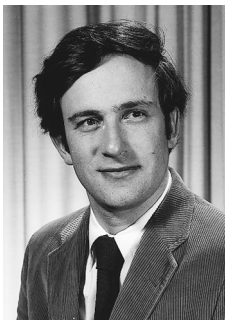
MICHAEL S. FELD



b. 1940, SB 1963 (humanities & sciences), SM 1963 and PhD 1967 (physics) MIT; joined the MIT faculty in physics, 1967; professor of physics, 1979- ; appointed director, MIT Spectroscopy Laboratory, 1976; also director, Laser Research Facility and Laser Biomedical Research Center; member, board of directors, American Society for Laser Surgery and Medicine; fellow, American Association for the Advancement of Science; recipient, MIT Minority Community Distinguished Service Award, 1980.

I was born in Brooklyn in 1940. I lived in an apartment house. My father died of a heart attack when I was three and a half years old. It was hard for my mother, and eventually she remarried. We lived there until I was ten and then we moved to Lynbrook, Long Island. I began in the sixth grade there. After high school, I came to MIT.

Were you the only child?
No, I had a half-brother who died recently—three years ago. His name was Peter. He was born after my mother remarried. He was six years younger than I. So Peter and I were the two children.

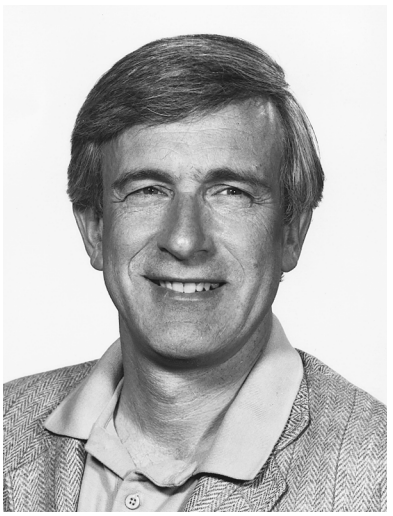
What was the makeup of the high school that you attended—the racial makeup? Also, academically, how did you do?
Well, in terms of the racial makeup, there was only one black family in Lynbrook. Lynbrook is not a very upper-class community, but not a lower-class community either. It's sort of in the middle. There were some fancy communities in that part of Long Island, but not this one. There were a lot of Jewish people and a lot of Catholic people in the community. There was one black family and that was it. So in the high school, there was only this one—the sister was a cheerleader, and the brother was younger. Aside from the lack of blacks, however, there was a very wide mixture of kids in high school.

How did I do? I was a good student in high school.

How large was your class?
Two hundred.

What would you say in terms of where you placed in that class?
I was pretty much at the top of the class. I was very good at math. In fact, I was so good that during class I was taught on the side by the teacher. The teacher would teach the whole class and teach me separately. When I came to MIT, I was amazed to see how ordinary I was in math compared to some of my classmates who really knew so much more than I did, who were so much stronger in math than I. It was really amazing to see. I was a good student, but by Lynbrook High School standards!

So basically, in high school you really were an outstanding student. How did you actually decide what school you would go to, what college? How did that come about? What influenced you to come to MIT?
Well, MIT seemed very exciting. I had had two high school teachers who had come from there.



Edited and excerpted from an oral history interview conducted by Clarence G. Williams with Michael S. Feld in Cambridge, Massachusetts, 23 April 1996.

One was a science teacher, but both of them were very broad in the humanities. That impressed me very much—the fact that they had very wide interests. In fact, one of them was an English teacher. They both encouraged me very strongly, and it seemed like a good opportunity. I actually won a scholarship. I won a full-tuition scholarship to MIT—nine hundred dollars! I don't know what the tuition is today, maybe $29,000.

Exactly. It wouldn't even cover a couple of weeks. During that time, then, it sounds like you had a couple of people whom you would consider very influential in terms of your education. Who would you talk about in terms of role models and mentors up to that point?
First of all, after my father died, my uncle George, who was married to my mother's sister, was very close to me. He was always a very important role model. He was like a father to me—and to my brother—until he passed away, a couple of years ago.

