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COLLABORATIVE CONSERVATION: SHARING EXPERTISE AT THE GOODWILL COMPUTER MUSEUM

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ABSTRACT

The Goodwill Computer Museum, Austin, Texas, established in 2005, maintains an extensive collection of computer software and hardware dating back to the 1960s. A significant component of the museum's mission is to help individuals learn about computers and computer technology, both as an object and as a tool of cultural expression and information communication. At the same time, the museum faces multiple preservation concerns related to its goal to maintain and coordinate a large corpus of hardware, software, and support materials. Conservation for the museum is not just about conserving the original, tangible artifact, but also about conserving the computing experience—the intangible values and processes that are associated with vintage equipment. Issues of authenticity and completeness are not simply defined in terms of physical presence and known history of a computer, piece of software, or even a game manual, but how these different elements interact with one another, as well as with individual people. While the staff size and budget are small, the museum has partnered with the University of Texas at Austin, School of Information, to develop unique ways of incorporating distance communication technology and protocols that augment available expertise and deliver timely and efficient advice from trained conservators.

INTRODUCTION

Within the holdings of the Goodwill Computer Museum (GCM), are a wide variety of materials ranging from the 1960s to the present, including vintage and obsolete computers, video games, software, and associated ephemera such as IBM erasers and an original Nintendo lunch box. A visitor to the museum is as likely to learn about the complex and often untold history of the Datapoint Corporation as they are to have a chance to interact with the once ubiquitous Apple IIc personal computer. The GCM is unique not only in terms of its diversified collection, but also in terms of their focus on the continued functionality of computer hardware and software. The GCM is a respected part of the Goodwill Enterprises of Central Texas, and is garnering recognition as a valuable institution within the discussion of the social history of computing (Galloway 2011). In many ways, the history of computing continues to focus on the "great men" and important firsts in the industry, often to the detriment of lesser known systems and individuals who helped shape the role and use of computers in society (Ensmenger 2004). While the museum includes systems that were indeed best sellers, or at least are well known, including Tandy Corporation's personal computer, the TRS-80 and the Cray EL-94, it also includes a lot of the lesser-known systems—perhaps even what one may deem to be the failures of computing history. These systems are equally important as the field of computing history begins to investigate what role and influence these devices and market failures had on emerging technology over the last several decades (Lipartito 2003). By focusing both on the user experience and the machines, the GCM allows visitors and researchers to learn about the social framework that influenced, and was influenced by, the development of technology (Ensmenger 2004; Pfaffenberger 1988).

OVERVIEW OF THE GOODWILL COMPUTER MUSEUM

The GCM is located in Austin, Texas and was founded in 2005 as a facility dedicated to the preservation and restoration of vintage computer equipment. The GCM provides interactive exhibits and programs that educate the community on the history and use of computer technology. Established under the umbrella of the Goodwill Industries of Central Texas, the GCM also promotes environmental technology and the importance of recycling end-of-life electronics. Because of this tie to Goodwill Industries, donations to the museum come through both the general Goodwill recycling stream, as well as through individuals who donate directly to the museum.

The GCM is staffed by one full-time museum director and about a dozen volunteers, primarily engineers from the Austin community and students and faculty from the School of Information (iSchool) at The University of Texas at Austin. Since 2009, the iSchool has been collaborating with the GCM on projects that have included preserving digital collections, conducting preservation surveys, creating databases, cataloging materials, and assisting with the restoration of vintage equipment and computing capabilities. In 2010, the National Historic Publications and Records Commission (NHPRC) funded a project to help the museum gain better intellectual control over their extensive holdings of software and documentation, as well as design and codify the preservation plan and collection development policy—a project in which iSchool students and faculty were integrally involved.

The GCM has many of the challenges one would expect with a small museum. Space for the museum has been carved out of the Goodwill warehouse. This warehouse was purpose-built to accept, process, and sell donations, but is not optimal for the needs of a small, but growing, museum collection. Lighting is provided by cost-efficient, overhead, fluorescent bulbs that are suitable for sorting donations, but emit levels of light and UV that are higher than desirable for storing objects, especially plastic computer casings, color printed software boxes, and other light sensitive objects. Heat and relative humidity levels are also primary concerns, as the portals at the loading docks are not well sealed, leaving entry points for both pests and outside air, a significant concern in the hot climate. For example, in 2010, Austin had at least 89 days over 95°F, and in 2011 Austin had a record 90 days over 100°F. Insects thrive in the hot, somewhat humid climate, and mold is occasionally found on incoming collections. Still, there is no option to quarantine materials when they are first accessioned. Fortunately conditions inside the building do not support mold growth, and there is some pest management built into the overall building facilities budget. One problem unique to this situation, however, is the overwhelming amount of dust arising from the tear down of incoming "raw" materials donated to Goodwill for resale and recycling. A thick layer of dust can be generated in a single day.

