An Interview with

JAMES H. AYLOR

Conducted by David Walden

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WALDEN: Today is September 23, 2016 and I'm with James Aylor at the University of Virginia in Charlottesville. Jim was the 1993 IEEE Computer Society president, and I am interviewing him as part of the society's history committee project to collect oral histories of past Society presidents. Thank you, Jim, for doing this interview.

AYLOR: You're very welcome.

WALDEN: For the record, the interview is being recorded and after we finish it will be transcribed by a professional transcriber. Then I'll do a pass over the written transcript to fill in things the transcriber didn't understand and remove unnecessary words like "um" and "unh." Then I'll pass the interview back to you to review. Once you're satisfied, the corrected transcript will be posted on the website of the Computer Society History Committee and also in a special category on the website of the IEEE History Committee's Global History Network. Therefore, before I hope you can sign a release form. Since I didn't bring the release form with me, I sent you an e-mail this morning. I'm hoping you can print it out, then we can sign it together.

AYLOR: Okay.

WALDEN: Please tell me a bit about your younger life; where you're from, your youth, your hobbies; anything you think that is interesting about your parents, siblings, home town, and so forth.

AYLOR: I'm from Virginia -- actually about 30 miles north of Charlottesville. Pretty much been here all my life in the Charlottesville area. My dad taught here at the University of Virginia -- actually taught in the engineering school. I guess when I was going to college, from a little town called Madison, which is up 29 North between here and D.C. and since my dad had taught here at UVA and I had already spent so much time

here, the only place that I was going to end up was at UVA. Always interested in engineering, even in high school; and always I was interested in electrical engineering; always fascinated by electronics and things like that. Once I decided to go to college it was pretty much a given that I was going to be an electrical engineer. Actually got more interested in the computer side of the business, primarily in the design of computers, the computer hardware side, interfacing of computers, not really so much the software side. And then once I graduated in 1968, I had the opportunity… Everybody was been getting 1-A classifications and ending up in Vietnam at the time, but because of a really strange situation of having flat feet, I somehow got deferred and did not have to go.

WALDEN: Let's get back a little bit more to your youth. How early did this interest in electrical engineering or electronics happen? Were you doing amateur radio or building radios? What kind of a hobby was it at that time?

AYLOR: That's interesting; I'm from a small town, my dad was brought up on a small farm. We actually still have the farm. Even while he was teaching up here, he had a few head of cattle, and actually milked cows before he went to work at the University. So I was brought up on a farm fixing things, cars, that sort of thing. I kinda got interested in electronics in high school, through the physics class. It was a small school so we kinda did everything, so I was kinda the audio engineer for the high school and had opportunities to do things like that, and that just sorta triggered my interest in doing that.

WALDEN: Did you participate in other nonacademic activities like sports?

AYLOR: I did. I played basketball; I played baseball. One of my major extracurricular activities was band. I played saxophone…saxophone player and participated in things called the Regional State Band Competitions, and stuff like that, for baritone saxophone.

So I was majorly engaged in extracurricular activities of that kind, and I enjoyed doing that sort of thing; I enjoyed interfacing with people, and so forth on that.

So when I graduated from college, the opportunity to go to grad school; maybe it was just because of the fact that I didn't know what else I was going to do; but the opportunity to go to graduate school opened up for me. I had applied to several places, but there was a young man here, a young faculty member actually, a former president of Computer Society, Edward Parrish, had just started on the faculty and I had him for a course. He had started to get into this thing called a computer, so he encouraged me to stay on to graduate school with him.

WALDEN: So as an undergraduate in electrical engineering, it was not yet computer-oriented [pause]

AYLOR: It was not yet computer oriented; it was pretty much classical electrical engineering. He had started in my fourth year here, a computer design course. I remember well: there were no simulation tools or anything like that; it was all sort of designed by discrete circuits , but they were small-scale integrated or medium-scale integrated circuits, putting them on bread board, or designed on paper, so there was no simulation or anything like that.

WALDEN: Did this university have production computers in those days?

AYLOR: They did.

WALDEN: What kind of machines?

AYLOR: They had primarily big machines, the Burroughs 5500-type machines. I remember even as a graduate student doing work on that machine and having to load

magnetic tapes to store my data, and I had card decks that I had to enter my programs on, and that sort of thing.

WALDEN: And these programs were for classes you were taking?

AYLOR: They were for classes and primarily I got more involved in that at the graduate level, the master's level, and doing some simulation type work.

WALDEN: What was your master's thesis area?

AYLOR: My master's thesis area — actually I can't even quite remember what I did for a master's — that's really a good question.

WALDEN: Well no matter. And you were taking now by this time, as a master's student, you were studying computer courses, software, hardware?