Also, since you're interested in matters relating to minorities, I remember that when I was a kid—maybe two or three years old—we had what we called in those days a maid, who slept in the house—live-in help. She was black. Her name was Pearl. I was very close to her, too. I can remember her playing marbles on the street corner with my friends and me when we were maybe four or five years old. She was a very formative influence on me.

Also, in terms of minorities, I would say that being Jewish always gave me a sense of understanding the underdog, and that was always something that I was very sensitive to. I have always identified with the underdog, I suppose. Even Negro spirituals identify very closely with the slaves of the pharaoh—"Let my people go." So I always felt there was this connection between the two. But there weren't many black people in my neighborhood, and no Hispanics either. I barely knew what a Hispanic was, to tell you the truth.

So essentially, these two people in high school—the teachers—were very influential in terms of your selecting MIT to go to undergraduate school, is that right?
Yes, right.

When you came to MIT, what's your impression now of that experience? Can you recall how things were the first year or two here?
Very hard and very difficult, a lot of pressure. I think that nowadays it's easier for students, but there is still a tremendous amount of pressure. When I was a student, we had to take not four courses each semester but five. And we had Saturday morning classes as well—laboratories, chemistry laboratories, physics laboratories. There was more work and the semesters were longer, so there was a tremendous amount of pressure always. It was the same for me as a graduate student, also.

If you reflect on the undergraduate years for the moment, can you remember any of the interracial contacts—earlier memories of contact with blacks, or even on your own views and attitudes on civil rights issues during that undergraduate period? Could you talk a little bit about that?
I joined a fraternity my freshman year, Pi Lambda Phi, to which one of my high school teachers belonged. It just so happened that that year that I joined, the fraternity also took in a black person, Mike Evans. I believe he was the first black person ever to join a fraternity at MIT. He was a very sophisticated person who came from prep school and was extremely well prepared. The next year we took another black person into our fraternity, and his background was more working-class. So there were those two people there that we had in our fraternity. I didn't really think that much about it, except that we were of course happy to have that mixture of people.

I should have graduated in 1962, but actually I graduated in 1963 because I went away for a year to study at London University. That was a year of marches to Washington. But I guess it was later on, after Martin Luther King's death, that I actually participated in my first march on Washington—the one led by Ralph Abernathy. However, aside from this, I wasn't particularly active in groups encouraging opportunities for minorities. However, I held a deep belief that such things were right.

During your undergraduate period, including the graduate period when you were here, you're talking about a span of perhaps ten years that you were actually a student at MIT?
Yes, something like that.

You came directly from undergraduate school into the graduate program here, is that right?
Yes.

Well, you're looking at about ten years. Do you recall any time, as far as making an assessment—for example,

of the black pledges—from the level of employment or in the student body in general?
No. In my students days at MIT, there were very few women and practically no blacks. Mike Evans was probably one of two or three black students in the whole class, I would guess. My main concern was keeping up with my studies.

Just trying to hang in there. You mentioned that your high school teachers had some influence on your attending MIT, but how did you actually decide to go into physics?
When I took physics as a freshman, it seemed like a very elegant subject, and I was very interested in it. I guess I had always been interested in physics, but the more I learned about it the more it seemed interesting and appealing to me. I was also interested in philosophy. When I was at London University, I studied both physics and philosophy, and I actually thought seriously of switching to philosophy. In fact, when I came back to MIT, I did a joint thesis. I got my bachelor's degree in the history and philosophy of science, writing about the history of the laser and why the laser wasn't invented in 1930, when all of the facts were fully known and all of the experimental techniques were available.

So I had a joint thesis, bachelor's and master's. One-half, the bachelor's part, was about the history and philosophy of the development of the laser, and the other half described laser spectroscopy experiments. I then went on to become a Ph.D. graduate student.

What personalities were influential during that time in terms of faculty members, administrators, or whoever? What people were influential in your continuing in that particular phase of physics and your academic life?
First, before I left for England, I was encouraged by Vicky Weisskopf. He was and is a wonderful man, kind and interested in people. I talked to him several times. He took me to lunch at the faculty club and put me in touch with other people to get further career advice. He was really great.

