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I grew up in Washington, DC, in a family of six—four children and our parents. I have two sisters and a brother, although my brother passed away about a decade ago. I went through the public school system. All of my pre-college education occurred in the public schools of Washington, DC. When I began my schooling in kindergarten, the schools were segregated by law. They were integrated after the 1954 *Brown vs. the Board of Education* (Topeka) decision, and I would say almost essentially de facto re-segregated by the time I graduated from high school.

During the time after the initial desegregation of the schools, a tracking system was put into place in the Washington, DC, school system. There were four educational tracks: a basic track, a business track, an academic track, and an honors track which was an accelerated program. I ended up in the honors track, and because of that I essentially finished high school a year early. I did spend my senior year here in my high school taking advanced subjects, including an advanced math course that was an introduction to calculus. I took an economics course, advanced biology—which was a college-level biology course—and Latin. I studied Latin, in fact, for six years, and studied advanced grammar and composition. In addition, since I grew up in the post-Sputnik era, there was a lot of focus at the time on science and math. I participated in various programs along that line, ranging from science fairs to a program given by the American Heart Association on the cardiovascular system, where I went to lectures on Saturdays. There were a number of other things I

did. I participated in a TV program called “It’s Academic,” an academic quiz show, school-wide and then city-wide spelling bees and oratorical contests. I was a student delegate to a Student United Nations here, etc.

So I would say I had a rich experience. I was aware that I was going to segregated schools, or had gone to segregated schools, because of the switch that occurred early in my elementary school career. But in many ways I was less touched by racial issues than others living elsewhere. I suspect this was so because our parents also protected us from a lot. I was always interested in science and math, especially mathematics. Most of my science projects were ones that did not involve expensive equipment because it was not something that we particularly could afford. A lot of my experiments were biologically oriented, I think because that



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was what was around me. I collected live bumblebees and did experiments on them, looking at how nutrition affected them, and how their environment affected them. I got a lot of encouragement from my teachers, particularly my math teacher and my Latin teacher.

In your pre-college days that you're talking about, when do you think you actually chose your field or career? You said you always knew you were going to be in science. Were there people—you mentioned your math teacher—who were very influential during that period of time? Could you talk a little about role models?

Well, I think I could honestly say that as far as scientific role models per se, I didn't have any growing up. In terms of role models to illustrate how one would live a good life, and the value of hard work, I think I got that from my parents. They were my role models in that sense. But in the conventional sense of the word, I had no role models because I knew of no one who was doing science research or mathematics as such. Other than my involvement with the American Heart Association program, I really didn't get to meet scientists per se.

You have to understand again that I was coming from what was a segregated school system that went through a transition. I think that my teachers were very influential in encouraging an interest and an ability they thought that I had in math and science, as opposed to their turning me on to something that I had not heretofore considered. I was actually, though, about equally good in the language arts subjects, the verbal, as in the math, and that was in fact borne out when I took the SAT's some years later. I mentioned to you that I had been in oratorical contests in my church and in my high school, and that I was in spelling bees in my high school and city-wide. I didn't win the city-wide spelling bee, but I went into the semi-final round, something like that. I had a good all-around education. Latin, the study of Latin, provided a fairly good foundation for the structure of language, as well as grammar and spelling. I think all of these things came together.

Let me move to how you actually got to MIT, and your experiences there as an undergraduate student.

Well, I was tracking to MIT early. I was my high-school valedictorian. When I took the PSAT's, and then later the SAT's, I did very well. The Assistant Principal for Boys at my high school was the one who really suggested that I apply to MIT, and I did

that. He did this, together with the college counselor at the high school. The Assistant Principal for Boys' name was Mr. Boyd and the counselor's name was Mr. Brown. Both of them encouraged me to apply to MIT, and Mr. Brown to apply for a scholarship from the Martin Marietta Corporation. Now, what happened was the Martin Marietta Corporation in those days offered three scholarships in the Washington area: one that would go to a student from the Maryland suburbs, one to a student from Virginia, and one to a student from the District, who were interested in studying math and science at the college level. I got the District scholarship from Martin Marietta. Interestingly enough, the Virginia and the Maryland winners also went to MIT. It was a big deal, and it gave me a four-year scholarship that covered tuition and some other things.

