

Interviews

Albert Vezza

Editor: David Walden

Albert Vezza is notable for his roles with J.C.R. Licklider, the Massachusetts Institute of Technology (MIT) Laboratory for Computer Science (originally Project MAC), the ARPANET development, Infocom creation and management, establishment of the World Wide

Web Consortium (W3C), and support of the Internet Engineering Task Force (IETF).¹

David Walden: When I first knew you, you were working with J.C.R. Licklider in his Dynamic Modeling Group at MIT. First off, how did you come to MIT?

Albert Vezza: Upon graduation with a master's degree from Northeastern University's Graduate School of Engineering, one of my job interviews was for a position at the MIT's Electronics Systems Laboratory. The interviewer, a pilot in the Air Force Reserve, and I argued quite vigorously about the frequencies of Tactical Air Navigation systems that I'd worked on at Stromberg-Carlson. I left the interview discouraged with my prospects for working at MIT. A couple of days later I received a job offer from MIT.

When the project for which I was initially hired ended, I joined an Electronic Systems Laboratory team assigned to Project MAC. About that time, MIT Project MAC and the Technical University of Berlin were planning a conference in Berlin. Tom Cheek and Rob Stotz (our group leader) had developed a computer display using a Tektronics storage tube that communicated at 1,200 baud (full duplex) with the CTSS (Compatible Time-Sharing System). MAC's Assistant Director Dick Mills wanted to demonstrate that display at the conference. Other members of the group were busy; as the newest member of the group, I was brash enough to say that I'd do it.

An apparently simple task quickly turned complicated. For European compatibility, we needed a

Siemens, not AT&T, modem. The dial-up network didn't support 1,200-baud full duplex, so I designed a simple protocol and a little circuit that turned full duplex into a half duplex, but we were not allowed to connect "foreign equipment" to the dial-up network. An AT&T line was leased along with time on ITT's undersea cable to Europe's dial-up network. However, ITT's onsite engineers in New York City refused to connect our leased line to the undersea cable. I phoned people up the ITT chain of command, demanding connection, until I reached an executive vice president. The VP called MIT's president, who suggested that ITT comply with my request. With our leased line connected, we next had to convince operators at ITT and dial-up operators in London, Paris, and Berlin that a quiescent line was still in use so they wouldn't disconnect the circuit. Luckily, it all was working about three days before conference started, and people around the institute knew of my efforts.

About that time, Rob and Tom were leaving to start a display terminal company, the group was disbanding, and I had my CV ready to move on. But Licklider, who was taking over as director of Project MAC from Robert Fano, convinced me to stay at MIT and join a new group he was starting.

Walden: The Dynamic Modeling Group?

Veza: I don't know how it happened, but I soon found myself managing the group—talking to students and staff members about projects that needed to be done, worrying about budgets, buying more equipment, and so forth. Licklider didn't have the time or inclination to deal with the daily activities of the group, but he was definitely the intellectual leader—a magnet for students and staff members.

Lick had several objectives for starting the Dynamic Modeling Group. One objective was the creation of digital modules that could be connected tinker-toy fashion, the way analog computer modules are connected. He also wanted students and staff to become immersed in real-time graphics experimentation and become part

Background of Albert Vezza

Born: 30 July 1934

Education: Rochester Institute of Technology, BS, 1962; Northeastern University, MS, 1964.

Professional Experience: US Navy, 1953–1957; Massachusetts Institute of Technology, 1964–1984;

Infocom, 1984–1986; Massachusetts Institute of Technology, 1986–1996; Corporation for National Research Initiatives, 1996–2005; Foretec, 1998–2005.

of the ARPANET experiment he knew was coming. Along the way the experimental MDL (MIT Design Language) was developed, mainly by Chris Reeve but with help from other students and staff. We did experiments with an Evens and Sutherland display and with communication between our PDP-10 mainframe and Imlac displays.

Lick loved the latest toys, and he didn't like packaged products. Thus, we always had lots of hardware and software to be developed and integrated. It was a full-time job for several of us to figure out how to make that all work. For instance, our PDP-6 running the ITS (Incompatible Timesharing System) didn't have a disc operating system, so we bought discs and a smart freshman, Scott Cutler, adapted the Artificial Intelligence Labs' PDP-6 disc operating system to our discs. Another effort was connecting a large memory bank to our PDP-10, done by recent MIT graduate Pits Jarvis.

At one point, Licklider invited me to a lecture by Robert Kahn in the director's conference room about the ARPANET. Afterward Lick said, "You'd better get the staff busy." So I found out more about the network and that we needed an interface to the ARPANET interface message processor (IMP, or packet switch). MIT graduate Bob Metcalfe designed and built it. (He was in graduate school at Harvard but learned of the opportunity from one of his MIT fraternity brothers.) I ascertained he was capable, and he said he could do it. He had a lot of chutzpah.

During that early ARPANET period, Steve Crocker was holding ARPANET Network Working Group meetings trying to develop the user protocols for remote connection, file transfer, and so on. To get everyone on the same page, a meeting of the NWG participants was hosted at MIT. The purpose was to make the various host-level protocols on every operating system on the ARPANET interoperate with their counterparts on every other system. We had a matrix on a white board of systems and services. When a service interoperated with its counterpart on another system, it was considered alpha tested. By the end of the week everyone had an idea of what work was still ahead.