Then, when I returned to MIT, I had to look for a topic that combined both physics and philosophy. Professors Townes and Javan had both just come to MIT, and they were starting a group. A friend of mine suggested I join that group. So Professor Ali Javan became my thesis advisor. He was also an important influence. His research was extremely impressive, and it was a pleasure to work in his laboratory. Townes, of course, was doing interesting things also. Those two were really very impressive role models. Townes was also the provost at the time.

I see. That made him a very powerful person in a sense, too.
I remember his power. He was also a very nice man—very straightforward, but also very respectful of the rules. I remember that because he was the provost, he didn't have a lot of time to work in the lab. But sometimes on late afternoons or on weekends, he would come to the lab. I remember one Saturday when I was working in the lab with him. We were doing an experiment and needed something from Lab Supplies. I convinced him to use his master key to open up the Lab Supplies door, which was locked. We went in and we took what we needed and left. We left a note, of course. He had a set of four keys that opened every door at MIT. To me, that was real power!

If you look at your undergraduate and graduate education here at MIT, outline what you have liked best or least about MIT's efforts while you were going through. What things did you really like best about your experience at MIT?
Well, it really was like taking a drink from a firehose. There was just so much information and so much knowledge there. There were individuals who were experts in every aspect of science and engineering. That was a very big plus. Also, it was a tremendous amount of work for me. Keeping up with all of the work was always difficult. I managed to do it, but it took a lot. I had some other interests at the time as well.

Long hours, right?
Yes, very long hours—many nights working through the night, writing papers, doing homework problems. You still see the students doing that today, of course. But I think it was even more rigorous then, and I think it's actually very good that the Institute has reduced the pressure on the students. Still, the students are under a lot of pressure.

We need to talk a little bit about your moving from a student category to a faculty type. How did that happen?
After I got my Ph.D. degree, I was a postdoc for a couple of months. Then the department appointed me as an assistant professor. It was a short transition. I was looking for a job. So I started working here as an assistant professor.

Again, you had to be very good—just as in high school. You had finally made the transition, but you had to be very good to move from a graduate student, finish your Ph.D., and join the faculty at MIT.

I was very happy to do that and it seemed natural. I knew exactly what I wanted to work on. I had worked on several projects that Professor Javan was pursuing, but I also worked on my own things. At the time I was appointed, the physics department was being run by Al Hill, who as you know was a very outspoken man.

Al called me into his office and, in his brusque way, gave me two pieces of advice—first, get to know everybody in the department and, second, do as little teaching as possible. Al said that is what I should do if I wanted to get ahead at MIT. I always remember that. But I ignored him. For some reason, I just didn't pay any attention to his advice. I just did whatever I was interested in doing. I was interested in teaching. I didn't have that much time to get to know other people. I spent my time pursuing my own work and got to know the people who were involved in my work.

Anyway, that was his advice to a young person trying to make his way at MIT.

What were the highlights? You've been teaching and doing research at MIT now for approximately how many years?

From 1967 until now, twenty-seven years.

Well, it's certainly close to thirty years. When you look at your career so far, what things stand out as being real highlights for you personally?

First of all, some of my research projects were exciting. I discovered an effect called superradiance in the early '70s. That was a topic physicists talked about and thought about, but nobody really understood it very well at the time. That and other research projects were very exciting.

In addition, working with students has always been enjoyable. As you know, one of my graduate students was Ron McNair. Certainly, my friendship with him has been memorable, especially because he died at such an early age. That was very sad.

Talk a little bit about that because I think, outside of your actual academic field, for those of us who were around and watched the relationship between you and Ron as student and mentor, it was quite unusual. Could you talk a little bit about how that happened and the things that you and he were involved in? It's very important, I think, for the record.

First of all, Ron came to MIT through a special program. The MIT physics department had a program in which students from historically black colleges would come to MIT in their junior year for a summer—and then, if it worked out, for a year. Al Hill had a role in organizing that program. Ron came to that program and started working with me. I don't exactly know how I got hooked up with him, but I was certainly interested in doing something like that. That was 1967 or '68, I think. Then in 1972 or '73, he returned to MIT as a graduate student.

