Oral History of Richard Egan

Interviewed by:
Gardner Hendrie

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Gardner Hendrie: We have with us today [Richard] Dick Egan who has graciously agreed to do this oral history for the Computer History Museum. Thank you very much, Dick.

Richard Egan: You're welcome.

Hendrie: Give us a little bit of family history and background, such as where you were born, what your mother and father did, siblings, a little bit of your early background.

Egan: I was born in Milton, Massachusetts and we moved to Dorchester where I went to public schools. My dad was an electrician and my mom was a housewife. When I graduated from public schools in Boston – we had terrific public schools in those days – I went into the Marine Corps. I had two years of duty in the Marine Corps. This was during the tail end of the Korean War. Then when I got out of the Marine Corps, I entered Northeastern University and graduated in 1961 with a Bachelor of Science degree in Electrical Engineering.

Hendrie: Do you have any siblings?

Egan: I have one sister and she still is with us and working the family office that we've created a number of years ago.

Hendrie: What is your earliest memory of what you thought you might want to do or be when you grew up?

Egan: I don't know. I think things I was interested in was automobiles and automobiles, maybe girls and automobiles.

Hendrie: In one order or the other.

Egan: Right. I really didn't have an inclination as to what I wanted to do until I was in the Marine Corps and then I woke up, so to speak, saw the difference between officers and enlisted men and the privileges granted and denied of each. So I decided to go to college. I always got pretty good grades in mathematics so I thought that engineering sounded like it would be a good way to make a living.

Hendrie: So that was something you realized you might be able to do all right and it would fit. College probably was not in your--

Egan: It probably was in the back of my mind; however, I couldn't afford it.

Hendrie: And your parents couldn't afford it--

Egan: Right. The military allowed me the GI Bill but I was also fortunate in that-- I don't know why I wound up going to Boston Technical High School, which is no longer in existence, but they had a lot of courses that prepared you for engineering, whether you knew it or not, like drafting, mathematics, sophisticated mathematics – calculus and things like that. So it seemed like engineering was a natural thing for what I already had.

Hendrie: So you didn't go to the regular Dorchester High School.

Egan: All the public schools in Boston at that time were oriented towards a particular discipline. You could be anything you wanted to be and there was a high school in Boston to which you could attend. It was a very great school, great school system.

Hendrie: How did you pick what college you were going to go to?

Egan: Again, finances played a big part, although I had the GI Bill. The GI Bill was actually a lot more modest than people think it was. It was an incentive that got you in there but as I recall, they allowed you three years schooling for every two years on active duty, to a maximum of three years schooling and Northeastern was a five-year program. So the co-op program was very attractive, gave you a chance to earn some money every other semester. That was the key thing; it was financial.

Hendrie: You didn't look at a lot of other options.

Egan: I did look at them but none of them had the co-op plan and most of them were more expensive. Simple choice.

Hendrie: What led you to electrical engineering?

Egan: I kind of hate to admit it but it's also financially driven. I think it was in the last few months in the Marine Corps, I read an article that listed the starting wages of engineering graduates and it was in descending dollar value with electrical engineering being the highest. I think it was electrical, chemical, mechanical, civil and then industrial, in that order. So I went for electrical because it paid the most. I think the difference, by the way, was probably about $20 a month.

Hendrie: You were very logical about your choices. Did any professor lead you in one direction or anything you discovered and tended to specialize in?

Egan: All the rage in those days was the advent of the transistor. It had just been invented and it was just starting to be accepted and designed into products. Most of us were caught up in electronics as opposed to what we used to call motor generator, AC/DC machinery, I guess was the official title of that side. I recall I think it was in our last year, maybe last semester, and we were all in one large auditorium and I don't know the reason. But anyway, the question was asked: For all of you that are going into electronics, please raise your hand. And it looked like it was unanimous. It was so overwhelming that the professor or

the dean said "How about those of you that are going into AC/DC machinery?" and there were only a couple of hands. One happened to be my friend that was sitting right beside me. I turned to him and I said "Edwards, why are you going to AC/DC machinery?" and he said "Look at all these other guys around here. Most of them are smarter than I am so maybe I'll do better in AC/DC machinery without the competition." So electronics really seemed to be the in thing for most of us and the computer industry was in its early stages. A number of us had co-op jobs at computer-related companies and I was fortunate to have one.

Hendrie: I was going to ask where were your co-op jobs and how did they influence you. What was your first co-op job.

Egan: I think the very first was Computer Control Corporation, which was located, at that time, on the campus of Babson College – I think it was "College" then. I spent two years there. It was a great education but I was curious about other aspects or disciplines within the electronics field. So I went to work for a company that made – this is a tough one – audio analgesics. It was a method of applying anesthesia theoretically to dental patients. I went to another company that made magnetic core logic that were things like flip-flops and electronics.

Hendrie: What was that company?

Egan: It was called Di/An Controls[1], which I later worked at some number of years later. I realized when it was all said and done that Computer Control was the most exciting work, so I chose the computer industry as a result of my early years at Computer Control.

Hendrie: Who did you work for and what did you do at Computer Control? There weren't that many people there. Do you remember?

Egan: I remember some very specifically. I think the early jobs were more, say, manufacturing oriented, putting together thing and Bob Massard was my boss then, a wonderful guy. Then I think it was the third or fourth semester there that I got some real hands-on engineering work with Bob Reichard, who was probably the engineer's engineer. He taught me a lot. He was extremely patient. He's still a very, very good friend. Damn him, he still looks like he's 30 years old and I can't figure that out. Wonderful guy.

Hendrie: I keep in touch with him too and you're right, he does.

Egan: He is a great guy, yes.

Hendrie: Finally, when you graduate – was that in 1961?

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[1] Di/An Controls Inc., founded in 1958 near Northeastern University (Boston MA) and then moved to Dorchester, MA, see: http://www.masshightech.com/stories/2009/08/10/weekly15-Inventor-Bob-Kodis-holds-patent-longevity-record.html or US patent 3,172,088 assigned to Di/An.

Egan: Yes I graduated in '61?

Hendrie: What did you think about doing? Did you have any questions or did you know from well before you graduated, what you wanted to do?

Egan: By that time, I was married. Maureen and I got married when I was in my freshman year, so it was important that I get a good job and I had become enamored by the computer industry. In those days, you may recall, there was a group of computer companies. There was IBM and what we all call "The BUNCH" and it was Burroughs, Univac, NCR, Control Data, and Honeywell. Maureen and I were still very young, very attached to our families so the thing was, I wanted to go into the computer industry but we didn't want to move out of Boston. So Honeywell was the obvious choice. I interviewed with 13 companies, all of which were practice, and Honeywell made me a job offer. It was kind of funny. That recruiting or interview process was very memorable.

Hendrie: Do you have any stories you could share about that?

Egan: There are a couple that I thought were funny; maybe ironic is a better term. I said I interviewed with 13 companies. Actually, that includes two interviews with two different divisions of Raytheon. One made me an offer and one sent me a rejection. The Honeywell interview, which was the one I had prepared for, really went the best. They were really classy people. I had written a paper in college for the IEEE on magnetic core memories and they pigeon holed me into the memory section. They made me an offer for the memory section. But the thing that was kind of important, I wanted $600 a month. I had done my research. I figured out what engineers were getting.

