BILL MAYHEW

BILL MAYHEW: I haven’t seen you for quite a while. I feel like I grew up at the museum, too, although I was allegedly an adult when I got there. Let’s see, where should we start.

MIKE SPOCK: Who are you? Where did you come from?

**[use this section for 12JJ chapter]**

BM: Okay. I grew up outside Baltimore in a rural or more suburb. I remember my mom and dad being so proud that they spent $10,000 for their house, a little bungalow not much bigger than this room. I went to Catholic schools for ten years. Was able to go to one of the most academically superior schools in Baltimore when I was there. And landed a position at MIT as a result. MIT was actually my second choice. I wanted to go to Caltech, but for whatever reason they did accept me. The thing that attracted me to Caltech was that there were some very nontraditional things about the place. I remember reading in Popular Science or something like that an article about one of their students, the things they would assign students to do every year was to come up with some way of dropping an egg off the top of some incredibly high building and having it survive. And you weren’t allowed to hard boil it first. I said, that’s really cool. That’s the kind of place I would like to go to school. I ended up at ended up at MIT plus the Children's Museum, so I got some of the best of both, I think, because there was a whole lot of experimental and learn by doing stuff, certainly between those two organizations. I was at MIT in an experimental learning program called The Experimental Study Group which was a natural fit for me. It was a collegial students teaching each other with mentors participating, for freshman- and sophomore-year students. And I had come out of what –

MIKE: Where was this [inaudible]?

BM: At MIT.

MIKE: Yeah, but was it [inaudible]?

BM: No. There were two competing programs. Edgerton’s lab had one of them. This was the other. And I couldn’t tell you the name of the other one [inaudible]. While I was in that program in the first year, because we were after all supposed to be working to fulfilling academic requirements, and one of the things that MIT had, of course, was a humanities requirement of some sort. And I didn’t know how I was going to do this humanities requirement thing because I had decided back when I was in high school that I was going to be a techie, by gollie. Technology was the only thing that interested me. Well, I was wrong. But in any case, a fellow named Don [Collish] was in the program with me, and he was working on some education-focused humanities courseware within the context of the program. And he was also working as a work-study student at the Children's Museum. And he invited me along one day and I said, “Children's Museum? They have kids on the wall? What is that?” But I came over and walked into the Visitor Center – and this was in early ’71 – and fell in love with it. And I remember March 11th, 1971, that happened to be my birthday is how I remember the date. I came home and I, or actually came back to MIT, got on the phone with my parents and said “I just got this job as a work-study student at the Children's Museum”, and they said, “What’s the Children's Museum?” I had to try to describe to them what I had seen in the course of about three hours of this whirlwind tour. And the whirlwind was not an exaggeration because of the atmosphere in that building at that time. So I continued there as a work-study student for a while, and at MIT. And as things matured at MIT and as I began to see a broader world than I had ever seen in my isolated rural community and in my somewhat closer high school, I began to realize how much more there was to the world than just the technology stuff that I thought I was interested in. And suddenly decided that, you know, I really didn’t want to be an engineer, at least not the MIT form of engineer, because I was not getting the breadth of education that I wanted. After meeting some other work-study students from other colleges around the country I said, “You know? Antioch sounds like it might be a really cool place”. I think you went to school there, too, didn’t you? So I applied to transfer to Antioch, and in January of ’72 I left MIT and was all prepared to go to Antioch the following fall. **[first getting into computers]** I thought about it decided, well, maybe I’ll take the year off along the year. Well, I’m still taking that year off. Because things just began to happen at the Children's Museum and it just took off from there. When I came back after summer vacation in ’71, there was a computer for the first time. And I had had my first introduction to computers in the summer of ’69, the Woodstock year is how I can remember that, when I went to a summer program at the Illinois Institute of Technology and learned programming in a couple of languages and was first exposed to what that side of technology’s like. And see that dropped in place at the Children's Museum was an eye-opener, because my imagination started kicking in about things I could see doing with kids and computers that I had not had the opportunity to experience prior to that. We also had a couple of other work-study students who were in at that time who built the first logo turtle using the mechano set, erector set, mechano set technology. We had our connections into the academic side at MIT with Seymour Papert to help us provide some of the software and before long we were doing leading edge stuff with technology education and kids. So I arrived at the right moment. And before long we knew that we were outgrowing the demand for that resource was so high. I was being written up in all the computer industry journals at the time as the go‑to guy for education-related computing. You still find a couple of those old references on the internet, believe it or not. Along with my one and only proof that I went to MIT is an article that I wrote for The Tech about some antiwar protest in ’71 which is still archived. But as we began to develop these new exhibit ideas, I put myself in the middle of that. I was no longer just an exhibit interpreter, but I was coming up with new exhibit idea programs and implementing them. And the demand was growing, as I said. And the crew of the computer that we had wasn’t up to the chore. And it was getting to be old technology by that point.