AYLOR: I was doing both. And I ended up getting involved… Oh, I know what I did. For a master's degree I actually built a piece of hardware. Ed Parrish was involved in a lot of pattern recognition stuff and so what we wanted to do was to implement one of these algorithms in hardware, and I remember building the machine in hardware that was kind of an imaging array, that then I had to do some averaging on, and so forth. But these were all small scale, medium scale integrated circuits that I patched together, and I wire-wrapped the back of it; I mean it was that type of thing.

WALDEN: I remember. [Laughs]

AYLOR: It was very low level integration in all of that.

WALDEN: Did you do extracurricular activities as a graduate or undergraduate student?

AYLOR: I did, but not so much anything like sports, or band, or anything like that. Most of it was through the Honor Societies Tau Beta Pi, Eta Kappa Nu, those types of things. We did not have any — I don't believe — any radio clubs or anything like that. The extracurricular was more in the area of leadership things, and Eta Kappa Nu, and being officers in those organizations, and so forth.

WALDEN: And was UVA explicitly trying to develop a computer educational capability? Or was it just kind of Ed Parrish working over on the side?

AYLOR: It started out with just him — that's a good point — him working on the side.

WALDEN: Where was that here at the university?

AYLOR: That was here, right under him and a couple of other faculty. And during that time, of course, I was working on my Ph.D. So at the end of sort of four or five years of that, and getting close to the end of my Ph.D., they offered me a job here. So that sorta goes back to your question about building up a computer engineering program, because before it was just Ed Parrish kinda trying to do this. It may have been, this was like 1978, they had explicitly then said look, we need to build a computer engineering program. And so they started hiring some faculty in that area, so I was kind of the second person they hired in the creation of a computer engineering program

WALDEN: My understanding of some universities, at least, is that it's not typical for a new Ph.D. to stay; they typically go somewhere else although they may come back some day. How did it come about that you stayed? Or that's not the policy here.

AYLOR: That's a really good question. And it's probably gotten to be now, almost — well, I shouldn't say uncommon — but it's very unusual to hire your own Ph.D.s, okay? You're gonna meet Barry Johnson, who was my first Ph.D. student, who we hired, but he did go out and work for three or four years at Harris Corporation. In my situation, they had the same concern and so what they said to me was look, we're interested in you being on the faculty but you've gotta go somewhere else. You either need to go for a year or so to another university, or to go into industry somewhere -- wherever you want to go. At the time, I wasn't totally convinced I wanted to be in academia because I really was more of an applied type person, hands-on, like to do that sort of thing. And so I chose to look at industry and I had a couple of opportunities; one at AT&T Bell Labs; one at IBM in Manassas, Virginia, which at the time was the Federal Systems Division. I decided to go to IBM systems because they were really starting to get to work on this cool thing called integrated circuits at the time. It's a Mead-Conway approach to designing integrated circuits and all that; and there was an IBM fellow there that was trying to transfer some software technology into the design of hardware. So I spent about a year and a half there working with him before I decided to come back. So I did enjoy that; there was some question at the end whether I wanted to stay there or come back. I had a lot of family in the area and so forth, so I came back.

WALDEN: Back to your Ph.D., what was your thesis topic?

AYLOR: I was doing more image processing type stuff; so we were looking at image analysis for various things like medical cells and using techniques to identify images from x-rays and things like that. At the time, that's where the research money was, and this was Ed Parrish's primary interest -- imaging, and kinda doing computing on the side.

WALDEN: And where was he getting this funding from?

AYLOR: National Science Foundation; got some work from NASA Langley; that sort of thing.

WALDEN: How did you finance this graduate education? Your father was still on the faculty, did that help?

AYLOR: He was still. Well, basically, and this is still true today, at the graduate level, there's really no reason to have to fund your own way. Between research grants that faculty have, or teaching assistantships, or something like that, if you're a good researcher or a good graduate student, you can get funding. That's what I did; it was pretty much funded by research grants and teaching assistantships.

WALDEN: When you came back to the university, presumably as a graduate student, you were already teaching some.

AYLOR: I was teaching some, I was co-teaching some courses with Ed Parrish at the time.

WALDEN: And these were in imaging, or computer design?

AYLOR: These were really more on the computer side, the computer design side, the early computer engineering courses.

WALDEN: And then when you came back as a presumably introductory faculty member; junior faculty member?

AYLOR: Junior faculty member, yes that's right.

WALDEN: And what were you teaching?

AYLOR: Pretty much at that time, it was understood that we were creating a computer engineering program, so I was teaching undergraduate logic design. At that time, too — before I came back — he had started a very large scale integrated circuits design course.

WALDEN: And this was again Mead Conway-type integrated circuit design.

