Oral History Interview with

Peggy Kidwell

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Via Zoom

Conducted by William Aspray

Charles Babbage Institute

Abstract:

This is one in a series of interviews on the early history of the history of computing. In this interview, Dr. Peggy Kidwell describes her upbringing and education, and her career working primarily with the mathematical collections at the Smithsonian's National Museum of American History. Among other topics, she discusses her work with Dr. Uta Merzbach and her collaboration with Dr. Paul Ceruzzi. She also gives her perspective on the general ecology of the history of computing and information processing.

Aspray: Okay, so this is the 22nd of January, 2021. This is an oral history interview with Peggy Kidwell, the interviewer is William Aspray. This is being done over Zoom. Let's start by asking you to tell me about the year in which you were born and the place in which you were born and something about your family.

Kidwell: Okay. Well, I come from a family of teachers. All of my grandparents and my parents taught at various times. When I was born, my father was teaching at the University of Missouri at Columbia. So that's where I was born. He very quickly came to the Carnegie Institution of Washington and gave up teaching. I grew up in Silver Spring, Maryland. My mother was not teaching when I was born, she was a conventional married woman of the fifties. But as soon as she could, she started teaching math at a local community college.

Aspray: So, she had been a math….

Kidwell: Both my parents were math majors as undergraduates. My father got his PhD in physics and my mother got her MA in psychology, but I think that being trained as a psychologist was eminently useful in running the department of math teachers.

Aspray: Yes, I can imagine. Were you a good student as you were growing up?

Kidwell: I did well in high school.

Aspray: What about your interests, your academic interests? Were there fields that were of more interest to you than others?

Kidwell: I didn't especially like gym, but other than that, I greatly enjoyed school.

Aspray: What about hobbies or other interests that you had as you were growing up?

Kidwell: I have some interests in music and my father also had a great deal of interest in music. So, we played the flute together, and I did a lot of reading of good fiction and not so good fiction.

Aspray: Did you have ideas as you were growing up (before you went off to college) about what you might want to do with your life?

Kidwell: I was totally uncertain. My first couple years of college took place in an era of considerable political unrest. I worked in a settlement house in St. Louis one summer and in a program for educating students in Troy, New York another summer, and decided that I was not really suited to being a political radical, or even a modest reformer.

Aspray: Right. Where did you go to college and why did you choose to go there?

Kidwell: My parents were from the Midwest originally. My sister had gone to Carleton College. I visited her at Carleton at Easter. It was snowing. I decided that was too cold, but I liked the idea of going to college in the Midwest. So, I went to Grinnell College in Iowa.

Aspray: It's not that much less snowy and cold there.

Kidwell: No, it was very cold and snowy.

Aspray: Right. I've actually been in both towns within the last two years.

Kidwell: Oh, good.

Aspray: What was your major in college? Or did you have multiple majors?

Kidwell: Well, I was planning to be a math major and then I discovered that college mathematics was considerably different from high school mathematics. And after some thought I decided to be a physics major instead. So, that was my official major.

Aspray: Right. After you finished college, did you go on straight to graduate school?

Kidwell: Well, yes and no. In my senior year of college, I went to Argonne National Lab. They had an exchange such that you could spend a semester at Argonne. I worked in the high energy physics lab. I was working on a problem of reducing a lot of data that had been collected for somebody who was working on his PhD. He didn't find at all what he was looking for. So, they decided to pass this project on to an undergraduate to see if an undergraduate could find something. I didn't. I also discovered that while I was by no means the highest paid woman in the Argonne high energy physics lab (there were female administrators and technicians paid more). as a college senior I was the only woman going to the high energy physics symposia. I also discovered that for me, the most interesting things to read at the library were history of science books (there was no fiction).

Aspray: Right.

Kidwell: It was a highly technical library. So, I decided to apply to Yale and Hopkins in history of science and to Princeton physics. I figured if I got into Princeton in physics, maybe I should be a physicist, but I really hoped I wouldn't. And I didn't. I did get into Yale in history of science and went there.

Aspray: Who was your dissertation supervisor?

Kidwell: Martin Klein.

Aspray: Martin Klein, okay. In your years [of] either high school or college or graduate school, were there particular people who had a shaping influence on you or your career?