MIKE: What was it?

BM: It was a PDP8I. Refrigerator-sized but small by today’s standards. I mean, your cell phone has tons more computing power in it than that thing did. So we knew we needed to move up to something bigger. And we went back to our corporate benefactors at Digital and were offered the opportunity to step up to their PDP11 line, which was their mainstream minicomputer family in that era. This was in roughly ’73.

MIKE: The PDP8 series, was that their first...?

BM: It was their first big seller.

MIKE: Oh, I see.

BM: They had a couple of other earlier ones. There was a PDP1, 2, 3, etc. The PDP8 actually later became the Decmate which they sold as a standalone word processor for many years. So computer architectures in those days had been sticking around for a long time. **[getting the first UNIX license]** When we knew this PDP11 was coming, and we knew we wanted to reproduce some of the same functionality we had in the PDP8 in the PDP11, we knew between the hardware differences and the software differences that we had some challenges, one of which was that in order to do the highly-interactive exhibits like the Logo Turtle, we needed the software to be able to interact closely with some of this external hardware. The PDP8 was well designed for that. The PDP11 hardware could do it, but the software Digital was selling at the time was an operating system called RSTS, only supported one language. That’s a language called BASIC, which was very well known at the time, but it had the disadvantage of being an interpretive language. The computer would spend a lot of its energy as the program was running deciding what to do next rather than simply doing the job. And that is not very complementary with an e in the word to the requirements of real-time hardware-related interfaces. So we knew we needed something else. And we stumbled on this operating system that was being developed at AT&T Bell Laboratories called UNIX. I remember writing a letter to them asking about it. And the next thing I knew I got a letter back that says, “Okay, you can now have it”. And we were the first licensed “customer” of UNIX outside of AT&T. The original manual that I received came out of Ken Thompson’s desk drawer. Ken was the primary developer and designer of UNIX, complete with his handwritten marginal notes. If I had only known then that eBay was coming, I would have preserved that book a long time ago because that would be worth a mint today. But that was unfortunately lost to history. We worked together with a fellow from Harvard which was also planning on doing a UNIX implementation. Because they had a machine in place. (Our was still some number of months, almost a year down the road.) So Brent Byer, from Harvard, and I went over to Harvard’s Chemistry Building on weeknights and brought the first UNIX system up there in late spring of ’73 using the Children's Museum’s license at Harvard. They later got their own license so they became real. When our computer came we swapped the paperwork around so everything was copasetic. And it was fascinating. I had been working while I was at MIT on a software system called Multics, which was in many ways the predecessor to UNIX, not a direct line of descent but a lot of concepts came from Multics. So it was familiar territory for me. But still there was a lot to learn. A whole new language, the C programming language, which nobody had seen before, except the people at Bell. The version of UNIX that we got was the first one that was written at C, so as I said, we were clearly leading edge. **[1:10 min]**

[PAUSE]

MIKE: The person that I bumped into that understood that you were using C was Jeptha of all people. Isn’t that interesting? Because he was an attorney, but he was trained MIT.

BM: Oh, okay. Interesting. So we did get that first UNIX system up and running, focused completely on the exhibit. And that gave us the ability to have more terminals and our first video terminals. That was a big deal. A video terminal at that point was about that long and that wide, had about a 17” black and white monitor in it and could only display upper case only characters, no graphics whatsoever. But still, this was revolutionary. And I think we had four of them at the beginning. Just the one terminal, one typewriter terminal that was attached to the PDP8. We also introduced a new exhibit that used a speech synthesizer chip called the votrex.

MIKE: I was thinking about this, the guy that, maybe it was not the same person, but the guy that did the tape would take text and turn it into [inaudible] talk to you for [inaudible]. Was that the same guy?

