Increasing the Museum Value of Information Technology Objects

The Case of the Finnish Data Processing Museum Association

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Abstract: In this article, we define the basic concepts of museum work, museum value, and contextual information with the help of a case study and literature. We base the case study on the empirical material of a project that aimed to gather knowledge of the collections of the Finnish Data Processing Museum Association. This article opens up the concepts and analyzes them in the context of museum work and information technology objects.

Keywords: Case study, Computer, Finland, Museology, Museum

1. Introduction

Picture a big pink "tower" with black leather "benches" at its bottom, the Cray 1S supercomputer, standing in a computer exhibition.[1] By its side is the IBM Ramac 305: a big grey "box" with a "table". It is not easy to comprehend that both of these are computers. Looking at the Cray, a visitor gets little information. The poster by its side mentions the technical specifications. The case is better with the Ramac: a visitor can find some notions of where they used it and when. However, what does this tell to the visitor? To a person who does not know the history of IT, the available information does not tell anything. Only a guided tour held by an expert opens up the stories of the machines and the meaning they have on the history of IT and to the society in general.

I worked to increase the museum value and contextual information of the collections of the Finnish Data Processing Museum Association (Suomen Tietojenkäsittelymuseoyhdistys ry.) from autumn 2006 to the end of 2007. Two grants from the Ministry of Transport and Communications of Finland funded the project. The museum association is located in Jyväskylä, Central Finland, and it preserves and exhibits objects of IT. The association has about 250 objects of IT

[1] The Finnish Data Processing Museum Association has two permanent exhibitions in Jyväskylä, Central Finland. They are located on the premises of Jyväskylä University, the Agora building and on the premises of the Jyväskylä University of Applied Sciences, the IT-Dynamo building. [5]

and related material in their collections and they work on converting old formats into contemporary formats, for example from punch cards to 3,5" floppy disks. [5]

The documentation project occurred in co-operation with Jyväskylä University Museum's Section of Cultural History. The project aimed to gather knowledge of 11 computers. With the help of this information, the museum association will improve their exhibitions, increase the general knowledge of their collections, and develop the listing of their collections. In this article, I present the museum association as a case study on how and why museological principles are important in IT museum work. Finally, in the epilogue I will tell the "real" stories of the IBM Ramac 305 and the Cray 1S.

2. The Museological Approach of the Project

2.1 The Museum Association's Story So Far

The beginning of the museum association is in a collection of computers of Mr. Ilari Taulio, a retired IBM maintenance engineer, who started the collection over thirty years ago. During the 1970s, he started to collect old computers, for example, from his employers and different institutions [9, 18]. During the 1980s, Mr. Taulio rented storages for the collection and called a committee to work on establishing a computer museum in Jyväskylä (1987). The committee had representatives from the Finnish State Computer Center, Jyväskylä University, and the Museum of Central Finland. The aim of the committee was to increase the collection and to exhibit the computers to the public. They also aimed to enhance the study of the history of IT by enabling researchers to have old computers at their disposal. Until the museum association was established in 1995, the museum committee tried to lay the foundation of computer museum work in Finland. The city of Jyväskylä, among others, supported the committee with monetary help on storage rents every year [1, 9, 18].

Since its establishment, the museum association has been working on the same goal of creating a national computer museum, as well as increasing and managing the collections. An essential part of their work has also been exhibiting computers to the public around Finland in various events and sites [5, 9, 18]. The work of the association is based on voluntary work of its members. The association also aims to preserve contemporary computers.[2] During its existence, various institutes have donated money to help the association continue their work. They established the two permanent exhibitions at the beginning of the 2000s [5, 9, 18]. These present the history of IT in a context of change: a visitor can see how computers and components have changed in the course of time.

The beginning of the project lies in the events that took place in 2006. In the beginning of 2006, the city of Jyväskylä announced that it would not continue its

[2] One part of the museum work is the documentation of the present. A voluntary association in Sweden SAMDOK (Samtids Dokumentation) created the basis of international contemporary documentation in the 1970's. Documenting the present brings today's culture closer. It also makes it possible to use more efficient methods in documentation [8, 12, 35].

monetary support to the association [6, 7]. From that day forward, the museum association was hanging on a thread. The situation was especially grim in April 2007: the association was served a notice of termination of rent agreement. The collections were facing the destiny of demolition when there was no money or no storages. Fortunately, with the help of the University of Jyväskylä, the collection was saved. The University of Jyväskylä helped the association to rent a new, smaller storage space (250 m²). This meant that the collections had to be screened, but on which basis? Fortunately, the documentation project was already in progress and they used the preliminary results to help the screening. With less space, they reduced the collections from about 600 to about 250 items during the move in June 2007. Now the association can continue their work, since they have got further funding from several sources to maintain the new storages and develop further projects [5].