Hendrie: And you figured that was a high but plausible number.

Egan: High but plausible. I was fortunate I was in the Electrical Engineering Honor Society, Eta Kappa Nu, so I figured I should be on the high range and I let them know it and they offered me $610 a month. I thought that was so classy. Wasn't that something? I'll never forget. Dick [Richard D.] Boucher[2] was the Human Resources guy and he figured that out. It was pretty cool.

Hendrie: How did you get involved in writing a paper or doing something with core memories while still in college?

Egan: One of my co-op jobs I mentioned to you was at Di/An Controls, so I learned about magnetic core logic, magnetism, things like that. The IEEE sponsored a contest every year for papers and you won a monetary reward. I think it was $25. I don't think I won it; I think I got second prize but I did write the paper, so I had it. I don't know exactly why I brought it to Honeywell, or maybe it was at the second interview I brought it, but they were talking about trying to fill out the memory section, the group within the company that worked on memory storage. When I showed that, I guess that was a differentiator. It's

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[2] Phonetically, a Richard D. Boucher was an Intel VP in 1995 according to SEC filings.

important though, college kids don't understand that some of these things that differentiate one from another sometimes can be considered to be very minuscule.

Hendrie: They appear minuscule to the student but they're very important to the company. Was this before Honeywell bought Computer Controls? So this was Honeywell's own memory group where they made their own core memories for their computers

Egan: That's right. Computer Control, which you may recall, spun out of the old Radac, which was the combined venture of Honeywell and Raytheon. 3C, Computer Controls, spun out of that and I had co-oped there. Simultaneously, Honeywell was continuing to build computers and it was Honeywell that I went to work. Even though I co-oped at 3C, I went to work at Honeywell, so they were parallel companies prior to Honeywell acquiring 3C.

Hendrie: Tell me about your first experiences at Honeywell.

Egan: The boss, so to speak, of all of the hardware engineering, was Norm Laurie and he was basically the boss of all of us in hardware, including logic as well as memory and peripherals. I was thrown into a small group – I think there were three of us – to design the main memory for Honeywell's newest and largest and fastest computer at the time, the H1800, Honeywell 1800. It was a big machine and used a rather unusual magnet core switching technology. So it was a combination of research and product development on some of the things that were done. I'm talking about a very old technology but I'm claiming it was state of the art, but it was at the time. That's where I kind of cut my teeth on memory storage.

Hendrie: I think the 1800 was the follow on to the 800.

Egan: It was. That's correct. It was. Big machine. We shipped the first one to Honeywell's principal customer, Metropolitan Life Insurance Company and we all got shipped with it because it didn't work until two weeks later. Anyway, that's a whole different story. [laughs]

Hendrie: How long did you stay at Honeywell? What other things did you work on?

Egan: Actually, I was with Honeywell for about five years or so, then left and took a sabbatical and went to MIT to work on the Apollo Program. After that was completed – we had developed the Apollo Guidance computer and the memory – I went back to Honeywell and basically became an instructor in circuit design theory.

Hendrie: At Honeywell, you worked on some more memories after the 1800?

Egan: Correct. I worked on the H200, which was a smaller but very popular machine. The length of time it took to develop memories in those days – because remember, you had to develop each and every circuit, you really didn't have integrated circuits as the drivers and the amplifiers – they were two, two-

and-a-half year projects. Basically, the two memories I recall were the H1800 and H200 and that consumed a period of about five years. The Apollo Guidance Computer was about a two year program.

Hendrie: What's the story of how you got associated with the Apollo Guidance Computer?

Egan: One of the fellows who was an extremely bright engineer, Dave Shansky[3] , left Honeywell and went to MIT when the when the Apollo Guidance Computer-- You might remember President Kennedy came out and said we're going to get to the moon first. MIT won the contract to design the Guidance Computer, the computer that would essentially get the space graph to the moon and more importantly, back home.

Hendrie: I believe the Computer History Museum has an Apollo Guidance Computer.

Egan: I remember visiting the museum here in Boston and seeing one. So has that been relocated to the West Coast?

Hendrie: That's out in the West Coast.

Egan: Then you did have one. It's kind of interesting. Raytheon got the job to manufacture it after MIT got through designing it and we were long gone, the whole group of us. The group was four kids that were in their 20s and two PhDs. We were all long gone when it really went into production and went to the moon. But it was an exciting project. It was a classic government project, NASA. We had unlimited funds, very little supervision and had a great time.

Hendrie: Just hire bright people and push them in the right direction.

Egan: Right. So I always wondered what the astronauts would have thought if they realized that thing was designed by four kids that were in their 20s and the two PhDs that were doing it were actually doing a lot of other things.

Hendrie: Your particular area was memory?

Egan: The memory. There were two memories. One was 4096 byte read/write memory and a 2048 byte read only memory. The reason MIT was awarded the contract by NASA to build the computer was the expertise that Dr. Charles Draper had with electronic gyroscopes and it was their specialty. You've got to realize that here's this rocket going to the moon, there's no GPS, there's no sign posts, you can't use a compass, the North Pole and South Pole are long behind you, so you really have to plot how far you go, how long you go that distance and then compute your adjustments and the trajectory. So the computer had to do all of that stuff so it basically was driving the machine. It said how long it would go for a particular distance, then know when to do a course correction with the retros, and all that. So that was

[3] Phonetically, probably David Shansky, see http://www.wickedlocal.com/lincoln/news/obituaries/x2015301851

MIT's expertise, taking these signals from the gyroscope, translating it into digital signals that then could be manipulated to steer the machine.

Hendrie: Then could be put into equations and figure out where you really were.

Egan: Right. So there were basically two machines on the Apollo Guidance-- Well, there were three computers on both the command capsule and the lunar excursion module, three MIT-designed guidance computers. There were also three life support computers that monitored the astronauts' life support signs. Those were designed by IBM and, by the way, they failed. Fortunately, there was nothing wrong with the astronauts.

Hendrie: What happened after the project was over?

Egan: Basically, when I left Honeywell, there was kind of an understanding. I wanted also to take courses. I took a lot of courses while I was there. I was basically on the staff at MIT so the beauty was, I could take any course I wanted and I had a parking space. Those were the two benefits. That parking space was worth gold.

Hendrie: And the pay was okay.

Egan: It was okay. It really wasn't that great but it was okay. I got to work on a tremendous project. It was probably the best job I ever had in my life, working on that.

Hendrie: Did you have to take a pay cut to go to MIT?

Egan: I actually got paid the same. I didn't get increases that you would normally get but I also could take courses without having to pay for them and I had a parking space as I said, to get to school, which is a big deal over in Cambridge as you know. We finished the project; that is, we checked it out, bounced it around, froze it, kicked it, dropped it, and then turned it over to Raytheon, who had the job of manufacturing quite a few of them. As I recall, over 300 were build, even though there were only six in each mission to the moon or each mission. It was to test them because they really had to be rugged. So there were only 300 built by Raytheon and they all worked fine. So the one that you have at your museum is one of that batch. So we were done with the design, shoved it off to Raytheon. The Raytheon people had always been working with us so it wasn't just mail them the drawings. They were already working on the manufacturing. Then I went back to Honeywell.

Hendrie: Do you remember some of the courses that interested you at MIT?