BM: I don’t think it was the same guy. There were several parallel things going on at that time and that was one of the things that that technology was used for. Yeah. So we had an exhibit where kids could walk up to a computer and sit down and press the green button – because we called the return key the “green button” because that was green for go, right? Because nobody was used to keyboards at this point, it was all brand new stuff. And the computer would start talking to him. And that – what is that? Then there was the – we had a sign on the front of the computer because, again, most of our visitors at that point had never seen a computer before up close and personal. And here was one they could actually touch and, you know, it was right there in front of them. It wasn’t in a glass room or anything. And there was a sign on the front of the computer that said, “This machine is called a computer. The pieces next to it are called a disk drive and it can do arithmetic and it can also send words and messages back and forth to you.” I’m paraphrasing. But the first sentence I remember very clearly. Because that sign ended up in the laboratory at Bell Labs when we moved out, when we decommissioned that machine and no longer had a place to put the sign, I sent it to Ken at Bell Labs. So last time I saw it, that sign was, I had a photograph of that sign on their machine in New Jersey. **[see if we can get a copy of the photo]** After we got the PDP11 it opened so many new opportunities to us, including the ability to begin to use it for some of the museum’s management needs. And I remember spending several meetings with the museum’s management team discussing what it was we were going to do first and how we were going to approach it and all these kinds of things. And I remember deciding to do the membership system first, or some sort of membership system first, because that was the place we were going to get the biggest payback fastest. That’s where our staff was falling furthest behind in doing their recordkeeping. So if we could get that on the computer first, that would be the low-hanging fruit. And I was making these decisions without any formal training in systems theory or in organizational decision-making. They simply fell out naturally out of the museum’s way of doing things, where you get everybody in the room and you talk about it for a while and the answer materializes. It happened more times than I can count. So we got the first round membership system functioning. And then the next thing we did was to begin to look up the accounting software. And there was this wonderful budget reporting system which Tom Goldsmith had put together using the mainframe at Striderite. And the question was, okay, well, how can we bring this in‑house because – I don’t recall now what the issue was, it was some political/economic thing going on at Striderite which was driving a little bit of a wedge in our continued ability to have it done there.

MIKE: Yes.

BM: It was also a completely mainframe-oriented batch system. So I remember when I sat with Tom to talk about what was going to be involved in doing this, and I think it was Phyl O’Connell and you had asked me to have this conversation with him. And I said, “Okay, I’m coming at it from the MIT guy perspective, right?” Because I had had my computer science education there, even though I left after only a year and a half. And I’m saying, “Okay, I’m going to design the data structures with Tom**.”** But that’s not where his head was. So we had a, I think a conversation that left both of us kind of cold at the beginning because he was thinking in terms of the batch processing model and I was already thinking in terms of what do we display on the screen, how does it fit on the screen, and where does it get stored.But eventually I figured out what it was he was doing. And Ken [Willis] was another key player. Hewas the museum’s auditor at that time. I remember him handing me an 8½ x 11 book about ½” thick called something like Teach Yourself Accounting. And it really was a workbook approach to learning accounting. So I learned all about double‑entry accountingand soup to nuts and where things had to balance and what accounts were and all that sort of stuff from that little book, within a couple of months. And that led me to think about some of the things that Tom had been doing. Because what Tom was really doing was taking the data that Mary [Babine], our bookkeeper, had in her manual ledger sheets and keypunching it and turning it into data that could be converted to reports. And because of my systems background and approach to things, I’d had enough at MIT to get me there, I began looking at, okay, what’s the better thing to do with the technology as it stands today to solve this problem? And I realized that we could evolve to the point where instead of Mary having to make all those journal entries on her manual pages with all the control totals that Tom was obsessed over legitimately, to be sure that all the pennies matches, we could begin to have her enter **–**

MIKE: What’s a control...?

BM: A control total is a – they would take a page of her ledger would have a total at the bottom of all the dollar amounts that that were entered, even though that number didn’t mean anything. But that could be used by the keypuncher to verify that that stack of cards matched what was actually in the original.

MIKE: But it was still being done, keypunched?

BM: Yes. But I began to think of, okay, how can we do this in a different way so instead of Mary having to do it, make the manual entries in her ledger, she would enter them into the computer directly. And the computer produces her ledger when she wants to see it that way, rather than her having to fill out all those things by hand. We were all beginning to get old and doing it all by handwriting was getting to be a real pain. So I couldn’t tell you the year at which that rolled out, but somewhere in the mid-‘70s I think we began to bring that out. And we ran it parallel with the two systems for, I think, at least six months, probably a year.

MIKE: Was Mary enthusiastic about it? Or was she skeptical [inaudible]?

BM: I remember her being a little bit skeptical. I think she had a little bit of concern about whether this was going to impact her job, you know, her job security. But this is long enough ago now that I don’t recall that in great detail. But I don’t think she was massively concerned. One of the things I learned throughout that entire process working with her and working with others at the museum was learning how to meet people where they are. Which I actually figured out from meeting six year olds where they were, explaining to them how to use a computer and what a keyboard was and why the letters were here and all that sort of stuff. That kind of mental shift I could apply to other situations. That is a learning model that has recurred time after time after time, of course. If you figure out how to meet people where they were, if you take enough time to listen to them, you can figure out everything you need to know about how to reach them with your new idea and present it in a way that it becomes, oh, their new idea, too. Which I think was part of the magic of that era. **[1:00 min] [INSERT AT END OF P 13]**

MIKE: And was that negotiation, that exploration between you and Tom a whole part of that kind of stuff as well?

BM: A little bit, but –

MIKE: [Explaining] to each other and all that kind of stuff?

