

**INTERVIEW WITH  
GORDON KAUFMAN  
SLOAN ORAL HISTORY SERIES  
April 25, 2013**

G: Gordon Kaufman  
B: Bob McKersie  
R: George Roth

Additions by Gordon Kaufman during transcript review:

I have a few corrections to what I said: our alumnus Jim Sebert with whom I had lunch on Friday started a firm with one partner and \$3,000 to analyze large asset deals. Since then they have dominated the field and processed deals that total over one TRILLION (not one billion as I mentioned) dollars.

Also, I should modify my comments about limits to growth: a system of first order differential equations composed of underlying exponential functions can do three things (not two) over time: growth, decline and oscillate. Over time one system can combine oscillation and decline or oscillation and growth. The Limits to Growth folks picked parameter values that allowed short to medium term oscillation in parts of their system but inexorably led to bump up against growth limits. Many of our own macro- and micro-economists objected to their treatment of the data as a determinant of choice of parameter values. We can read all about it in the archives.

Best, Gordon

R: This is George Roth and Bob McKersie interviewing Gordon Kaufman for the Sloan Oral history interviews that we've been doing. I'll set a bit of context.

This effort started with Allan, and Bob, and Eli, with meetings over at the Harvard Faculty Club, just reminiscing. The recognition was there were a lot of important things in the history here which were going to be lost. So they started turning on a tape recorder and capturing that. That was probably 3-4 years ago. Since then it's become more formalized; probably in the last year or so. We've done 31 interviews with people.

Basically, what we're trying to do is capture people's memories in terms of being here; what it was like when they came; significant stories for what happened. More recently, we've added two things: one is to ask people to think about what they think have been some of their most significant contributions here; and two, what is contributing to the preeminence of the School. The latter has a lot to do with some of the material from these interviews may be used for the 100th anniversary of Course 15, which is coming up in 2015. There is an effort to capture and write about that, and reach out to alumni.

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*[GR introduces himself and bio]*

B: Before we get into asking you about when you came and the story of your arrival at Sloan, let's do a little more about this wonderful story you were going to tell about Andrew Gregg and "wisdom can't be told," – where did it happen?

G: Let me explain because it segues into discussing my personal history. Just an aside remark, in essence, what you are doing is inward-looking anthropology. That's what you're doing here, with this. It's going to be very interesting to read how you structure the presentation of this material, because there are many different strategic avenues that you could follow. One is, as they have done in mathematics, by the way, -- you should go back and look at that.

B: I'm familiar with that. Bill Pounds put us onto that, where they interviewed different faculty members, and the book is a series of interviews....

G: Very distinguished mathematicians, not everybody. I happen to know a few of them.

One direction is anecdotal. Another is cultural – thinking about the organizational structure, its affective mode, and how the individuals who are playing roles here inter-relate. And a third is to set this in a broader, historic, educational frame. So these are the lenses through which I will look back at what you are doing.

Let's go back to Bob's question: what went on at the negotiation session after you left. I mentioned that it was a bit like the old prisoner's joke, in maximum security: the prisoners, they say "123" and everybody laughs. And then somebody said "17". Well, that's not very funny.

The presentation was useful in a very different way because it was a video of people trying to distill teaching wisdom, to paraphrase it. The problem with that is, the metaphors to paraphrasing are really tangibly understandable only to people like us who have taught negotiation, for one or two or three decades. If Bob says something, or Debra Kolb, or Larry Susskind, we relate not only to our historic experiences with these individuals, but a shared

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common framework about negotiation. What was being said, the metaphors, had operational meaning to us because we could think about what they were saying, and think about our experience in the classroom. Distilling this wisdom in its raw form would be essentially not meaningless, but not operationally meaningful to a set of students who were just engaged in a course in negotiation. Until they had gone through the drill, and then it would only be differentially meaningful because their experience would be tailored to the particular teacher they had. There are many different facets and viewpoints of how to teach, and what to teach. Teaching business negotiations; cross-cultural negotiations; dispute mediation in the Middle East – all of these are vastly different settings, textures, etc. So come back to Andrew Gregg because wisdom can't be told. You can't just tell it; you have to experience it in order to get it.

The next step is to take these metaphors and ask "How?" I'm going to segue out of this a little bit because while Larry was doing this, you had these excellent videos, and he said, "This is marvelous because I have a young guy here, a student, who has helped me with the modern technology." It is so powerful and effective that you don't need big, massive computer backup or anything. You can just use cellphones, iPads, and almost do it real-time. I'm a Luddite, I don't understand that totally. However, it led me to a suggestion about negotiation that I'm doing something about negotiation – teaching, I should say. I'm going to write an email to Mike Wheeler and to Larry Susskind suggesting that we think about putting together a short course on how to use technology to teach a course in negotiation, and that we engage students from around the Institute to do this, and use them as a foil to develop this new technology. We will learn something about how to teach negotiation using these new tools. I haven't fully formulated the concept, but I'm going to send the email out, and I'll send a copy to you, Bob, in the next few days.

B: That's great, and offline I want to talk some more with you about that. But I think we should plunge ahead with this.

G: Well, because wisdom can't be told – I'm an old MBA-er from HBS. I went to HBS in 1955.... Essentially, my brother got out of Army and actually was going to go to MIT. Sorry, he was in the Navy, and he was about to be shipped overseas, when the war ended. He had been admitted to MIT and he came to MIT and they said "Sorry, we can't take you, we have too

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many students. You might go down the river and try Harvard.” Well Harvard was full, so he took the train to New Haven and that’s how he went to Yale. So I went to Yale too.