Egan: Most of them were technical; although the course I remember best was Irish History. [laughs]

Hendrie: Were you intending at the time to possibly get a master's degree?

Egan: Actually, I accumulated enough credits [for a masters degree].

<Break in interview>

Hendrie: I was talking about whether you thought you were collecting courses to get a masters degree?

Egan: It wasn't necessarily consistent with my objectives, which was basically driven to make money. I felt that the MIT experience would further qualify me for new important roles in the field of engineering and engineering management. Between Northeastern and MIT, I probably had enough credits that if I went another semester, I'd get it, but that never really wasn't--

Hendrie: As you said, it didn't fit into your personal objectives.

Egan: Well, I had other priorities.

Hendrie: So you go back to Honeywell.

Egan: Yeah. It was easy to go back.

Hendrie: They had given you a leave to go do this.

Egan: Right. And the thing that I was asked to do is put together a design manual and teach circuit design theory. In those days, it still was the early day of semiconductors and there was a lot we didn't know about them and a lot of research had to be done, how to protect their behavior, particularly their speed, the ability, and be able to predict how fast they can switch and so forth. We were moving from micro-seconds to nano-seconds in that era. I did that for two or three years and then left to join a friend of mine who started a sales company, which was a complete departure from what I had done before.

Hendrie: Do you remember what year this might be?

Egan: I really don't but it certainly was still in the '60s, latter part of the '60s. A friend of mine who had left Honeywell started a manufacturer's representative firm and we were very good friends. He kept telling me about it and finally persuaded me to do it. It was kind of a big jump and I really liked it and enjoyed it. Then one thing led to another.

Hendrie: What was he selling?

Egan: A variety of electronic components basically, transistors, a variety of electronic components, manufactured by a variety of manufacturers.

Hendrie: Did he have any particular lines?

Egan: National Semiconductor was a big one.

Hendrie: That was a big line?

Egan: Yeah, that was a big one. But one thing led to another. I don't know exactly how it happened but I wound up being offered a job by Lockheed Electronics Company. The travel involved with that rep business – it was local travel but it was a lot of travel and I think maybe the appeal of going back to work for a corporation-- I don't know what it was, a variety of factors, plus a very good monetary offer. So I became the regional sales manager for Lockheed Electronics Company.

Hendrie: Where were they located?

Egan: That's a strange thing. Lockheed Aircraft was in Burbank, California but the headquarters for Lockheed Electronics Company was in New Jersey except the division for which I worked that made memories, core memory stacks and printed circuit boards was located in Commerce, California. So think about how long it took to get a decision made there. It was a wonderful job, an exciting job. I got promoted to head of product marketing and then head of sales and marketing.

Hendrie: Did you have to move to do this?

Egan: The original job was area sales manager so I could stay in New England and travel all around the Northeast coast. But then when I got "the promotion" to come inside, we moved to California and it was a great job, a great bunch of people to work for.

Hendrie: You obviously enjoyed it.

Egan: I enjoyed it very much. I worked for a fellow by the name of John North who was just one of the most brightest and knowledgeable marketing and sales people I ever met and a wonderful person. I learned a great deal from him. I think I did anyway. So you want to go on with the job history I guess.

Hendrie: Is that the next thing we probably out to talk about?

Egan: Yeah. The work at Lockheed was exciting and the division was doing great. In fact, it was the fastest growing division of Lockheed. There were 14 of us that participated in the bonus program. Unfortunately, the bonus was computed based upon how well Lockheed Aircraft Corporation was doing as well as how well our division was doing. The second or third year with Lockheed – maybe the third year – was terrible. I guess they had cost overruns on the C130 and they had, I don't know, cracks in the Cheyenne helicopter. There was a multiplicity of aircraft problems. They had manufacturing problems.

The bonuses that we all kind of really depended on because a great deal of our annual remuneration was in the form of bonuses, never occurred.

Hendrie: Especially in sales.

Egan: Pretty much. Actually, our division was doing great. It was an awkward equation that factored how well your division was doing, how well you were doing and how well the corporation was doing. The dominant factor was the corporation which, of course, we really didn't contribute that much to the overall corporation. Anyway, long and short of it is none of us got the bonuses and within I think a matter of one month, 13 of the 14 people had left and I came back East to join a fellow who just started a company called Cambridge Memories, which you may remember.

Hendrie: Yes, Joe [Joseph F.] Kruy.

Egan: Joe Kruy was the fellow. He and I had worked together at Honeywell. He started a company and asked me to come back and be the vice president. That was exciting. We built the--

Hendrie: Do you remember what year that was?

Egan: 1969[4]. I think we spent about seven years at Cambridge Memories.

Hendrie: Were you the first head of sales?

Egan: Yeah. The company was just being formed. It was Joe, myself, a couple of engineering fellows, a research fellow, which was kind of unusual for a startup, and a bunch of venture capitalists, some of the early venture capitalists, the Rothschild Banks and a number of different.

Hendrie: So he did get venture capital money?

Egan: Very quickly, yeah. In fact, I really didn't join him until after the seeds had been planted for the venture capital. And that business progressed ever so slowly.

Hendrie: What was the objective of Cambridge Memories – how were they trying to differentiate themselves?

Egan: That's a very good question. The intent was to come up with some memories that could be sold to the numerous mini-computer companies that were being established at that time. I don't know if you remember, we used to talk about the Mini Computer of the Month Club, which rapidly became the Mini

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[4] Incorporated in 1968 according to Cambex Corp 10k (successor to Cambridge Memories)

Computer of the Week Club. So we had three different memories for them. There's a large 4096-word memory, a small thousand word memory and a little MOS memory. While at the same time working on what could have been – never proved to be – could have been a revolutionary memory technology called DOT, domain tip logic. We spent a lot of money on that. It never really panned out. It wasn't that reproducible. So on the one hand we were building what I call run of the mill ferrite core memories and MOS semiconductor memories and that was paying the rent, so to speak, and spending a lot of money on this unusual magnetic technology.

Hendrie: And that's why there was a research person there.

Egan: That was the fellow who started the large group. Simultaneously, there were a couple of guys that spun out of IBM that were making bipolar semiconductor memories and we funded them. So there were two or three pockets of what I call memory sinks, money sinks.

Hendrie: Was that Cogar?

Egan: No. It never had a name because it was really a wholly-owned subsidiary of Cambridge Memories up in Poughkeepsie. I used to drive up there every week. On the one hand, they had pretty good going business; on the other hand, that was quite a cash outflow. That went on for about seven or eight years and one day, I got a call from Bob Noyce of Intel and he asked me if I wanted to explore a job at Intel as Vice President of Sales and Marketing. Actually, I turned him down. Ed Gelbach took the job and about a year later, I was reading Fortune Magazine where Ed Gelbach had made $13 million. I showed it to my wife and she was complimenting how smart I was. Coincidentally, that was on a Saturday. I'll never forget it. On Sunday, I get another call from Bob Noyce.

Hendrie: Why did you turn Bob down the first time?

