: Kenny's cats are appearing.

EVANS: Yeah, yeah, I kicked my cats out this morning. They tend to . . . as soon as Zoom is on, they want to be on camera. They're very photogenic. So they've been a part of several oral history interviews already, but I decided that this time maybe they shouldn't make an appearance.

PROENZA: I did see David's cat earlier in our conversations.

CARUSO: Yeah.

PROENZA: Okay, so where do you go from here?

EVANS: So I guess I am . . . want to check in with Dave on this too, but we're . . . you know, we haven't even gotten **<T: 150 min>** to your time at Akron, let alone PCAST. Depending on your flexibility now or possibly scheduling a second session to dig into that, and whatever works best for you and for Dave.

PROENZA: Okay, I'm open . . . here's my little friend here. I don't know if you can see him. Tyler, say hello. There you can see him.

CARUSO: Aww, he's cute.

PROENZA: I'm relatively flexible, or we can schedule another time whenever you want.

CARUSO: So I have another meeting at about 2:15, so I can . . . so I mean clearly, Kenny, you've been, sort of, taking the lead, so if you want to continue on, please don't feel like you need to stop just because I have to cut out.

EVANS: Yeah, I think either way I think we're in a good . . . yeah, I'm happy to continue for a bit more. Yeah, I guess it's up to you.

PROENZA: Well, probably if you were scheduled to . . . we were scheduled till two, you said . . . . I'm sorry, at one o'clock your time?

EVANS: Yes.

PROENZA: Okay, that can probably take us to the end of Alaska, beginning of Purdue, and maybe we can pick up on Akron and PCAST later—however you're fixed for time.

EVANS: Yeah, I think that that makes sense in doing them . . . it makes . . . I think having a second session . . . that way we're not crunched for time, and I think that's better. So maybe

what we'll do is like you said we'll go through the rest of Alaska and then we can start Purdue, see how far we get in the next twenty, thirty minutes and then schedule a second meeting.

PROENZA: Sounds fine.

EVANS: Thank you. Okay, we've got . . . so I've restarted the recording, if that's okay.

PROENZA: Yes.

EVANS: We're talking about your various roles in Alaska. I guess I'm . . . as you're speaking about this new position, I'm curious if . . . how you got up to speed with polar research and I guess what led you to be so interested in that type of research activity and then, in particular, this US Arctic Research Commission and what you guys were responsible for, so I guess if you're willing to tackle any of that.

PROENZA: Okay. Well, first of all, I think a lot of things were happening that made it possible for me to get a sense of some things relatively easily. I mentioned the study that Rita Colwell had chaired [for NSF and—I think—entitled "The Role of the NSF in Polar Regions"] and I'm almost certain that that happened if not right before I went to Alaska then very shortly thereafter. So I remember talking with her about it. I remember her being very helpful, I remember her clearly indicating that there was a sense at NSF that they needed to pay a little bit more attention to Alaska not only because it's part of the United States, but because there was some significant set of opportunities scientifically there. And because the Alaska Native population was not only very interested but needed to be both consulted and engaged with and appropriately introduced to some of this so that they understood and could be helpful and part of it. So all of those things were happening, I think, at the time. There was also, I think, an understanding that the research on the Arctic was a widely distributed set of programs in various agencies whereas the US interest in the Antarctic was focused virtually exclusively at the National Science Foundation. They had the logistical responsibility, if not virtually the entire funding portfolio. And, of course, they contracted with the Navy and the Air Force to provide the air support and the ship support to Antarctica, but it was also **<T: 155 min>** very clear that the US was spending a huge amount of money for the scientific efforts in Antarctica and, by comparison, a very, very small amount of money in the Arctic when arguably it should have been the reverse so to speak, if it was going to be politically speaking and scientifically speaking somewhat more balanced.

I don't know how much you know about the Antarctic Treaty, but in many ways, the Antarctic Treaty has defined the world's participation in Antarctica, but it also has, sort of, been an international agreement that no one owns any piece of the continent, although everyone that's involved in Antarctica has stated claims to certain pieces. And so strategically, for example, the

US by being . . . having a station at the South Pole where all of the claims intersect is, sort of, in a good position to null them all out. But I think arguably it's also the hope of the nation and probably important for it to remain as close to politically neutral as possible. But anyway, the US has a huge investment in Antarctica. As you may know, when I went there the station at South Pole was still the geodesic dome with a whole bunch of ship containers in the middle, providing the dormitories and key facilities and so forth. But they've since invested very heavily in a new facility that is . . . oh my goodness . . . I can't imagine how many billions of dollars that must have cost.

But anyway, so a lot of very interesting things were happening and, obviously, this . . . [it made sense], it made it imperative as well as an opportunity to push as strongly as you could for opportunities in the Arctic and for the university as the one university that was not only in Alaska but doing the bulk of research in the Arctic to be better supported, better funded, more opportunity, more interaction—you name it.

So that provided, I think, a level of opportunity that was very invigorating, very exciting to just get to know and work . . . and, you know, Alaska is huge. North to south is from Chicago, [Illinois], to Florida, and east to west is from San Francisco, [California], to Boston, [Massachusetts], so it's huge, okay? Since you're both at Rice [University], Congressman Don Young used to keep maps of various states to scale, and he would hold up California to Alaska, and it would just be a little piece, and he would say that cut Alaska in half, and Texas is still the third largest state. It's interesting. It's a place with tremendous, tremendous geography and opportunity. It also was . . . [ringing] Excuse me. One second. Forgive me. I'm trying to think, so . . . oh, sorry . . . the other piece, there was a large component as the . . . and I don't recall exactly the date, but the [Alaska Native Claims Settlement Act (ANCSA)], and the pipeline had just been completed when we went there, so there were other things happening in a major way that provided opportunities internationally.[12] The scientific community had understood that what Russia was doing with its ten smelting facilities in the Kola Peninsula was traveling around the Circumpolar North and creating air pollution that was not **<T: 160 min>** held tightly, that it traveled around. Strategically from a defense perspective, just all of those things were just absolutely fascinating, and I don't know how to say it—it's just captivating and was full immersion in an exciting way that had international dimensions, national interest, national security issues. And all of them, again, with the University of Alaska, kind of, very centrally positioned to benefit and/or to lead, if not, both.

EVANS: What was . . . yeah, and on that note, I am curious about, kind of, your experiences engaging with the Russian Academy of Sciences on this joint Arctic project. Did you travel to Russia? Were you meeting counterparts like other academics, Russian scientists, Russian diplomats?

[12] Alaska Native Claims Settlement Act, H.R. 10367, 92nd Cong. (1971), accessed May 23, 2023, https://www.govinfo.gov/content/pkg/STATUTE-85/pdf/STATUTE-85-Pg688.pdf#page=1.

PROENZA: We did one trip, and that was not long after the fall of the Soviet Union. I don't exactly recall, but by then the US Arctic Research Commission was in full swing. The chair at that time was the president of the University [of Alaska], Donald O'Dowd, or maybe he was the former president, but anyway, [he was] very involved. And we traveled from Alaska to Magadan, [Russia], basically in Siberia, and were familiarized with what was happening there, and, frankly, at that time, it seemed fairly primitive in just about every regard. What is happening in the "Soviet Far East" was not very much, but still the opportunity to open up some of that dialogue, that was the start of that.

EVANS: What were those—I'm just curious—what were those meetings like and just directly after the end of the Cold War? What were those meetings like? Were they diplomatic, I guess, would be a word?

PROENZA: They were very cordial, and I think they were very eager to share. There didn't seem to be any political undertones. For us it was fascinating from a number of perspectives, but not the least of which was just . . . if you've heard about Siberia, that was . . . it, sort of, put a face to some of the stereotypes and made it very clear that it wasn't too much of a stereotype to begin with. It was fairly . . . well, it just seemed like they had a lot of good work to do.

EVANS: I see. Did you also . . . did the university host . . . you know, was there a . . . did they travel to Alaska and come and visit your campus? Was there an exchange of . . . ?

PROENZA: There were a few, but then there was a . . . you may recall that during World War II, there was a program called lend-lease—I think was the name of it—where the US loaned some planes and flew them into Russia and so forth, back . . . to the Soviet Union way back when, and so there was a celebration that I recall in which now they came over and brought to some of their planes, and the celebration was largely in Fairbanks, [Alaska], at I believe one of the Air Force . . . at the Air Force base there. So yeah, there was . . . but in many respects, less than you might have expected that would come about. You know, I think eventually the fall of the Soviet Union and the opening of Russia was more centered towards the western end of the country and somewhat east. I can't tell you enough that the Native people who literally had relatives <**T: 165 min**> across the Bering Sea they hadn't seen in decades were moved emotionally greatly by that opportunity.

EVANS: Yeah, yeah. Thank you for sharing that. Were . . . this was all, kind of, during your . . . while you were vice president of research at Alaska. Were you often . . . and you were both . . . at one point, you were vice chairman of the Arctic Research Commission. Did that also include visits to other countries and more diplomatic work in terms of liaisoning with other countries?

PROENZA: Not so much at that point. The one . . . I mentioned it briefly where the seven Arctic countries held a ministerial meeting in Rovaniemi, Finland, and I was asked on behalf of the governor and the state of Alaska to be the Alaska representative. The United States was represented by the State Department, and, obviously, this was certainly my first introduction to international diplomatic conferencing, if you wish. I found it very interesting, on the one hand, because I'd just never experienced it before. On the other, because I found that the language used was appropriately diplomatic. If the US representative from the State Department wasn't quite sure what he should say, he'd say, "I [will need] to confer with my government before answering that question." Things of that nature, which were perhaps at one level obviously necessary, but at other times a little bit off-putting. It didn't seem like it was necessary; we weren't talking about nuclear arms disarmament and that sort of thing; we were just trying to establish some broad priorities and opportunities for seeing what was needed across each other's borders and the common things that we shared. Very interesting in that regard.

EVANS: Were there opportunities for more, kind of, informal meetings or engagement, I guess, while you were there? Did you have dinners or breakfasts?

PROENZA: Yeah, it didn't last all that long, but yes, and, of course, the Finns were very, very generous in terms of showing us what they were doing. The town of Rovaniemi, as I understand it, had been almost completely rebuilt since World War II, and so it had a vibrancy. Their forest industry was exemplary. I mean, they . . . extremely well-managed forest industry that was a testament . . . and a lot of things have happened since then that would have been premature to discuss at that time, but Finland, as you know, has a great technological capacity. But yes, the interactions were extremely pleasant, and nothing that you can say hostile in any way other than people talking and enjoying and seeing and . . . except for the Finns, everybody else was from someplace else, and that was . . . the governor had asked that I try to send some sense of what was happening that they could share with the citizenry of Alaska. I don't know . . . frankly, I don't know if it was ever used, but it was interesting trying to be a raconteur for the governor's office in that regard. But again, the thing that stands out in my mind was that at the formal meetings how interesting it was—the diplomatic lingo and posturing and hesitancy and "let me confer with my government."

EVANS: Right. Yeah, yeah, that can be . . . it is really interesting the formality of those types of events is really interesting. Did you bring anything back with you? Did you have keepsakes from the Finland meeting? **<T: 170 min>**

PROENZA: I think they had a commemorative stamp or something like that, but that was about it. It was . . . all things considered, I think we were there a total of three days or something like that. I don't fully recall. It was fascinating in every regard.

EVANS: Yeah, it sounds really, really cool. So you're technically still a tenured professor that you've got a professorship still at Alaska—University of Alaska. Are you teaching at all, or you've said you've stopped participating in grant writing and research?

PROENZA: Right. No formal courses that were uniquely my responsibility, just an occasional guest lecture—typically either on Arctic issues or on the retina and the vision system.

EVANS: I see. Let's see . . . and so you guys were there for about . . . is it five years?

PROENZA: Alaska was seven years.

EVANS: Seven years? So you're there till 1994?

PROENZA: Correct.

EVANS: Well, I guess, are you still sailing? How was your boat coming along at this point?

PROENZA: The boat was finished in '91, and yes, we still have the same boat. [. . .]

EVANS: I mean, you spoke about this being almost a lifelong dream to have this boat completed. Was . . . it seemed like a quite a project. I mean, that it took at least over a decade to build the boat? Sorry, we're cutting out I think a little bit.

PROENZA: Yeah, obviously if I'd had the time to devote continuously, it would have taken a little less time. Something appears—"set up professional studio" in audio section. Is there something I need to do in that regard or . . . ? At the top of my screen, it said set up professional audio. Can you hear me okay?

EVANS: I can. It was cutting out for a second.

PROENZA: Okay, is this better?

EVANS: I can hear you. Well, I guess, I want to . . . now that we're running out of time—

PROENZA: Okay. David, can you hear me okay?

EVANS: Yeah, I can hear you okay. If there are other, kind of, experiences or things you'd like to talk about from your time at University of Alaska and then we can, kind of, wrap up for the day and schedule another meeting.

PROENZA: Well, I think, maybe just a couple of points. Number one: the influence and support that I had personally from the governor and from the two senators and the one congressman were truly special—both Senator Stevens and Senator Murkowski. People who did not know Senator Stevens often did him a disservice to be critical about some things, but I mean, at age eighty-three, he would walk [vigorously up] . . . really literally almost run up the several flights of stairs in the Hart Building to get to his office—a remarkably energetic man who knew Alaska backwards and forwards. So anyway, I think that was very special. Don Young, who had begun his career as a riverboat captain in Alaska and eventually ran for Congress . . . I believe he's still a congressman for all Alaska, as we would say.