Then I went to HBS to get a Masters degree, planning to go back and work in my family business, about which, parenthetically, I’ve written a case in negotiations “Called Nelson Contracting. It’s a very small but focused case. I was intending to work in engineering, maybe on the coast.

This is true. I was walking off the campus to get into an old DeSoto to drive back to Muskegon, Michigan, dump the car off and go into the Army because I had to do military service. As I was walking off the campus, I ran into Abe Zaleznik. I had taken a course with him and Fritz Roethlisberger, you knew both of them, right? Abe said to me, “Gordon, what are you doing?”

I said, “Well, I’m going to go off into the Army, and then I’m going to work in my family firm.”

B: You had completed your MBA?

G: I had completed the MBA. Abe said, “Have you ever thought about doctoral work?”

B: So this would have been like June 1956, then?

G: 1957. I said, “No, I never thought about it.”

He said, “While you’re in the Army, think about it, and if you’re interested, come back and see me.”

I thought about it and it was really interesting. They had some interest in me so I thought I’d do it. So I was on leave from the Army, and I came back to Boston and I visited Abe and said, “I’m getting out in two months.”

He said, “Terrific! We’ll see if we can get you into the doctoral program.”

I presumed that he meant the doctoral program in Organizational Behavior. But he said, “No, Gordon, you’d be lousy at this. There’s a fellow named Bob Schleicher, whose

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assistant has just left to take a position as assistant professor at Dartmouth, and you should go to work for him.”

B: Was that Art Schleifert?

G: Art Schleiper had left to go to Dartmouth, and Bob Schleicher...

B: It was Art...

G: Yes, it was Art, my old buddy, 45 years. I came back and went to work instantaneously for Bob Schleicher. He was about to give a final exam in his new version of Statistics for Business Decisions. He gave me a 480-page book and said, “Gordon, I want you to write the final exam.” I had just walked in the door! I understood what a standard deviation was, but not much more, and I nearly got ulcers.

Bob was a self-taught genius who had got a Ph.D. in Classics and wrote his thesis on the economic history of the Greek city-states, and he gone to Penn State, come back to Harvard during WWII. He was so damn smart, he was working at the Underwater Laboratory and he was making advances in understanding turbulence issues that were causing torpedoes to go astray. He was hired to work on a project at HBS.

As I said, he’s a really smart guy, so he comes into a guy named Brown’s class in statistics, Classic Statistics, and said, “We’re in a business school, this is all wrong, it’s got nothing to do with making business decisions. I’ve got to re-think the whole edifice.” And Bob did. He wrote a classic text called *Probability of Statistics for Business Decisions*, which was the first segue into modern decision analysis, which became my specialty, by someone assigned from the geniuses at Chicago, like Leonard Jimmie Savage who had axiomitized the whole thing. And Blackwell, and others. This was a revolution in thinking about how to interface decision making and uncertainty for practical purposes.

Bob was self-taught in this. Bruno de Finetti, who was one of the last century’s great abstract probabilists, in his *Introduction to the Theory of Probability*, a two-volume series, he gives credit to a few people for inspiring his thinking. One was Leonard Jimmie Savage, who

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was a real genius; and another was Bob Schleicher, for his hugely insightful translation of modern statistics.

This is where I was trained. Bob was an impossible person. He was a real son of a bitch. I loved the guy, he was absolutely intellectually rigorous and ethical, but he was tough. In his whole career at Harvard, he had at most 2, maybe 3, Ph.D. candidates because nobody could work with him. I wrote my thesis with – although I worked with Bob – with Howard Raiffa, who is another of the founders of modern decision analysis. He retired as the Frank Plumpton Ramsey Professor of Managerial Economics [laughing] at Harvard. That’s an allusion. Frank Ramsey was a young, 20-something, who did some brilliant work in England in between the wars but he died very young.

Howard was as different as night and day from Bob. Students absolutely adored Howard. He was the Abou Ben Adam of advisors. You know that childhood poem, “Abou Ben Adam, may his tribe increase, awoke one night from a deep dream of peace...” Look it up, and look at the final lines, and you’ll understand the allusion.

I went to work for Howard. It happened that there was a guy named Jack Grayson I shared an office with, who was quite a character. He’d been an intelligence lieutenant in the US Navy on aircraft carriers down in the bowels of the ship, he said, looking at radar images. And he said if the ship went down, he went down with it, there was no way to get out. He came from a Louisiana cotton farming family....

B: Ft. Necessity, Louisiana...

G: Gosh! Good for you! How do you know that?

B: We’ll talk offline. Go ahead.

G: OK. Jack got out, he became a CPA, then decided to join the FBI. He was my office mate. That career didn’t last so long. Turns out he was out in the Midwest, on auto theft detail, and the first day on duty, while he and his partner were getting a hamburger, somebody stole their FBI car! [laughter] So ended up at HBS and I’m sharing an office with him....

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B: We better get back to you. We don't need a lot about Jack Grayson.

G: I love telling these stories, but OK, I'll go back to me. He influenced me enormously, because he was working on oil and gas exploration projects. He was building a very elaborate version of the Gusher Game. Howard was trying to direct me toward a practical application, so that is how I got involved in the oil and gas business and wrote my thesis on the application of statistical decision theory to oil and gas exploration.