Egan: Well, the reason I actually gave him which was that I had put six years into the company at that time. I felt I was about ready to take off. It was six hard years. As I said we had cash coming in but we had a lot of cash going out. And I felt it was like my baby, and that's why I turned him down. But then a year later reading this story and Cambridge had really not progressed much further. It never really had lost money, it was just-- wasn't growing and prospering like so many of the mini computer companies were at the time. And so coincidentally he called me right after I read that *Fortune Magazine* article and showed it to my wife, and I think it was within a month I was working at Intel and I took over the general managership of Intel's memory systems division. They had a division-- well Intel was, and still is I guess, headquartered in Santa Clara. They had a division located in Sunnyvale which made memory systems. It basically was that had a two fold mission. One was to use Intel memory chips, Intel was the leader at that time, to see how they can be improved or find out what's wrong with them, and the same time make higher profit, higher up the food chain and so forth and using these chips in memory systems. And that was fun. That was a fun job.

Hendrie: Now that's the group that Bill Jordan of Ridge Malay [phonetic]. He went from 3C and started when Jordan and Regitz moved out to Intel.

Egan: Right, right, exactly. And Bill Regitz is still there, yeah.

Hendrie: I think he's retired, Bill is.

Egan: Oh, I should have said he was still there when I was there.

Hendrie: Oh, yeah, when you were there. Okay.

Egan: So yeah, that was actually like old home week at Computer Controls. I was very comfortable with that whole thing. So we took basically Intel into the end user market is what we did. A lot of memory systems that increased the capacity of IBM computers, and so that was a lot of fun. I reported Andy Grove, who was at that time executive vice president. Goes back quite a ways doesn't it?

Hendrie: That does, yeah.

Egan: I learned a lot from him. We used to meet in my office every Wednesday morning I think it was at 7:30. And the reason we met in my office was that I couldn't say, gee I don't have that answer, I don't have that paper, he was smart. What a guy. There's a million stories about him. But you were talking earlier about did I ever have an interest in getting a Master's. I think later in life I kind of hoped I had a Master's in business. I got one from Andy Grove, working for him for a little over two years.

Hendrie: Do any stories come to mind?

Egan: Oh, just hundreds of stories. Many of the things that he did, I've got to confess I plagiarized at EMC. The quarterly meeting where you get everybody together and you discuss how the goals-- the prior quarter's goal had been accomplished or not accomplished and why and then establishing the other goals for the next quarter. All in order to get everybody on the same page, or as Andy put it, no one can say they weren't told - so to speak. And things like that, making sure you read maybe ever so briefly just about every memo that comes across your desk, and try to indicate to the person that wrote it, you know, your impressions or suggestions or look for ways to compliment them, things like that. A lot of things we did at EMC, ranking employees, so everybody, the supervisors understood. It was, I call it, MBA squared so to speak. Just a brilliant guy.

Hendrie: And he reached out to you because he needed somebody who's in the memory systems business, in the core memory systems business.

Egan: Yeah, well actually it was Bob Noyce that recruited me. He was my mentor, -- when the 14 of us used to meet every Tuesday morning in the executive briefing in Santa Clara, -- I used to always look to him for guidance because I was with a bunch of, at that time, strangers. Gordon Moore, Andy Grove, all those guys. Yeah, it was just a great education. And so about two years later, the kids are getting older, number one son, Jack had just finished a year of college at Santa Clara University, wanted to go transfer to BC, Boston College.

Hendrie: That's right, now you are out in California already, yes.

Egan: We're living in northern California, yeah, Saratoga, right in Silicon Valley, right adjacent to San Jose. And when he left, we decided that, hey, you know, kids' education is a serious thing. They're all either in high school or approaching high school, we had five children.

And so we headed east and came back – basically, Cambridge Memories had gotten into financial difficulty those two years and I came back, basically took a contract to get them out of trouble if I could. And we had a lot of good luck, a lot of good things went the right way and paid off the banks, paid the landlord the back rent and everything's kind of ducky. So I basically took the Intel stock, the consulting fees I had earned from Cambridge Memories, it was then called Cambex, and got together with an old school chum, Roger Marino, the M in EMC, and we started EMC Squared. There was a third fellow, we've never mentioned his name, I never have and Roger hasn't either, because he kind of pulled out at the last minute and we had already registered the name. And in those days it cost $85, you know, to register a name, so we weren't going to spend another $85 -- so that's why the name is EMC even though the two founders that really…

Hendrie: Really, those who operated the company were just you and…

Egan: Right, Egan and Marino.

Hendrie: I think Norm Lourie told me who he was once, but I can't remember.

Egan: Roger worked at 3C. But he worked at 3C not as a co-op, but as a graduate, and he was working in sales right out of college even though he graduated from Northeastern as an electrical engineer.

Hendrie: Okay, just as you did. Did you first meet him in Northeastern?

Egan: We kind of crossed paths at Northeastern. He was in division B and I was in division A, so we met on different mutual occasions. But we knew each other better later because I was in the memory business and he was too. He worked for RCA. And RCA was very much into memories and core memory stacks…

Hendrie: Yes, down in Needham. They had an operation in Needham

Egan: Correct. That was world headquarters, right, Needham. What made you remember that?

Hendrie: So Roger went there after 3C or before?

Egan: I don't know, I think it was after, after 3C. 3C as you might recall at one time not only sold you know, key packs and S packs and computer systems, but also sold memory systems as well. And

Roger's forte was in that area, 3C's memory systems, and then RCA's memory systems and core memory stacks. So it was a natural and so we teamed up together and started EMC.

Hendrie: When you decided to start it did you self finance it originally?

Egan: Yes, we did. I was the principal source of finance because I was fortunate, being at Intel and getting stock options, and then having this kind of consulting contract which was very rewarding if we could turn Cambridge Memories around. If we didn't it would have been a different story.

Hendrie: Okay. And Joe Kruy was still at Cambridge?

Egan: Yeah, he was still there but it-- like I said, they had gotten into serious financial difficulty. The Bank of Boston was all over them. Anyway, a lot of good things happened. And so with the proceeds of that contract and the Intel stock, I felt confident in starting a business such that if it was not a success, I had ample time to pay our bills while looking and getting a job. So I had a nest egg so to speak.

Hendrie: Yes, safety net.

Egan: I had most of the money that we put. And we didn't have a business plan, we actually started a business which was again, this manufacturer's representative business, which I had learned from my friend many years earlier. Roger understood that business as well because he used a lot of manufacturer's representatives in the sale of the products that were produced by 3C and RCA. So with that nest egg and this confidence that having worked with some brilliant people and then could understand their strengths and weaknesses, we had the confidence to start our own company. And again we started-- very low capitalization required because we started as manufacturer's representatives.

Hendrie: What did you represent first? I heard that there's a funny story somewhere in there.

Egan: It is. When you're a manufacturer's representative really all you need is an office, some phones, and some furniture. When you represent a company you talk about as being a line of product, the first line was a fellow that made computer furniture in El Segundo, California. And it was basically desks that had a beveled edge that allowed you to rest your forearms as you type on a keyboard. And so, you know, Roger and I and we had a third fellow that we had hired, a fellow that I had brought back to Boston from Intel, former 3C guy, by the way.

Hendrie: What was his name?

Egan: Bob Blanding [phonetic]. Anyway, between the three of us I think there were four electrical engineering degrees, and this fellow was trying to get us to sell furniture. And I told him, I said, It just doesn't fit." He says, "I'll tell you what. If you sell my furniture I will furnish all your offices." All of our offices by the way were three rooms up over the Mill Falls Restaurant, but still we didn't have any

furniture, so we took on that line. And our first product line was a line of furniture that these electrical engineers were selling, so that's kind out of the legend of the company.