As far as going to MIT was concerned, I was excited about going. The more I learned about it, it seemed the perfect place for someone who had my interests, and I looked forward to it. On the other hand, there were those who felt that it might be tough because, as far as they knew, MIT really didn't have any black students, and certainly not any black female students. People told my parents there was a good chance that I might be the only black female at MIT. I was pleasantly surprised, of course, to find that Jennifer Rudd was there. She was in my class. We were there together. Of course, people who saw us tended to try to push us together all the time, and seemed to mistake Jenny for me and me for Jenny. In fact, if I would pass some of the students in the dorm, they would come by and say, "Hi, Jenny." And I'd say, "Well, my name is not Jenny." They'd say, "Oh, you're the other." I'd say, "Yes, I'm the other one." And they would do a similar thing with her. Or, if I would go to the cafeteria in the dorm—and we ate in the dorm at that point—if I sat down at a table where other students were, they would want to know where Jenny was. And some of them would get up and leave the table, even if they weren't totally finished. If I sat at a table alone, I, by and large, would still be alone by the time I finished eating, even if other tables were occupied. This was particularly true in my freshman year.

It was also difficult to get into study groups. In fact, in working on the first physics problem set that I ever had at MIT, I was in my room working on it for a while. I got up to go to the wash room,

and when I left my room I found the other girls—the other freshman women on the floor—were working together on the physics problem set. When I tried to join them they told me to go away. That, in a way, highlights what the early experiences were, namely some degree of isolation and an inability to penetrate social and study groups, with the exception of Margaret MacVicar who was the women's physics tutor in McCormick Hall at that time and a friend of hers, Edie Goldenberg. Margaret was fairly straight with me and we became friends, and that friendship persisted through the years until Margaret passed away a few years ago.

How did you do so well, though, even despite some of these situations you mention?

Brilliance. [laughs] Focus on a goal, motivation, and determination not to be worn down. I thought if I gave up, those who wanted me to give up would win. Since I didn't want that to happen, I persisted. In addition, I enjoyed science and I never lost that love of science and math. That's why I'm a physicist today. I knew it was very important also to my parents and my family, and to my community, that I succeed. You could argue that that was a lot of weight for someone to be carrying around as a freshman and sophomore at MIT, but I did feel it very strongly. I also came out of a strong religious base. All of these things together gave me quite a bit of motivation, and even in the days when I might tend to lose confidence, in the end I still had an inherent belief that I was doing what I was meant to do and I had the ability to do it. So I did it.

There were a number of things that you got involved in that did not necessarily deal with the academic part of the institution. In a way you felt a need for some of these things, you and perhaps others. Could you talk a little about some of those things that you got involved in and sort of were responsible for?

Well, I think most people who think they know about my extracurricular activities probably base them from the time of the MIT Black Student Union. But in fact, what most people don't realize is that in some sense the BSU involvement was a natural follow-on at MIT from some kinds of things that I did early on. I told you I did come from a strong religious foundation, so I was always raised to believe that, in trying to move along, it's important to lend a helping hand to somebody else and that in spite of any difficulties I might

have been having, based on race or sex at MIT, that I was there, I was healthy, I was able to do the work, I was doing well. So I thought it was not enough just for me to succeed alone, and that I needed to try to help somebody else along the way. So, early in my career at MIT, starting when I was a freshman, I in fact did volunteer work, first at the Boston City Hospital in a pediatric ward for infants from birth to about age two—infants to the toddler stage. And I did that for a good part of a year. Interestingly enough, even though I was doing this to help someone else, it gave me a kind of strength because in looking at what these very young people were dealing with—ranging from physical deformities to leukemia to surgical problems, and they didn't even understand what was happening to them—it made me feel that I was very fortunate. So I got a lot out of it myself, as much as I thought I gave to these children.

And then I actually pledged Delta Sigma Theta Sorority in my sophomore year, and later became the president of the chapter for two years, that's the New England regional chapter—Iota chapter is what it was called. Again, that was a balancing experience for me. It gave me a larger sense of what black females and black students generally going to school in the New England area were dealing with at the time because, even though the numbers were minuscule at MIT, they were not large at any of the schools in that area at the time. We had membership drawn from as far away as New Haven, Connecticut. And so again, it was a question of something I enjoyed—the fellowship with these women and getting to know some African-American men through the affiliated fraternities and the social functions that we used to have, which were typically off campus. We couldn't use the campus facilities, so we would have them at various places in Roxbury. There was this place called the Negro Professional and Business Women's Club and we had functions there. In addition, there was a fire house on the edge of Roxbury where we got to use an upper hall. But we would have to rent it out, so we would have to charge money to cover our expenses. But again, students came from all over the place. That was a big part of it. I got to know some women who were at some of the universities around who grew up in Boston and Roxbury, and I got to know their families. They would invite me over on weekends and so on.