I completed my degree, and after a year at Harvard as an assistant professor, Sloan was being rejuvenated. We had just gotten a new dean named Howard Johnson, and I – let me segue aside. I presume somebody has told the story of the whole Eli Shapiro and Howard Johnson and Alfred Sloan.

G: Not with Alfred Sloan....

B: We have Eli Shapiro's, but that period of time there aren't many people alive today who can help us understand. That's why this is so important.

G: Well, I remember. I'm giving you a window from a young assistant professor who is coming into this picture, and it's only later I learned that the two chief candidates were Howard Johnson and Eli Shapiro to be the dean after Penn Brooks, who had gone to Sears as a vice president, is that right?

B: That's correct.

G: Alfred Sloan had a heavy thumb on the scales and he chose Howard. In retrospect, it was a wise decision. I happen to be a Jew, and I wonder if the fact that Eli Shapiro was a Jew played a role here. I don't know. But coming from the time that I did, and knowing the culture of that time, and having been told in college, "Well, you may get into Yale because you have great grades [I went to Culver Military Academy], but there's a quota on Jews at Yale," that kind of stuff. And the whole Paul Samuelson stuff at Harvard, and Norbert Weiner stuff at Harvard.

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There were a lot of anti-Semites around at the time. Fortunately, they weren't here. So that was something in the back of my mind.

Howard was an inspired choice, it turns out, because of the way the School evolved, and the great trials and tribulations he faced. I will give you some anecdotes that don't appear in his book, later.

B: What year?

G: 1963.

B: That you joined the faculty.

G: David Durand interviewed me, and they offered me a job. I came down, and I'm thrilled to be at MIT. I was assigned an office in the old Psycho Physics Lab in the basement of E52. There were still wires and stuff running through the ceiling. I had my own office, and I had two wonderful teaching assistants. Charlie Krebolt and Randy Robinson, Ph.D. students, who were helping me. Of course, we were not interrupted in our work in the office because anybody who wanted to see John Little had to walk through my office to get to John's office [laughing]. It was in the corner. Charlie went on to work in Operations Management and get a Ph.D. there. Randy got a Ph.D. with me.

I was assigned to teach the basic core Sloan mathematics course, what we called management science, which was really mathematics. Much of this had emerged from a brilliant effort that had been led by Howard Raiffa at Harvard under a very extensive, expensive Ford Foundation grant that enabled him (the 2-3 years while I was ending my graduate work and while I was an assistant professor) to bring 40 or 50 professors of business administration from around the country to reside for a whole year at Harvard and learn management science – statistics, operations research with Alan Spivey, and with Willie Fellers's teaching assistant who was a professor of mathematics at Oberlin, who was a brilliant teacher. I'm looking right at him, I should remember his name. Sam Goldberg! And he brought in Alan Spivey from Univ. of Michigan, and from Stanford we had Bob Jenicki, who later became dean of Stanford Business School. Bob Jenicki was a student, and there was a whole bunch of people from all over.



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B: Jenicki's field was accounting.

G: His field was accounting. So you had Bob Jenicki and a whole bunch of other distinguished professors coming in. Some from Harvard; there was nobody from MIT that I was aware of. But this formed the core of material, or basis, on which I was able to create a core "Mathematics for Business Decisions" course, which I taught 4 times a week, for 2 hours, including Saturday morning. I would teach from 8:10am until 9:45, then a break, and then teach until noon. That was 4 times a week. All of the MBA students had to go through that course. That was an intensive course in what today would be called Analytics.

B: So who else was there? Was John Little teaching in the same area? Who were your colleagues?

G: Good, good. Yes. John was teaching mathematical programming, because he was making some very fundamental contributions – the queuing theory, the branch and bow method which John created with one of his colleagues.

There was a guy named Marty Greenberger, who later went on I think to Rochester.

Who were my colleagues? Oh! Yes. Clarkson was a colleague. What was his first name? He was a real buccaneer. He was trying to teach something in the domain of what constituted modern artificial intelligence.

There were wonderful people like Elting Morison. And who was the guy who was always writing the great American novel? I don't know if you were there then.

B: No, I wasn't.

G: So let me back up for a minute. I'm being too tunnel-like. When I came to MIT, the Sloan School was VERY different from what it is today. There were no functional areas, siloes, that had formed and become rigid as we have today. One could talk with and interact with everybody because the faculty was small.

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B: And you were all in the one building, right?

G: Yes. We were all in the Sloan building. We could hold a faculty meeting in the dean's E52 office with everybody in the same room. It was kind of crowded, but everybody could get in there.

Peter Gill was there. And Carroll Wilson. At that time, it was "let a thousand flowers bloom." It hadn't settled down, everybody was experimenting. It was just a wonderful time for interaction and learning. Carroll ran this foreign studies program where students went abroad and did wonderful thing in Africa and Latin America and Mongolia, and all over the world, which changed lives. I hope you have a lot of information on Carroll Wilson. He was very very influential with a substantial cadre of our students.

B: I don't think we have a lot. Alan White is writing this. The 100th anniversary is going to have a volume, and there's going to be a chapter in it on the international outreach of the School. Alan White is drafting it, and Carroll Wilson – I know Alan wants to get as much fleshed out as possible. We did talk to Don Lessard. Dick Robinson might have been able to help, but he's not alive.