Kidwell: Yes, many, but it would be hard to pick out. For example, I had a high school English teacher who encouraged me to think about writing. I was the editor of the literary magazine when I was a senior. In college I had a physics professor who at least persuaded me to go and try physics, but I just had a lot of good teachers along the way.

Aspray: Okay. Had you had any experience with computers or calculating instruments during these periods of time we've talked about?

Kidwell: Well, when I gave up on being a political reformer in the summer of 1970, I stayed in Grinnell and worked for a guy named Beryl Clotfelter, who was a professor in astronomy and physics. He had us writing programs. There was something called WATFOR, which was a form of Fortran. So that was, I learned Fortran. It was at a time when Grinnell did not have a computer on campus. They had a connection to the IBM 360 that was in Iowa City at the University of Iowa. The people who used it most had been the business office, which was located in downtown Grinnell, not on campus. If you wanted to write a program, you went downtown, typed up the cards, handed them in, got a printout back the next day and discovered what typo you'd made.

Aspray: Right.

Kidwell: So, I did that for 10 weeks in a summer. That was the first I programmed really.

Aspray: What did you write your doctoral dissertation about?

Kidwell: Solar energy and measurements of solar radiation as they'd been made from the 17th century to the 1850s. It was a terrible topic – much too big.

Aspray: So many students do that though.

Kidwell: Yes.

Aspray: What were your plans for after you finished your degree?

Kidwell: Well, I got married before I finished my degree. And Mark, my late husband, got a job at Amherst College, and I've always been a strong believer in post-marital cohabitation.

Aspray: Yes.

Kidwell: We all have our fundamental principles.

Aspray: Right.

Kidwell: So, I went up with him and finished my dissertation and then worked some at WPI [Worcester Polytechnic Institute], but just for a term and worked as a lexicographer at Merriam-Webster Dictionary Company, and then decided that I would try and actually get some writing done and got a grant from the American Philosophical Society to do some research in Cambridge, Massachusetts on Cecilia Payne-Gaposchkin and her work in astronomy and astrophysics. So that's really what occupied me until I got a Smithsonian postdoc in 1982.

Aspray: Okay. So, you'd finished your degree when?

Kidwell: '79. That's a long time.

Aspray: Oh, I don't know. Anyway, so you had a Smithsonian postdoc that started in '82. What were your responsibilities?

Kidwell: I was writing about women in astronomy. I was thinking of writing a full biography of Payne-Gaposchkin. She'd written an autobiography, and I'd written an introduction to it. I was looking generally at women in astronomy and working with Debby Warner, who would become a colleague – we're still colleagues.

Aspray: Right. So, do you want to tell me [about your Smithsonian experiences]. I'm not sure I have the right set of questions to ask you about your Smithsonian experiences. Were they continuous from that point on?

Kidwell: Well, I was in a fortunate position that I did not have to get [a job]... that Mark had a job. He moved from Amherst to the Naval Academy.

Aspray: Right.

Kidwell: So, we moved to Annapolis, where I still live. So, I had one year of paid postdoc and another year where I just stayed around. Then in the summer of '84, I started working in the mathematics collections as a civil servant.

Aspray: Was this with Uta Merzbach?

Kidwell: It was.

Aspray: What did you do in this work?

Kidwell: I was a museum technician, which means that I went down and looked at the existing mathematics exhibit every day to see if everything was still there and processed new objects as they came into the collection. That particular year Uta was working particularly on processing and summarizing oral histories, which would have been actually compiled back in the early seventies. So, I spent a fair amount of time reading oral histories and writing summaries of them. It was a good way for someone who had absolutely no background in history of computing to at least learn some names.

Aspray: I see. So, these were the oral histories on the history of computing that you're referring?

Kidwell: Yes.

Aspray: The ones that Henry Tropp and company had been involved [with].

Kidwell: Yes. Robina Mapstone was the one who did the really good ones. She was a reporter and...

Aspray: I had forgotten her name. I remembered the relative quality of them, but I couldn't remember her name. So, okay. Could you spend some time telling me about Uta? I mean, I had a great admiration for Uta, but I was also a little bit scared of Uta as well.