So one could call all of these experiences ones that helped me to keep a balance. Through the Deltas—a big part of the Deltas' vision is service—I did volunteer work at the Roxbury Y, tutoring students in math, as well as in fact tutoring some of the siblings of my sorors. So, by the time I came to my senior year, which was the year Martin Luther King was killed—that was a catalytic experience in terms of making me decide that I needed to turn some of my focus to MIT and try to get MIT to admit more black students, more minority students generally, and to be more hospitable to the ones that it had—I had already had a history which was not the history that most people at MIT knew of, of working out in the larger community and working on issues beyond my problem sets.

Martin Luther King was killed as I was visiting the University of Pennsylvania. I was interested in going to graduate school there. I had gotten admitted and gotten a fellowship, and had been invited down to come visit the campus and decide which professors or professor I might want to work with preliminarily. On my way back to the airport, we had the radio on. A soror of mine was driving me to the airport, and the announcement came that Dr. King had been shot in Memphis, then a little bit later that he had passed away. We almost ran the car off the road. It had a big effect.

I was a child of the King era, that whole struggle for desegregation. The March on Washington occurred when I was in high school, and it had a big impact. My parents had grown up in the South, had experienced some of the classic things that blacks faced in the South during that period, and more. So I was sensitized anyway, but I was a believer that if one worked hard and was qualified and lived right that one would be judged by the content of one's character and not by the color of one's skin. And, in fact, I still continue to live my life that way. I decided then, when I heard the announcement of Dr. King's death, that I needed to try to work at MIT and with MIT to bring about some changes. And I thought MIT was very important because of what it represented as a leading edge scientific and technological educational institution.

There were others who were similarly affected. A small group of us came together to present some demands—we called them demands at the time—to the administration. But we had a

full-blown proposal for how to go about redressing some things we felt needed redressing at MIT. Paul Gray, I believe, was the associate provost at the time, and I guess Jerry Wiesner was the provost. They formed this Task Force on Educational Opportunity that Paul chaired and I was a member of it, with a number of others. We would meet every week, several times a week, sometimes for the substantial part of a day, hashing through the issues, reading. Paul read a number of things—Malcolm X's autobiography, *Black Like Me*, *The Invisible Man*—and I think all of us were moved because of Dr. King's death, and later Robert Kennedy's death, to feel that something was happening in this country and we needed to do our part to try to help set it on a certain course.

Those were some trying times in many ways, but at the same time some of the most hopeful times. Those of us who were on the task force, in addition to talking about what ought to be done in meetings, actually each went out and did recruiting at high schools. I went out to Cleveland and Detroit. In fact, two of the students whom I recruited came to MIT and they attended Interphase. The original summer program was called Project Epsilon. Epsilons and Deltas are small numbers. So we thought Epsilon was a small program, but a beginning. And then out of that grew the larger Interphase program the next summer, the summer of '69. Project Epsilon was the summer of '68. I taught in the physics part of that program. Jim Turner, who was working on his doctorate in physics, was the head of the physics option that year. I guess he was like a counselor in the dorm. Maybe he was not head of the physics option, but he was one of the physics instructors, as was I. The next year I became head of the physics option.

We all worked very hard. We dealt with things ranging from admissions criteria to financial aid criteria to scholarship programs to a transition program, which was what Interphase was meant to be, to provide follow-on support during the school year, support to get the BSU lounge, etc. etc. etc. The BSU tutoring program came a little bit later in the game. That was an outgrowth of discussions we'd had about the need for continuing follow-on support in certain areas for students, as much to build confidence as to address specific skills. The Office of Minority Education came later. Our feeling in those days was that whatever happened—I

mean, other than the fact that Interphase itself was obviously a separate program in and of itself—some of us, and I was among them, chief among them, felt that what happened for minority students and black students in this instance had to be as much as possible an integrated part of the overall life of MIT and all of the existing support structures, that if there were student support activities and responsibilities in the Dean for Student Affairs Office, or the Dean of the Graduate School Office, that any programs that were oriented to helping African-American students should be part of the mainstream of MIT life.

And then we also dealt with issues of recruitment of black administrators and black faculty. We spent a lot of time on that one. And I would say that we had an impact in the sense that within a couple of years of that time a number of black administrators had been hired in admissions, financial aid, and the Dean for Student Affairs Office and the Dean of the Graduate School Office, etc. We had some success—not as smashing—but some success in the area of recruitment of black faculty, and in certain areas we did have success. But the number of black faculty has waxed and waned at MIT.