AYLOR: Initially the Mead Conway-type design. A lot of it was focused more on sort of the hardware side of the business, how to integrate circuits in a system.

WALDEN: Was there a computer science component in the computer engineering department or was that somewhere else?

AYLOR: Well, there's a computer science department in the engineering school here, right?

WALDEN: But back then?

AYLOR: Back then, there was one also; and I think at the time — I can't remember — it started out of an applied math department, became applied math and computer science, and at some point along the way became just computer science. There was an interesting situation at the time, I guess, because when we started the computer engineering program, you know, you have a lot of programs that are computer science and engineering, and all that; so we offered the computer science department some idea in the way of changing their name because this department changed name from electrical engineering to electrical and computer engineering. We said okay, you can change your name to

computer science and engineering, because we do share the program here at UVA between computer science and electrical engineering.

WALDEN: What were your research areas when you came back to university?

AYLOR: All of my research is in some area having to do with computer, computer design; got involved some in automatic test pattern generation.

WALDEN: What is that?

AYLOR: Meaning that if I've got an integrated circuit, for example, I need to take that circuit and figure out what inputs I need to apply to it to be able to test it to see whether or not it works properly. So once that integrated circuit comes off the line, I need to apply a set of input patterns to it, make sure it's a good device before I ship it. What I want to do is to apply the smallest number of inputs as I possibly can. So the whole area is trying to figure out how do you apply a certain set of inputs that cover as many failures in that device as you can.

WALDEN: And somehow generate this automatically.

AYLOR: And somehow generate it automatically. So what you're doing is essentially analyzing the circuit and the possible failures in the circuit, and then from that analysis come back with a set of patterns, and the smallest number of patterns that you can apply to the circuit because every pattern you apply to the circuit costs you test time. So I did a bunch of that; got into where we were doing system level design; meaning not just looking at a small subsystem but looking at very large systems. And got involved in this new language at the time called VHDL, very high speed integrated circuit hardware design and description language. Actually I got involved with that some when I was at

IBM, and that was a hardware designers description language where if you go in there, and you could describe the machine or the computer you're building in software, essentially. You could simulations and all that sort of thing.

WALDEN: So on the website — I can't remember if it's here or for the Computer Society — it mentions you going to Federal Systems. That was after you were already a faculty member, another time, or that was the original time you went?

AYLOR: No, no, no. That was the original; that was between my Ph.D. and the time I actually came back. And I followed on with some of that interaction in terms of this VHDL design and description language, because at that time the community was developing VHDL.

WALDEN: Did this research go off into industry?

AYLOR: Right, and VHDL is still a language that's used for design and description of computers, so for example, VERILOG and VHDL are kind of the two common languages. Cadence Design Systems and other places like that use that language for their description languages and so forth. We did a lot of work for the Air Force in designing and describing equipment with VHDL, and so forth. Because what they wanted is to be able to have a sort of technology-independent description, so as the technology advanced, they can use the same description and just implement a different version of the different pieces of equipment.

WALDEN: So this description language, the pattern generation, what other research areas did you have?

AYLOR: They were primarily the major ones; the other area that I started and really continued sort of I would say on the back burner; was working with the medical community on devices for the physically disabled. Back early in my academic days, we had something called the Rehabilitation Engineering Center, and it was a joint program between engineering and the department of orthopedics. And so we were funded by the federal government to build things like wheelchairs, powered -- wheelchairs, or maybe not powered -- but wheelchair systems for maybe placing on aircraft; from something from the mechanical engineering side. We did a bunch of seating systems, to be able to build custom cushions for people that had to be in seats for long periods of time. So this thing had lots of sensors on it and it would create a form of your buttocks, and then you could basically pattern a piece of foam or something, based on personalization of yours. But I did a lot of work in … I was sorta, I think, the first one to put a microprocessor on an electric wheelchair; then that gave me the opportunity to do some things like designing controllers for people with spasticity. We did some work on fault-tolerant computing for wheelchairs so if it failed you wouldn't end up stuck somewhere. We did some work on battery monitoring systems so you had better indication of what the state of the charge of the battery was, so if you were going from here to the hospital, or something like that, you'd know whether you had enough charge to do that or not. So again, I applied a lot of the digital technology, the microcomputer technology, to that. But all the stuff I ended up doing was more in the computer design, computer interfacing, and computer applications area.

WALDEN: When did you start to get involved in administration here?