2.2 Museum Value and the Collections of the Museum Association

When we started to plan the project, the museum association had compiled a list of their "most valuable computers". The list consists of major developments from the history of IT: from punched-card machines to personal computers. It is their perspective on what are the most valuable computers in their collections. It was also the first step in valuing the collection.[3] In museums, valuing means the evaluation of material and mental value of the objects. They can base the value of an object on aesthetic, intellectual, or sentimental basis [24]. The list also defined the basis of the diminished collection when we decided to build the new collection around it.

To the documentation project, I chose eleven computers or mainframes from the list. They include:

- Wegematic 1000 (University of Helsinki the 1960s; Jyväskylä technical Institution 1965–1986);
- Elliot 803 A, (Helsinki University of Technology the 1960s);
- IBM 1620 (Valmet Jyväskylä or Summa paper mill the 1960s);
- EAI Analogue Computer model 640/680 (Technical research Centre of Finland the 1960s / the 1970's);
- IBM punched-card machines: from card punch to tabulator etc. (various);
- IBM Ramac 305 (OTK the 1960s);
- MIR-2 (Helsinki University of Technology the 1970s / the 1980s);
- Cray 1S (CSC 1990's);
- Zuse Z23 (Maansähkö Oy 1962–1970; Riihimäki technical institution, 1970–);
- Digital Inc.'s PDP computers: especially PDP-11 and PDP-15 (various);
- Spear Inc.'s µ-Linc a.k.a. Mikro-Linc (University of Helsinki 1966–1978).

So what does the concept of museum value have to do with computers? Museology is a discipline that has been a part of museum work since the 18th

[3] The original list of "the most valuable computers" contains also these: Almex Optical Reader, IBM Mainframes (System 3 and 7, 3032), Data General Nova, SM-4 (CM-4; Soviet PDP-11 clone), PC and minicomputers (e.g. IBM, Nokia, HP) [1, 2].

century. As a theoretical discipline, it has been evolving all the time. It deals with the daily functions of museums and related "memory" organizations, as well as the theoretical aspects of all museum work. It is theoretically divided into two approaches. Museography or applied museology asks "how"; for example, which are the best-used practices of museum work. On the other hand, theoretical museology asks "why": for example, why we maintain museums. The (museum) object is a part of museological work and the methodology is based on the information value of the objects [16, 21].

From the beginning, the concepts museum value and context were the guidelines of the project. Museum value is a resource for managing the collections as well as a resource for defining the value of an object or the collections as a whole. Peter van Mensch, a Dutch museologist, has defined the concepts through a theory of life of a museum object [21]. They base the theory on the concept of an object's lifespan. The lifespan includes the original value of the object and the changes in its value during time. The information value of the object can diminish, disappear, or rise. In museology, museum objects are seen as objects that are separated from their original context and given a new context by moving them into a museum. The context changes also if an object is preserved as a museum object in its place in the environment. In a museum, the object is a representative of its original context and a resource for museum work. [21, 32]

As primary documents, museum objects are seen as direct witnesses of cultural and natural phenomena. We can also see the phenomena indirectly through secondary documentation such as literature and archival material. The secondary documents are not always seen as a part of museum work, even among museologists. [21] Archival material and literature are vital sources in historical research, but in museological research the object tells the information through its story. In my opinion, by combining these two disciplines' methods, we may complete the stories of the objects and the information value rises.

We define the museum value of an object mainly by its information; but in art museums, they also define the value by aesthetic values. Sometimes even other museums value their objects on aesthetic basis. This means that a museum might choose to save a presentable object. We also discussed aesthetic values when we started to define the salvageable computers: whether to take a computer which was presentable or which had a story to tell. In the end, we chose to emphasize the story of the machines.

