Daniel McCracken
Interview by Arthur L. Norberg
January 7, 8, 9, 2008

Session 1, Tape 1, Side A

NORBERG: It's January 7, 2008. I'm in the home of Daniel McCracken for Session 1 of an interview with him about his professional career and his activities within the ACM.

We've talked a little through e-mail about this interview, and I would like to begin back at the earliest years that you can remember. Tell me something about your education, your parents, any siblings?

McCRACKEN: Thank you. I was the youngest of six: four brothers and a sister. All have predeceased me. My earliest memory is around age five, around a Christmas tree, where I was expecting to get something. Probably expecting to get an erector set—one of my favorite toys—for making things. I'd build the stuff in the diagrams, and then enhance it somehow. I had a close relationship with my mother, not as close with my father. They were both encouraging in their own ways, but quite different ways.

I went to public schools in Ellensburg, Washington. In the middle of fifth grade, somebody decided I was bored, gave me some tests, and I got promoted into the middle of the sixth grade. I've always wondered whether that did me any favors or not. I was less bored, I guess, but my social development wasn't in great shape anyway, and that didn't help. And then my last year of high school, I went to Ithaca, New York. My mother was convinced that I was in a competition with the son of the local college president, and that I would not be able to shine the way she thought I should as long as we were in the same school. That seems kind of silly now, but on the other hand, he won the Bausch & Lomb Science Award at Ellensburg, and I won it at Ithaca the same year.

NORBERG: You won the what?

McCRACKEN: Bausch & Lomb Science Award. Outstanding high school kids in science. We both won it the same year. Where do you want to pick up next?

NORBERG: When you went to high school. Let's pick up there. I should ask you whether you had any interests in mechanical toys, like the erector set that you mentioned. Did you build a radio, for example? Were you interested in these things during your elementary school years?

McCRACKEN: Yes, absolutely, late elementary. One of the highlights of my memory in that kind of area is building a radio from scratch, meaning no Heath Kits. This was in the late stages of World War II. You couldn't buy parts of any kind, so I scavenged a whole radio out of the junkyard. I'd learned enough about circuits to design my own receiver, cannibalizing parts from assemblies and whatnot. I put together a...I figured it must have been a...not a superheterodyne, not a superhet. I knew how they worked, but I probably didn't have the IF transformers. I had an RF transformer, a detector, an audio, an amplifier, a power supply, and four tubes. Sounds about right. And it worked.

[Telephone interruption.]

NORBERG: I'd be interested, Dan, to know what your father did for a living, and whether your mother worked outside the house.

McCRACKEN: My father got in three and a half years of a mechanical engineering degree at the University of Washington; dropped out for reasons I've never known. I was born in a little mining town in Montana in 1930. His job there was the mine engineer, which is what it sounds like, except there was a specific function, which was to run the elevator that dropped the guys down a thousand feet in the ground to get at the lead veins, whatever it was. There was some mining of silver in the area, but theirs was lead. That was just after the crash. I mean, I was born just after the crash. The price of silver went to hell and the mine closed down. It's a ghost town now. Went back for a visit a time or two. Moved to Ellensburg in the central part of Washington State, where he had a brother, my Uncle Alan, who was logging. Dad worked with him for a while, and then he bought a hay baler. This was back in the days when they had this thing that would turn loose hay into bales of hay so it could be trucked to Seattle and the dairies there. In those days, they brought the hay to the baler. Nowadays, they take the baler to the hay. He ran that for ten years, I guess, and I worked on it every summer, farm labor, all through my teens.

My mother had been a teacher in elementary school back in the days when a two-year, normal school education would let you do that. World War II came along, and the guys got drafted. She went to college, which was Central Washington College of Education then. That's what it was called when I graduated, too. She finished her bachelor's degree and went in and taught science until the guys came back from the war. I've always admired her for that. She went back to college would have been in her late 30s, and did her job. Oh, as a teacher, she certainly inspired me in that direction. She didn't tell me what to do. She tried to guide me in that way, but she led by being an example of it.

NORBERG: I'm a little puzzled by the move to Ithaca. Is that Ithaca, New York?

McCRACKEN: Yes. Ithaca, New York.

NORBERG: How long were you there?

McCRACKEN: I was there one year. My next older brother was going to Cornell, and I lived with him in a little trailer house just off the campus. Just across Cascadilla Gorge. My mother wanted to get me out of the house. I don't really understand all of that. My parents didn't have a particularly happy marriage, I don't think, but that's hard for a child in my situation to judge. All my siblings, as I hear it, got out of the house, somehow, at age 16. They just took off and went to some other school or went to nursing school or whatever. So, that was the family tradition somehow or another. I would have gotten a good education at Ellensburg. I had great teachers. It was a college town and all that. But I certainly got a good education at Ithaca. Outstanding teachers. A third of my classmates were children of Cornell professors, so the standards were high, and I did very well there. It was what my mother wanted, and I had no reason to object. I was adventuresome. I had gone out on three-day hikes all by myself when I was 14. That sort of thing. I did all kinds of individualistic things.

NORBERG: Did you study science and mathematics in these years before high school?

McCRACKEN: Everything I could get. Well, I could have gotten a biology course, but I didn't. But I took physics and chemistry and all the math that was offered. There wasn't any calculus in high school in those days, but I took everything. Solid geometry. Hadn't much use for it, but I took what I could get. I was the president of the math club at Ithaca, which was a leadership opportunity.

NORBERG: Yes. Well, did you then go back to Ellensburg, Washington, after the year?

McCRACKEN: Well, I hitchhiked back to home, yes. Then I went to Lee College in Cleveland, Tennessee, for two years at my parents' wish, which was a religious school. Academically not strong, although I had some nice teachers in some subjects. I had a fine English teacher, a livewire psych professor. Learned some music.

But I can give you a sample of what academic standards were. Took calculus. We did differential calculus and we did integral calculus. This poor guy one day said, "I've noticed that if you differentiate something and then integrate the result, you get the original function back." He said, "I don't know why that is, but it's true with everything I've tried."

NORBERG: That's amusing.

McCRACKEN: Nobody said, "Well, hey, that's the fundamental theorem of calculus." We didn't know. We just soaked this up. Interesting news.

NORBERG: But at least you soaked it up in high school.

McCRACKEN: No, this is college.

NORBERG: That's at Lee College?

McCRACKEN: Lee College.

NORBERG: Okay. And where was that?

McCRACKEN: Cleveland, Tennessee.

NORBERG: Cleveland, Tennessee.

McCRACKEN: Thirty miles from Chattanooga. An important part of my life. I had a chance to live in the South. I got a lot of broadening experience of a sort.

NORBERG: The college was affiliated with the Church of God, as I note in your notes.

McCRACKEN: There are lots of denominations with Church of God in their title somewhere, and this was the original one. A fundamentalist Pentecostal system, which I didn't buy. I started to break away from my parents' system at that stage.

NORBERG: Were they active in Church of God? Or a similar one in Washington?

McCRACKEN: Sort of. We weren't churchgoers. You had to drive 35 miles to get to it. There wasn't an appropriate church in Ellensburg. We'd go down to Yakima. But for a 35-mile drive, they weren't very in...you know, they weren't on committees or anything like that. So they were active churchgoers, but they weren't involved in running the place or anything.

NORBERG: Sure. Well, let me get the chronology straight here. We had just talked about being in Ithaca near Cornell for a year. Were you still in high school at that time?

McCRACKEN: Yes, I was at the high school. I graduated from high school there.

NORBERG: All right, so that was just one year of that.

McCRACKEN: '47, yes.

NORBERG: Okay. The standards there were pretty high. That's what you said a little while ago in the sense of the people who were attending.

McCRACKEN: Well, and the teachers.

NORBERG: Yes. Then you moved to Cleveland, Tennessee, and were there for two years at Lee College.

McCRACKEN: Yes, well, I didn't move in the sense of changing my residence. I went home every summer.

NORBERG: Oh, sure. Yes. That's all right.

McCRACKEN: That's right.

NORBERG: I'm just trying to get that straight because I'd like to ask you about Lee College a little bit more. What was it like at that time? What sort of courses were taught? Was there an emphasis on religion and so on?

McCRACKEN: It was a conventional college curriculum, as they understood it. They had English and some science. Not very much science, actually. Certainly was some religion. Old and New Testament. Studied music. They had sort of a music school for people who were going to be doing that kind of a thing. The basic job of the place-- it wasn't a Bible school. It was preparing future preachers in that denomination, and choir directors. So you could study lots of music and go to chapel every day. Academic standards, as I say, varied. The English professor was a guy self-taught in a lot of ways, but he brought Shakespeare alive to me. I'm happy. Appreciate that. More or less conventional with a strong religious flavor.

NORBERG: So, the English teacher stands out. You also noted in your notes that you had a year of German and a year of French.

McCRACKEN: Yes.

NORBERG: And the person who taught that had graduated from one of the écoles in France.

McCRACKEN: Something like that. I never saw her résumé, but she had been teaching in Paris, and she had an accent. At that stage, I wasn't chatting up my professors. I did learn pronunciation. It was the old-fashioned way. We talked about the languages in English. I never made any attempt at conversation. Final examination is to recite the Lord's Prayer in French.

NORBERG: Now, what occasioned, then, the move from Lee College back to Washington?

McCRACKEN: Well, Lee College was a two-year school, so it was a junior college. Went back home and graduated from my hometown college, which was the cheapest way to do it.

NORBERG: Which was?

McCRACKEN: To live at home and--

NORBERG: No, Central Washington?

McCRACKEN: Central Washington. At the time, it was called Central Washington College of Education. It's now Central Washington State University. Just seemed like the natural thing to do. With my grades and activities, I surely could have gotten a scholarship to lots of places. University of Washington, at least. A very good school, I thought. Elite at least. Never occurred to any of us. I just went to the teacher's college in my hometown. And same story. I got some good courses. It was not MIT. "The lives I could have led" kind of thought and take back to some strange paths as to how things might have been different if somebody had said, "Well, why don't you apply for a scholarship to Washington State?" Never occurred to us.

NORBERG: It didn't occur to me either. I had a similar sort of path.

McCRACKEN: Well, that's good to know.

NORBERG: In studying at Central Washington, were you there only two years, or did you have more than the two years?

McCRACKEN: It was two years. I went to the University of Washington the summer in between the two. Summer of 1950. I was taking a lot of correspondence courses from the University of Washington and the University of Chicago. Accumulated credits. I was able to graduate in four years with two bachelor's degrees. I had no idea how little I was learning that way. So after that, I wanted to try to do graduate school. But anyway, I got a Bachelor of Arts in Math and a Bachelor of Arts in Chemistry. Didn't offer a Bachelor of Science. These were for people who were going to teach science and math in high school, which was what I thought I wanted to do. I did take, I think, one education course for sure. I think there was another one. That's two more than the average college professors have. [Laughter] And I had a very fine physics professor and a very fine chemistry professor who encouraged me immensely and explicitly. The chemistry guy tried to talk me into joining a Toastmaster's club and learn

something about public speaking. He could see that I was shy and he could see that I had leadership possibilities. There was one in town right when he suggested it, and they would have taken me as a student, no problem. I didn't have enough sense to take his advice. Learned it along the way.

NORBERG: I notice in your CV that from '51 to '58, you were with General Electric. It strikes me there's a lot to talk about there.

McCRACKEN: There is.

NORBERG: First of all, how did you come to be at General Electric, and what was your initial assignment?

McCRACKEN: I came to be at General Electric because the Hanford Atomic Products Operation, as it was called, was a couple hours away from where I grew up: Richland, Washington. Hanford was a small town or village along the Columbia, where the Atomic Energy Commission, whatever it was called in World War II, built the plants that produced plutonium. I just applied there, and they accepted me, and same story. I didn't apply anywhere else. I went to work the day after my college graduation. What they did with technical people in those days—maybe still do, I don't know; seemed like a good system—the plan was to have me take four, three-month rotations at different kinds of work that I was especially qualified for. At the end of the year, I would decide and they would decide where the best fit was, and hopefully that would be the same place, and I started my career.

Well, the first thing I did was take the chemistry path and work in a plant that separated tritium (hydrogen-3) from slugs of lithium that had been irradiated in one of the reactors. Gases would boil off and then collected. Shipped it to Los Alamos where they did their thing. I was an overpaid, under-qualified technician, frankly. The product was so extremely expensive that I guess they wanted to get the college-educated people hopes of something or other. It didn't work. [Laughs] At one point, in a sleepy midnight shift, I flipped a switch, and bells went off all over the building. I had just exhausted—I don't know how much per volume, but they told me it was \$10,000 worth of tritium went up through the stack. I flipped the switch back. But it was an education. Lots of things were done for my benefit that I don't know why I deserved in the way of broadening experience.

At one stage, somehow, I got some of this tritium into my body. And once it gets combined with oxygen, it acts like water and any other chemistry that goes on. They wouldn't let me work until it drained out of me. It took three weeks. During that time, they said, "Well, you can't just sit around," and they set it up so that I visited the rest of the operations that were there. Had a 200 area, it was called, where they separated the plutonium from all the other stuff that came out of irradiated uranium. A zillion isotopes, many of them extremely radioactive. Of course, everything had to be done by robots of some sort or another, I guess. A whole series of chemical operations that went on to get uranium from plutonium. I don't remember the details of it all. They also fabricated the halves of a warhead, in these little bitty beakers. You can't have a vat of this stuff in solution; it's going to blow up. So you had little beakers. By happenstance, I learned how much plutonium it takes to make a bomb, and it's something like two kilograms. Saw the chemical process where they took the stuff from here to there and purified it and precipitated it out and cast it.

Another major area was where they prepared the slugs to go into the reactors—about a four-inch cylinder of uranium, about an inch or more in diameter, clad in aluminum, and stick it in a pile for six months and make plutonium. 2,004 rods—I remember that number—in these 600-megawatt reactors. They would take out a few of the uranium rods and put in lithium, which is poison to the reactor, but withdraw the control rods so the thing is still cooking and so on, self-sustained. Six months of that. Drop them into the water at the other end. Put them in a furnace to melt down and get the tritium out. This was after the first hydrogen bomb had been exploded, but I played my teensy little bit in production of plutonium. I don't feel very good about that. It's not something that I like to think about.

NORBERG: Did you have any contact with the Knolls Power Lab?

McCRACKEN: No, I didn't. Not at all.

NORBERG: In the rotation, then, in your first year in General Electric, where else did you go?

McCRACKEN: The first rotation turned into seven months. They didn't have anybody to replace me in three. Then I went to the computing operation. I'm trying to think of what it was called at the time. But they did payrolls and some of the accounting for the radioactive material, I think. And the scientific computation for the engineers. That was it. I never went back. There was no third rotation. I never left computing.

NORBERG: I'm trying to figure out what was meant by "computing" there. General Electric, as far as I know, bought their first computer for use in the Louisville plant making appliances. That was a little after 1950, as I remember. '52 or '53, perhaps?

McCRACKEN: That sounds about right. I went to Cincinnati in '54 to the jet engine facility. My boss at Hanford came through for a visit one time, and we went to Louisville and saw that operation in '54 or '55. It was UNIVAC.

NORBERG: It was UNIVAC.

McCRACKEN: Yes. I don't know how long they had had it when we visited.

NORBERG: So what sort of computing were they doing back in Washington?

McCRACKEN: We were using the Card Programmed Calculator, which was a lash-up of an IBM 605 calculator. I don't remember the names, but a computing unit. 2,000 vacuum tubes. Storage for about 40 or 50 digits on it. Plugboard control. A wired program machine. That, and a somewhat modified tabulator that printed stuff from cards that it read and did some arithmetic, or participated in that. And a punch, and an icebox. A storage unit that held, I think, 16 numbers. Can you imagine that?

NORBERG: Icebox.

McCRACKEN: They called it an icebox because it looked like one. It was about a two-foot cube. It sat there and used up space and weighed about 1,200 pounds, probably. Stored 16 numbers.

NORBERG: So did you do any programming for that? Or was that all you had done?

McCRACKEN: Well, define programming. I wired boards for sure. I hesitate to call it programming because I guess I reserve that for stored-program machines, and this definitely was not that. But it had a plugboard about a foot by two feet, and it'd hold a lot of wires. When we got done, my buddy and I built a system, and I'll tell you about it. The frailer women could not pick up those boards. [Chuckles] Weighed 30 or 40 pounds, mostly wires. I worked on the computer part, the 605.

NORBERG: 605 or 650?

McCRACKEN: Oh, 605. This was the...

NORBERG: Earlier accounting machine.

McCRACKEN: Yes, it was used for accounting stuff. Modified for use for scientific computation. The CPC. I learned from Jim Birkenstock there were 700 of them. I believe that's it. I thought it was 2,000. But anyway, I believe he told me there were 700 of those. He should know. That was computing in the aircraft industry until the IBM 701 came along. That was the mainstay of scientific computation for two or three or four years. There were publications that showed how to do the various operations. How to wire up the floating-point operations; nothing built in for that. And how to do sines and cosines and square roots and a few other things. My contribution to the effort at Hanford was to look at the Taylor series for sine and cosine. There are Taylor series for the Bessel functions that the engineers needed because of the cylindrical geometry. I stayed at that long enough until I saw how to make a small change in some mathematics and then some board wiring. Only had 60 steps, and each one had an alternate, so you had 120 operations to do everything. I got, I think, four Bessel functions out of the calculator, out of the 605, which before had been done with individual card programming. Add these two numbers here stored, multiply by this; if it's bigger than this, go to there, and that sort of thing. All those cards read it, and there were 400 milliseconds per card. I speeded that up by a factor of 50 or 100, I guess.

NORBERG: How?

McCRACKEN: Well, by doing the Bessel functions in the 605 instead of having to do it with card programming. The Taylor series, you know, I'd use this in class. I won't try to describe it here.

NORBERG: Why not?

McCRACKEN: Well, okay. The series of $\sin x^3 - (x^3 / 3!) + (x^5 / 5!)$, etc. One was the Bessel function, J_1 perhaps, is something like x over two minus x over 2^3 , divided by 1^2 times 2^2 times 3. Something of the sort. There was a pattern. I saw the pattern that let me trick the-- I don't

mean trick. I took the existing wiring that would get us sine and cosine and got Bessel functions out of it at a much greater speed than the clunka-clunka-clunka reading cards. Maybe 100, 200 cards can be one Bessel function. We did so many Bessel functions that we had three CPCs. They'd rent it for \$2,000 a month. They were able to send one of them back with what Bill McGee and I did. He worked on the tabulator boards to make all this tie together, and they were able to send one back. That's \$24,000 a year.

NORBERG: Sure, in those days.

McCRACKEN: In early 1950 dollars. We got a management award for it. That's funny. My immediate supervisor came in to us one day and said, "Ben Butler wants to see you guys at 2:00." We hadn't the faintest idea what was going on. We thought we were being called on the carpet. We walked over. You know, we worked some awfully strange hours and didn't punch the clock in any normal sort of way. We thought we were in trouble. We walk in and he had a \$500 check for each of us. [Chuckles] It may not seem like much for having saved the company what we did, but you had to bear in mind that my salary at the time was \$400 a month. It was a big boost in my career. A very satisfying experience.

NORBERG: Was that in Cincinnati, or was that at Hanford?

McCRACKEN: It's all Hanford so far.

NORBERG: All Hanford.

McCRACKEN: Yes.

NORBERG: Now, you shifted to Cincinnati. How long were you there?

McCRACKEN: About three years. I was at Hanford-- Well, I don't know how to divvy up that seven years. I'd have to think a bit. But roughly two years at Hanford. During that time, I'd come back to New York to go to IBM 701 school. The first one hadn't been delivered, I don't think, but the development machine was running at 590 Madison. I came back for a three-week programming school and programmed up a Monte Carlo calculation involving neutrons bouncing around in a block of graphite. I fell in love with computers—real computers. I couldn't see that Hanford was going to get one fast enough for my eager, young urges, so I wanted to transfer to Cincinnati and go work for Herb Grosch. Made a bet with one of my coworkers that Hanford would not get a real computer—701, 702—sooner than 18 months. One-dollar bet with a guy by the name Chuck Thompson, who retired a couple years ago as senior vice president of Motorola. I lost; they got one in about 15 months. So I sent him a check, which he never cashed. [Laughter] So I went to Cincinnati then, in early '54.

NORBERG: How long did you stay at Cincinnati?

McCRACKEN: I guess we can work backwards. I was at GE seven years altogether. I was at Manufacturing Control Services in New York for about the last year, roughly, and I was at the Computer Department for about a year. So I was in Cincinnati for two and a half years or something.

NORBERG: There was also a mention of Arizona.

McCRACKEN: The computer environment was and is whatever it is now in Phoenix, or outside of Phoenix. Herb went there to run an operation involving a bunch of stuff he cobbled together. Contract programming. Contract computer operations management. I was manager of training. We thought we were going to sell training to...I don't know who exactly. After not very long, I claim that I saw very, very early that GE was not going to make it in the computer business, and I got the hell out of there. I wanted to do another transfer from there to New York and learn something about how computers are used in manufacturing. Headed off to graduate school, having gotten a great education from General Electric. Immensely grateful to them. Lots of fun things happened in Cincinnati too.

NORBERG: Such as?

McCRACKEN: Well, I worked for Herb Grosch. He's a flamboyant character. We will return to his story in the ACM context.

NORBERG: We will.

McCRACKEN: But he was a big name in computation and technical stuff at the time. Made a big name for himself by making outrageous statements sometimes, but he encouraged young people in a major way. He certainly encouraged me. One thing is he encouraged me to join ACM. There was a meeting coming up and a bunch of us wanted to go. Then he said, "Well, I can get you travel more easily if you're members," so we joined. That's how I got a 1954 "Member Since" date. Got programming experiences. The last programming I did for, you know, live ammunition sort of thing, really doing some work, coming up with examples for my books. I worked with engineers on combustion chamber stuff. Most of what I did, as I recall it, was thermodynamics of the compressor stage of the engines. Herb had done-- You'd have to have tables showing the gas characteristics of hot air. It's not an ideal gas. People have worked out those things. We needed a new computer, and he did a two-dimensional Chebyshev curve fit. I still don't know what a Chebyshev curve fit is.

NORBERG: I can't remember.

McCRACKEN: And I don't know whether he did it right or not, but I presume he did. He calculated the orbit of some moon of Jupiter using a hand calculator in the '40s. He had real technical skills. The biggest thing he did for me was getting me my first book contract.

NORBERG: Can I ask a couple more questions before we go with the book contract?

McCRACKEN: Please do.

NORBERG: When you were at the Jet Engine Division, who was buying the product?

McCRACKEN: The United States Air Force. Well, no, no, that isn't fair. They sold it to airlines also. J79 was the number I remember, and it went into a whole range of military aircraft.

NORBERG: At the time, did you or anybody else around the Jet Engine Division have any contact with the Lewis Propulsion Laboratory up in Cleveland?

McCRACKEN: Not at all.

NORBERG: It was a NACA group at that time. Not at all? Okay.

McCRACKEN: I don't remember.

NORBERG: All right. I wanted to explore that a little bit there if there was.

McCRACKEN: There was an aircraft nuclear propulsion laboratory. For a while, it was a thought that maybe nuclear reactions could be... somehow got up in the air without frying up the crew and fly forever without refueling. It turned out this could not be done, but for several years there was research into it. I had a Top Secret clearance for a little while to do some kind of work on it. I don't remember what I did. I remember going back there from Hanford to interview. I'm sitting in what we call Human Resources now, and I heard Herb talking with somebody a few partitions away. This other person says, "I'd ask for a 10% raise." Another person says, "I don't think he's worth it." They didn't know that I could hear this. So as fast as I could find Herb, I said, "I'll come with no raise." And he said, "Well, that would help." That tipped the balance and I got to move. I don't know, looking back, it seems like a very, very pivotal time in my career.

NORBERG: Now, it's my understanding that the computer laboratory or computer manufacturing facility, or whatever it was called in Arizona, was a bootlegged operation in that the money was sort of fuzzy as to where it came from and that there was no official sanction for the Computing Division from the highest levels of management.

McCRACKEN: I'm sorry, Arthur, I was not at the highest levels of management.

NORBERG: Well, of course.

McCRACKEN: It had a feeling of a family operation. The guy who ran the place, Barney Oldfield, I met him and it was a chitchat, friendly sort of thing that a small group can generate, but I just didn't have any contact with that kind of thing. That rings a little bell that I certainly acknowledge. We heard stories about how later Dick Canning was at... I think it was Barney. Maybe somebody above him was driving from Dallas to Los Angeles and his car broke down in Phoenix for three days. Fell in love with the place, and that's how they decided. You hear stories.

NORBERG: Of course. The story I've heard is that they wanted to get as far away from headquarters as possible, headquarters in Schenectady, and therefore not be sort of under the eye of any of management back there.

McCRACKEN: I can well imagine that. I heard about that kind of thing from listening to Herb, and I have since learned that one should apply some adjustment factors on anything like that.

NORBERG: What I was referring to are articles in *Annals of the History of Computing* by some of the people who were there whose names I don't remember right now.

McCRACKEN: Strickland?

NORBERG: Yes, Strickland was one of them. Oldfield certainly was one of them.

McCRACKEN: Sounds entirely plausible. From what I could see, it's possible.

NORBERG: Okay. Other people in computing besides Herb at General Electric that you worked with?

McCRACKEN: Didn't work with very many. The contacts between computing people at different locations, there weren't enough of us to where there was much to talk about. I don't know. Louisville, they were doing commercial data processing to keep track of inventory. I don't know what else, exactly. I went there at my initiative for part of a day. It wasn't something that GE did so that we both do a better job for GE. Phil Thompson and I wanted to see it, and Herb said sure and the Louisville people said sure, so we got in my car and drove down there. The General Engineering Lab in Schenectady had computing as far as anybody from GE, but I didn't have contacts with that except for trying to get a transfer there, which didn't work out. They figured out I didn't really know enough math to be of much help to them. I'm struggling to think of other GE computing operations in the early '50s.

NORBERG: I don't think there were any. At least not using machines like the 701 or the 650.

McCRACKEN: There must have been 650s around, and I never worked on one. I took a programming course, I think. I never actually used one. It was a workhorse machine.

Session 1, Tape 1, Side B

NORBERG: You say in your notes that you went to the IBM 701 school in 1953.

McCRACKEN: Yes.

NORBERG: Was that held at IBM?

McCRACKEN: Yes, here in New York at 590 Madison, the old building at that location. It was something like six hours a day for almost three weeks, but the last week of that, I was working on this Monte Carlo calculation that I went back there to learn to do it. Taught by some people, programmers. We learned loops and branching. Showed us how to compute a square root. You know, the usual kind of stuff. How that machine worked. Very simple machine. I think 31 instructions altogether. Not a very complex architecture. No built-in floating point. Well, of course, you had to program your own floating point, at which there are multiple opportunities to create ghastly bugs. When the IEEE Committee came along and did that right, it took 20 bright people several years. [Chuckles] I've realized that, boy, I've missed an awful lot doing that.

The floating-point underflow is real. Awfully easy to do. 36 bit word there, and one sign bit. So you didn't have a separate sign for the exponent that used excess 50 or excess something or other. If you kept dividing by a big number, you'd get a small number. Once you go through the smallest number that can be held in that representation, you start back up. I don't recall that I stubbed my toe on that particular mistake, but that caused a number of Electras to crash later. I'd love to be wrong and be corrected, but I heard the story. After about the sixth Electra fell down, somebody said, "What is going on here?" some way of seeing that the wings had developed flutter, just like vibration except it's not bounded. Eventually, it just gets big and gets bigger and bigger and bigger. They figured out that the engines had been mounted at not quite the right angle. Apparently, the engines should not be straight forward along the axis of the airplane. It should be a little bit off. Somehow or another, it was wrong. Traced that error to the floating point as the real problem. That programs kill people, I didn't know that at the time.

NORBERG: Of course not. Yes.

McCRACKEN: I did the floating point stuff in the 701 that everybody used. I remember one of the other programmers found a mistake in something I'd done, tore into me about it, and I took it with as much grace as I could muster at that stage in my life. I tried to paper over the situation. I said, "Well, thank you for helping me debug my program." She said, "Most programmers debug their own programs." [Laughter] Which is not entirely true. Anyway, that's the kind of thing I was doing.

NORBERG: Okay. One last question about General Electric before we get to the book you published. Did you have any contact with Dayton, the Air Force facility there?

McCRACKEN: They were over about 30 miles away in 1950.

NORBERG: You mentioned here, again, in your notes that you published an article in *Scientific American* on the Monte Carlo method. Did this come out of the work you were just describing?

McCRACKEN: Yes. I guess I had teaching instincts from early days. I wired up a board on the 605. There's something called the Buffon needle problem. You draw a whole bunch of parallel lines; get yourself a needle that is, I think, let's say the same as the distance between the lines. You drop the needle from a high distance, and the fraction of the time that the needle ends up intersecting with one of those lines will be one over pi, or something like that. I'm making this up. Something of the sort.