AYLOR: A very interesting question that sort of goes back to the Computer Society stuff, and involvement there. In a university you're evaluated on teaching, research, and service. Research side — we've talked about things that I've done. Teaching — always taught at least one or two courses a year, or two courses or three courses a year; you try to

do your best on that. And then the service side typically is external service, service that gives visibility to the university and then, I guess from my standpoint, gets you engaged in the community; you give back to the community or in your profession, and so forth. So early in my day, Ed Parrish recommended that I get involved in professional society stuff, and he was involved in Computer Society, so as early as the 1980s I got involved in some of the Computer Society stuff. During that process, I guess I got to enjoy interaction with others ; got opportunities to take some leadership roles within the Computer Society and so forth; and then — I've got to look at my dates — in the early 1990s, I guess about 1993 or so, think it was 1996, I'd have to look at the dates. Anyway, the department chair position opened up in the department and I applied for that position. I was selected. I had been doing research now for 15 years and so forth, and I had enjoyed doing the leadership stuff in Computer Society, and decided I would try to [pause]

WALDEN: And by this time you were a senior faculty member?

AYLOR: I was a senior faculty member going through the ranks and all that. Got to sort of an age in my life that if you wanted to go into leadership. It's really hard to go into leadership and then go back into research because you can't do everything. [Laughs.]

WALDEN: It's impossible.

AYLOR: That's right. Can't do everything and your research program's gonna hurt, so you have to think a little bit about when you make this change. So I was at the point in my life, if I wanted to do this it was the time to do it, and it would give me opportunity to do other things. So I did that and then I served in that position for like eight years; two four-year terms as a department chair. Then once I stepped down from that, the dean asked me to come into his office as an associate dean.

WALDEN: Were you still teaching some during this time?

AYLOR: I was teaching as a department chair. So all during my time as department chair I was teaching one course a year, or one course a semester, it depends. But I was teaching the courses that I had taught; logic design, and integrated circuit design, stuff like that, so it was possible to do it. But it was no question that during that time my research started getting hurt.

WALDEN: Once you went into the dean's office you stopped teaching?

AYLOR: I did, I stopped teaching. I guess maybe the first year I was an associate dean, I might've taught then, but after that I didn't.

WALDEN: You were an associate dean for some specific topic area?

AYLOR: Well, yes. I was associate dean for academic programs.

WALDEN: What does that mean?

AYLOR: Which means that I was in charge of all of the undergraduate and graduate instruction side, and they had a different associate dean for research. So I had assistant dean for undergraduate programs and assistant dean for graduate programs under me. So I was just kind of in charge of all the academic side of it.

WALDEN: The dean's office is for the school, not for the department.

AYLOR: It's for the school.

WALDEN: The school of engineering and applied science.

AYLOR: Right.

WALDEN: And it was that name back then already?

AYLOR: That was the name back then, yes.

WALDEN: You mentioned getting involved with the Computer Society because Ed Parrish recommended involvement and he was involved. Were you involved with other professional societies?

AYLOR: There was where I got started. I got involved some late in my life in the American Society of Engineering Education; as I became associate dean and dean I did get involved there a little bit. My association or I guess I would say my professional side of the business took on a role once I got into the department chair situation and then the dean situation, is in the organizations that were associated with the job. So we had an electrical and computer engineering department heads association called ECEDHA; I got involved in that. That's basically all heads of electrical and computer engineering departments — probably 300-and-some … was one of the largest groups of departments; most schools have; if you're an engineering school, you're typically gonna have an electrical and a computer engineering department. May not have some others, but you're gonna have that. I got involved in that organization, and went up through the ranks there and became president of that organization. So once I kinda got into these other jobs, that kinda took my direction toward leadership in whatever the group was.

WALDEN: Can you tell me a bit about the progression of activities within the Computer Society; maybe a little bit about what you did in each area?

AYLOR: I started where most people start, in various committees within the Computer Society. One of the things I did to kinda — I won't say to get my name out there — but there were these technical committees within the Computer Society, and I created one of these technical committees called — and I forget exactly what it was called — on disabilities; something called computers in disabilities. So we created a technical committee at that time and gathered a bunch of people doing computer-related things together, and we had a bunch of conferences and so forth. So that got me involved in the technical side of the Computer Society. And so then I got interested in getting more and more involved with some of the administration of the technical side of the Computer Society. Then I went up through the ranks on that side of the business.

WALDEN: I'm trying to remember; but you were involved with Publications, maybe?

AYLOR: I was involved with Publications, and technical committee.

WALDEN: You were involved with conferences?

AYLOR: I was involved with conferences and technical activities. So like I say, I kinda got involved initially through the technical activities side of the business. That was probably one of my first vice presidencies in that. And then I moved in some of the other areas — conferences. I didn't ever do educational activities but I did conferences and technical activities.

WALDEN: Conferences were a big piece of the Computer Society.

AYLOR: Yes, conferences were a big piece. Actually, I looked at my 1993 President's Messages and then one of the things that we were trying to do at the time was to get

better support between the technical — between the conferences groups and the Computer Society. Better support, because, you know most of the people — and when I started, too — they really weren't interested in the Computer Society *per se*, but they were interested in helping putting on conferences, and doing things that were related to their technical committees.