Hendrie: That's a great story.

Egan: And then we took on a number of different companies, CAD Manufacturers. Intel wanted us to sell their systems level products.

Hendrie: Their memories particularly?

Egan: Their memories initially and then they wanted us to sell all of their things. All the way from DRAMS to microprocessors to what they call second level accounts. We wouldn't be selling to Digital Equipment corporation or Data General, but we'd be selling to Alden Electronics and smaller companies. And it was very good. And it was very profitable, so even though initially for the first, oh about half-year, very little or no money came in. In fact, I remember maxing out on my credit cards. I didn't want to sell all the stock. So we maxed out on the credit cards, but after about six months we started making enough money so that I'd say within a year, year-and-a-half we had broken even so to speak. And it wasn't until probably another year-and-a-half that we developed our own product.

Hendrie: Do you remember what month you started? This was '79, is that correct?

Egan: Yeah, the company was started in August 1979. EMC was founded, in my garage at Wellesley. That's the story, it was actually in my family room in Wellesley but that doesn't make any difference, we worked out of there for a while. And the history of EMC was we were basically a manufacturers representative, which means we were selling fundamentally high technology products, certainly the Intel line was a terrific one, that gave us an opportunity to continue to stay abreast of technology and at the same time, learn about a whole bunch of people that were making high technology products and learning their wants and needs and computer users. And so, I think it was, in fact, I know it was, a visit that I was making down at the University of Rhode Island, I think it was in Narragansett, the ocean campus. And one of the product lines that we had was, Intel made memories for Digital Equipment Corporation VAX and PDP-11 computers.

Hendrie: Okay, so these are plug in cards that…

Egan: Plug in cards that increase the capacity of the DEC VAX, yeah.

Hendrie: And were plug compatible with the cards that they made.

Egan: Correct. And I ran into the head of data processing-- scientific data processing at the University of Rhode Island. And I thought they had a VAX machine and I was mistaken. And he said, "No we have a Prime Computer. And he says, "I tell you, if you made a memory for Prime Computers I'd buy it in a

heartbeat." And I said, "Why is that?" Well, he said, their memory size was limited and their memories were extremely expensive. I actually remember what the price was…

Hendrie: What was it? Oh I need to hear this.

Egan: It was $36,000 per megabyte. Compared to today it's a wow-wow. So that registered in my mind and we went looking to see if there was anybody that, other than Prime of course, that made memories for Prime computers. We found that there wasn't and so I went back to the professor and I said, "If we were to get someone to make this or develop it, would you assist us by allowing us to use your machine to test it?" And we struck up a deal and he was our first customer. And from there we started then developing memories. Basically because we were into technology, we knew what was going on because we were selling it, we could anticipate what was next, you know. In our case it was the 64 megabit chip I believe.
[**Ed Note:** According to Texas Instruments' timeline production of 64K bit DRAM began in 1979, see http://www.ti.com/corp/docs/company/history/timeline/popup.htm

Hendrie: 64k?.

Egan: Might have been 16k, I forget which one.

Hendrie: The one that you used the first time.

Egan: Yeah, that's what I was trying to remember exactly. But it was basically the device that was going to be available in a year so to speak, we could anticipate that. Wasn't always clear, it wasn't always a doubling or a quadrupling.

Hendrie: Right. And it wasn't always clear how long it was going to take them to do it.

Egan: That's right, that's exactly right. So we kind of bet the farm on what was going to be the next generation when we started developing this memory for Prime Computer.

Hendrie: Now how did you develop this? This required somebody to do engineering.

Egan: Well, one of the engineering fellows that worked at Cambridge Memories where we made plug compatible memories there, only they were in boxes usually rather than plug in cards, knew how to do it. I knew pretty much how to do it.

Hendrie: Yeah, you could have done it probably.

Egan: I had built, built memories before. And it's just a matter of seeing where the connections are in the computer for the X drivers, the Y drivers and so forth. I'm kind of making it sound very simple but it did take us I think about five, six months to develop the first product.

Hendrie: So did you hire this gentleman from Cambridge Memories?

Egan: Yes, he came to work for us. We were making plenty of money in the rep business, so we had expanded our offices up over Mill Falls and we had the facility to do it and he welcomed the chance.

Hendrie: You could afford to hire an engineer.

Egan: Yes, well we hired an engineer, a couple of technicians.

Hendrie: Okay, who was the engineer, do you remember his name?

Egan: I don't remember exactly. I think there were a couple of them. So with that it took off like a rocket. We went to a Prime users group show in New Orleans and that really was very successful. Prime sued us, all that really did was create more attention and awareness by the user group.

Hendrie: Had they done a good job at patenting it?

Egan: No it was difficult to patent. Basically the history of plug compatible memories goes back to the IBM days, which the industry kind of grew up during the era of U.S. Justice versus IBM. And, you know, monopolistic behavior and predatory practices. And so that basically set the tenor for anybody that wanted to improve or increase the user's capabilities to use a machine. And now of course it's a huge industry. Almost all peripherals are made by independents so to speak. And Prime should have known that because the fellow that was running Prime at the time was a former IBM'er whose name was Henson and he should have known better. So he and I had a little discussion in the washroom at the New Orleans Airport and they called off the lawsuit the next day.

Hendrie: What did you tell him?

Egan: It stays in the washroom <laughs>.

Hendrie: It stays in the washroom, okay.

Egan: And from then on, we looked to see which were the more popular computers, mostly in those days they were mini computers, and which ones were limited in memory capacity because in almost all cases we drove them to larger capacities and the machine was ready…

Hendrie: Because you put in bigger chips than they were using, yes.

Egan: Correct. More dense chips.

Hendrie: More dense chips, yes.

Egan: It was a secret. Not a secret, but it was a…

Hendrie: That was your plan.

Egan: Right. And we could move very quickly to the next generation of memory chip as well because we were still a small agile company. And so that business grew and grew. And we then started looking to what I call the mother of all memory markets and that's the peripheral storage business, predominated basically by a magnetic disk-based systems. And we started making high performance disk systems.

Hendrie: I know, that's where we're going, but maybe you could tell me a little bit more about the memory business. Can we pause for just a second?

Egan: Sure.

Hendrie: Let's see. We were talking about memories and the memory business, so…

Egan: Right, our first was for the Prime computer…

Hendrie: Your first was for the Prime and then you started to-- you did start to branch out. Now did you do any for Digital Equipment?

Egan: Eventually we did. I think the next line of computer that we made plug compatible memories for was -- Wang I think. Wang had a high end line. I think they were called the V Series. Then eventually Digital Equipment VAX, and gosh, I don't think Data General.

Hendrie: Yeah, I believe that you didn't do Data General. I don't remember. I was at Data General by then and I don't remember that, you know, you did Data General. And Data General had a thing they called the secret circuit that would just disable the memory every so often, and it was truly a secret.

Egan: Isn't that amazing?

Hendrie: Yes, one other guy had designed it and I had the secret circuit in my desk and nobody knew about it.

Egan: The fellow that designed it, it wasn't Dick Sogge was it?