That's about the time, somewhere between 1972 to '74. So you know more about this than I do.

Well, I was here. I came in 1972 and it was just during that time.

Ron did research with me during the summer of his sophomore year. He then went back to North Carolina A&T, where he was enrolled for a year. That was the year of the Kent State tragedy, maybe 1968. It was a very difficult year. There was some sort of riot at North Carolina A&T, and Ron never even properly finished his exams there. In fact, he told me that he was shot at in that riot and almost killed. He then returned to MIT for a year and then went back to A&T for a final year, when he graduated. Anyway, it was a very turbulent time in the United States.

Ron decided that he wanted to come to MIT to major in physics. He applied and he was accepted and we continued to work together. He had been outstanding as a student at A&T, not only in his scholastic performance, but also he was well known on campus. He played football. He also joined the karate club there and became an expert. Evidently, karate was a very serious sport at A&T.

Ron was actually born and brought up in South Carolina. It was interesting that he went to college in North Carolina. He told me that the reason that he went to North Carolina A&T was because he applied to the University of South Carolina, but they were still segregated at the time and did not accept blacks. The state of South Carolina had an arrangement in which it would send students like Ron to North Carolina and pay all of their fees, rather than accept them in South Carolina colleges. That was amazing to me. Of course, South Carolina, like much of the U.S., has

changed quite a bit and has become more progressive. But it was amazing that, even in the mid-'60s, a major university in the United States would behave in such a way. It was beyond my ability to understand.

At any rate, Ron was an expert in karate. After he came to MIT as a graduate student, he decided to start a karate club at his church in Central Square, St. Paul's AME Church. My sons—David and Jonathan—were eight years old, and Ron asked them if they would like to join the club. I took them down to the first practice. I became interested too, so we all joined. Actually, for a while, one of your sons was a member. Was it Alton?

Yes, it was.

Alton joined the club. We had a lot of youngsters in the club. You were in the club for a short while, too.

For a short while.

Actually, Ron processed many, many students through that club. There was a mixture of young kids and teenagers and a lot of adults as well, all mixed together. It was a very nice activity for me and my sons because we could all participate together on an equal basis. That was a very nice thing.

So I was Ron's thesis advisor and professor, and he was my karate master. That was a nice experience, and it never produced the slightest difficulty. Ron knew how to handle responsibility and authority very well. It was a very comfortable experience.

It was comfortable for the two of you, but there are lots of people who never would have been able to do that. That says something about you, especially. It also says something about Ron, of course, but as a faculty member with a Ph.D. student working under you, there were not any examples that I have seen like that. I don't think you have seen any either.

I never really thought about it that much. It didn't seem like a very difficult thing. It was a wonderful thing, but it didn't seem in any way really difficult. I've always tried to minimize the barriers between myself and my students.

Yes, but there was an issue during that time—even more so now—and that was the issue of race. There were many people who never saw you and Ron as just simply student versus teacher. When they first saw you, they saw color. That, again, was very unusual.

That also brings up another thing too that, I think, it would help to talk a little bit about. During your time here of thirty-some years teaching, you are one of the few people who have been very much involved with the effort to increase the black presence on this campus in several ways. I guess my question is, what have you liked best and least about MIT's efforts to increase the black presence on this campus?

One of the things I have liked the best is the tremendous support from all of the presidents of MIT that have been around since I became involved. Jerry Wiesner was extremely strong in that area; Paul Gray was very solid; Chuck Vest is also excellent. I think that at the highest level there has been an unparalleled sense of commitment. That speaks very well for the kind of people MIT selects as its presidents. Without that kind of commitment and deep belief in recognizing the importance of this, MIT would really not be able to take the positions that it has taken and do some of the things that it has attempted to do. MIT hasn't always succeeded in all of the things it has attempted to do, but it has made some excellent efforts. That's one of the things that I have appreciated most.