You talk about the kinds of activities you were involved in. Could we focus a little bit more on your career, particularly at MIT, going into your particular field? How or why did you decide to go into that particular field, and who was influential in that regard? You also moved from the undergraduate to the graduate program. There were some very significant things that happened in that period of your life. So, could you tell us a little bit about that? Well, as I had said earlier, I was always interested in mathematics. I was always an excellent math student and my original interest when I went to MIT was in mathematics. When I was a freshman, I took Freshman Physics 8.01, and I really got quite excited about and interested in physics. In addition, I took an elective course on the structure and properties of materials. It was a course that was really offered in materials science, the metallurgy and materials science department. That got me very interested in materials science, how to model the microscopic properties of materials and the like. At the same time, I was still taking physics because at any rate at MIT in those days it was required for two years. I was interested in electrical engineering, kind of interested in circuits and

thought that it was kind of a practical activity to do. I'd say that electrical engineering was beginning its rise. At MIT, at the time, there were more physics majors, interestingly enough, than electrical engineering majors. That obviously has changed. But having taken a network theory course, while I thought it was nice, I decided that I liked the more fundamental approach of physics. And even though I liked the materials science course, I thought that physics would give me the kind of grounding that would allow me to study materials properties at a fundamental and microscopic level.

About that time, I started working. In the summer after my freshman year, I'd worked in a lab with Professor John Wulff. He was a professor in metallurgy and materials science. It was he from whom I took the structure and properties of materials course. I got an A. There were two interesting anecdotes relative to that course. One is that I had the highest grade in the course. Margaret MacVicar was my tutor. She was a teaching assistant in the course. I was asked because my grades were high, and so far above that of the other students in the course, whether I minded if the next closest person got an A also. Being magnanimous in those days, I said: "As long as I get my A, I don't mind." So because I did well, I went to see Professor Wulff about getting a summer job. And he started asking me if I knew how to cook. You can imagine, given my background, how I reacted to this. He said, "Can you cook? Can you cook eggs?" And I said, "Well yes, I can cook. My mother taught me to cook." Then, of course, I was suspicious about what he wanted. So he says, "Well good, you're hired." I said, "To do *what*?" And he said, "To work in my lab." He said, "I know you were an excellent student in the course, but I needed to know if you were good with your hands. Since you didn't have any lab experience before, I figured if you could cook then you had to be reasonable with your hands."

And I worked there that summer. In fact, I worked in his lab—or what I'll call the daughter lab, that of Professor Bob Rose, Robert Rose—every summer that I was an undergrad, and even during the academic year for credit. This was well before the advent of the UROP program. There was just kind of a lab, an individual study course that one could take, and I always took it as an elective to continue working in the lab.

There came a point where I had to finally decide what my major would be, and I was told that colored girls should learn a trade. I was told this by one of my professors that I'd had in one of these courses. And I said, "Excuse me?" Colored girls should learn a trade. I was essentially being told that physics was maybe too theoretical, and I should major in materials science, metallurgy and materials science. But I decided that the trade I would learn would be physics. I majored in physics. I focused on what was then called solid state physics, now called condensed matter physics. I even took graduate courses in my senior year on the electronic properties of materials—solid state physics, taught by Millie Dresselhaus. I did very well and used to talk a lot with Millie. So I was essentially interested in pursuing graduate school studies in solid state condensed matter physics.

When Martin Luther King was killed, I decided to stay at MIT and the big thing at MIT was nuclear and high energy physics. In fact, at an earlier stage I had had a discussion with my undergraduate advisor, who told me that—you know, I was doing very well, I was doing well enough to go to grad school at MIT, but it would be better if I had more interest in the nuclear or high energy physics. My focus, as I said, at that point was in solid state. I had applied to MIT, actually, for graduate school. I applied to two departments: one was in materials science, one was in physics. I also applied to Harvard, Brown, and the University of Chicago. And I got into all these places and got fellowships to them all. I decided to stay at MIT.

I had done an undergraduate thesis that was a joint physics-materials science thesis: on the tunneling density of states measurements of superconducting niobium-titanium alloys. And that was an experimental project that had involved some theoretical analysis, based on what was called the BCS theory of superconductivity. That stood for Bardeen, Cooper, and Schrieffer. Their work was based on what is now called many-body theory. That made me think that I perhaps wanted to do that kind of work, and to pursue that in graduate school. So I applied to Brown because Leon Cooper was there, to Penn because Robert Schrieffer was there. John Bardeen was at the University of Illinois in Urbana. I was not sure I wanted to go there because I'd heard some things about its inhospitability. So I applied to the University of Chicago because a physicist by the

name of Falicov was there. I thought I might try to work with him, although I never ended up talking with him.

