

Department: Anecdotes

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# In Search of Software History

**Burton Grad**

Cochair Software Industry SIG

**Editor's note:**

This is the second of three anecdotes in this issue telling Burt Grad and Luanne Johnson's journey collecting and communicating software history. The story begins with the prior anecdote and finishes with the anecdote after this one.

■ **THE VISION THAT** Luanne Johnson and I shared was that without the software companies, the technologies would have gone nowhere, but without the technologies, there would not have been any successful software companies. So, to carry out the mission and achieve our goals, we planned to do three things for the computer software and services industry.

- **Collection:** Collect materials, oral histories, and written recollections using paper, audio, video, and electronic media. Organize meetings with founders, historians, and other contributing participants to build a substantial information base. Participate in special information collecting projects using the Internet and other means for gathering information.
- **Preservation:** Donate the collected materials, oral histories and written recollections

to the Charles Babbage Institute (CBI) or the Computer History Museum (CHM) archives for preservation; they agreed to analyze and index these materials and make them available to scholars, researchers, and other interested people for examination and use.

- **Communication:** Work with CHM and CBI to ensure that all of the collected information is readily accessible both on a local and remote basis for historians, researchers, students, and the interested public. Work with the *IEEE Annals of the History of Computing* to publish special issues and promote and arrange for additional industry articles to be published in the *Annals*. Work with historians to use our resource information in preparing their books and articles. Create a website ([www.softwarehistory.org](http://www.softwarehistory.org)) to record all the materials collected and linkages to where they are located.

We were able to do all of these things. Over time we developed the Software History Center (SHC) and in time it merged with the CHM as the

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Software Industry Special Interest Group (SI SIG)—capturing the history of the companies as well as the software technology.

In 2003, I wrote a Think Piece which was published in the *Annals* (Vol. 25, No. 1) entitled, “Preserving the Software Industry’s Past”. One particular paragraph in the Think Piece was intended as a challenge to professional computer historians, curators, and practitioners: “Unfortunately, the computer software industry, which contributed as much to the development of the information age as computer hardware, has received short shrift. I believe that it’s past time to correct this oversight. . .”

I feel that the SHC and the SI SIG, working with the professional historians, curators and archivists have been able to do much, during the past 20 years, to collect, preserve, and communicate computer software and services history. The processes used in each of these areas is described in the balance of this article.

## HOW TO STRUCTURE THE COLLECTION PROCESS

Obviously, the key to preserving the history of an industry is to start collecting information. Finding an effective means to structure the collection process with the very different types of businesses in the software industry was a major challenge: software products; processing services; professional services; and value-added resellers. In each of these categories, there were significant subgroups whose business models were quite different. There was the added complexity of the variety of computer platforms used: large computer mainframes (IBM and what were then called the seven dwarfs—Honeywell, Univac, RCA, etc.); minicomputers (DEC, DG, HP, etc.); small business computers (Wang, Prime, etc.); and the more recent entry of microcomputers, known by most people as PCs (Apple, IBM, Compaq, Dell, etc.). Each of these platforms had its own set of software suppliers: companies that specialized in that niche with their own unique knowledge and programs. Making the challenge even greater, there were software companies that specialized in the system infrastructure, those which focused on a particular application area like accounting or payroll, and those which worked in a specific industry like insurance, manufacturing, or banking.

The solution that we came up with, using the advice of both historians and industry leaders, was to select a specific area (platform and type of software product or service) and bring together the principal business founders and technology leaders in that area in a one- or two-day moderated meeting with a few historians participating. At each of these pioneer meetings, the goal was to discuss the history of each of the companies present as well as the nature and history of that industry’s technology. In conjunction with these pioneer meetings, we also conducted some oral history interviews with founders of, or key contributors to, the growth of the companies. We asked attendees also to contribute their own materials and artifacts to be archived at permanent facilities. Each work session was to be recorded, transcribed, edited, and then posted on a permanent website. The earlier meetings were cosponsored by the Charles Babbage Institute and were just audio recorded. Later on, the meetings were cosponsored by the Computer History Museum and were video recorded. This was the primary collection process that was followed for the full 20 years, although it was augmented by many other oral history interviews that were done with significant industry contributors, separately from the pioneer meetings.