The things that I have appreciated the least would be just the complexity of our system. Power flows from the top down in a broadly distributed way. The president doesn't have total power, as might be the case in a large company. The centers of power are broadly separated, and many people with a variety of opinions and degrees of motivation on this subject are in leadership positions. Some of them haven't shown the level of commitment or interest that the presidents of MIT have shown. That has sometimes caused difficulties, even in making logical small steps.

If you had to assess the recruitment and affirmative action efforts and policies during the last two decades, including both those established by MIT and those mandated by law, how would you come down on an assessment?

Should we confine ourselves to blacks?

In this case it would be helpful.

First of all, there are black undergraduates, black graduate students, black professors, black employees, and they're all different cases.

I agree, and because you played a pivotal role in being the chairman of the Equal Opportunity Committee for at least five or six years, you are in a good position to make

an assessment in each one of those categories. In fact, you did a study, when you were chairman, of the entire broad sweep of the institution. So how do you assess it?
The first thing is that at every level—if we talk about, say, the students or the faculty—the pools are small, and you have to work very, very hard to select people for each of the categories that can do well at MIT and be comfortable at MIT and be accepted as equal citizens at MIT. It would be a serious mistake if we had a different standard for accepting black people at any of those levels—undergraduates or graduate students or faculty—than we did anybody else, because that would lead to bad repercussions down the road. MIT has generally been conscious of that.

So the pools are small. I've always felt that the most powerful pivot point is the faculty, because those people have a lot of power and prestige and authority at MIT and their actions have the biggest multiplying effect. So having a strong black faculty is very important in moving MIT ahead. But it really requires specially focused efforts to increase the number of faculty members, to recruit talented black faculty. The pools in every field of science and engineering are typically one percent of those in, say, the white majority. So it's hard and, although I think we have a reasonable record, we certainly don't have as outstanding a record as we could if we really put enough muscle behind it in our efforts. When you talk to people about this, they say, "Well, the problem really isn't with the faculty. We can't do much about that, so we should really work at the graduate student level and at the undergraduate level and the grade school level, and so forth and so on." Of course, all those things are true, but if you keep on displacing the problem to another part of the system, then you never get anywhere. So I personally felt that it was important to attack the problem at all of the different levels simultaneously.

Okay, I talked about faculty. In terms of graduate students, that really requires, again, very serious recruitment. I've seen that both undergraduates and graduates who have come to MIT suffer problems which are not always scholastic, but much more complicated—societal problems and problems having to do with getting along at a place like MIT, which is not always a very nurturing place. Graduate students definitely need mentors. Not only graduate students, but also in my opinion every faculty member, black or white, should have a mentor. It's important to make sure that each person who comes—every black, since we're talking about blacks—has somebody who really is aware and cares about that person. That is very, very important.

I hear you saying something that relates to all MIT students. Do I hear you saying that MIT is not a very nurturing place for anybody?
Not always, and not for everyone. MIT can be a difficult place for students to flourish in, because there's so much pressure and so much demand on the pursuit of excellence, and so much competition. You have good students of various levels that are all mixed together. Take my own case. As I explained earlier, I was a very good high school student, but in the milieu of MIT I was much less outstanding than I was in high school. So no matter how good you are, when you're at MIT there are always people who are much better scholastically than you are, and people much better than them! This leads to a situation where people are always competing and trying to excel and working very hard, very intensely, probably more intensely than at most campuses in the United States or in the world.

When people ask me about sending their kids to MIT, I tell them that MIT is not for everyone. You have to really be quite independent. You have to have the ability to figure out how to apportion your time. You have to show maturity in being able to handle yourself. White or black, if you don't have those characteristics, you will not do well. I think it's harder still for black students, who have other non-academic issues, than it is for majority students.

Do you think that there is a degree of intensity beyond the normal for blacks in this regard?
I don't really know. I do know that some of the black students that come here have very high ideals. For example, one of the most intellectually difficult areas of physics is theoretical particle physics. Many black students who come here want to become theoretical particle physicists just because they have heard that it's the most difficult and challenging area. They set themselves up for going right to the top. Some of them very quickly find that it's hard to go right to the top. They may wind up in the middle, or the bottom even, especially because there are other issues—non-academic issues—which many of them come into contact

with, issues having to do with discrimination, and more generally, issues having to do with a lack of sense of belonging maybe, a sense of community. For example, somebody who came from a historically black college might feel much more comfortable in that milieu than in the milieu of MIT which, as the saying goes, is like taking a drink from a firehose, without letup.