So then, as I say, all of that changed. I applied to Harvard because it was Harvard, and MIT because it was MIT—at MIT in two departments, physics and materials science. When I finally decided to stay at MIT, I decided to stay in physics. But having decided to stay in physics, MIT's focus then was in high energy physics and nuclear. I decided to do high energy theory, as much because I thought that the background—particularly in quantum field theory and some other aspects of high energy theory—would still give me the kind of physics and mathematical grounding that I would need to do many-body theory in solid state physics, which was still at the back of my mind.

So I stayed and started doing high energy. I ended up working for Professor James Young for my actual thesis, which was a thesis on what was then called strong interaction physics in an area known as multiperipheral models. I was studying a three-body problem using a type of multiperipheral model to look at the effect of intermediate states on the three-body scattering amplitude. The intermediate state described what was called a one-body inclusive interaction. I basically constructed the three-body amplitude using a type of multiperipheral model having a series of small momentum transfer interactions—a multiperipheral model with continued cross-channel unitarity. What those words mean is that it was a mathematical property of these scattering amplitudes that allowed me to use a multiperipheral approach to construct what was called a one-body inclusive interaction, which is where you have two particles scattering, but only one particle measured, plus a bunch of other particles that are not necessarily individually observed, but whose properties are averaged over. The continued cross-channel unitarity allowed me to use that kind of a scattering process to construct an amplitude for a three-body scattering process.

But in addition, I accepted projects with Professor Roman Jackiw in quantum field theory, on Bethe-Salpeter equations. It turned out that the two actually tied together when I did my thesis research because a set of equations I ended up having to solve to get a result in a kind of modified setting, what are known as Bethe-Salpeter equa-

tions, allow one to construct certain kinds of scattering amplitudes. But I also did this work with Professor Jackiw because the quantum field theory I felt tied more into the many-body theory, which was my original interest.

And so, armed with these two experiences, I went off to Fermi Lab, which had just opened as a high energy physics lab in Batavia, Illinois, and started my post-Ph.D. career. I'll stop there unless you want me to go on.

Based on your own experience, what advice might you offer to other blacks, other students who are in the MIT environment? You've spent a lot of years there, and established a lot of things. And you're still connected, so you really have never left. Your experiences are very important in terms of what advice you can give students, black students, faculty, staff coming to MIT in the future.

Well, I think that typically four factors play into how successful a person turns out to be. One, of course, is societal or historical positioning in terms of the willingness of the society to have people from certain groups to be able to pursue certain educational opportunities and certain careers. A second is that there really are career options and interesting activities that are worth pursuing, that are motivators. The two key ones—which are three and four, but they're key—are leadership by those in the position to do so, who as much as possible given societal constraints, etc. are willing to take a stand to move institutions along and to create opportunity. This is not about having unqualified people, but about those who have talent and motivation getting the chance to develop that and exercise it in useful activity. And the other, the fourth, is personal motivation. One cannot underestimate the importance of that. And I say that even as I realize obviously from my history—who I am; but it's not easy. It certainly was not in my case, but I'm not one that necessarily likes to spend a lot of time talking about how easy or not it was. There are a whole litany of experiences I could talk about that were tough. I've also had some positive ones that I can also talk about. But the fundamental thing is to have focus, to have early success—and I think my parents helped with that and my early educational experiences, my teachers helped with that—because early success creates the confidence to move on, as well as helping to create a firm grounding and the necessary skills to move forward.

And so focus, early success, self-confidence, and a kind of patience to know that it may take several rounds to get to where you're going. Or, you might lose a given battle on a given day, but you have to have some inner confidence that allows you to go back and do it again. We all have to know what our own abilities and capabilities are, but at the same time know that any given setback is not necessarily a reflection on us in terms of our ability. But we have to keep moving and, no matter what you say, other people can't—even if things are totally easy, so to speak—do your work for you. They can't provide your focus; you have to do it, each individual has to do it.

My life has been a story of opportunity offered and opportunity seized—and those two have to come together. We all know from a historical perspective that our parents and grandparents didn't have the opportunities we have, in spite of motivation, hard work, etc. So when that window in time opens up, however narrow a crack, one has to be ready and willing to step through it—even though stepping through it, even though it's an opportunity window, doesn't mean that it's going to be easy—but to recognize it as an opportunity window and to try to take advantage of it.

My experiences at MIT were not all bad. There's always a tendency to want to accentuate the struggle, but in the end it couldn't have been a total struggle or else I wouldn't be where I am. In spite of any things that may have happened, any bad things or not-so-great things—and as I say there was a litany of those—I nonetheless was successful. I did do well, both in the classic academic sense as well as walking through it with my psyche and my confidence still fundamentally intact. That's not to say I didn't have dark days, as people say, but it really is a question of what one's inherent disposition is. And I enjoyed working in the labs. These professors, whatever their motivations, did give me opportunity. They supported my applications to graduate school. I did get fellowships. I got into some of the best graduate schools in the country in my field, and have had the opportunity to work with some of the best researchers and teachers in the world—and have made a name for myself in my field.