After that meeting we started planning the first ARPANET public demonstration at the October 1972 International Conference on Computer Communication in Washington, DC.² I remember telling Lick, "You know there's going to be a demonstration in Washington at ICCC," and he just looked at me

and said, "You better make sure it works." That's all he said. I said, "Lick, I may need a lot of resources for that." He said, "As much as it takes."

I spent the next year or so, working with Bob Kahn, worrying about the ICCC demonstration, down to the smallest detail about how to put a false floor in the hotel in Washington, DC, so that we wouldn't step on wires and disconnect things and personally installing a 20-wire modification missing from one Imlac terminal. MIT sent a delegation of 20 or more staff to the demonstration and had a like number back at the lab to ensure the operation of our systems.

Walden: After that you went back to concentrating on the Dynamic Modeling Group.

Veza: The group was working on many projects, and Lick was being asked to do a second tour at ARPA in 1973.³ I took over the group and immediately scouted around for a new mission. I heard about a Morse code challenge that the Department of Defense had given to George Heilmeier.⁴ A couple of my staff members were hams, and I knew Morse code from my Navy days. With the group's knowledge of the subject, we wrote a proposal that was accepted.⁵

Walden: Michael Dertouzos had taken over Project MAC by this time.

Veza: Yes, and I still had a job because my group was one of the better funded ones in the lab.

Walden: How did you come to help Dertouzos with Project MAC? Or was it the Laboratory for Computer Science⁶ by that time?

Veza: It became LCS shortly after Mike took over. Mike always had associate directors to help with various jobs. Because I was in charge of one of the larger groups, he asked me to be one of his associate directors.

Walden: Infocom was started while you were still at Dynamic Modeling.

Veza: Infocom was started around 1979. At a meeting in my dining room, 10 of us decided to initially invest \$10,000 each.

We started the company to create a database system for a personnel computer. However, Mark Blank, who was the prime mover behind Zork on the PDP-10 while at Dynamic Modeling, said, "We've got Zork already; why don't we try to market it for an Atari or the

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April II?" Zork was a large program, so for ease of portability among machines, Joel Berez and Mark built a Zork virtual machine on which Zork ran. We were in business.

I was chairman of the board but not involved day-to-day operations until we were trying to raise venture capital funds. I couldn't raise the funds unless I joined Infocom. I was there for two and a half years and raised \$3.5 million dollars.

Walden: Did Lick invest in Infocom?

Veza: Both Lick and Dertouzos invested.

Eventually we did create a database system called Cornerstone. We should have called it Millstone. Although it was a technical success, we didn't have the funds to market it properly and eventually sold the company.

Walden: What next?

Veza: I had taken a leave of absence at MIT. Having decided not to go back, I was going to take time off and go look for a job. But Dertouzos called me to say he needed a full-time associate director for the Laboratory for Computer Science. I didn't think he needed one and said so, but he insisted. After some thought and discussion with my wife Kristine, I returned to MIT.

I became a full-time associate director and took over a number of director functions. What Mike didn't tell me was that he was planning to form the Commission on Productivity that resulted in the *Made in America* book.⁷ He was chairman and had a number of senior professors and a Nobel Laureate on his commission. He was at the commission's offices a great deal of the time, so I took over much of the day-to-day activities of the LCS director.

Prior to starting the commission, Mike asked me to survey some industry contacts concerning price points for an industry consortium. I concluded that we could charge \$50,000 from a large company and \$5,000 from a small one.

Bob Scheifler of LCS and Jim Gettys of Project Athena had developed the X Window system. Bob started the X Consortium and before long there were 100 members. After about five years they decided they wanted to spin out. Mike was reluctant at first, but I pointed out that we couldn't keep the consortium forever, so we spun them out.

Dertouzos liked having LCS involved in some way with industry. At several executive committee meetings, he mentioned creating another consortium. We were brainstorming

at one such meeting—this was 1994, maybe even late 1993—and someone said, "We should start a Web consortium." The seven people in the room were very excited about the idea, but I said, "We must be smoking pot. The reason the X Consortium worked was because we had the inventor here at LCS." Hal Abelson boldly said, "What a great idea, let's go hire Tim." Dave Gifford explained that he had visited Tim Berners-Lee at CERN and thought he'd come. Dertouzos had also visited with him and turned to me and said, "Let's hire him." It still amazes me that 18 years after that meeting the World Wide Web Consortium (W3C) at MIT is still going strong.

I visited CERN and Berners-Lee. After talking with the group, I had dinner with him and his wife (who was about seven months pregnant). I asked him to come to MIT to start a Web consortium. All during dinner, I was receiving and sending faxes to Dertouzos (who was in Athens) on a number of topics including Berners-Lee updates. I informed him that nothing was signed but it looked good.

