

The Case for a Silicon Valley Computer Museum

The computer was not invented in the San Francisco Bay area, nor are most of the world's computers built here. But few would argue with Silicon Valley's claim to the title of intellectual capital of the computer business. The confluence of established companies, startups, venture capital firms, technology-friendly universities, and media coverage has caused the center of gravity to shift to this area.

Perhaps because the early development of computers was centered elsewhere, an appreciation of the history of computers has not been much expressed here until recently. That has changed, however, and the objective of this paper is to show that **now is the time, and Silicon Valley is the place, to establish a major computer history center and the world's premier display collection of computer memorabilia.**

Why now?

The awakening of interest in computer history is fueled in large part by the sudden awareness that history not preserved is history lost. We can see that two important things are being lost at an accelerating rate: old computers, and people.

The new model of computing based on small distributed machines is quickly becoming dominant, and the mainframes and minicomputers on which the previous generation was based are disappearing. Machines from the 40's and 50's are no longer available for preservation, and those from the 60's and 70's are going fast. Unless significant specimens are saved, they will be lost forever. In fifty years no one will have any sense of what a mainframe computer room in the early days was like, unless we preserve it now.

Secondly, now that the beginning of the electronic computer age extends back 50 years, the early pioneers are dying. We will soon lose forever the opportunity to record personal histories and observations on the development of this crucial technology. Some early contributors have already gone without being adequately recorded, and that is a tragedy. Many who are now in their 60's, 70's and 80's seek and appreciate the opportunity to tell their stories.

In one respect the aging of computers is beneficial for our cause: it provides an audience. Old-timers like history, and for the first time now there is a significant population of computer old-timers who were designers and users in “the old days”. For some, the old days are when the Eniac was alive, and for others it’s when they bought their first Altair-8800, but they are all sympathetic to the goal of preserving what they worked on.

The computer does not exist in nature; it is entirely a recent creation of the mind. It will surely have a long and significant future that none of us can predict. But its origins are still within our grasp. We have a duty to future generations to record and preserve those origins, and an opportunity to do so with activities that are exciting and educational for us now.

What is it that we are proposing?

First and foremost, we are proposing to build a prominent display museum for exhibiting the history of computers to a technologically-aware audience. It is a medium-sized space (10,000 to 20,000 square feet) dedicated exclusively to showing and explaining the significant artifacts of computer history.

Each artifact will be accompanied by text that describes the technology and indicates its significance in the evolution of computers. In addition, copies of some of the original documentation and collateral material (such as advertisements or photographs of typical installations) will be on display. Other exhibits will include timelines, video terminals for viewing “soft” exhibits, and photographic collages, enhanced when appropriate with the latest in multimedia techniques.

The complete artifact collection includes computer hardware (both complete machines and significant components), peripherals, contemporary documentation, and software. Special emphasis is placed on documents which can be used to understand the technology in detail: theory-of-operation manuals, logic diagrams, programs listings and source code. Secondary materials include photographs, films and videos, audio tapes, books, and digital versions of all of these. As with all display museums, there will be a significant part of the collection which is in storage and not on public display, but will be available by arrangement.

Supporting the collection are the usual activities for acquisition, cataloging, maintenance, and preservation. One of the most intriguing new challenges will be determining the appropriate ways to preserve software and make it accessible.

Secondly, going beyond the collection, we can aspire to make this facility be a true “Institute for Computer History” by other activities that support academic research. These include providing a library, developing material for courses on computer history, preserving individual and corporate archives, encouraging and participating in the

compilation of histories, and becoming involved with other disciplines interested more broadly in the history of technology.

What is it not?

Many of the existing organizations that one thinks of as dedicated historical computer museums are not that. Instead, most of them instead have as their primary focus the explication of current computer technology to school-age children, which laudable goal they achieve with great success. We will be different.

In the Bay Area *The Tech Museum of Innovation* in San Jose and *The Exploratorium* in San Francisco are two such examples, neither of which has an historical bent. Also, both cover areas of technology other than computers; in fact the Exploratorium has very little display space devoted to computer exhibits.

The Computer Museum in Boston is closer to what we have in mind, but is still off the mark. It does cover only computers, and its original purpose was indeed historical preservation and exhibition. But its focus and audience has changed in the last decade, and it is now is 75% *Tech*-like, and 25% historical. Most of their impressive historical collection is not on display because the space is needed for the tutorial and hands-on exhibits.

Similarly, the Smithsonian's exhibit (the "Information Age" section of the National Museum of American History) is not restricted to computers, is directed towards children and non-technical adults, and emphasizes showing the effects of technology on society.

The facility proposed here does not compete with any of those that already exist except in minor ways. In particular, there is no overlap with anything else in the San Francisco Bay area, including *The Tech*.

Who is the audience?

There are many categories of people who are likely to be customers of an historical and research-oriented computer museum:

- Nostalgic computer users and engineers: The population of people who worked with "old" computers is becoming huge, and they respond with enthusiasm to having their memories refreshed. You can't show a familiar old machine to one of its programmers or users without provoking a long stream of reminiscences.
- Curious college students: The EE students who are learning to put 10^7 transistors on a chip are absolutely fascinated by fact that complete computers were built out of

postcard-sized logic modules that implemented two AND gates each. Just hand a 4 Kbit core memory module to a budding digital engineer who has never seen one and watch his or her jaw drop.