## ORGANIZING THE PIONEER MEETINGS

The linchpin of our collection activities was the pioneer meeting. Each meeting had a moderator for both the plenary sessions and for individual workshops. The moderator would either be a knowledgeable participant from the industry or a historian. The number of active industry participants was always kept below 20 to ensure that everyone had a chance to express his or her opinions. In addition to the active industry pioneers, each session had a few historians participating as well as other SHC members. Depending on the subject area, we would also invite those computer scientists and researchers who had created the technology that was used by the companies in designing and constructing the software products or services. Meetings were held either for one or two days, depending on the number of attendees and the complexity of the subject area.

Planning and organizing these meetings used structured, formalized processes, and the same



**Figure 1.** Desktop Publishing Pioneer Meeting held at the Computer History Museum in May 2017. Photograph credit: ©Douglas Fairbairn Photography.

pattern was followed for all of the meetings. First of all, it was critical to define the scope for each meeting so that it would cover a well-defined subject area that would permit sufficient depth of information to be obtained. It was critical to make sure that the key people from that industry sector were willing and able to come. Once you had those key people committed, virtually everyone else would then be eager to attend, and in some cases, we would actually have to limit the number invited. With the industry attendees lined up, we would then make sure that a few of the major historians could fit the meeting into their schedules. And we had to arrange for a venue; this was a serious problem in the early years, prior to our affiliation with the Computer History Museum. Using hotels in major cities was expensive for meeting rooms, food, audio/visual coverage, and hotel rooms for some historians and SHC members.

Then, the real work began in planning the agenda and preparing the details of what was to be covered within each plenary session and workshop. In some meetings, we had parallel workshops and so we had to come up with criteria as to who would attend each session. Later, as we had more of the company principals attending, we gave up on these parallel workshops and just had single workshop sessions for all of the attendees.

This reduced the amount of information that we could collect, but ensured that we had input from all of the attendees on all of the topics. We originally needed multiple moderators for the parallel sessions, but it ended up that I was able to moderate almost all of the later meetings, partly because I enjoyed doing the job and partly because I was able to provide a consistent pattern to the questioning and style of the meetings. Since I had been a consultant to over 200 software and services companies, it turned out that I was reasonably knowledgeable about almost all of the subject areas. This changed for the last two meetings, where I was basically ignorant of the subjects (Desktop Publishing and AI: Expert Systems), but in each of those meetings, I was able to recruit a guru from that area who not only ensured that we invited the right people, but persuaded them to attend; the gurus also guided the shape and content of the agenda and helped to stimulate the discussions during the meetings (see Figure 1).

Some of the participants decided to attend our meetings when we told them we would also do their oral histories in conjunction with the meetings. We also assured participants that each would have ample opportunity to speak. Besides these tasks, there was also the chore of making sure that the quality of the audio and

later the video recordings were suitable. For the later meetings at the Computer History Museum, this was no longer an issue, but at the hotels and other venues, this could be a problem.

So far, we have conducted 14 pioneer meetings and one other group meeting: a thank you meeting in 2017 at CHM for most of the historians who had worked with us. The thank-you meeting was also used to get the historians' guidance on where the collection activity should focus next in what was a dramatically changed software industry environment.

## CONDUCTING ORAL HISTORIES

Although the pioneer meetings were our special way to collect history about a subject area, we augmented the group sessions with oral history interviews, most of which were originally conducted by the computer historians who worked closely with us. These formal interviews were usually two hours long and tried to not only get the interviewee's business recollections, but also aimed at getting a picture of the whole person, their family background, education, first exposure to computers, starting and growing their businesses, and what they did after selling or leaving the business. In a very few cases, the interviews were continued for a second two-hour session. While lots of interviews were done in conjunction with the pioneer meetings, early on many were done by phone, some in cases where the interviewee could not travel to a meeting and others where the interviewee was not involved in the topic of a meeting, but we felt that the individual had a meaningful and significant story to tell that would provide further insight into the development of the technology or the business models or where their personal contribution to the industry was significant.