Hendrie: No, no, it was Bob Cuikay?

Egan: Yeah, Dick Sogge and I worked-- he was one of the other 20-year olds at MIT on the…

Hendrie: Oh really? So he was only a while ago? All right, that's a fascinating connection there. And I remember Buster Bodio out at Intel when I went out to visit Bill Jordan because I had known Bill quite well. And he was saying they were trying to do a Data General and he couldn't make it work. Of course, I couldn't tell him why he couldn't make it work, but I knew he would never succeed with it. Because it was impossible to devise, because this random thing would just go off and it was just, well, to catch it and trace it back and figure out where it was coming from or what happened. Anyway…

Egan: They were tough guys, Data General.

Hendrie: Yeah, you did a VAX. Now I understand that of course DEC sued you, didn't they, about the VAX?

Egan: Actually I don't think it really got to a point of being a legal lawsuit but they had lawyers and we had lawyers and they were arguing about it. And I still don't remember how that turned out, but I know we didn't back off.

Hendrie: Well, I remember somebody telling me that in the process of working on this suit, they discovered that all their patents on the VAX were invalid because they had shipped a machine…

Egan: Prior art?

Hendrie: It became prior art because they hadn't patented it in time relative to the first shipment.

Egan: Yeah, that's the silver bullet to winning a patent lawsuit when someone accuses you of infringing their patents is to try to find a shipment or shipments that were made prior to the patent filing. All I remember about that was I know it went away. That is, we didn't back off, we didn't go to court, it stopped. Perhaps that was the reason, that is, in DEC doing their homework in how to challenge us, if they were going to challenge visa vis the patent process. They probably learned-- and if they learned it they never told me, the just, you know, threatened but didn't do anything. So we're doing pretty well in what I call a solid state memory business. But the largest data storage market of all was obviously the disk storage business, the peripheral storage business. And we then start to find OEM disk drives that together with smart engineering could be connected to a variety of machines and provide higher performance and lower cost and preferably higher reliability. That was the three criteria that we sold everything on and we sold everything on that criteria for probably 8 or 9 or 10 years.

Hendrie: Okay. Now I know you initially, if my memory serves me correctly, you stuck with memory systems until sometime in the late '80s when you did your first disk system.

Egan: Correct. Even when we were rolling with the disk systems, we did not forgo the solid state memory business, the plug in memory business, the fixed main memory business. The peripheral memory business which are predominantly almost exclusively in the beginning magnetic disk-based systems, was an adjunct and proceeded in parallel with the solid state.

Hendrie: Okay, so you kept doing the solid state memories. Now at some point here your finances are doing well enough that you're going to go public. Did you ever take any venture capital?

Egan: No, never did.

Hendrie: Okay. So you self-financed?

Egan: Pretty much. We did borrow $4 million from Massachusetts Mutual Life Insurance Company. But because we were growing so rapidly, when you grow you need more cash than you're generating usually. And we went public approximately a year or so after we had that loan, and so we really hadn't used much of it, it was convertible debenture. So Mass Mutual did very well, they loaned us some money we hardly used and then wound up with stock. So yes, we went public in 1986. We also did a secondary in 1987. The secondary you might get a kick out of. The prospectus is dated October 17, 1987. That was the Monday after mad Friday, it was mad Monday. But we had struck the deal with the underwriters the previous Thursday so they had agreed to buy the stock and as you know, they'd resell it and we had the money in the bank by Monday. We looked like geniuses; of course we didn't really know what was going on in the market.

Hendrie: You had no idea the market was going to do that.

Egan: Yeah, so public in '86, secondary in '87 and the rest is kind of history there. Everything was going great. We ran into real problems in '88…

Hendrie: I was going to say, wasn't there a period where your profits went down?

Egan: Worse, we actually lost money. And it all was traced back to some bad disk drives that we bought from NEC, Nippon Electric Company. Surprisingly, because at that time, you know, there was this controversy about semiconductor memories and the quality of each, and the Japanese manufacturers were considered to be highest quality. Well it turns out, we were looking for disk drives that were very, very high performance but very reliable. And NEC made such a product that we could then put the interface on it and make it look like a disk drive for IBM computers. And the problem was that the drives, they were in such great demand, NEC had a great demand for these drives.

Hendrie: Well it was a very high performance.

Egan: A lot of people wanted to use them, right.

Hendrie: It was a great product.

Egan: I found this out much later after much interrogating and trips to Japan running around these clean rooms in bunny suits trying to get someone to admit to responsibility. And it turned out that they had doubled the size of the production line and hired a lot of new people, and the contaminant which was screwing up the drives, was facial make up. Ladies facial make up. And it was a incessant problem because you really couldn't test it. It was contaminants floating around inside the supposedly vacuumed chambers with the platters, and maybe it would settle on a track and maybe it wouldn't. And so there's no way of really testing, you could run it for days, months, maybe even years and nothing would happen, -- anyway it was an unpredictable failure. And it was such a large factor in a small company like EMC that we lost money.

Hendrie: What did you have to do? Did you lose money because sales dropped off or the expenses of dealing with it?

Egan: Combination of both. Word got out so people were very timid about buying it. The ones that were out there that were failing, we bit the bullet and actually bought the equivalent product from-- most of these were going to IBM computers, bought the equivalent drives from IBM and replaced our drives with the IBM manufactured drives that did not use the NEC disk drive component. So we kind of, you know, as they say, stood up at the plate, you know, and then took the hits, and put out a lot of money to make the customers whole.

Hendrie: And of course, had to pay a lot more to IBM for those drives.

Egan: Oh yeah, well they didn't give us any discount, I can tell you that.

Hendrie: Well because you were shipping them to their customers. If it hadn't been for the anti trust, they'd probably find out a way not to even ship them.

Egan: Yeah, that could be, but we'll give them more credit than that. So I remember those people on Wall Street, the analysts that were following us, particularly the Merrill Lynch analyst, saying, "You know, you should get out of this rotating memory business, go back and just do solid state." Of course, maybe she was right. In fact she said this is going to take you two years to get out of this hole. I thought it would take us two months, and she was right. Right about that anyway. But we didn't get out of it, but we did show that we were willing to support the product and we weren't going to walk away, and so we made a lot of customer's kind of friends. Because when a customer would call up and say I got a problem, IBM's approach used to always be, "Well, are you sure it's our problem?" And our approach was, "Okay, it's probably our problem. We'll have people there, you know, immediately." So anyway, we got some friends. And in the next generation products they'd started selling again. And then a major thing happened.

And this is a product that was in my mind and a lot of people's mind for many years, and that was the melding of a solid state memory with a rotating memory where the solid state memory acts as the cache to the magnetic disk-based systems. As you know semi conductor memories are much faster than disk drives. Disk drives are much faster than tape drives, and tape drives are much faster than microfiche, and all of it's faster than paper. And so we melded our solid state memory technology with the disk technology and came out with a cache based DASD, direct access storage device. And we named it Symmetrix. I don't know why, our marketing manager liked the name. And I don't know if you know their marketing-- his was Bob Ano at the time, A-N-O, marketing manager for Wang Laboratories. Wonderful guy, funny guy, anyway he named it Symmetrix and low and behold the thing-- because it used high capacity drives and had a solid state front end so to speak, it was faster, it was very reliable, and it was much smaller than the amount of disk space needed by IBM for their IBM mainframe system. In fact, I remember we ran a two page ad in one of the electronics magazines and we had the amount of IBM disk took up two pages and ours was in a small corner on the right hand side, and so it was the equivalent capacity. And it was a super product and actually that's what drove the company from say somewhere in the range of 150, $200 million, you know…

Hendrie: Up to where?