That was quite . . . it was at a very good time too because certainly both of them together with Elmer [E.] Rasmuson . . . and if you go, by the way, to the Smithsonian to the Museum of the American Indian, there is a gallery and an auditorium named for **<T: 175 min>** Elmer and Mary Louise Rasmuson. Elmer was the president of the National Bank of Alaska. His family had gone [to Alaska] very early; he was born there. Arguably, obviously the wealthiest man in Alaska and so forth, but, obviously, the one that also believed most ardently in the people of Alaska and in the future of Alaska, and he bequeathed his entire collection to the Smithsonian, and so when you're there, the Smithsonian Museum of the American Indian is heavily represented by Alaska, thanks to Elmer Rasmuson. And he was a fascinating man and one that . . . also instrumental in the Arctic . . . the US Arctic Research Commission. Spoke . . . well, anyway, those are some of the, kind of, personal influences that not only helped the university and me, but which really need to take the lion's credit for anything that happened during those years. They were heavily involved and committed. If you think that Senator Stevens is known as "the bridge to nowhere," the X trillion dollars that are going to be spent on infrastructure pales by comparison to . . . the bridge to nowhere would have a cost a couple of million dollars or a few million dollars, and it would have opened up something that to this day is not possible in many parts of Alaska—that even Juneau, the capital of Alaska, you can only get there be it flying in or by water.[13] I think, that's a little bit of history that needs to be better understood, but maybe it doesn't make any difference in the long run, anyway.

[13] In 2005, Senator Stevens backed legislation to construct a 223-million-dollar bridge between Alaska's mainland and Gravina Island. The controversy was that the island had a population of only fifty people. See Ed Hornick, "Stevens' Senate Career Hurt By 'Bridge to Nowhere,'" *CNN*, accessed December 21, 2021, https://www.cnn.com/2008/POLITICS/07/29/stevens.history/.

EVANS: I hadn't heard of the bridge to nowhere project.

PROENZA: No problem. So shall we maybe call it a day and find another time, have Flora [Naylor] find another time for us?

EVANS: Yeah, that would be perfect yeah. Whatever works with your schedule. I'm very flexible, and we can find something that works. I do not want to interrupt a sailing day.

PROENZA: No, no, no. That's easy then. We're relatively flexible, so the way she did it the last time is she gave me some times that you all were available, and I picked one, so that will probably work again.

EVANS: Okay, great.

PROENZA: David, did you have anything that you wanted me to think about or follow up on?

CARUSO: No, no. So it's always wonderful when we interview people who are very comfortable telling stories because then we don't have to do much; we sit back, and we listen.

PROENZA: I could tell a few more, but that's probably not as relevant as what you want to hear. I've had some great funny things and things that are misunderstood, and anyway, some of those things again in the scheme of things probably don't need to be either corrected or analyzed the third or fourth or fifth time. It's okay. Enjoy your time in Pennsylvania, and, Kenny, we'll talk next time. Thanks both of you. Thank you so much.

EVANS: Thank you so much. It's really been wonderful to talk to you.

PROENZA: Thank you very kindly. Now there's some way . . . ah, I see. Okay, I'll hit leave and see you guys later.

EVANS: Take care.

PROENZA: Thanks.

[END OF AUDIO, FILE 1.1]

[END OF INTERVIEW]

INTERVIEWEE: **Luis Proenza**

INTERVIEWERS: **Kenneth M. Evans**
David J. Caruso

LOCATION: **via Zoom**

DATE: **6 August 2021**

EVANS: Okay, it should be recording. Okay, great. So I'll again just situate us in place and time. Today is August 6, 2021. I'm Kenny Evans. I'm here with Dr. Luis Proenza and Dave Caruso, and we're starting our second session of an oral history as part of a project documenting the operations and membership of the President's Council of Advisors on Science and Technology. Dr. Proenza, thanks so much again for joining us this morning, and, like you said, we were . . . where we picked up last time was . . . or we dropped off last time was during your time in Alaska. I think we were wrapping up, but I, you know, since you mentioned it, and I wanted to just check in and see if there were other things from your time in Alaska that you didn't get a chance to mention last time before we move on to your next position.

PROENZA: Sure, I think there was only one that I don't think we had a chance to cover. And that was . . . I think it was about last year or two that I was there that the president [Ronald Reagan] established—on behalf of the United States—a United States Arctic Research Commission, and I think we had just briefly touched on the role that the two senators—the late Senator Frank Murkowski and the late Senator Ted Stevens—had had along with Elmer Rasmuson. And in any case, that was for me, anyway, the first presidentially appointed policy opportunity. The National Biotechnology Policy Board that we were wondering about had been appointed by the secretary, and I tried finding a little bit about us after we talked and there's some references, but I couldn't find any of the documents, so I hope you will, and, when you do, send me whatever you do find.

Anyway, that was an exciting opportunity in a variety of ways. It really began to cement the fact that the United States was part of the Arctic nations group—seven Arctic nations—and really to highlight some of the opportunities for the United States both from a scientific perspective but also from a national security perspective—Alaska being the only state that puts the US in the Arctic and being as large as it is, and in such close proximity to the eastern parts of Russia that . . . anyway, it was very exciting, and I do recall that we mentioned we had a chance to travel to Magadan and to eastern Siberia. But again, just to underscore that opportunity, and it was not long thereafter and while I was still a member of that commission that I left Alaska and joined Purdue University as vice president for research and dean of the graduate school, so unless you have some other questions, we can move on to Purdue/Akron and eventually PCAST.

EVANS: Yeah, perfect. Thank you. Yeah, well, I'm wondering you've spoken about your time in Alaska with a lot of joy and pride and it being so captivating and a really interesting position. What was it that, you know, drew you away from that time in Alaska and brought you back to mainland US?

PROENZA: Sure, and you're right. It was a very exciting time and opened up so many doors, opportunities, experiences. I think I did mention the fact that we won the contract for polar ice coring and so that I had a chance to go to Antarctica and so forth, and if either of you ever have a chance to go to Antarctica, please do; you won't regret it.

But I'd been in Alaska for seven years, and it was time from a number of perspectives, not the least of which was that Alaska winters are very long and the nights, they are very dark. You know, if you're at December 21, which is the shortest day of the year, the sun will rise in the southern horizon about ten o'clock in the morning, rise to maybe ten, fifteen degrees above the horizon, and then set again around two, 2:30 in the afternoon and then it's dark for the rest of the day. So that I think weighed most heavily but also the nature of what opportunities were or were not available for further professional growth, and so in the process, I had met some people from Purdue. Their vice presidency for research opened up, and they asked me if I would take it, so we moved to West Lafayette, Indiana, in 1994.

And Purdue, of course, being a great AAU-level institution with an exceptionally strong engineering program and obviously some of the other sciences—biology, broadly, including agriculture, veterinary medicine—linkages to Indiana University Medical School and other things, joint programs with Indiana University. All of that was exciting and to continue the focus on research policy, research management was, I think, a great opportunity. Indeed, as a result of being at Purdue, I think I had some additional opportunities in Washington and professionally speaking, so it was a good time.

It was . . . let's see . . . . I don't think there were any . . . it's interesting. I guess I probably did not chat . . . but while I was still at Georgia in the eighties is when some of the country's concern about competitiveness really began to rise to the surface. There were a number of pieces of activities going on. There was an entity called CORETECH. Oh good gracious. The fellow who ran it, [Ken] Kay. It was about that same time that all of those activities coalesced under John [A.] Young, the then CEO of Hewlett-Packard and [he helped to form] the Council on Competitiveness roughly in the '86, '87 time frame.[14] I can't remember exactly. But that is a relationship that has continued to this date, and, as I think I mentioned, I remain a distinguished fellow with the council, and I'm not as active now obviously because I

[14] Ronald Reagan founded this committee through executive order, then called the Committee of Industrial Competitiveness. See "Executive Order 12428 -- President's Commission on Industrial Competitiveness," Ronald Reagan Presidential Library and Museum, June 28, 1983, accessed March 24, 2023, https://www.reaganlibrary.gov/archives/speech/executive-order-12428-presidents-commission-industrial-competitiveness. John Young chaired the committee and then moved it out from under the Federal Advisory Committee Act (FACA) into its own NGO and changed the name.

really just retired and probably will step away from that before long, but that was another, kind of, continuing thread that moved into the policy arena and the broader issues related to the interface between science, technology, and economic policy. So Purdue enabled some continuance, and obviously Purdue's prestige was helpful in a variety of ways.

EVANS: Yeah, thank you. I'm curious just about the early . . . you'd mentioned John Young, who was also . . . he was at one point, for a number of years, co-chair of PCAST under President [Bill] Clinton. I guess I'm curious when you when you first met him and maybe could you . . . I'm not familiar with the early foundation of the Council on Competitiveness, so maybe could you talk about how the council got started and your early involvement in their work and what you were focused on?

PROENZA: Sure, well, my early involvement was more just as an observer and participant. Obviously, Mr. Young was visible. I did not personally know him at that time. The first director for . . . executive officer for the council was a man named Alan Magazine, and I'm sure he's still around. He joined a number of other large Washington-based entities later on in his career. And I think he was followed by John [N.] Yochelson. John, I don't recall how long he was involved with the council. But it was not long after Yochelson that Deborah [Lynne] Wince-Smith was appointed, and she certainly has been the longest serving—and I think most successful—executive for the council. **<T: 10 min>** And you can look back at some of their publications; they're all online at their website. For me, I think certainly the work in partnership with Michael [E.] Porter on clusters of innovation . . . . I think the council called it the US basis for economic competitiveness—something like that—a report that was issued, I think, around 2002, 2004—somewhere—and that thing was very influential.[15] And then a variety of other things that the council did in the in the early 2000s that I greatly enjoyed on high performance computing, on manufacturing. Norm [Norman R.] Augustine, the former chairman and CEO of Lockheed Martin, was very engaged. Interesting, I guess, for me, it goes back to my days at Georgia, because we, the University of Georgia, did some things with the Lockheed Martin facility near Atlanta and I remember . . . . I think that was when Norm was still chairman and CEO or CEO—I don't remember.

But anyway, it was a very formative period for the US thinking more strategically about its long-term economic competitiveness—perhaps not as highly focused even to this day. I think we worry that we don't have a strong industrial policy, and some people would argue that maybe not having a formal policy is a strength; others would say it's a weakness. As you know, we in the United States have a plethora of organizations that touch various elements of the economic competitiveness issue. So this . . . the clarity often is lacking as a result of so many voices weighing in on the issue. That's sometimes a strength if the voices can coalesce and a weakness if they seem to be pulling in various directions.

[15] Michael E. Porter, *Clusters of Innovation: Regional Foundations of U.S. Competitiveness*, Council on Competitiveness (Washington, DC, October 2001), accessed December 22, 2021, https://www.hbs.edu/faculty/Pages/item.aspx?num=47438.

But anyway, I think the council has continued to do good work. I've been a little less involved since stepping down from the presidency at Akron because that was my mainstay engagement opportunity. It's, as I think you know, an organization of CEOs, university presidents, and labor leaders. My last really strong engagement was when I served on behalf of President [Barack] Obama in the—what was it called?—[AMP2.0], it was a manufacturing initiative. [AMP]2.0.[16] Forgive me. I forget the exact title of the organization. It was chaired if I'm remembering correctly by the new president at MIT [Massachusetts Institute of Technology] whose name is Rafael Reif and by the then CEO of . . . not . . . sorry, not DuPont, but . . . what was the company that DuPont merged with? I'll think of his name in a minute.

EVANS: Was this . . . is this Andrew Liveris?

PROENZA: Liveris.

EVANS: Liveris?

PROENZA: Liveris. Andrew Liveris. That's who I'm thinking of, anyway—

CARUSO: Did DuPont merge with Rohm and Haas? Was it Rohm and Haas that DuPont . . . ?

PROENZA: No.

EVANS: It was . . . was it Dow [Chemical Company]?

PROENZA: Liveris was CEO of Dow, right. Right. And anyway, the former CEO of DuPont [Charles O. Holliday] was a long-term industrial chairman of the Council on Competitiveness and forgive me again. Memory linkages come and go, so . . .

EVANS: No, I . . . this was in . . . **<T: 15 min>** and I know we're skipping around a little bit, but I am very curious about I think it was called the Advanced Manufacturing Partnership.

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[16] See "Report to the President: Accelerating Advanced U.S. Manufacturing," President's Council of Advisors on Science and Technology, October 2014, accessed March 24, 2023, https://scholarship.rice.edu/bitstream/handle/1911/113027/pcast0039.pdf?sequence=1&isAllowed=y. See also "Advanced Manufacturing Partnership 2.0," PCAST Meeting, September 19, 2014, accessed March 24, 2023, https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/0905%20AMP2%200%20slides_v2.pdf.

PROENZA: Yeah, Advanced . . . we called it AMP2.0. The leadership council that I was on was called AMP2.0, so it was the second iteration of an ongoing interest in manufacturing, which, by the way, certainly had started in the Bush PCAST and continued also very strongly in the Obama PCAST. Some days I think some of us that have served on the Bush PCAST felt that they were not providing adequate recognition of the work we had done, but that set that standard for subsequent administrations, as I'm sure you will learn along the way.

EVANS: Yes, I can imagine. But this . . . was it—AMP2.0—was it somehow wrapped into PCAST . . . was it PCAST that was . . . was it under PCAST's umbrella that this work was being done?