We base the contextual information of an object on its lifespan. According to van Mensch's theory, the information value has three levels: The structural identity of the object contains the physical properties of the object. This means how it is built. Functional identity contains the functional properties and the significance of the object and its use. This means why they used a computer in a specific way. The contextual identity contains the object's relationship to its context. This means the relationship between the object and its environment: how the users of a computer reacted to it. [21, also 32]

This model is completed with the historical process that results in the final information value of the object [21]. This means the life history of the object and its effect on the information value. The final value is the basis on which we build

our understanding of the past. The lifespan and the process of information are based on three stages of context. The conceptual identity means the beginning of an object's life: the idea that started its process of making. [21, 23, 32] This means the invention of a computer, for example, the idea that started the process of making the Wegematic 1000. The factual identity means all the characteristics of the object as it was intended and not-intended by the maker. It means the finished object with regard to its structure, function, and idea. [21, 32] The factual identity of the Wegematic is the finished product after the assembly line. The actual identity of an object is the result of its life [21, 32]. This means the story of the Wegematic to this day with all the marks its life has left on it: who made it, what it is, who used it and why, etc. Finally, it tells us the story of how it became a museum object.[4]

This way the museum value of an object is based on its information. We see the object as a data carrier: it carries all the information its life left on it [21]. This means that we see the information hidden in the lifespan of the object and that it can be found through research. The object might have changed during its life in its functions and appearance. In museology, we consider these changes through the object's identity: is it still the same as its inventor meant? The context varies in an object's lifespan, and again when the object is "muzealised". The primary context of the object is the initial context in which it functioned. We achieve the secondary context when the object has a documentary value: usually this means that the object has become a museum object. [21]

The information value changes for the last time when an object becomes a museum object. It gains a new context, a museological one. In a museum, we introduce the object to a new environment that changes its identity. As a document of the past, the object is a source of knowledge. It also becomes a witness or a testimony of the past. Unfortunately, the muzealisation of an object affects its data. The information levels are damaged through the acquisition process and preservation. In the end, the documentary value of the object determines the place of the object, whether or not it belongs to a museum. [21]

3. Ways to Increase the Museum Value of Information Technology Objects

During the 30 years of their existence, the museum association had hardly written down the life stories of the computers. Furthermore, they had written few donation forms of the studied computers. Although the catalogues were insufficient from a museological point of view, the museum association worked regularly in order to improve this situation. Catalogues are vital in regard to the museum value and the justification of an object's belonging to a museum. Proper cataloguing enhances the museum value of the collection as a whole, as well as

[4] The Wegematic 1000 came to the University of Helsinki in 1960 as a donation from the Swedish Wenner-Gren Institute. It became operational in 1961. In 1965, the computer was moved to be used at Jyväskylä Technical School. It was never used in Jyväskylä, because they could not make it work. It was donated to the museum association in 1986 [1, 2]. See also [14, 15, 30].

enables researchers to distinguish scientific knowledge from non-scientific. Even one properly catalogued object enhances the museum value of a collection as a whole, instead of hundreds of insufficiently catalogued objects [33, 34, 35].

The documentary value of the objects was hidden in the lifespan. My work started with an investigation. First I had to figure out who had donated the computers and when using information provided by the members of the association. Concerning the lifespan, I had to begin from the muzealisation. After figuring out the story so far, I started to look for information on who had used these computers and where. I interviewed thirty-seven people and gathered archival material in order to collect the stories of the computers.

Interviewing is one of the most important methods of gathering contextual information. Memories tell a different story than facts do. Every person has individual experiences on how to use or program a computer, what difficulties they had while using it and what the world of computers felt like. Through interviews, we see the human experience. In museological context, the experiences of the users are vital to the museum value: they vitalize the object. Every object should have a story that tells to its viewer what it felt like to use it, touch it or look at it. Through the interviews I gathered first-hand and second-hand information of the computers. The second-hand information is important because the human experience can be used as an example of another similar object.

But what about the success of this project? All the information I gathered gave something new to the computers and to the history of Finnish IT. A few of the computers gained contextual information. Unfortunately, some computers (which should be the evidence of information technology) seem to stay uninformative. For a thorough investigation, the computers should be studied one by one. However, on the other hand, the project improved the knowledge and the museum value of the collections as a whole. Along the project, I helped the museum association to move and select the computers that were to be saved. I represented the museological expertise, and gave advice on what to consider as the basis of the selection: museum value of the objects. During this, the outlines of "the collection policy" were also created: the basis of the decision what computers to preserve. With it the association will be able to advance the collection they already have.