Consider the role played by senior mentors and role models in career development for newcomers of all races. Compare, if you would, and contrast attitudes towards blacks and other groups in what you've been able to see in your department, in your role as chairman of the Equal Opportunity Committee, and people of all races you've talked to. What's your view on that?
There's a broad spectrum, I think. I think there are some people who are very committed to this issue. They feel that MIT has a special responsibility to insure that we have a broad, multiracial community with the best people from each sector coming in, and that that makes MIT a stronger place. On the other hand, there are some people who are pretty much indifferent and feel that MIT shouldn't bother with such things, that its objective is excellence in the pursuit of knowledge, that we shouldn't bother to deal with difficult social issues of this type, that we should just do our thing and if some reasonable minority student happens to come along, that is fine, but there should be no special efforts at all to try to improve the situation. And there are, perhaps, even a few with worse attitudes.

But even if you take that attitude and even those that are worse, if you look at MIT—if you look across the faculty, for example—what percentage do you think fall in that category?
It's really hard to say. I guess I would say that there's a small nucleus of people who deeply believe in affirmative action and equal opportunity and enriching the community in this way. Maybe fifteen percent of the people feel very strongly about it, maybe ten percent.

Let me stop you there. How many people do you think you have run across in your thirty-some years here who fall in your own category?
Let's just say my category, people who deeply care about these things.

But how do you determine if somebody cares about something?
Well, by their accomplishments in this area, I suppose.

Right, exactly. You are a scientist, so you know how you get results, right? I could name at least five or six very significant things you have done that deal with the issue of race. I'm asking you, approximately how many people do you know, or can you name, in your faculty category?
I can name people who I think really are serious about this—Bob Birgeneau, John Wynne. I think Constantine Simonides very strongly believed these things. I'm mentioning white males.

That's who I would like for you to mention.
Jerry Friedman is certainly very interested in such issues; Phil Morrison—people like that. There's Steve Crandall, who recruited Jim Williams. So I mean these people who are in the nucleus feel very strongly about it.

I think that, when you just try to name them as you've done there, you probably have left out several people. But I would say that you named fewer than ten people there. I would say that if you try hard you would do well if you could get twenty to thirty people on the faculty whom you know, out of a faculty of nearly a thousand.
Yes, you might be right. I don't know all the people who feel strongly about this, but if we really made an exhaustive list and got to know all these people, we could probably get the list up to between fifty and a hundred, I would say. But you would know better than I do, perhaps.

Well, all I can say is that I have observed the results. I mean, actions say more than anything else. When I look at you and I look at those people you named, their actions speak for themselves. I think coming up with fifty people in the Institute like that, you would probably be doing the best you can do, if I had to say people who are on the faculty who have done the same kinds of things as these people you are talking about. Why is it, from your viewpoint, that these people are who they are—and I'm talking to several of them because I'm trying to get a sense about it—and where do they come from? What makes them up?
Let me just say that in my own department there's also Ed Farhi, who believes deeply in these things. George Koster is a very caring person in this area. There are probably a few others. In each department there are some, though I think that in some ways physicists are particularly interested in this.

Why is that?

I don't know, exactly. Physicists are actually pretty practical-minded people, and trained in being fair and logical. Maybe it's for that reason; I don't really know. Ernie Moniz is another person who cares about these things. Each person is different. I don't know if there's a common thread. Ernie has a Portuguese-American background, so maybe he also identifies with the underdog. I don't know about the background of other people like, say, Jerry Friedman or Phil Morrison. I have no idea why they are so strong in this area.

I have some sense about it. I have found, for example, in this institution that there are more Jewish faculty members who stand up in this kind of arena than any other group of people.