In selecting the interviewees, we generally tried to pick people that the historians would want to interview. Matching interviewers and interviewees could be a difficult process, so we ended up letting the historians pick whom they wanted to interview. Later on, when it became more difficult to line up historians to do the interviews, particularly those not connected to pioneer meetings, Luanne or I did a number of the interviews. By that time, we had observed and understood the process followed by the historians. We found that our interviews dug deeper on business topics and technical

topics than those done by the historians, although they brought a broader industry, historic, and cultural perspective to the interviews.

Preparation for an interview followed a defined pattern, whether done by a historian or an industry practitioner. First, interviewees provided their biographies and a timeline of their life. We usually started with their family and education, not their business experience. We also asked if they had any printed articles about their experience (their own or in the press) or if they had written any memoir which we could read. Then the interviewers would structure the sequence of topics that they wished to explore, usually in chronological sequence. So, by the time that the interview was conducted the interviewer was reasonably well versed in the interviewee's life and had a good idea of what areas should be explored in depth, although there were often surprises during an interview where the interviewer would take the opportunity to pursue an unexpected path.

To date, we have done over 140 oral histories under the auspices of SHC and SI SIG, with around half of them done in conjunction with pioneer meetings.

## EDITING THE TRANSCRIPTS FROM THE PIONEER MEETINGS AND THE ORAL HISTORIES

After the pioneer meetings and oral history interviews, each workshop and oral history audio or video recording had to be transcribed. We used commercial transcription services whose transcribers had no knowledge of the industry or the subject matter. The result was that the transcriptions were of mixed or even poor quality, since the transcribers did not understand the terms used, and of course the names of people, companies and products were totally unfamiliar.

That meant that we had to go through an extensive editing process before posting the transcriptions of the pioneer meetings or the oral histories. This posed a real dilemma: should we leave the transcripts relatively raw, just correcting the spelling of names, companies, and products, with all of the grammatical and other speech mannerisms as is; or should we edit the transcripts to make them more readable by a broader audience. We chose the latter approach, to the chagrin of some historians who wanted the unvarnished transcripts to be



posted. To satisfy them, we kept the original recordings and transcripts for them, but edited and posted the transcripts for the rest of us.

Editing turned out to be a much more daunting task than we had anticipated. There were two issues—the quality of the transcription, and the quality of the interview. Transcribers were taught by their firms to type exactly what they heard with every “er” or “um” or laugh or duplication or useless comment from the interview included. We decided to eliminate those and we provided editing guidelines to the editors, for instance, to use full four-digit years rather than the two-digit abbreviations most speakers used, as well as giving a number of other rules so that the transcript would be readable and understandable 100 years from now. This meant also giving the full name [in brackets] to the myriad of acronyms used in the computer software and services industry.

Also, as you might expect, the quality of the interviews varied dramatically, from people who spoke in sentences and paragraphs to those who could hardly follow any topic in a straight line and whose transcripts, therefore, were extremely difficult to make readable. Fortunately, there were very few of the latter. Pioneer workshops were particularly difficult because people would talk over each other and neither the transcriber nor editor was always certain who the speaker was.

In most cases, I would do a pre-edit on each pioneer work session to make sure that the speakers were identified as accurately as possible and to eliminate some level of cross-talk and unrelated discussion. Given the potential difficulty of identifying who was talking as an interview was transcribed, we would have large name placards in front of each speaker facing toward the camera and I would provide seating maps to the transcribers to assist them.