G: Yes, Dick would have been... I was very impressed with what Carroll did. The texture of what he did was totally different from what I or my colleagues were doing in mathematical programming and statistics. But we had great respect for that kind of thing and we could all exchange ideas and appreciate what was taking place at an experiential level that is very different from today. It's too variegated, complex, and siloed for me to understand everything that's going on in Organizational Behavior or Marketing. It was a very different, much more informal, relaxed, fluid environment that Howard presided over benignly.

Howard was not a dictator. He understood where the locus of power lay, and that's with the senior faculty, and he managed the senior faculty with great effectiveness. His ability as an administrator really blossomed as time went on, and he was recognized for this, and this is one of the primary reasons he was chosen to be president. This leads me to another interesting anecdote.

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I'm in my fourth year as Asst. Prof, a young guy, and we're living in a tiny little apartment, about the size of this room, in Cambridge, with our first child. I'm driving back to Muskegon, Michigan with an old DeSoto. I'm dropping that car off, and my dad had beneficently given me another car to drive back. I had a break in teaching, can't remember what it was. I called Lorna from the road, and she said, "Albert Hondo [who was in Economics here for many years before he went to the U/Penn] told me that somebody you know very well has been appointed president of MIT."

I said, "Who would I know?" I'm an Asst. Prof, how would I know?

She said, "Howard Johnson." My jaw dropped. Why? Here's the story. Howard has a philosophy of 7 years of renewal. After 7 years, you should go on and do something else. After 7 years, he announced that he was leaving MIT. He had met Ozzie Lazares. Lazares' were a Jewish family in Cleveland or Columbus, very wealthy...

B: Yes, that's where Federated Department Stores are headquartered.

G: Right. Howard had been on the board, I guess, and they offered him a job as senior vice president for international development at Federated, and he accepted it. He bought a house.... [to Bob] Were you on the faculty at the time?

B: No, no, I just know the story. It has a lot of legs around here.

G: Well, in the meantime, he announced he was leaving. So the faculty got together and had this big dinner in the Faculty Club. We bought a Revere bowl for him from Shreve, Crump & Low, and handed it to him at this affair, and said, "We love you, Howard. We're sorry to see you going."

Don Marquis played the clarinet (badly); I played the piano (worse), and Stan Jacks played the bass. The three of us got together in the Faculty Club to play for Howard, just to have a faculty thing going. We had this big party for him, and he said, "thank you so much." And all the time, he knew he was going to be president. But it hadn't been announced, so he couldn't say anything about it.

So you have this story?

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B: Yes.

G: Not the part that he knew.

B: No, but that he had also bought a house in Ohio. But before he had been asked, he had cemented everything for the move. He'd bought a house and everything.

G: But when we gave the party, he knew he was going to be president but he couldn't say anything. I'll segue to another Howard story.

Turns out that Howard and Betty bought a house up in Harpswell, Maine, a beautiful place down on the water. My wife is from Brunswick. We have a place on the water in Casco Bay as well, and it's due to Howard and Betty. We'd been looking for years and hadn't found anything suitable. And Betty called up Lorna one day and said, "The Chillingsworth property is for sale. Mrs. Chillingsworth died last night."

Well, this is a small town, so you can imagine. So Betty calls Lorna, and after much negotiation we have a gorgeous place up there, and it's really due to them. And we're very lucky.

So we used to get together for dinner. Howard would always go out and wear his WWII bomber jacket because he was a pilot, or gunner, or something in WWII. I can't remember which. I would often say, "Howard, the way you managed the SDS uprising at MIT was an absolute stroke of administrative genius." Jerry Weisner was ready to pullout machine guns and if not with real guns, then with his pipe, hit them over the head with his pipe. They occupied his offices, and Jerry was screaming and yelling, "Get those goddamn students out of there."

And Howard said quietly, "Weeeelllll, just leave them alone." So a day passes, and the students see everybody is making a big deal, they are occupying the President's office!!

And Howard said – Jerry with smoke coming out his ears – "ahhhh, just leave them alone, they will get tired." Sure enough, they did, and they left. He defused a potentially enormous – imagine if he'd had Campus Police come charging in and arrest them, it would have been a national scene.

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B: Which other universities did at the time.

G: Yes, absolutely.

B: Yes. I was at Chicago when they arrested a whole gang in President Levy's office.

R: And they got the attention they wanted.

G: Absolutely. But Howard didn't do that. He said, "Gordon, they went in and made a mess out of my office. They rifled all the files. But I didn't care. One thing really bothered me."

"What was that, Howard?"

"They smoked my Havana cigars!!" [laughing]

R: That was hitting close to home, wasn't it?

G: Yes. I still smoke Cuban Rojoba Robustos, which Castro used to smoke. I smuggled them in from Switzerland in a box that says Chez Roberno cigars, from Honduras. They have no rings on them. Two weeks later they mailed me an envelope from somewhere in France with the rings on them. I couldn't really tell, but they are real Cuban cigars. And I'm delighted to smoke them, and I'm delighted that Castro can't smoke them any more.

Anyway that's my cigar story.

*[food break ...]*

G: Should I keep talking? Elting Morison and Don Marquis were two of the preeminent senior professors at the time, and Elting was a mesmerizing lecturer and speaker. A historian of American technology, who wrote what I consider one of the most accessible, brilliant accounts of how the US acquired the technology it did to develop, in the late 1700s/early

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1800s, in a book called *From Nowhere to Knowhow*. He also wrote a brilliant piece, 3 essays that I think have been published, which everybody who aspires to become a college teacher ought to read. It's called "The Muse and I," which is well worth reading.