Kidwell: Yes. Well, Dr. Merzbach as she preferred to be called, although I was allowed to call her Uta, was a remarkable woman. She came to the United States after having [been] in an internment camp in World War II, because either her mother or father was Jewish. They took refuge in this country after the war and went to Texas and got academic positions. Uta was extremely proud of being an American and of being a Texan. For example, she let me know that

she played in a marching band as a high school student, which was the epitome of growing up Texan. She got her early degrees in math and taught math in Texas, and then went to Harvard (officially Radcliffe College) and did graduate work in history of science and history of mathematics.

Aspray: With whom?

Kidwell: I.B. Cohen and Garrett Birkoff.

Aspray: And could you tell me about the projects that, Dr Merzbach had done during over the course of years, and the nature of the collection in mathematics?

Kidwell: Well, the objects and mathematics collections had been accumulating at the museum since the 19th century, when a few people went to Europe and bought things like antique sundials. Technical objects were collected more systematically around the beginning of the 20th century, when the U.S. patent office dispersed its collection of patent models. There also were things that came from the Department of the Interior, specifically the Bureau of Education. It had had a museum and dispersed its collection. There also were things that came, a little later, from manufacturers, like Burroughs and Felt and Tarrant, that were making adding machines and either wanted to have their products on exhibit or offered historic collections to the museum. Then the real impetus came in the 1950s with the plans to establish a Museum of History and Technology. [These plans] actually came into fruition in 1964 when the museum opened (the mathematics and computer exhibits would open the next year). Uta was basically brought on to collect in the area of mathematics and computing. And she did, although her initial research interests had been in more straightforward 19th century mathematics.

Aspray: Okay. What kind of traffic or interest was there in these collections during this period of time?

Kidwell: Well, you have to realize that in 1965, most people had not seen a computer.

Aspray: Yes.

Kidwell: MHT was a place where people could see historic computers, like the ENIAC, the IAS, and then some of aerospace computing because the National Air and Space Museum hadn't been established yet. There also were bits and pieces of the UNIVAC 1. It was a way that Americans could encounter computing devices. It was also a place where people thinking about getting rid of computers could turn. For example, Harvard getting rid of the Mark 1, could give a third of it to IBM, and keep a third of it at Harvard, and give a third of it to the Smithsonian and it would be conserved.

Aspray: Some of the standalone historic computing machines have been on long-term exhibit in the museum, is that correct?

Kidwell: The paperwork regarding to the depositers [of] computers at the museum is complicated. Let us put it that [way].

Aspray: So, this is a hard question to answer, I guess?

Kidwell: Well, it differed a great deal from [donation to donation]. For example, the IAS was a straightforward donation. The ENIAC was a government transfer.

Aspray: That's not what I'm [trying to get at]. I'm interested in knowing when the random museum visitor came in, before there were concerted efforts to have a major computer exhibit, what kinds of things would they see? Were there things on display permanently and how extensive were they, and so on?

Kidwell: Well, in the mid-1960s, when the museum opened, there was a mathematics exhibit that included computers. And as more things came to the museum, some of them were added to this exhibit. Historically, the exhibit started with astrolabes, and would then go on and talk about calculating devices and slide rules and a number of computing instruments of various sorts, [such as] harmonic analyzers and differential analyzers. And then go on to talk about the ENIAC and the IAS. So, bits and pieces of a lot of stuff was arranged in an exhibit. The oldest stuff was at the front, the next oldest in another room, and the most recent in a third.

Aspray: And this persisted for a while?

Kidwell: Well, the exhibit went up in the mid-sixties and down in the mid-eighties, but it had had substitutions along the way.

Aspray: Were there people coming in to use the collections for research purposes?

Kidwell: Yes.

Aspray: Are there things that you can remember as particularly notable in terms of research?

Kidwell: Well, I didn't work with the computer collections for very long. I only did the computer collections basically from '84 to '85. So, I didn't see very many visiting scholars.

Aspray: Right.

Kidwell: For example, when I was there, I think it was when Apple decided… that's just not your question, but I'll say it anyway. When Apple decided that they were a national corporation in the mid-1980s, they decided to give the museum a couple of copies of its Macintoshes. Not that the museum wouldn't go on to have earlier Macs, but the 1980s donation was something of a statement that: we're on the corporate stage, so we're going to give the objects to the national museum.. Something that IBM had been doing for years, but it's curious. But I must admit that I do not recollect who came in, in that time, to look at stuff.