That's interesting, yes. When I was naming the names, it didn't strike me. I wasn't thinking about Jewish people, but it's interesting, because it is true, I think, that despite the tensions which exist between some black groups and some Jewish groups, as a group Jews appreciate suffering particularly and are sensitive to trying to remedy it. First of all, they don't like to see others suffer; no group does. But also, in our heritage, there is a strong requirement to try to do righteous things in areas such as this, based on where we came from—not only in World War II, the concentration camps, but going back to the days of slavery. Jews are brought up to remember that they were once slaves. I don't know what the sociology of that was, and how such an experience could be so long-lasting, but I guess it persisted generation after generation and century after century as Jews were kept in ghettos and excluded from certain countries and certain professions. So it's sort of a collective memory which has become embedded in Jewish people.

That may be one reason why many, but certainly not all, of the people who are active in this area, are Jewish. People like Constantine or John Wynne certainly are wonderful examples of non-Jews who really care about these things, or Ernie Moniz or Bob Birgeneau, who I think is Catholic. Some Catholics also have very strong feelings from a religious point of view about this. Of course, there are other Catholics who think that the Jews killed Christ, and there are certain Jews who have crazy beliefs also. So you can't just sort of use religion itself as the only basis for this.

I agree, but let me just say this. When I look at the twenty-something years I've been here, there are three faculty members who stand out very much in my mind. There are others, I'm sure, if I thought about it. But there are three whom I consider as individuals who really have shown a commitment to not just talk but to be there when the chips are down—Steve Crandall, yourself, and Leon Trilling from Aero and Astro. Leon was the chairman of the Equal Opportunity Committee long before you became chairman, I think. He was one of the first. He should also, I think, be given credit for whatever has happened in his department relative to black faculty members. Wes Harris clearly was mentored by him, also those who came after him who were black. I mean, he has been a trouper just like yourself during his time as chairman of the committee.

But when I look at those three models, no matter where the chips were, they were there. When I look at the characteristics of these individuals, there is an element about the Jewish background, I do believe.

Crandall is Jewish?

No, I don't think he is.

Maybe he has a Jewish heart. Trilling, I have no idea.

He comes out of the same kind of background as yours, or very similar.

You mean he had a father who had died at an early age?

Well, it was something very similar to that—and growing up in a majority Jewish community and not rich or anything, but really working hard, very supportive, and being discriminated against at times. I don't know; all I'm saying is, there's something there.

Let me also say that it's interesting that I myself have experienced only a tiny amount of discrimination. However, my uncles and other relatives—the generation before me—always talked about how much discrimination they experienced. But the discrimination I've experienced has really been minor, so I have been blessed with not having a lot of that kind of experience.

I want you to quickly review the role that you have played over the years to increase the black presence at MIT.

I especially remember two black Ph.D. graduate students—Ron McNair and Bill Quivers, who is now the chairman of the physics department at Wellesley. Lots of black students have worked in our lab. Right now Marta Dark, a black woman, is working in our lab and will soon get her Ph.D.

I have also been active in minority activities in the MIT physics department, and chaired the Institute's Equal Opportunity Committee for a number of years. Not all of our projects there were focused on blacks. We were also interested in seeing how women were doing at MIT, and understanding the so-called "glass ceiling" in the administration. We were, of course, interested in minorities, the presence of black and Hispanic graduate students and faculty members as well. We also looked at the situation at Lincoln Labs. There were lots of projects that our committee worked on at that time.

One became a classic, though. Talk about that study that you did in a little bit more detail, because that still is used today.

Not being a labor economist, I probably didn't do a very scientific thing, but we invented a way of analyzing the Institute's complete employment profile. I forget what we called it. What we did was to consider the different administrative staff of the Institute, of which there were a couple thousand people, if I remember correctly.

That's right.

We considered white males, white females, and blacks and Hispanics, but there were very few Hispanics at the time. It was around 1975, I think. For each of these categories, we divided the group into three different layers—lower, middle, and upper—in terms of job stratification. In each case, we studied the flow of people into the system from both the sub-administrative ranks—the secretarial pool, for example—and also the flow of people from the outside coming in at every level, studying in time how they progressed, as well as their flow out the top and out the sides, so to speak. So we could compare the relative advancement of people in these three different groups.