What I didn't say was, after doing high energy physics for a couple of years, I decided to go back into condensed matter or solid state, my original interest, and had the opportunity to go to Bell

Labs. In those days, Bell Labs would hire you if they thought you were bright and could make that transition. And that's how I transitioned back to condensed matter. I had the opportunity to work on some very nice problems, particularly those having to do with the physics of two-dimensional systems. I was able to do some work in an area known as polaron physics, or two-dimensional electron systems, that I'm known for and garnered me election as a fellow of the American Physical Society. That work, plus my work on the outside in science and technology issues generally, together got me elected as a fellow of the American Academy of Arts and Sciences. And then I think all of these things have tracked to my being where I am today. I think my scientific and technical background plays into what I do here. This is a very technically based agency. I think my various organizational and managerial opportunities—ranging from ones I did in the community with the Deltas, to other outside organizations, to my jobs, and then being on corporate boards and other high-level boards—all have tracked to my being in the position I'm in, to really manage an agency like this, and at the same time to try to develop good public policy in nuclear safety. So it's an exciting opportunity, even as it's one that has always been fraught with some controversy. But it's an important one and it's a high-level one, and I'm honored to have been asked by the President to do it. I think I'm doing some things that are the right things to do, and will have left my mark when I'm done.

I think that one message that I would like to make sure comes across is that there are struggles—struggles that we African-Americans have emphasized, struggles that I may have dealt with at MIT. But nonetheless, there are talented African-Americans—multi-talented in many ways. I've been able not only to do well in traditional science but to do it as I've done a myriad of other activities. I'm able to bring the science, the policy, and the managerial features all together. I think that's why people respect me. I think that's how I ended up in this job, and why I'm able to do this job. So I'd rather, even though the times are tough, and, as I say, things always wax and wane, to have an upbeat tack.

Too often when I'm interviewed, people want to focus on the struggle part of it. I have to point out that I went to MIT thirty years ago. One

could argue in many ways there are a lot of endemic problems that seem similar, but for me personally I'm a different person than I was thirty years ago. I think it's important that people have the integrated picture, in terms of what I am and what I've gotten out of those experiences, how I dealt with them, and what they reflected about what kind of person I was at the time, what kind of person I am—but also how they in fact were also part of building into what I'm able to do today. To the extent that people feel I'm a success, then all of these things track to that—the professional, the education, even the baptism by fire, so to speak. It's what one can try to make out of it, that's important—and that not everybody treated me badly. Obviously, Paul Gray is a very good friend of mine and he has been very supportive of me through the years—still is, in fact. Margaret MacVicar was a good friend of mine. John Wulff gave me my chance. Bob Rose followed up with that in the lab. So these are things that I think people have to keep in mind.

One other thing I wanted to mention was the issue of role models. You know, there are those I call “unwitting mentors.” Most people think of mentoring programs as somebody deliberately working with a person. I think what I tried to do was, if I interacted with someone, unless they totally mistreated me—they may not have been particularly oriented to mentoring me or doing anything for me, by studying them and how they did what they did and learning from them as much as I could, then I made them unwitting mentors. They basically showed me some things, even if they weren't planning to do that. That's how I've tried to live, because not everybody that I come up against is going to be wanting or willing to lead me by the hand. But the question is—by my interaction with them, how can I bootstrap? I think that particularly for young African-Americans, we need to think more about that as opposed to whether somebody is specifically trying to hold our hands and help us along, because, on average, that's not going to happen. And therefore, what are you going to do about it? Sit back and cry about it? Or take what you can and move ahead?

I always felt that my high-school teachers, who by and large were African-American, were wonderful. My Latin teacher could have been a classics scholar had she been living in a different time or the values were different. My math teacher

would have been a mathematician, a mathematical researcher. And so on down the line. But they weren't. They just picked up where they were and did what they could, and they helped to make me what I am today. And so it's a bootstrap. My parents' children are having opportunities that they never imagined. And that's not to say everything is rosy, but it's a question of opportunities offered and opportunities seized—and being willing to step through *your* window in time.