Egan: Well beyond, well today it's over $10 billion, but…

Hendrie: Can I stop? We've got to change tapes.

Egan: Sure.

Hendrie: Thank you.

Hendrie: I'd like to roll back and get a little bit more of the Symmetrix story, which of course is a great story. At some point, you identified, an Israeli that was doing something in disks, that sort of was the seed of the technical talent you needed to make this happen. Maybe you could tell me about how you ever found him, how did that all come about, what's the story there?

Egan: Well, the principal market for a manufacture of the plug compatible memories, the biggest market has always been IBM and the IBM interfaces, a variety of IBM interfaces. And our first disk product was aimed at the IBM AS400 which was IBM's mid range machine, and the 4381 which was a little bit larger machine, but wasn't the 370 class at the time. Unbeknownst to a lot of people, there was a company in Germany called Nixdorf Computer, that made IBM compatible systems. Unbeknownst to everybody else, the designers were actually a company called Elbit,[Systems] which was an Israeli based company. Now, I won't explain why I knew all this, but I did know all this. I spent a lot of time in Germany, and Israel. And so what I really needed was expertise relative to the large IBM computer interface, and Nixdorf -- Elbit, this group designing it, which was Elbit, actually had been shipped to the U.S., in Burlington, Massachusetts, by Nixdorf. They bought this group out of Elbit moved them to design IBM peripherals…

Hendrie: So they were working at Nixdorf, because Nixdorf was also doing terminals, doing other things in Burlington, too, yeah. They had their own facility, right.

Egan: Exactly. So there was this expertise on IBM interface which was kind of like the standard, you know, the industry standard, and I pursued them. I called up the recruiter, got names, phone numbers, and eventually settled on, I think we pulled out about three guys out of that group, and they had that expertise. It came consistent with this idea of marrying solid state with DASD. This group was the third piece, and that's the interface to which the, let's call it the solid state memory connected into the computer.

Hendrie: Now who was the principal in this?

Egan: There were three or four guys. One was Naton [phonetic], another one was named Moshe [Yanai], Israelis, and I forget the third fellow. I can't remember. So anyway, what we, I guess what we'd say, pirated from Nixdorf was this IBM interface.

Hendrie: I had heard there's also a piece of this story that is interwoven with an OEM deal you did with Storage Technology. Maybe you could talk about the storage technology deal, how that came about, and if there is a connection, how they connect together.

Egan: Right, now I'm basically telling about the engineering and development of the products. We had a small sales force that was selling to the prime markets and the Wang and so forth, and there were a number of companies that had large sales forces that sold to the IBM high-end market. Telex, Memorex, Storage Tech, you remember some of those names. So Storage Tech was selling the large tape drive systems to the same customers that would be prospects for our disk drive systems. And so we got together with Storage Tech and they wanted to sell the product, we wanted them to sell the product, and so we reached an arrangement whereby they would sell the product.

Hendrie: Now what was the product at that point?

Egan: The product was a Symmetrix-- it was, no, it was a solid state disk. It was a system built entirely with semiconductor DRAMS, but it had an IBM interface. So, take my comments about the Elbit one step earlier. So we built this system that was very, very high speed, it looked like a disk, but it was made out of semiconductors so it was very high speed. That's the product that Storage Technology asked if they could sell, and we said yes.

Hendrie: Okay, now, when did you come up with that, that's a new piece.

Egan: Yeah. I'm sorry. Symmetrix basically took off on its own, and became such a large product that that one is kind of is often overlooked.

Hendrie: But you did this before Symmetrix, before you came up with Symmetrix.

Egan: It was before Symmetrix, but it was the same fellows. It was the IBM interface expertise that these fellows from Nixdorf brought to the company and wedded to our semiconductor plug in memory card technology. And so we built a thing that looked like a disk, architecturally, but was made of DRAMS. Then that got welded to the disk memories, disk space memories, to form the Symmetrix.

Hendrie: Now, when did you start doing plug compatible disk memories that were made from arrays of small disks? Is that how you got into the plug compatible disk business? What was the original product?

Egan: The original IBM compatible disk products for the AS400 and the 4381 were straightforward disk systems. It was, I believe when we were marrying the solid state disk to the disk-based systems, that we started using RAID, the redundant arrays of independent disks. Very great idea, a very primitive idea at the time, you know, you never knew whether you were supposed to use three disks for two disks worth of storage, or four disks for three, or five for four…

Hendrie: Well you started doing mirroring I think, didn't you, even before you did the rest of them?

Egan: You're right about that, too, right. But that was a brief interlude.

Hendrie: That was a brief interlude before you then switched to…

Egan: A very expensive, you needed twice as much storage as you were using. But the RAID turned out to get an awful lot of publicity because everybody kind of jumped in and used it at the same time, and so we basically had credibility even though we were still a small company. We had the credibility that this technique of using multiple disks to provide the, basically the back up storage, was a reasonable thing to do. A lot of it had to do with how quickly we were able to develop the whole thing, so front-end solid state, back-end high performance multiple arrays.

Hendrie: So there's a weaving of different products and things. This is during the late '80s and early '90s, after you had gone public. You had cash, you can, but you were trying to recover also.

Egan: We recovered from the, what I call the crash of '88, and it was, it was head crashes. It took us I think, about two years, so when we basically had, if you will, the Symmetrix rolling fine, that basically made the solid state disk basically obsolete. So, that was running fine, and we were expanding the capacity all the time, more and more small form factored disk drives were becoming available because the PC market was booming, and they were starting to make them of industrial strength. And then we started turning to software that could make the products more useful to customers.

Hendrie: What was the genesis of that strategy?

Egan: Well, the fact is that we were starting to use embedded micro processors in the systems to do different things. And once you put that intelligence in there you could now start to really ask a customer

what they want, and try to fulfill their desires, whereas up until then, and for the prior forty years, everybody's been asking the customer what they want and hoping to God they wouldn't tell them.

And so first thing we were able to do was develop algorithms that could anticipate what data the customer was going to request out of their disk systems in anticipation of them requesting it.

Then we moved on to disaster recovery techniques like being able to store and retrieve data at two sites simultaneously, initially, not very far, and then eventually, basically around the world. And that was terrific for customers that were concerned about disasters, storms, fires, earthquakes. It was extremely beneficial to a lot of the investment banking firms when 911 occurred. A lot of them had data centers in Manhattan, but their other data center, which was kind of a mirrored facility, which was often in Brooklyn or Staten Island, or elsewhere. So, that was a wonderful product called SRDF, Symmetrix Remote Data Facility, and to this day we are the preeminent supplier of that for that disaster recovery.

Then the next problem, well it's a problem that they've always had, but it started to become more and more apparent as more and more customers were storing more and more data, and that was what we called the sunrise problem. How do you back up the data on the tapes, onto tapes, which was the most prevalent form of backup for the day's work, because of the amount of data that you had to store required longer than the evening hours. It's called the sunrise problem. The sunrise was coming up too soon. And so we developed the software that allows the backup to occur simultaneously while the system is being used, and therefore the people could use the systems for work 24 hours a day rather than 12 hours for work and 12 hours for backup, and that's another feature.