WALDEN: When I read that, I didn't quite understand that…there is a central staff which works on conferences, and then when you talk about conference organizers, are these the people in a specific technical area who want to have a conference?

AYLOR: That's exactly right.

WALDEN: And they'll be Computer Society members or not necessarily?

AYLOR: I don't think it was necessary that they were. Can't remember back exactly what the rules were; but what happened to people was that, okay, you've got this big thing called the Computer Society that has resources, that has staff to help you do this. So if I wanted to put on a conference on Next Generation Computing or whatever; let's say you've got a technical committee on computer architecture, which one of them, and I wanted to put on a symposium or conference; I would then propose to the Computer Society to do this conference and I'd have a budget for them, and all this sort of stuff. The Computer Society then would essentially underwrite it. What that means is that they would try to make it break even or make money, hopefully; but if it didn't that was where your golden parachute was, right? It was the organization that supported you to do it. So that was kind of the management side.

WALDEN: Some of those conferences became regular conferences; they repeated, but not all of them?

AYLOR: Some of them became annual conferences. It might be that you had a small symposium that happened aperiodically, or whatever; but sometimes the conferences became annual, had a standard following, and all that. They were the easier ones to manage because you could always predict what was going to happen there most of the time. With symposiums, you would have to trust the organizer, that they knew enough of their community to gather enough people together that would at least pay for the writing.

WALDEN: They'd have to gather both presenters and attendees.

AYLOR: That's right. And you had a lot of arguments. It was interesting; somebody would come to you and propose a conference and they were convinced that it was going to be the biggest conference ever, right? They were going to have 350 people. Somehow, you'd have to sit down and say, look, this is the first time you've done this, you don't have a following, and blah blah blah blah… you know, get them down to something we could all live with.

WALDEN: I understand better; I've probably attended some of those conferences and never knew how they happened; I just thought it was a Computer Society conference.

AYLOR: Right.

WALDEN: It doesn't necessarily come from the central Computer Society.

AYLOR: Very few of them actually came from there. There were a few conferences that were sort of top down called COMPCON at the time; these were annual computer conferences. You know, it's an interesting comment. A lot of the societies, like Control System Society, and others that are in IEEE have their one annual conference and

everybody in that society goes to that conference. Computer Society was so big at the time, it was like almost 100,000 members, you had so many niches it in that you really did have this one big conference. But for a little while there, we had a couple of them

WALDEN: You were the vice president of publications?

AYLOR: Yes.

WALDEN: And that entailed both the magazines and the transactions on the one hand, and the Computer Society press on the other?

AYLOR: Right, it did.

WALDEN: Can you tell me a little bit about each of those?

AYLOR: It's a good question. There was a VP for the press, and there was a VP for publications — I believe when I did it. And I might've been VP for press at one point in time but I don't remember — but when you were VP for pubs, it was primarily the periodical stuff: *Computer* magazine, Transactions on Computers, and all the other periodic magazines.

WALDEN: So in that role as vice president of pubs, you're involved in making sure that the processes of appointing editors-in-chief happen.

AYLOR: Right, you had all the processes associated with putting out a magazine.

WALDEN: And when a journal is running behind you had to do something about that?

AYLOR: Exactly. If you had a huge backlog, for instance, of papers you would have to get engaged hopefully with the editor-in-chief to see what you could do about that. It might be an issue of trying to add a few pages, for instance, in a year to try to clear up the backlog; and so you'd have to… you'd be the one to take it to the Board of Governors and say look, I need extra pages this year. Maybe permanently, or temporarily, or something like that. You know, you also were the ones that pulled together all the editors-in-chief and stuff like that.

WALDEN: For the semi-annual meetings.

AYLOR: Right, right. So you pretty much were in charge of anything which was associated with the operations of pubs.

WALDEN: Were there new publications that came while you were VP?

AYLOR: That's really a good question.

WALDEN: I think there were when you became president; maybe we'll get back to that.

AYLOR: I don't remember. I don't remember whether there were or not. And again, I guess I should note there that the idea of a new publication or a new technical committee was typically a bottom-up process. You had to have some champion that wanted to create this new magazine or this new technical committee, that's sorta how it happened. Maybe we might've seeded some things, and could see somethings happening and recommended to somebody to get something going. But typically that's a bottom-up process.

WALDEN: Eventually, you rose to the position of president. What was you view of the Society as you decided to run for president, and how did you decide you were going to run for office? Were you encourage to run by others, or did you want the job?