Aspray: Okay. What about with more traditionally mathematical things?

Kidwell: Well, there the line is so blurred.

Aspray: I was trying to get a sense overall for the level of the museum's resources for carrying out historical research in these general areas of mathematics and calculation.

Kidwell: Well, one thing we did was give out a lot of pictures, actually sell them. That is to say, a lot of people were trying to write books. This was not a time when you could [not] easily download something from the web since the web didn't exist. So, we have a list of the standard things that most people asked for, and then could arrange to have photography done of other things. That was probably at the most popular level. Although there were certainly scholars who wanted pictures of things ranging from astrolabes to bits of the ENIAC and we would supply to them. Let me think a minute… for example, I think Paul [Ceruzzi] came over when he was working on his dissertation, but I have no idea what we supplied him with... and I don't know whether that was when I was there yet even.

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Aspray: Right. This was the dissertation that was about Zuse, Stibitz, and Aiken, right?

Kidwell: Right. That would have been the Aiken part.

Aspray: Right. And just for the record it's Paul Ceruzzi?

Kidwell: Yes, Paul Ceruzzi.

Aspray: What about activity in the history of mathematics area, mathematics education or other kinds of development?

Kidwell: Uta had an annual symposium on history of mathematics, which was largely attended by mathematicians with an interest in history of mathematics and which was very much oriented toward texts. I think she continued this [at the] University of Texas after she retired.

Aspray: I'm not sure.

Kidwell: Through the math department. So, in any event, that was one of the few regularly scheduled things. She was also very much interested in women in mathematics and had a convocation in the early eighties where she brought in women who had received their PhDs in mathematics before 1930. Grace Hopper and other good people came at time.

Aspray: Right.

Kidwell: She also maintained a large network of acquaintances outside the museum, and the museum also has benefited a great deal over the years from volunteers, e.g. Judy Green, who continues to be a volunteer. She came in the early eighties, I'm told, I was not quite there yet and was a postdoc. I'm sure there were other people who were postdocs. For example, much later

Dave Roberts would come as a postdoc in math and would have a fellowship. So, there was a fellowship program that brought people in over the years.

Aspray: Are there other things from this era that I should be asking about, but I'm not thinking of to ask about?

Kidwell: Well, one thing that I hope I have conveyed is that my interest in history of computing is object driven. And the research I have done, and the research I have helped other people to do, has tended to be about objects or tying them with other materials, which include documentation in history of computing. So, Janet Abbate came down at some point when she was working on some project. It's a collection-driven job.

Aspray: Can you tell me about some of the research that you've done along these lines?

Kidwell: Well, the first book I did, that I persuaded Paul to be the coauthor, was called *Landmarks in Digital Computing*. It started out as captions for the photos that we gave out most frequently. Then it expanded more generally just to give very basic information as to what things were called, what their rough chronological sequence was, and where people could find out more about them. That was a SI Press publication because it was SI objects. Other articles were specific articles about kinds of objects in the collections: who made them, who used them, why they were important to the history of computing and sometimes to larger themes. For example, it turned out that we had a patent model that had been given to the museum as an early example of a direct multiplication machine, which is a machine that you could put in one number and put in a second number and turn a crank and get the product, which was wonderful in its time. You didn't have to turn the crank seven times to multiply by seven, which is what you had had to do

[previously]. But it also was an invention of Ramón Verea who was a Spaniard who left Spain for Cuba in the 1850s. He came to New York and patented calculating machine. Verea said that he wasn't going to try and develop the patent, but he wanted to show that a Spaniard could invent as well as an American. He also founded one of the first Spanish language newspapers in New York. Who would think that this little patent model had that connection?

Aspray: Right.

Kidwell: Then at the time of the Spanish-American War in the 1890s, he didn't like what was going on. He left the United States and ended up in Argentina. So that's the kind of story that I like to be able to tease out of an object.

Aspray: The museum eventually invested heavily in a major computer exhibit.

Kidwell: Yes, the Information Age exhibit.

Aspray: David Allison, for example, and other people were involved as well. Before turning to that, what else should I know about the period prior to that?