NORBERG: Don't admit that on tape. [Laughs]

McCRACKEN: Oh, sure. Buffon lived, I don't know, 150 years ago. And I'm not sure that the philosophical basis for that problem is sound. It seems to me like, if you're going to use a sine in simulating this, you've got a bit of a circular argument. Can you compute a sine, if you don't have any idea what the value of pi is... I just don't know enough about mathematics to answer it. Anyway, I wired up a board that would simulate dropping the needle. Random number generator and that kind of stuff. Between, that gave me something to talk about—the neutrons and the graphite... I don't think it was classified. I don't know why it should've been. I haven't looked at that article in a long time. I don't know what I did that used up three or four pages, but

I wrote it up and they published it with very, very few changes, which I later learned is a high praise because they normally rewrite stuff. So I guess I had writing talents even then.

The fun story out of that one is that I got...I call it e-mail because—it was dated—it came over a telephone line. We had a setup to do that between Cincinnati and Lynn, Massachusetts, where another one of the departments of the Jet Engine Division was. They could send us test cell data. The computer would send it back over a telephone line. Data. In the early '50s. And using some such lash-up between IBM and us, I got mail pointing out an error in the article. As published, it said that the improvement in accuracy goes up as the square of the number of trials. So if you did twice as many trials, you would get a four-times better answer. That would be one hell of a method, if true. Should've been square root. So help me, I wrote "square root." I'm convinced that some copy editor changed it and we didn't catch that. Anyway, I get this mail by data-over-telephone pointing out the error signed "John von Neumann." I figured this had to be a hoax. I didn't respond to it. But depending on exactly when his final illness began, it really could've been John von Neumann. He would've caught the error instantly.

NORBERG: Yes. No doubt.

McCRACKEN: And he was a consultant at IBM at the time.

NORBERG: Yes, seems to me that would be about the time he was in the hospital already.

McCRACKEN: Well, he went in the hospital in '55. I don't know what time, like what part of the year. The article came out in late March of '55, I think.

NORBERG: Okay. Now, I think you said to me just a little while ago—actually, before we started—that Herb had made it possible for you to write the book that was published in 1957 called *Digital Computer Programming*.

McCRACKEN: Herb made it possible in two senses. He gave me time off from work to write it once I had a contract. We were at a meeting in Boston in whenever it was, '55. Two editors from Wiley, Charlie Stoll and Walker Stone, went to Herb and said, "Why don't you write a programming book?" And Herb said, "Nah, not me. That's not my thing. But I've got this kid working for me that ought to write a book." And they said, "Fine. How can we meet him?" He said, "Well, he's right over there." One thing led to another, and they wanted to see samples of my writing. I had written some stuff for a GE publication that went to engineers in management. But I had some samples of writing. I had to send an article with my writing. And they said, "Okay. Looks like you can write. Give us an outline." One thing led to another, and I wrote the book. I remember working at home—I wrote longhand in those days—in the morning, and going to work and do my job for about half a day. Did that for some months. I don't remember how long. Herb let me do that. GE holds the copyright to that book, but I got the royalties.

NORBERG: It's part of a GE series.

McCRACKEN: Yes. One of them was a very influential servomechanisms book. Just not that. And a bunch of others on engineering topics.

NORBERG: What did you perceive as the need for that book at the time?

McCRACKEN: I am hesitating because I'm not sure how well I foresaw the market. It just seemed sort of obvious that something that big, with no textbook-- There were four other books, at least, three in programming, and they were important books. But if anybody wanted to teach a course, there was nothing to use for a textbook. It just seemed obvious that, you know, nature abhors a vacuum, so let's get in there and get the first one. Jean Sammet spoke up at a Charles Babbage Foundation meeting one time and said, "Yes, I have it." She said she remembers teaching a course somewhere in the spring of '57 and there was no textbook she could find. Fall of '57 my book was there. Certify the date. And, yes, there had not been a textbook before that. A textbook that uses a hypothetical machine doesn't have much of a chance of selling a lot of copies, but we had no competition for a couple of years. It sold enough to make difference in my finances. I had four children by 1960, and kids cost money. I wasn't getting a huge stipend at Courant. We haven't gotten to that part of that story, but I left GE and went there. I was supposed to be working on a Ph.D. in math. They didn't pay a lot, and the book made a difference till some other stuff came along.

NORBERG: How did you design the book, which may answer the perception question at the same time?

McCRACKEN: I had thought about the courses I'd gone to. What the topics were that had to be considered. Loops. Branching. Had to talk about floating point. Had to talk about I/O. I'd been to probably half a dozen programming courses at that stage. This reflected what I had learned. Came up with a hypothetical machine that's a cross between a 704 and a 650, and sat down and wrote the book. I evidently did it right. [Chuckles]

NORBERG: I'm not questioning that.

McCRACKEN: But I don't remember how I... I just did what seemed right at the time, I guess.

NORBERG: Were other people using these paper computers in any writings at the time?

McCRACKEN: I have a strong feeling that the answer is yes, but I can't name one. I think several people did things like that.

NORBERG: Knuth did a similar technique.

McCRACKEN: Well, yes, of course.

NORBERG: But I don't remember now whether it was--

McCRACKEN: That was later.

NORBERG: Yes, I thought it was later as well.

McCRACKEN: Well, I know it was later because he came to me in '63. Syracuse. '62 or '63. I have to think about that. We had dinner, him, Jill, and I about this book, so the book didn't come out before that.

NORBERG: You mentioned acknowledgments to four people in that book: Thompson, McGee, Grosch, and Gruenberger. What was the relationship between you and each of these men?

McCRACKEN: Phil Thompson was my supervisor at Hanford, who encouraged me in big ways and little. He obviously nominated me for that GE management award. He let us take a bit in our mouths and ran with the CPC board we worked on.

NORBERG: With McGee?

McCRACKEN: With McGee. That's Bill McGee. There's more McGees in this field. But Phil Thompson, he didn't know exactly what we were doing. It looked like we were doing reasonable things, and he said, "Go for it." We just dropped everything else, worked nights, and did our job. That kind of encouraged me as a process. Bill McGee I worked with on the thing. We stayed in touch. Dear friend. Lost his wife a couple years ago, whom I knew before they were married. Herb Grosch, of course. I worked for in Cincinnati and in Phoenix, the Computer Department, and he helped me get the contract. Who was the fourth one?

NORBERG: Gruenberger.

McCRACKEN: Fred Gruenberger left us about five years ago. He had a publication called *The Computing Newsletter*. It was a 16-page, about 6x9 thing, stapled binding, and he wrote it pretty much all himself except when he could drag in someone else. He talked about whatever interested him. He knew some number theory, and he liked plugboards, and he liked bad jokes. Got in contact with him, and I got to know him a lot better later than this. I don't remember exactly what contact that is. As early as writing those acknowledgments in, like, late '56. I don't remember exactly. *The Computing Newsletter*, I suppose.

NORBERG: There are a number of general articles that you wrote in the late 1950s while you were still at General Electric, I assume. Did they lead to anything besides publication? I'm looking at consulting now and operations involving different GE facilities, or maybe outside GE facilities. Because three of these were in the *GE Review*. Three articles. At least one was in *Datamation*. We've talked about *Scientific American*. There was also *Data Processing Yearbook*. How did all these articles come about?

McCRACKEN: I had an urge to write. When I saw something that I thought might be publishable, I wrote something. I guess it's genetic or my mother transferred something to me. I was doing it as a journalist as much as anything. I just wanted to spread the word about good stuff. It did not lead to any consulting for me. I don't know. Little hard to say. The editors at Wiley, or I can't ask them anymore, but I assume that my record of publication helped them decide that I was a good bet for writing a book even though I was 24 years old at the time. 23, actually, at the moment I met them. It was a brand-new field. Lots of people were taking chances on young folks, but that's a bit of a gamble. I had a bit of money in advance and watched other people writing for them for a little while. So, the fact that I had published these other things probably helped get me a book contract at the start of my writing career.

NORBERG: Yes. It seems to me you wrote guides to FORTRAN, the IBM 1401, and also ALGOL.

[Break]

NORBERG: Dan, I had asked you about the various guides that you just handed to me: FORTRAN solutions, the problems on the 1401, and ALGOL programming. I noticed from the cover of these that there are other people who did this work with you at least in two cases. The one on COBOL has Umberto Garbassi.

McCRACKEN: That's the second edition, yes.

NORBERG: All right. So the first edition you did by yourself.

McCRACKEN: Yes.

NORBERG: All right. Good. *Problem Solving with the IBM 1620*, which is the first machine I worked, on, by the way.

McCRACKEN: Fred did most of that. I wrote some. We talked about it a lot. I had 11 co-authorships over my 25 books, and on average, it worked out fine. Some were superb, and one was not so good. Most in between.

NORBERG: Yes, we all had that sort of situation.

McCRACKEN: Sure.

NORBERG: I brought this up because these were things you were doing while you were still in Phoenix, as I understand it, because the dates on them—at least the GE stuff—notes Phoenix.

McCRACKEN: Well, let's work on chronology just a little bit. I went to work for GE in '51. I left in '58 and went to the AEC computing facility at NYU, which was part of or affiliated with the Courant Institute (Courant was still alive) to work on a Ph.D. in mathematics. That's a good story. Hold that, perhaps forever. There's another book in here that nobody knows about because it sank without trace. It's called *Programming Business Computers*. With two coauthors. Started when I was—two guys who worked for me, actually—in Phoenix., Tempe where we were, but I think it's called Phoenix. Another hypothetical machine. Had a focus on the kinds of things done with business applications. I don't know why it didn't do much at all.

While I was at NYU, somehow or another—no recollection how this happened—but I got in contact with people at Honeywell in Wellesley, somewhere in the Boston area. I wrote a FORTRAN manual for them. Somewhere along the line, I said, "Wait a minute. This could be a published book." Went to my editors at Wiley and told them what I had in mind, and it took them no time at all to see it. They were livewire people. One of them, Walker Stone, senior editor (Walker's a little bit older) had gone through the Ford Foundation summer course at Michigan in '55, maybe, for six or eight weeks. They studied programming and logic design and maybe applications and a little bit of numerical methods, maybe. He could see that computers were going to be a big thing and that somebody in their organization ought to know something

about them. He went out and got himself a grounding education. It took no time to convince him. He saw it instantly. It took him a while to convince management to publish a book on a subject where IBM gave away manuals. I'm sorry, but that used to be an automatic laugh line in my after-dinner talks. [Chuckles] People in my audience in those situations, they certainly knew why people would buy a book even though IBM gave them away. IBM manuals have gotten...it wouldn't work now because theirs are as good as anybody else's. But the IBM manual for FORTRAN—I'll look up the code and we'll read it on the tape—was just impenetrable. Not to knock IBM. IBM has been good to me, too. I wrote for them, but otherwise... Anyway, Walker Stone saw it, convinced management, and I just turned all possible effort to getting a FORTRAN book out fast before anybody else got the idea. I wrote that book in under six months. Well, it's 88 pages. 8.5x11 format. In those days, I kept time records, and I clocked out at exactly 400 hours on that book. That may seem like too much for what you're holding there, but it sold about 300,000 copies.

NORBERG: It's listed here as being done by McCracken Associates.

McCRACKEN: I didn't know how I was going to handle my career at that point. For a little while, I thought I wanted to run a consulting operation and have people working for me. I may have thought that I'm better off being incorporated for tax reasons. I don't remember what the motivations were, but I incorporated, and still am incorporated as far as I know. It's an inactive corporation, to put it mildly. McCracken Associates is the name.

NORBERG: My research shows that you worked with a number of different companies and federal agencies, taking on consulting tasks. The Federal Aviation Administration.

McCRACKEN: That was my first consulting. Well, unless you count the Honeywell FORTRAN manual.

NORBERG: Honeywell comes next in my list.

McCRACKEN: Okay. Well, chronologically, it would've been before FAA. FAA I did on leave from Courant and never went back. Went down there. "Down there" meaning outside of Atlantic City, where FAA has NAFEC—National Aviation Facilities Experimental Center. They were in the earliest stages of trying to get a computer into air traffic control, and they had a machine that had been adapted for the semi-special purpose no reason it should've been chosen. Can't remember the name of it right now. They wanted me to teach a programming course to a bunch of former air traffic controllers who had-- the way I got it from conversations at coffee breaks and whatnot, a fair number of these people had burned out in high-pressure jobs. You handle enough airplanes and approach control at O'Hare, you get the jitters. [Chuckles] I don't see how they stand it. At any rate, this is a losing game. It didn't work. They didn't turn out to be good programmers. I worked there off and on for a year or year and a half maybe, teaching various kinds of courses, including logical design and how that machine worked at the gate level. I didn't know anything about hardware; I knew enough to do that. What was the question?

NORBERG: I wanted to get back to the chronology again because some of these works, the one on the guide to FORTRAN, which I was just looking at, has a date of 1961 on it. So this suggests to me, at least, that these were done after you left GE. Is that true or false?

McCRACKEN: That's totally true. The only book I did at GE was the first one, *Digital Computer Programming*. *Programming Business Computers* was after that. Well, no, that was during and after. And then FORTRAN and all others were after I left GE. I built on what I learned there. I learned my trade thanks to GE. I insist on my gratitude to them, but not in that particular...

NORBERG: Okay. What came about that you transferred to the Manufacturing Control Services of GE in New York?

McCRACKEN: I was totally disenchanted with what I saw in Phoenix, which was a mix of the working setup with Herb Grosch. I didn't have any conflict with him, but it just wasn't very satisfying to me. I was manager of training, but there wasn't any training needed. I couldn't sell it. I can't even remember what I did for ten months there. I just kind of hated the thing. I wasn't learning anything. I wanted to learn everything possible. If I could have seen what I was going to be doing for the next 20 years, I'd have done exactly what I did. It was beautiful preparation. I needed a broader background. I don't know how I got in touch with-- Oh, Burt Grad was my boss at Manufacturing Control Services, and Ford Dickie was his boss. I don't know how I made that original contact, but I let it be known that I would like to be transferred, and it happened. Manufacturing Control included a bunch of stuff, research and development and stuff. What I worked on was an attempt to get a computer into the operation of a job-shop level manufacturing facility in Lynn, Massachusetts, that did meters, as I recall.

NORBERG: Meters for measuring electricity into a house?

McCRACKEN: Stuff like that. I could tell you the difference between a meter and an instrument at one stage. Maybe next time, though. They would get an order for 200 of those, and they'd have to set up relays and do appraisals and that kind of stuff, and schedule the jobs and all that. It seemed like maybe a computer could help with that. Burt and I and about four other people worked on that for six or eight months, much of it in Lynn, Massachusetts. Stayed in the Statler Hilton in Boston. I learned something about manufacturing. It turned out that computers and organizational stuff wasn't ready to do that. It's been done since. But we may have had some part in the development of what's done now. It was a great learning experience. Maybe a contribution of some sort.

NORBERG: How did you and Burt Grad interact with each other while you were working for him? What sort of manager was he? What sort of problems was he working on?

McCRACKEN: As far as I remember, the only thing I saw him working on, knowing what all he was doing, the only thing I was aware of was this project with the meter department. Doesn't matter. He and I had a little bit of an arm's-length relationship. It was cordial.

NORBERG: I'm trying to understand what Burt Grad was doing in General Electric insofar as you know what it was.

McCRACKEN: As far as I know, he was doing the same thing I was doing, and I would characterize that as broadening his background for incredibly important stuff he did later.

NORBERG: At one point, he told me some years ago now—I didn't interview him, but I talked to him at various meetings—he mentioned to me that one of the first things he was doing was programming that UNIVAC at Louisville because it didn't come with applications.

McCRACKEN: No, it didn't. I must have known that, but I had forgotten it, so I'll just mention it. I didn't know that.

NORBERG: You moved to New York then. Brought your family to New York to live here. Stayed with General Electric about, what, eight months more, would you say?

McCRACKEN: Call it a year. I don't remember.

NORBERG: Okay. What came first and what came second between joining the Courant Institute, working for a Ph.D. early on, and the McCracken Associates?

McCRACKEN: This will be a fallible recollection, but I'm pretty sure it's described to make sense. I went to Courant first, and I formed McCracken Associates in late '58, probably in '59 or '60. What my reasons were at the time, I just don't know. Surely something to do with taxes. I had a succession of accountants, some of them not very good.

NORBERG: Let's turn to the Courant; was the institute free-standing in NYU?

McCRACKEN: As far as I know. I think so.

NORBERG: But had the privilege of granting degrees? Or were they granted through the math department, physics department, or whatever?

McCRACKEN: I guess it could have been either one. I didn't get close enough to actually get into a degree to know how closely it was integrated. Courant was a very, very large name before I ever got there. I'm sure NYU had welcomed him with open arms because he was bringing a great deal of prestige, whenever it was, late '30s I think. I think it was pretty well-integrated in with the math department. What they did was apply mathematical physics and that sort of stuff at a level I would call theoretical, but to insiders, it would be considered applied, the best I understood it. You asked a question?

NORBERG: Who were the faculty? Who did you interact with? Take courses from?.

McCRACKEN: The best course I took was from Lipman Bers. His field was algebra—algebra at a level that I don't pretend to understand. But the first semester was to make you see some determinants and all that, and I was doing pretty well indeed from having done computation. That was the best math course I ever took. I got an A+, if they gave such things. I remember a guy named Rob Richtmyer, but I didn't take a course from him. I took complex variables from Peter Lax. "P.D. Lax" was a big name in partial differential equations, a course they offered too. Again, at a level I wouldn't pretend to understand. And there were some others. I'd have to find a catalog to talk about some of them. But I didn't have as close contact with any of them except for Bers, as I certainly would have hoped. He and I both lived in Westchester, and the class was

on Friday afternoon. When class was over, we both needed to get to Grand Central, so we ended up taking a cab together. Otherwise, I had only a little contact there. I later had contact in a totally different context 20 years later. No, I didn't have much contact with my professors at all. The low point of that was going in to get my registration signed from one of these high-power types. I don't really remember which one now. But they were big names. Still are. This guy was talking with somebody, and he looked up to see what I needed, and he could see what the form was. He just took it from me and signed it without ever stopping talking with the other guy, handed it back to me, and I left. That was my advising session. I wouldn't do that to a student myself.

NORBERG: Probably wouldn't get away with it now.

McCRACKEN: The short story on my Ph.D. career was that I had a very poor undergraduate preparation, starting with integrating what you just differentiated and the amazing news that you get the original one back, a story I told you earlier. That just seems comical now, but it was pathetic. And the correspondence course, that's a bad way to learn mathematics, I can tell you for sure. So what I did was between bad and useless. (But I must have learned Taylor series somewhere...) When I first went to NYU, I took an intensive advanced calculus course, and I struggled even with that. Seriously struggled in it. I didn't know what I was doing. Did the homework, but I didn't understand it. I'd been thinking that I should have realized right then that I wasn't cut out for this. But the courses mostly just shot right on by me. I just didn't know what they were talking about. They had a lot of students, and I guess they had to think about where they're going to apply their resources, so they had a master's qualifying exam, two or three hours, where we took a test to see if we were ready to be given a master's degree and go on for the Ph.D. A master's was not a consolation prize then at that place. It was, I think, part of the normal progression to a Ph.D. It's a good point to check and see if their students are making appropriate progress. It just sticks in my mind. I don't know what else was on that test, but one of the questions was, "Is $\sin(x)$ over x differentiable at the origin?" I have since learned not only that it is, but how to figure it out. [Laughter] I couldn't figure it out then. That couldn't have been the only thing I got wrong because I didn't pass that qualifying exam. I got this news on a postcard. They printed up a bunch of them. Had a space for "You did" or "Did not," and they checked off "Did not" and mailed it to me. [Chuckles]

NORBERG: Yes, that seems a little odd to me. It seems rather impersonal and impolite.

McCRACKEN: Hey, I learned FORTRAN there.

NORBERG: Okay, but if it was true that you went to the Courant with certain expectations, I would assume you must have known that their emphasis was in mathematics and certainly not computing.

McCRACKEN: Oh, yes. I wanted a Ph.D. in mathematics.

NORBERG: Were you being supported by the AEC facility before you went to Courant? Or did that come afterwards?

McCRACKEN: Package. I was given a job. I had a small office I think I shared with somebody, and I did programming on a 701.

NORBERG: 701 or 1620?

McCRACKEN: Either 701 or 704. Must have been 704. I was expected to do programming for the people who needed programming done. I taught a programming course for NYU using my book. I was supposed to do this and work on a Ph.D. all as a package. And for that, I got \$7,200 a year, which was reasonable enough at the time.

NORBERG: Quite high, actually.

McCRACKEN: I couldn't support my family on that, but I had the book. It was bringing in big money, and it made the difference there for a few years.

NORBERG: Did you stay with the AEC facility after you decided to leave the Courant, or not? How long did that go on?

McCRACKEN: That was a package also. I was working at the FAA as sort of on leave, came back--

NORBERG: Excuse me, Dan.

McCRACKEN: Yes.

Session 1, Tape 2, side A

NORBERG: You were talking about working with the FAA when the machine stopped.

McCRACKEN: I had taken a leave, I guess, formally. Informally, maybe. Stopped getting a check, and went off and did the work at the FAA outside of Atlantic City. That's my last contact with the Courant Institute AEC Computing Center. Cleaned out my office somewhere, I guess, but that was it. I had finished up the second book, *Programming Business Computers*, while there. Whether I got the idea for the Fortran book before or after I left Courant, I don't know. But I certainly learned Fortran there. It's indisputable. And I learned some mathematics that was useful in coming up with examples for books. It wasn't a wasted two years in my career in any way. It's kind of a shock to be forced to admit how little I learned in undergraduate math. It didn't ruin me. I don't know if I'd be any happier today if I had gotten a Ph.D.

NORBERG: Let's see...give me just a moment here. The FAA job was done for the Computing Center. The other task--

McCRACKEN: I'm sorry. Was done...?

NORBERG: Through this AEC Computing Center.

McCRACKEN: No, no, no.

NORBERG: No, was not?

McCRACKEN: No connection. I took leave from the AEC Computing Center at NYU part of the Courant Institute. I just closed that door and opened another one. I had no other employment of any kind while I was doing the FAA project.

NORBERG: Okay. I was confused about that, then.

McCRACKEN: That's when I became self-employed.

NORBERG: You mentioned that in the AEC Center, you were just doing programming for those people there—whatever they wanted.

McCRACKEN: Yes.

NORBERG: When you left that and went back to or started consulting, what were some of the other tasks that you had to do for places like Honeywell, Shell Oil, IBM, and so on?

McCRACKEN: Honeywell I had mentioned. That was writing a Fortran manual for them while I was at Courant. Everything else came later in the chronology. At Shell Oil, I taught a programming course on the 709, I think, in the Time-Life Building somewhere. Stand-up-and-talk kind of teaching for some weeks. That assignment was at a building close to the Museum of Modern Art. It was about four blocks away. I went up there on lunch hour and fell in love with the impressionist painters. That was a one-shot teaching deal. IBM, I wrote stuff. Well, I taught a technical writing course. It didn't go very well. I know how to write; I don't know how to teach writing. But I wrote stuff for them, small manuals of how to do structured programming in COBOL. Sounds like an oxymoron, but it's not. Did three books: *Structured COBOL*, Fortran, and PL/I. The other one I wrote for them on linear programming. Somebody's coming in and going to be doing that kind of stuff. Give me a start. What does it mean to maximize output under given constraints. And I wrote a book-length manual on the 360 before there were any. Well, fairly early, I learned that what makes my kind of writing work is the examples. Other people have said that. That's why they're good books. They're expository books. I insisted on being able to run the-- Well, the COBOL book published programs never having been run anywhere. Well, I'll never do that again. That was a bad mistake. [Chuckles] I had stuff there that just wouldn't compile. The options for compiling things in '63 were rather limited. But I wrote the 360 thing. The contractor said I could republish it. Sequence is wrong. The 1401 book before IBM, where the contractor said I could republish it with Wiley, and I did. I had a similar contract on the 360. I'm afraid I took a short-sided view there. I got frustrated with the difficulty of getting support on how things worked on the 360 at a time when they were trying to get the first one out the door. Those were the days of 5,000 programmers working on OS/360. I was not their highest priority, of course. But I got impatient with that and decided that I would just finish what IBM wanted and not bother with the Wiley publication. That was a mistake, I'm pretty sure. I'm positive I'd have gotten a fair amount of money from it.

NORBERG: Who did come out with one? Do you remember who the competition might have been?

McCRACKEN: I forget. Where else was I just consulting?

NORBERG: Dun & Bradstreet. Sybase.

McCRACKEN: Well, I wrote a thing for a company called Gain Technology in Palo Alto. They were later bought by Sybase, so that's how I came to say that. That was very interesting. Found out some good things about UNIX.

NORBERG: So these are later in your career.

McCRACKEN: Yes. Fortran is '61 and all this other stuff came after that. That established my reputation. I could walk in any of these places and say, "Here, this is me." The book was something of a phenomenon. 300,000 copies for a paperbound book on something that didn't exist two or three years earlier. That's kind of unusual. A number of people have told me about, even in grad school, when somebody says, "Do you know Fortran?" they said, "Sure." The question actually said, "Well, learn it by Monday." [Laughter] And there's this black-covered book you could get. You rushed out and get it done. Mostly got the job, and they never left. I've heard that from, I think, from hundreds of people. They think they're all talking about that one right there, the '61 book. Some of them have to be talking about the '64 Fortran IV book or something else, but it's a great story.

NORBERG: Yes, it's very flattering, I think. All right. I have two other topics to discuss here in this part of the interview that essentially happened before your ACM activity.

McCRACKEN: Dun & Bradstreet, I don't know why. I consulted for something called National CSS. It's quite a while ago. They had a connection with Dun & Bradstreet there. Sorry, I don't remember.

NORBERG: No, that's all right. The two topics are: one, various volunteer activities with organizations that, as far as I can tell, did not arise because of your ACM activity, which is partly false with the next statement I'm going to make, and that is you were a national lecturer for ACM in 1964 and then again in '72 and '76. So that's one thing that's connected with ACM. We can talk about that later if you'd like. You were active with the Computer Professionals Against the ABM.

McCRACKEN: I founded it.

NORBERG: You founded it.

McCRACKEN: Yes.

NORBERG: By yourself, or with others?

McCRACKEN: I joined up with three friends namely Paul Armer, Joe Weizenbaum, and Greg Williams. We were the Executive Committee, but it was my idea, and I'm the one who went around the country giving the speeches, getting on TV where I could, trying to influence the Senate. That was a lot of fun. It was a lot of work. Travel cost me some money.

NORBERG: How can you say it was fun? The issue at stake was very, very important.

McCRACKEN: Fun in the sense of being satisfying work, doing something that you think is important, and perhaps succeeding at it. For me, that's fun, yes. Strange definition, perhaps. Stimulating, exciting, satisfying. The stakes were tremendous indeed. The money that might have been spent on a full-blown anti-ballistic missile system is just stupendous. Even though they got slowed down along the way, they spent a hell of a lot of money anyway. And still are. The Nixon administration wanted to do a full-blown deployment of the thing, and we went around the country saying, "Don't do it. It's not technically feasible. If it were to work, it would be the most complex thing ever dreamed of. Other computer systems even remotely comparable in complexity were gotten to work by a process of years of testing under realistic operating conditions. How are you going to test this thing in a realistic operation? Have a test war?" We were dead serious. Almost all of us were flaming liberals too, but in the minds of our opponents, we would not have been in favor of it if we thought it would work. We never denied that, but we said, "Look, that's not what we're talking about here. Even if you think it's a good idea, don't do it. It's going to be a waste of money. It's not going to work."

NORBERG: It sounds to me like these were the same arguments used against the Strategic Defense Initiative a decade later.

McCRACKEN: What was that?

NORBERG: Star Wars, during the Reagan administration. Parnas wrote a big piece that appeared in *The Bulletin of the Atomic Scientists* about the lack of feasibility, and you could only test it under operational conditions, and that wasn't satisfactory as a test. Seems like the same thing.

McCRACKEN: I had no connection to that, and I don't know whether they picked up anything from me or not. I doubt it. They wouldn't have had to because when somebody says, "Look, consider the telephone system. Yeah, it's huge." The amount of testing they do before anything goes live is stupendous. I talk about the OS/360. Comparable effort, perhaps. Had a million pitfalls along the way. It was years getting to be reliable and efficient. It was a pretty easy sell with programmers and some people in the military. I had a guy come up to me after a talk in Cincinnati or someplace, and he said, "Look, I'm at such and such an Army base, and I totally agree with you. But if I said so publicly I would be court marshaled. Go for it." Had some of that, too. I got invited to Strategic Air Command headquarters outside of Omaha to just talk with a group of officers. My host was a colonel who was in charge of picking targets for our ballistic missiles. In his office, he had about a three-foot reproduction of a cartoon. It showed the ballistic missile system pointed north, mounted somewhere in the east of the United States, a submarine was going to be involved at the back side of it. And the guy was-- [chuckles] The people who were running this stuff didn't believe it. Just amazing. I got a really hostile reaction

when I spoke over here in Madison, New Jersey, to a bunch of people who were building the system. They thought I was bad news.

NORBERG: I think that's true. Now, was Computing People Against the ABM a membership organization? Or was it just the people that you mentioned a few moments ago?

McCRACKEN: The four of us and about 300 or 400 people who signed our statement. Some of them were prominent people. Fred Brooks. And he was particularly helpful—in our minds, at least—because he said flat out that if he thought it would work, he'd be in favor of it. But he didn't think it would work. And he should know after he finished what he did on OS/360. He saw our point. I gave a talk in Chapel Hill on the ABM tour, and it was in a church for some reason. Chapel on campus or whatever. And he was sitting in the front row. One of my standard jokes was about OS/360, and I decided, you know, why stop? So I went ahead and told it, you know? One of my points was that...well, what I said was that something like two-thirds of all of the effort on OS/360 was given either to correcting mistakes or dealing with the problems caused by mistakes. And Fred said, "More." Communications problems were a big part of it.