AYLOR: Well, I guess, some of both. I guess I was encouraged to consider it and I had served in a lot of the offices so I thought it was a good opportunity for me. It was a good opportunity to gain visibility for my career to do it, no question. One of the things — little bit of an aside — but you know you have to always, it seems like, take a look at what you do and say how is it helping me in my career and so forth? So what I did as president is I always sort of made sure that I was engaged significantly in the things that were associated with my research, too, so I would attend conferences and be visible at conferences that were associated with test pattern generation and design automation, or things like that. So I took it as an opportunity, too, to help build my career. It was a very interesting and rewarding position process.

WALDEN: In your first [president's] letter in January of 1993, you note that two issues facing the society were the partnership between the Society and the conference organizers. We've already talked about that a little bit. And the other was the information explosion. Can you say a little bit about how that was viewed at the time? The world wide web kind of existed but hadn't really gotten going yet. There might've been a little bit of gopher or something.

AYLOR: That's exactly right. The Computer Society was very early in adopting e-mail. We had sort of gotten engaged in that, so we were sort of on the road to using information technology in our operations. We were trying to get ahead of the game, too, on publications and how [to do] electronic transfer of information; how do we get material to and from the authors; how do we take advantage of this information explosion to run our magazines. I guess we were realizing at this point in time that this whole thing

was going to be a massive change in way things are done; and I got interested in how this all was going to happen. And at the same time, IEEE, the parent, was sort of interested in that, too; had gotten interested. So that was kind of my push at the time, to try to see what we could do in taking advantage of some of this activity and streamline.

WALDEN: So you say you got involved in e-mail relatively early; that was internal to the Society or with distributions to members?

AYLOR: It was pretty much internal to the Society. We had contracted with an e-mail provider for our activities; I guess I should say it was primarily for our operation, right? So that doesn't mean that conference organizers went on e-mail and all that stuff but it wasn't something we sold to membership or something like that.

WALDEN: But it also wasn't a way to distribute information.

AYLOR: It wasn't.

WALDEN: Right now, I get an e-mail from the Society, and the e-mail says click on this link and then it takes me to web page.

AYLOR: Right. None of that existed at the time.

WALDEN: So you worked on this for a year, how do you think it helped in the future? My observation is every few years, the Computer Society has to review its IT systems and I'm wondering what your view is, looking back, did it help get a head start in this whole area?

AYLOR: That's ***really*** a good question. I'm not sure that there were any breakthroughs during the time. It seems like that this whole sort of revolution is one that it takes some major breakthrough in the technology, and then everything else changes. Everybody starts re-evaluating where they are and all that sort of stuff. I think the main thing that I did during my period was just get the Computer Society to start thinking about this.

WALDEN: And surely for the staff, they had a way of doing it and beginning to think about a new way takes a long time.

WALDEN: It does. And one of the — well the biggest fish, I think, sort of, in the Computer Society is — and we're still dealing with that — is that the economic model is based on printed matter and we struggled in the early days with how do we recover, how do we replace income when we're transmitting things electronically? I can't remember all the sequence of events, but one of the things we looked at a lot had to do with the conference area, right? How do you distribute material for conference proceedings was a little bit different situation than the monthly periodicals and stuff. And so I remember getting involved a lot in some of the areas of how to; and I don't know all the sequence of putting these things on CDs and all this sort of stuff as opposed to having printed copies. Anything you could do for a conference to cut down the cost to the attendee was something you wanted to do.

WALDEN: I have a general question I ask all of you presidents — about initiatives you launched: do you think that you launched some or it's more that you kind of pushed the areas that needed to be pushed? The digital library, had that happened while you were there?

AYLOR: That really had happened.

WALDEN: I would call that an initiative.

AYLOR: Yes, that's an initiative. Like I said, I think most of the stuff that happened within the Computer Society was bottom-up. So you'd have somebody wanting to do a new magazine, and what we tried to do was support all of that stuff. The thing that I really tried to push was the whole issue of thinking about new ways of taking advantage of information. But we didn't have a lot of the stuff that we have [now].

WALDEN: It wasn't there yet.

AYLOR: Right, it wasn't there yet; but we started thinking about some of that sort of stuff.

WALDEN: In March of 1993, there was discussion of the industry layoff report, and apparently that was a fairly big deal for the Society, in terms of how do we help our members? What happens to our members? Can you say anything about that?

AYLOR: I don't remember at all much about that. Going back to some of the things I can remember, I remember some initiatives more on the order of being EIC of *Computer* magazine and some of the stuff we did there. But I can't remember as much anymore.

WALDEN: You were the Editor-in-Chief.

AYLOR: I was Editor-in-Chief of *Computer*, IEEE *Computer*.

WALDEN: And that was before you were president.

AYLOR: No, that was after.