We improved the contextual knowledge of the machines with the interviews and the archival material. The information tells about the values and the conceptions of the past society and the culture. Combined with the human experience the facts tell the whole story of how and why the computers were used. Via these stories, we can begin to understand the impact computers had on our society. Although the gathered information was not very informative in the case of some computers, they all justified their place in the collections. This way "the list of the most valuable" is not the only justification. By being some of the oldest and most important computers in Finnish IT history, the justification is valid.

In the end, it is difficult to determine to whom this kind of collecting and documenting belongs. According to Finnish laws, there is only one very general ordinance about what museums must preserve: prehistoric or historic monuments

(immovable artifacts) and movable artifacts and protected dead animals [4]. Museum workers have to decide themselves on what other material to preserve. There isn't any ordinance to save old computers. The museum association has done their work voluntarily with the help of professional museums. The members have decided on their own what computers or related material they collect. With a collection of this magnitude all the needed work cannot be done in a short period of time. Even with the help of professionals, museum work is comprehensive in nature.

4. Epilogue

Therefore, what are the stories of the IBM Ramac 305 and the Cray 1S? The museum value of the Ramac stayed the same. The Ramac is the world's first computer to use a hard disk drive. It celebrated its 50th birthday on 13 September 2006 [13]. The machine that stands in Agora is actually a part of the IBM Ramac 305 mainframe. In the exhibition, you will find the hard disk drive and the control board. The machine is an exhibition loan from the Technology Museum of Finland [1].

However, there is not much to tell about the machine. They possibly used it in the 1960s in a retail cooperative OTK (Osuustukkukauppa). At the same time, an IBM Ramac 305 was in use in a similar cooperative, Elanto, in Helsinki. This machine was famous: it even had a nickname, "Äly-Elo" [20, 28, 29]. The information of Elanto's machine represents second-hand information: it increases the value of the Ramac on display.

The story of the Cray 1S supercomputer is different. Its museum value was increased, and the justification of its existence in a museum is valid. Actually, that pink tower is a central processing unit (CPU) [3] that was never in use in Finland. The Ministry of Education of Finland set up a committee in 1977 to plan the obtaining of a new mainframe in joint use. After years of hard work, Finland got its first supercomputer. Cray X-MP EA/416 supercomputer was activated on the premises of CSC – the Finnish IT Centre for Science in January 1989. [11, 17, 19, and 27]

According to a story told by one of the association's active members, there was great interest about the supercomputer. People wanted to see what the supercomputer was that caused so much work and cost a lot of money. When the Cray X-MP had arrived, the public interest was so large, that CSC started to inquire if they could get a computer to exhibit, because only authorized personnel were allowed in the machine room of the Cray X-MP. After negotiations, a representative from Cray Corporation suggested a Cray 1S that was out of use. The computer had been in Netherlands in the use of Shell Corporation and they used it in calculations of oil search. [9, see also 11] However, there is also another story. According to the personnel of CSC, the Cray came from England, from a meteorological institute [11]. They stripped the CPU of all essential parts that makes it a functional computer before it came to Finland. There have been speculations that it happened because of the Iron Curtain era; that is, so the

Soviets could not copy the technology [9]. This is the problem and the enrichment of memories. On one hand, this complicates the understanding of the machine and it can compromise the museum value when the contextual information is based on assumptions. On the other hand, this difference enriches the story. It shows the variety of human experience and the personal truth as one source of information.

Finally they brought the CPU of the Cray 1S to Finland in 1990s. The Cray stood in the hall of CSC's premises. Everyone who came to the building could see "Finland's first supercomputer". Some people even wanted to take their picture while sitting on the benches of the Cray [10]. It stood in the hall until 1999. That year they were to receive a new supercomputer so they donated the Cray to the association [9]. Later the Cray 1S went on display in the computer exhibition and it has represented the beginning of Finnish supercomputing ever since.

How does the Cray tell its story from now on? It tells us in the end about the beginning of the supercomputer era in Finland. Through the knowledge gathered in the project we can see the life story of the machine. It is not just this big, pink computer CPU in a computer exhibition. It is a document of the work done in CSC, but also a document of how and why supercomputing began in Finland. It is also document of the importance of computer museum work: by saving it, the association has preserved an important part of Finnish IT history. The stripped CPU also tells of past conceptions of the western society: how the technology should be protected. In the end, when this knowledge is added to the information in the exhibition, also the visitors of the exhibition will find the story behind the machine. The Cray 1S is truly a museum object with museum value.

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