NORBERG: Did you ever participate in anything else like this later on?

McCRACKEN: No. On the ACM Council.

NORBERG: Of course. We will cover that. The last one that I picked up was the Task Force on Science and Technology in the Criminal Justice System. You were chairman of the group there for two years, a group called Scientist's Institute for Public Information. Was it through them? I seem to recall hearing from them from time to time about an issue or other that they asked if I had an opinion on. So, what's the action here with the group?

McCRACKEN: The action, as best I recall it, was that Margaret Mead was connected with the Scientist's Institute. I'm a big admirer of Margaret Mead and welcomed any chance to work with her. I later got a chance to work with her a lot. But she was lending her name to what this organization wanted to do. To be perfectly honest, I didn't put very much effort into that. Went to a few meetings and met with people. I wasn't a major hitter.

NORBERG: But it allows us to segue into the second activity, and that's Union Theological Seminary. What brought that up in your mind...

McCRACKEN: I need some coffee. [Chuckles]

[Break]

NORBERG: You mentioned a little while ago, when we were talking about your move to New York and talking about coming with a wife and four children and therefore you needed to have them supported, and once you left the Courant, then you were really out on your own, as far as I can tell.

McCRACKEN: That's absolutely right.

NORBERG: Now, to stop that and to go to a place like the Union Theological, which is different than any of the things you've done before as far as I know, how did such a decision come about? What did you expect to gain from it?

McCRACKEN: The short answer is that all I understood of myself at the time was that I wanted to change careers and become a Unitarian minister. I have since come to understand that there was a lot more going on.

NORBERG: In you, or elsewhere?

McCRACKEN: In me. To pick up the story: The Fortran book came out in '61. I don't have the exact chronology myself, but I think ALGOL was next, and 1401, and Fortran IV, COBOL, and had done the *Numerical Methods* book with Bill Dorn. A life-long friend. That's about where I was in publishing. Three of those books had just sold big tonnage for me. I had wrangled a very favorable contract with Wiley. I was doing a great deal of promotion. I was going out to give talks, and passing out books. Hard sell. Something I wouldn't do today, but I was shameless then. I was doing a lot of publicity for them, writing articles and all this kind of stuff. I thought that I deserved more than the standard 15% of net. At a memorable dinner at one of the Bookbinders in Philadelphia, Walker Stone, the editor I mentioned, and two other junior people working for Wiley and I had about a three-hour dinner. Haggled this thing out. Then the upshot was that one of my contracts became 18% of the first 10,000, 21% on the next 10,000, and 25% on all subsequent.

NORBERG: Wow. That's a good deal.

McCRACKEN: It's unheard of, I think. I don't know what Michener gets. But it sure as hell would be unheard of for a textbook today. You're lucky to get 15%, and some people get 10%. Wouldn't know. Well, this had brought me more money than I had ever expected to see. Walker Stone had-- I used to have lunch with one of these guys once a month—opportunity to stay in touch; smart thing for all concerned. And Walker looked at me one time and he said, "You shouldn't be scrabbling for paying-the-rent money. We only send you a check twice a year. You ought to be getting a monthly stipend." Monthly whatever. Advance. I began to get, I think, \$2,500 a month as an advance against royalties. I'm not sure what the number on that was as of '66, but it was something similar. \$1,500 a month, maybe.

Well, after taking out the monthly advance, my royalties for the second half of 1965 were, as I recall, \$105,000. That'd be nice money for anybody. For me, it was unspeakable. I couldn't handle it. What I mean by that is that my father—my parents both, but my father more so thought of himself as a loser. He wasn't, but he thought of himself as one. He had worked out a rationalization for why the rich are rich and he was poor, and backed it up with the Bible. He was absolutely convinced that the rich people had all gotten that way by being evil. The folks who lived up on the hill must have cheated to get there. And that's preposterous. He tried that on me for the last time when I was 22 or something like that. I laughed in his face, I hope. But I heard that story before my earliest memories. [Chuckles] I grew up hearing that all through my childhood, and I guess I believed some of it.

As I look back with the benefit of some years of psychotherapy, that check did me in, I think. I figured I must be pretty evil to make that kind of money. He said it that way, but what

am I going to do? Well, give it to the missionaries. That's what I thought. Better yet, I'll invest in changing careers. Well, give it back by doing good works. Within a closed system with no possibility of criticism, it holds together. A lot of things do. Compartmentalize enough, you can justify anything. And somehow or another, it made sense to me to just throw the whole thing over and go get a seminary degree. It didn't take me very long to figure out that this was not a good idea. In the first place, I was not cut out to be a minister of any denomination. Don't have the personality for it. Some people are cut out for that and some people aren't. I wasn't; let's face it.

I started my second year there. I had a great time. I guess I should say it's fun just to maintain the game here. I learned a lot. I explored my roots. I had read the Bible cover to back three times before I ever got there, but I learned a lot. I enjoyed the study. But my back gave out, and there may have been-- well, backs are complicated things. Some people say that back problems are all in your head. Well, that's too strong. I was having trouble with all what was going on in my head, so my back gave out, and I had my first back surgery in '67. It didn't work, but I got back to the seminary and got a semester in on that year. And then I had another back operation in '68. Finally...I don't remember the details of the decision process, but at some point, I realized I was going to get back into computing. Finished one book after a month there, and I had started another one, COBOL, second edition with Umberto Garbassi. I picked that up my last year in the seminary. So I was getting back into the business. I could have just dropped out; I certainly wasn't trying to get ordained or anything like that. But I dropped out of Courant, and you know, I just decided I wanted to finish something. The graduate program. And I did. Got a *cum laude* degree out of it.

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NORBERG: Tell me a little bit about the studies there, Dan. What sort of courses did you take? Are we talking about hermeneutics? Are we talking about epistemology or metaphysics and so on? Are we talking about history of particular groups?

McCRACKEN: Yes to all of the above, depending on what your specialty was. If you know you're going to go into the preaching ministry, well, yeah, hermeneutics and all that. Public speaking in any form, how to construct a sermon, and all that jazz. I didn't do that. By the time I got to when I would've taken such a course, I was on my way out. I just focused on what I had to do to meet the area requirements and still have fun. I took a course in Jeremiah that required a reading knowledge of Hebrew. That was fun in the ordinary sense. It's just satisfying to study. But the required courses, Old and New Testament; a course in ethics; three semesters of church history; theology, two or three semesters of theology. A whole bunch of elective areas. They had a flourishing Psychiatry in Religion program, and I took two courses in that. Liked that especially. They had a fine speech course. Dropped out in the middle because of a hopeless conflict with the instructor. Thought I was out to get him somehow, but I wasn't. But I just cut a deal to get half-credit and get out of there and get out of the conflict situation. But before that happened, I learned a lot. What am I forgetting? There must have been some other things.

NORBERG: It's all right. That's a good example of things. Now, you published a book from that with Margaret Mead. Was there more than with just Margaret on that book? I forget.

McCRACKEN: Yes. Well, two books came out of that in a way. My Bachelor of Divinity-- it was called a Bachelor of Divinity at the time, and then the New York State Education Department changed it from a bachelor's to a master's. I didn't like that because for a couple of

years there, I was the only guy on my block that had three bachelor's degrees. [Laughter] And now I've got two bachelor's and a master's. [Laughter]

My Master of Divinity thesis was, I wrote up the ABM thing. A good bit of that was done while I was in Seminary. The three-year program took four years for me, partly because of the surgery and partly because I was doing other things: finishing one book and starting a second edition of another, and doing the ABM stuff. So when I wrote the thesis, my thesis adviser was the social ethics professor, and John Bennett, who was president of Seminary at the time. Roger Shinn was my adviser, and he was on the Publisher Board. So I'm hoping to help the cause of the ABM because he agreed with me. Everybody agrees, except the contractor.

NORBERG: So what gave rise to the book, *To Love and to Perish*? Was that the ABM book?

McCRACKEN: My involvement with Union Seminary made that possible. What happened was that when the National Council of Churches—a Protestant organization was right across the street from Union Seminary; Union Seminary and National Council of Churches of Christ was the official title—cosponsored a task force on technology and society. I'm not going to have the names exactly right. And there were some two dozen people: theologians; a population expert, who happened to be a Jewish woman; people who knew a lot about environmental issues. A guy who had been my department chairman and my manager at GE in Evendale was on it. I had lost track of him. We can find a list of who was on it. Some of them were pretty well known. The co-chairs were Margaret Mead and my thesis adviser, Roger Shinn. Roger recommended me as a person to work on the task force report. The executive director of the task force was a man named Ed Caruthers, who was a Presbyterian minister, and has since passed on. So the four of us were the editors of that task force report. It got generated like most task reports: by cobbling together the reports from subgroups. And like most such things, it wasn't much of a book. I didn't think so and Roger didn't think so. But that was also fun in any sense you please, because Margaret Mead is an exciting person to be around. She was a dynamo. It was a real privilege.

[Telephone interruption]

The various subgroup reports fed into an editorial process, which I was the main player in. I mean most active. Margaret was an inspiration on other things, but she didn't do much of the actual dull work. Entirely appropriate that I should do it. So I applied my writer's hand to the book, and of course, it had to be cut by I don't know how much, a factor of two or three. One chapter, I don't know what happened or how it got to a certain point, but Margaret sent in a telegram or whatever it was at the time, saying that "if Chapter Five goes out the way it is now, take my name off the cover." And she was right. Roger Shinn, he didn't want to rewrite it. I don't know if he felt I could do a better job or not. He also had a bit of a temporary health problem. He got himself to my house in Westchester to ask me to rewrite the chapter. He wouldn't trust the telephone because he knew I'd want to say no. So I said yes, and sat down and rewrote Chapter Five. When Margaret saw it—I still have the letter she sent me that said, "That's very fine writing." She was widely accepted as one of the best expository writers in the 20th century, of course. Coming from her, that was really nice praise. So that's the highlight of my career in a way. The book sank without a trace.

NORBERG: Oh, it did?

McCRACKEN: I mean I have a copy.

NORBERG: I don't have my notes here. I don't know whether I found a copy or not, but I know I didn't look at it.

McCRACKEN: Happy to give you one.

NORBERG: Okay, Dan, let's turn to ACM since we have explored a good deal about your early career. You mentioned before that you had become a member at the urging of Herb Grosch. Is that correct?

McCRACKEN: Right. '54.

NORBERG: All right, so you were around a long while before you really became involved in a deep way with ACM. Is that a fair statement?

McCRACKEN: Well, define "deep." Actually, I had been a National Lecturer or whatever it's called. Do you know what that is?

NORBERG: Yes. I was a National Lecturer for Sigma Xi.

McCRACKEN: Done that. That was satisfying. Sure, if you like that kind of speech. And it fit into my book. I needed to be in touch with my readers, you know? Professors were my buyers. So that contact with the market was important. I like to talk. That was fun. ACM paid travel and helped with making the arrangements. Otherwise, I set up the trips. So I had that beforehand. There was the strange little incident of the Counter Conference. With the uproar of the Democratic Convention in '68 in Chicago, some of us thought that Chicago should be punished, I guess. I have a hard time recovering my motivations at the time, but anyway, ACM '70 was-- ACM something or other was scheduled for Chicago, and we didn't want to do that. So we said we were going to hold a Counter Conference, and that's the only title it ever got--the Counter Conference. We had some people that agreed with us and worked with us. I got as far as meeting with a facilities person at a hotel in Boulder, Colorado, meeting rooms and stuff. Then, common sense took over and we just stopped that. It wasn't going to be financed. It was a bad idea. Of course, with that, I twisted some tails in ACM, and obviously, they didn't care for this kind of activity. No reason they should have. I went to some kind of meeting at ACM headquarters technically open to membership. I found out the meetings and just went. That was my first time in ACM headquarters, and that was whenever it was, '69 or '70. But I never thought I'd become an officer and join the Council.

NORBERG: What was the meeting at ACM headquarters?

McCRACKEN: I'm not sure. A Conference Committee meeting, perhaps. Whatever meeting it is that we were trying to boycott. ACM '70, perhaps. It might have been one of their meetings. When it'd been announced that there was going to be an open meeting, I went. Sat on the windowsill where I'd later chair the Executive Committee. I was forgiven, apparently.

NORBERG: [Laughs] I'm looking for some information about what you did as an ACM volunteer before that, between '54 and '64. Were you volunteering at all, or dragooned, or whatever you want to use as the right word here? What were you doing for ACM in that decade?

McCRACKEN: Well, more at some times in that decade than others, but I was chairman of the Computers and Public Policy Committee.

NORBERG: That's 1974, though.

McCRACKEN: What's your question now? Which decade are you talking about?

NORBERG: I'm talking about the decade between '54 and '64. Did you do any volunteering then? Or were you asked to do things?

McCRACKEN: I don't think I did. Neither. None of the above.

NORBERG: All right, so the 1964 National Lectureship was really the first time you were actively involved.

McCRACKEN: As far as I remember, yes.

NORBERG: Okay, fine. During that period—again, we're still talking about the decade ending in '64—were you a member of any Special Interest Groups or committees?

McCRACKEN: I don't recall that I was. I don't know when the first SIG—Special Interest Group—was founded. I think the only one I ever joined was Computer Science Education. So, I joined that early and stayed in, to my professional development. I think the first meeting of that was in, like, '66 or so. And I don't recall that I did do anything earlier.

NORBERG: So there'd be only one, let's call it a Special Interest Group, for lack of another term.

McCRACKEN: That's the term, an ACM SIG.

NORBERG: So, you were a member of that. Did you go to annual meetings?

McCRACKEN: Oh, yes. Absolutely.

NORBERG: Did you attend any business meetings or whatever of the ACM Executive? Before you were elected, now.

McCRACKEN: No. Except the one thing I had mentioned that I crashed in connection with the Counter Conference.

NORBERG: It's also beyond the 1964 period.

McCRACKEN: Oh, yes.

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NORBERG: The reason I was asking those questions was to try and elicit from you some statement about what you thought of those meetings when you attended them. I'm speaking of national meetings now. What you thought of these meetings and what sort of interaction you had with the other people. But if you didn't have any, then there's not...

McCRACKEN: No. If I understand your question, I assume you're also getting at what were the foundations that led me to want to be an officer.

NORBERG: Exactly.

McCRACKEN: Okay. Well, the meetings, they were very important to me. I was trying desperately to learn the field and keep up with some piece of it. Nobody can keep up with all of it. That's been impossible since as long as I've been in the business. But scientific applications or programming, I was an avid attendee at a lot of meetings in that period, some of which I attended at my own expense, some at GE expense. Herb was very gracious and generous about that. I went to a meeting in Philadelphia. I remember very distinctly that I stayed to the bitter end—to the last paper of the last session. I can't tell you exactly what I learned where, but the process was an important part of my professional development. It was my professional home. I don't know what I'd be doing today without ACM, let alone what being an officer did to my career. A world without ACM—it would've been some other organization doing the same thing under some other name. [Chuckles] There had to be something like ACM.

NORBERG: There's always the sort of chicken-and-egg problem. Was it your reputation within the computing field as a result of writing these books and guidebooks and so on, or did it enhance your writing of new materials because you became an officer within ACM? And I think that's a very hard thing to separate out.

McCRACKEN: The officer part is not relevant because I wasn't an officer until '76. I published 15 books by then.

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NORBERG: Now, Dan, you know there's no one reason for anything.

McCRACKEN: Oh, that's the sole reason.

Session 1, Tape 2, Side B

NORBERG: [Laughs] Dan, I'm not buying that.

McCRACKEN: Well, I nominated myself, essentially, against two superbly qualified guys who would've done at least as well as I did.

NORBERG: As vice president?

McCRACKEN: Yes. I don't know if you want to leap ahead to that right now.

NORBERG: Go ahead.

McCRACKEN: Well, this is '75 now, and I wanted to be vice president. I came on the Council in '74, and I made it known I wanted to be nominated. The Nominating Committee didn't nominate me. I knew them all, of course. It was a small club at that point. Still is, in some ways. One of the members of the Committee came to me and said, "Well, Dan, we didn't nominate you, but you'll get your turn sometime. Don't feel bad. Are you pissed?" And I said, "No, I'm not pissed, but I'm going to run anyway." [Laughs] I felt that I owed it to Stu Lynn and Eric Weiss to tell them what I was going to do that before they heard it from anybody else. Stuart was there. Was he on Council as chairman of the Pub[lications] Board? I don't remember. Anyway, he was at the meeting. I just took him aside and told him I was going to do it, and he said, "Okay." And Eric Weiss was at Sun Oil outside of Philadelphia, and I flew home through Philadelphia, went to see him, told him I was going to do it, and then went out and got the petitions. I needed, I think 500, the number sticks in my mind. And thanks to my books, I had no trouble whatsoever getting those petitions signed. That was the first step. Then comes the election, and you've got somebody who's written some enormously popular books up against two guys who are very well qualified, but they're unknown to the general membership. It's like it wasn't fair.

NORBERG: Oh, I don't know about that.

McCRACKEN: I won because I wrote the FORTRAN books.

NORBERG: But the Association members made that decision by themselves.

McCRACKEN: That's true.

NORBERG: Something you're not buying now.

McCRACKEN: Which side am I on?

NORBERG: Well, I think it's worth pointing out that there are two sides to that story, not just one.

McCRACKEN: What's the other side?

NORBERG: The other side is whether the publications helped you to get elected, or whether getting elected helped your publications. I don't know the answer to that.

McCRACKEN: Much more of the former.

NORBERG: You think so? All right.

McCRACKEN: The majority of my books had been written before I ever got on Council, before I became vice president.

NORBERG: Now, I noticed in your notes that you sent me that the chairman of the Nominating Committee at the time was George Glaser.

McCRACKEN: He was the one who came to me. I don't remember if he was chairman or not.

NORBERG: That's true; it doesn't say that. It says, "Was on the Nominating Committee." He came to you in Minneapolis in '75 and he said not this year, Dan.

McCRACKEN: Yes.

NORBERG: What sort of relationship did you have both before and after with George Glaser?

McCRACKEN: I don't remember before. We became quite good friends after. I don't remember. I'd have to think about the sequence. I can figure that out. But I stayed in his home a couple times in...Los Gatos? That isn't right. Somewhere in...

NORBERG: Los Altos, I think.

McCRACKEN: Could be. I took a call one time from a woman whom I knew, and she didn't expect me to take the call. Karen Duncan. They weren't married at the time. They weren't public at the time. We were pretty good friends. The action of the Nominating Committee didn't harm our friendship at all. I used to see him regularly. When I was traveling a lot in California, I stayed with Paul Armer in Menlo Park, and George lived a couple towns down. George was chairman. We're good friends. That's satisfying. That's very satisfying. There weren't very many personal animosities that grew out of the ACM thing. I don't have very many regrets about that.

NORBERG: Do you recall whether they had been any previous people who had gone into elections by petition?

McCRACKEN: I don't recall, but my wife, who was working at ACM at the time, does. I think she told me that somebody or other had run by petition beforehand. I don't remember who.

NORBERG: What I was trying to ascertain is, of course, this is the year that Herb ran as a petition candidate as well, but for president.

McCRACKEN: Right.

NORBERG: And I'm wondering if there was any sort of...what shall I say? Revolution going on within the Association by people who were not academics, and therefore felt that other policies might be useful to the Association?

McCRACKEN: I want to be careful that I don't exceed my knowledge. It is certainly true that there was that kind of tension within the organization between the academics and me. For a term at the time, the practitioners didn't deny the importance and value and all that good stuff about the academics, but I believe the feeling was that the academics had founded the organization and run it, and they weren't paying attention to the rest of the professionals in the field. There was some of that. I don't feel that I had consciously played into that, but Herb certainly did. He was contemptuous to the academics. Contemptuous to a lot of people. He had that kind of feeling.

There was another tension, which was more relevant for me, which was that I'd been active with the chapters through the National Lectureship and speaking on my own outside of the lectureship umbrella, and the chapters people felt that they were underrepresented. There was a Publications Board, there was a SIG Board; I think both of these existed at the time. They felt, "Why isn't there a Chapters Board?" At the time, the chapters, I believe, were very, very much more active than they are now. In New York, we had a dinner meeting every month with a nationally known speaker. That didn't last, I don't think. I became inactive when I got off the Council, so I wouldn't know, but I just don't think it's like that anymore. The chapters people felt that they'd been sort of eclipsed. They, meaning some people who were active in the chapters' leadership, strongly urged me to run for vice president. And Herb. They would have supported him, too. This turned out to be a tempest in a teapot. I don't know if it was even that important. Sort of a phony conflict.

NORBERG: Between who and whom?

McCRACKEN: Between the chapters people and all the people they thought were against them.

NORBERG: Didn't the chapters have voting rights on the Council at that time?

McCRACKEN: Not at all.

NORBERG: "Not at all," you say?

McCRACKEN: Not at all. Not as a group. They still don't.

NORBERG: Oh, they don't now. That's true.

McCRACKEN: They never did, as far as I know.

NORBERG: I'd have to look back at some of the...

McCRACKEN: You can check that, but they certainly didn't at the time I got on the Council.

NORBERG: Okay. When you were elected, you set out a series of goals that you thought you'd like to explore during your vice presidency.

McCRACKEN: Can I have that piece of paper? [Laughs]

NORBERG: Yes. And I'm wondering why. This is not typical of vice presidents, so I'm curious as to why you did this.

McCRACKEN: Arthur just handed me something I wrote in 1976. I have no memory of this. It's hard to answer when I don't remember writing the document. If you'll let me find a pair of glasses, I'd like to...

[Break]

“To the Board chairman, these are my goals to reach in the next six to 12 months.” By God, how many pages? Oh, this is embarrassing. I have no memory of it, of course. Well, I guess my instincts were to teach and communicate. I think I had an overblown view of how much influence the vice president could have in six to twelve months. I suppose—I’m reverse engineering this because I don’t remember the document, but it’s characteristic of me.

NORBERG: Let me try to help you along then by asking you, what were the duties of the vice president when you entered the office?

McCRACKEN: Explicitly stated, none whatsoever. I don’t remember any.

NORBERG: Well, didn’t various boards and Special Interest Groups report through the vice president to the Executive Committee?

McCRACKEN: Not explicitly that I recall. I tried to visit at meetings. Three meetings a year we had then. I tried to look in on every committee for ten minutes, if nothing else. When I became the president, I thought Peter Denning was going to do the same thing, but he didn’t think so. I chided him slightly, and he said he wasn’t going to do that. So, I saw it as a way of integrating operations and organizations. Let the people know what each other are doing. Trying to be a central node in the communication—or, if I could, and if that would be useful. It just seemed like I didn’t have to do the things the president had to do, so why not find some way to be useful? I stayed in touch with the boards and committees. Where appropriate, that helped me explain what they were trying to do at Council or support them in what they were trying to do with the Council.

When I was first at GE, they sent me to a variety of development courses, and one of them was something about how to be a manager. The mantra was POIM—Plan, Organize, Integrate, and Measure. And I suppose this would have been in the service of trying to integrate operations within ACM. Through all my joking about it, I did do some of that. I say here in this letter, that you so kindly provided me, that the first priority had to be publications restructuring. The current issue (2007) of CACM has articles by all the past editors of *Communications*, and they review that very point. Slightly as a story, but fits here. I can’t remember exactly what the publications restructuring...well, I’m reminded by the CACM stuff, but until I saw that last night, I couldn’t remember what I had tried to do, but I was convinced that Stu Lynn was right. He was Pub Board chairman by then, I’m pretty sure. Quite sure. I thought the restructuring was important, and I had a feeling that it might be a tough sell with the Council, so I just lent all the energy and strength that I could to making it happen. I went to all the meetings I could get myself to, with the Pub Board or the-- there was a committee on restructuring the publications. I dragged myself to meetings. I remember a long, long Sunday somewhere off in San Diego and sitting in a meeting. I tried to visit all the Council members that I could in their home territory, away from meetings, just to organize and integrate the kind of...

NORBERG: Okay, let me go back a little bit further then, Dan, because there’s something else going on in 1974, ’75, ’76, and that’s a reorganization of the entire structure of ACM. In March of 1975, Jean Sammet sent out a letter to members of the Council reporting on an ad hoc committee that she had set up, which Bernie Galler chaired. This was a very, very large document, and some of it was implemented, and some of it was not. For example, divisions and responsibility between the vice president and the president. Board chairs and their roles. For

example, a question was, “Why isn’t the chairman of the Publications Board elected by popular vote?” And the Pub Board person was a member of the Council. But because of the nature of the work that that committee did, he or she should have some sort of an input. Do you remember any of this attempt at restructuring?

McCRACKEN: Now that you remind me, I do. That’s Jean Sammet’s style; it is to set up a small committee and tell them to go off somewhere and think. Write a report, and that would change things. That’s not my style. My style is to go out and talk to people.

NORBERG: I’m not trying to get a contrast here between Sammet and yourself as far as operations are concerned, but I’m trying to see if there’s a relationship between what you did in that letter of December ’76 that you have in your hands, and this reorganization, which was attempted during the time you were vice president. ’76, ’77.

McCRACKEN: I don’t think there was any contact. I don’t remember. I had mostly good relations with Jean Sammet. I sat at her feet for guidance on how to do my job, but we didn’t influence each other very much at all.

NORBERG: So let’s get back to the goals. Since this [the reorganization plan of 1976] , as far as I know, was not implemented in any major way, I’ll just leave that aside. Did you have any contact with the previous vice president? Which was not Herb, I’m sure, but I can’t remember who that was now.

McCRACKEN: I don’t think so.

NORBERG: Ralston was past president then.

McCRACKEN: The previous president was Jean. The secretary was John Hamblen. I knew this would happen. I can’t remember who it was during that time.

NORBERG: No, that’s all right. If we try to reconstruct some of those things. Galler was president before Sammet, and Anthony Ralston was president before Sammet. That true?

McCRACKEN: Yes.

NORBERG: So, who would have been the vice president under Sammet?

McCRACKEN: I want to say it was Herb Grosch.

NORBERG: I don’t think so. I think Grosch went in as president the year you went in as vice president. Anyway, okay. If you don’t remember, I can look that up.

McCRACKEN: But I remember Jean-- Memory is faulty here. I have reason to know more about that than I’m going to tell you about, but I remember meetings of the Executive Committee where Jean would be saying black is white, and Herb would be saying white is black. One of the other would look at John Hamblen and say, “Okay, John, it’s up to you because we’re never going to agree. Whichever one you want to go with. You hold the fate of the...”

NORBERG: Okay, but that's during the time you were vice president. Is that true? When Sammet was still past president and Grosch was president.

McCRACKEN: I think between now and tomorrow morning, I'm going to see a forest through that tree. [Laughs]

NORBERG: Yes, that's okay. It's hard to come by.

McCRACKEN: No, not very often.

NORBERG: You can look in publications and see who they are.

McCRACKEN: No, Google knows everything. I'll find it.

NORBERG: All right, what I'm trying to get at here is, was this letter-- we're still talking about the December 1976 letter—was this letter helped by any discussion with the previous vice president?

McCRACKEN: Oh, no, I don't think so.

NORBERG: You don't think so. Okay. So, this is based on your knowledge?

McCRACKEN: If you want to know who that was for sure...

NORBERG: It's all right. This, then, was developed, insofar as you know, by your understanding of the structure of the organization and what you might be able to contribute to it.

McCRACKEN: Yes.

NORBERG: Good. Okay. I'm satisfied with that.

McCRACKEN: To my best memory.

NORBERG: That's good. Looking over some of those suggestions that you made, which ones were you able to do in your time?

McCRACKEN: [Laughs] This is embarrassing. To do my job as vice president, well, I had to define the job, I felt. I couldn't tell that anybody else was going to tell me.

NORBERG: That's interesting.

McCRACKEN: Forgotten the advice that I was getting. "Do what I can and help ACM continue." These were rather broad goals. "Do what I can to improve service to unhappy members." "Encourage membership growth." "Consent possible without fission." Lot of sins covered by that sentence. "To promote greater involvement in ACM's public affairs." I managed to do some of that. The Computers and Public Policy Committee report had some

influence. Publications restructuring has to come at the top of the list. Not yet clear exactly how I can best help Stu and his committee, but I sure intend to be available for whatever help I'm able to give." And I think what I did there was offer moral support and a pat on the back and support at Council meetings and that kind of stuff that none of the others remember at this point. I think it may have been the most important thing I did as vice president is to support that. Now I can't even tell you what restructuring meant, exactly. Something had to be done about *Communications*, but yes, I feel I had a-- No one person did the publications restructuring. Stu Lynn and I did. They just grew. By running against him and beating him, I saved him to do the support work. [Laughter]

NORBERG: Did the idea of the journal for all the members enter into this discussion that we're talking about here?