In addition, we could study some widely held beliefs by senior-level people at the Institute. For example, "There's no turnover at the top" was something that has been said to me many times—"That's the reason why we don't have many women or minorities in the top ranks." Another statement was, "We grow our own, and since none of our own are minorities, we don't have any minorities at the top." We were able to see whether there was turnover at the top or not. With John Wynne's support—he was then our vice president for personnel—we obtained the raw data. That took a long time, since at that time MIT didn't have very good historical records about the people in the system. It took us many, many months to get all of the information and to put it into a formalism that could be worked with. But eventually we could study the turnover at the top and we could study the extent to which we grow our own.

It turned out that neither of those two sayings was true. In fact, there was a large amount of turnover at the top. If you looked over any reasonable period of time, the number of changes in the senior administration was quite large. And still, the number of women or blacks selected for those positions was very few. Similarly, it turned out that we don't really grow our own that much, at least in the study that we did. A very large number of people came from outside, and very few were promoted from the bottom and middle ranks into the highest rank.

That was the kind of study we did. I don't remember all the details, because it was twenty years ago. I and a lot of other people on our committee worked very hard on it, but in the end this study really was never presented to the administration in a very serious way. The reason why was interesting. Our study had in it one very "dangerous" piece of information, which had nothing to do with minorities or women. It was that over the ten-year period that we studied, the size of the administrative staff had gone up by a factor of between two and three. It had expanded way out of proportion to every other part of the Institute. This looked very bad for the administration—at least some people viewed it as looking bad, although there might have been justifiable reasons for why it occurred. I don't really know, to be honest with you, but I think that people felt that our study should be suppressed just because of this very damning piece of information which emerged from it. As it is, in our current efforts in reengineering, we are finally facing up to some issues that people who studied these statistics knew about in 1975.

What advice would you offer to blacks, from your experience, who might come here in the future as faculty members? Being a faculty member yourself for a long time, what advice would you offer a young black scholar coming into MIT?

I guess maybe Al Hill was right, in part—get to know everybody in your department, but do a lot

of teaching! But seriously speaking, my advice would be to find a mentor. That would be the most important thing. Having help getting through the system is incredibly important, and having someone who can give you guidance and act as your advocate and also give you advice about what you're doing wrong—very frank advice—is very important in a system such as ours. In some sense, it's not a naturally nurturing system at any level, and I would say that having a mentor is very important. So my advice would be try to find a mentor if one doesn't naturally emerge, or is not provided.

Are there any suggestions you would make to improve or enhance the experience of blacks who are here at the present time? I mean, to the departments where black faculty are moving up in the system?
I would say, again, be sure that minority individuals—undergraduates, graduate students, or faculty—don't fall through the cracks by inattention, or worse. Each department should give very special care to each of these people, because these people are really very talented and very rare and a very special group. I think that we've seen a number of examples where that hasn't happened, unfortunately, where people have just—through inattention—slipped through the cracks. That has made the situation much worse in a number of ways.

I've known you a long time and I have never seen you uncomfortable or unnatural around black folks. Do you have any sense about how people could be more like that? Do you understand my question?
I guess so, and I guess I really haven't the vaguest idea how to answer it, to be honest.

Well, that's you. I mean, I'm not surprised. Most Jewish people are like that. I mean, you take it for granted, but in general the majority of people are not like that.
I wouldn't even be aware of that, and I know that you would be. It's just too bad. I don't know how you teach a person or work with a person to get him to behave in a natural or comfortable way with people who are a little different.

See, I keep trying to wrestle with that because I'm still trying to find ways to explain it. I mean, how do people get that way? That's what I'm saying. I really don't understand it totally. I think I have some clues, but I keep trying to get individuals like you to share your opinions about how one becomes the way you are. It's just you. It's not anything that you're putting it on, it's just you.
I think there must be a sense of security in believing that the people you are relating to are not going to harm you in any way and that they're really not going to be different from you in any way, or that if they are different from you, they may be different from you in ways which are interesting and maybe even valuable. It's really hard to know. I wish I had some magical understanding of the situation, but I just don't.