B: I should get these 2 books, by Elting.

G: He was an influential contributor to our early curriculum. Don Marquis came to us from the Univ. of Michigan. He was a research psychologist. He had been head of the Psychology Dept. at U/M, and came here. He was an inspirational researcher. In particular, few people will know or have remembered this....

B: We did get some pretty good coverage on part of this from Ed Roberts on Don Marquis and the NASA or Navy project? He brought in some major funds that made it possible to get some important research going.

G: Well, I'm going to talk about something different that Ed may or may not know. That is, he tried to get an initiative going to study uncertainty from a behavioral perspective by getting up a contract with one of the Las Vegas or Reno casinos. This would have been a precursor – this was before Tversky and Kahneman – it was all about how do people actually calculate odds, think and act on uncertainty. He talked to me about it and I said, "Gee, it seems like an interesting idea, but a casino?" At that time, casinos and the mob and all that negative connotation were tied together. It never came to fruition. But he would have been one of the early researchers in behavioral decision theory had that been carried through. But it never happened.

B; That project never took place?

G: No, never took place.

B: But, going to the small size of the faculty, you were able to interact with Don in discussions about this.

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G: Yes. There's another interaction, or dimension, that was present at that time but no longer exists, at least to the same degree. That was centered around the MIT Faculty Club. In those days, in the 1960s and 1970s, the Faculty Club was the center, a nexus, for meetings because there were big round tables in the Faculty Club. They served you off the menu, and you went and sat around the round tables. The economists – Paul Samuelson, Bob Solow, Morey Adelman, Bob Bishop, Frank Fischer – had their own table, and you only went to that one if you were invited. But in the main, you could sit with anybody. I can remember, it was so interesting, sitting down with Hans Molo Christianson, who was a leading expert on helicopter mechanics and design.

Norbert Weiner used to hold forth at one of the round tables in the center of the room. He would sit down and try to converse in whatever language he thought you spoke. I was up there with an Italian mathematician who was a real crazy character named Leonardo Lombardi. He had an office down in the Psycho Physics lab area, in which his file cabinets were filed with gym and camping equipment. He didn't have any papers in there, but he had a chinning bar in his office. He was quite a character. So we were sitting down, and he's got an obvious Italian accent. So Norbert Weiner starts talking to him in Italian, and they are chatting in Italian. Afterwards, he said, "Norbert starting talking to me in a southern dialect, and then switched to a northern dialect. It was quite impressive. But his Chinese is terrible." So everybody would love to hear Norbert hold forth – until the end of the meal. At the end, he would sit back—most of us wore a jacket or coat in those days – reach in his tweed jacket (it was always tweed) and pull out a pile of dark black Italian stogies, cigars. He would light up this cigar, and people around him would disappear like snow melting in the sun! [laughing]

But that was a mechanism for creating interactions among people from all over the campus, together, which doesn't exist today. There is Stockham, but it's not really the same.

B: There was a table where Sloan people gravitated, but as you are saying, you could gravitate to other tables.

G: That's right. Well, you were here when that....

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B: Yes, in 1980.

G: The thing that kept it afloat, from a benefit perspective, was that at 4:00 or 4:30 the bar opened, so you had a whole bunch of people who were drinkers who would gravitate up to the bar to have 1, 2, 3, 4 drinks before driving home. Not a terribly healthy phenomenon, but... Once they reorganized and shut down the bar, it became very expensive to keep it going and the administration shut it down.

B: Speaking about connections with the rest of the campus, let me ask a question about statistics or whatever word is appropriate. We don't have a Statistics Dept at MIT, some universities do have a way to bring all the statistics people together, at least into a field or a department. You mentioned earlier being familiar with the Mathematics Dept and their celebration of their history. How have you made your way around MIT in terms of colleagues elsewhere who you are interested in, or were interested in your work?

G: Interesting question, because in the early days I had close interactions with a mathematician who was here named Etan Baruch, an Israeli mathematician, who was an assistant professor. We started writing a number of papers together. There was a bloodbath of letting young people go in Mathematics. I can't pinpoint the exact year, but it's got to be in the late 1970s, speared by Shism over there in Applied Mathematics, and people like Harvey Greenspan. Etan was going to up for associate professor in a year, and he was worried. Then he was offered (as an assistant professor), a full professorship at Clarkson University in upstate New York, and he took it.

My professional interactions with folks in other departments kind of eroded. As I think back, aside from those early papers, I don't think I have written a single paper with an MIT colleague, out of 60 or 70 papers. Mostly working with people in my particular domain either didn't resonate or didn't have much interest from the perspective of others.

B: Who had been your co- in writing papers? Are they both within the Sloan School, or elsewhere?



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G: No, elsewhere. Jim Kress, who was at Chicago; and Ben King. I wrote a couple of papers with Al Bernando in Economics. Then much of my work in the oil and gas exploration and discovery is with people who were not fully... they're either in mathematical geology or economic geology at the University of Alberta, University of Delaware. The monetary analysis stuff that I've done was with Jim Kress.

Did you know Jim?

B: Only by name.

R: You mentioned, when you were talking about Don Marquis, mentioned Jay Forrester, but you went off in a different direction.