PROENZA: You know, I never saw it that way, but I do remember that some PCAST members were also a part of AMP2.0. Shirley [Ann] Jackson was one such person that I recall. I didn't pay particular attention to who else was on PCAST, but I'd known Shirley from a variety of forums so I recall that she was on PCAST. So, in any case, there was certainly some overlap, and John [P.] Holdren, I think, had his hands on both of those activities, so certainly there were some linkages, both individually and from an administration perspective.

EVANS: Interesting. Thank you. Well, I want to get back to your time at Purdue and your work there, and I know you were . . . well, I guess, first, let me ask who . . . do you remember who it was that recruited you to Purdue? I'm sure you were getting lots of offers at this time. Were there particular things that, you know, stood out to you as really enticing to go to Purdue, and were there other places you were looking at in terms of moving out of the largely dark, very cold Alaska?

PROENZA: Well, there were certainly a number of opportunities, and one funny story is in a very short period of time—literally, a span of two weeks—I was a [candidate] for the presidency of Texas A&M, University of Texas in Dallas, [Texas], for, I think, senior vice president at Houston—at the University of Houston. How to best put it? My stock was running high in Texas for a while, but nobody picked up any of the options. So anyway, it was along that time with various meetings that . . . of course I had known Bob [Robert Albert] Greenkorn, who was the vice president for research at Purdue that I had . . . that I eventually succeeded, and he and I had a good rapport and good feelings about each other, and I think he spoke strongly to the president, Steve [Steven C.] Beering, and to the provost, Bob [Robert L.] Ringel. Bob and I had met . . . my last assignment at Alaska involved academic affairs and research, so I had gone to some of the provost academic affairs meetings and gotten to know Bob Ringel. So those two individuals, I think, probably not only enticed me but were part of the attraction, but Purdue's name and recognition and so forth, it was, I think, a very welcome opportunity for me.

EVANS: Thank you. There . . . so at this . . . this was, kind of, a similar role that you were in . . . it was a vice president for research?

PROENZA: And dean of the graduate school, so yes, it was what some might call a lateral move, but clearly Purdue was the larger and better-known institution. **<T: 20 min>** Very different, of course, both in geography and in total character—much, much larger institution with a great, long record of success.

EVANS: Yeah, I guess I want to ask, you know, what . . . did you have, kind of, a vision for what you wanted to accomplish as VPR and dean of [the] graduate school at Purdue? Were there things that you wanted to see happen at the university?

PROENZA: Sure. Well, let's see. I think, by that time, I had been spending a fair amount of time looking at the very nature of what defines research competitiveness about universities, and, as you probably know, the traditional measure that ranks institutions in terms of research capacity is simply how much money they spend on research [each year] and, in particular, the amount of federal funding that they compete for, okay? The problem with that, obviously, is that size does not necessarily make for anything other than size, and there's no scaling variable that would say how do institutions rank when you create a comparable set of metrics based on, say, the number of researchers at universities. What is the amount of federal funding per researcher as opposed to the university? And, when you do that, you get some very interesting factors that begin to make institutions not look as strong as they might be. Some institutions have a great deal of money, but they have so many researchers that a lot of them simply aren't contributing. The other thing is places like University of Maryland or your . . . an institution not far from you, Texas A&M, and others, obviously, have some very large programs, which were really service contracts. Texas A&M, at least at last time I looked, managed the US research logistics for some aspects of oceanography; I think it was a sixty-million-dollar contract annually.

So, you know, if you factor that in which is not actually a research/competitive piece—obviously, it's competitively funded and very appropriate—but it's not what you would say defines the university's ability on the basis of its scientific talent to attract research-directed money, okay? And there are other metrics. I mean, for example, patents per researcher or patents per million dollars of funding that begin to create a whole different dynamic in how you look at universities and how maybe they want to be viewed. When I went to Akron—and we can come back to this later—Akron often is ranked first in the nation in terms of patents per million dollars of research funding, okay? So everybody's surprised; you'd expect that of MIT or Stanford [University] or something like that—not of little old Akron. But it turns out that it has . . . consistently had a very high rate of turning out patents, given its particular mix of scientific expertise, particularly in polymers. So I had become very interested in how maybe you can more appropriately describe the strengths of universities.

Another concept is what is the research portfolio? Universities with medical schools—if you're familiar with the fact that to this day about every seventy cents of every research dollar is a biomedical related expenditure—then you can see that an institution with a medical school as compared to one without would have a larger amount of funding, all other things being equal. Likewise, engineering is one of the largest contributors to funding success, and so a place like Purdue has a very large portfolio of research as a result of its engineering school. But not having in medical school it looks smaller than some institutions with a medical school, so those **<T: 25 min>** were issues that, I think, still to this day need to be better understood and described because otherwise, "Oh, you got more money than institution Y; therefore, you must be better." And that's a total misconception.

It goes also, obviously, to graduation rates, so if you're a Harvard or Stanford and you accept only a small fraction of students, it's only those that would succeed regardless of where they went to school you don't even have to show that you had any value; they all graduate, and they do wonderfully, and you're thought to be better, but again, not necessarily. I don't know if you've ever seen it, but there was a famous video done of an interview with Harvard graduates at the end of their graduation asking them a number of simple questions that probably any university graduate would be able to answer and very, very, very few Harvard graduates knew the answers, so what does that say? Anyway, you get the point.

EVANS: Yeah, sometimes the, kind of, analysis, or at least set of metrics people use to do . . . evaluate university success are pretty flat, or pretty thin, if it's just an amount of money. So I agree. Well, at Purdue, you said they had a large engineering portfolio. Were there particular areas that you were interested in growing in terms of, you know, saying if you had a better system of metrics, what was it that you were looking to undertake to . . . ? Go ahead.

PROENZA: Yeah, it was actually as a result of this competitiveness question that I began to look at how Purdue was doing compared to other Big Ten institutions or other research institutions, so I think my first focus became one of ensuring that Purdue understood the statistics and could, you know, focus on growing its portfolio as appropriate. But yes, otherwise, certainly the research portfolio in engineering was one of the big pieces that I focused on. They had an aeronautical engineering program, as well as an aviation pilot training program, and that offered some opportunities. They had a nuclear engineering program that was very strong. In combination with a school—oh, what was it called?—College of Technology, I think, something like that. It had an interesting set of complements of very strong research programs on what you might call today advanced manufacturing, and, on the other hand, a number of applied programs to translate that into faculty that would interact with industry and advise them on some simple things that would not be accessible to the average small or emerging company. So that was another piece that I paid a lot of attention, and I learned a great deal from that; that helped me when I went to . . . both PCAST, eventually, but to Akron. Akron had some of that similar mix at a much smaller scale.

EVANS: You're referring to, kind of, like industry-university partnerships?

PROENZA: Yes, and the scientific expertise to make that possible.

EVANS: I see. Yeah, I mean, that seems to be a persistent challenge for many universities, is that . . . . I guess, how did you go about establishing those relationships in Purdue, in the surrounding area? Were there already . . . was their industry involvement in . . . or academic involvement in industries in Indiana?

PROENZA: Yes, but, again, think of this: the average institution . . . the strong science enterprises are focused very much on basic research, comparatively speaking less on applied research. This, of course, began to change in . . . particularly in the 1970s and 1980s. The 1970s saw the emergence of a biotechnology industry, and that made it both increasingly very interesting for faculty to realize that work they were doing potentially could lead to significant clinical applications if not actually to the formation of a company that . . . Cohen-Boyer patent made that very clear with the formation of Genentech **<T: 30 min>** and so forth. But in other disciplines, I think, agriculture, for example, have very traditionally been engaged with industry, and a lot of the things that came out of colleges of agriculture had immediate applications throughout the country, and, indeed, the world. But it became far more focused, I think, in the seventies and eighties. The passage of the Bayh–Dole Act, Public Law 96-517, in 1980 I think made a great difference to a lot of people and legitimized, I think, not only entrepreneurial ideas for a university as a whole, but for individual faculty that saw the emergence of policies that would enable for the sharing of some of the proceeds from licensing from commercialization, from startup companies, etc. And Purdue had started a research park; it had some faculty in chemistry and engineering and some other disciplines that had it started companies. And there were some very exciting things that I think . . . . I treasure to this day.

There was a company led by faculty member named Pete [Peter T.] Kissinger and already in that time frame—late eighties, early nineties, etc.—as a result of Bayh-Doyle, there'd been established conflict of interest policies, and Pete was fond of saying, "No conflict, no interest. No commitment, no results." Something like that, you know, which made it clear that, often, I think we create an environment of fear and you, sort of, anticipate the worse rather than trying to figure out how you can appropriately manage conflicts that could be a problem, as opposed to things that actually were confluences of synergy as opposed to conflicts of interest. I mean, clearly, if a researcher has a great interest in a particular area and develops it, the fact that a company is interested in that makes it for a synergy that needs to be managed so it doesn't get abused, but obviously you don't want to establish a partnership with a scientist that has absolutely no interest in your company from a scientific research perspective. It just doesn't make sense.

But there are other companies . . . we really started the idea of a strategic partnership with a company—we'll leave that unmentioned as to which. But anyway, the idea being that by

chatting and conversing with a company, signing non-disclosure agreements, non-compete agreements, etc., you could get a company to share what their technical challenges were and then you could bring together the faculty that were most likely to be able to solve those problems. And it cuts through this . . . a lot of the difficulty that otherwise existed when companies would come and they'd say, "We can't tell you very much, but we're interested in your engineering faculty." And nobody would know how to interact because there was not enough information to create that focus of strategy, of synergy. So that helped a great deal. What we did initially, we . . . once we got past some of the fear of our strategy—corporate strategy—and trade secrets would go out the window, we were able to take a busload of faculty with the most likely expertise for this company's issues that we were hearing about, took them to their major facility, they were then briefed by the technical people at the company, they had conversations, they went home—the faculty went home—and wrote proposals now to those specific problems that were being shared. And, as a result, they went from, you know, maybe one in ten proposals to the company being successful to one in every two, for example—something like that. A major increase **<T: 35 min>** in the ability to create a substantial, successful partnership and outcomes for both parties, okay? And I think that was very important for me because that then became one of the things we tried to do at Akron, and I'll tell you about one shortly.

EVANS: Thank you.

PROENZA: Don't let me forget.

EVANS: I won't. I mean, it's really interesting because it's just such a . . . I mean, there are so many moving parts and logistics, and there's also the culture, like you said, of academic campuses. Yeah, I know . . .

PROENZA: Indeed, and the whole area of technology transfer and commercialization and . . . it remains one that is very poorly understood both by industry and by university leadership. In industry because they're afraid of, shall we say, compromising their proprietary interest; universities because they've always thought about working with industry is equivalent to selling your soul to the devil, you know, so it's kind of curious phenomena, but . . . and this continues. There's . . . well, anyway, it's enough of that. We dealt with that in PCAST under Mr. Bush in one of the early reports. I think it was called "Technology Transfer," but anyway, there's still a lot of questions that remain—industry sometimes thinks that because they pay taxes and the federal government funds research that they've "already paid" for the information, and they don't want to pay for it twice, but universities, on the other hand, are sometimes a little too narrow in how they can enter into a proper relationship with industry.[17] It's not just licensing for

[17] See "Technology Transfer of Federal R&D," PCAST Panel on Federal Investment in Science and Technology and Its National Benefits, May 15, 2003, accessed March 24, 2023, https://scholarship.rice.edu/handle/1911/113013.

a fee, but you can license it with a long-term interest in royalties, you can license it in exchange for internships and fellowships—a human talent growth opportunity—and many other opportunities that isn't just the exchange of monetary value.

EVANS: What about facilities? I mean, if there's . . . like at Purdue, I guess I'm curious if these proposals to industry . . . if industries are running into technical challenges and then university professors are brought in to assess these challenges and, you know, make improvements or create solutions, then where does the research happen? Does it then happen in a sponsored lab, or does it happen on Purdue campus, or does it happen in their industry-specific facility?

PROENZA: Well, at Purdue at that time anyway—this was the late nineties—it was still mostly the research being done at Purdue, but you began to see collaborations between a faculty member—scientist or engineer—and a technical person at the company, who would collaborate on that research and at that time you saw some movement of people back and forth and/or collaborations that, you know, you do this piece, I'll do this piece, and we'll join together, so you saw that a great deal. The other thing that began to happen was following some of the various kinds of financial, economic cycles that took place that when industry downscaled and so forth, at Akron, at least, we began to work with industry to let them either donate certain pieces of equipment or even loan a space in their facilities that we could vastly expand the capabilities that we had without any expenditure of funds. So one of my . . . the vice president for research that I had hired at Akron, for example, got a lot of these companies to donate their technical libraries to the university. It immediately expanded the range of our technical holdings, and, at the same time, enabled the industry to shed and get a tax credit for some of their assets that were not being utilized effectively, so [very interesting possibilities that have yet to be fully explored].

EVANS: Interesting. **<T: 40 min>** I mean, in Akron, you mentioned it was polymers. In Purdue, what was the industry that you were most involved with?

PROENZA: Well, we were very much involved with engineering-related companies in a wide array of areas, but particularly mechanical and electrical engineering, nuclear engineering, aerospace engineering, and the manufacturing aspects associated with those in other areas.

EVANS: Thank you. I want to ask . . . at this time you're also getting . . . we talked about the Council on Competitiveness, but you were also very involved with AAU at this time.