Then there was a number of different-- once we had embedded microprocessors we could now solve the customers problems. I don't know about you, but I've always had this bad feeling about our industry, because we always talked about solving people's problems, but really could we do it? Our systems were sold on price, speed, performance so to speak, and reliability. It was only with the advent of the microprocessor that we actually could solve people's problems. And Katy bar the door since that's happened. We have a multiplicity of software tools that allow for the data management, storing data, controlling it, managing it, protecting it, terrific. The industry's really changed for the better.

Hendrie: Yeah, exactly, and it gives more to the customer.

Egan: Absolutely, now you can actually sit down with someone and ask them what their problem is. Most of our sales guys spend most of their time trying to learn the customer's business and trying to get the customer to tell you what his problems is. In the old days, the customer wouldn't bother; he knew you couldn't solve the problem. He didn't care whether it was IBM sitting on his desk, or EMC sitting on his desk. Why waste his time telling this guy what he needs only when he knew that technologically it probably was impossible. But today, we have customers come out to EMC all the time and we just ask them, "So what are the problems today?" And we listen. And we can't solve them all, but, boy.

Hendrie: Yeah, exactly, then you can put some engineers on it.

Egan: Oh yeah, in fact, those are the people who are asking the questions, they're really marketing and sales people. We got them at the plant, you see engineers that sit there with their pocket protectors, <laughs> yeah. I tell you one little-- I know it's getting late, so just one quickie. We had Barnett Bank in, this was quite a few years ago. And we had two vice presidents and this little techie guy from Barnett Bank, and we were having them for lunch at the briefing center. And I noticed all morning the little techie guy you know, had a pocket protector, you know, and lots of pens…

Hendrie: You could tell he was the techie guy, he just looked like it.

Egan: He was the techie guy from the bank. He hadn't said anything all morning, and we had visited some labs and all. And I said, "Duke," his name was Duke Livermore [phonetic]. "Duke," I said, "you haven't said a dam word all morning. What's wrong?" My suspicions were that he for some reason didn't like us and wanted to stay with IBM or something. And he said, "Well you know, I've been thinking." He said, "I saw something up in your lab, and you know, if you could do this with that," and I forget what it was, probably was over my head anyway. And I said, "Drop your fork, get dessert," and I put him in my car and drove him up back up to the lab where there was this young engineer, John Fitzgerald [phonetic]. I said, "John, I want you to meet Duke. Duke, John. You two work together," and I left. Literally, six months went by. John and Duke, talking on the phone, that product became one of our most successful products. We sold it to every bank, and institution that has that. Now that's the good news. The bad news is the next time I see John, my techie, he's got a tie on and he's waiting for another customer, <laughs> true story.

Hendrie: True story, very good. Do you remember what the product was that they came up with?

Egan: It had to do with that backup in the background.

Hendrie: Okay, it had something to do with the way to do that.

Egan: Yeah. Because the bank had the problem, you know, the sun came up in the morning and they weren't, you know.

Hendrie: And they weren't ready.

Egan: Yeah. But putting an engineer together with a customer, fortunately we had a customer that could talk the same language as our engineer.

Hendrie: Yeah, that's a great story.

Egan: We've got a Berlitz class for some of these guys.

Hendrie: What areas, at least in your business career, have I missed and maybe not covered at all?

Egan: Well we've talked a lot about EMC and that certainly dominates, in my mind anyway, my business career. I was, you know, chairman, CEO, for 14 years. When we made Mike Ruettgers CEO, I stayed on for another six, seven years, and really only resigned when I went to work for the government in 2001. So, it pretty much was the good bulk of my career. The rest of it I think was all learning experiences. Fortunately I had some good-- you know, we had some good teachers, you know.

Hendrie: Tell me a little bit about your career after EMC, you went and did a stint as an ambassador in Ireland?

Egan: Right, right, the President appointed me to the position of United States Ambassador to the Republic of Ireland.

Hendrie: Was that something you thought you wanted to do, and how did that work out?

Egan: Actually, I think I never really ever thought about it until some time after the election in 2000. I was reading an article and I saw the names of two fellows I knew, one was Jim Nicholson, who is now I think, Secretary of Veterans Affairs, and another fellow. I knew them very well through the campaign process and all the things that occur during an election, and they were being considered as the ambassador to Ireland, and we established EMC, myself and Paul Fitzgerald, the CFO, established the Irish plant in '88, in Cork, and so I'd been there three or four times a year. For years I knew everybody. And these two fellows were being considered for the ambassadorship. And I said, gee, I know a lot more about it. Is that all it takes? I know a lot more about Ireland than they do, and so I went on the Internet, filled out an application. And then about a month later, Andy Card, the President's Chief of Staff, called me up and he said, "If the President offered it to you, would you accept it?" And that's the way it's done.

Hendrie: That's the way it's done. They check out whether they're going to get a yes first.

Egan: And it was completely a different kind of job. The confirmation process took a long time because, as I put it, the religion of the Senate, changed from Republican to Democrat when Senator Jeffords decided to give up Republicanism and become a Democrat. All right, it took a long time. So as a result, my wife and I didn't get to Ireland in our official capacity until September 10, 2001, so if you ask me what it was like to be an Ambassador, I'll tell you the first year was hell. It was, yeah, it was really a tough thing. I was meeting with the Prime Minister of Ireland, which of course was the most important job, certainly an important job, in an Ambassador's eyes. We were having lunch when he gave me his cell phone, you know. Ireland's about five hours ahead of us in time. That's it. That screwed up the first year. Second year was boring.

Hendrie: The first year was screwed up and painful, the second year was boring. But it was an experience.

Egan: Oh yes, I guess I'd do it again.

Hendrie: If you had to change or redo any decision you made in your career, do you have any thoughts as to what it would be?

Egan: I think all the things I would think about would be small things like, never buying those NEC disk drives, or you know, finding some better way to do things. I mean, it's turned out pretty darn good, you know. I'm wealthy far beyond what I thought was ever possible when I was growing up in Dorchester. I got a great family. I'm not sure, you know, you've got to be careful of unintended consequences, so if I made a change in something, maybe it would mess up a lot of good things we've got.

Hendrie: What would be your advice to young people who seem to like technical things and are considering maybe, science or engineering career, but young people that have sort of an interest in that direction?

Egan: I would encourage them to do it. I still think it's one of the most exciting work. Forget Scott Adams and Dilbert, I mean, that's not really what it's about. There's almost an excitement every moment in discovery and invention, seeing things work. But I would suggest if they really wanted to benefit from that, again monetarily, they might also want to consider taking some courses in salesmanship, or watching to see how things are sold and marketed, how ideas for products are derived like listening to customers. Or seeking out areas that could be made more efficient, both, not just the technical aspects, but how it all fits into our social structure, our environment, health, moving numbers, gathering data, all those things, see how it all relates, and then it really gets exciting.

Hendrie: Well, I want to thank you, Dick, for doing this with us, for this oral history. Thank you.

Egan: It's been a pleasure. Thank you.

END OF INTERVIEW