McCRACKEN: Yes, very much so. The feeling was that *Communications* should be that, and it wasn't. Again, I was reminded of that by reading the current issue of *Communications*. But it was very much in the air that we needed, oh, a *Scientific American* for computing or something. I don't know that it was well defined, but something that all members could read. *Communications* had drifted away from being that. Everybody had to take it because it came with their membership dues, but it was too theoretical still. Too theory-oriented. I'm not an anti-theory person. I don't understand the theory stuff. I don't know much about computability and all that, but I don't knock it in any sense whatever. Some people we've mentioned here did. But it was clear that *Communications* was not serving that purpose, and it certainly seemed like something of the sort was needed. Or even those members who didn't want to pay for something they never read. The vast majority of members never read the journal; they couldn't read *Communications* either. I didn't have any particular leadership role in that, but I recognized that it was a valid argument and we had to do something about it. When Stu Lynn came along, he said, "Well, I'm going to figure out what to do about it," and I said, "I'm going to give you all the support I can." Helped in moral support more than anything else.

NORBERG: Was there some discussion at the time about unbundling these journals from the membership dues?

McCRACKEN: Must have been. The word "unbundling" sure rings a bell.

NORBERG: Well, it's around the same time that IBM was supposedly unbundling.

McCRACKEN: Well, yes, that's what I remember it from. There may have been, but it couldn't have gotten very far because we knew perfectly well if we did that, not an awful lot of people would take the publications only, if we allowed the membership to do that. It's always clear that people go in for the publications. If publications don't serve the membership, boy, you're in trouble. That's what the restructuring was about.

NORBERG: I have another way to get at some of these questions, I think, that I've been asking so that I could elicit different responses from you. Therefore, let me sort of move these questions up to generalizations rather than staying at the level of specifics, and ask you what was the structure of the organization when you became vice president? What happened? What were

the offices—not officers, but the offices—that were the principle parts of the organization at that time?

McCRACKEN: The boards and the committees. The Publications Board was very important. They set policy. There wasn't very much, in a major way, that they could do on their own. They had to come to Council. But they had a huge job. I can't remember exactly when the SIG Board was founded, but I'm pretty sure it was before this period. Jean Sammet had a major role in that. That would've been, I think, early '70s. The SIGs were a growing part of the organization. The field was getting-- Too many things feed into the same issue here. Let me take another tack on it.

Until about '86, we had an annual meeting of the organization. Supposedly, all members could find something to tempt them to come to Dallas or Boston or wherever for three days and chat with their friends and give papers and all that kind of stuff. I felt that that couldn't last because the field was getting too specialized. People interested in graphics couldn't have very much to say to people interested in business data processing. Well, they could today, you can see that now, but I mean... That may not be a good example.

The SIGs were, by their admission, specialized. Special Interest Group. And they were wildly successful. SIGGRAPH was legendary. Still is. It looked to me like either ACM was going to fission, or it was going to become a federation of SIGs. I remember sitting on an airplane. I wondered how we could manage to run an annual meeting as the field was getting more and more specialized. I remember sitting on an airplane next to a guy who was a chemical engineer, and I said, "Are you a member of AIChE?" He said, "Sure." And I said, "Do you guys have an annual meeting?" He goes, "Yes." I told him what I was talking about, and he said, "Well, yes, we're pretty much the same. We find things to talk about." ACM didn't manage to do that. Maybe it wasn't possible. It was '85. I remember the meeting where the axes were heard in the cherry orchard. The exhibitors, who paid for a lot of freight of the annual meeting, went to their contacts and said, "If we don't get more traffic through the exhibits area next year than we had this year, next year will be the last." As I heard it, ACM made a major effort to try to generate more traffic and it didn't happen. Exhibitors pulled out, and we stopped having an annual meeting. I have the impression that ACM, in some sense, has become a federation of SIGs, or maybe it always was, from an earlier date than I imagined. And that's okay. It's serving a lot of useful purposes with that style of organization.

NORBERG: So we have a Publications Board, which is overseeing all of the editors-in-chief of the various journals. We have a SIG Board, which is looking out over the array of Special Interest Groups, and also taking some initiative in making sure that the rules are always appropriate to what those Special Interest Groups are.

McCRACKEN: The Special Interest Groups tended to follow their own instincts sometimes. There were some conflicts there, but no big stuff.

NORBERG: Well, Jean Sammet made a big thing of some of those conflicts.

McCRACKEN: To be sure.

NORBERG: And then there were the officers themselves. There was the president, the vice president, the secretary.

McCRACKEN: They were the Executive Committee. The treasurer was invited to the meetings except for executive sessions, and the past president was invited. Neither had a vote.

NORBERG: Neither had a vote. Okay. So that's pretty small.

McCRACKEN: Yes.

NORBERG: Running the organization in between annual meetings, especially after the annual meetings stopped.

McCRACKEN: Yes, we used to have three meetings a year where the Executive Committee could meet because we were all there anyway. Then it went to two. I don't know what happened since I left.

NORBERG: Would I be correct in saying that one of the principal issues in the middle 1970s was the separation between the academic members of the Association and what I'll call the practical members?

McCRACKEN: Absolutely.

NORBERG: Because that's what seems to be the right term.

McCRACKEN: Absolutely. It was the fundamental conflict.

NORBERG: What did you think of that conflict?

McCRACKEN: I thought it was deplorable, and I wanted to see what I could do to glue the pieces together and stop the fighting. Remove the reasons why they were fighting. I don't know whether-- It's awfully hard to say how much you accomplished in that kind of situation, but that was my goal. I felt that the academics were absolutely necessary. Hey, they were paying my rent. I didn't have any reason to fight with them. Whatever Herb's problem was, I didn't share it. But, of course, I come out of the practitioner side myself. I just wanted to heal that tension.

NORBERG: Do you recall what you tried to do, if anything?

McCRACKEN: Not very well, to tell the truth. I talked to a lot of people. It's hard to judge the effect.

NORBERG: Sure. So, if that turns out to be the major issue in that period, then the question—to me, at least—immediately arises as to how the Publications Board changes that were proposed could try to settle this issue. A journal for all members, perhaps, is one of those vehicles. That the SIG Board would have to have some differences of approach, again, to attract all members into the SIG groups rather than worry about the general membership so much.

McCRACKEN: Sorry, I don't hear the question there. Many of the SIGs could have existed independently. A number of them threatened to leave, as I recall. Fallible memory. But they were told, "Feel free. But you understand that all the funds are held by ACM."

NORBERG: Oh, that's after the period we're talking about. Probably while you were president.

McCRACKEN: What's the period we're talking about?

NORBERG: Well, there was a period in which the SIGs had self-control over their funding. They took money in, and they expended some of it.

McCRACKEN: Was that part of the Save ACM in the '70s?

NORBERG: Yes. Exactly right.

McCRACKEN: You know better than I do. Or you reviewed it recently.

NORBERG: Well, yes. That's right.

McCRACKEN: You probably know it better than I ever did, actually. So fill me in. Where are we here?

NORBERG: Well, I'm still on the structure of the organization and trying to determine the association between things like this major issue of the academics versus the practitioners or practitioners versus the academics, on the one hand, and some of the other structural changes that were going on within the Publications Board and within the Special Interest Group Board, and maybe others. Because there were big changes on the horizon. Some of it emerges I think—I want to get you to say this rather than me—but some of it came through the reorganization plans that were proposed in '74 and '76, I think. The Galler Committee and was it the Ralston Committee before that? I'm not sure. So, we've got this difference between the general problem, i.e., how do you satisfy all the members, and the more specific problem, how do we deal with our publications and our Special Interest Groups? Those things looked like they could come head to head in time, but they didn't.

McCRACKEN: You mean in a major conflict?

NORBERG: Yes.

McCRACKEN: Well, they didn't because the publications were restructured so that they met the needs of the members better. As I recall, as my fallible memory reconstructs things—how memory works—some publications were initiated that were even more specialized. TOPLAS. Incredibly specialized, but they made some people happy. Everybody doesn't have to be happy about the same thing, as long as they're all being served by being part of the same organization. If you can make all these parts stronger for being part of a group, then everybody's happy. Of course, the *Communications* had to be made readable by everybody, or closer to it than it was. If you think it's bad now, you should have seen it in '74. From what I read last night, there was a three-year backlog besides. Even the academics weren't happy with that. They were waiting

forever to get their papers published so they'd get tenure. I've learned not to jeer at that argument. I think a lot of good people chipped away at the problems until, with the benefit of rosy hindsight, they sort of got it solved. Problems went away or something.

NORBERG: Well, some of the problems went away, but certainly not all of them. You raised a good point there in connection with the new journals that were proposed by the then Reorganization Committee. And bringing in the *Transactions* of various kinds, that helped to solve that three-year backlog or whatever it was for various journals. And it's true, people who are pushing for tenure in the academic world can't wait that long.

McCRACKEN: That's right.

NORBERG: So, that had to be taken care of.

McCRACKEN: Some people sneered at the very statement of that as proving that academia was corrupt. Bullshit. It's just how that world was.

NORBERG: Yes. But in the solution there with the new *Transactions*, which would help that backlog, that doesn't appeal necessarily to the practitioners, does it? There was no journal on software practices, was there?

McCRACKEN: No, no. The closest thing would be Jon Bentley's "Programming Pearls" in *Communications*. Maybe we never did solve that one, and it went away. If they hadn't, maybe ACM would be 300,000 now. I don't know. Compared with the average person you'd hit with a shotgun downtown from where we are, and hit computer people, ACM is still pretty theoretical. Maybe we were trying to be all things to all people in computing. I don't know. Unwittingly gave up on a part of that audience and focused on what we were good at.

NORBERG: Was the Association trying to be the spokespeople for computing at the time that you were in ACM?

McCRACKEN: We were ambivalent about being a spokesperson. Now you're talking about public policy. We were a 501(c)(3) organization. We could not do lobbying. We could do informational things. We could do a lot of stuff. But the people who were allegedly-- I mean they claimed they were worried about losing that status. They were hypersensitive about anything that could conceivably be construed as lobbying and blocked any attempt to become active in Washington, to my annoyance. Serious annoyance.

NORBERG: Why? What sort of annoyance?

McCRACKEN: Because I thought that somebody needed to be speaking to Washington about computing from our standpoint. Couldn't always block that with the 501(c)(3) argument. Eventually, AFIPS took over that, I guess, as long as it lasted.

NORBERG: So you were chairman of the Computers and Public Policy Committee.

McCRACKEN: Yes.

NORBERG: Before you were vice president.

McCRACKEN: Oh, absolutely. Yes.

NORBERG: Yes, because I see a letter here as an interim report, more or less, in April of 1976 about the committee, in which you were going to submit a draft of a paper to the Privacy Protection Study Commission. I'm wondering whether that was inside ACM or outside.

McCRACKEN: Or what it is.

NORBERG: Anyway, I bring that up because it seems to me that Computers and Public Policy has a long and checkered history within ACM, starting back with Anthony Ralston's term as president of the Association.

McCRACKEN: What did he...?

NORBERG: Well, he was interested in scientific freedom, particularly, and some of the Russian issues, the refuseniks.

McCRACKEN: Right.

NORBERG: I'm getting a little off the track here now, Dan. Let me catch up. We're talking about the major issues associated with ACM in the middle 1970s as you became vice president, and we settled on three areas that seemed to be very important. One of them was a general proposition associated with this conflict between academic types and practitioners. The other two were structural problems within the organization—one on publications and one on the SIG Board. Now, I don't want to make too much of that distinction that I just offered you, except that there were major discussions about these things.

McCRACKEN: It's a useful distinction.

NORBERG: Yes. Then, I was trying to get you to move on to what actually was happening in the Association with these various groups as you were vice president, then as you became president. You wanted to suggest to me just a few minutes ago, it seems to me, that the issue of practitioners and academics was either solved, which I don't agree with, or it went away, which I also don't agree with.

McCRACKEN: You can't do both.

NORBERG: That's right, you can't do both. Is it true that it can't be one or the other, either? That it's more complicated?

McCRACKEN: Bear in mind that I've had no serious connection with ACM in 25 years now.

NORBERG: Well, that's true, but we're talking about 25 years ago.

McCRACKEN: It seems that I've got a memory problem, of course, on what was going on. And a perception problem. I mean, a lot of committees were meeting. Tried to look in on each one of them for ten minutes.

NORBERG: When you say "a lot of committees," what other ones besides Publications?

McCRACKEN: Accreditation. ACM had an Accreditation Committee for years and years and years before CSAB was formed. We were active in forming it. My early days as vice president, I was in the position of saying, "Hang in there, people. Nothing's happened yet, but it's got to happen someday. Don't give up just because you don't see any payoff yet." Maybe that helped. I don't know. I remember saying it. I chugged away on accreditation. The question of whether to push accreditation or certification. I guess Certification of Computer Professionals came out of that. Nothing came of that. That's another story, but it wasn't fated to succeed, I think. Jean and Tony ran a Taxonomy Committee to try to decide how to divide up the field for purposes of indexing. Enormously bigger job than I would have ever dreamed. They met for hours and hours and hours and hours. I hadn't known it was a problem. I think there was a Chapters Committee. Must have been. They thought they should be on the Council, too. They should be able to select a representative on Council. That probably wasn't a good idea. I don't know. I thought that that lack of representation was a source of some tension. I was always looking to reduce tension and conflict avoidance, I guess, in some context. [Chuckles] You're tempting me to say, "What did you accomplish as vice president?" and structure my answer a little bit. I'm going to give you a different answer. My perception is what I did. I prevented Herb Grosch from destroying our organization.

Session 1, Tape 3, Side A [no side B]

NORBERG: Dan, you just started to say that you were always trying to put a gag on Herb Grosch during Council meetings while you were vice president, and I suppose later on as well when he was past president. I have a letter here from you to Herb, and it was April 6 of 1977. You were really taking him to task about his--

McCRACKEN: Remind me.

NORBERG: Okay. "Herb, you're absolutely amazing. You begin by speculating about my psyche, then brush off every aspect of my criticism. This imperviousness to the views of others combined with the heavy traffic and their motives is your most serious fault, I think." And it goes on from there with specifics: the ICCP discussion, the Publication Board discussion. He's president of all the members, not just the ones that agree with him, and so on. And you'd like him to sort of shape up.

McCRACKEN: Didn't have an effect, did it?

NORBERG: I don't think it did, but--

McCRACKEN: It didn't change Herb. It may have changed....I don't know. Maybe it put some steel in my spine. I don't know. Let me back up and say that in July of '76, when we both

became officers, we were both well known for different reasons. I was known for having good books and having talked to a lot of chapters and that sort of stuff. Herb had done important technical work and had shot off his mouth a lot. The man brags about having been fired twice by General Electric and fired twice by IBM. For a sample of what got him fired-- I forget which one it was. IBM, I think. In like 1960, he found some occasion to say to the Associated Press, I think, that the United States Space Program was a farce and identified himself as an IBM employee. That will get you fired most of the time. They were a contractor, if I'm not mistaken, but even if they weren't at that moment, it's a dumb thing to say. It's just not good politics, even if he really believed it. I don't know why he thought that. At any rate, that's the kind of guy he was, and he was known for that sort of thing. So, when he and I got together as "flaming non-academics," there had to be some worry. The third guy was George Dodd, who's not an academic either, although he's not flaming. [Laughs]

In those days, and maybe they still do, the chairs of the Ph.D.-granting departments met every two years at Snowbird, Utah. It's a ski resort that's available in the summer. George and I went to it, and I asked for the floor. I asked for a chance to speak. I, of course, was not in the club, but I was an ACM officer, and they welcomed this. And I said, "I can understand that some of you are nervous about the guy who just got elected president of ACM." I said, "I remind you that the Executive Committee consists of three people. The other two are in the room, and we're not crazy." I think that may have saved a lot of trouble. It didn't stop Herb. Just so that future generations will know I'm not making this stuff up. At the '76 annual meeting in Houston, the president gave a State of the ACM address. I don't know exactly how it worked, but anyway, he spoke after the Turing Award winners. Or he stood up and talked, anyway. It was after the Turing Award winners, who were Michael Rabin and Dan Scott, who did incredibly important work in computability—that stuff that I don't understand, but I know it's important. Heavily influential in all kinds of ways. And after they were done speaking, he stood up and said, "Alan Turing studied that kind of stuff and committed suicide."

NORBERG: That's shooting off the hip.

McCRACKEN: That's crazy.

NORBERG: Sure is.

McCRACKEN: It's dumb. It's wrong-headed.

NORBERG: And it's also wrong factually.

McCRACKEN: Well, yes. What a thing to say to those two guys. What a thing to say to all the academics and all the theory people in the audience. I had no way that I could stand up and say, "Herb's crazy, and George Dodd and I are not." I would've made things worse. But I could do it privately. I did.

NORBERG: Which is the nature of this letter.

McCRACKEN: Yes. Well, I laid out the particulars. You've got the letter, of course, but I read enough other oral histories of past presidents to not apologize for a bad memory.

NORBERG: No, no, no, you don't have to do that. My purpose here is to try to spur your memory back to those days, and I think we're doing pretty well, actually.

McCRACKEN: Good.

NORBERG: When this Executive Committee met, of the three people plus the two guests, what went on during this period? I'm thinking of when Herb was president and you were vice president. What was the tenor of these meetings?

McCRACKEN: Part of the time, it was just business-like. Let's get the job done. There's this budget to approve, there's this meeting that wants ACM approval, and things like that. We do or we don't. If we don't, we've got to say why. It was pretty much just matter-of-fact stuff, and then some stuff with just a lot of tension where George and I—I, mostly, George is the mild-mannered sort compared to me. At least on that occasion. Tried to calm Herb down and get him off his wild horse or whatever was going on at the time that was either keeping us from doing our job or inflaming people who didn't need to be inflamed. No useful purpose was served. Inefficient, waste of time in a lot of ways. I don't know whether Herb and I had even the same goals for the organization. It's strange, because I had so many debts to him early in my career, to find myself having to try to shout him down as an ACM officer. If you read Joseph Campbell and that kind of stuff, this is akin to killing the old bull, you know? Whatever that image is. Didn't feel good. I didn't like to have to attack Herb.

NORBERG: Did this continue through your presidency as well? When he was past president?

McCRACKEN: Well, he didn't have a vote then.

NORBERG: He could still disrupt the meeting, though.

McCRACKEN: Sure could. I don't recall that it was that bad. There was no split at the Executive Committee. Peter Denning and Dave Brandin and I didn't all agree on everything, but we had nothing to shout at each other about. We didn't have any fundamental differences in outlook, so we could just ignore Herb. Herb doesn't take well to being ignored.

NORBERG: I see. [Laughs] That's one way to get attention: just be the loudest person in the room. All right. Dan, I know that I'm pressing you very hard here and that it's hard to remember all of these things, but I want to ask you about a series of what I see in the materials that I've looked at, that I would classify as management issues for the ACM Council. One of those was ACM and its relationship with the Special Interest Groups, or with the Special Interest Group Board chair. In order to understand that a little bit better, I'd like you to address the question: How is a SIG governed? First, within itself, and then with its relationship to the Council.

McCRACKEN: Within itself, each SIG had files, I guess. A founding document and officers that they elected. I've never acted in any SIG, so I don't have inside knowledge from having been there on this stuff. The SIG I felt closest to at the time was business data processing; came up all from left field with ACM. Unfortunately, I guess. Boy, somebody has to check my memory, but I think they had to get their budgets approved by ACM. But that was kind of a

laugh; they were generating enormous amounts of money. 50,000 people in SIGPLAN. They could get the feeling that the ones who brought in the money get to call the tune. And somewhere—I believe you’ve got better sources on this than I do at this point—somebody had to remind them that they didn’t hold the money. So that’s what happened. ACM centralized the SIG funds. They couldn’t just leave. They could leave, but they wouldn’t have a budget. They wouldn’t have what they had thought was their money. I just obviously don’t remember that consolidation. That must have created a whole lot of tension right there. Some of the SIG people must have thought that the central organization didn’t really have the moral authority to do that because they hadn’t generated the money, but I don’t remember it. I don’t remember it. Occasionally, a SIG would come to the Executive Committee-- well, a group came to the Executive Committee wanting ACM sponsorship for a meeting. They were going to hold it in Honolulu, and Herb managed to block it—I don’t know who he got to vote with him—on the grounds that they’re just going to go over there and sit on the beach. They’re talking about just asking for the approval, and Ed says, “Herb, don’t be stupid. We’ll get somebody’s approval if you don’t want to do it.” Herb said, “I know that, but you’re not going to get it from me.” This is the way he played the game. Maybe George and I voted for them, and they got ACM approval. That’s probably what happened. That would be hard to look up.

NORBERG: During your terms then, both vice president and president, did any faltering SIGs get attention from the Council? Or from the Executive Committee?

McCRACKEN: Not that I remember. Do you have something in mind?

NORBERG: Well, I do have a couple of incidents that occurred in that period. One of them was Jean Sammet’s concern about whether or not the officers of the Special Interest Groups could be an officer in a SIG without being a member of ACM. She went after that pretty strongly. And there was one group—I think it was SIGMAP—that had elected a group of people that were not members of ACM. Or, at least, many of them weren’t. This group was having difficulty keeping its own program going. I don’t imagine there was very much money there. But there was discussion on the part of the Council, I remember, about whether or not this situation was addressable by the ACM Council. If they did address it, what were they going to do? Were they going to insist that these people either join the members or not be officers in the Special Interest Group, and what sort of authority did the Council have to force this? Well, it seems to me that was all resolved by changes in Bylaw 7 of the constitution of the organization.

McCRACKEN: Say it again?

NORBERG: The Bylaw 7 governs the Special Interest Groups.

McCRACKEN: What did it say?

NORBERG: There are a number of paragraphs in it. One of them is what constitutes a SIG, who are the officers, how do they get elected and so on, and what’s their relationship to the Council, and what’s the Council’s responsibility to them both financially as well as educationally. That, as I recall, was done by David Brandin in the early 1980s.

McCRACKEN: Okay, that makes more sense because I don't remember it at all. Dave was in a good position then.

NORBERG: He was the SIG Board chair.

McCRACKEN: All SIG Board chairs until Norm [?] became officers in ACM's history. It's good training. Yes, that sounds like something Dave would do. He would've gotten the experience of seeing that it was needed. Looking back, having been involved in that discussion, I would've said, "Of course they have to be members. Let's do whatever it takes to force that." Or at least the president does, or something.

NORBERG: Well, that's apparently what happened. It was forced, and in the process, the excess money was taken away, and future budgets had to be included with their annual request to ACM in order to run that and so on.

McCRACKEN: It didn't happen until Dave was president?

NORBERG: No, that happened in your term. David was the head of the SIG Board at the time. And Sammet, as past president, had a very big role in trying to define this issue of whether a Special Interest Group had autonomy or not; whether it was an ACM-sponsored organization. And she was always, of course, in favor of it being a sponsored organization and not something that was there by anybody's by your leave.

This also raises the question of the relationship between the ACM Council and the regions.

McCRACKEN: Mists of history. What is that relation?

NORBERG: Okay. [Laughs] Well, early in the history of ACM, those regions which had a structure—Chicago and the Northeast and New York City, I think—these were very important before the SIGs had become so numerous and had as much money as had generated from their meetings. And that began to be a problem in, oh, I don't know, early '70s, as to what the role of the regions really is within the organization.

McCRACKEN: I haven't the faintest idea. I don't think I ever knew. Early '70s is before I became involved in any way. I was first on the Council in '74, and I don't recall that discussion at all. Well, it did involve the constitution or bylaw in that the region could be a member of Council. Gwen Bell fixed that using the Council process. I wish I could claim to have had some hand in that—that was the right thing to do—but I didn't.

NORBERG: I mentioned the reorganization plan. We talked about that. But there's one small part of that that I'd like to come back to, and that is, I think we both agree that publications were a major topic at every Council meeting, more or less.

McCRACKEN: More or less, sure.

NORBERG: Herbert Bright, at one point in February 1978, produced a critical analysis of *Computing Reviews*. He stated that that journal needed serious attention. And if it couldn't be made better, then its existence does not justify the cost.

McCRACKEN: A lot of people felt that way. I didn't have much involvement with it at the point where that kind of discussion came up, but I had friends who did feel exactly that way, that it was a lost opportunity. If it were done right, it could be the most important publication ACM that had. That's Paul Armer's view. Books were reviewed two or three years after they came out. There weren't nearly enough reviewers. I'm just remembering criticisms I heard. It was a thin publication, cost a ton of money, and it still hasn't broken even. You know, that kind of thing was factual. I don't know what happened. It's still around. I don't subscribe. I don't know what the story is on that. I don't know what happened. I don't recall that Herb Bright's initiative... I don't think that it spurred any action right then. I don't know what did come of it.

NORBERG: I'll get you off that topic and move onto another one. Anthony Ralston, in reporting on his term as president of ACM, noted the changes in the organization over the two years that he was president, especially related to financial affairs. Two significant issues in that statement of his caught my attention. He stated that "achieving large financial surpluses has nothing whatever to do with ACM's purposes as a scientific, educational society. But achieving financial stability, including adequate financial reserves, is the sine qua non for all of ACM's scientific, technical, and educational programs."

McCRACKEN: Hard to argue.

NORBERG: Now, I fail to see a difference here between those two aspects of that series of sentences. I think it's trivially semantic, but I'm not quite sure of that. Let me read it again. "Achieving large financial surpluses has nothing whatever to do with ACM's purposes as a scientific, educational society. But achieving financial stability, including adequate financial reserves, is the sine qua non for all of ACM's scientific, technical, and educational programs." I don't see a difference, Dan, do you?

McCRACKEN: Sounds to me like he's trying to justify a large surplus and he's been criticized for it. I really don't know what he meant. I don't understand it, either.

NORBERG: It puzzled me.

McCRACKEN: He could probably explain what he meant. He's no dummy.

NORBERG: Yes, I don't know the man. I only know him by reputation.

McCRACKEN: I know him moderately well. I admire him very much.

NORBERG: It strikes me, and I'm still talking about his report as president of ACM because there are some others I want to come to later on, the materials that he talked about on the successes of ACM in this two-year period seemed to me to be typical of all periods, or at least most of the ones that I've looked at seriously from Galler's term on into Paul Abrahams'.

What's significant in the financial report, it seems to me, is the overall cost in publications: 49% of expenses. Which is typical, I think, of at least all the organizations I'm aware of.

McCRACKEN: That's far more than I know about. It sounds reasonable.

NORBERG: There's insufficient data to know whether or not this is also 49% of income. And that, I couldn't discern by looking at the financial records.

McCRACKEN: You couldn't discern what? That it was impossible to tell?

NORBERG: No. Whether or not this 49% of expenses is equal to 49% of income.

McCRACKEN: I don't think anybody could tell at that time.

NORBERG: Okay. That's fine. It was hard to discern.

McCRACKEN: I came in on a discussion that had been ongoing for some time and lasted for a long time on the "cost of servicing a member," which tied in with the switch from a cash basis to an accrual-based accounting system. And ACM existed on a cash basis for the longest time. This didn't make sense because we get our membership money from the members. Perhaps 70% of it, as seen by the member, was for publications. Look at all this cash right then, even though we hadn't provided the service yet. That's stupid. You're going to have to switch to accrual accounting someday, so said the people who felt that way. So, to do that, you have to know what it costs to service a member. We didn't know that. I don't remember the details, but a lot of people worked very hard on figuring that out and doing something about it. I remember one meeting where, I think, Tony actually was against accrual accounting. Has that turned up anywhere in your research?

NORBERG: I didn't observe that, no,

McCRACKEN: Well, let me not put words in his mouth, then. I don't know if there was anybody on Council who could count. There were people who had founded companies. Some of us had taken Accounting 101 and hadn't understood it, but we tried to do the best we could. Accrual accounting seemed like the right thing to do. It was painful to make the switch. I think when we decided to do it, we discovered how long it had been needed to be done. We were very sorry we hadn't done it sooner. But I don't remember the details at all.

NORBERG: Okay, well, I looked at several budgets. Not expenses because that was not included in the materials that I had, but prospectively, a budget was given in the documents that several presidents submitted to the Council or the financial officers who were under the Council. Why do you think that this number, the cost of servicing a member, was not being done in the headquarters offices where there was daily staff?

McCRACKEN: Why do I suppose? That's a good question. That's the right way to put it because I don't know the answer. Maybe I do, too. The headquarters staff did what the volunteers told them to do.

NORBERG: Yes, of course.

McCRACKEN: The volunteers ran the organization. Nobody had any uncertainty about that. Anybody who seemed uncertain, we straightened them out. If some executive director had set out to do that and needed half a person to work for a year on it, and that hadn't been approved by at least the Executive Committee, I think there would've been some yelling and screaming if enough people didn't think it was needed. So I can see how an executive director might not intend to take a lot of initiative in that sort of thing. In my time, at least. I don't know what happens now.

NORBERG: Well, if there was this discussion going on about the institution or implementation of an accrual system, it seemed to me that the headquarters would know a lot more about what the costs were per member and how you would allocate money against future issues of the journal, which people paid for maybe as much as 18 months in advance.

McCRACKEN: But I don't think they did. My sense is that—and that's a commonsense view, but in fact, it would've taken more effort than you and I can imagine to gather that data. That's my guess.

NORBERG: But it did change eventually.

McCRACKEN: Eventually, yes.

NORBERG: But you don't know when. It was not during your term, anyway.

McCRACKEN: To an accrual system? Well, it just isn't up there. I don't remember. I saw the logic of it. I just don't remember.