G: Yes. But I'm sure you have the whole story of the....

R: We've interviewed Jay a couple times,

G: So you have the whole story of the *Limits to Growth* dispute.

B: Yes, but what's your perspective on it? We know what the project is, and some of the controversy around it, but I'd be interested in your view.

G: All right. It's both very simple and very complex. Dennis Meadows and Jay came out with a then rather startling assertion that without major innovation and restructuring to society there would be severe limits to growth of economies induced by finite limits of the natural earth resources that we all depend on for survival and sustenance. System dynamics, at its root, is a dynamical system, a set of linked differential equations, most of first order. A system of first order differential equations composed of underlying exponential functions can do three things (not two) over time: growth, decline and oscillate. Over time one system can combine oscillation and decline or oscillation and growth. The Limits to Growth folks picked parameter values that allowed short to medium term oscillation in parts of their system but

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inexorably led to bump up against growth limits. Many of our own macro- and micro-economists objected to their treatment of the data as a determinant of choice of parameter values.

The economists were incensed because they did not consider the empirical foundations on which parameters of these equations were determined to be sound. In other words, they hadn't done the right kind of data analysis, the right kind of econometrics. They also questioned the structure of the underlying model. In the end, however, my very simplistic view is that you had a dynamical system that is based principally on exponential functions, a function that over time behaved like exponential functions. They either decay or they grow, okay? And depending on how you mix and match them, you are either certain to get decay or certain to get exponentially explosive growth. The idea of partial equilibrium, or long-term general equilibrium can occur in such systems only under very, very special conditions. So you can question: is this the right way to go about modeling this phenomenon? I don't know the answer to that. I'm not a system dynamicist. But I do know that great attention to detail is both useful and necessary in order to answer that question. I'm a naïve observer on this. I look at it from the point of view from somebody who is used to thinking about modeling and structure, etc. John Sterman is a very smart guy, and he will have a much more structured answer to those questions than I can possibly give you. But that's my view.

B: But with your general appreciation of quantitative analysis, and also your work in oil and gas, were you ever sought out by Forrester or Meadows? Did they want you to read a draft or something?

G: No. No. But in a way, that's MIT typical. Let me give you a few stories. I think you should verify with Bob Merton: Story #1. Bob and Myron were on a committee or panel looking in MIT finances, and how they were managed. Bob Merton and Myron Scholes in Finance. This is my recollection; check it out with Bob. They went back and thought out it, made a recommendation that MIT should use stock in its endowment portfolio, or should loan it out as collateral on Wall Street. Very safe. It's done frequently. Bob can explain better the details of it. But the idea was to loan out what MIT loaned for short-term collateral to companies that needed

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coverage in borrowing and in loans, and charge a fee for it, which would bring in a substantial amount of money. Immediately rejected by the Treasurer's Office. Can't do that.

That's just a tiny vignette of the administration/faculty interface on issues of policy, strategy, tactics. Time and again, the administration will undertake some activity that could exploit – to great effect – its own people, its own faculty, great expertise in some areas. And they don't do it. The latest example, of course, is this Kendall Square development, Matimco, where after the fact now, there is a lot of stuff going on, a lot of yelling and screaming and noise in the faculty newsletter and elsewhere. So here is a stakeholder dynamic that would constitute an interesting research project for somebody in organizational behavior: why does this happen, over and over again?? We can hypothesize, but there's an interesting research project for somebody in negotiations organizational behavior. So that's somewhat off the focus.

Where are we on the timeline now?

R: I have another question. You mentioned that your office was in the Psychophysics Lab in the basement. And I am curious if Alex Bavalas was still there? And in particular, one of the things I was interested in is a story that I've heard from Ed Schein, but I don't think anyone else has said anything. That Gordon Moore, who ran that lab and had both Deming and Durand here, in the lab. The statistician who had such an impact, and you might have known him as a mathematician.

G: I've never met him, didn't know him.

R: But some of their insights into the behavioral pieces they taught workers, in addition to the statistics for their methods that were used in manufacturing in Japan, came from some of the insights in that lab.

G: I remember Gordon. He was a cigar-smoker. We all smoked cigars in those days. I know Hawkes and I smoked cigars. Don Marquis was a heavy cigarette smoker.

In Jules Verne's *The Island of Dr. Moreau*... Did Jules Verne write that? It's about a young couple who are shipwrecked, they end up on this deserted island way out in the

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Pacific, and there is this doctor who has enlisted a whole tribe, mesmerizing the tribe into assisting him in operating on animals and trying to transport them into humans. The key saying by Dr. Moreau is: "It's amazing how the flesh reasserts itself."

We can bring that to bear in thinking about what happens in terms of organizational dynamics in a place like MIT, over the years. How you not only get behavioral repeats but in some cases substantive topical repeats. A good example – and it stems from your discussion of Deming – is the idea of big data. All the rage now is how organizations and researchers can use big data to help them understand better how to manage people effectively. There is talk of being able to analyze every keystroke on a computer, every Twitter message. Let me ask Bob: If we revert to pre-Hawthorne experiments of organizational behavior on the factory workflow, who do we think of?

B: Before Roethlisberger and Dixon?

G: Yeah, Taylor, Frederick Taylor. And what do you do there? You measure every movement, tiny little fractions of movement. Time and motion studies. It's amazing how the flesh reasserts itself.

B: That's a great example of a 360-degree turn.