WALDEN: Ah, so that gets to a question about what did you do with the Society after you were president. And you were also involved with the IEEE after this?

AYLOR: I was involved with the IEEE after; I was division director of IEEE. And being the largest Society in IEEE, we were always sort of a burr in their saddle. We had two division directors at the time, and so it was a position where we were always advocating for things that the Computer Society needed, and stuff like that, so that was an important position. Lot of times former presidents would go into that position because they were so knowledgeable about what was going on with the Computer Society.

WALDEN: When you were the president, did they already have the system of the president elect, president, and the past president?

AYLOR: No.

WALDEN: That's how it works today.

AYLOR: Right. Well they did have the past president. But I believe they did not have the president elect thing because I remember being on the slate, so it wasn't automatic president elect to president position.

WALDEN: Another thing I read about was your pushing European and Asian activities. What was the view of why that was important to the Society?

AYLOR: So much of our activity had become international. Lot of the conferences now were being taken internationally. We wanted I think to have, I think, a bigger presence internationally; meaning that we wanted to have relationships with our sister societies in

China, or whatever. A lot of information was flowing now easier across the continents and between continents; so we tried to take a more global view and so forth of the activities that the Computer Society was doing. And when I say that, I mean being visible at conferences and other activities that were out of the country. It was important to me that since the Computer Society sponsored these types of thing on behalf of our members that were working in the technical areas, that we be at certain things like that. We opened up, you know I was part of — I don't remember the times and all — but we opened up other office in other countries so that we could deliver material, and also to support conferences that were being held; we had one in Brussels, you know, and so forth; and in Japan. And so it got to be important that we were in the countries where a lot of our membership was.

WALDEN: Your presidential year was a year when you were also still here at the university?

AYLOR: Yes.

WALDEN: Trying to fit that in with whatever else you were doing?

AYLOR: Exactly.

WALDEN: And what was it that you were doing at the time? Had you taken; were you in the dean's office already, department chair?

AYLOR: No, I wasn't department chair, it was before all of that. So what I was doing was trying to get all my research stuff going. I did get relief from the teaching side, because that was toughest [pause]

WALDEN: So that was support from the university.

AYLOR: That was support from the university because that was a tougher situation, to be able to do all these trips, all this sort of stuff, and still be in class.

WALDEN: As a past president, did you continue to travel? My impression is that today the past president carries the flag all the time for a year.

AYLOR: I don't remember that I did that much traveling as past president.

WALDEN: Related issues, perhaps: (1) tell me about how it is working with the Society staff; and (2) a year seems a very short time to get things done. Those are perhaps related issues. Can you talk about that a bit?

AYLOR: I guess first of all … the effect was it was more than year, right? Being vice president for pubs, you got engaged with a lot of the staff, obviously, in that situation. And then you become president, and of course, I transitioned at some point around there to Editor-in-Chief, back in pubs. So working with the staff was kind of a long period of time. I enjoyed a lot, working with the staff. I felt like the kind of relationship between the volunteers and the staff were really important and I think a lot of time was spent from a management standpoint, making sure that worked; making sure that the volunteers showed respect for the great staff.

WALDEN: And how did you do that? I mean, were you talking to Michael Elliott a lot, or [pause] ?

AYLOR: Talking with Michael Elliott a lot, talking with the staff a lot, making sure that you and all the people around you realize that the staff is really what gets it done.

[Laughs.] Be considerate, I guess, of the relationship and the staff that you have. Great staff; they were just really dedicated to what they were doing.

WALDEN: Anne Marie was already involved then, right?

AYLOR: She was already involved. So, you know, staff/volunteer relationships were kind of a constant issue that you had to work with. I think to some extent that's one of the president's jobs because you always end up with some conference volunteer that got all pushed out of shape; that the conference staff, they didn't get something done; they weren't attentive enough to them, and all that sort of stuff; so you spend a lot of time doing that. But that's a tough responsibility.
I stayed involved a little bit in the Computer Society, you know, through Editor-in-Chief, and then I was on the editorial board for a little while after that, but then once I got in the dean's office and stuff, I kind of phased out of CS volunteer activities.

WALDEN: Was there a central manuscript system at the time you were the Editor-in-Chief or was that still in the future?

AYLOR: That was the beginnings of that. We had AVERS and CMS going on, and that sort of stuff.

WALDEN: CMS?

AYLOR: Central Management System.

WALDEN: Okay. Somewhere, I guess in your December 1993 letter, something called "computer online" is mentioned. Do you remember what that was?

AYLOR: We were starting to think of electronic transfer of information at the time. I don't remember exactly what form that took, or anything like that, but yes.

WALDEN: But that was more general than just *Computer* magazine?

AYLOR: Yes.

WALDEN: Okay.