NORBERG: In one of your presidential letters, February 1980, you present some ideas for changing the governance of ACM. Measures such as increases in the size of the Nomination Committee and the Executive Committee, additions to the SIG Board, internal elections in some committees instead of presidential appointment, and some financial authorization changes to face a more complex world outside ACM. That's quite a list.

McCRACKEN: Audacious.

NORBERG: Needed in February 1980?

McCRACKEN: Thank you. [Laughter]

NORBERG: In February 1980, it was needed.

McCRACKEN: Did it have any effect?

NORBERG: That's what I'm asking you. By raising these questions in February of 1980, when four months later you'd be out of office, is this meant to be a series of suggestions to your successor?

McCRACKEN: I suppose. I had no hesitation to giving advice to Peter Denning.

NORBERG: Well, then the question is, did Peter Denning pick up on any of them?

McCRACKEN: I wouldn't know, actually. [Laughs] Peter and I didn't share confidences. I can tell you what I told him at the last meeting of the Executive Committee, when he was incoming president. I said, "Peter, you've got a list of things you want to accomplish as ACM president. A few, I'm sure, are very, very important and very much more important than what you've seen us doing. Even what the vice president knows. You know what you're going to do. You're going to do it right. You've got your list." I said, "Let me tell you--"

NORBERG: Was this done publicly?

McCRACKEN: Yes. Oh, yes.

NORBERG: Within the committee.

McCRACKEN: Yes. There were a dozen people in the room. I said, "A year from now, you will have no idea why you even wanted to be president, because you will have spent all of your time between now and then putting out stupid little fires that you don't give a good damn about." He understood that, but he didn't believe it. Perhaps he didn't believe it.

NORBERG: No, he wouldn't believe it. That was not the first time you had an interaction with him as I remember from the correspondence. When you were chairman of the Computers and Public Policy Committee, and had submitted an interim report to the Council, Denning wrote a letter saying that your committee was doing some important things and so on, but he thought that there was something which was left out and that his group—I don't remember exactly what the group was—was interested in this problem, too. And you and he should get together and resolve this in your report.

McCRACKEN: Yes. [Chuckles]

NORBERG: I asked him about that.

McCRACKEN: What was the group?

NORBERG: Well, I don't know. I don't know whether I have it here or not. I don't think I have his letter here. I used it during the interview with him. I don't think I shifted it over to your file.

McCRACKEN: Maybe we can figure that out.

NORBERG: This is the statement by Daniel McCracken in April of 1976, Committee on Public Policy. But I don't have his...

McCRACKEN: There was a certain amount of conflict around that before—mostly friendly. It was published in *Communications* and it held up well. I looked at it a dozen years later for a possible homework assignment or something. Most of the issues we identified were still very alive indeed. We did a good job. Needed to be updated. The people that took over that committee after I did other things, they never succeeded in updating it.

NORBERG: The other group, I think, was Privacy and Security. Jean Sammet had asked for a statement on privacy from a committee that she put together, I guess.

McCRACKEN: They disagreed?

NORBERG: Well, I'm reminding myself where these documents come into play. She wanted that statement so that there would be a one-page response to people who were interested in what the ACM position might be on privacy. Peter, I think, was on that committee. He thought he saw a connection between Computers and Public Policy and this Privacy and Security discussion, and wanted you and he to get together to deal with this. That was the issue.

McCRACKEN: He wrote me a letter?

NORBERG: He did.

McCRACKEN: He didn't pick up the telephone?

NORBERG: He always puts things in writing, I think.

McCRACKEN: Well, so did I, but I don't know that anything came of that.

NORBERG: What was your relationship with Peter during the time you were both on the Executive Committee?

McCRACKEN: Friendly, arms-length most of the time. We were not meant to be enemies. We both had delusions of power and we saw each other in each other's way in small ways, I guess. I shouldn't say that because I don't know his mind. I think I told you, as president, I suggested to him as vice president that he go out and meet with each board and committee at the meetings. And he said, "I don't want to do that." And that was the end of that. Just differences in personality. I don't know if it was very much more than that. But sometimes, when you're working closely with somebody, little differences like that can get bigger.

NORBERG: Sure. Do you recall when he became editor-in-chief of *Communications*?

McCRACKEN: No, I don't.

NORBERG: I think it was February 1981, so that'd be during his term as president.

McCRACKEN: That's easy to look up.

NORBERG: Yes. That's all right. I have some other ideas about it, too.

McCRACKEN: That doesn't make total sense, but it could've been illegal.

NORBERG: No, no, no.

McCRACKEN: I mean not constituted in the constitution or anything.

NORBERG: We can ask the same questions about other committees, too, that the ACM had. Like the Coalition to Diversify Computing.

McCRACKEN: We can do that.

NORBERG: Committee on Women in Computing.

McCRACKEN: Oh, yes.

NORBERG: The Committee on ACM History, which is just now in full operation. This is a new committee, but there was one that you actually stimulated.

McCRACKEN: I hope so.

NORBERG: Yes. You wanted the ACM to do something about its history and you thought it was a good idea. We talked about Computers and Public Policy. We didn't talk about Constitution and Bylaws.

McCRACKEN: I can't remember what that committee did beyond reacting to suggestions that came to it, but I just don't remember.

NORBERG: That goes all the way back to Galler's chairmanship of a committee appointed by Jean Sammet.

McCRACKEN: It's a reasonable committee. I just don't remember what it did.

NORBERG: K-12 Task Force. Nominating Committee. Awards Committee. Elections. Committee on Professional Ethics. ACM International Collegiate Programming Contest. And USACM Committee. I think this covers a broader span than we're talking about here, but do committees like this, in your knowledge of the past, come into existence because someone or a group of members is interested in supporting this? Or do they all have to have some sort of imprimatur from at least the Executive Committee if not the Council?

McCRACKEN: I don't think that it's an either/or. I think that the successful ones come from the bottom up and get approval. The ones that come from the bottom up, in the sense that some people see something that needs to be done and volunteer to work on it, probably have a more lasting effect than the ones that are appointed by a president or something and are convinced that they should write a report about such and such. The things you rattled off there, some of them had a lasting impact and some I didn't even know existed. The Women in Computing thing, unfortunate perception that ACM was against women somehow. I'm in favor of women.

NORBERG: The perception is that the field itself is against women, not just the ACM.

McCRACKEN: Well, some people still feel that way. They look at the enrollments of women in computer science programs and look for somebody to blame. Say, "It's a damn shame," and "It shouldn't be that way," and "Who's causing that?" Or, "What can we do to fix it?" "What can we do to fix it?" is fine. I think it is a damn shame that it's down to 12% or 15%. In that case, I think ACM was blamed for something which we hadn't particularly done.

NORBERG: Yes, that's always the way.

McCRACKEN: Maybe we're being blamed for not being more active. I don't know. The Awards Committee is an example of the independence sometimes shown by ACM committees. Most of the time the nominees are well chosen, but sometimes the committee members decide to nominate a single person for an award when it is tactful to nominate another person with the first choice, since the work was done by two, or the two are so inseparable that nominating one for a development that two of them worked on is out of place, but the committee won't budge when given advice. Three ACM awards committees did this, and it annoyed me a lot.

Two of them had to do with the Grace Murray Hopper Award committee. Somebody or other nominated two people, X and Y. The Grace Murray Hopper Award for those who don't know, is given—established in her lifetime, of course—to encourage young people, which she did all her life, for technical work done before the age of 30. The Grace Murray Hopper Award committee chose to give the award to X and not to Y. I thought that was a supreme, stupid, idiotic insult. I never got an explanation for that, but I assume that some people must have felt that you don't give a Grace Murray Hopper Award just because somebody got rich. I don't believe that's what the citation said at all. Both people had certainly presented a contribution done before the age of 30, and the chairman of the overall awards committee told me that he went to that subcommittee and just jawboned as hard as he could for them not to do that. If you can't give it to both of them, don't give it to either one. No luck.

The other instance occurred when I was on Council. The committee had decided to give a second prize in the Grace Murray Hopper Award and no first prize. Say what? So help me. The guy got up, the poor kid, and said, "This is the greatest second prize I've ever gotten." A bunch of us said back in Council, "If you can't give a first prize, don't give any." Don't do that again.

Well, this committee did it again. I went to a well-known entrepreneur and asked him if he would like to be nominated for a Grace Murray Hopper Award, and he said, "I'm very much honored to be nominated, but please make it for my former colleague also." This was a laudable request, and the damn committee wouldn't give it to the two. That just made me furious. I should not attribute motives, but it sure seems like they're saying, "He's rich enough; we're not going to give him another \$5,000," or whatever it was. He did important technical work before the age of 30, subsequent to which they founded a company, and I just hated that.

Then there's one that hasn't been given yet that I hope will still happen, and that is that the Turing Award has not gone to Tim Berners-Lee. That just seems to me like an absolute no-brainer. He did work that changed society forever in a very short period of time. I chatted up Jim Gray not too long before he sadly disappeared into the Pacific. He was chairman of the overall awards committee at the time, and I said, "What's going on with that?" He worked for Microsoft. He was totally sympathetic to the notion that that kind of contribution deserved a

Turing. He said, “Well, as I hear against it that there was no technical contribution there. It was just social engineering.” I think that’s nutty.

NORBERG: That sounds absurd. Let’s stop here and resume tomorrow.

Session 2, Tape 1, Side A

NORBERG: Dan, last night, I listened to the tapes, and I didn’t come up with any other questions that should be added and sort of interspersed into those tapes. I did observe that toward the end of the tapes of yesterday afternoon’s session, I was spending a great deal of time leading the witness. I’m going to stop that today. I’m not going to do as much leading, because it seemed to me that what I was trying to get at was consensus between us, and that’s not what the interview is all about.

MCCRACKEN: I don’t think I quite agree with that. You were talking a little bit more than you had at the beginning, but just looking back now that you’ve made an issue of it, I thought maybe you were just frustrated by my poor memory.

NORBERG: I hope that’s not the case, but it could be.

MCCRACKEN: Well, so I didn’t help by saying anything.

NORBERG: You said you had some thoughts about what transpired yesterday as well. Would you like to tell me what they are?

MCCRACKEN: Well, simply in response to what you told me what you had in mind, and one was to talk about the headquarters people. I’d be delighted to do that.

I have a few regrets: one personal and three awards that were not given. I feel bad about it, and I want to say something about it. I want to say something about perspective of what the average member thinks about the ACM president. I’d like to talk about the structured Cobol book and concept and debate briefly. It was an important part of my career and how that fit into the Y2K debate in a small way. Where do you want to start?

NORBERG: Let’s start with the ACM activities, because that will continue with yesterday’s session, and then we’ll get to the structured programming book after that.

MCCRACKEN: Fine. You asked me to say something about the people at ACM—both, I take it, what their jobs were and how I related to them. Helen and I discussed this last evening; she helped me remember some names. The executive director was Sidney Weinstein the whole time I was there, although she reminded me that he had a serious illness during my presidency. I’d forgotten it was that early. I got along famously with Sid. We just hit it off. Sometimes we would have disagreements about policy issues, but that’s normal. There was never a raised voice that I remember, so that was cool. The people who reported to him, as best Helen and I remember, were Irene Hollister, and neither of us can remember exact titles for people. Maybe there’s a reason for that. There was a structure to the organization. The executive directors were people that came from government, and they’re not going to run a loose ship. (That’s an

expression.) There was a policy and procedures manual, thanks to Jean. I'm pretty sure there was. But these people were not martinets about following the book. If a job needed to be done, the first available person was Joe or Sam, well do it. Get the job done. There was a lot of stuff I'm not going to mention by name, what med students call scut work, washing test tubes back when there were test tubes. Copy editing—there's got to be a lot of copy editing in an operation like that, and as far as I know, it was well done. Nobody gets awards for copy editing. Just doing your job right doesn't win you prizes.

As far as I was concerned, the headquarters operation worked very smoothly. Irene Hollister handled the personnel side of things, I guess. I don't remember her title at all. John McKegney was the controller, and I got along with all of these people—a little more simpatico with some than others, but I didn't have any conflicts with anybody of any seriousness. At Executive Committee meetings, I had an "Aw, shucks" routine that I did. I'd say, "John, as you know, I failed Accounting 101, but I'd like to ask us about this number here on the third line on page six." And I asked Helen one time, "Did John start to tremble when I did that?" and she said yes. For the benefit of readers, that's Helen Cohen who worked for Irene Hollister. I'll say more about that later. John did a fine job. I just don't remember chronologies. I think he was in on the conversion to accrual accounting, but you'd have to check with somebody who has a better memory than me on that. Mark Mandlebaum was head of publications. That worked so smoothly I didn't have much to do with it. Relations are good. I guess I won't say that for everybody. Myrtle Kellington was the headquarters person for CACM during my time, if that's even close to the right title. She's a sweet woman, and she did her job very, very capably. I meant to go down the organization chart. Jim Adams was sort of (neither of us can remember his title), but effectively he was Deputy Executive Director. That surely wasn't his title.

NORBERG: Well, that's the title that I have here.

MCCRACKEN: Oh, really? Marvelous.

NORBERG: Office of Executive Director, office of the Chief Operating Officer...

MCCRACKEN: Who was that?

NORBERG: I don't have names associated with these because it covers a wide...

MCCRACKEN: Still, I don't think the term was likely used in that time.

NORBERG: Okay. Deputy Executive Director, office of Membership, office of Publications, and office of SIG Services. That I think was contemporary.

MCCRACKEN: Slow down and read it again, and I'll give you the names.

NORBERG: Office of Executive Director.

MCCRACKEN: Sid Weinstein.

NORBERG: Then office of the Chief Operating Officer/Deputy Executive Director.

MCCRACKEN: That's got to be Jim Adams.

NORBERG: Office of Membership.

MCCRACKEN: That's Irene Hollister.

NORBERG: Office of Publications.

MCCRACKEN: Mark Mandlebaum.

NORBERG: And office of SIG Services.

MCCRACKEN: I have that written down here, once we figured it out. Fred Aronson. I couldn't think of his name, but Helen of course worked there, so she thought of it. Then Lillian Israel was in the membership operation and still is. They've expanded that, but at one point, if any ordinary member had any kind of question, Lillian was the person. She married a volunteer. We went to the wedding. Nina Knyphausen was her name then. I don't know what her job was, but she seemed to be everywhere doing everything and did it very well. She left to get married and unfortunately died a few years later. It was very sad.

There was somebody in headquarters who had a primary liaison responsibility for the chapters, that may have been Aronson also, or I may be missing something. And then Helen Cohen worked for Irene. She was responsible-- I don't know what her title was. She doesn't know. It didn't matter. We didn't go by titles; we just got the jobs done. Her job was to make sure that Council meetings and Executive Committee meetings ran smoothly. She put together the agenda, working with the officers. She put together the packets that had to go to all the members of these groups. I don't think she arranged for the coffee for the meeting rooms; I think that came under Adams' bailiwick. There was a guy, Lou Fiora, who was specifically in charge of running conferences, and he had a free hand to go out and do what had to be done to get things done in big hotels. I don't think I want to say any more about it than that. So Helen didn't have to order the coffee, I don't think, although if there wasn't any coffee there, she'd take care of it!

Switching gears back to my activities with ACM, volunteering with ACM was a fine thing for my career. I would still say that if I hadn't written all those FORTRAN books, the election would have been a horse race. Stu Lynn had done a lot of stuff. He was only one among volunteers. So I don't know. I hope I did some good things for ACM, although I'm having trouble pinning very many of them down. So ACM was obviously a crucial part of my career. It may have had a major part in getting my current job, for all I know. I was asked to be a visiting professor at City College in '81. I don't think my presidency was what tipped the balance there; it was one of my books. But it certainly didn't hurt when it came time for tenure. I didn't have all those refereed publications. All those books, they counted then; they wouldn't count today. I'd never get tenure today; that's another story.

NORBERG: Who would? Things have changed.

MCCRACKEN: They certainly had at the time in the hands of an acting dean who was very much on my side. That made a huge difference. So all the pieces of my career tie together.

NORBERG: Can I interject here with a couple of questions?

MCCRACKEN: Yes.

NORBERG: What I heard you say in your rundown of the various people in the executive offices of the association was that you had essentially good interactions with all of them.

MCCRACKEN: That's how I remember it.

NORBERG: Okay. Now, what sort of things did you ask them to do, other than the agendas and getting out the materials for board meetings?

MCCRACKEN: Not much. They knew their jobs.

NORBERG: Okay. That's what I thought you'd said.

MCCRACKEN: I didn't say much—I didn't have to. They were responsible, inner-directed people who were given a clear understanding of what their jobs were by Sid Weinstein and their supervisors. The organizational structure worked; there was a reasonable division of responsibilities. Somebody over the years had done some extremely good hiring. The turnover was not high, I don't think.

[Telephone interruption]

NORBERG: So if I asked you the question how effective was the staff at ACM headquarters in helping the officers meet the aims of ACM, you would say?

MCCRACKEN: Superlative. You have to understand that the volunteers were not always of one mind, and if person A wanted this and person B wanted something else, they couldn't satisfy both. But it was the job of the Executive Committee not to have volunteers giving orders to the staff in that way. Where there was a clear connection-- Stu Lynn working with Myrtle Kellington on publications-- Well of course they talked directly, but if some Sam Glotz thought that something should be done about the chapters, he did not call up Fred Aronson and say, "Do it." Fred would find some way to gently explain the channels of communication. So the volunteers had lots and lots of arguments, but the staff didn't get caught up in those very often. Sometimes they were asked for an opinion, and that could put them at odds with one side or the other, but that's life. Everybody understood that. Some conflict was normal, even essential. Now I don't know. Others may have had a different view, and memory may be kind. I don't know. That's the way I remember it.

NORBERG: Can you elaborate on your relationship with some of the other officers during your years? Herb Grosch was president when you were vice president. When you were first on the Council, it was Jean Sammet, was it not, or was she Past President at the time?

MCCRACKEN: No, she was president. Herb Grosch was vice president. He had run by petition—against whom, I don't know. And John Hammond was Secretary.

NORBERG: And you continued to have an association with these people after that like Sammet. I saw a lot of letters between you and Sammet.

MCCRACKEN: Sammet became Past President when Herb was president, and as Past President, she was a member of Council, and I think she got elected as a regional rep after that. So she was, I believe, on Council when I was president. It certainly seems that way. Memory.

NORBERG: Are we still talking about Jean Sammet?

MCCRACKEN: No, no—in general. I can run down the relationships.

NORBERG: Let's talk about them as if they were contributions to the association. What is it you think Jean Sammet accomplished during the 1970s?

MCCRACKEN: That is a hard question for me, because she and I have different styles, and I don't want to make it any worse than that. She was a stickler for detail. It led to conflicts, and we wasted time. It's not that I don't care at all about details, but I'm more relaxed about them than she is. She was particularly adamant about this business of whether ACM should be involved in social and political issues, and "deeply political and social issues" got into the bylaws somehow. They were just a thorn in the neck because it would be thrown up at anything I wanted to do in the way of-- If I said, "Evil is bad," someone would say, "Oh, no. We can't say that." I'm exaggerating of course, but it was used to block a number of things I wanted to do. It seems like that, anyway.

NORBERG: Such as?

MCCRACKEN: Well, I was afraid you were going to say that. Oh, Social Security number stuff that came a little later. Any attempt to talk about dissidents who wanted to get out of Russia—you can do anything you please as an individual, but you can't say, "ACM believes..." That's a deeply political and social issue. I got totally exasperated because I wanted to know exactly what that meant. What is a deeply social issue? I think we had a question of importance about whether that should be kept, and that led to a great deal more heat than light. There were things flowing out of this style difference that I guess made it hard for me to appreciate Jean's strengths. I suppose that an attention to policies and procedures as a counterbalance to my more laissez-faire approach was probably useful. In a lot other ways I simply don't know, she must have had a great deal to do with the successful organization of the SIGs, and I just wasn't involved at that time. That was past history by the time I got on Council and she was President. We were not doing that anymore. And then of course, I have the memory problem. I just don't remember. If somebody were to remind me of major things she did, then I'd say I knew about them, but...

NORBERG: Well, what I would say if you asked me that question is that there was the attempt at reorganization in the middle 1970s when she was president, and that was a very elaborate discussion.

MCCRACKEN: Remind me.

NORBERG: Well, the committee under Galler about this issue was trying to establish more direct lines of communication.

MCCRACKEN: Between whom and whom?

NORBERG: Between SIG groups and the SIG Board Chair, the SIG Board Chair and the Council, and so on. Jean's attempt at detail was to nail these things down as closely as possible so there would never be any question about it.

MCCRACKEN: I disagree with the approach entirely.

NORBERG: Well, that may be, but that's what I would say about her.

MCCRACKEN: Well, maybe that's why nothing came of it. I don't think you can legislate good will.

NORBERG: Oh, I'm sure you can't.

MCCRACKEN: Or mutual respect. These things have to be earned. That's Jean all over, and Bernie, because they were agreed on this. I don't remember the debates very well. I don't think much came of them.

NORBERG: She was also helpful with the various SIG problems that developed in the middle '70s.

MCCRACKEN: I absolutely believe that, but I just don't have any direct knowledge of it.

NORBERG: I'd like to bring up the association with Herb Grosch again and bring George Dodd into the discussions, because there were a series of letters that passed between Grosch and Dodd and Aaron Finerman it turns out and yourself concerning a number of things. I brought a couple of the letters with me. One of them was actually published in *Communications of the ACM*, and it begins with a letter George Dodd sent in April 1977 in which he says, basically, that Herb is misrepresenting what's going on in his criticism of Dodd and others. "The strength of the ACM depends on the members who volunteer to organize and carry out its programs. All activities, be they the publications," etc.—he goes through the long list of these—"are carried out by volunteers or by the headquarters staff under the policy direction of volunteers. Because of this dedication of our members, it was distressing to read the ACM president's letter in the March 1977 issue of the *Communications*. The style of the letter and its attacks on volunteers are deplorable." This is a letter from Herb. For example...

MCCRACKEN: I don't remember the details of the letter. There were so many things that he could have been talking about, but I totally and absolutely agree.

NORBERG: Well, let me bring up one specific case, which I think you should know a lot about, and that's the ICCP loans and...

MCCRACKEN: I remember I favored that. I helped with things in whatever way in getting it founded. I was on their board for a while; I took one of the exams. I'm a certified computer programmer. I wrote a Presidents Letter about that. What did I do on the Council? What was the debate? Well, let's back up. A profession is characterized by people having a body of knowledge that affects the public that the public can't be expected to know. Doctors go to med school four years and residency for who knows how long-- You and I can't know everything they know, and yet they can make decisions about our life and death. Just change the details for lawyers, teachers, and the rest of them that call themselves a profession with a public responsibility, and normally somebody has to say whether the individual is qualified to claim that lofty title. It's done different ways in different professions. Doctors have their boards—"I'm boarded in psychiatry" and all that stuff. Teachers have to get a certificate, I guess—I've never been a public school teacher. College professors of course are exempt. [Laughter]

NORBERG: And there's a great deal of criticism about that.

MCCRACKEN: And you know, programming mistakes, we're killing people. Not very often, but it was more than just potential. It has happened. I don't know if that was realized at the time, but anyway, it certainly is now. So who's going to do the certifying? There are three choices. You can wait for the state to do it in some form or another, and most of us didn't think the state would probably do a very good job with a fluid, new field like this. A board exam in psychiatry—those things don't change as fast as computing does. So we weren't too comfortable with waiting until enough horrible things had happened to where legislatures would step in. Another possibility was to set up our own certification where a body within the field would administer a test and say, "Yes, this person is qualified to do such and such," whatever the test was about. That's focusing on the individual.

Then there's the question of accreditation. Make sure that the education that these future professionals are getting serves the purpose. I favored the certification of individuals by the profession in setting up ICCP. It's not perfect, but it was better than anything else I saw. I also very strongly favored accreditation. I supported that at all stages. We had an accreditation committee "n" years before the Computing Science Accreditation Board came into existence. I don't know what "n" is; it's like five or six or eight. Then when it started to get into existence, I supported it. I took the training; I led accreditation visits; I am just a strong believer that that is a good thing for our field and for our future and the future members of it.

Now, the only place that conflict came into was whether the ICCP was going to be successful. Could they do it? And I don't know what I said at the time, but I would say now that I wasn't sure that they could, but it was better than anything else I'd seen. I thought we had better do something before the legislatures jumped in. I may have been alarmist about that; that is to say maybe they weren't paying any attention at all, I don't know. Surely some people were saying that they didn't trust the proposed ICCP to do the job very well, either. That's all I remember.

NORBERG: What constituted a loan to them? Why was money given to them on a loan basis if they were doing the job that ACM wanted to support?

MCCRACKEN: I don't even remember that. I'm sorry.

NORBERG: Okay. There was a lot of discussion about it.

MCCRACKEN: How much money?

NORBERG: \$700,000 is what I remember, which in the grand structure of things wasn't a great deal of money.

MCCRACKEN: Oh, at that time, it was a hell of a lot of money! Maybe it was a bridge loan for them to get into their offices in Chicago or something. I don't remember that at all.

NORBERG: There's another part of this letter which we started to talk about yesterday, but I don't think went into it deeply enough, and that is Dodd, who was writing this letter, says that "Previous presidents have circulated their proposed letters for opinions on style, substance, and accuracy from others most directly involved with the issues. Dr. Grosch has chosen not to do this. As a member of the ACM Executive Committee, his letter does not reflect my views of the style by which ACM should operate." Then in other letters, there are some comments by you and others. So Herb just went out on his own, it seems to me.

MCCRACKEN: He always did. That's right.

NORBERG: Then how do you explain the comment you made yesterday to me about you trying to put a gag on Herb?

MCCRACKEN: I wasn't always successful!

NORBERG: Well, that's true. Yes, this is one letter that wasn't very successful. And another time about elections, he was writing in *Computer World* about them—not in ACM publications at all. That seemed very odd.

MCCRACKEN: Well, was that before he was an officer and he didn't have...?

NORBERG: That's after. '80, '81.

MCCRACKEN: Oh, well he was long since an officer. Well, a former officer can write anything he pleases, I suppose. As far as George's claim that the drafts of presidents' letters should be subject to review, I would resist that a little bit, too. I'd like to think that most presidents wouldn't have to be told to do that, and they also wouldn't have to be told not to insult half the membership. A rule that says, "Thou must get three reviews from somebody or other" wouldn't have stopped Herb, anyway. I don't think the Executive Committee had ordered headquarters not to publish Herb's letters... I don't know what would have happened. That would have been a hellish conflict. He'd have gone public with that and claimed that he was being gagged by the... I don't know what he would have said, and I don't want to put words in his mouth. We had that kind of conflict all the time. That just used up a lot of energy to no good purpose.

NORBERG: During your years as an officer, Dan, who do you think made significant contributions to the ACM now, not to the profession?

MCCRACKEN: Jean Sammet did. I didn't agree with everything she wanted to do, and I mostly didn't agree with her style of doing it, but people and a style I don't agree with are often in the right, you know. So, sure I overreacted to style sometimes. She obviously did very good things for the SIGs, and it was probably a useful corrective to have her there championing the policies and procedures manual kind of approach to things. Stu Lynn made an enormous contribution with work on restructuring the publications, most of the details of which I simply wasn't involved in. At the time, I knew what was going on, and I supported it—moral support, jaw bone support to the extent I had a forum to do that.

Aaron Finerman was a very capable treasurer. We had to watch our pennies during the early part of my years on Councils that I know anything about. The situation he stopped later—we were just coming out of a near crisis as I hear it—and he kept track of where the pennies were. Budgets, as I recall, had to be voted by Council and I think then published. There were strict restrictions on how we could spend our money written into the bylaws. I tried to get some of that changed. Well, there was something in the bylaws that the budget could not be changed by the Council or anybody else between annual budget cycles—I'm making this up; it's something like this—in excess of \$25,000. And that was written at a time when the total budget was like \$100,000 or something, namely in 1958 or so. At that stage, our budget was whatever it was—three, four, or five million. I really don't remember, but it was a lot more than it had been, and it was just tying our hands something awful. We couldn't do much of anything of significance because of that bylaw which would be trotted out only in opposition to something that somebody didn't want to do. I tried to get that—maybe I succeeded, I don't know—taken to the membership. It was a question of importance. I don't remember whether we actually managed to do that, but whoever championed that was not contributing anything except obstructionism, I'm afraid. But that wasn't Aaron, certainly. He was on the right side on that one.

Key people in headquarters—I'm satisfied that they did a superb job. All the ones I've named. Volunteers? Well, so many people did good work. It's a marvelous organization. There are extremely talented people who are looking at a lot of time, some of which advanced their careers. Well, that's okay. Not all of it would have been justifiable on a career basis; they just felt an obligation to their profession and gratitude for what it had done for them. They worked hard and long to get good things done. It would be tough to single out very many more because there were hundreds. Give me a membership roster, and I could tell you what they did. I am very proud of being able to work with such people. Maybe all organizations are like that, but ours was fairly new, young, and energetic. I was lucky to be associated with it at that early stage in the history.

NORBERG: I'm looking at your notes that you sent me a week or two ago, and among the issues that you raised in connection with the organization itself, you mention that ACM chapters were much more important back then than they are today. Back then, I assume you mean the '60s and '70s.

MCCRACKEN: Yes.

NORBERG: It was the chapters' people who felt they weren't properly represented in ACM governance who urged you to run.