I said that in many ways a lot of women at MIT, white females, were hostile. In the early days, they didn't want to work with me on problem sets. They would work with each other, not with me. I told you about the first incident when they told me to go away. They might speak to me in the dorm and not speak to me in the halls of MIT. I'd get my tray in the cafeteria. This was when I lived in McCormick Hall. Girls would be sitting at the table, eating their dinner, other women in the dorm. I would go sit at a table that had people at it. And even though they might still have their desserts, or sometimes food on their plates, all of a sudden they'd be done. And after a while I would sit and they would immediately say, "Well, where's Jenny?" And I would say, "Well, I can eat without her." Or, if I went and sat at a table alone, then I would stay alone, unless Jenny happened to come and decide to sit there. Probably the fact that we tended to be pushed together created some early tension, but I think we grew out of that pretty quickly. People were forever calling her Shirley and calling me Jenny. In fact, one girl's parents were up visiting once and I walked by, and she said "Jenny, I want you to meet my parents." But I wasn't Jenny, that was the only problem.

Then if I would go to class, I would sit in the middle of the second row because that was the best seat for seeing everything, particularly when the professors would lecture on a raised platform. But then nobody would sit around me. Or, I would do the problem sets and the other students would come in and talk about how they had done the problems, but nobody would talk to me. I would always put a cover sheet on my problem sets. What would happen is that the grade would be written on the cover sheet. So when they saw that I was getting 50 out of 50, 49 out of 50, basically 98%, 100%, 95%—then they would come talk to me, but only about a specific problem that they couldn't get. They would never generally

invite me into their space—only when we were talking about some specific problem.

So it was never a full-fledged being part of the group. And that was true, by and large, in my class, even though my class had the highest number of women physics majors that MIT had ever had. So, it was very much this limited interaction. If they talked to me at all, it was about a specific thing that I would know, but not part of the general studies. It was difficult to be invited generally into the study groups, so I basically worked alone. I'd say that was definitely true through the bulk of my undergraduate years. Other than the work I did in the metallurgy and materials science lab, I pretty much worked on my own. When I started graduate school, it was a little bit different partly because there were some different students coming in from other institutions. But even then, by and large I worked alone. I did get to know Ronald Mickens, who was a post-doc at MIT when I was beginning grad school. He and I would work on physics calculations together, and I would discuss some problems with him. But most of my interactions with black students really were more where I was the senior person, because most of the influx of black students came after me. That meant that those who were undergraduates were undergraduates after me, those who were graduate students were graduate students after me.

Could you say a little about Ron McNair, since he's such a significant force in our history at MIT? I know you and he knew each other very well.

Ron McNair was an undergraduate, as you know, at North Carolina A & T. But MIT had a program where it would bring a couple of black students from HBCU's to come during their junior year to spend a semester at MIT. They'd get a sense of MIT, and this was again part of this general thrust of trying to open the Institute up more. The idea was to get really outstanding black students from HBCU's, and have them come up and spend a semester and see what it was like. And then the opportunities might exist for them to come back to graduate school.

So Ron McNair came, I believe, in the spring semester of 1970. In fact, I met him at Logan Airport. I went to pick him up there. That's how I got to know him, through that time on the campus, so I was the first—or one of the first—MIT

people that he met coming into Boston. He and I kind of stayed in touch that year, that semester, but when he came back—I believe it was the fall of 1971, as a graduate student—that's when he and I used to interact more strongly because there was a group of black students, both in physics and chemistry; chemistry students were taking certain physics or physical chemistry courses. I had, by that time, an apartment off campus. They would actually come to my house to study. I would lend them, or let them copy or take, my previous problem sets because they were tracking through those courses a year or two or three after I had gone through them. Ron, in particular, used to come and study. Literally, I would be doing calculations related to my thesis research, and he would be there in another room studying for hours. I would lend him old problem sets. Any time he had any questions about what he was working on, he would come and ask me a question, we would go over the material, and then he'd go back to work. He would do this typically at least once a week, and particularly leading up to when he was taking exams.

So, we spent a lot of time together like this. I also did that with other students, but not as strongly probably as with Ron. Then I remember when Ron was working on his thesis, he was mugged on his way home one night, lost his briefcase, and he had to reconstruct it in a very short time. And he did that. I'd say the combination of the way I saw him studying and going at things, when he would come and work at my house; and working with me—coupled with that reconstruction he had to do with his research results in a fairly short period of time in order to start to write—shows just how motivated he really was.

Then when he went off after his doctorate and particularly once he was in the astronaut program, we would talk from time to time about some things he was going through. I did talk with him briefly just before he went up in the Space Shuttle *Challenger*, and we were talking—and I didn't even remember talking to him about that flight. But then when I heard that the space shuttle had blown up—I was standing near a Xerox machine at Bell Labs, somebody came and told me—then without even confirming it, I knew that Ron was on that space shuttle. So that's the scene.