The transcript would then go to a skilled editor (paid or volunteer) who would do the heavy lifting of editing for spelling, grammar, and getting rid of unnecessary redundancy or duplication. Next, I would do a post-edit to clear up any questions that the editor had identified on names, etc. In contrast to the pioneer workshop transcripts, with the oral histories, we would go back to the interviewee to clarify the spelling of names, companies, and products. We would send the edited transcript to the interviewee for his or her review and that would

also give them an opportunity to provide additional or correcting information (always shown in brackets). We did not send the edited meeting workshop transcripts back to the participants since that would have been a nightmare to try to integrate the changes from as many as 20 people.

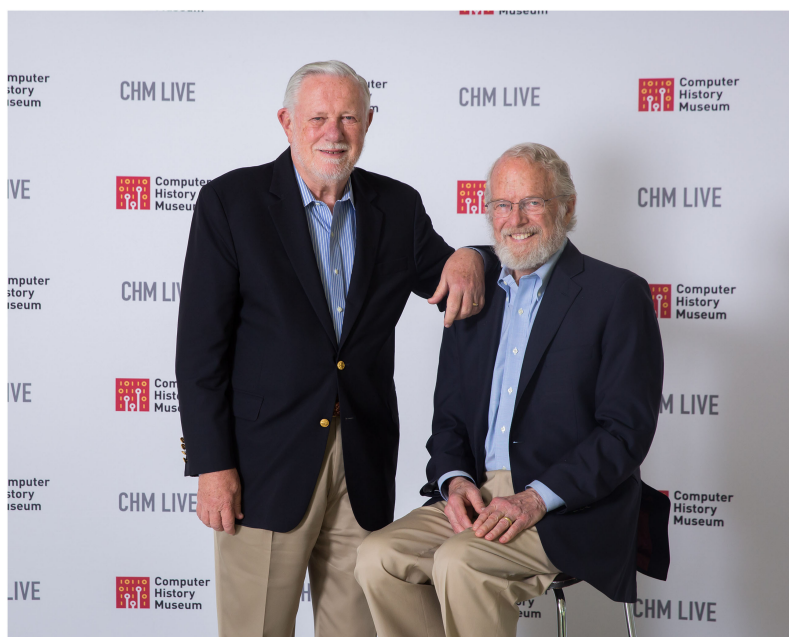
Finally, the edited copy was given to my wife, Carol Anne Ances, who, over the years, has formatted and final edited over 100 workshop transcripts and as many oral histories so they could be posted on the CHM or CBI websites. This total process has taken many years, but we have finally caught up and at this point, all of the workshops and oral histories have been edited and posted.

## PRODUCING SPECIAL ISSUES OF THE *IEEE ANNALS OF THE HISTORY OF COMPUTING*

While pioneer meetings and oral histories were two of our most valuable collection processes, we were always concerned with the communication of what we had collected. Besides having the edited transcripts of the meetings and oral histories available on the CBI or CHM websites, we used the *IEEE Annals of the History of Computing* as the primary vehicle to make many of the industry stories available to a broad computer industry audience in a more professional format. The *Annals* was the vehicle used by computer historians and some industry practitioners to publish their research results or memoirs. We decided that this would be our primary method for publishing articles based on our pioneer meetings and oral histories.

Again, we established a well-defined process for preparing special issues of the *Annals*. First, we had to decide whether we had enough industry company founders who were willing to write articles for an issue and who would commit the time to produce an article of suitable length and interest. I then had to get a historian as the coeditor in order to meet the *Annals* standards of academic rigor for those related historical articles not written by practitioners. The process of following up with the authors, submitting the articles for professional review, and then for copy editing was often lengthy and tedious and occasionally even contentious.

With each author, we asked for a one to two-page outline of what they intended to write. Preparing a paper for a professional Journal was somewhat different for the business authors than for the



**Figure 2.** John Warnock and Chuck Geschke, co-founders of Adobe, authored an article for one of the Desktop Publishing special issues of the *Annals*. Photograph credit: ©Douglas Fairbairn Photography.

academic participants. Writing for a professional journal was well known to academicians and scientists; however, the idea of peer-review with extensive recommendations of changes in content and structure was unfamiliar territory for most business people. This was perceived as a major barrier for some authors; yet, with the assistance of the *Annals* Editors-in-Chief and their associate editors, over the years, we were able to get almost all of the business articles that we wanted for each issue to be of satisfactory quality (see Figure 2).