AYLOR: And again, we were starting to think of the future of this publications industry here and what was going to happen as the technology continued to improve. But it took years, and years, and we're still not there.

WALDEN: We're still struggling with online subscriptions and printed subscriptions, some people still want one or the other or want both [pause]

AYLOR: Want to have the hard copy to take on the airplane, I mean, you know. The big thing we dealt with — and I can't remember all the sequence of events and stuff — but we dealt a lot [with the] of the value of membership: why does somebody want to be a member when they probably can get all the pubs through their local university, you know, all that sort of stuff. We constantly dealt with member retention. A lot of the stuff we talk about like computer online, and all that stuff, was to try to be a value proposition for the membership, right?

WALDEN: So you had institutional subscriptions and institutional membership already?

AYLOR: We did. And of course a lot of that was through the IEEE, whatever they call; Explorer or whatever, like that.

WALDEN: Explorer is what they call it today.

AYLOR: Yes, but some version of that, that we did. But really we had computer versions of that, but just Computer Society stuff, so that you didn't have to; for like for computer science departments and stuff that only wanted Computer Society versions of that.

WALDEN: When you were president, how were relations with the IEEE?

AYLOR: They were, I would say, always strained or stressed. Again, like I said earlier, it's we were the thousand-pound gorilla. At the time — you know I don't remember — IEEE might've been 300,000 members or something and the Computer Society was 100,000 of those. And we were always; I guess all the other societies felt like we were trying to get something when we were at the IEEE meetings, and so forth. And we always felt like from our standpoint, the IEEE was trying to do things to us that we really didn't want done, so it was pretty strained at the time.

WALDEN: I know from the *Annals*, with which I've been pretty deeply involved in, that the page budgets apparently have to be approved by the IEEE.

AYLOR: Right.

WALDEN: The publications staff. You know they can make requests, but the IEEE — it appears to me — is making judgements over; well, this magazine really isn't supporting itself quite enough, or whatever.

AYLOR: Right, and they were some of the rough edges that we ended up having to deal with. Why's IEEE trying to tell us how many pages this ought to be? Or whatever. That was always a constant taxation issue, right? That sort of stuff; how much we had to pay the IEEE. [Laughs.]

WALDEN: Sure. [Laughing] I've seen some of the that again for the *Annals,* where there's a budget for the magazine but there are a few line items that are just dictated from the IEEE. You ask what's that justification to the person who's running that, and she says they told me to put it in.

AYLOR: That's right.

WALDEN: Can you tell a bit more if you're willing, about the rest of your life, your family, your other activities; how things are going when you're now retiring from dean?

AYLOR: Yes. I own a family farm about 30 miles from here. That's sort of always, that's been my … I always tell people that's my golf. So I still have a few head of cattle up there that I look after, and so that's my recreation. I probably will step down in a year. I enjoyed being dean a lot, but it's like 24/7 jobs; after a while I said okay, it's just consuming me. But it was fun, we had a great run; Barry Johnson and I had a great run together at the job, so I'm happy. And I got two children; I've got six grandchildren; all living in Charlottesville so I have plenty of recreation and all the attention that I need.

WALDEN: Nice.

AYLOR: But it's been fun. It's been a great career. I recommend professional services, professional society services. It's tougher [in] this day and time; it's so much pressure on publish or perish, or the level of your research activity. It's hard to get young people now

engaged in professional societies. But we do still push that; and my attitude about it is like I said earlier, you still gotta think about what's in it for you. But to me, it's all about those relationships, it's all about getting engaged with people in your professional arena, or in your technical arena and so forth. That's what you value. I always tell faculty when it comes time to get letters for your promotions and stuff like that, it's a lot better if that individual knows you and has met you than them writing an anonymous letter. So I think this professional society activities is still really, really important for young faculty to do.

WALDEN: Is there an IEEE chapter here?

AYLOR: There is an IEEE student branch here. And there's what's called the Central Virginia Chapter of IEEE. Not many faculty are engaged in that.

WALDEN: Do you recommend it to students?

AYLOR: I do, yes. It's one of the things you might expect that comes and goes. It takes a committed faculty and a set of students to keep it going. Seems like we have an ACM student chapter that seems to be more active. 'Course they always run things like programming contests and al this sort of stuff.

WALDEN: I think the ACM has always been a little more software oriented.

AYLOR: Oh yes.

WALDEN: And the Computer Society a little more hardware oriented.

AYLOR: Absolutely.

WALDEN: And there's a lot more activity in software these days.

AYLOR: That's right, it really is. But it's been a really great career.

WALDEN: Thank you for taking the time to do this interview. I really have enjoyed it.

AYLOR: I've enjoyed talking to you, Dave, and look forward to working with you on editing it.