BM: A little bit. But my memory of that interaction was that there was really very little of it. I remember thinking that I was really going to be able to take what he had designed and simply reimplement it on this new computer. But there was sufficient cultural different between the batch-oriented computing world and the timesharing or interaction computer world that it wasn’t going to be that straightforward. So I had to do a lot more inventiveness than I anticipated. Once I got over the hump that probably lasted me a day of “what did I walk into here” and began to approach it as a problem that I could solve, it got **interesting and exciting**. Which, again, is something that happened many, many times at the museum in many, many settings.

MIKE: Now what role did Phyl – we talked about Mary and Tom. What about David and Phyl in terms of how they impacted or were impacted by [inaudible]?

BM: I had some relatively minor, in terms of time, interactions with David. It was more, I guess, in the family model he was the grandfather. Keeping an eye over things just to be sure everything was going okay, but he didn’t have his fingers in the soup. Phyl and I spoke often and regularly. And I was running ideas past her, and again I was having to translate them into language that she would understand as a manager.

MIKE: Was she enthusiastic or risk-taking about taking this stuff on?

BM: I think she was reasonably risk-taking. Again, I unfortunately did not capture in my memory as much of the attitudes of the time as I might like to have, knowing what I know now. But my memory of her was that she was, if not enthusiastic, certainly accepting and encouraging, absolutely. Absolutely encouraging.

MIKE: Yeah. No, she was –

BM: ...expect from the norm of her – and particularly once you established a little bit of credibility with her. It didn’t take a whole lot. She would begin to go with you and trust you and encourage you forward.

MIKE: I think she was bright enough so that she could pick up what you were doing, even if she couldn’t [inaudible].

BM: Yes, oh, sure. And she didn’t know or care about the details about which bytes were going where in the computer. She cared about what came out in the reports and how readable the reports were. And I remember several times having discussions with her about changes we could make to the reports.

One of the curses that turned into a blessing, when Digital gave us the PDP11, **the printer** they gave us only took narrow paper. Now, previous to this time, everybody had getting all their printouts on the standard 15” wide green bar paper. Now we had this thing that could only do 8-1/2” wide paper and half an inch on each for –

MIKE: [Inaudible] regular binder [inaudible] Xerox it [inaudible].

BM: Right. Exactly. Exactly. So instead of giving people those green bar things, shortly we were giving them white paper with the Children's Museum logo screened on in official color as the background, printed by our own computer internally. And it was 8-1/2 x 11 so they could do whatever they wanted with it. It just made it much more manageable. It could fit in their mailboxes, mailslots. I remember many evenings spending it seemed like an hour but I’m sure it was ten minutes filing all the printouts from that month in people’s inboxes. I had dreamt of getting to the point where there was enough technology presence in the organization that people could be using the stuff from their desktops rather than dealing with the month reports. But the timing just didn’t work out that way. **[1:40 min]**

MIKE: So essentially you were, as the [server] provider, they were seen as a batch operation.

BM: Yes, right, that’s true.

MIKE: They weren’t interacting with it on their own computers.

BM: Right. Mary was at one point.

MIKE: Yes. And probably people were also [inaudible] that kind of stuff.

BM: No, that’s fine, you’re absolutely right.

MIKE: And I couldn’t get them adopt that thing. And all they could really do with these printouts was prepare clean records for the auditor for once a year. And everything else wasn’t really useful, real work. So we ended up [inaudible] sort of a guy in production whose whole job was to translate all the records and everything else into standalone things just to keep track of our [projects]. And I was there for 8-1/2 years and I couldn’t get – he didn’t understand –

BM: Just the organizational policies.

MIKE: Well, I don’t know. I think also there was one of the things that was really different about that when you get into this, but David Burnham was quite [actually involved in it], he said, “What you have to understand is if you get that level of information to department people, they are in a position of power”. And the people at the organizational level, essentially the vice president, that’s where they [inaudible] onto their power. And they weren’t about to give these back to organization.

BM: Yes. For a highly conventional organization, that would certainly be a problem.

MIKE: So back to where you were.

BM: And I’m sorry, I’ve lost track of where I was. You mentioned the addition of the backup pages. I think that was introduced by –

MIKE: Let’s talk about the [inaudible].