Besides these aforementioned issues, the amount of space allocated is insufficient and is divided into six areas on two different floors. None of the museum spaces are adjacent, only two areas have a locking door, and some of the space is accessible only with forklifts. Staff is creative and makes the best of the situation, but the situation dictates compromises. In one case, piles of computers and software are stacked on wooden pallets, shrink wrapped, and then stored on shelves 15 feet off the ground, as a temporary solution to avert discarding the materials. The GCM's space problems are exacerbated by the constant influx of donations from the Goodwill recycling stream. While this donation source often provides invaluable gems for the collection, it simultaneously creates a backlog of potential materials that may block access to already overflowing storage spaces. Guidelines for collection storage, use, and exhibit are in progress and are very much guided by the problems at hand.

Despite these challenges, the museum has distinct strengths upon which to build. The director of the GCM, Russell Corley, is a computer engineer who is interested in the recovery of computers and computing experiences, and as such, refers to himself as a "restoration engineer." His interests and experience are less similar to that of a typical museum director and more closely related to what a conservator would offer. Indeed, he is eager to incorporate conservation ethics and aesthetics into museum practices. He knows the collection materials from the inside out; he can rebuild and repair them, understands both the hardware and to a lesser extent the software, has an appreciation of the history of computers, and is passionately concerned with keeping them in working order for future generations.

In addition to the director, there is a dedicated network of volunteers that continue to help the GCM expand its reach and strengthen its mission. Through work with the National Historical Publications and Records Commission grant, a collection development plan and preservation policy for the GCM is emerging with the help of iSchool faculty and students. The museum also has a strong cohort of volunteer engineers who all share in the director's enthusiasm for the social history of computing. A recent redesign and grand re-opening of the museum in September, 2011, drew strong support from the board of Goodwill Industries of Central Texas and the large Austin computing community.

CONSERVATION AT THE GOODWILL COMPUTER MUSEUM

Conservation plays a critical role in this museum, but it is an emerging form of conservation, based on collaboration and a variety of expertise. Similar collaborations have been undertaken in the preservation of cultural artifacts, where local values and conservation expertise are blended for the benefit of the community (e.g., Clavir 2002; Ogden 2004). Fortunately, one of the side effects of the GCM's complex collection is that conservation has been incorporated from the very beginning. Preservation of the software, hardware, and all the supporting documentation calls for both engineering expertise and an understanding of the physical nature of the materials. The scope of the museum, both in terms of collection and preservation of objects, coupled with the mission to restore functionality, is almost unprecedented. Additionally, the museum does not have the luxury of limiting use in favor of preservation as this would interfere with a key component of its mission.

The GCM is not concerned solely with the computer as an object, but also with the experiences associated with the physical and digital materials. Thus, conservation entails preserving the intangible values and processes that are associated with vintage equipment as much as preserving the original, tangible artifact itself. Issues of authenticity and completeness are not simply defined in terms of physical presence and known history of a computer, piece of software, or even a game manual, but how these different elements interact with one another, as well as with individual people. The museum is fortunate to have a variety of experts on hand to address many of these issues.

For example, three highly committed volunteers, Austin Roche, Bryan Lee, and Karen Boelinger have used their expertise to design and build a machine which allows the museum to preserve not only files from disks, but the actual bitstream as recorded in the electronic pulses of magnetic media. Their machine is called, appropriately, The Ditto. Another project, coordinated by volunteer Phil Ryals, is the reconstruction of a 1940s relay computer—affectionately called RC3 (relay computer 3)—which the museum is currently using in the gallery to demonstrate one of the first types of computers available. While the computer itself is a replica, the relays were made by the original manufacturer. The RC3 made its official debut in September of 2011, and the GCM is exploring ways to interface it with an online application so people outside the museum can see it work.