- Practicing engineers doing new designs: There are techniques that were used in the past that are useful to research in detail for two possible reasons: (1) they may be useful again in a new technology (example: Tomasulo's instruction-scheduling algorithm designed for the 360/91, which is being reimplemented for the latest superscalar microprocessors), or (2) they have been dead-ends in the past for good reasons whose lessons can be inexpensively learned. For both you may need detailed access to design details from the historical documentation.
- Visitors to the area who have a technology interest: This facility can become one of the standard high-tech tourist spots to which visitors at Silicon Valley companies and conventions go, on a par with the tourist spots of San Francisco and The Tech in San Jose.
- Lovers of collections: As personal computers become ubiquitous among the general population, old computers may become an object of more broadly-based interest in the same way that old cars and old aircraft are. Not all visitors to those collections are dedicated car or airplane buffs. Many of those who enjoy them are casual users, just as they will be of computers.
- History researchers: The displayed and stored collection, especially the technology and developmental history documentation, is a valuable resource for studying the evolution of computer hardware and software. At a more global level, the development of the computer industry is a rich example of accelerated scientific development and the social and economic factors that made it work; future historians will need primary source documents to understand these times.
- Legal researchers: Lawyers and corporate research staff doing prior-art investigations of intellectual property for patent and trademark work need this material.
- Public media: Television and print media need a source for historical photographs, films, and sound clips, as well as a place (or service?) to do historical fact-checking.
- The next generation: Posterity. We are preserving an historical record for people yet unborn. What would you like the college student of 100 years from now to be able to find out about the origins of the computer?

What organizations could be involved?

There are several organizations which are sympathetic to the establishment of a west coast computer collection, and two in particular which have expressed serious interest in participating.

- The Computer Museum in Boston (TCM) wants to establish a presence in the Bay Area, and in doing so would like to return to its roots as an historical museum. They have an impressive collection in storage, a prestigious board, good name recognition, and an ongoing source of funds. Surely if TCM moves the major part of its collection here and establishes a display space, they instantly become **the Silicon Valley** computer museum with which all the other organizations must align.
- The Computer History Association of California (CHAC) is a small non-profit corporation which has published a journal called *The Analytical Engine* for several years, and is the strongest local lobbying group for an historical museum. They have a modest artifact collection to which has just been added a complete 60's-era small mainframe: an SDS-930. The CHAC is sympathetic to the idea of joining forces with TCM if their goals are aligned, and the *Engine* could serve as the basis for a more widely-circulated journal of the museum.

At the next level down, there are several local projects which could be more loosely affiliated with this new venture.

- Stanford University has a project within their library's Department of Special Collections called the *Silicon Valley Project*. Its mission is documenting the history of science and technology, but its scope is regional rather than disciplinary, so it includes biotechnology, physics, and aerospace as well as computers. They have a good private-use collection of company and individual archives from people who worked in the area, but only a small artifact collection. They have encouraged us in the establishment of a display collection and discussed several avenues of collaboration.
- The Perham Foundation has an electronics museum collection, and once had a display facility in a building on the Foothill College campus. Their collection is currently in storage, and they are planning a new facility in downtown San Jose. They have expressed interest in cross-loaning artifacts as appropriate, and perhaps other cooperative efforts.
- The *Bay Area Computer History Perspectives* is a popular lecture series on computer history organized by a couple of Sun employees. They originally thought that it could be an official event of TCM, but the long-distance coordination made that impossible. It could instead be sponsored by this new museum.

- The *Tech Museum of Innovation* would be a sensible collaborative partner, since there is little or no overlap in approach but there is a shared interest in the subject matter.

In addition, other relationships would be likely to develop with like-minded organizations in other areas, including the Smithsonian, the Babbage Institute, the London Science Museum, the IEEE History Center at Rutgers University, and others.

What other activities can it sponsor?

In addition to activities directly related to the collection and to historical research, there are other activities which can be sponsored or encouraged, some of them especially appropriate if the display facility is reasonably slick and spacious:

- Use of the facility for company and organization events. Many other museums have found this to be a valuable PR and fundraising source. What is more appropriate than for a modern computer technology company to hold a board meeting, press announcement, awards dinner, or shareholder meeting amidst the equipment that represents its historical roots?
- A lecture series on computer history, trends, and future prospects, subsuming that of the Bay Area Computer Perspectives series.
- If TCM is a sponsor, it makes sense for their annual auction to be sponsored as an event of the historical collection.
- A library dedicated to preserving computer history, which might include: contemporaneous material (books, manuals, design documents), books and monographs on computer history, video and audio tapes of interviews with pioneers, and so on. The library's scope will need to be refined in collaboration with the other associated organizations which have similar functions.
- Publication of an informal journal, which is both the house organ and is of wider interest to computer history collectors. Here, too, it's scope will be defined to avoid overlap or competition with the product of other organizations, like the IEEE's excellent *Annals of the History of Computing*.

What do we call it?

This is not the time or place to worry about or decide on a name and associated image, but here are some possibilities which may help to convey the flavor of the undertaking:

- The Silicon Valley Computer Museum

- The [Silicon Valley?] Institute for Computer History
- The [Silicon Valley?] Computer History Center
- ...

Site location possibilities

The target location is the San Francisco peninsula along the freeway 101/280 corridor from Menlo Park to San Jose. Easy freeway access and simple directions are a plus.

The target facility is a stand-alone building of 10,000 to 20,000 square feet. It should be mostly large open spaces with few offices. Having a distinctive architectural look, making it a recognizable destination in this land of boring concrete tilt-ups, would be a plus.

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Funding and staffing scenarios

...TBD...

How do we proceed?

...TBD...

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