BM: Yup, the transaction details. The front pages, of course, were the numbers. Five columns with current month, [actual] budget, year-to-date [actual] budget and annual budget. And I remember the earlier version on the wide paper doing something different about highlighting the discrepancies in some way. I can’t recall if there was another column for the different between the two or what. But there was something like that. But all of a sudden when we had to fit it onto 8-1/2 x 11 paper, there wasn’t that room for that many columns. And that was when I came up with the idea of just flagging them, of putting a U in an unfavorable column so that you could quickly scan down and say, “Oh, these are the places where I’ve got trouble”. And then figure out how to deal with it. And the first go-round, those reports were what they were**. [getting the transaction pages to troubleshoot problems]** But then as I dug into the system more and as it became more complete in terms of Mary being able to do her data entry directly into the computer instead of to her ledger sheet and then transcribing it, I realized that it was equally possible to take the data once it was in the system and chew on it in different ways so that we could produce, in addition to the big general ledge for everything in the museum that she was seeing, we could take a slice of it for this individual project or this combination of projects and offer people the opportunity of getting that as a backup to their budget statement. That transaction detail did make things run a lot smoother from a managerial perspective. People who cared about managing the budget and who were concerned about [inaudible] that they were seeing that they couldn’t explain, suddenly had the detail available to them as opposed to having to go over and sit in Mary’s office, maybe dig through her big printout or go through the file cabinets, whatever it was. And I also promoted it in such a way that we could regulate who got that level of detail by the specific project, by the department into which their project [rolled] up or by the person who’s getting the printout. And you could actually give the same information, sliced and diced different ways, to different people. Which helped to manage some of the political concerns that I think you were alluding to. So we weren’t giving everybody in the world all the transaction details that showed the salary lines for each and every employee. And because of the way I happened to design the system – and this was a happenstance, good architecture says it happened but I didn’t know it, I didn’t consciously do it that was – I was able to capitalize on some of those design decisions to make it not that difficult to implement those changes as the system matured. **[1:35 min] [1:00+1:40+:1:35=4:15 min]**

**[RELOCATE FROM PP 8-9]**

MIKE: And was Tom in any way in involved in making those – or was that all yours?

BM: That was all mine. I don’t recall who did the, whose invention the U was. There were a couple of minor details like that. But, yeah, the breakdown of those reports in that way was mine.

MIKE: And how long into the.... It would be fun to – you don’t have to answer it now.

BM: Yeah, it would.

MIKE: But it would be fun to know, you know, because I also, I was looking at a very early printout we were getting from [inaudible] who – and again, I was thinking we didn’t have any printouts until you did your magic. But in fact we had these printouts, but they were terrific and certainly better than written on a ledger, but it didn’t have that capacity to.... Especially when we went to the business after the huge turnaround of my having the technology for distributing more responsibilities throughout the organization. We didn’t have the tools to do that. So it’s the going to see this results to make these things possible was not just because we had [inaudible].

BM: Sure, right.

MIKE: We couldn’t do the next level of [inaudible] for [inaudible] the whole ethos of the organization was based on this business of people sitting around solving problems, all that kind of thing and being very transparent, sharing it with everybody else, and there was no way you could match the – the tools weren’t there to make that possible to do that.

BM: Right. Until we got the reports to agree that they could be customized person by person. Of course, if somebody wanted to walk up and steal the reports out of your mailbox at 7:00 that night and see everything, they probably could. But nobody cared to because they had enough to do what they needed to do so there was no.... The political drive to undermine the system just wasn’t there. I mean, there may have been some isolated case that I’m not thinking of. But by and large, when you give people the tools to do their job, they don’t need to look around for other things. It’s when you start withholding things from people that those internal struggles begin to fester. While, again, I didn’t study organizational theory before I got into this, certainly I learned it in real life, which is the way I learned most things, actually. I’m trying to think of what more I need to say or should say about the budget and accounting piece. Were there other questions that you’re thinking of that are...?

MIKE: No. And it’s more than, you know, a huge amount of [inaudible].

BM**: [getting other organizations onto the system]** One of the other things that was happening around the time, of course, was – this was mid‑70s and nonprofit organizations were simultaneously springing up all over the place and they were condensing and coalescing and beginning to interact more than they ever had before. So we had the Metropolitan Cultural Alliance was formed. We also were seeing interest from the Mass. Council on the Arts & Humanities, which was providing some operating funding to many of these institutions. They were seeing the success we were having with some of our management tools and they had some interest in reproducing them. In addition, many of these institutions were going to many of the same corporate and foundation donors and looking for grants. So at one point Digital came to us and said, “We would like to give you this bigger computer if you will provide services to all these other nonprofits around who we’re giving little computers or terminals and printers to, but they don’t have the expertise to run it and make it happen”. So we took that on. That’s what got us into the business of being the business side of the house, as Mike referred to it. Which was, for me, a huge opportunity. I think it was for the museum an opportunity, too, because we certainly got some big benefits out of it. It got us more powerful hardware that we could do more things with educationally, as well as programmatically internally. It gave us the capacity to do things like computerize the collection, catalog and the membership and development system, get it really on line and to do the card reader-based access control system, you know, all those things, without us having to pay the full bill because we now had partners, effectively. We were part of the game. And before long I was moonlighting for a bunch of these organizations because they needed more help than the museum could afford to give my time up of. Horrible grammar, but you know. And so over the years I was building up this little evening consulting practice. And I go in and see these folks for an hour a month or something like that. It was not a big deal. Meanwhile, other things were happening for us. The museum was getting ready to move to Museum Wharf. I was on the Building Committee at that point, the board and staff committee that was responsible for getting us in there and for designing the space and all those things. Which was a fascinating project to me, because before I left MIT I had sort of settled on urban planning as an interest area. So learning what was going on in terms of that building being situated in a neighborhood – in the location where it was, neighborhood’s not quite the right word – as opposed to the genuine neighborhood that we were leaving was certainly interesting. But in addition to that there were all the how do you fit this function and this exhibit need and these offices and so forth into this big wool warehouse. So that was a sort of an exciting and challenging opportunity for me.