MCCRACKEN: Yes, that's what I said, and that's how it was. Have you got a question there?

NORBERG: Yes and no. I'm trying not to lead the witness again today. What I'm interested in is you said yesterday that George Glaser, a member of the nominating committee, mentioned to you that you were not nominated by the committee and that you decided to run on your own. But I don't remember hearing you talk about the chapters' people asking you to run or suggested you run.

MCCRACKEN: Well, I didn't say it then. They did. At that point, I was giving a lot of talks around the country, and again, ACM and career meshed. A lot of it was in service of selling books. I went out and gave a lot of talks about structured Cobol. The day I decided I wasn't going to do anymore, I'd given 67 of them around North America and often enough to ACM chapters meeting a half day on Saturday or a dinner meeting or whatever. So I was in good contact with the with the chapters' people, I think, probably more than anybody, and I had my ear to the ground to a certain extent. I didn't do all the talking; I did some listening, and there was dissatisfaction amongst the people I was talking to who were practitioners. The academics were not studying Cobol. In the theoretical side of academics, Cobol wasn't their language. Some of them were even contemptuous of it; some of them were just apathetic, but they didn't flock to my talks. The people who did flock to my talks were the ones who were doing programming in Cobol or in FORTRAN or in whatever I was talking about. So I had excellent contact with such people, and whenever ACM came up, part of the time I was hearing dissatisfaction. And if I indicated that I was receptive to such criticism, I would of course hear a lot more. I may have done some of that. Who knows. And then in Minneapolis when I was not nominated, there were chapters' people as I would call them—people I knew through chapters, people who had been involved in ACM volunteer activities from the chapters side—who said explicitly-- Well, I may have asked them whether I should have, I don't know, but they strongly said, "Yeah, run, run, run, run. Go. We'll get you elected."

NORBERG: The issues confronted by ACM in the '70s and '80s in particular when you were active. The first of them is a journal for all members. I bring this up not to talk necessarily about what the concept of the journal for all members was, but you've mentioned several times that Stu Lynn wanted to restructure publications. I'd like to take you back a little bit further than that into the middle 1970s and the Ralston committee, which was looking into the question of a journal for all members. In May 1975, they raised the issue of whether or not *Communications* was serving the members as well as it could or should there be some other journal? And in the summer of 1975, an ad-hoc committee on publications was established. Is that Stuart Lynn?

MCCRACKEN: I really don't know. I was on Council; I wasn't an officer. There was so much talk in the air which mostly I think evaporated once Stu restructured the publications so that everybody was getting something they wanted. It turned out that changing *Communications* alone wasn't the sole answer to that.

NORBERG: Yes. We talked about that yesterday.

MCCRACKEN: Some new publications were part of the answer. We're a federation of special interests. Well, then each special interest has to be getting services from the organization or they're going to go away and form their own club. So the focus on *Communications* did change. They changed the magazine design. The first time I heard Stu Lynn use that term, I hadn't the

faintest idea what it was. I later took a course in book design and found out some sense of the huge subject it is to just change the whole appearance of a publication like that. But to most people, that was a cosmetic change. It was more than that, but the real problem was perceived as the excessively academic nature of the papers

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which had been submitted in service of getting tenure, so to speak, which is not bad, but it didn't serve all members. And the three-year backlog was a killer for any number of reasons. Those problems just sort of got worked out, and the creation of about half a dozen publications there in five or six or seven years, that solved a lot of the problem, as I now understand it. You can read the current issue and see what the editors-in-chief thought they were doing to respond to the same issues. But the journals for all members as such—that idea just disappeared. It got heard, and *Communications* changed. Of course there was advocacy, but it didn't make much of a splash, I'm sorry to say.

NORBERG: No, it did not. Peter Denning was on that ad-hoc committee, and I suspect, from the style of the report, that he wrote it. But in that report, the committee says that the JAM focus had to change in terms of content as well as implementation—that is, how to do it, how to produce this journal and make it of interest to all the members. That idea did carry through the whole second half of the 1970s that it should be meaningful in a technical sense, and it should be implemented in order to make it something that the members would like to read. Well, what they claim...

MCCRACKEN: Can you tell me what Peter meant by that?

NORBERG: Well, the claim was that the effect on other ACM publications would be minimal except for the *Communications*.

MCCRACKEN: Oh, that's interesting.

NORBERG: Name change—you spent a lot of time interested in the problem of a name change.

MCCRACKEN: Yes, I did. The name was chosen in 1947 at a time when a computer was a human being sitting at a desk calculator computing missile tables. And since that's what the mostly women at Aberdeen Recruiting Ground were doing, that the ENIAC was built to speed up. So Association for Computing would have been totally misleading. People today don't realize that and think our name is just seriously stupid, which it is, but they don't realize that there was a very good reason why it was picked at the time it was picked. But by the time I was involved, ACM was getting letters saying, "Would you like to buy our steel, iron, copper? We know all about machines." We were taken as a trade association. We got no respect from Washington because they could have thrown off the scent entirely by the name. It had become greatly misleading, and I wanted to change it and somehow keep the initials ACM. I got enough people to agree with me that we put through a constitutional amendment to the membership to change the name to Association for Computing and then do whatever necessary to keep the initials, like doing business as ACM, Inc. A lot of people agreed with me. I'd say I worked on

that for two years. During those two years, I was speaking a lot around the country and in Canada, and I tried always to get in at least five minutes on the name change to try to build up support for it. I didn't hear any objection. To people who hadn't heard the issue before, it just seemed to make sense. I thought we had a pretty good chance, but there were people who didn't want it changed, and I wish I understood their reasons better.

Bob Ashenhurst wrote the con statement that went out with the ballot on this. I haven't looked up what he said, but I wish he hadn't said it. I don't think he said it, but I heard the argument that this would make an awful lot of work for librarians because Association for Computing Machinery would alphabetize differently than Association for Computing and they'd have to retype all of their index cards and re-file them. Therefore we should not change our name.

NORBERG: Well, it's not true, first of all.

MCCRACKEN: Then it would alphabetize differently?

NORBERG: It could be alphabetized differently, but there's a "See to" pointer in the new index cards.

MCCRACKEN: Oh well, today it looks absolutely stupid! They don't have index cards, but at that time, index cards were still used, I'm sure. It just seemed to me that the long-term benefit of the organization was just absolutely in favor of changing the name, and all the objections were very, very short-sighted, short-term things. I apologize to the people who differed with me on the issue, if I'm not being fair to their position, but that's how I feel. We needed a 2/3 majority to change the constitution; we got 60%—short 1,000 votes. I published a president's letter that quoted Satchel Paige who said, "Never look back. Someone might be gaining on you." And as you can tell, I haven't exactly kept that faith with that slogan. I still get red in the face about this, but it's just... I'm not always right, but I mean, if you ask 1,000 people chosen at random whether that was the right way to go... You win some; you lose some. I lost that one.

NORBERG: What about the question over the use of Social Security numbers as identifiers?

MCCRACKEN: I forget whether I did that through the Computers and Public Policy committee or just several of us—Paul Armer and some others. Paul Armer and I were cohorts on a lot of good right-minded things, as we saw it, and we thought that using the Social Security number as a universal identifier was a bad idea for privacy reasons. That wasn't a very hard sell back then, so we didn't have very much difficulty getting counsel to adopt a resolution saying that. That's all that they did. We must have evaded the deeply political and social issue on that one somehow. All I can say is we had it right, and we didn't make any impact whatsoever. We lost that one.

NORBERG: Well, were there others trying to make a case against the use of the Social Security number as identifier? I'm thinking of the Technology Assessment Office doing a study of electronic funds transfer and subjects associated with it. Finance on the one hand, private information on the other and using the Social Security number—I thought they weighed in on this question, too. They didn't have any effect.

MCCRACKEN: Well, I guess I see it a little differently now. Every policy issue worth arguing about has two sides. I go to my classes sometimes—we're supposed to do writing in the program, and I say, "Okay, here's an issue. Those of you with even numbered Social Security numbers... [Laughter] There are going to be reds and blues here. The reds are going to be for it, and the blues are going to be against it. I don't care what your current view is; you're going to take the view I've assigned because an educated person should be able to argue either side. If you can't understand the other guy's argument, you can't make your own case. That's education." Assuming that it's a normal issue, there are two sides. There always are or there wouldn't be any debate. So we were right. On the other hand, it is very convenient to have something that serves that purpose. Maybe we were saying that the Social Security number, considering what else it's used for and what it was created for and is being used for, that was the wrong one. But it's pretty handy to have a UID. As our society has developed—now, obviously 30 years ago we didn't foresee 10% of consumer spending being done over the Internet or anything of the sort. That one was too big for a few enthusiastic individuals to solve. We were on the right side, I'm convinced...

NORBERG: But wouldn't we have needed some sort of universal identification number...?

MCCRACKEN: That's what I'm trying to say. I guess the issue was more complex than I realized at that time. I think we got that counsel at my first Council meeting in 1974—quite early. That was a long time ago as these issues go.

NORBERG: Can we turn to the subject of education and ACM's involvement in issues associated with it?

MCCRACKEN: You bet. Do you want me to start?

NORBERG: Please do.

MCCRACKEN: For me, it's been the most important part of what ACM does. I'm an educator, and I was before I joined City College of New York because I thought of myself as a teacher even when I was self-employed for 20 years and writing books. I explicitly visualized a student in the dormitory on Sunday night and the homework is due at 10:00 in the morning, and it's me and that student. I tried to keep that in mind as I wrote, and it evidently worked in some sense. So ACM's contribution to successful computer science education was the center of my career. That's what I needed somebody to be doing, and as an author with great sympathy for textbook publishers, somebody needed to say something about curriculum. ACM Curriculum '68 committee did it. They did an incredibly important thing coming up with a division of the field, as taught to undergraduates, into courses. I'm not sure if people realized at the time how much impact that had on publishers. Publishers have to publish a book—in those days it took two years, and then you see if anybody wants it. They were not in a good position. This didn't become clear until I think 20 years or so later when a subsequent curriculum committee decided to drop the course organization and come up with knowledge units and say, "Okay. You can teach the same stuff if you want to, but put together the knowledge units that make sense in your situation." I got up at a town forum meeting I think—one of the major meetings—and said, "Hey guys, I see what you were trying to do, but speaking as an author and I think for the publishers, don't do it that way. Or I mean, you did it, and it didn't work. Don't do it again."

Gerry Engel was on the platform, and I went up and chatted with some people on the platform afterwards and they said, “Thank you for saying that.” It was the previous group that had done it. This group reversed that now, and I was saying, “Good job” even though it had faults. Divvying up the field into CS1 and CS2 which is data structures—data structures include sorting and searching—sorting and searching are data structures? Anybody can make that kind of criticism, but it worked. A whole lot of computer science programs were able to get their act together, get organized, and educate a lot of students, which the Curriculum ’68 committee did. I’m honored that I didn’t get my SIGCSE Award until after they got theirs. That was the only time a group of people has gotten the SIGCSE Award, and they richly deserved it.

NORBERG: Who were these people? Do you remember?

MCCRACKEN: I could name most of them. Bill Atchison was the guy—was he at Maryland? When we take a break, I’ll look it up. Most of them were all known at the time and became well-known afterwards, and they were mostly college professors. They understood the problems; they understood the field. They understood theory, thank you, and they just did a good job—a damn good job. And subsequent committees have also done good jobs in a difficult situation because the field changes so fast. At one point, they decided that a revision every ten years wasn’t often enough, and then it turned out that doing it every five years was an enormous amount of work, maybe too fast. I don’t know quite where things stand now.

The field is fissioning. A number of schools have discovered, for example, that you can get students interested in starting programming by having them program games, computer games, video games. That’s as good a way as any to learn the principles. Well, what’s the curriculum committee supposed to do about game programming? There are 50 different things you can use to make the subject come alive, which it turns out we need to do. We can’t just say, “Okay, here’s how you sort. *Chuga-chuga-chuga...*” And the student says why do I want to sort? And by now, I, too, am saying, “Well, why do they need to know how to sort? If you want to sort, you click on the top of the column, and it sorts it.” 99.9% of our students will never write a sort routine, and yet we have a whole course full of algorithms. You can get these kinds of arguments at the drop of a hat at any SIGCSE meeting. That data structures course—I led a session once. About every second or third year, there will be a session “What shall we do about data structures?” at SIGCSE and keep chewing away at the problem.

Anyway, there has to be a focus for that kind of discussion, and SIGCSE has been that and Council has supported it, and it’s been just wildly successful as far as I’m concerned. I mean, not that everything’s been done perfectly, but things have been done in a very timely as well as I can imagine them being done. The Computer Society has a curriculum effort also. In the last two or three revision cycles, it’s been a joint ACM/IEEE, and that’s great—that’s what I was hoping for when I did my little bit to push the two organizations together. But ACM did it first, and it’s been the most important part of my professional association with ACM, other than as a leader of the organization.

NORBERG: Do you have any idea whether there was an association between, or a convergence if that word is more correct, between the development of the Curriculum ’68 and the fact that there were many new departments in computer science or computer engineering or whatever, being established around that time? This is the time of the big expansion, is it not?

MCCRACKEN: Well, yes, but it's also true that the first Ph.D. in computer science by that name was given in '66, if I'm not mistaken. And the first department with computer science in the title I think was not more than a couple of years before that. There were lots and lots of places that were teaching some computer science and educating the people who became the leaders of the field and all that. It's a chicken and egg as far as whether the rise of all those new departments made Curriculum '68 necessary and successful or vice versa. I'm inclined to think the answer is yes, it was both. Curriculum '68 happened at a time when it was needed, and they did a good job, and that helped define programs for new departments. The big name schools, especially if they're private, can do anything they please. They think it's the right thing to do, and they don't have to ask Albany, so to speak. And they probably have a very much better budget than we do, but that's another story. But if some smaller state school decides that they need to have a computer science program and it's 1971, they kind of need to know that they're doing something that is going to be recognized as being more or less in the right ballpark. Curriculum '68 just gave them something to crystallize around. You need a historian, which I'm not, to trace down the details, but I do believe that Curriculum '68 had a lot of impact on the successful expansion of computer science departments in colleges and universities.

NORBERG: Do you know of any relationship or association between the Curriculum '68 and subsequent committees and the nature of graduate study in computer science?

MCCRACKEN: My perception is that there isn't much connection. I'm not aware of any—never say all this-- I don't know of any organizational effort to formalize graduate curriculum. Maybe it's too difficult; maybe it's not needed. I don't know. I don't think so.

NORBERG: I'm leading toward the, I'll call it the controversy in the early part of the 1970s. There was concern within science programs, the ACM, IEEE Computer Society and so on about a potential glut of people with graduate degrees, particularly Ph.D.s and how that could be somehow prevented in the future. What I'd like to ask you specifically is was there anything ACM could do about graduate programs in the first place?

MCCRACKEN: Oh, I think so. The time constants and all go on, you know. It takes three to five years to get a Ph.D. past your bachelor's. The time line is built into this control system, and I think it may have been sort of unstable. The correctives came half a cycle too late and amplified the oscillation or something like that. Some such metaphor might work. I was one of the ones who said that we were going to have a glut and it was a big mistake and we ought to do something about it. That's kind of an embarrassment now. In my mature years—I was 50-something when I said that—there have been boom and bust cycles in computer science enrollments since forever, and the period is about 15-20 years. When things are either the worst or the best, you overcorrect. So what else is new?

NORBERG: There were continuous discussions about a software crisis along the same lines as that. Did you participate in any of those?

MCCRACKEN: Well, there's been talk of a software crisis since approximately two minutes after Adam and Eve left the garden. [Laughter] I don't know how you could pick any one point.

NORBERG: Did you believe there was ever a software crisis?

MCCRACKEN: Oh, there still is. Define the term. What was meant by it was that the hardware was getting faster and better at incredible rates, and software production was not doing any such thing. Measure it any way you please. Reduction of errors, productivity—how are we going to measure that, programmers, or anything else? Progress in the software side just wasn't comparable at all. The joking answer from people like me was, "Well, the software part is much harder." I don't know what the answer was exactly, except there were a lot more people involved. It's a herding cats problem, maybe. But the crisis in question was the failure of the software development process to get better very fast at all, despite a continuous rolling wave of things that were going to solve the problem from structure charts to HIPO from IBM... You just name it. That was going to solve the software crisis. Structured programming was certainly one of those, which I'll talk about more, and it certainly helped. Nothing is going to solve it, in a sense.

There was a famous meeting with the software engineering field that I think was initiated and defined at a NATO conference in Garmish Partenkirchen or some place like that in '68. I think they used the term software crisis—one of many. I don't know whether software is easier than hardware or not, but everybody agrees it hasn't kept pace with the incredible advances in hardware. We keep working at it, and I suspect we always will. I don't know what more to say than that.

NORBERG: You mentioned a couple of times the association between the IEEE Computer Society and the ACM. Can you elaborate on that? During your experiences as an officer, what sort of approaches to the IEEE Computer Society do you remember that ACM did in the '70s, and were any of them successful?

MCCRACKEN: I don't know that there was very much at that time of attempts at joint programs. We were both involved in AFIPS, which was a big player then. Of course, now they've disappeared. I don't know exactly what I foresaw at the time when I was president, '78 to '80, as potential duplication or unproductive conflict. Conflict is sometimes good. Fruit has come out of contests, if you will, but it can also be wasteful. I'm not quite sure exactly what my motivation was for trying to get the two organizations a little closer together. It just seemed like that to a greater extent than had been realized, we were doing much the same things. In the earliest days, computing was such that the Computer Society worked on hardware and we worked on software, but the overlap was amazing. All the major SIGs—the Computer Society had one, too—and if that was productive to have that competition, then let 100 flowers bloom. But even then, you could have some sort of umbrella group to talk about things in a tradition of talking. So I started talking. I thought I wanted to be a preacher at one time, and I'm still a writer and publicist, popularizer, sponsor. So I went and talked. I set up a dinner with the guy who was president of the Computer Society at the time. He met me at the Detroit airport or something, and we had a nice meal. Nothing specific came of that that I recall. Then—it must have been 1980; whatever meeting was in New York that year—it would have been AFIPS... I don't know what meeting it was exactly. It was one of the big ones. Not the ACM annual meeting, but whatever the big meeting was at that point. I pushed for just a joint dinner of the Council and the Computer Society governing board, and we had a meal together. I think ACM bought. We talked Council into paying for the dinner, and there were some toasts. We encouraged people to mix it up and don't just sit by your ACM friends, and that's it. That's the

end of the story. Maybe nothing came of it, but my feeling is that big things have started with little steps. At least we had broken bread together once. I went on and did other things.

NORBERG: Now there was a facilitation committee between the two organizations, some sort of discount if you joined both societies, for example.

MCCRACKEN: That was in place maybe around 1970?

NORBERG: It was later than that.

MCCRACKEN: Anyway, you could still get it-- I don't know now. I lost track of that. Some people took the \$5 discount from both organizations, and I once said on Council that there weren't any written rules about that. It just seemed to me that you should decide that you have a primary professional home and then take the discount on the other one, and most people nodded, "Yeah, that's how I play it, too." I don't recall if there was any major conflict about that. Was there talk about a bigger discount or something? I don't remember.

NORBERG: No. It was just as you described it, to have a reduction of one of the membership dues.

MCCRACKEN: That happened.

NORBERG: That happened, and that came to a final vote during Brandin's presidency, but there was this facilitation committee when Denning was vice president. He served on that committee for ACM.

MCCRACKEN: What was it going to do?

NORBERG: Investigate what possible joint activities could be had, whether it was journals, whether it was...

MCCRACKEN: You see, I started it.

NORBERG: Yes, that's what I was trying to get you to say.

MCCRACKEN: Well, I was going out of office. I wasn't going to have any direct influence anymore, so I at least got the two groups together. I don't know if it had any effect or not?

NORBERG: Did you belong to the IEEE Computer Society?

MCCRACKEN: Absolutely. I remember when I first joined; I've been a member for ages. And I've been a member of ACM since 1954, thank you, continuously. I'm curious to know how many people there are who have been continuous members longer than that.

NORBERG: Oh, that are still alive, you mean.

MCCRACKEN: There are still a lot, yeah. Franz Alt was president before I joined. I don't know if he kept up his membership. It's a small distinction.

NORBERG: I want to turn to the privacy issue which came up in the association. When Jean Sammet was president, she appointed a committee on privacy, and as I said to you yesterday, the objective of this committee was to develop an essay on the subject of privacy which could be used as a public statement by ACM. This involved your committee on computer science and public policy—Computers and Public Policy—and it also involved the SIG group on computers and society, which at the time was chaired by Peter Lykos from Illinois. Okay. Now, AFIPS also established such a committee with Willis Ware as the chair. That's not a surprise, either, given his activities in RAND.

MCCRACKEN: But I don't remember that we met with him.

NORBERG: Well, I don't remember that either. What I want to talk about is the ACM side of this because Jean Sammet wrote a letter to the AFIPS, particularly to Willis Ware, saying that he wasn't doing anything. Therefore, here are some suggestions on how this committee can operate, and when are you going to do it? So it looks as if AFIPS established a committee, but it didn't get started right away, and Jean...

MCCRACKEN: Jean was doing a lot of things.

NORBERG: Jean was a little bit upset about the issue. She offered suggestions on how the committee could proceed and what issues would interface with ACM, that is AFIPS and ACM.

MCCRACKEN: When she was president?

NORBERG: Yes, when she was president. It was in 1974. In ACM, though, this was a difficult issue it seems, as I look through the materials. In 1969, sufficient members voted against ACM's involvement in political and social issues that officers believed they must take the vote seriously and therefore back away from social and political issues. The subject of universal IDs was in there as well.

MCCRACKEN: All true as to the facts. The motivations, and the results, and the dynamics are really hard to pin down at this remove. But I suppose that '69 vote-- I wasn't very active; I was at seminary at the time. I was just getting back into computing. I assume the vote came out of an attempt for somebody wanting to say something about the Vietnam War, but I don't know that.

NORBERG: Oh, that could be.

MCCRACKEN: Or the Chicago '68 convention, the Democratic convention. I don't remember the details of that at all, but that "deeply political and social issues" was thrown up in what seemed like every Council meeting for a while to block anything remotely like public policy. It seems as though some people didn't want us to say anything except, "My bubble sort isn't very good." I couldn't understand. I know what Title 501(c)(3) means, but that was being used as a bogey man to knock down shadows that were not real.

NORBERG: Your committee at the time also discussed electronic funds transfer.

MCCRACKEN: Yes. I was just wrong on that. Paul Armer and I again went around speaking here and there, and the concern, as I recall it, was vulnerability to hackers and unreliability of ATMs and that kind of stuff. At the time, the possibility that we were right was real enough that we got some serious audiences, but it hasn't worked out to be that big of a deal. That was one where I was just wrong, that's all. But there were some interesting stories. I argued seriously against the ATMs on the grounds that they weren't reliable—totally out of my field all together—and I said, "They aren't going to make you any money." And boy, was I wrong. They knew exactly how they were going to make their money: they were going to cut their number of tellers by a factor of ten compared to what they would have to have today. So they knew what they were doing, and they were right.

But there was concern about privacy and terrorist kind of things we call them now to where-- I was invited to a group of bankers, high-level people—the kind of folks that belong only to the Republican country clubs. They knew about that cold, jellied soup; I didn't even know what it was. But I got up and gave a talk about why the EFT was a bad idea. Does that give you a picture of where I was?

NORBERG: Yes. [Laughter]

MCCRACKEN: I remember one thing I said was-- There were six speakers, and I was one of them. Somebody in the morning had been talking about there was a proposed EFT net or something like that. I think I asked that speaker, "Are transmissions over that wire encrypted?" and the speaker said, "No. We haven't had any problems." When I got up I said, "I suggest that when that question is asked again in the future, you say, 'We haven't had any problems *yet* that we know of.'" And I'm sure they would have encrypted them anyway, but maybe I was heard. At least I got a chance to talk.

Then Paul and I were invited to address a group—I don't remember what the group was—but one of the attendees was Arthur Burns, who was within two or three years of having been the Chairman of the Federal Reserve. We gave our spiel. We might have had AFIPS's endorsement; I don't know. We did a number of things just pretty much on our own. We got our act together, wrote some letters, and away we went. What sticks in my mind is that Burns was pretty well convinced I hadn't the faintest idea what I was talking about, and he asked me if I knew what the, I don't remember what the unit was, daily transaction rate over the fed wire was. I said \$30 trillion, or whatever the right question was, and he said, "Well, okay. \$31 trillion." Then I said, "Are you going to call me a liar for 3%, for \$1 trillion?" I had some facts at least. It made for a fun story, but I should have saved my effort. I didn't do anything useful.

NORBERG: Maybe it was too soon.

MCCRACKEN: Maybe I was heard, and nobody had any incentive at all to give me any credit. I mean, that would be the self-serving judgment. I just don't know.

NORBERG: You give the impression in your comments about the social and political issues and I can draw the conclusion that attention to these issues ceased by the time you were president. Do I have something wrong there?

MCCRACKEN: You'll have to clarify that. Do you mean attention to specific issues like Social Security number and EFT and...

NORBERG: Those seemed to be left behind.

MCCRACKEN: Yes, I had left them behind. We'd gotten the social—it's just called the social now; you knew that—through Council and it hadn't had any impact that anybody could tell. I would never beat that dead horse. And the EFT thing—I think maybe by then I realized... I don't know when I realized I was wrong; I guess it was later, but I didn't try to do anything through ACM as an officer.

NORBERG: In your term as president, you did do that, established a committee. In the general category of social and political action, you established a committee to evaluate this area and submit recommendations to the Council on what ACM should do, could do, and could not do.

MCCRACKEN: And whom did I appoint as chair?

NORBERG: Well, that's interesting. It isn't clear to me who you appointed for chair of the committee, but somehow Peter Denning is in there.

MCCRACKEN: I doubt that that was my idea. Maybe that was to see it bounce. Who else was on it? I don't remember this.

NORBERG: Well, there was the Committee On Scientific Freedom that Ralston was promoting and apparently got through at the time. Scientific freedom and human rights. And then there were still at least lingering questions about computers and public policy, which were not addressed at the time, and Ralston and Denning were very involved in these things during your administration. They had been for several years.

MCCRACKEN: Well, I may have just left them to do their thing. I don't even remember what you're talking about, so I shouldn't speculate.

NORBERG: I want to go back to something we talked about yesterday in connection with Council meetings. The December 1978 meeting, as I suggested to you yesterday, it seems to me was particularly decisive—not divisive, decisive in this case for the following reasons.

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These are all things that were approved now, so the discussion had gone on apparently for several meetings before. There was an alteration of the membership dues and journals. So this might be Stuart Lynn's activities. Changes in editorial position, which I am not fully understanding. Delegation of authority lower in the organization where appropriate. Legislative activity, such as stronger support for ICCP, to prevent state certification because ACM didn't want 50 sets of rules out there instead of one set on the federal level.

MCCRACKEN: That I remember.

NORBERG: Copyright issues. I saw some interesting correspondence about the reprinting of ACM materials from journals, particularly as to whether the author should get anything for these transactions or should all the money just go to ACM?

MCCRACKEN: Should have gone on strike, obviously. [Laughter]

NORBERG: There were some interesting results from that. And then the ACM film project, which we haven't talked about yet. Do you remember these? You indicated you remembered some of these things.

MCCRACKEN: I certainly remember some. Why don't you take them one at a time.

NORBERG: Okay. Alteration of the membership dues and journals.

MCCRACKEN: That would have been my first Council meeting as president.

NORBERG: December?

MCCRACKEN: Well, I took office July 1st, and yes, it was in Washington and it was in December.

NORBERG: Excuse me, Dan, does that mean that all these would have come out of the previous presidential years?

MCCRACKEN: Yes, that's what I'm getting at. Yes. I assume that it was at—I can visualize the hotel but can't remember the name. That's when they could get the rooms. We didn't normally have meetings that late, but it was that year. As president, I was chair of the Council meetings, but I had not had any serious involvement in that issue at all.

NORBERG: The comment that I made about coming out of previous terms is that this would put a positive light on Herb Grosch's term, wouldn't it? That these things were discussed and brought to fruition in December of '78?

MCCRACKEN: No.

NORBERG: You don't think so?

MCCRACKEN: Some previous terms, presidents. No, I don't have any detailed memory at all, but my just overarching memory of the whole decade is that Herb rarely had anything constructive to say. He would attack whoever he was mad at to no effect.

NORBERG: Okay, but in his term, there were other people who were promoting such things as you pointed out.

MCCRACKEN: A lot of people went on doing their job despite the fact that Herb Grosch was president of the organization. That's one of the beauties of the system. One single president can't do very much damage in two years, or good.

NORBERG: That's too bad.

MCCRACKEN: Well, I went into the job thinking I could accomplish a great deal more than I did. I came out a little bit disillusioned about that. But now, two years isn't very long in the life of an 80,000 member organization. And a lot of people had no serious contact with Council anyway. They'd been doing the job for some time and, "Oh, there's a new president. So what?" Two years later, they'd greet the new president. So what? They'd been doing their job the whole time. I exaggerate slightly, considerably, but there was a lot of that. The editors of the various publications are going to do what they think is the right thing, and Herb Grosch couldn't stop them in any way I don't think, unless he could convince Council. He could rarely do that, unless it was something that there wasn't much dispute about.