Part of the fun for each issue was getting the cover designed, writing a Guest Editors' Intro, and organizing the structure of the issue. Every one of the issues was more than a one-year project, but there was a great sense of satisfaction when we would finally see the printed copy in finished form. We ended up producing nine special issues of the *Annals* with more than 50 articles and encouraging or arranging for the publication of 25 additional individual articles on software history.

## MATERIALS COLLECTION AND ARCHIVING

Another part of our collection process was to try to get materials from the industry pioneers. Over the years, thanks to the efforts of the late Doug Jerger, we were able to collect a significant

amount of materials from the industry pioneers. Some of these were donated to the Charles Babbage Institute and others to the Computer History Museum. The bad news is that many people did not preserve their files while others decided to keep them for their families.

Both CBI and CHM have prepared finding aids and archived the materials that we have collected and that have been donated to those archives.

Some of the material has been scanned so that those materials are available to scholars and researchers anywhere in the world; they do not need to go to the Computer History Museum to do their research. The Museum has also said that if scholars or historians identify particular items that they wish to study directly, arrangements may be made for them to be scanned.

The good news is that we did get donations of materials from a number of organizations (like ADAPSO/ITAA) and over 75 individuals. All have been indexed and have had finding aids prepared, and CHM also has been able to scan about 15 percent of the materials donated to them from SI SIG

## SUMMARY

Pioneer meetings turned out to be surprisingly successful. Not only did we get many individual memories and materials, but by having former



**Figure 3.** Len Shustek, Chairman of the Computer History Museum, presenting an Achievement award to Burt (remotely in the Beam robot) and Luanne in March 2017. Photograph credit: ©Douglas Fairbairn Photography.

competitors facing off with each other in a neutral environment with historians present to probe and explore, we often got conflicting stories and opinions as to what happened. Computing historians who make use of our collected materials have acknowledged the value of material coming from these pioneer meetings.

Collecting, preserving, and communicating software history has been one of the highlights of my life and gave me special focus as my professional consulting work has diminished over the years. It has given me an excuse to meet again with friends from my ADAPSO years and to interview people I had heard about but previously had not had the opportunity to meet. And the chance to work in partnership with world-renowned computer historians has been a wonderful educational experience (see Figure 3).

## ACKNOWLEDGMENTS

The author would like to thank all of the wonderful people that he had the privilege of working with at GE and IBM, where he learned the structure of the computer business and the software and services industry. His "graduate" degree in the industry was from his participation in ADAPSO for

almost 20 years and his consulting work with so many software and services company entrepreneurs. Particularly, he would like to mention Larry Welke, Larry Schoenberg, Bruce Coleman, Sterling Williams and Sid Dunayer who were his special clients, associates and friends.

**Burton Grad** devoted his business career to computer software and services. In 1954, while at GE, he wrote one of the first business application programs for the Remington Rand Univac computer that GE was installing in its new Major Appliance plant in Louisville, Kentucky. He left GE in 1960 to join IBM, becoming a Director of Development in 1969 after IBM unbundled software and services from its hardware sales or leases. As IBM's representative to ADAPSO's software section starting in 1970, he became an active organizer of meetings and special projects. Leaving IBM in 1978, he started Burton Grad Associates, Inc (BGA) which was a boutique consulting firm for over 200 software and services companies during the next 28 years. When Luanne Johnson approached him about preserving the history of the software industry, he felt that this was a special opportunity. Burt partnered with Luanne to run the Software History Center from 2000 to 2020. Mr. Grad can be reached at [burtgrad@aol.com](mailto:burtgrad@aol.com).