MIKE: I was also wondering whether, and Bill, you know, the guy who was the Project Manager for the move to the wharf, he was a top guy and wonderfully [inaudible] certainly, but he came up with the solution of, since the whole building was modular [inaudible], he came up with [inaudible] the idea of having use of the bays having its own [inaudible].

BM: Yup, exactly.

MIKE: It meant that you could have a space that has a very different climate, whether it was the use of a collection or –

BM: Computer room.

MIKE: Heavy-duty heat-generating computer.

BM: I wonder if that infrastructure is still there? I haven’t been to the museum in a long time myself.

MIKE: It is. But I think they had to redo parts of it.

BM: I’m sure they redid the controls since then. Yes. So I learned that all these things were going on, and the need for controlling them in some interesting way became apparent. The next thing I knew, I was designing and implementing a control system for the HVAC throughout the building, all 36 or however many of them there were, units. And this, again, was relatively uncharted territory. There were one or two big providers like Johnson Controls and so on. And there was no way we could afford their solution. But, because of our friends in Maynard at Digital and so forth, we did have access to other computer technology if we wanted to use it. So I came up with the idea of building, taking the same basic technology we’d be using – sorry, the same C technology we’d been using, not Basic – and moving it onto some microcomputers that were distributed throughout the building for some of those specific purposes and hitching them together with a connection back to our computer. Little did I know that that was a network. A few years later networks were all the rage, and now we can’t imagine living without a computer network, right? I actually had the software written on our larger computers that was downloading software over the wire into these little microcomputers to do their job. As far as I know, nobody else had done that before. And again, today, that’s actually, that’s core technology behind the newest software and the service architectures which download software from your service provider into your PC. So yet another place that we were ahead of our time and didn’t necessarily know it or plan to be. It just happened. Necessity is the mother of invention.

MIKE: But it happened often enough so that there must have been something going on there.

BM: Right, absolutely. The same thing happened with database technology. A friend of a friend had designed some full text retrieval software and somebody else who knew him at the museum introduced me to him. And we toppled something together out of that, just another version of it as one of our experiments for how we were going to handle the collection. And after I played with that for a little while and merged it with my understanding of how data is laid out in commercial data management systems like the journal ledger system, I said, “Well, what if we format the data this way and we provide these little tables that define how the data is formatted? And then that gives us all this flexibility because anything can read the table and know where the data is and know what to expect to find there and what form it’s going to be and manipulate and so forth.” Little did I know that I was designing, essentially, a relationship database, the same thing that the people at Berkeley and other leading universities were designing. They had a little more money to put behind marketing it so they got all the credit. And it was all being done at the same time. But it was kind of remarkable that it was all happening at the same time in so many different places for different reasons. Yes. I was able to take some of those concepts, merge them with this activity that was happening in other nonprofits in the area, and turn it into a spinoff business, effectively. Certainly when the museum moved to the wharf there were huge tradeoffs, as I’m sure a number of people you’ve spoken with have addressed. We lost our neighborhood sense. We lost the sense of, even within the staff, of functioning like a family, largely just due to the mass of work and the context in which we were situated. You know, it’s hard to have the same mental framework when you’re doing your work when you’re sitting in the middle of a 6x6 wool warehouse as opposed to when you’re sitting –

[END OF AUDIOTAPE SIDE A]

[BEGINNING OF AUDIOTAPE SIDE B]

BM: ... We lost the sense of, even within the staff, of functioning like a family, largely just due to the mass of work and the context in which we were situated. You know, it’s hard to have the same mental framework when you’re doing your work when you’re sitting in the middle of a 6x6 wool warehouse as opposed to when you’re sitting across the street from Jamaica Pond. And the stress level went way up, and I think the rewards of working at the museum went way down. I remember in the early years I was working seven days a week and it was no skin off my back whatsoever. It was completely natural. After we got downtown for a while and got through the charrette of getting into the building and the kind of emotional high of the grand opening and so forth and settled into day-to-day operations, things began to change. And I lost the sense of commitment to a mission that we once had. Meanwhile, these other things were popping up and I said, “Gee, you know, maybe I could make a go of that”. Lo and behold, I did. So in December of 1980, three of us left at the same time. I remember the museum had a wonderful going away party for us and I still have the souvenir book from that event with us now. This is one of my heirlooms.