PROENZA: Right, so I continued my relationship there, but while I was at Purdue, I was vice president, not the CEO, so we did have the opportunity as a result of that for me to participate in

some of the technical groups and bring some faculty along, you know, to serve as the, shall we say, the . . . the council has what they call the leadership committees or leadership councils and then working committees. The principals are always CEOs or presidents of institutions, but the working committees often involve the technical people in industry and/or at universities.

EVANS: I see. Well, I also want to ask . . . you know, you moved to . . . like what was life like in Indiana? Did you enjoy your time there? I know last time you mentioned you saw a KKK rally, but I guess I wanted to see how . . . what life was like for you at Purdue.

PROENZA: It was fine. Purdue was a very well-managed institution. We often joked that Purdue knew how to spend both sides of a nickel as a way of summarizing the effectiveness of their management of their resources. Some of that created some . . . you might say bureaucracy. It wasn't impossible to overcome, but it took some doing and it perhaps inhibited a little bit of the entrepreneurial opportunities that some people saw. But more than anything, it probably . . . it was [sufficiently conservative] to ensure that things were done properly and legally and legitimately and not so loosely as to create potential problems down the line. But we enjoyed it. I mean, it . . . that part of Indiana is relatively flat—once you leave the immediate vicinity of the river [Wabash River] that courses through West Lafayette and Lafayette, [Indiana], you're pretty much in in very flat farmland, and it goes on for miles that . . . the scenery often left a little bit to be desired, but lots of good other things—very close to Chicago to the north, and Indianapolis to the south, and Lafayette and West Lafayette had enough population and so forth that it wasn't as barren as some other college towns around the country.

EVANS: Did you get out on the river at all? Did you have your boat by this time?

PROENZA: There were a number of lakes nearby, and some friends of ours in engineering would sometimes invite us to go sailing on their smaller boat. The river I don't recall getting out on the river per se, but the lakes that weren't too far away were quite suitable for a nice sail on a fifteen- to twenty-foot sailboat, so that was fun.

EVANS: Nice. Well, is there anything else from your time at Purdue that you want to mention . . . or I should also ask Dave if he has questions—you're good. Was there . . . . I guess, life in Lafayette is good, you're happy at Purdue. **<T: 45 min>** Were you . . . you were there for . . . let's see . . . about four or five years?

PROENZA: Yeah, almost five. And, as I mentioned, even when I left Alaska, I had been a finalist for a few university presidencies so that had remained an interest of mine. I think I mentioned at Georgia, the president nominating me for an American Council of Education fellowship in academic administration, and I don't think I mentioned that one of the participants

. . . one of the "faculty" in the program had recognized something and encouraged me to pursue a possibility of a presidency and even nominated me at that very early time for one. But anyway, these things are such that they'll happen sometime, not necessarily when one wants it or where one might wish to be located, but it continued that interest, and indeed it was a close call at Texas, but nobody picked up their options, and it's probably all for the better, but who knows? [laughter] Things work out . . . so anyway, as a result of that, I think I'd both had people calling now and again, and I was, sort of, watching what was happening, so Akron came along, and, as they say, the rest is history. It worked out.

EVANS: Were you . . . did you have an interest in, kind of, staying in the Midwest. Was that part of your plan?

PROENZA: No, I think I would have been happy to go almost anywhere. I probably gravitated more to the Atlantic Coast generally, certainly to the east. And to . . . you know, I had spent a summer at Utah and thought that was a very interesting part of the world and might not have minded that. Obviously, [I] was familiar and had admired some of the Texas institutions. But other than that, I would have probably been focused more on the East and had looked at some things in Pennsylvania, Massachusetts, etc. But anyway, it was still no predilection for the Midwest per se.

EVANS: But Akron, I guess, picked up your options, I suppose?

PROENZA: [laughter] Yeah, it was interesting. A couple of things stood out. Number one, the institution was large enough at the time that I was being interviewed—it was about twenty-one thousand students. It had certain points of excellence, the polymer program being the one that clearly stood out in a city that was born out of polymers—the rubber industry initially. So it had some clear strengths that played to my interest in science and technology and research programs, etc. It was also in a city that was not small and in an area that was even larger. I mean, Akron, [Ohio], I think at the time was about fifty thousand in population, thirty miles from Cleveland, [Ohio], with a population of about five hundred thousand. Northeast Ohio is a really large metroplex probably a population of four, four-and-a-half million people. Lots of industry, lots of other attractions—proximity obviously for me to a larger body of water, Lake Erie. So all of those things I think were very interesting. The other thing, I think, it was . . . it had gone through some turmoil and yet it had great strengths to build upon.

And so the finalists included a person who had been a vice president at IBM **<T: 50 min>** . . . trying to remember where the other person was. If I recall, there were three finalists. And in the end result, the chairman of the board, sort of, saw something in me, and anyway, we . . . the chemistry was right. I said to many people along the way that search committees have vagaries known only unto themselves, and I'm not really sure that even they know what those vagaries are, so it's . . . how does a group of people react to a set of candidates? And I'm not

sure they're particularly strategic about it necessarily, but hopefully the process works at least well enough that it's a better match than is sometimes made. As you may be aware of, Boston University, who had been run by John Silber for many years, when Silber decided to step down, they went on a search, and they selected Dan [Daniel Saul] Goldin and gave him free rein, but the minute he actually started doing some things, they summarily fired him before he actually had . . . before he actually set foot on campus. And there are stories of people that accept the job and arrive and take the next plane back out. So anyway, I felt blessed that I had a tenure of fifteen-and-a-half years—not without some problems—but on the whole very, very successfully grew the university from twenty-one thousand to nearly thirty thousand, doubled or tripled the research program. We did some major rebuilding of the physical plant and more to the interests we'll come back to it in a little bit. Had some great successes in industrial partnerships.

EVANS: What was it like . . . you had mentioned having this fellowship in university administration. Did you feel . . . what was the transition from being a vice president of research and a dean to becoming a university president?

PROENZA: Well, you know, despite some of the disappointment of not being selected for some positions along the way, I think every opportunity that I had gave me greater insight and breadth of experience, so I felt more prepared. By that time, I'd had a chance to work with, I think, five different presidents fairly closely along the way, so all of that was very helpful. Also had a chance to develop my own sense of style and approach to—shall we call it "leadership?" So I think all of that was helpful. And you learn from different people. The president who had nominated for that ACE fellowship had a great ability to, sort of, take stock of not only what were his locational—his geographic—strengths on which to relate and relate to and build upon, but also the portfolio of his institution and how to marry the two. And so he would often say, "Here we are in Georgia with one of the largest land areas of the state with two hundred fifty frost-free days, a port—the port of Savannah, [Georgia]—that was substantial, and today it's one of the largest seaports on the Eastern Seaboard. You wouldn't think to bring all those elements together and how do you bring that to your institution so that, I think, helped me think about the opportunities in Alaska, Indiana, and Akron in ways that I might not have thought of had my experience been either at a single institution prior to moving to the presidency or in a single geographical center so I think that was . . . that I credit that strongly with **<T: 55 min>** some of my ability to move ideas and just generate ideas period.

EVANS: You mentioned, you know, tremendous growth for the university both in terms of student enrollment and also facilities. You had major facility and renovation projects. Was that kind of . . . like entering into the university, was that part of your vision for Akron was to kind of expand the reach and research capacity of the university?

PROENZA: Yes, and I think it was facilitated a great deal by the board of trustees themselves. They had had—as I mentioned—some difficulties with previous leadership. And most of them

felt that the institution was far better than it had been given credit for being, okay? And so one of the things they asked me to do is to really become the face and voice of the institution to the public. And the chairman [Alex Arshinkoff] was funny. He said, "We want you to be the Dave Thomas of the University of Akron." That's the guy who advertised for Wendy's, I believe. [And he joked] that maybe I'd rather be compared to Lee [A.] Iacocca. But anyway, that was the gist of it, and they not only asked me to do that, but they said, "We think that best avenue for you to do that is to put the university on TV with some spots telling people about the university." So we did that every year for the fifteen-and-a-half years that I was there. And that was a great boost to the institution. It didn't do much for my privacy interests, but it really helped. There was a buzz created as a result of our doing that and other things, obviously. There was just a lot of things that the institution was very good at that frankly, people just didn't know about and telling that story in a broad way was part of that success.

EVANS: So how did you . . . how does one become a Dave Thomas? Did you take media training? Were you set up with . . . what was that process like?

PROENZA: You know, it was a combination of things. We initially hired a PR firm to help us with those spots and by and large, that was very helpful. But eventually, it was hiring a vice president for communications that was very capable of really getting inside my head and other people's heads and being able to abstract from that what needed to be shared in order to be true to the institution, not just to what some advertising company thought might be best.

EVANS: And so that, kind of, helped . . . I mean, did you . . . I guess, where were these spots located? Were you on national television? Were you trying to recruit students from overseas? Were you trying to recruit students . . . ?

PROENZA: We primarily did a . . . well, first of all, going on national television would have been too far, too expensive. But buying time on a regional basis—northeast Ohio, western Pennsylvania, western Ohio, occasionally going into the Columbus, [Ohio], market, for example, was affordable, okay? And so that was the strategy that we pursued. If you're interested, if you go to YouTube and look up University of Akron advertisements for my name, you'll probably find most of those spots on YouTube. I haven't looked at them in a long time, but they're probably still there.

EVANS: Yeah, I've seen one of them, yeah.

PROENZA: We focused on getting kids excited about the idea of innovation and the university's role in discovery and innovation and the role of innovation in the economy, and giving them what we call the Akron advantage, the ability to not only get an education but <**T:**

60 min> to . . . most of our programs require the students to have an internship in industry, in business, and so that linkage we touted as one of the strengths and advantages of going to the University of Akron, and we're very successful with it.

EVANS: Right, right. Does Akron also have a . . . it doesn't have a medical school, but does it have a nursing school?

PROENZA: It has a nursing school, and it had . . . it's a long story—I'll make it very short. But there was a great interest between Cleveland and Akron in establishing a public medical school, and so there was this competition between Cleveland State University, Youngstown State University, and the University of Akron. And the legislature said, "Okay, you all are fighting about it. I tell you what. You all can have it, but none of you can own it." So they created a northeast Ohio universities—plural—college of medicine now called NEOMED, Northeast Ohio Medical School. And so it was in between all of the three institutions, and we all had a role in it—sort of a broad advisory role. Each of the presidents was on the board of trustees for NEOMED, and we each had a pre-med program for early placement at the medical school. So we had twenty-five slots open to be able to place them. Anyway, but . . . less than optimal.

EVANS: Was . . . I'm curious. You know, you'd mentioned these major expansions. Some of these projects are many hundreds of millions of dollars. In terms of fundraising, how . . . what was your approach to that, and where did this money . . . how did you fundraise to make these improvements possible?

PROENZA: So we did quite a bit of fundraising but not nearly enough, and so we funded most of that by issuing bonds. The proceeds of our success in growing the enrollment enabled us to have a reasonable income stream to pay off the bonds. In addition, we did some fundraising, and the state had a very modest roughly eighteen million dollars a year capital funding for the University of Akron that that we could access, so between those three options—three mechanisms—but with the major one being our increased revenue stream as a result of the success in enrollment, that enabled us to issue the bonds and begin to retire the debt.

EVANS: I understand. Was . . . were you also involved with the city? Was there . . . what was the working relationship like between you as president and also were you involved with the governor's office?

PROENZA: The governor was by and large . . . when I went, Bob Taft had just been elected governor, and he had very good relations . . . and my board of trustees had very good relations with him and so that was a very critical one. By contrast, the mayor initially started to have a

very . . . well, I shouldn't say not started but had had a very contentious relationship with the board. He was Democratic; most of my board was Republican and so that created some friction. But when we started building and partnering with some companies to build the adjacent structures, the mayor began to be, frankly, much more amenable to working with us and became a great partner in time. So politics were initially somewhat contentious.

EVANS: Makes sense. And you were still—I imagine—very interested in this issue of competitiveness. Was this something you were, kind of, growing statistics, making Akron known? Were there . . . were you still involved with AAU and Council on Competitiveness. Were you still doing activities through these other external organizations?

PROENZA: Well, once I left to Purdue, **<T: 65 min>** I was no longer involved with AAU. AAU was only sixty universities across the country and in Canada. But yes, now as president, I was able to take more of a leadership role in the council, became a formal "member," institutional member of the council. Deborah was very receptive to some of the things we were doing. I think we played a very strong role in the Clusters of Innovation project and manufacturing projects, a very natural evolution then. If you look at some of the reports in the 2000s—early 2000s—you'll find many good comments about Akron and so forth. This was the time also that Bruce [F.] Katz was starting at the Brookings Institution some of the work on metro regions . . . metro areas and his push for recognizing the competitive advantage of metro areas, and he talked about that and led eventually to Antoine [W.] van Agtmael doing a series of interviews around the country and coming to Akron as part of the book that he published roughly 2015, I think, called *From Rust Belt to Brain Belt*—something like that.[18] That was an interesting look at the transformation that was occurring in many formerly very strong manufacturing areas that had seen a decline and were now showing a resurgence, a rebirth.

EVANS: Was EPSCoR [Established Program to Stimulate Competitive Research] around then? Was Akron involved—

PROENZA: It had been around, and in fact, one of the things that we did while I was in Akron . . . the formal . . . the academic organization known as NASULGC [National Association of State Universities and Land-Grant Colleges]—now APLU—Association of Public and Land-grant Universities had a small program . . . . I'm trying to recall what it was called . . . Urban something or other. Anyway, Nancy [L.] Zimpher, who was the president of the University of Cincinnati, and I got together, and we created something called Urban Serving Universities Coalition—something like that.[19] We eventually married it with APLU'S program and then housed the program at APLU, and so it continues quite active now. It has an executive director.