Kidwell: I think that one should be aware that, although corporate sponsors had been extremely generous to the museum over the years, the federal government had paid the brunt of doing exhibits. This was not really true by the mid-eighties. So, the museum was really walking a fine line between corporate sponsorship and exhibition.

Aspray: Yes. Were there particular instances where that issue came to the fore and in your division?

Kidwell: I think it was more that people working at the museum felt less independent of corporate interests than they might have previously.

Aspray: This just a necessity of economics, or did it have to do with the leadership of the museum and their attitudes?

Kidwell: That's a good historical question, but above my pay grade.

Aspray: Okay. When was it that Dr Merzbach left?

Kidwell: She retired in 1987.

Aspray: And it was a retirement. That was the cause for the [departure]?

Kidwell: Well, she'd been there 20 years, so she could retire.

Aspray: Did she continue to have any close relationship with the museum after she retired?

Kidwell: Well, she was always extraordinarily helpful when I wrote her for advice, and she remained very close to some of the people, like Judy Green, who had been volunteers with her. She retained strong [ties], she was a woman with wonderful friendships. Those who were her friends, she remained friends. When she left, she had intended to retire entirely to Texas, but had a friend in Massachusetts who needed care. So, she spent much of her early retirement taking care of an old friend of hers.

Aspray: Yes, now that you mentioned that, I remember that. What happened with responsibility for this division after she retired?

Kidwell: Well, before she retired in 1985, David Allison had taken over responsibility for the computer collection, and she had retained responsibility for the mathematics collection. I had a choice, and I chose the mathematics collection. Someone else who was very good at processing objects came and worked with the computer stuff, which desperately needed it.

Aspray: And who was that?

Kidwell: Ann Seeger.

Aspray: Oh, I know that name, but I…

Kidwell: She was the technician. She had worked with Jon Eklund and had taken care of the chemistry collection. And, when Jon began working with computers, so did Ann.

Aspray: It may have been a practical necessity to divide up mathematics and computing, but there also could have been some negative implications of that in terms of relationships between story lines, artifacts, and so on. Can you talk about that concern?

Kidwell: I think the decision was more a matter of personality than an intellectual [one]. But there was [a lot] going on in computing. This was the early eighties, when the PC was becoming dominant. I mean, it was no longer a time when you would come to the Smithsonian and see a computer for the first time.

Aspray: Yes.

Kidwell: Any number of people owned computers; or if they didn't own them, they at least saw them all the time. Collecting objects of that sort had a special appeal to Jon Eklund, who was a

real enthusiast for PCs. Dr Merzbach wasn't as interested in them, but Jon really wanted to collect in that area and was not as interested in the history of chemistry as he might once have been. So, he took over a lot of the collecting responsibilities. But I was not in on the decision making.

Aspray: My memory, which may be faulty, is that David Allison had been hired primarily for this major exhibit that was being put together. Though he continued well after that exhibit was completed.

Kidwell: Right. But I would say David's real interests were administration and exhibits. He went on from being a curator to being the head of a division to being the head of office of curatorial affairs. He spent much of his time directing exhibit projects in areas quite far from computing or even information technology. He directed exhibits in military history, for example, which was an area of his own historical interest, but was not something that would necessarily be within the interests of somebody doing history of information technology.

Aspray: Right. And do you have things you want to tell me about the creation of this large exhibit from the inside [perspective]?

Kidwell: I had very little to do with it.

Aspray: I know [that]. But, nonetheless, you're more on the scene than us outsiders who were involved in the history of computing.

Kidwell: Well, the one thing that one should emphasize is that this began as a collaborative effort between Uta, Barney Finn, David Allison, Steve Lubar, and Jon Eklund. And then there

were a few of us other, just subsidiary people who handled objects. But it was envisioned as much [about] telling the history of communications and telegraphy and telephony as [about] history of computing devices. So, that aspect of history of computing, which had not been in the mathematics exhibit, was very much incorporated into this new exhibit – information technology and not strictly computing devices.

Aspray: Right. If I remember correctly, the beginning rooms of this exhibit had two strands of computing and communication that were separate when covering the period up until the ENIAC.