MIKE: And who were the three people?

BM: Carol Harrigan and Ted [Faldis], I believe. And myself. So I left, well, my company was incorporated in 1980 and actually kicked off in 1981. And I had three clients, the Children's Museum, the New England Conservatory and Earthwatch. Two of those were museum clients previously. They were still museum clients. I was still using the museum computers to do all my work. I repeated the museum’s experience. Two blocks away from the museum I moved into another wool warehouse, got the walls sandblasted, I retrofitted rather like the Museum Wharf space did. And moved there into a 2000 sq. ft. space. Dirt cheap rent at the time, something like $3 a year, something ridiculous, per square foot. And had delusions of grandeur that I was going to build this really sizeable and thriving consulting and software business. Things didn’t work out quite that way. And as I began spending more and more time traveling to these other institutions and having less need for the museum’s computers because the personal computer was introduced, I ended up folding up that office and moving the company into my adjoining room in my house. I was living in a rented space in Wellesley at the time. Then we moved to Natick. And along the way, while I was still working at the museum as a consultant after I had left the staff, with managing their software and systems, I was still parking on Fan Pier and walking over and somebody broke into my car and stole the radio. That was how I ended up meeting my wife.

MIKE: Was that at Museum Wharf?

BM: Yes.

[END OF VIDEOTAPE]

[BEGINNING OF NEW VIDEOTAPE]

BM: I ended up with a total of 20 nonprofit clients and the business ran for 14 years. Didn’t have all 20 for the whole 14 years, of course. But unfortunately the business was brought to an end as a result of divorce because it was a family-owned business, and when we split up the assets it just wasn’t possible to keep it thriving. I kept a couple of those clients on still as side consulting customers. But in addition the whole industry had changed as well. More and more organizations were moving to PCs. I could not see – and for a number of years there was no way that any of our nonprofit clients could have reasonably switched over to the PC model because software for PCs was too expensive, even if they got the PCs donated to them by somebody and support was just – how on earth could you support all these things out there? There was no model for how that was going to happen. So it took a – nonprofits in general were certainly on the trailing edge of adopting of that technology change. Not a big surprise. And not a tragedy, either, I don’t think. But after that I had to find a job somewhere, moved to Virginia, worked there for ten years for a small company that was then bought up by Oracle. So I worked for Oracle for a bunch of years. And bits and pieces of technology that were developed at the museum occasionally managed to work their way into – I mean, little bits and pieces, you know, like a dozen lines of code or something, not a lot, but things that were invented there played their role in other things. Because of the way UNIX was evolving at the time, we were working on it in the 70s, most of the work that I was doing was being contributed to the UNIX community globally at the time. There were multiple user organizations. And I ran our database product, for example, called the Information System. That was one of the things that went out. When I migrated our software down to work on those little microcomputers I had to produce a new operating system that would run that environment, which I called Tynex. And you can even find references to that on the internet today. There were about three that came out at the same time, but that’s out there. And as of a few years ago, maybe three years ago now, I was told that some of that stuff was still running at a place in Australia. Long time later. Thirty years.

MIKE: So looking back on it, what was different or the same about the museum vs. other places you worked in your life, including your own [inaudible]?

BM: Not much different between the museum and my own. I think I took a lot of what I learned at the museum organizationally and it worked so well.

MIKE: [Inaudible].

BM: Yes. And replicated it to the extent that I could. But I think that the notion that if you can identify and hire good people up front and then give them the tools they need and step out of their way you’re going to succeed. It’s a good rule of thumb. And things don’t always work out that way. Sometimes there’s some external circumstance like something funny happens in the stock market. But time and time again that has proved itself. And I have tried to use that same model in small and mid-sized departments of bigger enterprises. If it doesn’t match the corporate culture it’s very hard to make it fly. Success is limited by the size of the umbrella that you’re under. But it was truly remarkable the way that people that happened to be attracted to the museum were, I think uniformly, creative, energetic, enthusiastic, encouraging of each other, supportive of each other. You had all the attributes that you would want in a well-designed family. And if we could figure out what it was that attracted those people – I mean, we could figure out pieces of it, of course – but how we did it so effectively is to me one of the big open questions. Of course, creative people tend to attract each other. So that’s part of it is getting the right seeds planted and allowing them to show up and giving them some visibility. Too often creative people are put in the corner somewhere and left to do their creative thing while the people with the green eyeshades or whatever are over in the main space.