G: Anyway, that's off the topic.

B: Well, George was taking you from the basement of E52. Another way to have you talk about your career – you've been at Sloan/MIT since 1963. But maybe you've had a year or two away here and there? To try to understand your career, and also a point George mentioned, about having you also talk about things that you're proud of that you've done, whether it's in the classroom, or it's the many articles you've written.

G: I think the articles are irrelevant. Well, not irrelevant, but if you asked me what has really counted in my career, it's not what society you're a fellow of, or how many papers you've written; it's students. Have you been able to help students understand how to be better

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human beings and better managers? I'm having lunch tomorrow with a student, Jim Sebert, who lives in Santa Barbara. He said he wanted to get in touch with me because he's built up quite a real estate empire. He started a firm with one partner and \$3,000 to analyze large asset deals, and since then, they have dominated the field and processed deals. He told me he has bought and sold over a trillion dollars worth of real estate. He said many of the ideas he got in the classroom were extremely helpful to him over the course of his career. If you think of what Paul Samuelson said in his American Economic Association Presidential speech, "as a final analysis, we work for our own applause." But we have to define what that applause is. For me, it's getting students to come back and tell me stories like that. That's the real world.

B: Now, did you take sabbaticals?

G: Yes, I did.

B: Just tell us some of your interests along the way.

G: I was working on Bayesian econometrics. In the early days of that field, I took a leave for 6 months to go and work with Jacques Drez at the Catholic University of Luvan. It was a wonderful experience. We lived in an old mansion, a huge townhouse that had been owned by the chairman of the Stella Artois brewery, because Jacques Drez's cousin's father was this guy, and he had just died. They were both dead, and they needed somebody to stay in this magnificent house filled with all these antiques. I think our rent was \$90/month, or something. It was perfect, a young couple with no children who might knock over these enormous, valuable Ming Empire vases. The dining room had crystal settings with 5 different size wine glasses for 70 people! It came with a maid, Katrine. In his will, he said "Katrine gets to live in this house until she dies," which was kind of a problem for the son who didn't know what to do with the house. We were the perfect couple, and we had a wonderful time there, as a young married couple, in Belgium, traveling around.

Jacques Drez was a great guy to work with. He was a very eminent microeconomist, econometrician, who was really Bayesian at heart, which was where I was coming from. I continued that line of work for some time.

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B: I should just add that Jacques Drez came to Chicago while I was there, because the Chicago business school had, in the very early day, a partnership program where students could go for a semester to Luvan. They also had one into LSE. They had these two programs into Europe for students to get international exposure. It was a kind of partnership between the business school at Chicago and Jacques Drez came back and forth.

G: Yes. It was the Center for Operations Research and Econometrics. One cute little vignette. Two. There was a German mathematical programmer there who was all excited, he was going down to someplace with a condo to teach mathematical programming. He went there for two weeks and he came back and we said, "How was it?"

He said, "It was surreal. In the classroom, the temperature was always about 105° or 106°, and I never knew until one of my last lectures, that students could sit through a whole lecture and be asleep with their eyes open!" He said he tested it out. There was one guy looking at him with a kind of glassy stare, and... Then there was another guy who was Dutch or something who was doing an econometrics study on southern Italy. And he was all excited because he was going down there. He came back a month later and he was quite glum. I said, "Cesare, how did it go?"

He said, "Not well."

"Why?"

"The economy of southern Italy does not exist!" From an econometrician's point of view, the economy of southern Italy didn't exist.

But it was a wonderful experience living there. I taught a course in statistical decision theory, graduate students. It was 3 hours on Monday, and then there was homework for the students. We had a break about 1.5 hours into the class. When the break came, it was like Moses parting the waters of the Dead Sea. The Flemish would go off in this direction to their coffeehouse, while the Walloons/French would go to their coffeehouse, and never the twain shall meet. Which was very sad....

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B: We should tell Gordon about what happens next. One thing that should go on the record is when you started teaching negotiations, because that was an important part of your classroom career here.

G: Oh, we didn't get to that.

R: So you started teaching negotiations.

B: What year was it you started?

G: I don't remember. I'll have to go look this up.

R: We'll send you the transcript and you can fill it in.

G: OK. It's been at least twenty years. My mentor, Howard Raiffa, who is 92 or 93 and still alive. We visited him a few months ago, in Arizona. He has retired there. He moved from abstract game theory, to creation of decision analysis and statistical decision theory, to an attempt to introduce analytics into negotiation which culminated in a book named *The Art and Science of Negotiation*. He's written a few other things since then. I thought this was very interesting, from my perspective, because it offered an opportunity to intersect some elementary game theory, decision analysis, and very elementary mathematical programming into an operational topic: how to negotiate, focused on business. Talking about mediation, and cultural disputes, politics. We're in a business school, focused on business. So this prompted me to create this course called "Competitive Decision Making in Negotiations," which in its early incarnation had a heavy emphasis on game theory, decision analysis, auctions, paired vision coupled with single issue and integrative multiple-issue negotiating environments. It was relatively popular, and kept its reasonable popularity as the years went by.