Kidwell: And the computing part included things about information processing, like sorting goods to be sent to market. Which would not have necessarily been considered part of mathematics. Not that we didn't have cash registers, but…

Aspray: Yes. Can you tell me about what happened with your career going on?

Kidwell: Well, I really stuck with mathematics collections and did a series of small exhibits on topics ranging from computers, the history of the term "computer bug" from Thomas Edison to Grace Hopper and beyond, back to Simeon de Witt. De Witt was in a surveyor general to George Washington and the Continental Army, but he made this little planisphere (a moveable star map), which happens to have ended up in the collections. So, I did an exhibit on that. But again, it's the exhibits were object-driven as much as reflecting current scholarship. I have done small exhibits on topics like the 50th anniversary of COBOL or the most recent one, which I did with several other people, on "my computing device." This is about personally operated and owned computing devices, starting with some of the inventions of the 19th century and going to iPhones, iPads, and such.

Aspray: Has there continued to be some kind of symposium or conference or workshops in the history of mathematics since Uta switched environment?

Kidwell: No, we've more going towards putting stuff online. I have also been a member of the MAA [Mathematical Association of America] and HOMSIGMA, a special interest group in the MAA devoted to history of mathematics. I've also coauthored a book on mathematics teaching apparatus, which corresponded to a small exhibit. But no, we haven't tried to organize the mathematicians.

Aspray: I see. You mentioned earlier that you had worked together with Paul Ceruzzi. Of course, Paul is over in the Air and Space Museum. What was the interaction between curators in the two museums over anything in these general areas?

Kidwell: I would say that the interactions were as much personal friendship as intellectual endeavors. For example, I had worked with David DeVorkin, who is a curator in history of astronomy at NASM, before I came to the Smithsonian and we've been friends ever since. I've never planned an exhibit at NASM, although others from American History have, but not in history of computing.

Aspray: Was there a joint historical colloquium that people from more than one museum might have regularly attended?

Kidwell: Oh yeah. Paul Forman, is his name familiar?

Aspray: I know Paul.

Kidwell: He started a colloquium at Air and Space that still meets at Air and Space although Paul is long retired. Its concern was 20th century and 21st century science. There is also a colloquium series in American history, which is topics in American history. I go every week, but people now Zoom in from all over the world.

Aspray: Right. I have some other questions to ask you about the more general ecology of the history of computing field. But before doing that, I wanted to see if there are other things about the Smithsonian we should talk about.

Kidwell: Nothing comes to mind.

Aspray: How did you get up to speed about the history of computing to do the things that you needed to do? Where did you learn about it? Who did you talk to? Where did you go? What kinds of meetings did you go to, and so on?

Kidwell: Well, someone [might say] that I never got up to speed in the history of computing! This is always a possibility because there are entire areas of history of computing that I know nothing about. I think most people would admit that.

Aspray: Yes, but it was just good taste.

Kidwell: I mean, my primary professional association has remained with the History of Science Society. I am a member of the American Physical Society and the MAA. Although I have made use of all kinds of good things, I have not joined that [history of computing] community as hard as I might have. I have taken an object-oriented approach from the beginning, [which] has involved looking at objects, looking at documentation about objects, reading books, like Mike

Williams's book on computing technology and Martin Campbell-Kelly, the kinds of things he's written, looking at your stuff on the IAS, though I couldn't recite it back to you now.

Aspray: Neither can I.

Kidwell: I have served on the editorial board of the Annals of the History of Computing and also the editorial board of Information and Culture. But it has not been a systematic attempt to keep up with the community.

Aspray: Since you had such a long period of connection to Annals, are there things that you can tell me that reflect on the changes over time in the journal?

Kidwell: I think it began largely as a place for personal reminiscences. Now that there is a well-established community of professional historians whose primary interest is defined in some way to be history of computing or history of information technology, then you have articles in the Annals and articles elsewhere, which are coming out in issues from that perspective.

Aspray: I suppose commented to that, is that the people who were editors in chief, or large numbers of members of the editorial board, early on [had] been computer scientists, but increasingly [Annals has involved] professionally trained historians.

Kidwell: Professionally trained historians, although certainly the historical work of people like David Grier is really useful.

Aspray: Right.

Kidwell: These boundaries are not too fixed. And the insights offered by people who actually know what's going on in the field are also extremely valuable.