REMOTE RECOVERY

Because the conservation strategy at the GCM involves collaboration among many individuals and most of the positions are part-time or volunteer, communication can be augmented by distance education techniques. This has been especially useful for conservation training where Skype (a Microsoft software application that allows voice and video communication over the Internet) allows the conservator to demonstrate techniques in a fully equipped conservation lab using appropriate tools and methods. Using remote conservation collaboration then allows for creativity and problem solving both on site and in the conservator's lab. The use of Skype allows a flexible schedule so it is possible to address issues as they arise rather than saving a pile of problems to be addressed on a training day. This requires that the conservator in the lab and the technician in the museum commit to an on-call schedule of available hours. Finally, working with Skype allows a surprising level of close supervision, but avoids the awkwardness that can come from working too closely. The conservator can view the technician's ongoing work in detail but the computer screen provides a barrier; and, the nervousness that can come into play from close supervision is not an issue.

We have found remote instruction to be successful for minor conservation treatments including dry cleaning, insect and mold identification and removal, separating paper adhered to vinyl binders, and removing rusty staples and embedded paperclips. In all cases, a good source of raking light, even something as low-tech as a flashlight, augments the flat fluorescent lighting of the warehouse and enhances detail. Remote communication is also highly effective for assessing condition, an extremely useful benefit in the context of the GCM because hidden gems can be found in the Goodwill recycling stream. In the instance when a potential gem is identified, having it reviewed simultaneously by an engineer for relevance and a conservator for condition can save time and storage space.

APPLICATIONS IN OTHER MUSEUMS

The work done at the GCM shows that these remote recovery strategies may have applications in other situations. One obvious scenario is in the immediate aftermath of a disaster, when only local residents and first responders are allowed access to a site. Conservators then may offer assistance remotely, providing technical expertise while collaborating with individuals, including home and business owners, to make determinations of object value, treatment options, and prioritization. The American Institute for Conservation, Collections Emergency Response Team (AIC-CERT) members and others understand the frustration of arriving days, weeks, or months after a catastrophe and finding photos, records, and objects that could have been salvaged but that were discarded because the owners assumed they were lost. This might give conservators the opportunity to be "on the ground" more quickly, perhaps to do assessments or offer workshops as people are entering water or wind damaged structures. Later, when the second responders are allowed in, and a conservator is working on-site, conferencing equipment might give access to a network of colleagues. This type of instruction has already been used successfully in conservation education (Henry 2000). Currently this technology is dependent on copious amounts of bandwidth such as what might be found at a university or office setting, but technology is improving quickly.

In some situations, phone lines are more reliable than wireless service, but there are impediments to communicating strictly by telephone. While camera resolution on smart phones can be quite good, the screen size is small and it is difficult to assess minute details. Connecting a smart phone to a pocket-sized projector circumvents this problem, but the connections may be somewhat convoluted. Still, this option remains viable as more devices are introduced to the market.

Another application of remote communication techniques may be to expand the reach of the conservation profession since the majority of conservators in the United States are located on the East or West coast and much of the country has little access to conservation expertise. A conservator might do an initial assessment over Skype and then follow up with advice or an on-site visit as appropriate. Furthermore, collections with cultural restrictions—such as indigenous artifacts—could benefit from remote assistance; working this way might avoid inappropriate access and contact. Likewise, collections requiring security clearance might be served by remote conservation techniques. Individuals at the local site would have the proper clearance or authority to work directly with the materials while conservators at a remote location could provide their expertise to direct specific treatments. These types of applications need to be investigated more thoroughly, but hold promise for the field.

CONCLUSION

The relationship between the GCM and the iSchool has been mutually beneficial in terms of the exchange of ideas, research, and practical hands-on learning. The work at the GCM provides not only a fresh perspective of conservation methodology by incorporating the preservation of intangible values with the tangible artifact, but also demonstrates how different disciplines and fields can work together towards the same goal. The collaboration between engineers, archivists, conservators, and programmers has yielded tremendous results and insights into the role the GCM may play within the community in the future. The wide array of materials and types of systems and hardware presents both exciting research opportunities for conservators, as well as incredible challenges. This work will hopefully lead to the development of remote conservation techniques and protocols, and facilitate broader research into applications for remote response and recovery in disaster situations. Finally, the GCM—like many small museums—will continue to struggle with space and the challenges that are inherent of large collaborations, but this is only a very new partnership and we anticipate working together for many years to come.

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