[18] Antonine W. van Agtmael and Fred Bakker, *The Smart Places on Earth: Why Rustbelts are the Emerging HOTSPOTS of Global Innovation* (New York: PublicAffairs, 2016).
[19] The correct name is Coalition of Urban Serving Universities (USU). See "Coalition of Urban Serving Universities," accessed January 3, 2022, https://www.usucoalition.org/.

But we were able to establish some early ideas that focused, if you wish . . . some of the major public institutions that were created in cities and created a focus for them to express their relationship with their cities and their ability to work with them. Urban Serving Universities Coalition—something like that. Anyway . . .

EVANS: Yeah, Coalition of . . . yeah, urban—

PROENZA: Coalition of Urban Serving Universities. Yeah, something like that. The lady who was at APLU . . . she was hired. Yeah, that's right. We hired her together with APLU. Yeah, that's right. I'm blocking on her name. I think she continues there, and the program has thrived, you know. It's now a growing concern, let's put it that way.

EVANS: That's great. I want to ask about maybe other . . . I mean, these are all great success stories. Are there other things from your presidency that you look back on and are very proud of?

PROENZA: Well, I think one of the things that has continued to evolve, but I think worked very well . . . the person I hired as vice president for research had been a former colleague of mine. He had been vice president for research at the University of South Florida, George [R.] Newkome. George, interestingly, was a polymer chemist and had been born in Akron, **<T: 70 min>** and as a result of not only being a polymer chemist but knowing Akron, he had a long-standing collaborative research program with one of the faculty members at Akron. So anyway, his coming to Akron . . . would end up serving both as someone who had real experience managing research programs, who had done it very successfully at the University of South Florida, and who had the knowledge—an ongoing knowledge—about what was in the Akron area to build upon. So one of the things he did very early is to form a research foundation: the University of Akron Research Foundation (UARF) and to begin developing that in a way to stimulate opportunities that would serve the long-term interest of the economy of the university and the larger community, okay? So he established an angel network called the Akron Regional Change Angels [ARCHAngels]. He established a series of investment groups, one for women, one for students and the angel network, obviously—the ARCHAngels. He established a number of international partnerships. He did this library thing that I mentioned earlier where he got companies to donate their technical libraries. He established rather than research associates—assistantships—industrial assistantships getting companies to fund a graduate student that would then most likely go back and work at the company or who may have been someone at the company that needed to finish a master's or a PhD.

In short, he established a series of activities around the university's technical expertise, and so the Research Foundation became focused not just on technology transfer and commercialization but on trying to understand and establish and grow an economic opportunity ecosystem, if you wish, around itself. There's a fine paper [that two of the University of Akron

Research Foundation colleagues, Elyse N. Ball and Kenneth G. Preston, wrote that shares this, and that we called] the Akron model which outlines the idea of a cluster of activities all focused on creating economic opportunities.[20] So the idea of a strategic partnership really took off in a new way.

So one of the things we did that I think to this day remains perhaps unique, we had very good relationships with the Timken Company in Canton, [Ohio], just twenty miles south of us. And the Timken Company had looked at the University of Akron as one of their technical partners and unlike the other technical partners, which would be places like Purdue and Stanford [University] and, you know, MIT, we were their smaller university partner, but then as I said, we were recognized, and they understood . . .

Well, they had developed at Timken a coatings technology that gave their roller bearings —they were roller bearings—a huge, huge competitive advantage in the industry to the point that they could not only exact a premium in sales, but the premium was justified because these bearings not only perform better but lasted for longer than anybody else's bearings. So they had a person in a laboratory focused on this area of tribology—coatings for friction reduction—and we had a number of people at the polymer program who were interested in this area and, eventually, the gist of this is that we talked them into literally moving their entire tribology laboratory to the University of Akron—okay?—providing this license to market that technology in other areas of application that Timken wasn't interested in at all. So all of a sudden, there was an opportunity for Timken and the university to have a joint partnership for areas **<T: 75 min>** of economic interest to both but also to have a joint laboratory to continue to develop the technology both for Timken's interest and for these other potential application interests. And so I do not know—to this date—of any other company that was willing to take their proprietary technology for the entire segment of their company, move it to the university, make it a joint venture—if you wish—and enable it to grow in this fashion. [phone ringing] Can you excuse me just a minute? I'll be right with you.

EVANS: Yeah, I've never heard of that. That's incredible that a company would do that. And it made me think . . . well, my home institution could use your expertise—I think—as they're setting up their . . . they're trying to create a cluster in central Houston and could use the Akron model, I think. So they're just getting up and running—lots of money, but still, kind of, figuring out the nuts and bolts of how this cluster would work.

PROENZA: Sure, yeah. I think your colleagues down at Austin, [Texas], have done a great deal of that cluster-building far more so than many other institutions.

[20] Elyse N. Ball and Kenneth G. Preston, "University Commercialization Models: The University of Akron," *Computer* 47, no. 8 (2014): 28-36, accessed April 24, 2023, https://www.computer.org/csdl/magazine/co/2014/08/mco2014080028/13rRUx0xPMd.

EVANS: Yeah, yeah, that's . . . . I think that's right. Houston is . . . it's really pushing for that innovation ecosystem. We've got the Ion—they call it—so it's opening up in, I think, the spring, so we'll see. Should be good. So I guess some I want to turn . . . you'd mentioned these PCAST reports several times earlier, but I guess I want to turn to PCAST for bit if you're willing.

PROENZA: Sure.

EVANS: Yeah, so I'm wondering just about your recruitment process to the board or the committee and when you first became involved and what your expectations were going in.

PROENZA: Sure, well, needless to say, I was interested in continuing some of the policy work that I'd been privileged to have [done]. The biotechnology, the Arctic issues, and the types of things that the Council on Competitiveness was doing, so I'd certainly let it be known that I was interested in some other kinds of appointments. I did not expect and thought it was very unlikely for me to be asked to PCAST. Ohio had some very good relationships with the Bush administration. By the way, the US Arctic Research Commission was appointed by George Herbert Walker Bush, G. W.'s father. I never met him, so I can't claim any relationship there, but that obviously the appointment came through his office. So anyway, I wasn't expecting anything, but one day, I was in my car, and I got a call from [E.] Floyd Kvamme, who was the PCAST chair, along with Jack [John H.] Marburger, the president's science advisor, quite simply asking if I would be interested in serving. And I said that I'd be delighted, and we chatted a little bit. I think [we] talked one other time, and next thing I knew I was formally invited to participate.

I don't know that I had any well-formulated expectations. By that time, I had met Mr. Bush a couple of times. When he was on the campaign circuit, he had come to Akron a couple of times and was pretty well-known to some of the people that I was . . . had on my board and to some other folks that I knew. So I had met him just very briefly, etc., and I think one observation that is worth sharing is I think the press picked up on some of his unusual pronunciation and thought he was a lightweight. **<T: 80 min>** But that was certainly not the impression I got either from his campaign speeches, and I think more importantly from his first meeting with the PCAST that he appointed. It was in the Roosevelt Room of the White House where most PCAST meetings with the president I expect continue to take place today. But he came in and for about twenty minutes without a single note ticked off the series of thoughts—topics—that he thought he'd like for us to address. And I don't know about my colleagues, but I would have expected the president to come, you know, with a scripted set of notes for something like that, and instead just off the top of his head and cogently why this might be important and so forth and so on. I'm trying to remember whether that first meeting took place after 9/11 or not, but clearly that became one of the areas that we were asked to look at, and I think some of the work that we did in that early committee became part of the structure of the Department of Homeland Security and the R&D science and technology component, so that was

an important piece, but anyway, [he] ticked off . . . I can't remember the topics except that we did address a number of them in our early work.

EVANS: Had you . . . ? Go ahead.

PROENZA: Sorry. As a result, I tell anybody that I meet who has an impression of a person they've never met to please not assume that everything they read in the press is exactly as portrayed in the press, that the individual is often far more affable, capable, intelligent than the press makes them out to be.

EVANS: Yeah, we tend to . . . with politicians it's difficult for them to manage, I imagine. When you got the call, had you met Kvamme . . . Kvamme . . . Floyd before?

PROENZA: No, I had not, no, and I didn't know John Marburger at the time either. It was something about . . . he was used at SUNY [Stony Brook] [State University of New York at Stony Brook] at the time. I had some colleagues there, but I didn't know Jack. That's what it was.

EVANS: And were you aware of PCAST in, you know, previous administrations? Did you know kind of . . . ?

PROENZA: Sure, sure. If there was one appointment that I would have sought specifically, it would have been an appointment to PCAST. I mean, you know, from a perspective of anybody to be, if you wish, part of the highest level of science and technology advice to the government—wonderful. A friend of mine thought that I would be better advised to look at the National Science Board, but National Science Board is NSF-focused, not nationally. I mean, it's national, of course, but in different ways . . . agency-focused, so I was quite frankly thrilled, delighted, humbled. Just very, very appreciative of being considered and eventually appointed.

EVANS: You mentioned your first meeting with President Bush . . . were there . . . and that you met in the Roosevelt Room. Did you continue . . . did PCAST continue to meet in the Roosevelt Room and did you continue to interact with the president? You mentioned he rattled off, you know, the twenty or so items.

PROENZA: Yeah. Yes, we did—typically once or twice a year. Not very frequently. Most of our interaction was with Jack and Floyd and with each other. It was a remarkable group of people. I told you I was looking them up the other day because I had forgotten some, but I was

delighted to already know some of them like Charlie Arntzen, Chuck Vest, and . . . anyway, several of them. But also to see some people . . . and some of them did not become great **<T: 85 min>** participants. You know, Michael Dell was often not there. Oh goodness. The Intel . . . sorry . . . the founder of Intel, Gordon Moore. Gordon. He was a delight to have when he was there, and I just really enjoyed getting to know him a little bit. Some of the other ones who were mainstays of US science and technology policy, Erich Bloch. Oh, the person who became . . . forgive me, let me see if I can find my notes. Norm Augustine again.[21] Bernadine [Healy]. Ralph Gomory is who I was thinking about. I later served with Ralph on the National Academy's Board [on] Science . . . [STEP] . . . Science, Technology, and [Economic] Policy . . . [G.] Wayne Clough, who had president of Georgia Tech [Georgia Institute of Technology] was very active and very, very helpful. Marye Anne Fox, she was down at [University of Texas at] Austin, the vice president for research there. Walter [E.] Massey. Someone that I had . . . . I did not know before that but developed great respect for was Kathy [M. Kathleen] Behrens. Kathy was an entrepreneur, venture capitalist in the biotechnology industry. She was exceptionally capable, exceptionally articulate in making some points.

Anyway, it was a very good group, and I thought a very good PCAST. We had some very good staff support. I think the combination that Jack and Floyd brought was also very important. Jack was not dominant, and neither was Floyd. They shared many of the roles of chairing the meetings often, you know, one and/or the other would be there—more often than not, both were there. And so it was a good mix of people and a very good portfolio of activities that we developed. I don't believe Mr. Obama continued the tradition of an industry and an academic person co-chairing. I don't remember for sure. I don't know, but . . .

EVANS: Obama's was more academic leaning, I think.

PROENZA: Yeah, yeah. It seemed that way.

EVANS: Yeah. You mentioned security—homeland security—and PCAST's involvement with that. Were there other items that, you know, stood out to you that was part of the PCAST portfolio that you remember?

PROENZA: Sure. I'm sure I can think of more if I looked at the [portfolio of reports], but the other one that I was very active and interested in and so was Kathy and others, of course, was the technology transfer report.[22] That was one of the early ones. Advanced manufacturing was a

[21] Norman R. Augustine, interview by David J. Caruso, Kenneth M. Evans, and Kirstin R. W. Matthews via Zoom, 22 September and 15 October 2020 (Houston and Philadelphia: Rice University's Baker Institute for Public Policy and the Science History Institute, Oral History Transcript # 1116).

[22] "Technology Transfer of Federally Funded R&D," PCAST Panel on Federal Investment in Science and Technology and Its National Benefits, May 15, 2003, Baker Institute for Public Policy, Rice University, accessed May 23, 2023, https://hdl.handle.net/1911/113013.

great piece, and we did, I think, three reports that involved manufacturing. Another one that I was very interested in and then again Bernadine and Kathy played a strong role in was, I think, we called it "Personalized Medicine," the whole role, of course, the ability to bring in the whole genetic makeup of an individual in creating better both therapies and pharmaceutical agency that would be specific to . . . as you well know, when you see these ads on TV for a new pharmaceutical agent, they tell you all of these caveats that you may have this, that, and the other thing and then even then, you know, many of them do not **<T: 90 min>** have the desired effect on a large percentage of the target population, so more of this was needed, and I think that was also a time when . . . with the advent of all of these technology platforms that allowed individuals to interact an opportunity to tap individual, if you wish—people—individuals throughout the world with various maladies to participate in the generation of therapies that might work for them, okay?[23] So that was, I thought, a highlight of that piece. Gosh, there was something else I'd thought about there. Sorry, it came in one ear and went out the other, I guess.

EVANS: Was . . . well, I'm curious, you know, you'd shared a number of these and were very deeply involved in especially these reports surrounding technology transfer and manufacturing. What . . . I mean, what was the time commitment for you? Did you . . . was this, kind of, like a part-time job? Was it something that took . . . what were . . . . I mean, in terms of developing these reports, what was the process like for you?