NORBERG: Changes in editorial position.

MCCRACKEN: I had nothing to do with that. Is there a question there?

NORBERG: That's singular. Well, I'm wondering what it was about.

MCCRACKEN: I don't know. I'm sorry. I may have said it, but...

NORBERG: All right. Delegation of authority lower in the organization where appropriate—giving more authority to board chairs, for example.

MCCRACKEN: Sounds like apple pie and motherhood to me! [Laughter] You may disagree, but I don't remember the details.

NORBERG: All right. How about the ACM film project?

MCCRACKEN: ACM film project. In my life as a publicist and popularizer and expositor, etc. I thought it would be nice if there was a film that the general public could see and find out what these computers were about. Mind you, this was started in the early to mid '70s. Before the PCs existed by some years—the IBM PC was '81. I don't remember when the Apple IIe came out, but it was before that at least some years. Computers are still a mystery, and these two guys at Carnegie Mellon—I think it was at their initiative entirely—started a project to do just that. I don't remember the initiation of how the project came about. ACM got involved at the point where they had shot a bunch of film and had audio tapes, and they either ran out of money, energy, they finished their degrees, whatever. They were not in a position to finish the job. It needed editing, both film editing and editing of the content and some flow. Somebody had to write the narration and narrate it, and they... I don't know what they ran out of—knowledge, money, time, enthusiasm. It doesn't matter. I don't know who suggested that ACM step in. It might have been me, but I sure as hell supported it. A bunch of us went out to Carnegie Mellon, a carload of us, looked at the film and met with the guys. I got Council to—it must have been me; who else?—up the money that it would take to hire a film producer whom I knew through an

association that I had, that I want to talk about a little bit, in Chicago. He had been a film producer from way back; he's a little older than I am, but he's gone now. I brought Gordon Weisenborn in, and he said, "Yeah, sure, they're capable guys, and I can see why they can't finish it. But we can finish it." So they did. He and I decided how to put the pieces together. I wrote the narration, and he took me to a recording studio with double-gasketed doors and all that jazz. I sat there doing this like I'm doing right now. After one session, they came in and said, "What is that noise?" Incredibly audible [snap]. [Laughter]

NORBERG: Dan McCracken is talking about the use of a pen and pulling the cover off and then putting it back on and hearing the snap every time.

MCCRACKEN: It'll be on your tape, too! And then we wanted to get it distributed. You don't just do this to soothe your ego; you want people to see it. There was an organization I found or somebody found—Sid might have found it—that distributed films for whoever wanted them distributed. I met with them, and they would charge so much per whatever to mail the film out and get it back and check to see if it's got breaks in it and all that kind of stuff. We got 20 copies made or something, and then we publicized the fact that it was available. It went out to Rotary Clubs, retirement groups meeting in trailer houses in a park in Arizona—whatever. I didn't care. I just wanted all of them to be in the information business. Of course, it wasn't my money. I put my own money into a lot of things, but not that one. By the time we wound that one down, it wasn't needed anymore. It had been seen by 500,000 people. That would be one TV show now. Anyway, it did serve a purpose, and I'm pleased to have been involved. One of the nicest things that anybody said to me while I was on Council was that when that thing-- We showed it to Council, and Stu Lynn spoke up and said, "We really ought to thank Dan McCracken for this. He swam upstream against Council on this for a long time. He stuck it out." Very gracious.

NORBERG: Yes, very nice. I wanted to ask you about the history of programming languages conference, i.e. the first one. It gives rise to several different kinds of questions. The first of them, of course, is how familiar were you with the project and did you attend the meeting and so on? And secondly, it produced some controversy—not the conference, the preparation for the conference—and that goes to the question of who can make proposals in ACM to other funding organizations and what sort of approvals were necessary at that time?

MCCRACKEN: Well, let's start with the first question. It was the best conference I ever went to on any subject, I think, and I remember saying, "Jean Sammet ran it." I remember saying to her that it was the only conference I'd ever gone to where I attended every single paper, and she said that lots of people had told her that. Of course, if there are parallel sessions, you can't obviously, but I didn't go off golfing or take a nap or anything else; I went to every single session, it was so good. The banquet speaker was George Radin I think was his name from the PL/1 committee. He was a sober-sided guy, but he gave an excruciatingly funny speech about some of the things that happened on the PL/1. It was an attempt by IBM and some customers to form a language that would replace both FORTRAN and COBOL. Fated to fail from the beginning, but nobody knew that at the time; I certainly didn't. There were obviously going to be conflicts there, and what a lot of people feel they did is they accepted all suggestions, and it is a very large language. For anything that needs to be done with a programming language, there are six ways to do it. You can say that $A=B=C$. It'll mean something. You don't know what until you try it, but it will mean something. It wasn't a great success although the people were

good. And he said, “Well...” We had a policy when we ordered lunch. We’d have pizza, and everybody would make their private little list of what they wanted for the topping, and then we ordered them all. [Laughter] He had a whole string of stuff like that. It was a great conference. I remember asking whether the PL/something, was that a “1” or an “I”? And it turned out there had been a lot of discussion about that. I don’t remember the answer. That’s one language I did not write a book about. I was out of that kind of business.

NORBERG: Well, who within the association could authorize a group like this group that tried to establish the programming languages conference?

MCCRACKEN: I would have thought the Executive Committee could, certainly Council could. What was the controversy?

NORBERG: I’ll come to that in a minute. I’m trying to find out some facts first before I ask you about the controversy, and that is were there any regulations or guidelines or policies or practices?

MCCRACKEN: There must have been. I don’t remember the details.

NORBERG: Okay. Do you remember whether there were many different kinds of proposals made outside for money to support something within the association?

MCCRACKEN: Was that the issue that Jean was going for support from IBM, or...?

NORBERG: NSF.

MCCRACKEN: Could she go directly on behalf of that conference or did it have to go through ACM? Is that the issue?

NORBERG: That’s one of the issues.

MCCRACKEN: Well, I can see how that would have been controversial, and off the top of my head, I don’t think Jean would have done anything irresponsible, but it was bad precedent, I suspect was what was felt. I don’t remember how it came out at all.

NORBERG: Okay. The controversy is when Herb Grosch got involved in the matter.

MCCRACKEN: Unfortunately, I’ve forgotten that also.

NORBERG: Apparently after the proposal had been made to NSF, it was either approved or on the cusp of being approved at the time, and Herb wanted some changes. Herb wanted to be involved, basically.

MCCRACKEN: Why?

NORBERG: I don't know. Jean Sammet made it quite plain that everything had been structured. That information was going into NSF, and she was obligated to keep that the way it was, so he couldn't start changing the rules.

MCCRACKEN: As you remind me of what happened, I don't remember this.

NORBERG: All right. Then let me turn to another topic on disseminating information...

MCCRACKEN: It's totally like Herb to butt in on something like that where he had had no involvement. He had nothing to do with that.

NORBERG: You have mentioned a number of topics in the past day and a half as we've been talking about these matters about ACM's dissemination of information about computing, obviously.

MCCRACKEN: That's what we're there for.

NORBERG: Yes. I'd like to ask you how effective was ACM in the '70s and early '80s in disseminating information about computers and computing? How effective were they?

MCCRACKEN: Can you focus the question a little bit? You mean latest developments, or...?

NORBERG: No, I'm thinking of getting information out of whatever kind, whether it's programming languages conference, the social and political issues and the various controversies and what the ACM thought was going on there, information to the membership about the association, all sorts of different kinds of information. Now I realize it's difficult to pinpoint a weighting factor of how effective it was in disseminating information, but there must have been some feedback. You just gave me some feedback from the film for example, when you said that people liked it and mentioned very good things about it and Stu Lynn stood up and thanked you for it in the presence of other Council members. So between the dissemination of information for the general public and that which promoted the field and the profession, how effective do you think ACM was in the '70s and early '80s?

MCCRACKEN: I think moderately to fairly well. I lost track of the syntax there. You can't satisfy everybody on that kind of thing. You can't ever go fast enough for the enthusiasts; they want it out yesterday. That's a moral issue, and I tended to be on that side. You can never be too slow for the people who want to study things for two years before they announce that the sun rose yesterday. I'm not giving a fair shake to... I think in fairness, ACM did a good job at almost everything they tried to do.

Obviously something like the three-year backlog on the *CACM*—that was in a field changing as rapidly-- Not just because of tenure; I don't mean to over-exaggerate that, but that was the main problem, and they fixed it—the organization. I didn't have anything to do with it. I think the organization's done a good job. I would say communication is its central purpose, to get information out to the members and others, and to the general public as appropriate. It was appropriate in the early '70s to make a film. It wouldn't be now. As appropriate could mean speaking on public policy issues, and that could still be true.

NORBERG: Then with respect to this question, what do you think ACM's strengths and weaknesses were trying to do this?

MCCRACKEN: A strength is that we represented a large majority of professionals in the field besides the majority depending on which subgroup you're talking about. There was a heavy majority in academics and a large enough number of people like SIGPLAN members or SIGGRAPH. We had the authority of knowledgeable members and numbers. A weakness by me, it took too long to get anything done. I realize I was a rash, young, impetuous type at that stage in my life. Nothing was ever fast enough. That's kind of how I'm built, but I'm not the only such person. We push things to happen sometimes. Some of the things I did may have had more impact than I knew about, because nobody had any incentive to tell me.

NORBERG: I'm trying not to repeat some of the things we've already talked about. I think we've taken care of the financial aspects of the organization, unless you think there are more things that ought to be added to that.

MCCRACKEN: There might be, but I have nothing more to add.

NORBERG: What sort of relationship existed between ACM and the computer manufacturers, if any?

MCCRACKEN: There was some. I believe there was an institutional membership. I don't remember the details. I may not have the basic facts right. Some of the manufacturers I believe contributed to running some of the conferences. IBM contributed the time of a lot of volunteers, obviously. They said, "Sure, you can take two years off to become president." Not all organizations did. George Dodd—I very much wanted him to be my vice president. Not that I had anything against Peter at that point, but George was knowledgeable and I could work with him. He was flattered and thanked me and came back a little bit later and said, "Well, General Motors thinks I've given enough pro-bono time. They don't want me to run." Can't argue with that. They weren't a computer manufacturer, or they might have said yes. IBM was the most generous, I think, and also the biggest then. Times change. The current president works for Google; I had to look that up. [Laughter] There's probably a lot that I just don't remember.

Involving the running of conferences, that was an enormous amount of work, a great many volunteers. Some headquarters people did their jobs so well that I didn't have to do anything. I just didn't know what happened; I had enough things to worry about without that.

NORBERG: There's an intermediate step in there, too, and that's the situation with respect to SHARE and GUIDE and Educom; organizations that were devoted to a particular kind of machine or a particular development in programming.

MCCRACKEN: I don't recall if there was very much contact, actually. Almost all of us as individuals had some association with other groups, particularly AFIPS of course. But SHARE, GUIDE certainly. Educom, I never knew much about. I don't know.

NORBERG: All right. Succession is the final topic within the ACM years. We know who your successors were: Peter Denning, David Brandin, Adele Goldberg, and then others, which you may or may not have had substantial interactions with.

MCCRACKEN: With David I certainly did, obviously.

NORBERG: Yes. Can you suggest how you reacted to their terms as president, vice president, secretary, and so on, in terms of the relationship, if any existed, between your way of doing things and their way of doing things? What I mean by that, Dan, is each president in this period wrote a final letter as president and published it in the *Communications*, usually in the August issue, leaving a sort of testament as to what was good about the two years that they had spent as president and what was left undone. I interpret that as a means of communicating to the successor some of the things that ought to be continued, and I sense that in many organizations it doesn't matter; the new presidents come in and they have their own programs to do. So how did you interact with these people after you were president?

MCCRACKEN: Well, I told you yesterday that I had an arm's length mutual respect relationship with Peter [Denning]. His style—again, the style issue, and maybe energy issue in some sense. Well, I had plenty of energy then. He just went about things differently than I did, and he had different priorities. I had already figured out long since that I wasn't going to influence him much because he didn't agree with me. I didn't know if anybody was, but certainly I wasn't, so I didn't waste my effort trying. We didn't have any fights over anything important. I remember one time I was showing a copy of *Datamation* to Mike Harrison, an article that I had written had a full-page cartoon. Peter complained that he didn't talk during Executive Committee meetings when I was president, and I said, "The hell you didn't! You talked all the time!" [Laughter] That's not a very serious conflict.

NORBERG: But it does show something about perception—his perception of what was going on while he was vice president.

MCCRACKEN: Dare I ask?

NORBERG: Well, no, you just said what it was, that he spoke more than he was willing to remember.

MCCRACKEN: Peter's soul is in good hands, I'm sure. I didn't worry about him very much. I don't know what else to say.

NORBERG: Well, let me sort of restate the question in a different way. When you became past president and were still sitting on the Council, what role did you play?

MCCRACKEN: Elder statesman—tried to. I had no other responsibilities or authority. I was one member of a 25-member council, and I was phasing out, starting a new life with a new wife. When I got out of Council, she got out of ACM and started MBA school. We went on a trip around the world, and I got back into writing and video-assisted instruction. I still want to talk about that. We'll get back to that. I don't remember being very active at all. I went to all the meetings. There was one very awkward meeting, and if I struggle a little bit, I'll think of what the distraction was that caused us to waste so much time that we had to schedule a make-up meeting. I don't remember what we were fighting about. So I attended 25 Council meetings in

eight years, and that's where the extra one came from. I remember the combatants, but I don't remember what the issue was.

NORBERG: Who were the combatants, then? Maybe I can remember the issue.

MCCRACKEN: I don't think I want to say since I can't say anything intelligent about it.

NORBERG: So what else is on your list there?

MCCRACKEN: Well, I'll say something about some of the books.

NORBERG: Let me lead into that then because I want to go back to 1975. You wrote a paper in 1975 on COBOL. Do you remember that?

MCCRACKEN: Well, I wrote a book on it in that period. Was it in *Datamation*?

NORBERG: Well, that's what I'm having trouble finding. I passed over it because we were talking about other things and it seemed to me it was more important to get those down. [Break in tape so he could find his question and notes.]

You published a paper in 1975 in the *Proceedings of the 1975 Annual Conference ACM '75*, which discussed how to teach structured COBOL to beginners. You stated that, "Since all programming should be taught according to a structured approach and since COBOL is the most widely used programming language, it is important to find good ways to teach a structured form of COBOL." You went on to present a course outline and three illustrative programs. I was curious about what your interest was in that at the time.

MCCRACKEN: At the time, my interest was that of popularizing the incredibly important contribution of Edsger Dijkstra and his "Go To statement Considered Harmful." It wasn't his title, but that's what everybody calls it. It had been published in '69, you say?

NORBERG: '68 or '69, yes.

MCCRACKEN: I gave that talk. I think I was part of a panel, actually. I remember that now. It was in Minneapolis. And at the time of that meeting, I was finishing up my structured Cobol book, which came out in approximately June of '76. So I was deeply involved in that. I was doing it because I had become convinced that Dijkstra was right. I didn't understand him at first; I don't think most people did. But I came to see that he was absolutely right. And since Cobol was indeed the most widely used language and possibly still is—not for new stuff; Java is that—but there's a lot that Cobol is still running and I think probably is written in a structured style. I'll come to the book separately, but this is the background on why it's important.

Cobol programs were a mess to understand. I was doing a lot of speaking. At one meeting in Columbia, South Carolina, I asked at a dinner meeting if anybody could let me come to their office and just read some Cobol programs. Let me see. One of the companies had their stuff filed, non-proprietary stuff, and I spent an hour or two just leafing through stuff. I did that several times, and I came across programs that I couldn't make any sense of whatsoever because of not just the Go To statement, but something in Cobol that was even worse, and that was the altered Go To. What that did was you could say, "Paragraph 6 Go To..." and here's a blank, and

then anywhere else in the program, you could say, “Alter Paragraph 6 to Go To Paragraph 23 or Paragraph 16 or ABC or XYZ.” As soon as you see one altered Go To statement, you know you have to read the entire program. You not only have to read the entire program, you have to trace the execution sequence of the entire program, and that becomes a combinatorial explosion. You can’t do it is what that means. People simply didn’t know what their programs did, and I encountered-- That was a more or less theoretical argument, but I ran across a place where I got a demonstration that it was really true.

What Dijkstra really said was, as I came to understand it (I’m going to check this with people who know better than I do about the subject), but that was the problem. The way programs were written then and the way they were explained then was by tracing the execution sequence. Here we have a decision; we go there; explain each branch. Here’s a loop; explain how the loop works. They’ll be coming back together now here, except when we branch out over there, and it became very, very difficult to understand how the program worked. And the goal of structured programming as I understood it then and as I understand now was to write programs where you can understand what the program does simply by looking at the text of the program and not having to trace the execution sequence. You will have still have subroutine calls; you’ve got to look out and go out and see what subroutine X does or count tax or whatever, but you don’t have to worry about where it’s going to come back to because it’s going to go back right there. You can separate your concerns. You can compartmentalize the complexity—conquer complexity by breaking it into pieces that interact in carefully controlled ways. That’s what Larry Constantine said. And I said, “Hey, you can do that in Cobol.” Most people thought I was crazy. If anything was ill-suited for structured programming, Cobol had to be the leading candidate, and I said, “Don’t be silly.” Number one, don’t use Go To statements, and here’s why you don’t ever need them. For God’s sake, don’t use the altered Go To statement, and that led to a standard joke in my talks. I’d say, “The altered Go To statement is so bad...” If I was speaking to a group of Cobol programmers, they knew that. They weren’t using them. I said, “The altered Go To statement is so bad that I’m running a contest to decide what should be done to the guy who invented it. The leading suggestion so far is he should be altered.” I don’t know if we leave that on the tape or not, but I could get by with it at an after-dinner talk at least. Don’t use Go To’s, or if you absolutely have to, here’s how to control the damage. Then do some simple-minded things and do your control things with just a couple of loop structures and branching as needed. Then use careful indentation to show the scope of control of all your control statements. Just run it through a formatting program and it becomes instantly 1,000 times more intelligible, even small programs. And when you start talking about 100,000 line programs or 500 lines of subroutines, just consistent indentation is-- And that’s commonplace now, but I don’t think it was when I wrote that book.

Use meaningful data names—a simple-minded thing, but when you’re getting a whole bunch of stuff that says “QX13” and “routine 49Z”, it’s so much better if you say, “Calculate Illinois tax” and if it’s a little bit more writing, do a little bit more writing. And if you really have to use “Z13” to save your fingers from breaking off, do it, but then use a text editor to make a couple of changes and put in meaningful names. These days, of course, that’s called refactoring. They bottled it, but that’s long after I was writing. If you want to change the name in a program that you’re developing, say Eclipse or anything like that, just select it, say “Refactor,” and all instances change and the file name changes if that doesn’t break anything. If it does, it’ll tell you.

So I had some simple rules like that, simple conceptual things, which I developed out of listening when I went out to talk. An IBM course in Atlanta that I went to, I wrote some stuff for

IBM on structured this, that, and the other thing. I found the structured FORTRAN one. This I do not list as one of my books. If I say I wrote 25 books, somebody's going to say, "Okay. Define a book," and I won't get into that now.

NORBERG: The title of this piece is *An Introduction to Structured Programming in FORTRAN*, and the date was July 1977.

MCCRACKEN: So that was after the book came out, but that is not one of my 25 books.

NORBERG: Let me get the chronology straight then. You were working on the structured programming for Cobol as a book during the years '73 through when it was published in '76, and in the middle of that, you went and gave this paper at this ACM '75 conference. Then following that, you wrote this piece on structured programming in FORTRAN.

MCCRACKEN: And parallel things in Cobol and PL/1.

NORBERG: And those were distributed by IBM as well?

MCCRACKEN: IBM paid me a fixed fee to—that's what I called consulting. Most of what I list as consulting in my CV is contract writing.

NORBERG: I have a slightly different question to ask about these, and that is how did you arrive at a perception of a need in the field of computer science that you thought you could contribute to? These 25 books that you're talking about—how did that sort of thing develop? Now, we're not talking about how did you get into writing; that was pretty clear. You said that yesterday. But how do you pick the topics as they come along in these years that we're talking about, from 1975 to today?

MCCRACKEN: A very perceptive question, and I hope I know the answer because you can waste a lot of time writing the wrong book at the wrong time or the right book at the wrong time.

NORBERG: Yes, you're absolutely right.

MCCRACKEN: I did a little bit of that, too, but I think the answer is that I did a lot of traveling and speaking in those years. I counted up 400 talks I'd given to student chapters or 2,500 people at a GUIDE meeting in Denver or 2,500 people at a user group in New Orleans, and tons and tons of student chapters, 20 or 15 or 40. 400 of them. And usually I had lunch or dinner with some people, drinks, and often enough I said, "Hey, I would like to sit in on a class," or "I'd like to have lunch and include a student or two." Or if it was all faculty, we'd talk shop, and I might explicitly say, "What books do you need? I'm a writer as you have learned, and I'm listening." In the nature of the business, I did more talking than listening, but I did a lot of listening, too. So that's part of the answer.

Another part of the answer is that I had a good editor. I had a succession of good editors, and their job was to travel and find authors and understand the market. They didn't necessarily understand the subject very well at all; they didn't have to at that stage. I was with Wiley for most of my writing career, and my editor would come to me and say, "What would you think of doing a book on so-and-so?" Or I'd go to them and say, "I think there's a market for a book on

ALGOL.” That would have been Walker Stone’s era, and he actually would have known what ALGOL was at that point. We’d talk about it, and if they were uncertain about the market, they’d ask me for more information and I’d get more information. Then we’d either pursue the project or not. It was very satisfying. Well, it was fun, and I’ve thought about that word “fun”. I realize I’ve given it my own definition, but...

NORBERG: Well, that’s fine, as long as we know what the definition is, Dan.

MCCRACKEN: I realize where I got it. I think it has good genes. I’ve been influenced by John Kennedy’s answer to what I think was a set-up question: a reporter asking one time, “Are you happy?” I don’t think the average reporter asks that question unless he’s been told that he can. Kennedy had a famous quote. The “Ancient Greeks told us that happiness is the pursuit of excellence. It’s using one’s highest power in the pursuit of excellence.” Not your average definition of happiness. My definition of fun isn’t average either. I mean something that engaged my powers doing something I thought was useful.

Session 2, Tape 2, Side B

MCCRACKEN: When I talk about fun, I mean that: influenced by Kennedy’s definition of happiness, and most of my career satisfies that. Everything I’ve done. If it didn’t, I didn’t do it. If it wasn’t fun in that sense, I didn’t do it, because I hate being bored.

NORBERG: All right. I want to segue into your teaching career now. Just after your term as ACM president, you became a faculty member at City University of New York. What drew you into this path?

MCCRACKEN: My mother. My mother was a teacher, and she never... Oh, I’ll give you two answers. There’s a broad general answer that I admired my mother enormously for a lot of things, and she was a teacher herself. She never told me, “Dan, you must be a teacher,” like some parents do. She didn’t do it, but even in college or high school maybe, I thought I wanted to be a high school physics teacher. Hey, as dreams go, made at age 18 I pretty well lived that out. Computer science is pretty close to physics. So that’s the long-range answer.

The short-range answer is that George Ross, who had founded the computer science department at City College, called me up, invited me to lunch, and asked me if I wanted to be a visiting professor for a year. I didn’t even know where City College was at that point. It’s 2 ½ miles from where we’re sitting. Actually, I had been to a concert at Louisohn Stadium, which was on campus. It was torn down to build the building I have my office in. Some people think that was a bad trade. But anyway, George invited me to spend a year, and that turned into the rest of my career.

NORBERG: What did they want you to do when you first went there?

MCCRACKEN: Teach programming.

NORBERG: Programming? And I presume it's not the programming of starting with a language like Pascal or Basic or something like that, but they were dealing with high-level questions, were they not, just as you were?

MCCRACKEN: I'm sorry?

NORBERG: What sort of programming was taught to students at that time?

MCCRACKEN: Assembly language and FORTRAN, actually. The program was not the most modern in the country or the farthest behind, but it's been part of my career there to push for change and modernization. But the first CS 1 course, the Introduction to Computer Science that I taught, was in FORTRAN. City College did not have good funding still, and George had not fought for equipment or been successful at it, I don't know which. My first year, students were still using mark sense cards, where you take a No. 2 pencil and fill in the blanks. It's the same with the computer. Everybody was using cards. We got off the mark sense cards not too long later after that. It was FORTRAN, and then I switched us to Pascal and then to C, then to C++, and then to Java, although our first course is still taught in C, I think. That's a different story. Midway through the year, George moved me to a permanent line. Dirty dog! He didn't even tell me he was doing this [laughter], and I'm enormously grateful to him for doing it. A few years later, I got tenure, and here I am with a career that will carry as long as I have health. If I didn't have that job, I have no idea what I would be doing today, because when that structured Cobol book came out, it did extremely well. I think it sold 400,000 copies, and it was rather more than \$2.95. I was insane. I thought that was going to go on forever. I thought I could write books like that off into the distance. I was so wrong it's ridiculous.

NORBERG: Why do you think you were wrong?

MCCRACKEN: Because there just weren't going to continue to be situations where I could have the only book on the subject for two years. I had FORTRAN, ALGOL, Cobol, numerical methods, and then when you put the structured part in, I had the only structured Cobol for two years. People caught on very quickly that that was the right way to do it, and there was no competition. Anything that I can imagine writing about today, there are already 20 books out, perhaps literally.

NORBERG: Well, there are a lot of them on bookshelves in stores, that's true.

MCCRACKEN: Well, do a Google search on Java sometime, and some of them will turn up coffee or the nation that used to be called that, but there will be roughly 3,000 books with Java in the title.

NORBERG: Separate books? Not reproductions of each other?

MCCRACKEN: No, no, no.

NORBERG: Because there are a lot of things that are derivative once you get to that level, too.

MCCRACKEN: Of course. You've triggered a remark. You may have noticed I wrote I think four FORTRAN books and four Cobol books with second editions and what not, and then I stopped. I had an experience along somewhere in the late '60s maybe. I read a review in *Time* magazine of a book by, I think his name was Maria Remarque—called *All Quiet on the Western Front*. It's an anti-war World War I novel, and enormously-- Well, it didn't prevent World War II, but it was an effective book and effective movie. He had written another something, and *Time* dismissed it as "a 17th carbon copy of *All Quiet on the Western Front*," and I said, "I'm not going to do that. I am not going to write a FORTRAN edition every four years. I could, but I'm not going to do it. I'll find some other way to make a living. I'm just not going to do that. I'll find other things to write about."

NORBERG: If that's the case, how did the topics come up for the various books that occurred between '84 and 2003? *Computing for Engineers and Scientists with FORTRAN 77*, for example.

MCCRACKEN: That was a little different approach to the subject, and it was a different language, FORTRAN 77. So there's a modernized version. I shaded my resolution not to write carbon copies. That was a little bit of a carbon copy, not very much.

NORBERG: Was it very popular, do you remember?

MCCRACKEN: No, it wasn't. I did something I thought was forward-looking, and one of my reviewers said it was the best thing about the whole book. I had a final chapter that wasn't about programming at all, and I talked about data retrieval with...I don't remember the name of the company. Lockheed owned it, and so 25 years earlier than Google or something, we're looking up technical information like Lexus, but it wasn't that. I did something on that. I did something on symbolic computation and differentiation and that sort of stuff. I did something on infinite precision arithmetic, as it's called. A sampling of other stuff that you can do with computers that has to do with engineering that isn't FORTRAN, and I thought that was a forward-looking way to do things. Apparently, the market didn't think so. I turned up a co-author for a second edition of something or other who referred to that as "the widely unread Chapter 10."

NORBERG: You also did books on Pascal and Modular 2, '86 and '87.

MCCRACKEN: Data structures books. One of the things I truly regret about my career is that I was just bull-headed with my editor at the time. They were data structures books, and they should have been called that. She had been asking me for years to write a data structures book, and I said, "I don't know enough," and she said, "That's impossible." And I said, "But it's true." Then I taught data structures a few times, and I called her up and said, "Hey, now I know enough to write a book," and I did. But I insisted on calling it *A Second Course in Computer Science with Pascal*, and I was an idiot. It should have been called *Data Structures* by McCracken, or whatever. Anything to get data structures in the title. Nobody knew what the book was. People who got past that barrier said it was a fine book, and I might have been happy enough to write second editions of that, but it never had a chance. Then I turned up a co-author who was willing to convert that to a Modular 2 version. Some of us thought Modular 2 was going to take over—a fair number of us. It didn't, but hey, you don't win all bets.

NORBERG: Right. *Learning GEL by Example*. What is GEL to begin with? 1992.

MCCRACKEN: It's not that I don't remember, but I want to get it... Well, I do have to see exactly what GEL stands for. Gain Engineering Language, or something like that. Anyway, Gain Technology in Palo Alto was a company founded by Mike Harrison. They had a clever way of doing some stuff he got a patent on, and at the time I wrote that book, they had 100 employees and were bought by Sybase. There the CEO that he found and hired was Tom Sebold, so I had some one-on-ones with Tom Terrific, as he was universally called. Dynamic guy. I remember talking to him in the parking lot. I said, "They sold the company. Well, what are you going to do now? Fly your airplane?" Across from a private plane field. And he said, "Well, I've got a new non-compete here for three years. Then I've got an idea for another company."