MIKE: Why did it infect beyond the “creative” people? What do you think that was? Why did so many people or even people that were doing more routine jobs still got it [inaudible]?

BM: I think that creativity and enthusiasm are infectious. And my perception is that if you put creative people into a mix, into a setting where people aren’t creative, eventually the creativity overwhelms – maybe not overwhelms, but does infiltrate the rest of the organization. It may take time depending on the interpersonal factors on the one-on-one level. But I have seen that happen before, too, where there were some really stodgy organizations, and you put a couple of creative people in there who are still to look over the stodginess and are committed to their own mission and to the organization’s mission enough then that commitment begins to spread to the others as well. And that begins to feed an appetite for some of the creativity among people who have not been creative heretofore.

[DISCUSS ADDING SOME THINGS THAT ARE OUT OF ORDER BUT BE EDITED IN LATER]

BM: One of the things that I particularly valued about the museum in Jamaica Plain which I think we lost when we moved was the whole neighborhood and community context. And I also mentioned that I had begun to get this training in urban planning. After I moved to Virginia, I put – my last day in the Boston area I was living in a house in Natick – I put my arm around my next door neighbor and said, “I’ll be back”. Because she was unhappy to see me moving. I figured I’d be back in six months. And for six months every weekend I was driving back to Boston just because I wanted to be here. It didn’t happen. Eleven years later I came back, she’s still there, and I now live across the street. I landed in the same neighborhood, across the street from where I was. And I have three of the same neighbors that I had 11 years ago. And it is truly a community neighborhood experience. Shortly after I landed there, an opening appeared on the town strategic planning oversight committee. Natick has done it’s first five-year strategic plan ever. And we knew that we wanted to do it in a way that engaged the entire community because there was some infighting between residents and the government. Darned if we didn’t use some of the same techniques. Reaching out into the community and being accessible to everybody. We held weekend conferences and forums for people to come to and give their ideas. We had put charts up on the wall and everybody was writing up their ideas about everything they liked least and loved most about where they lived and why they wanted it, what brought them to the town or why they wanted to stay. And all that stuff got digested and chewed and sliced and diced a whole bunch of different ways, computerized and not. And it turned into one of the first strategic plans for a town in Massachusetts. And I had the opportunity to be there. And I wouldn’t have had that opportunity if I hadn’t – I wouldn’t have been in the place to be able to contribute to it if I hadn’t had the background at the museum. So sometimes things flow in very unexpected ways.

Oh, yes. One of the other less exciting things that happened, Mike mentioned that Kate has epilepsy. So did I, it turns out. I was biking home. I was living in Somerville at the time, biking home from Jamaica Plain to Somerville, hit this little tiny blob in the pavement, maybe a half an inch high. But this was before people wore helmets, right? So I landed on my head on the curb on the sidewalk. Fortunately, there was somebody from the museum driving behind in a car who saw me and got me to a hospital. The hospital did not treat me. I was there from Thursday night until Saturday having never seen a doctor. Yes, I discharged myself. This was at Mount Auburn. But as far as anybody knew then, it was just a bad concussion. And it hurt like the heck. But I took the bus home from Mount Auburn to Central Square where I was living at the time. Fifteen years later I had a seizure in the middle of the night, a grand mal seizure. And they believe it was that head injury 15 years earlier. So a traumatic brain injury is interesting.

MIKE: [Inaudible] quite aside from my stroke I also, at the AAM meeting in Boston, I fell out of bed and landed on my head and it kept hurting [inaudible]. And I finally went in. They did a CAT Scan, and they [found] a [subdermal] hematoma, which is probably what you had, some bleeding in there.

BM: But for it to wait 15 years to materialize was pretty remarkable, and that it morphed and came and went and was medically treated and wasn’t, and it eventually, after more or less, let’s see, ’92 to ’98, six years of successful medication treatment – I’m sorry ’87 to ’98, 11 years – the medical stopped responding and I ended up having to go in for surgery. I had brain surgery in 2002. [Inaudible] [percents]. But that’s all the museum’s fault. If they’d been [inaudible]. And the fact I was only make $25 a week as a work-study student might have had something to do with it, too.

MIKE: Well, you have my sympathies but I won’t take any responsibility.

BM: Absolutely you shouldn’t. Absolutely shouldn’t.

MIKE: Well, this is great. Anything else? Because this is terrific. We’ve got to get Mary [inaudible] in here, too, [inaudible] so we could complete all of these players together [inaudible].

BM: Sure. Where is Mary?

MIKE: Well, Mike said that she is, he bumped into her.

BM: Oh, that’s right, you did, yes. So she’s in the area somewhere. Yup.

 [END OF RECORDING]