PROENZA: Well, it had many interesting features. As I'm sure you know, one of the things that we discovered early is that there's no report in the administration—in any part of the administration or agencies—that is uniquely the product of one individual or one committee. It's vetted in a variety of ways and certainly at the level of the White House, anything that they sent to the president is vetted by the Council of Economic Advisers, the national security advisor, this, that, and the other thing, so all of these things were often informed by these other linkages that obviously were brought to us through Jack and Floyd and the staff. So that was very interesting. We had, I think, a very good staff, and I think depending on the topic, each of us had more and/or more peripheral involvement. There were several that I was very actively involved in, but others that I would say [where] I participated in the meetings and some of the discussion, but I did not participate in the final write-up or review of the document. I don't remember offhand the names of some of the staff offhand, but to a person, they were all very, very capable and knowledgeable and brought an additional layer, if you wish, of context and connectivity and review and resources.

Oh, I know what I was going to say. I think one of the other things that I valued and we all valued is the opportunity to get briefings as part of our work related to a particular topic. So I remember, for example, this was part of—I don't remember which committee—but prize-driven innovation, which has come on a little bit more strongly in recent years. There was a company that was formed called InnoCentive. You may have heard of it or not; it's worth looking up.

[23] See "Priorities for Personalized Medicine," Subcommittee on Personalized Medicine, September 15, 2008, accessed March 24, 2023, https://scholarship.rice.edu/handle/1911/113024.

They developed an approach where they would publicly through web resources very carefully formulate a problem and the kind of solutions that would be acceptable to the problem and specified how the person who solved the problem would benefit from having provided the solution, okay?

So I recall they mentioned a company that sought their services. It was a mining company, I believe in Canada, who was not being economically successful as a result of the very low concentration of the mineral they were **<T: 95 min>** searching for in the ore that they were mining. Well, the typical mining engineer had no solution, and if they could . . . put it another . . . if they had consulted only mining engineers, they would have never gotten the result that they got. As a result of putting it out for this competitive solution process, they got a totally unexpected person or persons to submit a solution, and they went from, you know, maybe pennies per ton to maybe . . . I don't remember the . . . anyway, a vastly increased economic return on the amount of ore that they were looking at, at any one time.

That kind of approach was then used by companies like Procter and Gamble and a number of others, and on the website for InnoCentive you get a listing of some of that. It's also the kind of approach that Peter [H.] Diamandis, who runs the X Prize Foundation, was using for this competition that led to . . . first, to a suborbital recoverable vehicle to be returned from earth and, obviously, you can argue that that led to [Jeffrey] Bezos and Virgin Galactic and all the other folks that are in the private space business now and that idea of sourcing solutions from other than the typical suspect possible experts I think took flight, and that was a seminal moment for I think all of us to hear that and to understand that really good solutions to complex technical problems don't necessarily have to be solved by established technical experts in the area—that others may have a linkage that could bring completely new insights to the solution. Anyway, it's just fascinating so that's what I was thinking about it—one of the things that I personally valued greatly from some of those meetings.

EVANS: Interesting. Was it a representative from InnoCentive that came and briefed you?

PROENZA: Yes, I wish I could remember their name, but yes. Very articulate, very capable, obviously, in part, selling their company, but it's just a novel idea. There's a guy who then wrote a book about this kind of approach more broadly on the web. Anyway, I'll think of it. It's just . . . it's a crowdsourcing idea, but specifically for technical solutions.

EVANS: Yeah, very cool. Like challenge-based and prize-based innovation process is something that is really interesting and often very fruitful. Were there other briefings . . . did you guys . . . what was the interaction with OSTP [Office of Science and Technology Policy] like? Were briefings or members from OSTP that sat in these meetings?

PROENZA: Yes, of course, the . . . virtually all of Jack's stuff would attend—surely, the senior leadership did. I'm sure he had others that didn't necessarily interact with PCAST. But yes. And Floyd, I think, was very interesting in that he occasionally brought people from the venture capital, startup environment. I remember one in particular as some of this concern about excess CO_2 was really beginning to get a push into public consciousness and so forth, he brought a person that was looking at carbon capture technologies and the possibility that not only you could solve this problem by pursuing carbon capture technologies but that you could actually also make a business of taking that captured carbon—CO_2—and turning it into other products that would not be detrimental to the atmosphere. That was absolutely fascinating. And, as I'm sure you know, there are now dozens upon dozens of companies and researchers looking at this issue.

EVANS: Yeah, very cool. **<T: 100 min>** I mentioned . . . . I want to come back to Jack Marburger seeing as one of his signatures or at least legacies anyway is, kind of, elevating at least the conversation surrounding R&D statistics. Were there . . . he wrote this famous op-ed around this time in *Science*, which was "Better Benchmarks," which always stood out to me.[24] I guess was there discussion in PCAST about, you know, that shared interest that you guys both had on creating better sets of indicators for science and competitiveness.

PROENZA: I don't think it became a particular focus, but it certainly was there. There was an undercurrent here or there. That's roughly when NSF started the STARS [Supporting Talent for Academic Recruitment in STEM] program, and the lady who ran it came and briefed us on some of the things they were doing in her office. Jack, of course, wrote that piece, and then he wrote a book later. I forget the title of it, but, you know, it's a well-known book in the science and technology policy arena.[25] I don't recall a focused meeting on the topic, though, and it would have been a good one to have, clearly the whole issue of productivity—what's the return on investment that the government gets, how do you better quantify it, how do you better really . . . ? I remember years, years ago a scientist out of UBC—University of British Columbia—talking to his colleagues who were only interested, obviously, in talking to either Canadian or US government about more funding, more funding, more funding, more funding and not being able to communicate the kind of economic outcome that has blessed us, if you wish, over generations is the sheer economic impact, for example, of the polio vaccine, of just a number of things you can point to. But even the incremental things which over time obviously enable the economy to grow. It's not well-understood.

EVANS: Yeah, that's a whole science upon itself it seems—measuring those outcomes. What about the American Competitiveness Initiative? Was PCAST involved in . . . ?

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[24] John H. Marburger, "Wanted: Better Benchmarks," *Science* 308, no. 5725 (May 20, 2005): 1087, https://www.science.org/doi/10.1126/science.1114801.

[25] Kaye Husbands Fealing et al., eds., *The Science of Science Policy: A Handbook* (Stanford, CA: Stanford University Press, 2011).

PROENZA: Oh. Yes, yes, and can we take a just a brief bathroom break?

EVANS: Yeah, of course. I'll pause the recording. I should have offered.

PROENZA: Yes, so you were asking about the accountable . . . American Competitiveness Act, and, you know, if I had to guess or to suggest anyway, I think it was our advanced manufacturing report early on. I'm trying to remember the name of the . . . [George] Scalise was his name. Do you have the list of PCAST members?

EVANS: Yes. George? George Scalise?

PROENZA: George Scalise, yeah. He was with the [Semiconductor Industry Association], and we did a report and heard several briefings which made it very clear that the US all of a sudden was being able to not only outsource manufacturing, but that companies were actually often being able to reach into other countries for very advanced technical work, okay? Some research, but clearly the chip design, you name it. The level of technical expertise was rising in a very alarming way. And I think that report and discussions at the Council on Competitiveness [and] elsewhere, obviously, pushed this to higher awareness and hence with Chuck Vest **<T: 105 min>** and Norm Augustine on PCAST and Chuck being at the [National] Academy along with others gave rise to the initial report of *Rising Above the Gathering Storm* and *Rising Above the Gathering Storm, Revisited*. I don't know of the two who was personally acquainted with Senator Lamar Alexander, but Senator Alexander became, I think, the Congress's champion in this area. And if you look at the acts, they mirror the recommendations in the *Rising Above the Gathering Storm* reports almost, you know, literally by number and by words. So that was very exciting time, and of course, it was unfortunate that what wound up having great bipartisan support then ran into the recession of 2008, I guess it was, and some funding came about, but the expectation for a truly large government opportunity I think remains unmet to this day. So I think that PCAST really honed in on that issue, and it bubbled up thanks to Lamar Alexander, Chuck Vest, and Norm Augustine are the three people I would name as the people who became most personally and prominently associated with the ACA.

EVANS: Yeah, yeah, I know the RAGS [Rising Above the Gathering Storm] report was really pivotal in making . . . moving the pieces along. What about nano? Were you involved in any of the nanotechnology-related reports?

PROENZA: Yes, in fact . . . yes, we were. That was not one that I was personally greatly involved in, and I'm trying . . . there was a separate committee that got folded in PCAST

towards the end of the Bush administration. I don't recall; that may have been the nanotechnology initiative. Do you know?

EVANS: Yeah, there was a . . . like the acronym has changed, I think, with time, but like a National Nano Advisory Panel or something like that?

PROENZA: Yeah, I'm almost sure that was the one that got merged into PCAST at that point.

EVANS: What about PITAC? Were there PITAC activities . . . there was this Information Technology Advisory Council [The President's Information Technology Advisory Committee]. Were there . . . ?

PROENZA: Yes. Obviously, we heard from Michael Dell on that. Oh, the other one that was I think very seminal was on energy, and a business/industry person by the name of [Steve] Papermaster was quite influential on that. That really focused on the great inefficiencies in the . . . what do you call it? The . . . not the web, but the transmission lines, etc. What's that called?

EVANS: Like the grid?

PROENZA: Yes, thank you. The grid. So that was one that I thought was also, I think, very seminal. I don't . . . . I didn't see it as having that great an impact because as, you know, not long thereafter, there was that big power outage in the Northeast that got a lot of attention, and I think focused attention on that issue. But yeah, IT, Michael Dell got involved, Gordon Moore. There were a couple of others on PCAST whose names I don't remember who, I think, were very articulate on that. I'm sorry. My memory's not as good on that one.

EVANS: Could you talk more about these energy reports and your involvement in that kind of arena? I know you were at one point on the DOE Secretary [of Energy] Advisory Board. I guess could you speak on your, kind of, involvement in the energy policy arena?

PROENZA: Sure, the . . . my work on the DOE panel, I think, followed PCAST, so it didn't **<T: 110 min>** immediately interact, and the work that I did for Energy was called science [and] mathematics education task force (SMETF) as I recall. And the focus of the question that we had been given is how can the nation and the Department of Energy better utilize the national laboratory networks to advance science, mathematics, and technology, engineering education, okay? And I think we had a number of very good recommendations in that. And they certainly, I think, echoed some of the things that were in the *Rising Above the Gathering Storm* report for

STEM [science, technology, engineering, and mathematics] education, but it did not deal with the kinds of issues that you call traditionally energy.

EVANS: Interesting. I want to ask about the National Science and Technology Council and the relationship to PCAST there. Was this part of PCAST . . . was OSTP folks being in the room or were you specifically advising or interacting with the council itself?

PROENZA: Was that group already existent at that time?

EVANS: I think so. It was like a coordinating body.

PROENZA: Okay, I can certainly recall a number of briefings on alternative energy; there were fuel cells—obviously some issues on batteries and so on. But forgive me, I don't recall a focused meeting on alternative energy. I'm probably just not remembering it.

EVANS: Yeah . . . was . . . what about things like the overall R&D budget? Was PCAST involved in making recommendations for the president . . . ?

PROENZA: Yes, we did, and, in fact, that was a subcommittee of PCAST that Wayne Clough chaired. I participated very actively on that for some of the reasons that I shared with you earlier. I think, in particular, we made very clear in that report that where if you look back at the history of R&D funding, sort of, following World War II, it initially was heavily weighted to the physical sciences, and biomedical had started coming in and really took off after 1970 and so forth.[26] And so, by the time we were looking at this, seventy cents out of every R&D dollar was a biomedical dollar and only thirty cents—less actually—was a physical sciences, and we . . . that report made it clear that that portfolio needed to be better balanced in order to take advantage of the things that would be needed and, by the way, a couple alternative energy [sources] because nuclear energy—fusion and fission—being woefully underfunded from an R&D perspective, so that was an important piece. And that was one of the early reports that we did. That was one of the things, as I recall, that Mr. Bush specifically asked us to look at. And I think, as I recall, that led to the goal of driving the . . . doubling the NSF budget, increasing Department of Energy funding, and [to] ensure just better balancing bio and physical to a more even level, if you wish.

[26] "Assessing the U.S. R&D Investment," President's Council of Advisors on Science and Technology Panel on Federal Investment in Science and Technology and Its National Benefits, October 16, 2002, accessed March 24, 2023, https://scholarship.rice.edu/bitstream/handle/1911/113010/pcast0021.pdf.

EVANS: Right, yeah. You mentioned Bush, you know, asking for these topics early on. Were there other instances where you then had the opportunity to brief the president on . . . or interaction on your reports and recommendations or time with him in the Roosevelt Room? <**T: 115 min**>

PROENZA: There were. I think, if you look back at each report, Floyd and Jack transmitted on behalf of PCAST generally and the particular committees . . . there's a letter, for example, in this R&D report—R&D funding report—from Wayne Clough transmitting to Floyd and on to the president. Typically, the meetings that we later had with the president were, you know, maybe an hour or so—comparatively speaking somewhat more limited—and Floyd and Jack would highlight some of the things that had happened since our last meeting. Sometimes, I seem to recall, their turning to Wayne, for example, and sharing . . . Wayne then sharing some thoughts about the R&D report—things like that. Other people might weigh in, but relatively brief and not intense and, needless to say, at that point, they were probably well beyond what you might expect to be able to conduct as a detailed conversation or not with the president or general briefing update. "Are there any new things, Mr. President, you'd like us to do?" That sort of thing.