I told you I had gone out to Cleveland and Detroit to recruit students, and one of the students

whom I met in Cleveland was Curtis Morrow. I remember having a pretty spirited discussion with Curt as to why I felt he ought to come to MIT. He was very hesitant, but I pressed him pretty hard. I was very pleased when he in fact decided to come. I probably knew a lot of the students in the class of '73, because they were students many of whom I helped to recruit but also worked with during that first Interphase. I'm thinking of people like Michael Fant, who is now a physician; Jim Gates, who was my student in physics class in the first Interphase; I've already mentioned Curt and Beverly Morrow—and they too were people who studied with me and we would talk things over. Syvila Weatherford, from California—I remember she came and I met her mother with her when she first came to MIT. Her mother was very concerned and when she met me I think that helped allay some of her concerns. I told her I would look out for Syvila. In fact, whenever I would go to California I would make a point of going by to see Syvila and her mother.

If you look at the list of names that you have according to the years, they tell a story even of themselves. You had the threesies-fivesies, and if you look through—this is what struck me—when I was an undergrad there were on the order of a handful of black students, and I notice that under the class of '68 you have six. Two of them are African students, and four are African-American students. And that was kind of the way it went until really around the class of '73. That's when you see a big jump, and the class of '72 a little bit more of a jump—because that was when Project Epsilon had occurred. In addition, in some ways we made a little more progress earlier on with some of the graduate students, because if I look again at some of the names these were people who came to MIT in certain graduate programs as opposed to being undergraduates. They were all part of the crowd, obviously, but these are people who have gone on to significance in their own right, such as Harvey Gantt who was there in architecture. I know Harvey pretty well. And Charlie Kidwell. Jim Bishop was working on his Ph.D. at the time. He was one of the first black administrators. Linda Sharpe. Now Linda Sharpe and I—there was another interesting thing of people, to some extent, pushing us together. But we felt we came from very different places, so originally we kind of stayed apart, but then afterwards

Linda came around and wanted to pledge the Deltas. I remember that shocked me to death. As you know, Linda and I are now quite good friends. And Bennie Ward. He went through MIT in two majors, straight A's, then went to Princeton and finished in no time flat. He was in the class of 1970. Sekazi Mtwinga. Sekazi was a good friend of mine. I knew these people in different forms, different times—I'm just looking at some of the names. In the class of '73, particularly, there was Lyman Alexander, Elliott Borden, Greg Chisholm, Quaco Clutterbuck, Darryl Dawson, Michael Fant, Jim Gates.

Those were all of your group.

All of my group. John Mack, Beverly and Curt Morrow, Paula Waters, Syvila Weatherford. Curt and Beverly own part of McDonald's. McDonald's, the McDonald's.

The McDonald's, right? It's really unique.

Frederick Sears, that's another good friend of mine.

He's in North Carolina.

Also, you know, a lot of these people are spectacular successes. Each of these people is unique in his own way. Jim Turner was very much involved with the early Black Student Union. I think he's kind of an unsung hero. People didn't know who he was. He had graduated by the time a lot of the students who were the beneficiaries of the early activities came in. And so many people tend to remember the later Black Student Union co-chairs and the like. Jim was an early co-chair of the Black Student Union, and very much involved in the push and was a member of the Task Force on Educational Opportunity. In many ways, he and I were kind of at a pressure point where there were black students who were more angry about things and not totally happy with the task force process. Yet you had people like Paul Gray who were really pushing on their side an institution that maybe wasn't quite ready for all of these changes.

There's another interesting thing on this list in the class of 1960, there's a Mr. K. O. J. Evans-Lutterodt. That is Kenneth Evans-Lutterodt's father. Ken Evans-Lutterodt works at Bell Labs. His father was the one in the class of 1960, and Ken himself got a Ph.D. from MIT, I think in the '90s.

We'll have to look him up. That's unique, you know. This is the kind of people I want to try to get to. There are some other people, like the Powells, for example. I think Ken was there when Jim Williams was there.

Oh yes, Adam Clayton Powell III. Jenny and I used to have these parties up in the penthouse at McCormick Hall. We would put our little money together and get a few of the freshmen, take our little record player that only played 45's, and have these parties and try to get the—we'd call them in those days "the Negro students" at MIT—and some of them came, including Jim Williams. We would do this maybe once or twice a year, have Charlie Kidwell and some others come. There weren't a whole lot of people to choose from, but we did what we could.

One other message—this is a follow-on to my earlier comments about how I've tried to live my life—is that I think that what a lot of people don't appreciate about me, which is why I am here today, is that I was carrying on my career, both academic career and later professional career, even as I was trying to move things along at MIT vis-à-vis African-Americans, both students and faculty. And I managed to do it.