Gradually, as this course evolved, I discovered that the real positive thrust of the course came through the students' experience of getting controlled feedback on the results of a negotiation immediately after the negotiation, one classroom after. So I began to structure the course more and more toward scorable, simulated negotiations in which you and I would

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negotiate today on the Street Streaker, or some more complicated – Welsh Water, or some four-part negotiation, in which each individual would be assigned a role, and the information for that role was the same for everybody playing that role, it was uniform. We would negotiate; the results would be fed into what is now the Stellar system; downloaded into Excel format; analyzed using the techniques I was talking about that Howard had developed with some minor refinements but essentially his ideas. Then at the beginning of the next class, have a feedback discussion with the results of the negotiation shown. In particular, it was possible in most of these scorable cases to present an efficient frontier and to show exactly where each pair fell on the efficient frontier. And then have a discussion. The learning really took place in the discussion. You can read the material, and try things out....

R: Right, you know what you could have done, what you did, and why you didn't...

G: Right, but it was this idea of quick controlled feedback. So I did that for years. And at the very end, 2010, 2011, I said, "You know, I'm missing a great opportunity. This is a wonderful experimental laboratory for doing research." I began to research on negotiation trajectories, and have a lot of recorded material. But I never got closure on that because when my 5-year period of half-time for teaching this course, at the end nobody in the organizational behavior and negotiation area wanted to pick this stuff up and continue with it. Unfortunately that experimental vehicle just disappeared. I haven't yet gotten around to writing up the stuff on negotiation trajectories because I've been too busy working on the MIT natural gas project and a lot of time I was doing work for the US Geological Survey on the US's endowment on natural gas hydrates in coastal areas of the US, Alaska, the Gulf of Mexico. I've been engaged in a number of other projects mostly related to the earth sciences, modeling etc., which is somewhat orthogonal to all of this. Hopefully someday I will get around to closure on that.

But it's been a great learning experience for me to teach a course like this, which you do not teach the students; they teach themselves. I've had many fascinating teaching moments. This is one of the reasons why I wish that many of those courses had been videotaped. Of course, in negotiations of all kinds, trust looms large. And when trust is missing, you get all of the usual negative dynamics that typically emerge in political debate and private organizations when people are playing "Game of Thrones" and not thinking about the greater good.



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I had an episode where I had one woman from Taiwan, and another woman was in the Sloan Fellows program from Brazil. They were engaged in a debrief. In the debrief, it's all laid out what your position is, and what my position is. Before there is confidential information for each side, otherwise all you'd have to do is compute the efficient frontier and say "Where do we go there?" Not quite that easy, but.... The woman from Brazil discovered that the Taiwanese woman had strategically misrepresented – or thought she had – and she exploded.

R: With that Latin temper...

G: With that Latin temper. Perfect teaching moment. I retreat into the chalkboard and this went on for 20 minutes. Dead silence. Then a big discussion ensued after that. Whatever relevance or irrelevance with other issues and with what other people did went by the wayside but with very good effect because you get, in the dynamics of teaching in this fashion, these kinds of moments, and students really learn from that.

R: Right, they crave that experience and have them debrief it.

G: I'm going to ask this fellow, Jim Seberg – I can't imagine what I could have taught that he was going to be so successful with. But it's very gracious of him to say that I had influence, and I want to find out what it was. I'm curious. It's those kind of things that make teaching resonate, that you feel that you're contributing. The research, the papers, that's all fine and that's fun, and it's important.

R: Let me ask you one last question, which we've asked people to think about: In the period you've been here, Sloan as a business school has become quite preeminent. What are your thoughts about what has contributed to that, and what's helped propel Sloan? What do you think is important about that?

G: First of all, I think.... well, I talked about functional siloes. One of the wonderful features at MIT is that all its barriers are permeable if you really want to cross them. You can

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interact with people here at Sloan or elsewhere. We don't tend to do that as much as we did in the past, but it's still there. I think that's one of our great strengths.

We have the freedom, and the control, to be innovative, and to experiment and try new things. Much of what you might call "preeminence," I would attribute to chance, but chance in a very particular way: you have a personnel process that tends to hire individuals who are creative, independent thinkers. When you have those kind of people around, you can't predict them. On occasions, there will be explosions of creativity, and new ideas – programmatic ideas, teaching ideas that move the whole field ahead.

A good example of that is the whole entrepreneurship area, which now is a stellar example of how MIT has come to preeminence. You have a small group of people, like Ed Roberts and others who have a very active dynamic in promoting a new type of functional area that turns out to be very attractive, very much in the American entrepreneurial spirit. That resonates with a very large audience.

There are always phases and fads in academia. When I came aboard, it was management science that was going to revolutionize how you thought about business. Then there was a move toward mathematical marketing, which John Little created. He quantified marketing, he and his colleagues, in a way that hadn't been done before. Then there was finance, with Bob Merton and Myron Scholes. What the next big thing is, I don't know. Everybody is talking about Big Data.

R: I think there may have been some other things in there – organizational learning, sustainability. We've had Eric Brynjolfsson's work on productivity and IT.

G: Yes, you get good independent thinkers. It goes back to a very simple idea: when you are vetting people for tenure, you hire really smart people, and let them do their thing. And hopefully the walk is not random, it's upward intellectually. I think as long as we stick to that, we are going to be fine. We are going to be adaptable, we are going to be attractive.

That is just the musing of an over-the-hill, I've seen a lot.

R: And you have been involved in a broader range of things than many people we have talked to.

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G: Oh really? It has been interesting teaching negotiations, working on natural gas hydrate, and doing linear algebra to look at coherence. It is all mixed up.

R: Thank you so much.

G: It has been great.

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