EVANS: Right. What about with Congress? Were there times that you interacted with congressional leaders on behalf of PCAST?

PROENZA: I don't recall that. I remember I did a briefing with regard to that SMETF report with Energy. I do recall that certainly Norm and Chuck—Chuck Vest, Norm Augustine and Chuck Vest—started having more detailed briefings with the Congress. I don't recall a time when it involved all of PCAST, or it probably involved a few other members of PCAST from time to time. I don't recall a PCAST-focused meeting with Congress that I was involved in, however.

EVANS: Thank you. Well, I've got a number of other, kind of, questions about PCAST, but I also want to just check in with Dave and see if he has items.

CARUSO: No, no, I think we're getting everything, so I don't . . . nothing has come to my mind.

EVANS: Okay. Well, I kind of, have like a magic wand question, I guess. If you were in charge, at the helm of PCAST now, if you were a co-chair of the committee, are there things that you think PCAST should be addressing or should be tackling as it stands as the president's science council.

PROENZA: Yes, I think first and foremost from a structural perspective, I think that idea that we discussed earlier about the president's science advisor together with an industry person being co-chairs of PCAST is a procedurally speaking and administratively speaking a very good idea that needs to be embraced. As far as other things, I think everyone that attempts to advise the government broadly should be a little bit better informed about the complexities of issues and hence to not assume that a single perspective can rule. A colleague of mine [Charles Huettner] has worked both in the Bush and in the former Clinton administration has an acronym he calls POETS, and it stands for . . . he says every question has five correct answers is the way he puts it. There's a political, an operational, economic, technical, and societal right answer, and they don't often coalesce into a single, equally **<T: 120 min>** acceptable answer for any of the other groups, okay? So I think . . . . I remember, for example, when we were doing some of the biotechnology stuff, Mr. Bush got terribly criticized for his limiting federal funding of fetal cell research. And I think if you put that more broadly—into a broader context—you will probably understand that the people criticizing it had a very narrow perspective and didn't understand the other things.

I think likewise . . . . I'd expect Neal [F. Lane] would be a good one to talk with this about, but if you look at some of the work of Roger [A.] Pielke Jr. from a policy perspective, you probably know his book, *The Honest Broker*.[27] That's not a particularly well-known book, and the work that Roger, I think, has tried to do to explain, you know, how some scientists have grossly overstepped their area of expertise and in many ways politicized what is reasonable to say from a scientific perspective, I think it's very important and little understood by either scientists or politicians. Politicians would hope that we would have the answer to everything, and scientists would hope that everything we have to say is immediately enacted and made good. And many people don't understand that having a piece of knowledge doesn't tell you how, when to use it, if at all. I think that's an area that could use some real discussion and some education—broader education. There've been a number of editorials in the last several months, and so forth, not the least of which was this morning's paper editorial by Bjørn Lomborg, who, if you recall, when all this global warming issue came about, he wrote the . . . . I think the title of his book was *The Skeptical Environmentalist*.[28] I mean, he was so resoundingly criticized. Anybody who didn't read the book assumes that he was saying global warming isn't happening when his answer was much more nuanced, and I think important to listen to, and I think that the book recently by . . . what's his name? [Steven E. Koonin] Formerly with BP, works at the Department of Energy. He wrote a book recently pointing out that we don't really know everything about global warming that we'd like to know, okay?[29] And again, he was resoundingly criticized.

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[27] Roger A. Pielke, Jr., *The Honest Broker: Making Sense of Science in Policy and Politics* (Cambridge: Cambridge University Press, 2007).

[28] Bjørn Lomborg, "Climate Change Doesn't Cause All Disasters," Opinion, *The Wall Street Journal*, August 5, 2021, accessed May 24, 2023, https://www.wsj.com/articles/climate-change-natural-disasters-ahr-river-flood-germany-wildfire-risks-11628177742; Bjørn Lomborg, *The Skeptical Environmentalist: Measuring the Real State of the World* (Cambridge: Cambridge University Press, 2001).

[29] Steven E. Koonin, *Unsettled: What Climate Science Tells Us, What It Doesn't, and Why It Matters* (Dallas, TX: BenBella Books, Inc., 2021).

Anyway, I'm going on too much. The complexity of the issues is such that every question has five right answers, and sometimes they're in conflict with each other. People don't see that. Pielke points it [out] . . . when he uses this short-term way of saying tornado politics versus abortion politics. Nobody disagrees about trying to protect us from tornadoes, but everybody disagrees about what we should or shouldn't do in terms of the concept of abortion. So, anyway. I think those are two things that from an operational and really . . . [there's] long-term societally important work that needs to be done. That would be my top two. Obviously, scientific issues are many. I think if you go into that, I think we're really at a cusp of needing to understand that nuclear energy—both fission and fusion—need to be explored. From an economic perspective, there is nothing that **<T: 125 min>** economically could solve the CO_2 issue more readily than those two. Biologically, the whole genetic engineering, CRISPR-Cas9. Boy, that's exciting for the future. Well, the vaccine issue right now, as the new technologies are poised for being perhaps even faster.

EVANS: Do you think . . . are you . . . do you think PCAST should, kind of, be involved in, like, for instance, pandemic response? Is that something that PCAST is suited to do?

PROENZA: I think it could be. As constituted, I think it could play a role in understanding it and making some of these things better talked about, than it has been. But no, I think, for something like that, you need a focused group of expertise. But again to go back to that topic of InnoCentive and prize-driven innovation and crowdsourcing, I think there may be opportunities that are not being pursued, for getting other sources of expertise involved in potentially coming up with solutions that the experts don't necessarily think about.

EVANS: Right, right. That's interesting. I'm . . . so I'm remembering, you know, Dr. Pielke's book was one of the first things I read as a postdoc transitioning out of physics and postdoc'ing with Neal. I'm curious in his book on . . . he's got a number of interviews with science advisors—former science advisors—Neal being one of them, one of the only interviews post-G. W. [Bush] administration was Dr. Marburger, which is great. And, I guess, this kind of a . . . again, like an operational question, but Dr. Marburger caught a lot of flak during his tenure for various reasons, and one of the things Pielke points out and others is that he . . . traditionally, there'd be two titles for the science advisor. You'd be able to get . . . you had an advisory role as assistant to the president and you'd have a Senate-confirmed role as director of OSTP, and Marburger just had the latter. Do you . . . what's kind of . . . do you have a perspective on that kind of . . . ? I know it's kind of weedy, but that particular role of the science advisor, and if they . . . if these titles make a difference, or if you think . . . I mean, what . . . if you have a perspective on that and what Dr. Marburger went through during his tenure.

PROENZA: In honesty, I don't recall that he had just one title, okay? But I think it should be both, personally. Realistically, I think that so very much depends on who occupies the office of

the president and who the other people in the cabinet are. It can get soured pretty easily depending on the composition of the cabinet. Ideally, it should be a person who sits on the cabinet. And I don't think any of the science advisors have had a seat on the cabinet. Am I wrong?

EVANS: No, you're not wrong. Dr. [Eric S.] Lander, I guess, is the first one appointed to the cabinet under President Biden.

PROENZA: Oh, interesting. Interesting. Good, good. Eric will do a good job.

EVANS: Well, I guess that leads me, so why do you think . . . ? You know, this is, kind of, an open question, but what is it about being on the cabinet that you . . . or why do you think the science advisor should be a cabinet member?

PROENZA: Well, I think a number of reasons. You know, what comes to mind is so very, very few of the people who rise to the cabinet have in-depth knowledge of science that it's almost necessary in a society's . . . in a society—excuse me—whose in some way very existence and certainly **<T: 130 min>** long-term economic and general wellbeing depends increasingly on science. And, if you think about, the economy today is largely growing as a result of some form of technological innovation, discovery, application that you just can't have a cabinet that doesn't have that source of input and who doesn't understand, again, the complexities that we talked about with the POETS acronym. The average politician that I know of doesn't have that mindset. It's just not there.

When we did all the work on science and tech . . . sorry, STEM education generally whether at Energy or PCAST and so forth, I remember a briefing by then president of the University of California. I forget his name. [Richard C.] Atkinson was, I think, his name. Who said that in California, of all of the teachers teaching science, engineering, mathematics, technology, only 5 percent had the requisite educational background to teach that subject. Now you go to the Congress, and I don't know presently, but I know somewhere along the eighties, nineties, two thousands, there was only one or two MDs. I think only one PhD scientist, so . . . I don't know any recent cabinet that has involved any cabinet member being a scientist, engineer, or otherwise, but again, I'm not sure. That depth and breadth of understanding what's the role of it, what's the proper role of it, how do you ask the questions more deeply as to what you can and should expect from science and what you can't or what you have to solve through other means.

EVANS: Right. I mean, it's really foundational. I think that . . . and I was just looking at what you were wondering about—the number of science PhDs and STEM PhDs in Congress and [the] cabinet, and right, there's only been several in recent years.

PROENZA: Who was the congressman from Michigan that chaired the science committee for many years? [Vernon J. Ehlers] Very nice man. [. . .] The irony, I guess, is that Congress itself had no particular respect for that committee then or now, as I can tell. [. . .]

EVANS: I remember . . . well, he only passed away a few years ago, so I remember when he passed. Yeah, so well, I wanted to ask too. I mean, you've mentioned a couple things PCAST should focus on. Were there things that you wish you could have done while you were on the council? Were there opportunities that you wanted to pursue that you couldn't for some reason or . . . ?

PROENZA: No, I found the experience very worthwhile and very enlightening. I think there were some fun topics that we chatted about. There's a lot of handwringing about education, but you know, no clear solutions. That would be a wonderful one to try to really delve into in further detail. But again, I think some of my perspectives that I'm sharing now come **<T: 135 min>** with the benefit of not only hindsight but additional years of experience, and at that time, I don't think Roger's book was available. Some of the other people . . . I think we continue to learn, and we have to be committed to continuing to use what we learned to improve things and make things better. A colleague of mine used to say we have to be committed to muddling through because things are complex and knowledge isn't perfect and people aren't perfect and human partiality rears its head in every interaction.

EVANS: Were there, you know . . . as you learned, were there things from PCAST that you brought back to your presidency at Akron. Were there . . . ideas, people . . . ?

PROENZA: Oh, absolutely. I think virtually everything we've talked about had some at least educational opportunity. It was during my PCAST time that the big power outage in the northeast that involved an Akron-based company—FirstEnergy—took place, and I could talk directly to the CEO and both understand how he must feel being in the hot seat when obviously it wasn't his personal fault—things of that nature. And it certainly . . . the work we did both on technology transfer and on the R&D funding portfolio enabled me to talk more authoritatively and cogently about many of these issues both to our congressmen and senators but to my own colleagues. All of that had a very, very fine . . . yeah, I was delighted.

EVANS: That's great. Were there members, were there individuals on PCAST that you stayed in contact with that you had met, that you had formed relationships with and continued to work with after your term ended?

PROENZA: Sure, Norm Augustine, Chuck Vest, for a short while, Bernadine Healey, Erich Bloch, in particular, Walter . . . Wayne Clough, Marye Anne Fox, Ralph. I mentioned Ralph because then we were together on this STEP—Science, Technology, and Economic Policy—committee. Charlie Arntzen. [I] visited down in Arizona State where he moved. Those are the folks that stand out.

EVANS: Yeah, Ralph has, in particular, a very unique perspective on things.

PROENZA: Yeah, he's been around policy circles for generations you might say. He's a delightful man.

EVANS: Yeah, really fascinating guy. Yeah, great. Well, so I guess talk to me about, you know, you served on this council for both terms all the way up until the end of the G. W. Bush administration. Were there . . . I guess, what was transitioning out of it like? Were there things towards the end that you rushed to get done, or you . . . I don't know. What was the end of that period like for you?

PROENZA: Well, I remember that Jack got some of our input in writing a transition letter to the Obama PCAST and [Dr. John P.] Holdren. On a more personal note, I think most of us were sad not to be continuing in some fashion with that level of activity. Glad to have it in other respects. I think I shared as Mr. Obama's PCAST got started, **<T: 140 min>** it was more and more difficult to find some of the things that we had been involved in, and I don't recall . . . . I probably didn't read it that carefully, but Mr. Obama, [Dr. Holdren] placed a great deal of emphasis on manufacturing. But I don't recall a single reference to the PCAST work that had been done, you know, suggesting that they were building on this work, but anyway, I guess that's standard for transition politics. So not so much, but it's unfortunate when you don't have that sense of where the nation's been and where it might yet go. I think a case in point is if you'd had been around in 1983 when Terrel [H.] Bell was secretary of education and issued that report, *A Nation at Risk*, and while you see some reference to that report still being made today and noting how relatively little improvement compared to the statistics reported at that time has actually taken place, you recognize the importance of understanding a) how difficult it is to make certain kinds of progress but how important it is to know the genesis of when we first recognize the problem.[30] I would dare say some recognition probably existed even before *A Nation at Risk*, so I would think that's important in every topic that is discussed by [a] PCAST-like committee.

[30] *A Nation at Risk: The Imperative for Educational Reform*, the National Commission on Excellence in Education, April 1983, accessed January 5, 2022, https://www2.ed.gov/pubs/NatAtRisk/risk.html.

EVANS: Yeah. Well, I guess that that leads me to ask, I mean, how you then got involved with this AMP2.0 and then your engagement with some of those PCAST members. Were you able to bring those previous recommendations to the table and your historical perspectives and also, you know, make them aware of PCAST's earlier work on the issue.