Aspray: I did not mean to make a two-culture comment when I made that utterance. But anyway, yes. What have we not talked about that we should talk about?

Kidwell: Well, you had asked about early sources in the history of computing.

Aspray: Yes.

Kidwell: When comes to that, not from a point of view of people, but from the point of view of objects, I think that one should mention the importance of institutions in preserving objects that might not be the kinds of institutions one would first of all think of. For example, the NCR patent department saved cash registers - only those manufactured by NCR, but by other firms - for decades. They are now at a Dayton History [a museum] in Dayton, Ohio. Similarly - you would have talked to Jim Cortada, so you would know something as to how this came to be - IBM both preserved a collection of its own tabulating equipment and sponsored histories of electronic computing that are certainly extremely useful. And Felt and Tarrant, this little adding machine company out in Chicago, had, as its chair Mr. Felt, who was really interested in calculating machines and adding machines and went out and collected them. After his death, they came to the Smithsonian. So, if you're looking at preserving objects in the history of computing, I think you look not only to long-standing institutions like the Deutsches Museum or the Science Museum, or even the Smithsonian, but you look to the individual corporations. And I'm not sure how much that carries over into other sources in history of computing, but it is something that I figured I have a perspective on that others might not.

Aspray: And do you think that there has been a continuing recognition of the value of these artifacts and organization companies have continued, for example, to take care of them over time?

Kidwell: Well, I think that often the company goes for a certain amount of time and then decides, no, we can't do this. And they give it to another institution, which is fine. But I think, and this is something I've been wondering about quite a bit these days, now an awful lot of the computer industry is devoted to producing intangible products.

Aspray: Right.

Kidwell: And preserving those products isn't necessarily… well, they just don't have the nice oak construction of an early Hollerith tabulating machine.

Aspray: Yes.

Kidwell: So, how are you going to preserve these electronic digital objects, which are not tangible? [It] is really hard.

Aspray: How are you going to recreate the user experience with these things?

Kidwell: Well, I mean, how are you going to preserve the software?

Aspray: Yes.

Kidwell: So, why is a company going to be motivated to want to preserve? I mean, I'm not sure that people's memories of what they once saw on a screen are the same as people's memories of this large object that we used to spend hours and hours sitting at, or standing by, or fiddling with.

And I'm not suggesting that people don't do their fiddling, but I'm not sure it's suggested by the tangible object.

Aspray: So, what does one do?

Kidwell: I don't know. I mean, I went to a colloquium at the museum yesterday - a talk at the museum by our new digital archivist - and I had great sympathy for her. It is a large challenge.

Aspray: You mentioned, just a moment ago, both the Deutsches Museum and the Science Museum. Are there things that you can say in comparison to the Smithsonian in this area of mathematics, mathematical instruments, or calculating instruments about collections interest, and so on, or for that matter about interactions between these three museums?

Kidwell: Well, we interact all the time. There is something called the Scientific Instrument Society, and there's a Scientific Instrument Commission of the International Union of the History of Science that both are active in bringing together museum people to look at things. Increasingly, the collections are online, so you don't necessarily have to go to another place to look at them. Barney Finn (an emeritus curator at NMAH) has done a lot with other museum curators through an organization called Artefacets that meets regularly to discuss museum collection in history of science and technology. So, there are such things. All national museums are subject to national fluctuations in resources, as well as changing senses of what the nation should be doing. So, people's careers come and go.

Aspray: Do you have remarks to make about other players in this ecology of the history of computing, the Babbage Institute, the Computer History Museum, the museum in Paderborn, and so on?

Kidwell: Many good places, many good places. They've done very helpful things. One thing I would do is mention that there are also government museums. So, for example, NSA sponsors the National Cryptologic Museum, which has a remarkable collection of computer software and hardware as devoted to code breaking. And that's the kind of institution that is easy to forget about. I don't mean in any way to denigrate the CBI or the Computer History Museum, but I do think that I should mention these others as a resource.

Aspray: Indeed. They're part of the ecology, right?

Kidwell: Yeah.

Aspray: What topics have we not talked about that you've prepared yourself to talk about?

Kidwell: No, this was basically on my list.

Aspray: Okay.

END OF INTERVIEW