Berners-Lee's wife is from Connecticut and wished to be closer to her family. Thus, we came to an agreement that Berners-Lee would come if I could get the right structure for him and the consortium. He didn't know how to create a consortium and asked if I would start it for him. I had a tough negotiation with an MIT dean to get a package that would work, but we finally made the offer and Berners-Lee came to MIT-LCS.

Berners-Lee showed up in September, and I sent out letters to potential consortium members on 1 October. We had our first consortium meeting with people from 35 companies on 14 December 1994. Memorably, Vice President of IBM John Patrick declared, "This consortium better be worldwide. I don't want to have Europe going their own way, and Japan and the Far East going their own way."

In fact, I was flying that afternoon to Brussels and had been going around Europe between October and December to find MIT a partner. Two potential partners were INRIA, which would be the best place, and CERN, because that was the birthplace. Mike and I had been to Brussels on 1 December for a meeting with CERN about them becoming LCS's partner in Europe. When I got to the Brussels meeting on 15 December, I was surprised to find about 300 people jammed into a room. I reported that we had had our

first meeting of the consortium the previous day with 35 members attending.

To my surprise, three CERN staff members were essentially saying, "Who are these upstarts at MIT that they're going to start this consortium. We can do it better in Europe. It was invented here." Others in the audience were saying similar things. Another person stood up and said, "Let them develop it. They know how to do it and we don't. The big money is in the use of it. If they've got Tim and they're going to build a consortium, let them have it."

After that the discussion moderated a bit. When my turn to speak came I said, "I'm disappointed in CERN. I thought we had agreed on five of six issues. But I come here and hear differently." George Metakides [from the EU where he was promoting cooperation between the EU and other regions of the world] then told the group, "Well, essentially that's right." And the meeting ended. I didn't know what had happened, but Metakides told me to go to his office. About 20 minutes later he showed up at his office and told me, "CERN is out. Start discussion with INRIA." A week and a half later Brian Carpenter of CERN called Mike to say, "We just got funding for a supercollider, and we can't afford to do anything but that." So we made a partnership with INRIA.

The six or so Japanese members wanted the consortium to have a Japanese partner. Thus began a long search resulting in finding a group headed by Dean Nobuo Saito of Keio University becoming a consortium partner. We hammered out a basic deal, and the contract was executed at the Office of Sponsored Projects about four weeks before I retired. The OSP staff told me, "This is the biggest consortium MIT's ever had on campus; you've got over 150 companies already." Eventually there were well over 300 companies.

At this point, I knew I was going to retire from MIT to go to CNRI. Tim Berners-Lee was the director of the Web consortium and intellectual leader. I suggested that Jean-Francois Abramatic of INRIA be the consortium's chairman and business leader. Jean-Francois agreed to spend a year at MIT-LCS. That's where I left it.

Walden: Why did you leave MIT and go to CNRI?

Veza: It was a good time for me to leave MIT. Bob Kahn had been asking me to join CNRI.⁸ I was already in my 60s, and I knew Dertouzos would leave the directorship in a

couple of years, but I was not ready to retire. I commuted to CNRI in Reston, Virginia, for a couple of years, and then I started an office here in Boston.

At CNRI Bob put the Python⁹ group under me, although eventually the Python people left CNRI.

CNRI was also involved with the Internet Engineering Task Force. The task force folks wanted to break free of government-funding constraints. I suggested to Bob that we start a subsidiary, stop the government funding, and support the IETF solely from meeting fees—an average of 1,200 attendees at three meetings a year could make it self-supporting. Thus, I started the company Foretec, based in Virginia, as a CNRI subsidiary, folding the IETF function into it and serving as president. We also developed better tools for registration and other functions followed.

Eventually, CNRI sold Foretec and my involvement in that activity ended. At that point I retired.

During my career, I also consulted for a number of firms and served on several government advisory groups and ad hoc committees.

Walden: Let's go back to the beginning, before you got a master's degree at Northeastern.

Veza: I was born in north New Jersey. In 1934, we moved when my father took a job in Rochester, New York, where I went to public schools. After high school, I joined the US Navy to learn electronics (I received sonar-repair training), to travel (with deployments around the world), and for the GI Bill to pay for my education.

After almost four years in the Navy, I worked for Stromberg-Carlson in Rochester for a few months repairing test equipment. I then went to the Rochester Institute of Technology, where I received a bachelor's degree. RIT was a co-op school with 12 weeks of school alternating with 12 weeks of work. I spent all but one co-op term at Stromberg-Carlson.

After RIT's five-year program, I married and then came to Boston to attend Northeastern, which was also a co-op school. During work periods I worked for Ladislav Dolansky in speech research, which led to my master's thesis.

Walden: How did you envision your career?

Veza: I wanted to get into computing because I thought that was the way to the future.

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Walden: Being at the forefront of the Internet and the Web was not what you envisioned?


Veza: I had no vision of that at all. It was like sitting on top of a rocket and saying, “Where am I going?” It just propelled me.

Walden: What an amazing career!

Veza: I just thought I was going to be an engineer and be happy with that.

References and Notes

1. This interview was done on 6 Nov. 2011 at Veza’s home in Weston, Massachusetts. It was edited down from its original length of 10,500 words to the size of this column with the approval of the interviewee.
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