PROENZA: Sure, from time to time, but that . . . for the most part, it just goes in one ear and out the other. Nobody really cares that somebody looked at this problem before. I think, you know, obviously I was able to bring some of that experience and some of those ideas forward and to see what would take off. I'm trying to remember a point that I made on one occasion. It might come to me. I think it involved the CEO of Siemens [Eric Spiegel] had a meeting with Mr. Obama. Oh, I think I got it. The kernel of the idea was this: industry has perfected the, shall we say, component supply chain. You look at a company like Boeing, you look at any company that integrates components into the manufacturing process. They work very tightly with their suppliers to have this level of tolerance in every degree that can be measured. So they have . . . they are experts in the component and supply management process, okay? But arguably, you could say that their . . . the thing they complain about the most and they ought to pay at least as much attention to that, is their talent supply chain management. So I was trying to point out to them that there ought to be a way to create a commission, create a group of people to see how their supply chain management tool chest could be <**T: 145 min**> adapted to the talent supply chain process. Now understand making widgets and making them conform to a particular set of specs is entirely different from trying to make people come out a particular way. But I am convinced . . . that I did have two faculty members at Akron began to tackle that issue and see what they could do about it, but anyway, I think that happens to be something that could be pursued to good ends and to improve the process about which we have complained for so very long. So, there you go.

EVANS: This was a point you made at a briefing with President Obama?

PROENZA: Yes. I forget. Whatever the Siemens president had been doing with Siemens's relationship to educational institutions, particularly community colleges, pointed a little bit in this direction, so I was trying to make more explicit this idea that supply chain management ideas could have an application in working with the workforce problem that industry complains about every day.

EVANS: Right, right. I mean, this goes back to what you were talking about earlier with your VPR at Akron where he was doing, kind of, that type of . . .

PROENZA: Yeah.

EVANS: Yeah, well, interesting. I didn't . . . you know, the AMP2.0 set of . . . there must have been . . . I think there were two separate reports because they . . . PCAST did . . . again picked up the manufacturing topic. Were there other times that you met with, I guess, either Dr. Holdren or President Obama during your work on AMP2.0?

PROENZA: Holdren came a couple of times to the AMP2.0 leadership council or whatever it was called, and a reasonable group of the AMP2.0 leadership met with Mr. Obama, I think, twice. I clearly remember just one time, but I think there was a second time. Most of the work that AMP2.0 did were in the, sort of, technical subcommittees where, you know, Andrew Liveris appointed somebody else. I had two people that worked on the various committees and so forth, and they did the bulk of the, shall we say, reviewing the literature, scoping out the recommendations, and bringing those forward.

EVANS: Right, right. Interesting. Thank you for sharing that. I think that I've been curious just why when you had mentioned that the Obama PCAST didn't reference some of the work that you guys had done already on this issue, and then I had seen that they had released these AMP2.0 reports on . . . like as part of PCAST on their website and stuff, so I was curious about the origins of this committee and how it operated. So I hadn't . . . it's good to hear it from someone who was on the ground working on it. Let's see. Are there, I guess, other experiences from PCAST that you can share or are interested in sharing. I'm, kind of . . . I have lots of general questions, but just in terms of PCAST, are there experiences or things that you would like to . . . . I guess before we wrap up on the PCAST set questions that you'd like to talk about?

PROENZA: I'm sure your other questions might remind me of other things, but since we were on the education piece, I remember a very spirited discussion that we had on that issue, and people were, kind of, commenting on this, that, and the other thing, including the role or lack thereof, of the Department of Education at which point I recall getting a good laugh from everybody by reminding them that Mr. Reagan had suggested that abolishing the **<T: 150 min>** education department might be the best thing that could be done for education. [laughter]

EVANS: Yeah, yeah, we always . . . in Texas, we always talk about how Rick Perry at one point said we should just get rid of the Department of Energy and then became secretary less than ten years later.

PROENZA: That was a different kind of comment, yes. [laughter]

EVANS: Yeah, yeah. Politics. I guess, yeah, I mean, I want to thank you for sharing so much about PCAST, and I hope to continue to reach out to folks that served from G. W. [Bush] because there's not a ton of interviews or information from that time that I've found in my

studies so it's really good to hear about it. I guess I, kind of, want to ask about . . . you know, wrap up with time because you served . . . you were president of Akron for almost sixteen years—fifteen, sixteen years—and that the university expanded tremendously during that time. And I guess, [I wanted to] kind of, get your perspectives other things that you made happen at Akron during your time—your presidency—and then talk about what you're up to today. You said you're mostly retired at this point, but you're still president emeritus I understand, so maybe are there other things from your time at Akron that you want to talk about . . . perspectives from being a university president for so long that you'd like to share?

PROENZA: Gracious. Well, it certainly was a very rewarding experience; it also was very demanding when there isn't just one set of constituents. There's just dozens upon dozens of different constituencies. Every alumni, every school and college has a different constituency thing, every person in town has a different kind of perspective on the university and so forth, so you're bombarded with so many different wishes and complaints and things of that sort. And if you're [as] involved in the role as I was, you're pretty much busy from seven o'clock in the morning till ten o'clock at night, virtually seven days a week. So that certainly calls for some measure of stamina that I'm not sure how many people have.

In the old days, a lot of people, I think, looked at the president's role as a social gadfly, ministerial role—you shake hands and you do things—but I think, increasingly, it has become a role that is not well understood and very demanding, and I think clearly this pandemic has called into question the very nature of what is the value proposition of a college education *in situ* as opposed to getting your education in a variety of possible ways. I don't know if you're familiar with Anya Kamenetz's little book called *DIY U*—do it yourself university.[31] It's a telling book about what an enterprising person who's familiar with the web could learn and does learn entirely on their own. And clearly online education and all of its permutations is going to play an increasingly larger role and so it's challenging to know how best to adapt an existing physical campus for the future.

Lewis [M.] Collens, who was president of the Illinois Institute of Technology, had, I think, some very interesting ideas that, you know, a place like Stanford could mount an electronic dream team in maybe fifteen disciplines. **<T: 155 min>** A community college probably can't mount an electronic dream team in anything per se, but they still probably have a role in some way. Education . . . institutions like Akron could mount a very credible dream team in polymers and in many ways does. It's a globally recognized program. But how do you mix and match those things to ensure the ongoing success not only of what's there but how it might transition into the future. So I think that was . . . clearly the role that I played was facilitated by the board having recognized two primary things: one, the institution was far better than anybody knew about so telling the story was important. The other is the campus had deteriorated and needed to be massively reinvigorated, revitalized, renewed and so that was . . . how do you do it and how do you pay for it? And so sure, we built, I think, twenty-three brand-new buildings and

[31] Anya Kamenetz, *DIY U: Edupunks, Edupreneurs, and the Coming Transformation of Higher Education* (White River Junction, VT: Chelsea Green Publishing, 2010).

refurbished I don't remember how many others. And unfortunately, as a result of all of this and other things, my successors, of which there have been many, unfortunately, are having to struggle with how do you make the payments on the debt that my board and my administration incurred on behalf of the institution?

But change comes slowly apropos of this set of issues, an editorial in *Science* by a Yale . . . I think he was an economist, Eli [M.] Noam entitled "Technology and the Dim Future of Universities" is telling.[32] By the way, by dim he didn't mean poor, but dimly seen. He could tell from what he was seeing—if you wish—that [the] economy was changing and the technology was changing and when both of those changed, he foresaw that the institutions themselves had to change. How much and in what direction he couldn't tell, but I think we still can't see that as well as we'd like. So Lewis Collens talked about electronic dream team, an electronic Olympic village, a place where kids could come and get their education not only from that place but from everywhere else. He had a couple of other ideas. I forget what he titled them. But, you know, somebody had a video out that was envisioned by a combination of iTunes and Amazon and imagine a company formed around education that was an agglomeration of iTunes and Amazon. What would you do to make that successful? How would you . . . Coursera and edX are doing some of that, but they're nowhere near what could happen. Anyway . . .

EVANS: No, it's interesting—

PROENZA: Challenging times.

EVANS: Yeah, yeah. I mean did Akron offer while you were [president], I mean, did you guys transition at all or offer online . . . was the polymer dream team assembled?

PROENZA: We had a very substantial electronic . . . online program, and I'm sure it has expanded with a pandemic. Obviously, everything went online, so everybody all of a sudden had to do that. The thing that surprised me the most, because I was at that time teaching a series of colloquia, which relied very much on students participating and stimulating discussion. And I was surprised to see that students online were almost more willing to participate than while they were in the classroom themselves. So that was an interesting surprise to me.

We had issued a call to our colleagues at APLU. I chaired a meeting—I forget whether it was 2012, 2013, something like that—where we were asking how could we, indeed, take advantage of these resources in a way that would make it possible to create a better product overall for students? And so one idea is **<T: 160 min>** you take all of the courses that are online and try to make some sense of them and decide which are good and which are poor and why

[32] Eli M. Noam, "Electronics and the Dim Future of the University," *Science* 270 (October 13, 1995): 247-249, https://asistdl.onlinelibrary.wiley.com/doi/full/10.1002/bult.24.

does every faculty member have to put their own unique course online, okay? And obviously, if you're teaching an advanced course in policy, you want . . . Neal Lane's course, for example, or if he were alive, Jack Marburger's course—they've got the experience. But if you're teaching introductory math, there are thousands of people who can do that.

Well, who does it well? And how can you sort through that in a way that say, okay, we think this course would do better for you and this one might be better for David and this one might be better for Joel and what is the category of Kenny and Joel and David and so forth that might create an economy of scale, as well as an improvement in the effectiveness and success of those educational programs? And so we came up with an idea that, I think, encapsulated some of those. We call that IAM. I for integrative, and A for assessment because we felt that what was lacking, on the one hand, is an ability to integrate the available offerings into some portal that would allow some semblance of ease of use and ability to select. And secondly, we thought at that point, it would be essential for us to be able to assess whether anybody had actually learned something, either in the classroom or out, in such a way that we could stand behind that and say, "Oh, you know this guy or gal already knows this at this level and doesn't need for the training or can qualify for credit from Rice or Akron or Stanford for anything because they know everything that we teach." So if we had a framework for integrating the offerings and for actually assessing whether anybody actually is making progress in their education, I think we'd go a long way to beginning to come up with a solution, and anyway, they call it an integrative assessment model (IAM).

EVANS: Interesting. Did you say . . . when you say "we," was that with APLU, or was it with Akron?

PROENZA: Well, we tried to convey that APLU, and certainly, you could say that the president of Purdue [Mitchell Elias Daniels, Jr.] listened, although he wasn't at that meeting in particular. But what Purdue's trying to do is along those lines. What Coursera and edX [are doing] is along those lines. But I'm almost afraid to suggest that a company might do it better than any traditional educational institution, but who knows? Poorly seen—dim.

EVANS: Yeah, it's a lot of . . . . I'm sure Dave can attest to the transition into fully online teaching was a challenge and the university . . .

PROENZA: That individual interaction with individual students is so important, and the interaction between students one with another and the socialization, all of those are components of a traditional campus that may not be needed by every student but is certainly important to many. And certainly individual professors have a role, and, you know, I'm sure each of you can say, tell stories about individual students that you've impacted in ways that other faculty didn't or couldn't.

EVANS: Right. No, that's true. Well, we've got about ten minutes left and so usually what we do at this time is turn it over to you if you have questions for us, or if you think we've missed something that you'd like to . . . us to ask about or . . . generally, it's an open forum for whatever you'd like to speak about.

PROENZA: Well, thank you. I'm not sure I have anything to add. Many of my comments obviously have been prompted by your questions and what **<T: 165 min>** little fragments and snippets of memory that has elicited. From our discussion today, I would truly value seeing if you can come up with some, sort of, summary of some of the ideas that some of us might have about what's important going forward for an institution like PCAST or, for that matter, in the nation in terms of science and technology generally and advice to the president. [. . .] You know people like Ralph Gomory and some of the others that are still around, it would be very interesting to see what they say and see if there's some common threads or which ones seem to rise to the surface more often or just stand out to you. I'd value that a great deal, would love to hear from you. Other than that, if you have anything that you want to follow up on, then feel free to just give me a call and we'll see what it is, but I've enjoyed your questions. David, thanks for listening.

CARUSO: It's been a pleasure.

EVANS: Yeah, it's been really great. Thank you for being so candid in sharing your perspectives, and we hope to do just that. So we will certainly . . . in terms of compiling threads and themes and perspectives. And, as you know, [Ralph] was not shy about his opinions on these matters, so I will certainly pass those perspectives along to you as well, and I do want to look up this National Biotechnology Policy Board because I'm very curious about it, so I will get back to you.

PROENZA: I hope you find it. I'm pretty sure that it was formed essentially right around the time that I moved to Alaska, so it would have been '86, '87, '88—somewhere around there, I would guess. But anyway, I long ago put those things . . . or left them at Akron or Athens. I'm not quite sure where. Thank you, Kenny. Thank you, David.

EVANS: Yeah, thank you so much, and we will follow up with the transcript and that whole process afterwards and yeah, if anything else comes up, we'll be sure to contact you.

PROENZA: Please, please do. Thank you very much.

EVANS: Okay, thank you. Have a wonderful afternoon.

PROENZA: You guys too. Stay well. Bye bye.

EVANS: Bye. Thank you.

[END OF AUDIO, FILE 2.1]

[END OF INTERVIEW]

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