NORBERG: Does that mean that the 1982 publication in *SIGSOFT* with Michael Harrison was a prelude to this book? It was entitled "Life Cycle Concept Considered Harmful."

MCCRACKEN: That came out of a conference on possible accreditation or certification—I don't remember which—of people in the data processing side, or systems analysts; it was held at Georgia State in Atlanta. I don't think it was Mike Harrison. I think there's a name wrong there, somehow. Michael Jackson makes more sense.

NORBERG: The singer?

MCCRACKEN: Not the singer, not the dancer, not the basketball player. I'm quite sure of that. I'm quite sure of that. We were with a bunch of traditional old-timers in data processing, and they had the life cycle business thing: you do this, you do this, you do this, and you do this, and then you do maintenance and you're done. This was when?

NORBERG: '82.

MCCRACKEN: There were stirrings of the notion that that wasn't the only or the best way to develop programs. In the spiral approach and now extreme programming says, "Get anything that works and expand it." Michael and I just found that we were of the same mind on that. I hadn't met him before, and I haven't stayed in touch with him, but we just felt that the old-timers were being far too rigid about that. So we put together an argument that was one of about 50,000 different things called X considered harmful after Dijkstra. That's what that was.

NORBERG: Rather than going down this list seriatim...

MCCRACKEN: Get to the last book before you give up.

NORBERG: Well, no, I'm not going to give up. I'm going to approach it in a slightly different way. How did your teaching career develop as the years passed from '82 on to maybe even the present?

MCCRACKEN: I just kept teaching. I taught some courses over and over and over trying to improve them as I went along, and I continually asked to teach new subjects, either because I felt

our curriculum needed them-- Well, I always felt that, but it was very often and it's not always a motivation, but it was something I wanted to learn. Our curriculum had a data structures course, but I volunteered to teach it because I wanted to learn it. We had a course called Programming Languages, and I volunteered to teach that. I don't think I did a very good job of it, but I learned something about what the subject is and maybe how it should be taught, and then I hired somebody who did it right when I became Chairman. So I was always active, always terrified of the possibility of becoming bored, always engaged with students. I like students. I make a desperate effort to learn their names. You know, I've got a terrible memory for that, and I go to great ends to learn their names, and they appreciate it. It turns out that most of my colleagues don't bother.

NORBERG: They do appreciate it.

MCCRACKEN: And I don't do counseling; I don't talk religion, but if somebody's got an academic problem or a personal problem, unless it's something just totally out of my competence, I'll listen and give advice if asked. Students appreciate that. Not very many of them take advantage of it, but... It's just been a dream situation for me to have the stability of a regular income doing something I dearly love to do.

NORBERG: Who are some of your colleagues?

MCCRACKEN: I could name them all, but where would you like to go with this?

NORBERG: Well, I'm curious to know who else is in the department and also what the emphases were on teaching. Departments, as you well know, try to cluster things according to a group of areas. How did that work at CCNY?

MCCRACKEN: I understand the question; I wonder if I can give a medium length answer. Some things you either give a short answer or a long answer; I'll try to do an in-between answer. George didn't try to run the department exactly that way. His Ph.D. is in applied mathematics from Courant, mathematical physics maybe. I don't remember. His undergraduate was in chemical engineering at a good school downtown, Cooper Union, where Lincoln spoke. He had attracted other mathematicians, and we now have a formidable cluster of people who are world experts in graph theory and its applications, which is a very, very hot subject—a million applications. It's not taught extensively to undergraduates. I learned enough to teach a unit on it in the data structures course, but we've got more people in that specialty than we need to teach our undergraduate courses. But that's okay. We have a graduate program, too. We had a heavy competency in what was then called scientific programming, and that's still done and FORTRAN is still used—FORTRAN ninety-something, which is almost a different language. It is a different language, and there's still a lot of people doing it, but as a fraction of the total field. It's gotten smaller and smaller and smaller. It's where computing started of course, but as a fraction of total efforts, it's a shadow of what it was. We now have a number of people who are very strong in some aspect of computer graphics or image processing or that kind of stuff of computer vision—loosely related fields there—and me. I'm the only one in the department without a Ph.D. I don't do research, never did. I'm the designated teacher, and I'm the person who's allowed to just teach without doing research. I've had some interesting grants from NSF, but-- I mean, they're interesting to me, and a few of us appreciated the overhead recovery

money. So I'm a good guy in that sense. They'd love to have him do it again, but I focus on teaching and curriculum. I guess that's a medium sort of answer.

NORBERG: Okay, so we only have graphics, vision, and I'll call it software. Three areas?

MCCRACKEN: Oh, I hate to leave it at that.

NORBERG: Yes. I would think so. Were you the only one doing data structures?

MCCRACKEN: Graph theory, computer graphics, vision, and all that, and they may not be one field by the people in it. We have a couple people doing data mining kind of stuff. We have any number of people who can take a rousing theory of computation course; we're very heavy in that. We used to have two discrete math courses and plenty of people who would be delighted to teach them. I didn't think we needed two courses in that, so I fought to get one removed. We finally got support from accreditation and got it out of there. It was a modern algebra course, and I remember asking people to a point where they'd run when they saw me coming. I'd say, "Where in our undergraduate curriculum does a student ever need to know the difference between a ring and a field?" They'd look at me, and I'd say, "Yes, I know the difference," and if they still kept looking at me, I'd give a definition of each one. I'd say, "I know that rings are used in encryption, but that's not one of our required undergraduate courses. Mike Anshell says that students don't remember what it is anyway, so he teaches it and it takes two weeks. Why do we have that course in the curriculum?" I never got an answer of any type. I expected at least some bad answers, but I didn't get *any* answers. When an advisory board that I set up said, "You've got at least one too many math courses in your curriculum," we finally got it out, and that was part of what let us put in a required capstone, a senior thing.

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NORBERG: Were any of the books that you published in this period—the '80s, '90s, 2000s—a result of your teaching activities, or did they come from somewhere else?

MCCRACKEN: Oh, very much so. The data structures book, as I said, initially came from my editor at the time, Carol Beasley, and before I could write it, I had to learn it. I volunteered to teach data structures and taught it three or four times, and then I wrote two books. I thought that Cobol on PCs was going to be a bigger deal than it was, and I got a free compiler from Microsoft—not much of an accomplishment there, the marginal cost on that; it's about \$3, I imagine. They cheerfully gave me a copy. I can say I've spoken with Steve Balmer because I spoke up at a meeting and asked if he could get me a copy, and he said, "Sure." I never taught out of it; it didn't make much of a splash. And what other...? I did one other book in the '90s. I don't remember.

NORBERG: *Simplified Structured Cobol with Microsoft/MicroFocus Cobol?*

MCCRACKEN: That's what I was talking about.

NORBERG: Yes. 1990.

MCCRACKEN: Yes. That's what I was just referring to. And then my most recent book—I hate to say last because I'd love to write more; I hope I will—last in the sense of most recent was

in 1999. I had both knees replaced, and I scheduled that for the day after I turned in my grades in May so I would have the summer to recuperate. It didn't take all that long to get back on my feet literally. Walking and doing my physical therapy and getting horribly bored, I said, "Hey, I've got to learn something while I'm doing this, and I guess it's time I learned something about this Web jazz is." So I went down to Barnes & Noble and asked this guy, "Do you have a book on...?" I didn't even know how to ask. I can't remember what I said, and he said, "Do you mean HTML?" I said, "Yes, I guess so." [Laughter] So I sat down at my computer and I found Owen Astrachan's site. I figured out how you get bullets into a web page and took off—self-teaching—and volunteered to teach a course. Well, that's a short enough story that I think I can tell it briefly.

The course I proposed was called I think "Graphics Issues in Graphical User Interface Design," which is a mouthful, but the guy who was Chairman at the time didn't really care one way or another and said yes. I taught the course. I had a literal shouting match with the dean to get to teach it with only six students—a dean I liked very much and still do. We literally shouted at each other on that one. So it was six students and it was mostly graphic design—color and topography and layout—and I was taking a course at the New School in Graphic Design One just as a hobby. I had previously taken a course in color and stuff. So I just taught that, and the six students were cool. About halfway through, they said, "Could we learn some HTML in this course?" I said, "Sure. Let's learn it together," and by then I'd put up a few pages. So I decided to make that the final project, and I've taught it at least every other semester since then, every time bringing it more and more into the mainstream and updating it as much as possible each time. Most recently, this last semester when I had surgery in the middle of the semester and somebody else had to come in to finish the course, the students put together a complete application from the browser to the database with the database engine running on their machine and their web browser running on their machine and all the software in between, which can be rudimentary. Each team did a complete application and the students loved it, except one student, who said, "I wish we had more time," or "Why don't you have an advanced course?" I'm going to show that to my Chairman!

Well, very early in this development, I got on to the SIGCSE news group, which has been an important part of my career, too, and just asked some questions about some of these issues. The one that got me my co-author on this was a question about PhotoShop. I asked if anybody taught PhotoShop in the program, and I figured the answer would be, "Good God, no. That's vocational training." I was expecting that, and I wanted to see if I was right about that and what other answers I might get. One thing led to another and Rosalee Wolfe at DePaul in Chicago and I discovered that we had similar views on the need for a book. I knew how to write a proposal to NSF then and a book proposal to Prentice Hall. I went to the SIGCSE meeting in Austin that year, which would have been 2000 maybe, and went around to different publishers' booths, and none of them had any idea what I was even talking about except Prentice Hall. I had a display up on the graphics stuff, some color and some layout stuff, and I said, "Come see what I do." Well, hardly any of that got into the book, but it got me a conversation with her. She saw the point and got an NSF grant and got it contracted from Prentice Hall all in the space of about seven months from the time Rosalee and I first talked. I whipped out a very good proposal. I'd been on review committees, NSF review panels, so I knew what a good proposal was. I'd had three successful ones before that, and there we were. And I got invited to be a visiting professor at DePaul for a quarter; we were able to work together there some. They were very, very generous on the terms of that, and I had a sabbatical. I got some sabbatical money, and it let

ends meet, and I moved out there for the fall semester. I had a fine year—a lot of jazz stuff I really liked—and the students were great, and it was a fun time.

NORBERG: Well now, what was the name of this book, Dan? You haven't mentioned the book yet.

MCCRACKEN: *User-Centered Website Development*.

NORBERG: *User-Centered Website Development*. So that's the same as *U-Centered Development*.

MCCRACKEN: Yes, it must be. I misquoted the title.

NORBERG: This one is 2003, if I'm right.

MCCRACKEN: That's it.

NORBERG: And this one has a date of 2004, not that it makes a whole lot of difference.

MCCRACKEN: Copyright dates are strange animals, as you must know. The publisher makes them as late as possible.

NORBERG: Let me put this full title into the tape here. *User-Centered Website Development: A Human-Computer Interaction Approach*. Daniel McCracken and Rosalee Wolfe.

MCCRACKEN: The cover designer is probably credited actually in the back of the page you're looking at.

NORBERG: It's from the Pearson Division of Prentice Hall.

MCCRACKEN: Well, vice versa. Pearson Education is a conglomerate of Prentice Hall, Simon Schuster, and other divisions, and Addison-Wesley also. Let me just say, that book was a lot of fun in the sense I use the word. I told Rosalee in an email last weekend, "I think we were blind-sided by the pace of change in that field." We have a lot of screen shots of websites in there, but you couldn't find any of them today. So if anybody wants to look that up and use it in a lecture or something, or interact with it in the class, they couldn't do it because it's not there anymore.

NORBERG: Yes, that's a problem all right.

MCCRACKEN: Color and topography—I wrote great chapters there. I know the subject, and I know how to teach it. I regret to inform you that not very many people think it should be taught, so the book hasn't been as successful as we would have hoped. I'm very disappointed. I'm proud of it, though.

NORBERG: Is it possible that a number of topics associated with web design can be learned vocationally rather than through any sort of theoretical discussion in a computer science program?

MCCRACKEN: Well, they sure can, and that's a fundamental issue always at least in our department, whether something is vocational education or computer science or university education. A winning argument in many a curriculum debate can be, "Oh, that's just vocational education." If you think you're right anyway, you have to fight and say, "Part of the answer is that well, maybe so in a sense, but our students do have to get jobs. If they can't get jobs when they finish our program, we aren't going to have students. We can teach some courses that have some principles in them that also meet the needs of industry in town to where our students can get work." For example, students told me in my web design course that they'd gone to a job fair, and the first question was always, "Do you know Java?" and of course, they would say no because we didn't teach it. They said there were no further questions after that. To myself and everybody that would listen, I said, "That's ridiculous. We've got to teach Java." By now it's the most widely used language in the world, and it will be replaced soon enough by something else, I'm sure. But I sort of informed my Chairman—well, I asked him—I said, "That sophomore course that I teach, 221, I want to teach it in Java next time." He said, "Okay."

I'd like to pause on that point. The Chairman is Douglas R. Troeger. He's a good Chairman; I'm happy to support him and help him in any way I can. He's the first guy I hired when I was Chairman. That's a pleasant closing of the circle. After I had a lot of the work, he helped me understand what structured programming is actually about because when he came in for an interview, he was just red hot to teach CS I in a particular way that was structured in the extreme—this idea that you should be able to understand a program by looking at the text in a static sort of way without introducing confusion. I suddenly understood the real reason that things like my structured Cobol book had been right. He and I got a grant; we were going to write a book, but that didn't happen. It was too far in advance of where the field was.

NORBERG: Interesting. Dan, I forgot one topic along the way. We hit on it once when we were talking about Willis Ware, but the relationship between AFIPS and ACM during your terms as vice president, president, and past president. These are still halcyon years for AFIPS; there wasn't the specter of failure of the National Computer Conference later on. But you were involved with that as a sort of an honorary position, I guess.

MCCRACKEN: More than that.

NORBERG: The president of ACM has a place on the board.

MCCRACKEN: The president of ACM is automatically a member of the AFIPS board.

NORBERG: That's what I meant.

MCCRACKEN: I took that seriously, and I knew a lot of the people. A lot of people claim to have had the idea way back—Paul Armer is one of them. I have a great loyalty to Paul. I knew the people and I supported what AFIPS was doing, which was running successful conferences and generating a lot of money. The collapse of those big conferences—I think they're called horizontal conferences that cover the entire field-- At one point, there were only three places in the United States where that conference could be held because the exhibits required 50,000 square feet or something. So the McCormick in Chicago and Atlantic City and Vegas, the only places it could be held, and it just generated a ton of money. We always had Council meetings at

the things, and for a while they ran two meetings a year, I think. I lost track of the history on that. Then over an amazingly short period of time, the horizontal conference idea just blew apart. There weren't enough people who wanted to spend three or four days and get only one good paper out of it. You go to meetings to meet your friends, but your friends were too diluted. They wanted to know 5% of the people, not ½%, and the whole thing just came down in a crash. Just before that, they moved out of perfectly adequate office and built a building. You know, I've heard that in many a failed marriage, about a year before they give up, they build a tennis court or put in a swimming pool or something. In my case, we put in a greenhouse, and I thought of that when I looked at that AFIPS building out in the middle of ... a long cab ride from anywhere in the world. But they had to build a building out there. Too bad. AFIPS served a good purpose for a long time, and then it went the way of all things.

NORBERG: What were some of the topics that were discussed in the board meetings for AFIPS?

MCCRACKEN: Well, there's one in particular that so overshadows everything else, I'm having trouble remembering any of the others. That's the AFIPS contribution to the foundation of the Charles Babbage Institute, which AFIPS put some money into, and regrettably, that was a controversial action with some strange folks tugging for hearts and minds held by some directors who really didn't care much one way or another, but they still had a vote. All the rest of us on both sides of it were fighting for their votes. We had several votes on it over lunch. I remember Aaron Finerman came back and said, "Now when the vote is announced, don't look at me." And when the vote was announced, it looked dramatically different from the last one before lunch, and Aaron said, "What happened?" I don't want to say anymore about it than that, I think. You know what I'm talking about.

NORBERG: But that's later now; that's 1979 or 1980. Were you still...?

MCCRACKEN: I was past president. There was no money for you to become director until... Well, maybe Erwin could have financed the whole thing, but he didn't want to, I believe.

NORBERG: Well, he didn't think it was a good idea, either.

MCCRACKEN: That's what I mean. I meant it exactly that way. A lot of people had considered judgments on that. IBM decided to give no more than anybody else would give, because they didn't want to be accused of dominating it, I gather. So Erwin Tomash, whether he could have afforded to do the whole thing or not, he didn't want to play it that way. He didn't think it would be good for the organization, and I'm sure he was right. So I have certainly had a hand in fighting for those hearts and minds, and we won that one. I'm proud of that.

NORBERG: You should be, he says whimsically. [Laughter]

MCCRACKEN: May I report on the tape who is doing the interviewing?

NORBERG: The former director of the Charles Babbage Institute and Foundation.

MCCRACKEN: Oh, is that right? [Laughter]

NORBERG: But what other issues came up? Because that's sort of in the history computing area; it's a little bit outside of the mission of AFIPS.

MCCRACKEN: AFIPS had a mission besides generating money?

NORBERG: Okay. I thought they did. There were a lot of fights going on from time to time that I knew about in the early 1980s.

MCCRACKEN: Well, by the middle 1980s, I'd turned into a pumpkin by then. Well, that's not quite true. What did I go to—it was an AFIPS function. AFIPS sponsored I think by themselves—I mean nobody else's money; I'm sure of that—a thing for the general public. A half-hour public television kind of thing done through KQED in San Francisco. I think they were involved; their studios were used. It cost a lot of money, and I really don't know whether it got any respect or not. But at one stage, I was a member of an advisory board on content or something like this, and I remember going to a meeting at Newark airport. This is how we remember meetings. You can't remember the city, but what color was the wallpaper? AFIPS had put together something called the Office Automation Conference, a spin-off meeting, and a couple of times, it generated lots of traffic. I went to one of them, and there were tons of people. Then it just died over the course of about two years. At one of the meetings, somebody reported that there were—the meeting was about two or three weeks off—about 300 registrants so far, and somebody just about fainted. Whatever the number was, they were expecting five or ten times that many. That was the first indication, looking back, that I had that things were coming to an end for AFIPS.

Session 3, Tape 1, Side A [no side B]

NORBERG: Let me ask you one more question not related to that specifically, but do you think that there is a role for past presidents in the management of ACM?

MCCRACKEN: Yes, a very limited one. I think it's useful whether by bylaws or not to just practice where it works. Past presidents should be on the nominating committee for two years—tends to know a lot of people. I did that and it worked okay. Brandin did it; at least I think he did. It's the sort of thing I wouldn't propose to put into the bylaws or anything of the sort, but sometimes it-- You know, I wouldn't have wanted Herb to be on it. Otherwise, I think I favor letting the individual past president do whatever he or she feels like doing or see what they want to do, and if it's not crazy, do it because some aren't going to want to do anything like me. I sure didn't go away mad at all, but I did go away burned out. I just put everything into that. Well, not everything. But I put a lot of myself into it: energy, time, money. I was self-employed at the time I was an ACM officer, and when I was president and maybe also vice president of ACM, I got a small monthly stipend to cover my correspondence. I had my own office, my own copier and that kind of stuff, and that was to cover incidentals. But travel, certainly ACM had nothing whatsoever to do with any of my speaking dates on behalf of books. That would have been immoral literally. So it depends on the past president.

NORBERG: So there's no role for a group of them to get together and try to help on some project or other?

MCCRACKEN: There might be. If I were president and saw a need and the candidate pool for such a thing seemed like the right people, well, sure I'd ask them to go and do it. If it's something that depended on understanding the organization pretty well and knowing a lot of people in the organization and other organizations-- You spend pretty much--well, depending on your job situation and what not--full time for two years, if not four. You're going to know a lot, and it's nice to tap into that before it becomes irrelevant. Otherwise, let it come from the bottom up. I just feel that works better. It reminds me of a saying I like by Albert Schanker when he was president of the United Federation of Teachers, an ear-catching phrase. He said, "All educational experiments are doomed to succeed," and what he meant was that all educational experiments are proposed and carried out by enthusiasts. "All" is a strong word; understand that. But they are usually carried out by people who are enthusiasts for what they want to experiment with, and an enthusiastic teacher is going to turn out enthusiastic students and of course it's going to work. I'm sorry to say that if you go to a SIGCSE meeting, a lot of the papers are, "Well, I tried this, and boy did it work!" You get good ideas out of such papers. I go to them; I give them, but you've got to remember Albert Schanker. Now the connection is that if I were president looking for a way to get good things to happen, I would far prefer to have some volunteers with time, energy, and ideas to come to me and say, "We want to do this, and here's how we're going to do it. Can we have your approval and maybe \$500 for seed money?" I just think that they're going to bring their own motivation that an appointed committee just is extremely unlikely to have. Unless you call for volunteers, it's the same thing.

NORBERG: Dan, what are the topics that I didn't bring up that you think should be included?

MCCRACKEN: I'm prepared to answer that. There was one other thing I wanted to pick up on. I'd like to say a word or two about the perception among the membership of the officers, and that is this. As seen from a seat on Council in a situation you're spending essentially all available energy on this one topic, it can seem like the most important thing in the world. It doesn't seem that way to the average member who cares only whether he can read the publications and that they're on a subject he cares about and they're on time. The average member couldn't conceivably name the current president at any time in our history, at least not after the first few years. There's no reason they should. Current vice presidents? Who could possibly know that? I've said many times, and when people seem to think about it, they say, "Yeah, that's probably true." For every current ACM member who remembers that I was ever president of the organization, there are 100 people who know that I wrote a FORTRAN book. I don't see any problem with that. I insist that the FORTRAN book got me elected, and coming back the other way, the ACM connection got me entrees into things. ACM fed my career, and my career fed ACM in a useful way. I'm not saying that very well.

I would like to tell a story that I told approximately 100 times on the speaking tour because it's relevant to structured programming in more ways than I realized at the time I was telling it, and it also involves Charles Babbage. The way I told the story was that there was this time when I was--it's a made up story. You'll figure that out, and sometimes I fit it to the circumstances, but... I was taking the IBM 701 school, working on my program and working late at night, and I might have had a gin and tonic or something. I fell asleep and had a dream, and in my dream Charles Babbage came to me. I said, "Sir Charles!" and he said, "Yes, me

lad?” And I said, “Sir Charles, I cannot get these flow charts right.” He said, “Do the lines cross?” I can’t remember the shapes of the boxes, and the average audience is laughing already, okay? I spun this out for a little while and he listened patiently. I said, “Sir Charles, what should I do about that?” and he said, “Danny, me lad, there’s nothing to it. You simply write the program first and when you’ve got it running, you can draw up the flow chart to match it with no trouble.” And the audiences tended to roar, and I didn’t really understand why at first in two senses. One reason was that they were doing the same thing. I would then go on to say, “That’s how I did it in fact after about the first book,” is that I would make the program work first and then draw the flow chart, even if I pretended. In one book, I put in a hand-drawn one instead of what the Wiley graphics people did to prove that’s how you think about programming stuff. That’s not how I did it, and it turns out nobody else did either.

NORBERG: That’s interesting.

MCCRACKEN: What I didn’t understand at the time was I was more right than I knew. Flow charts were not the right way to think about programs because they focus entirely on the sequence of execution, and that had been amply demonstrated to be an unproductive way to do it. And that the structured programming thing in the sense of replacing that with structured programming and object-oriented programming with well-defined modules where each module does a closely related set of things, is highly coherent, and is loosely coupled with the other modules and the coupling is through carefully specified interfaces—I now summarize what Larry Constantine said 35 years ago. But that was what Dijkstra said, and you have a recipe for throwing flow charts out the window. That’s what happened. Try to find a programming book today that’s got very many flow charts in it, if any. We don’t teach with them. And that was a quiet revolution, indeed. I don’t remember a SIGCSE session ever that said, “Let’s throw out flow charts. Flow charts considered harmful.” It just happened as a consequence of other things turning out to be true. I told that joke literally at least 100 times, and it always worked, which was good enough reason to keep telling it, but it was truer than I knew.

I would like to take advantage of the pulpit you’ve loaned me and say my thank yous and a few regrets. From where I sit today, I am extremely grateful to George Ross for inviting me to teach at City College, which changed my life. Really, I thought I was going to write books forever, but that wasn’t meant to be. It just was an extremely graceful way to transition into something else. And to Doug Troeger for supporting me and the things I’ve done, assigning me courses that I love to teach. It just worked out well for everybody. And I want to thank Rohit Patel, who was with a company called Advanced Systems who came to me in ’78 approximately and asked me if I would like to do a series of videotapes (as it was then), video-assisted instruction on structured Cobol built very closely on my book. Rohit was a former programmer and now product development manager I think would have been his title for a company that did videotape instruction in computing. They were later bought or merged with Deltac, and their name was ASI. He came to me and said, “I’d like you to come to Chicago and we’ll plan the things with your help, and you narrate the tapes. We’ll do the graphic stuff and all that, and we’ll make you a lot of money.” A very nice guy. He said it exactly that way; he said it with a smile. I said, “How much?” The circumstances are mildly interesting. Helen and I were not a public couple at that moment, and I was eager to have dinner with her. So I said, “You know, I don’t have too much time here.” He said, “How much time can you do?” I said, “20 minutes.” Well, he talked for about an hour, but he didn’t argue with me about that. He’s a good man in all kinds of ways. He finally said \$400,000. I said, “Okay. I accept. Where do I sign?” I did what

was prescribed, and I have a set of the tapes around here somewhere. It made me about \$700,000. When you hit it right, when you're on, swing for the fences. I made more than that from the book itself because I was getting 25% of whatever net after discounts was on 400,000 copies. My book sold altogether about 1.6 million; it's a nice number.

Back to thank you. I thank all my students. I've learned I'm sure more from them than they've learned from me. But at any rate, we learn together, and it's a great sport. That's fun if anything is. By category—I can't name them all—all the talented, exciting, good people I met through ACM. A marvelous experience, and I just have a very limited number of negative feelings. Some of the people I didn't necessarily have a close, simpatico kind of relationship with, nevertheless did me favors, and I'm thinking of Gerry Salton, may he rest in peace. He was an acid-tongued individual, and enjoyed putting people in their place. He was on Council, and he came up to me, not exactly out of nowhere—he was correctly nailing me on something. All he said was, “Dan, it is not the case that every disagreement involves a moral issue.” [Laughter] He had me dead to rights. I have no idea what I said, but he was so right. I certainly did tend—do still. At least now I try to fight it down.

I have a few regrets, as Frankie would say—very few. I regret any pointless or unproductive hurts. What I mean by that qualification is if you accomplish anything, you're going to step on a few toes in the process. All I can say is I didn't enjoy it; I didn't enjoy stomping on people's insteps, and if I did things unintentionally, and I did, I'm sorry about it. I hope all sorts of people are better at forgiving past grudges than I am sometimes. I hope that parses when it's read.

NORBERG: You mentioned something when we first started, which you said you'd follow up on later, and that was Aaron Finerman.

MCCRACKEN: I'd like to end with a few remarks about Aaron Finerman, may he rest in peace. He was a good friend for as long as I knew him. I was a guest in his home; we had dinner together many, many times, ACM and otherwise. I went to the funerals of both of his children. He was an excellent treasurer, and he would have made a great ACM president. He had the bad luck to run against the incumbent vice president, who was very well-known at the time. In the inner circles, we had a name for that kind of situation. There's an obvious candidate, and barring unforeseen circumstances, which sometimes happen, he's going to win. That's all there is to it, and everybody knows that. But the bylaws say you've got to have at least two candidates, so you have to find a sacrificial lamb, as they're called. Maybe everybody calls them that. Aaron agreed to take that role when I ran for president. I had run for vice president by petition, but for president, I guess that I proved myself—proved that I wasn't crazy at least. I was nominated and I won. Fortunately, they didn't publish the vote totals in those days, but I won handily.

That involved the weirdest thing that ever happened to me, I think, in some sense. I was giving my structured Cobol talk. I'd go out and I had slides and a dog and pony show talk and some jokes, and people learned something about structured Cobol. I'd given the last one, the 67th, and I wasn't going to give anymore. I was sick of it. I was bundling up my slide projector and all that kind of stuff, and the program director for the organization—it's over in Queens some place; I don't know what group it was—he's standing around being sociable and chit-chatting and this is in June 1978. So the election had been held and I had been elected president of ACM, and this poor guy, after the first few words, I could tell what was coming. I didn't like it, but I couldn't see how to head it off. He said, “Do you know Aaron Finerman?” And I said, “Yes,” and tried to get out of there. He said, “A really good guy,” and I said, “You're absolutely

right about that.” And he said, “Didn’t he run for president of ACM?” I said, “Yes,” and he said, “Gee, I hope he won. Do you have any idea who won the election?” And I said, “Man, I’m sorry to do this to you, but I don’t know how to get out of it. Yes, I know who won. Aaron’s a great guy. He would have been a great president.” I’m sorry that he suffered any embarrassment for that. It wasn’t my wish. Well, Aaron died in ’94; I’d have to look up the exact date. My one serious regret, and I’ve thought about it many, many, many times, is that I didn’t go to his funeral. Sid Weinstein called me up and told me he had died and that the funeral was the next day, and I think I would have had to cancel a class or something, and I so much wish I had done so because I had gone to the funerals of both of his children. I wish I had been able to pay him that last respect.

NORBERG: Thank you very much, Dan.